

The Potential Economic and Fiscal Impact of Planned LNG Facilities along the Texas and Louisiana Gulf Coast

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Executive Summary

- Liquefied natural gas (LNG) is a critical component of meeting global energy needs, and current and planned facilities on the Gulf Coast of Texas and Louisiana play a crucial role in keeping up with LNG demand. The purpose of this commentary is to respond to the recent report from the Department of Energy related to LNG exports, specifically providing data related to the economic and fiscal benefits of relevant LNG facilities along the Texas and Louisiana Gulf Coast which could be affected by future permitting decisions.
- The Perryman Group measured the total economic impacts of construction and ongoing operations of LNG facilities in the study area (Texas and Louisiana Gulf Coast) which are under consideration and have been designated as relevant by the Department of Energy for this inquiry. It is important to note that these facilities are only a fraction of the overall LNG industry, and thus the overall economic benefits of the industry and upstream effects are much larger.
 - The total potential economic benefits related to **construction and pre-operational** activities if these planned facilities are permitted and move forward include a projected **\$78.9 billion** in gross product and more than **769,300** job-years (including multiplier effects). A job-year is one person working for one year, but it could be multiple individuals working partial years (as is typical in construction projects).
 - If these facilities move forward, at full operations levels the estimated economic impact includes almost **\$1.4 billion** in annual gross product and over **10,200** jobs (when multiplier effects are considered).
- By enabling US natural gas to be sold on global markets, the LNG market supports demand for gas and, therefore, ongoing development of resources in major production areas with pipeline connections to the Gulf Coast.
 - Three areas (the Permian Basin, Haynesville Shale, and Eagle Ford Shale) currently provide more than 90% of the gas utilized by the facilities in the study area. The production of natural gas generates substantial economic benefits in these areas.
 - Assuming the same allocation of future gas supplies (which is well within the production and planned infrastructure capabilities of the relevant regions), the estimated increase in business activity in key production areas associated

includes **\$8.4 billion** in annual gross product and more than **52,500** jobs (including multiplier effects).

- Business activity generates tax receipts.
 - During the **construction and pre-operations** phases, these planned facilities have the potential to generate a projected **\$4.4 billion** in Texas and Louisiana state tax revenue and nearly **\$3.8 billion** for local taxing entities in the study areas.
 - **Ongoing operations** of these facilities have the potential to lead to an increase in tax receipts including **\$70.8 million** to the states of Texas and Louisiana each year, with almost **\$55.7 million** annually to local government entities in the study areas.
 - Business activity related to **natural gas exploration and production** supported by the planned, but not yet permitted LNG facilities includes an estimated **\$431.0 million** in annual taxes to the states of Texas and Louisiana, with **\$325.6 million** per year to local taxing entities in the major production areas.
- The United States currently has an abundant natural gas supply, and allowing some of it to be exported not only stabilizes the US market, but also benefits allied nations through providing a reliable source of energy in times of geopolitical uncertainty.
- Even with additional LNG facilities, the relatively small volumes exported (relative to overall proven reserves and production capacity) are unlikely to lead to significant price increases because estimated reserves in major resource areas continue to increase dramatically, despite ongoing production, and technological advances will enhance recoverability.
- Natural gas is crucial to meeting future energy needs and is essential to base electric generation capacity for the foreseeable future. From a geopolitical perspective, enhanced LNG exports reduce dependence on gas from nations that are potentially adverse to a stable world order.
- Socioeconomic factors are clearly worth consideration in permitting decisions, as is meeting future needs for energy. With EIA and virtually all other forecasts indicating that the need for natural gas around the globe will continue to grow, the LNG market and US facilities are crucial to meeting future demand. As a result, it is evident that future LNG production is in the public interest and that there is a substantial valid rationale to approve and encourage further development.

Introduction

Liquefied natural gas (LNG) is a critical component of meeting global energy needs, and current and planned facilities on the Gulf Coast of Texas and Louisiana play a crucial role in keeping up with LNG demand. The current baseline forecast from the US Energy Administration International (EIA) Energy Outlook indicates demand for both oil and natural gas will increase significantly by 2050, even under alternative scenarios regarding the pace of economic growth, costs of zero-carbon energy sources, and other relevant parameters also indicate continued expansion.

National export data from the EIA indicates that annual LNG exports grew from less than 1.1 trillion cubic feet (TCF) in 2018 to more than 4.3 TCF in 2023, more than 400% higher in just five years.¹ Demand from Europe and Asia for LNG is expected to continue, and US sources will meet critical needs and help ensure adequate energy resources given geopolitical uncertainty and ongoing conflicts. The purpose of this commentary is to respond to the recent report from the Department of Energy related to LNG exports, specifically providing data related to the economic and fiscal benefits of relevant LNG facilities along the Texas and Louisiana Gulf Coast which could be affected by future permitting decisions.²

The creation and continued expansion of a global natural gas market through LNG exports has significant geopolitical implications. The ongoing military action between Russia and Ukraine has clearly illustrated the essential nature of global energy security, and the ability to mobilize natural gas supplies to fill market needs is a critical part of these efforts. International demand for natural gas is increased due to its favorable environmental properties compared to sources such as coal as well as its potential role as a backup fuel to intermittent renewable energy. Developing economies around the world are also in need of low-cost, environmentally friendly fuels to facilitate growth. Even with substantial expansion of alternative energy and efforts to address climate concerns, the need for natural gas is likely to expand for the foreseeable future. Its essential nature has been further enhanced of late by the rapid development of artificial intelligence (AI) and other emerging

¹ United States Energy Information Administration, Natural Gas, Liquefied US Natural Gas Exports, January 31, 2025, <https://www.eia.gov/dnav/ng/hist/n9133us2A.htm>.

² US Department of Energy, Office of Fossil Energy and Carbon Management; Energy, Economic, and Environmental Assessment of US LNG Exports; December 2024.

technologies (including those related to carbon capture and other emissions-reducing methods) which require unprecedented levels of power consumption.

The LNG industry has a significant economic impact on the economies of the United States, Texas, and Louisiana. Through their operations and construction, LNG facilities provide jobs, economic activity, and fiscal benefits. Future permitting decisions could affect a significant number of facilities which will be important to supplying and expanding an already growing market. The Perryman Group (TPG) was recently asked to analyze the potential impact of LNG facilities planned, but not yet permitted, located along the Texas and Louisiana Gulf Coast. These facilities (listed in the following table) could be affected by future permitting decisions.³

LNG Facilities Included in the Present Study	
Corpus Christi Area	
CORPUS CHRISTI LIQUEFACTION, LLC; CCL MIDSACLE 8–9, LLC; AND CHENIERE MARKETING, LLC	
Lake Charles Area	
VENTURE GLOBAL CALCASIEU PASS, LLC	
COMMONWEALTH LNG, LLC	
VENTURE GLOBAL CP2 LNG, LLC	
LAKE CHARLES EXPORTS, LLC	
MAGNOLIA LNG, LLC	
SABINE PASS LIQUEFACTION, LLC AND SABINE PASS LIQUEFACTION STAGE V, LLC	
Louisiana Central Coast	
VENTURE GLOBAL PLAQUEMINES LNG, LLC	
NEW FORTRESS ENERGY LOUISIANA FLNG LLC	
GULFSTREAM LNG DEVELOPMENT, LLC	
Beaumont-Port Arthur	
PORT ARTHUR LNG PHASE II, LLC	

³ *Federal Register*, Volume 89, No. 245, Friday, December 20, 2024, p. 104132.

Background of The Perryman Group

The Perryman Group has analyzed the economic and fiscal effects of various types of economic stimuli on hundreds of occasions over the past four decades. TPG has conducted numerous studies of energy markets and impacts, developed numerous models including prices from various hubs, and has estimated the price effects of major market shifts. This analysis has been extensively used by major energy market participants including pipelines, utilities, gas producers, and LNG facilities, as well as the Federal Energy Regulatory Commission.

The firm has performed impact assessments of major petroleum and petrochemical facilities throughout the world, including numerous major

operations along the Texas and Louisiana Gulf Coast. Analyses have involved major chemical, refinery, and LNG facilities in the area.

The Perryman Group has performed permitting analyses of the economic aspects of the public interest requirements for a number of LNG facilities along the Texas and Louisiana Gulf Coast which have been reviewed and accepted by relevant regulatory agencies.

The firm performed the analysis of the economic aspects of the public interest requirements in the permitting process for both the Sabine Pass and Golden Pass projects in the Beaumont-Lake Charles area, as well as other

major investments including Rio Grande LNG (Texas), all phases of Cheniere's Corpus Christi Liquefaction project (Texas), Bear Head (Nova Scotia), and Alaska LNG (Alaska). These studies have been reviewed and accepted by the relevant regulatory agencies and have facilitated negotiations with many state and local authorities. Most of these projects are currently generating substantial economic benefits in the areas where they are under development or operating.

Other energy-related studies by the firm include analyses of intrastate and interstate pipelines (oil, natural gas, and refined products) throughout the US. Representative examples include Longhorn Partners, Frontier Aspen, Louis Dreyfus, Creole Trail, Rio Bravo, ExxonMobil, Colonial, TransCanada (Keystone XL), Alaska, Texaco, Enbridge, Williams Pipeline, and North

Texas. TPG has also completed scores of studies related to the economic aspects of oil and natural gas exploration, production, transportation, and exports, including projects for the US Department of the Interior, the US Department of Energy, the Interstate Oil Compact Commission, the Texas Railroad Commission, and the Federal Energy Regulatory Commission. Dr. M. Ray Perryman, founder and CEO of the firm, has testified on energy market issues on numerous occasions (including a June 2023 presentation to the US House of Representatives Energy Action Team).

In addition, TPG has analyzed economic aspects of major production areas including multiple assessments of activity in the Permian Basin as well as assessments of the Bakken Shale, Haynesville Shale, Eagle Ford Shale, Barnett Shale, Fayette Shale, Alaska North Slope, and Marcellus Shale. Dr. Perryman is a resident of Odessa in the Permian Basin, giving him extensive local insight into the up/downstream impacts of LNG.

Economic Benefits

Any economic stimulus leads to dynamic responses across the economy. The Perryman Group has developed complex and comprehensive models over the past four decades to measure these dynamic responses in order to estimate the total economic effects (not only direct, but also indirect and induced) associated with direct sources of stimulus.

Any economic stimulus leads to dynamic responses across the economy.

In this instance, The Perryman Group measured the total economic impacts of construction and ongoing operations of LNG facilities in the study area (Texas and Louisiana Gulf Coast) which

are under consideration and have been designated as relevant by the by the Department of Energy for this inquiry.⁴ In addition, the upstream benefits in production areas related to supporting the development of the natural gas market were quantified. It is important to note that these facilities are only a fraction of the overall LNG industry, and thus the overall economic benefits of the industry and upstream effects are much larger.

For the construction/pre-operational and ongoing operations effects, input data was obtained from filings with the Federal Energy Regulatory Commission (FERC) to the extent they were available and other public information. In a few cases, likely construction spending and ongoing direct effects were estimated based on typical patterns in detailed information regarding closely related projects of similar size and geographic location. Impacts were quantified for several regions with concentrations of planned LNG facilities. These areas include Corpus Christi, Texas; Beaumont-Port Arthur, Texas; Lake Charles, Louisiana; and the Louisiana Central Coast area (including Plaquemines and Jefferson parishes). For the upstream effects, study areas include major production regions in Texas and Louisiana which typically supply approximately of the natural gas used for LNG production in these areas at present.

⁴ *Federal Register*, Volume 89, No. 245, Friday, December 20, 2024, p. 104132.

Methods used in this analysis are summarized on the following page, with additional information provided in Appendix A.

Measuring Economic Benefits

Any economic stimulus, whether positive or negative, generates multiplier effects throughout the economy. In this instance, the construction and ongoing operations of the facilities provide jobs and operational spending in the areas where they are located. This incremental business activity generates significant tax receipts to local entities (such as cities, counties, and school districts) as well as the state and federal governments.

The Perryman Group's dynamic input-output assessment system (the US Multi-Regional Impact Assessment System, which is described in further detail in the Appendices to this report) was developed by the firm about 40 years ago and has been consistently maintained and updated since that time. The model has been used in thousands of analyses for clients ranging from major corporations to government agencies and has been peer reviewed on multiple occasions. The impact system 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. This process allows for estimation of the total economic impact (including multiplier effects) of the industry and related activity. The models used in the current analysis reflect the specific industrial composition and characteristics of each region analyzed.

Total economic effects are quantified for key measures of business activity (further explained in the Appendix). Note that these measures are alternative means of expressing the same effects; they are not additive.

- **Total expenditures** (or total spending) measure 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 the 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 effects** are expressed in job-years for transitory effects such as construction or on a full-time-equivalent basis for ongoing effects. A job-year is one person working for one year, though it could be multiple individuals working partial years.

Monetary values were quantified on a constant (2024 dollars) basis to eliminate the effects of inflation.

Construction Effects

The total potential economic benefits related to construction and pre-operational activities if these planned facilities are permitted and move forward include a projected **\$78.9 billion** in gross product and more than **769,300** job-years (including multiplier effects). A job-year is one person working for one year, but it could be multiple individuals working partial years (as is typical in construction projects). These results are fully adjusted for the labor and materials that are expected to be acquired outside of the region.

The Economic Benefits of Construction and Pre-Operational Activities Associated with the Relevant Planned LNG Facilities

	Total Expenditures (Billions of 2024 Dollars)	Gross Product (Billions of 2024 Dollars)	Personal Income (Billions of 2024 Dollars)	Employment (Job-Years)
Corpus Christi Area	\$4.706	\$2.255	\$1.571	21,659
Beaumont-Port Arthur Area	\$15.903	\$7.807	\$5.515	76,340
Lake Charles Area	\$122.674	\$60.576	\$43.016	590,824
Louisiana Central Coast	\$16.688	\$8.299	\$5.787	80,487
TOTAL	\$159.971	\$78.938	\$55.889	769,311

Based on direct spending and operations data in FERC filings and from other public sources (and, in a few cases, estimated based on typical patterns) and The Perryman Group's estimates of related multiplier effects. Note that there would also be spillover to other areas which would increase the total economic effects but are not included. Components may not sum to totals due to independent rounding. A job-year is one person working for one year, though it could be multiple individuals working partial years. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A, with results by industry in Appendix B.

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

Ongoing Operations Effects

If these facilities move forward, at full operations levels the estimated economic impact includes almost **\$1.4 billion** in annual gross product and over **10,200** jobs (when multiplier effects are considered).

The Annual Economic Benefits of Ongoing Operations Associated with the Relevant Planned LNG Facilities

	Total Expenditures (Billions of 2024 Dollars)	Gross Product (Billions of 2024 Dollars)	Personal Income (Billions of 2024 Dollars)	Employment (Jobs)
Corpus Christi Area	\$0.317	\$0.069	\$0.039	479
Beaumont-Port Arthur Area	\$0.761	\$0.162	\$0.096	1,234
Lake Charles Area	\$4.641	\$0.954	\$0.563	7,156
Louisiana Central Coast	\$0.819	\$0.177	\$0.102	1,349
TOTAL	\$6.537	\$1.362	\$0.800	10,217

Based on direct spending and operations data in FERC filings and from other public sources (and, in a few cases, estimated based on typical patterns) and The Perryman Group's estimates of related multiplier effects. Note that there would also be spillover to other areas which would increase the total economic effects but are not included. Components may not sum to totals due to independent rounding. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A, with results by industry in Appendix B.

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

Upstream Effects

By enabling US natural gas to be sold on global markets, the LNG market supports demand for gas and, therefore, ongoing development of resources in major production areas with current and planned pipeline connections to the Gulf Coast. The Perryman Group estimates that almost 94% of natural gas which is liquefied on the Gulf Coast of Texas and Louisiana originates in the Permian Basin, Haynesville Shale, and Eagle Ford Shale.

The production of natural gas generates substantial economic benefits. Assuming the same allocation of future gas supplies (which is well within the production and infrastructure capabilities of the relevant regions), the estimated increase in business activity in key production areas associated includes **\$8.4 billion** in annual gross product and more than **52,500 jobs** (including multiplier effects).

The Annual Economic Benefits of Natural Gas Production to Support the Relevant Planned LNG Facilities

	Total Expenditures (Billions of 2024 Dollars)	Gross Product (Billions of 2024 Dollars)	Personal Income (Billions of 2024 Dollars)	Employment (Jobs)
Permian Basin	\$13.831	\$4.444	\$2.443	27,643
Haynesville Shale	\$7.888	\$2.566	\$1.414	16,280
Eagle Ford Shale	\$4.373	\$1.402	\$0.758	8,617
TOTAL	\$26.092	\$8.413	\$4.615	52,539

Based on estimated production of natural gas to support LNG facilities included in this study and The Perryman Group's estimates of related multiplier effects. Components may not sum to totals due to independent rounding. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A, with results by industry in Appendix B. Source: US Multi-Regional Impact Assessment System, The Perryman Group

Fiscal Effects

Business activity generates tax receipts. For example, the retail sales and hotel occupancy effects of the economic stimulus measured in this study were quantified. A portion of the retail sales is taxable, and receipts to the

During the construction and pre-operations phases, these planned facilities have the potential to generate a projected **\$4.4 billion** in Texas and Louisiana state tax revenue and nearly **\$3.8 billion** for local taxing entities in the study areas.

State and local taxing entities are affected by the direct stimulus. Moreover, additional room nights provide occupancy tax resources. Economic benefits also affect property tax values. Higher incomes enhance housing demand, leading to higher taxable values as well as additional need for houses. Increased retail sales and incomes enhance the need for

commercial space such as restaurants, retail outlets, and personal service facilities. Higher property values increase taxes to counties, cities, school districts, and other local taxing entities. The Perryman Group estimated the fiscal effects of the gains in business activity described in this study.

During the construction and pre-operations phases, these planned facilities have the potential

Once fully operational, the potential annual increase in tax receipts includes a projected **\$70.8 million** to Texas and Louisiana and almost **\$55.7 million** to local government entities in the study areas.

to generate a projected **\$4.4 billion** in Texas and Louisiana state tax revenue and nearly **\$3.8 billion** for local taxing entities in the study areas.

Fiscal Benefits of Construction and Pre-Operational Phases of the Relevant Planned LNG Facilities

	State Taxes (Millions of 2024 Dollars)	Local Taxes (Millions of 2024 Dollars)
Corpus Christi	\$127.470	\$107.051
Beaumont-Port Arthur	\$441.580	\$374.553
Lake Charles	\$3,406.956	\$2,913.643
Louisiana Central Coast	\$465.867	\$393.490
TOTAL	\$4,441.873	\$3,788.737

Based on the estimated increase in business activity as described in this study. Cumulative taxes during construction and pre-operational phases. Local taxes to cities, counties/parishes, school districts, and other local taxing entities.

Components may not sum to totals due to independent rounding.

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

Ongoing operations of these facilities have the potential to lead to an increase in tax receipts including **\$70.8 million** to the states of Texas and Louisiana each year, with almost **\$55.7 million** annually to local government entities in the study areas.

Annual Fiscal Benefits of Ongoing Operations of the Relevant Planned LNG Facilities

	State Taxes (Millions of 2024 Dollars)	Local Taxes (Millions of 2024 Dollars)
Corpus Christi	\$3.439	\$2.719
Beaumont-Port Arthur	\$8.452	\$6.664
Lake Charles	\$49.755	\$39.131
Louisiana Central Coast	\$9.198	\$7.148
TOTAL	\$70.844	\$55.661

Based on the estimated increase in business activity as described in this study. Annual taxes at mature operations levels. Local taxes to cities, counties/parishes, school districts, and other local taxing entities. Components may not sum to totals due to independent rounding.

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

Business activity related to natural gas exploration and production supported by the planned, but not yet permitted LNG facilities includes an estimated **\$431.0 million** in annual taxes to the states of Texas and Louisiana, with **\$325.6 million** per year to local taxing entities in the major production areas.

Annual Fiscal Benefits of Natural Gas Activity Supported by the Relevant Planned LNG Facilities		
	State Taxes (Millions of 2024 Dollars)	Local Taxes (Millions of 2024 Dollars)
Permian Basin	\$229.798	\$172.727
Haynesville Shale	\$128.777	\$99.049
Eagle Ford Shale	\$72.471	\$53.802
TOTAL	\$431.046	\$325.579
Based on the estimated increase in business activity as described in this study. Annual taxes at mature operations levels. Local taxes to cities, counties/parishes, school districts, and other local taxing entities. Components may not sum to totals due to independent rounding. Source: US Multi-Regional Impact Assessment System, The Perryman Group		

Additional Considerations

The United States currently has an abundant natural gas supply, and allowing some of it to be exported not only stabilizes the US market, but also benefits allied nations through providing a reliable source of energy in times of geopolitical uncertainty. Natural gas prices have recently been at historic lows, dramatically slowing exploration and development of resources. In fact, while the DOE LNG Update study noted natural gas prices at Henry Hub for 2022 and 2023 of \$6.45 per million British thermal unit (MMBtu) and \$2.53/MMBtu,⁵ respectively, but prices for 2024 were significantly lower at \$2.19/MMBtu according to data from the US Energy Information Administration.⁶

Even with expansion, the relatively small volumes exported (relative to overall proven reserves and production capacity) are unlikely to lead to significant price increases for several reasons. Estimated reserves in major resource areas continue to increase dramatically,⁷ despite ongoing production. In estimating future market conditions, it is crucial to consider the potential impacts of changes in drilling and production methods. As technology improves, recovery rates will as well, increasing the available supply (current approaches only extract a small fraction of the oil and gas found in major shale formations).⁸

⁵ US Department of Energy, Office of Fossil Energy and Carbon Management; Energy, Economic, and Environmental Assessment of US LNG Exports; December 2024.

⁶ US Energy Information Administration, Natural Gas, Henry Hub Natural Gas Spot Price, March 2025, <https://www.eia.gov/dnav/ng/hist/rngwhhdA.htm>.

⁷ US Energy Information Administration, Natural Gas, U.S. Crude Oil and Natural Gas Proved Reserves, Year-end 2022; April 2024, <https://www.eia.gov/naturalgas/crudeoilreserves/>.

⁸ See, for example, US Energy Information Administration, Assumptions to the Annual Energy Outlook 2023: Oil and Gas Supply Module, March 2023, https://www.eia.gov/outlooks/aeo/assumptions/pdf/OGSM_Assumptions.pdf and volumes of undiscovered gas resources assessed by the USGS, including: Whidden, K.J., Pitman, J.K., Pearson, O.N., Paxton, S.T., Kinney, S.A., Gianoutsos, N.J., Schenk, C.J., Leathers-Miller, H.M., Birdwell, J.E., Brownfield, M.E., Burke, L.A., Dubiel, R.F., French, K.L., Gaswirth, S.B., Haines, S.S., Le, P.A., Marra, K.R., Mercier, T.J., Tennyson, M.E., and Woodall, C.A., 2018, Assessment of undiscovered oil and gas resources in the Eagle Ford Group and associated Cenomanian–Turonian strata, U.S. Gulf Coast, Texas, 2018: U.S. Geological Survey Fact Sheet 2018–3033, 4 p., <https://doi.org/10.3133/fs20183033>. And Paxton, S.T., Pitman, J.K., Kinney, S.A., Gianoutsos, N.J., Pearson, O.N., Whidden, K.J., Dubiel, R.F., Schenk, C.J., Burke, L.A., Klett, T.R., Leathers-Miller, H.M., Mercier, T.J., Haines, S.S., Varela, B.A., Le, P.A., Finn, T.M., Gaswirth, S.B., Hawkins, S.J., Marra, K.R., and Tennyson, M.E., 2017, Assessment of undiscovered oil (footnote continued)

As noted, natural gas is crucial to meeting future energy needs. In addition, it is essential to base electric generation capacity for the foreseeable future. While renewable sources clearly have a role to play, their intermittent nature and a lack of sufficient battery storage capacity requires that they be backed up by generation capacity fueled by natural gas. In fact, to the extent that natural gas can replace coal as a generation fuel, emissions can be reduced. By supporting the development of natural gas resources, the LNG industry helps ensure sufficient fuel is available when needed. From a geopolitical perspective, enhanced LNG exports reduce dependence on gas from nations that are potentially adverse to a stable world order.

and gas resources in the Haynesville Formation, U.S. Gulf Coast, 2016: U.S. Geological Survey Fact Sheet 2017–3016, 2 p., <https://doi.org/10.3133/fs20173016>.

Conclusion

Moving forward with LNG facilities which are planned but not yet implemented would lead to substantial economic activity and jobs in the areas where facilities are located. The increase in business activity would also

generate substantial tax receipts to help meet the needs of communities in Texas and Louisiana.

Moving forward with LNG facilities which are planned but not yet permitted would lead to substantial economic activity and jobs in the areas where facilities are located.

In addition, there are numerous reasons to support development of the LNG market, ranging from meeting global energy needs to stabilizing the US natural gas

market. Natural gas can also help reduce emissions as it often replaces coal as a source for electric power generation.

Socioeconomic factors are clearly worth consideration in permitting decisions, as is meeting future needs for energy. With EIA⁹ and virtually all other forecasts¹⁰ indicating that the need for natural gas around the globe will continue to grow, the LNG market and US facilities are crucial to meeting future demand. As a result, it is evident that future LNG production is in the public interest and that there is a substantial valid rationale to approve and encourage further development.

⁹ US Energy Information Administration, International Energy Outlook 2023, *Table: World natural gas consumption by region*, October 11, 2023, <https://www.eia.gov/outlooks/aeo/data/browser/#/?id=6-IEO2023®ion=0-0&cases=Reference&start=2020&end=2050&f=Q&linechart=Reference-d230822.1-6-IEO2023&map=&sourcekey=0>.

¹⁰ See, for example, Gas Exporting Countries Forum, Global Gas Outlook 2050, March 2025, https://www.gecf.org/_resources/files/pages/global-gas-outlook-2050/gecf_ggo2024_9th_edition.pdf.

Appendix A: Methods Used

US Multi-Regional Impact Assessment System

The US Multi-Regional Impact Assessment System (USMRIAS) measures multiplier effects of economic stimuli. The USMRIAS was developed and is maintained by The Perryman Group. This model has been used in thousands of diverse applications across the country and has an excellent reputation for accuracy and credibility; it has also been peer reviewed on multiple occasions, accepted by courts, regulatory agencies, and legislative bodies on hundreds of occasions, and has been a key factor in major national and international policy simulations.¹¹

The basic modeling technique is known as dynamic input-output analysis, which 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. The second phase involves model simulation to determine total (not only direct, but also indirect and induced) effects. Additional detail is provided in the following sections.

Estimation of Direct Effects

Direct construction outlays and ongoing operations effects were based on data from FERC¹² and other public sources¹³, with a limited number of estimates where

¹¹ See for example, Perryman, M. Ray and Virginia Gleghorn, "Obesity-Related Costs and the Economic Impact of Laparoscopic Adjustable Gastric Banding Procedures: Benefits in the Texas Employees Retirement System," *Journal of Medical Economics*, 2010; Perryman, M. Ray, "On the Development of Integrated Multi-Regional Impact Assessment Systems." *Modeling and Simulation*, 1988; Perryman, M. Ray, "Large-Scale Econometric Systems: Their Potential Roles in Impact Assessment and Target Industry Analysis." *Modeling and Simulation*, 1987; and Perryman, M. Ray, "On the Use of Integrated Multi-Dimensional Modeling Techniques in the Industrial Targeting Process," *International Journal of Modeling and Simulation*, 1989.

¹² Federal Energy Regulatory Commission, U.S. LNG Export Terminals – Existing, Approved not Yet Built, and Proposed, March 12, 2025, <https://www.ferc.gov/media/us-lng-export-terminals-existing-approved-not-yet-built-and-proposed>. And Federal Energy Regulatory Commission, U.S. LNG Import Terminals – Existing, Approved not Yet Built, and Proposed, March 5, 2025, <https://www.ferc.gov/media/us-lng-import-terminals-existing-approved-not-yet-built-and-proposed>.

¹³ *Federal Register*, Volume 89, No. 245, Friday, December 20, 2024, p. 104132. And United States of America Department of Energy Office of Fossil Energy, Port Arthur LNG Phase II, LLC, FE Docket No. 20-23-LNG. And United States of America Department of Energy Office of Fossil Energy and Carbon
(footnote continued)

information was not available. Estimates were based on TPG's prior work in measuring the economic effects of LNG investments and typical patterns for similar facilities.¹⁴

For the estimates related to natural gas exploration and production supported, TPG estimated the percentage of natural gas used in Gulf Coast LNG facilities which originates in the Permian Basin (located in western Texas and eastern New Mexico), Eagle Ford Shale (south Texas), and Haynesville Shale (primarily in east Texas and northwestern Louisiana). These three areas comprised almost 94% of all gas used in current Gulf Coast LNG operations.

Model Simulation

The direct inputs were then implemented in a series of simulations of the USMRIAS to measure total (not only direct, but also indirect and induced) economic effects of the direct stimulus. The systems used reflect the unique industrial structures of each study area analyzed.

The USMRIAS is somewhat similar in format to the Input-Output Model of the United States which is 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) comprehensive 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.

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

Management, In the Matter of: Venture Global CP2 LNG, LLC, Docket No. 22-131-LNG. *And* United States of America Before the Department of Energy Office of Fossil Energy, In the Matter Of: Rio Grande LNG, LLC, FE Docket No. 15-190-LNG. *And* United States of America Department of Energy Office of Fossil Energy, In the Matter Of: Commonwealth LNG, LLC, FE Docket No. 19-134-LNG.

¹⁴ See, for example, prior analyses by The Perryman Group including "The Socioeconomic Impact of Authorizing Exports of Liquefied Natural Gas (LNG) from the Golden Pass Products Facility in Jefferson County, Texas on Business Activity in Jefferson County, the Surrounding Region, and the United States," Analysis prepared for Golden Pass LNG, 2012; "The Impact of Construction and Operation of Pangea's South Texas LNG Export Project on Business Activity in the Corpus Christi Area," Analysis prepared for Pangea LNG, 2012; "The Impact of the Proposed Stage 3 Expansion of Cheniere Energy's Sabine Pass LNG Facility and Creole Trail Pipeline on Business Activity in the Surrounding Region, Louisiana, and the United States," Study prepared for Cheniere Energy, Inc., 2013; "Economic and Fiscal Benefits of the Proposed Bear Head LNG Project in Nova Scotia: An Analysis with Emphasis on the Effects on the United States," Analysis prepared for Bear Head LNG, 2015; and "The Potential Impact of the Proposed Rio Grande Liquefied Natural Gas (LNG) and Rio Bravo Pipeline Facilities on Business Activity in Cameron County, Texas, and the United States," Analysis prepared for NextDecade, 2015.

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, health care services, utilities, housing, recreation, and other items. Typical purchasing patterns in the relevant areas are obtained from the Center for Community and Economic Research *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.

Impacts are typically measured in constant dollars to eliminate the effects of inflation.

The USMRIAS is also integrated with a comprehensive fiscal model, which links the tax payments by industry to the specific rates and structures associated with the relevant State and local governmental authorities.

Measures of Business Activity

The USMRIAS generates estimates of total economic effects on several measures of business activity. Note that these are different ways of measuring the same impacts; they are not additive.

The most comprehensive measure of economic activity 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 is **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 Texas 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 final aggregates used are **Jobs and Job-Years**, which reflect the full-time equivalent jobs generated by an activity. For an economic stimulus expected to endure (such as the ongoing operations of a facility), the Jobs measure is used. It should be noted that, unlike the dollar values described above, Jobs is a "stock" rather than a "flow." In other words, if an area produces \$1 million in output in 2023 and \$1 million in 2024, it is appropriate to say that \$2 million was achieved in the 2023-24 period. If the same area has 100 people working in 2023 and 100 in 2024, it only has 100 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 Job-Years (a person working for a year, though it could be multiple individuals working for partial years). This concept is distinct from Jobs, which anticipates that the relevant positions will be maintained on a continuing basis.

US Multi-Regional Econometric Model

Overview

The US Multi-Regional Econometric Model was developed by Dr. M. Ray Perryman, President and CEO of The Perryman Group (TPG), about 40 years ago and has been consistently maintained, expanded, and updated since that time. It has been extensively peer reviewed and has been accepted by courts, regulatory agencies, and legislative

bodies, on hundreds of occasions.¹⁵ It is formulated in an internally consistent manner and is designed to permit the integration of relevant global, national, state, and local factors into the projection process. It is the result of four decades of continuing research in econometrics, economic theory, statistical methods, and key policy issues and behavioral patterns, as well as intensive, ongoing study of all aspects of the global, US, state, and metropolitan area economies. It is extensively used by scores of federal and State governmental entities on an ongoing basis, as well as hundreds of major corporations. It can be integrated with The Perryman Group's other models and systems to provide dynamic projections.

This section describes the forecasting process in a comprehensive manner, focusing on both the modeling and the supplemental analysis. The overall methodology, while certainly not ensuring perfect foresight, permits an enormous body of relevant information to impact the economic outlook in a systematic manner.

Model Logic and Structure

The Model revolves around a core system which projects output (real and nominal), income (real and nominal), and employment by industry in a simultaneous manner. For the purposes of illustration, it is useful to initially consider the employment functions. Essentially, employment within the system is a derived demand relationship obtained from a neo-Classical production function. The expressions are augmented to include dynamic temporal adjustments to changes in relative factor input costs, output and (implicitly) productivity, and technological progress over time. Thus, the typical equation includes output, the relative real cost of labor and capital, dynamic lag structures, and a technological adjustment parameter. The functional form is logarithmic, thus preserving the theoretical consistency with the neo-Classical formulation.

The income segment of the model is divided into wage and non-wage components. The wage equations, like their employment counterparts, are individually estimated at the 3-digit North American Industry Classification System (NAICS) level of aggregation. Hence, income by place of work is measured for approximately 90 production categories. The wage equations measure real compensation, with the form of the variable structure differing between "basic" and "non-basic."

The basic industries, comprised primarily of the various components of Mining, Agriculture, and Manufacturing, are export-oriented, i.e., they bring external dollars into the area and form the core of the economy. The production of these sectors typically flows into national and international markets; hence, the labor markets are influenced by conditions in areas beyond the borders of the particular region. Thus, real (inflation-adjusted) wages in the basic industry are expressed as a function of the corresponding

¹⁵ See for example, Perryman, M. Ray, "A Mathematically Consistent Structural Specification for Regional Econometric Models," *Modeling and Simulation*, 1981; Perryman, M. Ray, "On the Empirical Determination of Large Dynamic Economic Simulation Models," *Modeling and Simulation*, 1981; and Perryman, M. Ray, "Simulation Tests for Price Responsiveness in Dynamic Energy Sensitive Systems," *Current Issues in North American Economics and Finance*, 1986.

national rates, as well as measures of local labor market conditions (the reciprocal of the unemployment rate), dynamic adjustment parameters, and ongoing trends.

The “non-basic” sectors are somewhat different in nature, as the strength of their labor markets is linked to the health of the local export sectors. Consequently, wages in these industries are related to those in the basic segment of the economy. The relationship also includes the local labor market measures contained in the basic wage equations.

Note that compensation rates in the export or “basic” sectors provide a key element of the interaction of the regional economies with national and international market phenomena, while the “non-basic” or local industries are strongly impacted by area production levels. Given the wage and employment equations, multiplicative identities in each industry provide expressions for total compensation; these totals may then be aggregated to determine aggregate wage and salary income. Simple linkage equations are then estimated for the calculation of personal income by place of work.

The non-labor aspects of personal income are modeled at the regional level using straightforward empirical expressions relating to national performance, dynamic responses, and evolving temporal patterns. In some instances (such as dividends, rents, and others) national variables (for example, interest rates) directly enter the forecasting system. These factors have numerous other implicit linkages into the system resulting from their simultaneous interaction with other phenomena in national and international markets which are explicitly included in various expressions.

The output or gross area product expressions are also developed at the 3-digit NAICS level. Regional output for basic industries is linked to national performance in the relevant industries, local and national production in key related sectors, relative area and national labor costs in the industry, dynamic adjustment parameters, and ongoing changes in industrial interrelationships (driven by technological changes in production processes).

Output in the non-basic sectors is modeled as a function of basic production levels, output in related local support industries (if applicable), dynamic temporal adjustments, and ongoing patterns. The inter-industry linkages are obtained from the input-output (impact assessment) system which is part of the overall integrated modeling structure maintained by The Perryman Group. Note that the dominant component of the econometric system involves the simultaneous estimation and projection of output (real and nominal), income (real and nominal), and employment at a disaggregated industrial level. This process, of necessity, also produces projections of regional price deflators by industry. These values are affected by both national pricing patterns and local cost variations and permit changes in prices to impact other aspects of economic behavior. Income is converted from real to nominal terms using relevant Consumer Price Indices, which fluctuate in response to national pricing patterns and unique local phenomena.

Several other components of the model are critical to the forecasting process. The demographic module includes (1) a linkage equation between wage and salary (establishment) employment and household employment, (2) a labor force participation rate function, and (3) a complete population system with endogenous migration. Given household employment, labor force participation (which is a function of economic

conditions and evolving patterns of worker preferences), and the working-age population, the unemployment rate and level become identities.

The population system uses Census information, fertility rates, and life tables to determine the “natural” changes in population by age group. Migration, the most difficult segment of population dynamics to track, is estimated in relation to relative regional and extra-regional economic conditions over time. Because evolving economic conditions determine migration in the system, population changes are allowed to interact simultaneously with overall economic conditions. Through this process, migration is treated as endogenous to the system, thus allowing population to vary in accordance with relative business performance (particularly employment).

Real retail sales is related to income, interest rates, dynamic adjustments, and patterns in consumer behavior on a store group basis. It is expressed on an inflation-adjusted basis. Inflation at the state level relates to national patterns, indicators of relative economic conditions, and ongoing trends. As noted earlier, prices are endogenous to the system.

A final significant segment of the forecasting system relates to real estate absorption and activity. The short-term demand for various types of property is determined by underlying economic and demographic factors, with short-term adjustments to reflect the current status of the pertinent building cycle. In some instances, this portion of the forecast requires integration with the US Multi-Regional Industry-Occupation System which is maintained by The Perryman Group. This system also allows any employment simulation or forecast from the econometric model to be translated into a highly detailed occupational profile.

The overall US Multi-Regional Econometric Model contains numerous additional specifications, and individual expressions are modified to reflect alternative lag structures, empirical properties of the estimates, simulation requirements, and similar phenomena. Moreover, it is updated on an ongoing basis as new data releases become available. Nonetheless, the above synopsis offers a basic understanding of the overall structure and underlying logic of the system.

Model Simulation and Multi-Regional Structure

The initial phase of the simulation process is the execution of a standard non-linear algorithm for the state system and that of each of the individual sub-areas. The external assumptions are derived from scenarios developed through national and international models and extensive analysis by The Perryman Group.

Once the initial simulations are completed, they are merged into a single system with additive constraints and interregional flows. Using information on minimum regional requirements, import needs, export potential, and locations, it becomes possible to balance the various forecasts into a mathematically consistent set of results. This process is, in effect, a disciplining exercise with regard to the individual regional (including metropolitan and rural) systems. By compelling equilibrium across all regions and sectors, the algorithm ensures that the patterns in state activity are reasonable in

light of smaller area dynamics and, conversely, that the regional outlooks are within plausible performance levels for the state as a whole.

The iterative simulation process has the additional property of imposing a global convergence criterion across the entire multi-regional system, with balance being achieved simultaneously on both a sectoral and a geographic basis. This approach is particularly critical on non-linear dynamic systems, as independent simulations of individual systems often yield unstable, non-convergent outcomes.

It should be noted that the underlying data for the modeling and simulation process are frequently updated and revised by the various public and private entities compiling them. Whenever those modifications to the database occur, they bring corresponding changes to the structural parameter estimates of the various systems and the solutions to the simulation and forecasting system. The multi-regional version of the econometric model is re-estimated and simulated with each such data release, thus providing a constantly evolving and current assessment of state and local business activity.

The Final Forecast

The process described above is followed to produce an initial set of projections. Through the comprehensive multi-regional modeling and simulation process, a systematic analysis is generated which accounts for both historical patterns in economic performance and inter-relationships and the best available information on the future course of pertinent external factors. While the best available techniques and data are employed in this effort, they are not capable of directly capturing “street sense,” i.e., the contemporaneous and often non-quantifiable information that can materially affect economic outcomes. In order to provide a comprehensive approach to the prediction of business conditions, it is necessary to compile and assimilate extensive material regarding current events and factors both across the state of Texas and elsewhere.

This critical aspect of the forecasting methodology includes activities such as (1) daily review of hundreds of financial and business publications and electronic information sites; (2) review of major newspapers and online news sources in the state on a daily basis; (3) dozens of hours of direct telephone interviews with key business and political leaders in all parts of the state; (4) face-to-face discussions with representatives of major industry groups; and (5) frequent site visits to the various regions of the state. The insights arising from this “fact finding” are analyzed and evaluated for their effects on the likely course of the future activity.

Another vital information resource stems from the firm’s ongoing interaction with key players in the international, domestic, and state economic scenes. Such activities include visiting with corporate groups on a regular basis and being regularly involved in the policy process at all levels. The firm is also an active participant in many major corporate relocations, economic development initiatives, and regulatory proceedings.

Once organized, this information is carefully assessed and, when appropriate, independently verified. The impact on specific communities and sectors that is distinct from what is captured by the econometric system is then factored into the forecast

analysis. For example, the opening or closing of a major facility, particularly in a relatively small area, can cause a sudden change in business performance that will not be accounted for by either a modeling system based on historical relationships or expected (primarily national and international) factors.

The final step in the forecasting process is the integration of this material into the results in a logical and mathematically consistent manner. In some instances, this task is accomplished through “constant adjustment factors” which augment relevant equations. In other cases, anticipated changes in industrial structure or regulatory parameters are initially simulated within the context of the Multi-Regional Impact Assessment System to estimate their ultimate effects by sector. Those findings are then factored into the simulation as constant adjustments on a distributed temporal basis. Once this scenario is formulated, the extended system is again balanced across regions and sectors through an iterative simulation algorithm analogous to that described in the preceding section.

Appendix B: Results by Industry

Construction Effects

The Economic Impact of The Relevant Planned LNG Facilities: Construction and Pre-Operation Activities -- Corpus Christi Area

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$76.4 m	+\$22.1 m	+\$14.5 m	+182
Mining	+\$52.0 m	+\$13.1 m	+\$7.4 m	+39
Utilities	+\$162.8 m	+\$36.7 m	+\$16.0 m	+55
Construction	+\$1,543.7 m	+\$721.7 m	+\$594.8 m	+6,619
Manufacturing	+\$644.2 m	+\$196.4 m	+\$114.8 m	+1,389
Wholesale Trade	+\$128.6 m	+\$87.0 m	+\$50.2 m	+452
Retail Trade*	+\$647.4 m	+\$487.9 m	+\$284.0 m	+6,852
Transportation & Warehousing	+\$115.8 m	+\$76.5 m	+\$50.6 m	+546
Information	+\$65.0 m	+\$40.2 m	+\$17.2 m	+122
Financial Activities*	+\$504.9 m	+\$111.9 m	+\$43.4 m	+353
Business Services	+\$335.4 m	+\$213.5 m	+\$174.2 m	+1,679
Health Services	+\$152.9 m	+\$106.8 m	+\$90.3 m	+1,182
Other Services	+\$277.3 m	+\$141.3 m	+\$113.8 m	+2,189
Total, All Industries	+\$4,706.4 m	+\$2,255.3 m	+\$1,571.2 m	+21,659

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

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Economic Impact of the Relevant Planned LNG Facilities: Construction and Pre-Operation Activities -- Beaumont-Port Arthur Area

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$111.1 m	+\$34.3 m	+\$21.7 m	+267
Mining	+\$36.3 m	+\$8.9 m	+\$4.4 m	+19
Utilities	+\$545.6 m	+\$123.1 m	+\$53.7 m	+186
Construction	+\$5,330.3 m	+\$2,492.3 m	+\$2,053.8 m	+22,857
Manufacturing	+\$2,622.4 m	+\$854.5 m	+\$525.2 m	+6,524
Wholesale Trade	+\$366.7 m	+\$248.2 m	+\$143.1 m	+1,288
Retail Trade*	+\$2,264.9 m	+\$1,706.9 m	+\$993.7 m	+23,971
Transportation & Warehousing	+\$500.1 m	+\$329.9 m	+\$218.2 m	+2,356
Information	+\$186.3 m	+\$115.4 m	+\$49.3 m	+349
Financial Activities*	+\$1,264.6 m	+\$270.4 m	+\$120.1 m	+988
Business Services	+\$1,230.6 m	+\$784.0 m	+\$639.6 m	+6,163
Health Services	+\$533.4 m	+\$372.9 m	+\$315.3 m	+4,126
Other Services	+\$910.4 m	+\$465.8 m	+\$377.0 m	+7,245
Total, All Industries	+\$15,902.9 m	+\$7,806.6 m	+\$5,514.9 m	+76,340

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

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Economic Impact of the Relevant Planned LNG Facilities: Construction and Pre-Operation Activities -- Lake Charles Area

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$898.8 m	+\$289.1 m	+\$178.1 m	+2,179
Mining	+\$266.7 m	+\$65.0 m	+\$31.9 m	+141
Utilities	+\$4,199.3 m	+\$947.5 m	+\$413.5 m	+1,431
Construction	+\$44,008.4 m	+\$20,561.9 m	+\$16,944.3 m	+188,573
Manufacturing	+\$19,534.8 m	+\$6,363.9 m	+\$3,897.6 m	+48,393
Wholesale Trade	+\$2,814.8 m	+\$1,904.9 m	+\$1,098.4 m	+9,884
Retail Trade*	+\$17,177.7 m	+\$13,009.9 m	+\$7,584.8 m	+181,584
Transportation & Warehousing	+\$3,655.4 m	+\$2,411.4 m	+\$1,594.8 m	+17,220
Information	+\$1,430.1 m	+\$885.7 m	+\$378.1 m	+2,681
Financial Activities*	+\$8,649.6 m	+\$1,986.2 m	+\$914.2 m	+7,597
Business Services	+\$9,152.4 m	+\$5,830.9 m	+\$4,756.5 m	+45,838
Health Services	+\$4,097.6 m	+\$2,864.7 m	+\$2,422.2 m	+31,698
Other Services	+\$6,788.6 m	+\$3,455.2 m	+\$2,801.5 m	+53,606
Total, All Industries	+\$122,674.0 m	+\$60,576.4 m	+\$43,016.0 m	+590,824

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

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Economic Impact of the Relevant Planned LNG Facilities: Construction and Pre-Operation Activities -- Louisiana Central Coast

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$289.5 m	+\$85.2 m	+\$55.5 m	+690
Mining	+\$4.6 m	+\$1.5 m	+\$0.9 m	+5
Utilities	+\$379.8 m	+\$85.6 m	+\$37.3 m	+128
Construction	+\$5,985.0 m	+\$2,792.0 m	+\$2,300.8 m	+25,604
Manufacturing	+\$2,245.8 m	+\$855.4 m	+\$506.1 m	+6,808
Wholesale Trade	+\$538.5 m	+\$364.4 m	+\$210.1 m	+1,890
Retail Trade*	+\$2,324.3 m	+\$1,760.3 m	+\$1,026.3 m	+24,571
Transportation & Warehousing	+\$562.9 m	+\$371.0 m	+\$245.4 m	+2,649
Information	+\$217.2 m	+\$134.5 m	+\$57.4 m	+408
Financial Activities*	+\$1,714.8 m	+\$402.8 m	+\$160.5 m	+1,321
Business Services	+\$883.8 m	+\$558.6 m	+\$455.7 m	+4,392
Health Services	+\$556.1 m	+\$388.7 m	+\$328.7 m	+4,301
Other Services	+\$985.8 m	+\$499.5 m	+\$402.1 m	+7,721
Total, All Industries	+\$16,688.1 m	+\$8,299.5 m	+\$5,786.6 m	+80,487

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

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

Ongoing Operations Effects

The Economic Impact of the Relevant Planned LNG Facilities: Operations at Maturity -- Corpus Christi Area

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$2.2 m	+\$0.6 m	+\$0.4 m	+5
Mining	+\$40.4 m	+\$8.9 m	+\$4.1 m	+17
Utilities	+\$10.3 m	+\$2.2 m	+\$0.9 m	+3
Construction	+\$7.7 m	+\$4.2 m	+\$3.5 m	+39
Manufacturing	+\$189.9 m	+\$17.8 m	+\$8.7 m	+62
Wholesale Trade	+\$4.5 m	+\$3.0 m	+\$1.7 m	+16
Retail Trade*	+\$17.1 m	+\$12.7 m	+\$7.4 m	+181
Transportation & Warehousing	+\$7.1 m	+\$3.3 m	+\$2.2 m	+23
Information	+\$2.1 m	+\$1.3 m	+\$0.5 m	+4
Financial Activities*	+\$18.8 m	+\$5.6 m	+\$1.9 m	+15
Business Services	+\$5.2 m	+\$3.0 m	+\$2.5 m	+24
Health Services	+\$3.9 m	+\$2.8 m	+\$2.3 m	+30
Other Services	+\$7.5 m	+\$3.8 m	+\$3.1 m	+59
Total, All Industries	+\$316.5 m	+\$69.1 m	+\$39.2 m	+479

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

Notes: Monetary values given in millions of 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Economic Impact of the Relevant Planned LNG Facilities: Operations at Maturity -- Beaumont-Port Arthur Area

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$2.4 m	+\$0.8 m	+\$0.5 m	+6
Mining	+\$25.4 m	+\$5.6 m	+\$2.6 m	+11
Utilities	+\$26.3 m	+\$5.5 m	+\$2.4 m	+8
Construction	+\$21.1 m	+\$11.5 m	+\$9.5 m	+106
Manufacturing	+\$526.2 m	+\$50.0 m	+\$24.7 m	+183
Wholesale Trade	+\$10.0 m	+\$6.8 m	+\$3.9 m	+35
Retail Trade*	+\$44.4 m	+\$32.9 m	+\$19.0 m	+470
Transportation & Warehousing	+\$24.3 m	+\$11.1 m	+\$7.4 m	+79
Information	+\$4.4 m	+\$2.7 m	+\$1.2 m	+8
Financial Activities*	+\$32.7 m	+\$9.7 m	+\$3.8 m	+30
Business Services	+\$15.1 m	+\$8.8 m	+\$7.2 m	+69
Health Services	+\$10.3 m	+\$7.2 m	+\$6.1 m	+80
Other Services	+\$18.5 m	+\$9.4 m	+\$7.7 m	+148
Total, All Industries	+\$761.0 m	+\$162.0 m	+\$95.9 m	+1,234

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

Notes: Monetary values given in millions of 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Economic Impact of the Relevant Planned LNG Facilities: Operations at Maturity -- Lake Charles Area

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$14.9 m	+\$5.2 m	+\$3.1 m	+38
Mining	+\$143.6 m	+\$31.6 m	+\$14.6 m	+59
Utilities	+\$155.4 m	+\$32.5 m	+\$14.2 m	+49
Construction	+\$120.4 m	+\$65.8 m	+\$54.3 m	+604
Manufacturing	+\$3,306.6 m	+\$310.7 m	+\$152.7 m	+1,112
Wholesale Trade	+\$58.8 m	+\$39.8 m	+\$22.9 m	+206
Retail Trade*	+\$257.0 m	+\$191.4 m	+\$111.1 m	+2,720
Transportation & Warehousing	+\$135.9 m	+\$62.3 m	+\$41.2 m	+445
Information	+\$25.7 m	+\$15.9 m	+\$6.8 m	+48
Financial Activities*	+\$171.8 m	+\$53.1 m	+\$21.9 m	+176
Business Services	+\$84.4 m	+\$49.3 m	+\$40.2 m	+388
Health Services	+\$60.6 m	+\$42.4 m	+\$35.9 m	+469
Other Services	+\$105.8 m	+\$53.7 m	+\$43.7 m	+841
Total, All Industries	+\$4,641.0 m	+\$953.7 m	+\$562.6 m	+7,156

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

Notes: Monetary values given in millions of 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Economic Impact of the Relevant Planned LNG Facilities: Operations at Maturity -- Louisiana Central Coast

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$6.6 m	+\$2.0 m	+\$1.3 m	+16
Mining	+\$2.0 m	+\$0.5 m	+\$0.2 m	+1
Utilities	+\$16.2 m	+\$3.4 m	+\$1.5 m	+5
Construction	+\$17.5 m	+\$9.6 m	+\$7.9 m	+88
Manufacturing	+\$582.5 m	+\$57.6 m	+\$28.4 m	+224
Wholesale Trade	+\$15.6 m	+\$10.6 m	+\$6.1 m	+55
Retail Trade*	+\$47.8 m	+\$35.6 m	+\$20.6 m	+506
Transportation & Warehousing	+\$29.3 m	+\$13.4 m	+\$8.9 m	+96
Information	+\$5.5 m	+\$3.4 m	+\$1.5 m	+10
Financial Activities*	+\$52.4 m	+\$16.5 m	+\$5.6 m	+45
Business Services	+\$10.6 m	+\$6.1 m	+\$5.0 m	+48
Health Services	+\$11.3 m	+\$7.9 m	+\$6.7 m	+88
Other Services	+\$21.3 m	+\$10.7 m	+\$8.7 m	+167
Total, All Industries	+\$818.8 m	+\$177.4 m	+\$102.3 m	+1,349

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

Notes: Monetary values given in millions of 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

Upstream Natural Gas Effects

The Economic Impact of Upstream Natural Gas Activity Associated with the Relevant Planned LNG Facilities: Permian Basin

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$123.9 m	+\$35.2 m	+\$23.7 m	+298
Mining	+\$8,547.4 m	+\$1,875.2 m	+\$866.2 m	+3,516
Utilities	+\$449.4 m	+\$100.5 m	+\$43.9 m	+151
Construction	+\$517.7 m	+\$279.7 m	+\$230.5 m	+2,566
Manufacturing	+\$723.6 m	+\$215.0 m	+\$125.0 m	+1,343
Wholesale Trade	+\$236.3 m	+\$159.7 m	+\$92.1 m	+829
Retail Trade*	+\$1,050.3 m	+\$784.2 m	+\$455.0 m	+11,159
Transportation & Warehousing	+\$240.5 m	+\$157.0 m	+\$103.8 m	+1,121
Information	+\$131.6 m	+\$81.3 m	+\$34.7 m	+247
Financial Activities*	+\$1,009.9 m	+\$299.1 m	+\$92.3 m	+715
Business Services	+\$181.5 m	+\$104.6 m	+\$85.4 m	+823
Health Services	+\$196.8 m	+\$137.7 m	+\$116.4 m	+1,522
Other Services	+\$422.6 m	+\$214.9 m	+\$174.5 m	+3,353
Total, All Industries	+\$13,831.5 m	+\$4,444.1 m	+\$2,443.5 m	+27,643

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

Notes: Monetary values given in millions of 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Economic Impact of Upstream Natural Gas Activity Associated with Planned LNG Facilities Not Yet Permitted: Haynesville Shale

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$69.6 m	+\$20.8 m	+\$13.6 m	+170
Mining	+\$4,636.9 m	+\$1,017.7 m	+\$471.1 m	+1,915
Utilities	+\$189.6 m	+\$42.4 m	+\$18.5 m	+64
Construction	+\$338.7 m	+\$182.9 m	+\$150.8 m	+1,677
Manufacturing	+\$610.1 m	+\$194.9 m	+\$114.0 m	+1,367
Wholesale Trade	+\$100.3 m	+\$67.8 m	+\$39.1 m	+351
Retail Trade*	+\$588.5 m	+\$439.5 m	+\$255.1 m	+6,251
Transportation & Warehousing	+\$112.1 m	+\$73.3 m	+\$48.5 m	+523
Information	+\$64.4 m	+\$39.8 m	+\$17.0 m	+120
Financial Activities*	+\$708.1 m	+\$216.1 m	+\$62.8 m	+492
Business Services	+\$101.2 m	+\$58.3 m	+\$47.6 m	+459
Health Services	+\$133.7 m	+\$93.3 m	+\$78.9 m	+1,032
Other Services	+\$234.8 m	+\$119.5 m	+\$97.0 m	+1,858
Total, All Industries	+\$7,887.8 m	+\$2,566.4 m	+\$1,413.9 m	+16,280

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

Notes: Monetary values given in millions of 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Economic Impact of Upstream Natural Gas Activity Associated with the Relevant Planned LNG Facilities: Eagle Ford Shale

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$40.3 m	+\$11.3 m	+\$7.7 m	+97
Mining	+\$2,846.0 m	+\$624.1 m	+\$287.9 m	+1,167
Utilities	+\$74.0 m	+\$16.6 m	+\$7.2 m	+25
Construction	+\$151.0 m	+\$81.6 m	+\$67.3 m	+749
Manufacturing	+\$73.0 m	+\$24.3 m	+\$14.1 m	+172
Wholesale Trade	+\$72.6 m	+\$49.0 m	+\$28.3 m	+254
Retail Trade*	+\$337.6 m	+\$251.9 m	+\$146.2 m	+3,586
Transportation & Warehousing	+\$78.9 m	+\$51.4 m	+\$34.0 m	+367
Information	+\$27.5 m	+\$17.0 m	+\$7.3 m	+52
Financial Activities*	+\$411.4 m	+\$125.2 m	+\$34.4 m	+256
Business Services	+\$48.4 m	+\$27.7 m	+\$22.6 m	+218
Health Services	+\$77.5 m	+\$54.1 m	+\$45.7 m	+598
Other Services	+\$134.6 m	+\$67.8 m	+\$54.9 m	+1,076
Total, All Industries	+\$4,372.8 m	+\$1,402.1 m	+\$757.6 m	+8,617

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

Notes: Monetary values given in millions of 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

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