

LOUISIANA ~ GLOBAL IMPORTANCE FOR COMPANIES SEEKING TO INVEST IN NORTH AMERICA

ASIA ~ March 2018

Louisiana is in the midst of an industrial boom unlike any other in our history, with over \$110 billion in industrial projects either completed, under construction or at the front-end engineering and design phase.

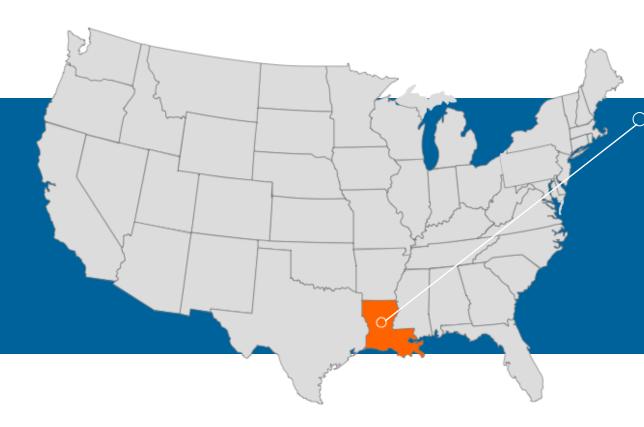
> LOREN C. SCOTT Economist

U.S. SHALE DRIVES HISTORIC INDUSTRIAL GROWTH

This presentation will focus on:

- Advantage of doing business in Louisiana
 - Strategic Location
 - Business Friendliness
 - Workforce Availability and Training
 - Incentives
- Economic impact and trends
- Market dynamics require boosting workforce training
- Louisiana's robust industrial renaissance and technology boom

LOUISIANA IS A STRATEGIC PART OF THE U.S. ENERGY INDUSTRY



- Through the Gulf of Mexico (GOM) oil production, resident refineries (19), and chemical plants (90+), Louisiana provides a key position for success:
- Infrastructure meets or exceeds needs
- · Strategically located sites available
- Low cost workforce, taxes and utilities to increase margins
- Best workforce training via LED FastStart™
- Employer-oriented business climate
- Right-to-work state
- Robust transportation options

OpportunityLouisiana.com

LOUISIANA'S STRATEGIC LOCATION MEANS COST EFFECTIVE TRANSPORTATION OPTIONS

UNSURPASSED CAPABILITY

With seven commercial service/primary airports, an international airport, six major interstate highways, and the world's largest port complex.



TOP U.S. PORTS

The Port of South Louisiana is the largest single port in the nation (measured by tonnage).



KING OF THE RAIL

Louisiana is one of only two states in the nation where all six of North America's class one railroads converge.



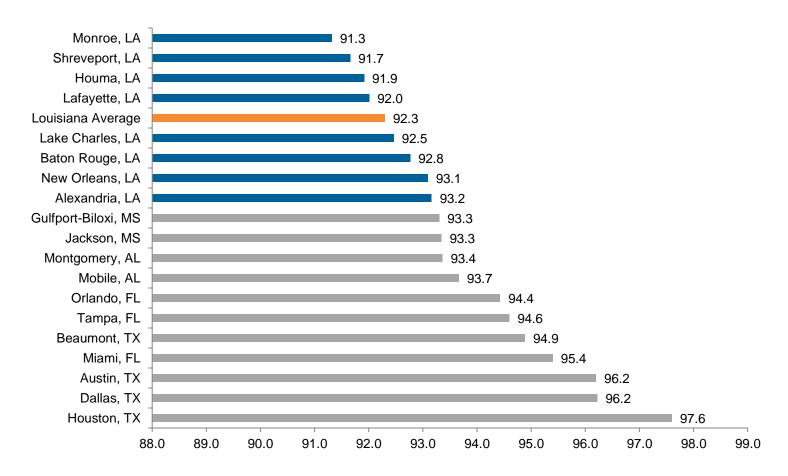
LOUISIANA'S PORTS AND WATERWAYS DELIVER SOLUTION TO SERVING DOMESTIC AND INTERNATIONAL MARKETS



LOUISIANA HAS LOWER OVERALL BUSINESS COSTS THAN THE SOUTHEAST AND U.S.

Overall business cost index (U.S. baseline = 100)

The overall results combine all operations, including manufacturing and non-manufacturing



LED FASTSTART® NAMED THE NATION'S BEST STATE WORKFORCE TRAINING PROGRAM

NATION'S BEST

Business Facilities magazine, 2010, 2011, 2012, 2013, 2014, 2015, 2016 & 2017

LED FASTSTART® PROVIDES A DISTINCTIVE SOLUTION





LED FASTSTART PROVIDES CUSTOMIZED EMPLOYEE RECRUITMENT, SCREENING, TRAINING DEVELOPMENT AND TRAINING DELIVERY FOR ELIGIBLE, NEW OR EXPANDING COMPANIES – ALL AT NO COST.

ANALYZE

LED FastStart's team pairs with the company's subject matter experts at any location in the world mirroring the new operations. If the company has a unique process, FastStart will work with the R&D and engineering departments to gather the necessary critical data.

ATTRACT

After a complete analysis of the company, FastStart determines the competencies that match the cultural and technical abilities that will help define the most successful employee.

EVALUATE

Critical data is collected for each applicant through behavioral interviews, pre-employment training, hands-on simulations and more. Evaluations are scored and sorted, allowing the company to select the best candidates.

TRAIN

Training programs are sequenced and delivered to engage new employees.

A VARIETY OF INCENTIVES HELP COMPANIES GAIN A COMPETITIVE ADVANTAGE

QUALITY JOBS

 Up to 6% rebate on annual gross payroll for 10 years; and either a 4% sales/use tax rebate on building materials, or a 1.5% refundable tax credit on capital expenditures (excluding land, building, interest, and tax-exempt machinery and equipment)

INDUSTRIAL TAX EXEMPTION

 Up to 100% property tax abatement for up to 5 years for manufacturers with an opportunity to renew up to 80% for up to an additional 3 years

ENTERPRISE ZONE

Provides a tax credit of up to \$3,500 per certified net new permanent, full-time job and either a 4% sales/use tax rebate on qualifying expenses or an investment tax credit equal to 1.5% of capital expenditures, excluding tax-exempted items

DIGITAL MEDIA AND SOFTWARE DEVELOPMENT

 Provides a 25% tax credit on payroll expenditures for Louisiana residents and an 18% tax credit for digital interactive media expenditures made in Louisiana

CURRENT U.S. ENERGY SECTOR DEVELOPMENTS

- Shale-based production has revitalized the North American energy industry, transforming it from being primarily a crude oil importer to a refined products exporter, which requires significantly more infrastructure for gathering, transportation, processing, storage and production export.
- With off-shore production included, Louisiana is the No. 2 producer of crude oil in the U.S.
- Industrial Boom: Over \$170 billion of announcements in Louisiana
 - \$85.4 billion underway or completed
 - \$85.1 billion at FEED or permitting stage
- John Felmy, chief economist for the American Petroleum Institute notes that the competitive U.S. advantage from affordable natural gas remains strong. "The United States has the second lowest feedstock costs in the world. While the oil price drop has narrowed that advantage, the gap was so wide to begin with that there likely will be little impact on domestic manufacturers."

TIME OF TRANSITION FOR LOUISIANA AND THE U.S.

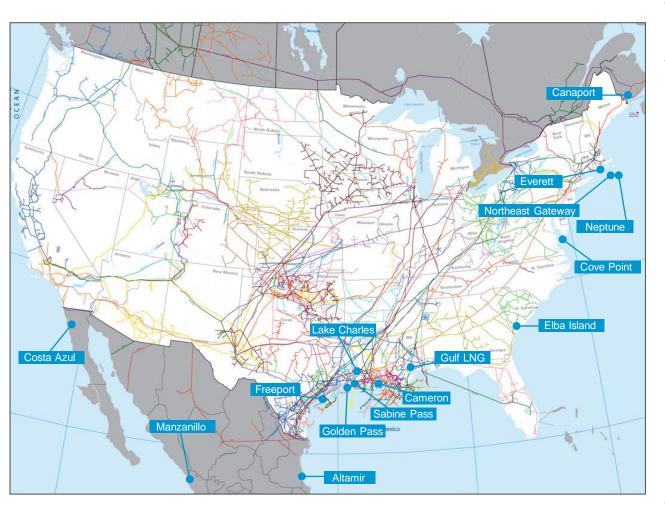
- Advances in drilling techniques have advanced U.S. natural gas output to record setting production levels every year since 2011.
- U.S. is now the world's largest natural gas producer. <u>Up 74% since 2007</u>.
- Industry relies heavily on natural gas for heat, steam, power generation and feedstock. <u>Louisiana is the second largest chemical producing state in</u> <u>the U.S.</u>
- This emergence of prolific unconventional natural gas resources was made possible in large part by the Haynesville Shale, La.; the Eagle Ford Shale, Texas and Permian Basin, Texas; Marcellus Shale, Pa.; and Utica Shale, N.Y.
- Dr. David Dismukes (Louisiana State University Center for Energy Studies)
 credits this vast new supply of natural gas in the U.S. which has attracted
 the very large number of investments in new or expanded facilities.
- Louisiana demonstrates the importance of shale gas as supporting energy security and securing economic growth. <u>Today Louisiana has 108,000</u> <u>direct and indirect jobs in the chemical sector.</u>

REMARKABLE SURGE IN OIL & NATURAL GAS PRODUCTION

- U.S. is now the world's largest natural gas producer
- Permian Basin is the second largest oil and gas reserve after Saudi Arabia
- 200 top oil operators and 65 major pipeline and midstream companies now operate in the Texas-Louisiana region
- Advances in unconventional drilling and hydraulic fracturing techniques have advanced U.S. natural gas output.
- Infrastructure is presently in place. For example, Louisiana has the nation's second-largest concentration of refinery capacity and has enough miles of pipelines under it to circle the globe 4.5 times.
- Louisiana's expedited permitting process contributes to production success.



U.S. GAS PIPELINE SYSTEM: GULF COAST-CENTERED TRANSMISSION SYSTEM REACHES ALL U.S. MARKETS

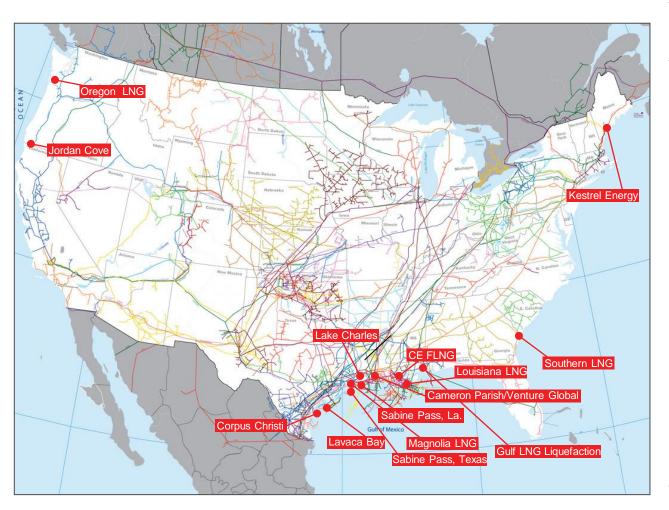


Existing LNG Terminal	Baseload Sendout (Bcf/d)
Canaport	1.0
Everett	1.035
Northeast Gateway	0.8
Neptune LNG	0.4
Cove Point	1.8
Elba Island	1.6
Gulf LNG	1.5
Lake Charles / Trunkline LNG	2.1
Freeport	1.5
Sabine Pass	4.0
Cameron LNG	1.8
Golden Pass	2.0
Altamira	0.7
Manzanillo	0.5
Costa Azul	1.0
Total	21.235

LOUISIANA PROPOSED LNG PRODUCTION IMPACTS

- Of the 38 liquefied natural gas export projects planned across the U.S. only one is active, Sabine Pass in Louisiana, and five are under construction, including Cameron LNG in Louisiana, two in Texas one facility each in Maryland and Georgia.
- Sabine Pass and Cameron LNG will have a combined cost of \$24 billion.
 They promise a total of 540 permanent jobs, and at their peak will employ 7,500 construction workers.
- Sabine Pass and Cameron LNG plants have secured federal permission to export liquefied natural gas to Asia and Europe, key markets where natural gas brings the highest prices. Natural gas prices overseas also have fallen, making America's relatively inexpensive gas less of a factor.
- Most importantly, Sabine Pass and Cameron LNG have signed long-term supply contracts with buyers for basically all of their LNG exports, which provides secure financing for constructing the multibillion dollar facilities.
- Another advantage Sabine Pass and Cameron LNG share: They are being added to existing import terminals that were constructed years ago to bring LNG into the U.S. (before advanced drilling techniques provided enhanced oil and natural gas production in the U.S.) Having most of the infrastructure needed in place lowers project construction costs.

U.S. GAS PIPELINE SYSTEM AND LNG EXPORT TERMINALS



Under Construction LNG Terminal	Baseload Sendout (Bcf/d)
Sabine Pass, Texas	2.1
Corpus Christi	2.1
Lake Charles / Trunkline LNG Expansion	2.2
Jordan Cove Energy Project	0.9
Cameron Parish / Venture Global	1.4
Oregon LNG	1.25
Southern LNG	0.35
Lavaca Bay	1.38
Sabine Pass, La.	1.4
Magnolia LNG	1.07
CE FLNG	1.07
Louisiana LNG	0.3
Gulf LNG Liquefaction	1.5
Kestrel Energy	0.45
Total	17.47

LNG ECONOMIC IMPACTS AND TRENDS

- Liquefied natural gas (LNG) is growing its global market share within the natural gas industry and the market for LNG is expected to continue to grow as a result of high-use of natural gas in various industry applications.
- Similarly, owing to high liquefied natural gas imports, the LNG market in the European countries is also expected to rise in the long term.
- Even before the 55% plunge in crude oil prices in recent years, there seemed no doubt the global LNG industry (doubling in size by 2020 compared to 2010) will undergo significant changes towards a more dynamic, flexible, maturing business.
- Worldwide, developers have proposed \$200 billion into LNG export facilities, adding roughly 220 million tons of annual LNG production, a 66 percent increase.
- Completion of all of these proposed plants appears much less likely today, versus a year ago, in a world of plunging oil and natural gas prices.

U.S. AND LOUISIANA LNG EXPORT PLANT FORECAST

- Eleven proposed Louisiana projects are among 38 U.S. liquefied natural gas export facilities for which developers have filed federal permit applications.
- Plummeting oil prices mean that two natural gas export projects in Louisiana that are already underway may be among the few such planned facilities in the U.S. that experts say will actually be built, potentially leaving \$31 billion or more in other proposed Louisiana projects at risk of going undeveloped.
- "No matter how many permits the U.S. Department of Energy issues, probably no more than five or six LNG export plants will materialize in the United States through 2020," ~ Harvard researcher Leonardo Maugeri
- The 38 LNG projects around the nation were aimed largely at capitalizing on a great disparity between oil prices and natural gas prices, a ration that has changed dramatically.
- Some LNG projects have been delayed. (Houston- based Excelerate Energy placed its Lacava Bay, Texas, facility on hold)

LNG ECONOMIC IMPACTS AND TRENDS

- The LNG export picture also has been complicated by falling natural gas prices in Asia. The price plunged to \$5.86 per MMBtu in May 2016, down from \$16.55 in March 2014. Current price is approximately \$10 per MMBtu.
- Low oil prices, and production from a number of new LNG facilities in places like Australia led to the LNG price decrease.
- That price decline to \$10 has helped erode the advantage of U.S. exports. With a U.S. natural gas price fluctuating between \$2.44 \$3.63 per thousand cubic feet, a number of proposed export facilities could deliver gas between \$10 per thousand cubic feet to Europe and \$12 per thousand cubic feet to Asia.
- The price for U.S. exported natural gas must factor in liquefaction related costs: the gas itself, the expense to cool the gas to -260 degrees to make it a liquid, shipping the LNG by sea and then re-gasification by warming the liquid to turn it back into a gas.
- Cost overruns, poor planning, changing market conditions and emerging skinny margins will likely impact many projects across the world, or postpone their path forward until the future financial performance is more certain.

"No matter how many permits the U.S. Department of Energy issues, probably no more than five or six LNG export plants will materialize in the United States through 2020. Cheap shale gas makes U.S. export projects cost-competitive, but few will survive."

Leonardo Maugeri, Associate Geopolitics of Energy Project and the Environmental and Natural Resources Program at the Harvard Kennedy Center's Belfer Center for Science and International Affairs.

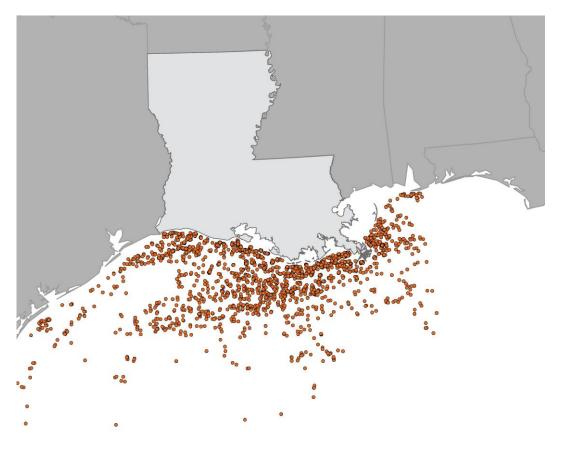
OIL & GAS INDUSTRY HAS A \$77.3 BILLION IMPACT ON LOUISIANA THROUGH DIRECT AND INDIRECT EFFECTS

- Louisiana is the nation's No. 2 producer of crude oil
- Louisiana ranks No. 2 in the U.S. for natural gas production

- Louisiana is recognized as the No. 2 state in both operating and refinery capacity
- There are nearly 125,000 miles of pipelines transporting crude petroleum and natural gas within the state and offshore

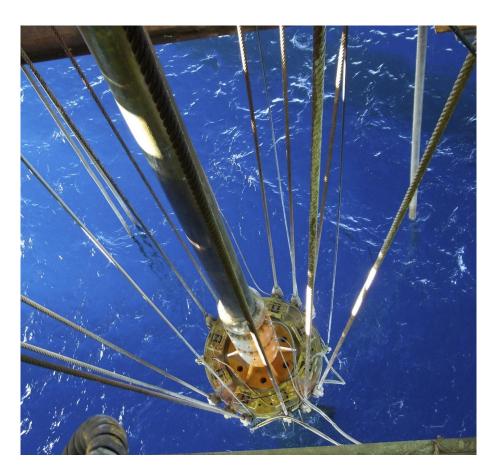


ACTIVE / NON-REMOVED OIL PLATFORMS IN THE GULF OF MEXICO



- A third of U.S. oil production flows from over 3,300 platforms in the Gulf
- The first well was drilled in Louisiana in 1938

LOUISIANA CONTINUES ITS ENERGY LEGACY



- Several Louisiana universities have specific programs and research strengths related to the energy industry
- More than 1,000 Louisiana engineering, service and fabrication companies support the state's energy industry
- Louisiana's expedited environmental permit-processing program issues permits more quickly and efficiently than other States in the United States.

STATUS OF LOUISIANA ANNOUNCED PROJECTS

- Area petrochemical executives say the lower prices of oil and gas, which were driven widely by decreased global demand for crude oil, pose no immediate threat to pending Louisiana projects.
- "The oil prices will only affect the projects of oil producers. I don't expect this to impact others at all," said Don Briggs, president of the Louisiana Oil and Gas Association.
- Most Louisiana announced projects are in the area of chemical or manufacturing projects. Key threat is for those chemical and petrochemical plants that target overseas markets. Not only is demand slowing, but at the same time the dollar is surging in value, making U.S. products more expensive.
- John Felmy, chief economist for the American Petroleum Institute notes that the competitive U.S. advantage from affordable natural gas remains strong. "The United States has the second lowest feedstock costs in the world. While the oil price drop has narrowed that advantage, the gap was so wide to begin with that there likely will be little impact on domestic manufacturers."

DYNAMICS REQUIRE BOOSTING WORKFORCE TRAINING

- Louisiana manufacturers, technical schools, local and state government have now teamed up to help narrow the skills gap.
- State of Louisiana is sponsoring the Southwest Louisiana Technical Community College and we have opened a new \$20 million trade and crafts facility to train workers in Lake Charles, La.
- Sasol announced they will launch a \$900,000 workforce pilot program to increase craft trade skills.

LOUISIANA MANUFACTURING SECTOR REBOUNDS

- Manufacturing sector has recently announced \$130 billion in new capital investments in Louisiana.
- This is the largest concentrated level of capital expenditures in Louisiana's history.
- Ranked third in the U.S. for total natural gas usage and second in industrial natural gas usage, Louisiana is poised to reap the benefits of continued natural gas production for decades to come.

SHINTECH INC.

We at Shintech are very grateful for the understanding and cooperation of the State of Louisiana in many ways. Without it, we would not have been investing as much as \$4.7 billion in the Louisiana facilities. Shintech and the State of Louisiana have built a wonderful relationship.

-DAVID WISE, Vice President, Shintech Louisiana



FORMOSA PETROCHEMICAL CORP.

We believe strategic growth in petrochemicals in the future will be in the U.S., especially in Louisiana. It is the right and perfect location for our company's next development base. With our experience, we will not only focus on the industry itself to improve economics, but also take serious consideration of environmental issues.

—BAO-LANG CHEN, Chairman, Formosa Petrochemical Corp.



NEW JOBS

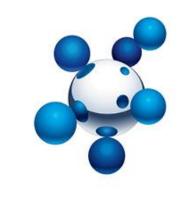
1,200

AVG. SALARY

\$84,500

CAPITAL INVESTMENT

\$9.4 BILLION



SASOL LTD.

sasol reaching new frontiers

Louisiana has proven to be a place where research and next-generation technologies can thrive and grow.

-ERNST OBERHOLSTER, Group Executive of International Energy, New Business Development and Technology, Sasol Ltd.

NEW JOBS

1,000

CAPITAL INVESTMENT



THE DOW CHEMICAL COMPANY

The great people of Dow Louisiana Operations deserve this win today. They have run this site safely and reliably for many years. With the support of our state and local government and the community in which we operate, we all get to celebrate this win today.

-EDUARDO DO VAL, Site Leader, Dow Louisiana Operations

NEW JOBS

71 (1,380 retained)

AVG. SALARY

\$49,000

CAPITAL INVESTMENT

\$1 BILLION

Honeywell

HONEYWELL

In July 2013, Honeywell announced it will invest in manufacturing projects at four production sites in Louisiana. The projects will expand product offerings into catalysts, refrigerants and adsorbents while improving the competitiveness of sites in Caddo, East Baton Rouge and Ascension parishes. Specifically, the projects will be at Honeywell Performance Materials and Technologies facilities that include fluorine products production

operations in Baton Rouge and Geismar; a catalyst production facility in Shreveport; and an adsorbent production facility in Baton Rouge for the UOP business unit of Performance Materials and Technologies. Honeywell is examining the feasibility of additional Louisiana projects that would bring the total new capital investment at Louisiana company sites to \$1.2 billion over 10 years.

NEW JOBS

42 (698 retained)

AVG. SALARY

\$68,300

CAPITAL INVESTMENT

\$208 MILLION



The support of the State of Louisiana, as well as local governments, was key in our decision to locate production of key new products at our Louisiana facilities, helping to ensure their future viability.

—ANDREAS KRAMVIS, President and CEO, Honeywell Performance Materials and Technologies

LOTTE CHEMICAL

We selected Louisiana as the site for the state-of-the-art, steam-cracking facility and adjacent ethylene glycol plant due to the advantages of existing infrastructure, including access to competitive feedstock resources, as well as the distribution infrastructure and a skilled and well-trained workforce.

—STEVE CHUNG, CEO, Lotte Chemical



WESTLAKE CHEMICAL



The new facility is adjacent to the existing facilities and the construction of this new plant is consistent with our vertical integration strategy, and will allow the company to continue to expand and optimize its vinyls chain. Additionally, we have enjoyed a long and rewarding relationship with Louisiana since our company's inception in Lake Charles in 1986.

—ALBERT CHAO. President and CEO, Westlake Chemical

NEW JOBS

70 (75 retained)

CAPITAL INVESTMENT

\$425 MILLION

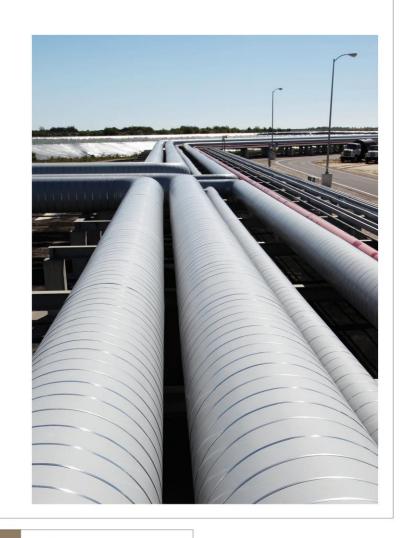
LOUISIANA: POSITIONED FOR THE GLOBAL LNG MARKET

- The U.S. Department of Energy has received applications for nine export facilities, three of which are in Louisiana. In addition, three Canadian export facilities have been proposed.
- The proposed U.S. plants would be able to export 14.8 billion cubic feet of natural gas per day — nearly 40 percent of it from facilities in Louisiana.
- A partial list of facilities proposed in Louisiana and their daily capacities are:
 - Cheniere Energy's Sabine Pass facility, 2.2 billion cubic feet
 - Cameron LNG in Hackberry, 1.7 billion cubic feet
 - BG and Southern Union in Lake Charles, 2.0 billion cubic feet
- British firm, Centrica, has signed its first liquefied natural gas import deal
 with Cheniere Energy for 20 years worth of shipments from the LNG plant at
 Sabine Pass, with the shipments to start in September of 2018. This is the
 first-ever, long-term LNG supply deal for Britain and it marks a breakthrough
 for U.S. gas in Europe.

CHENIERE **ENERGY**

We greatly appreciate the support that Cheniere has received from the state of Louisiana and the people of Cameron Parish, who have demonstrated a strong commitment to our Sabine Pass LNG terminal.

—CHARIF SOUKI, Chairman and CEO, Cheniere Energy



NEW JOBS

148 (77 retained)

CAPITAL INVESTMENT

\$6.5 BILLION

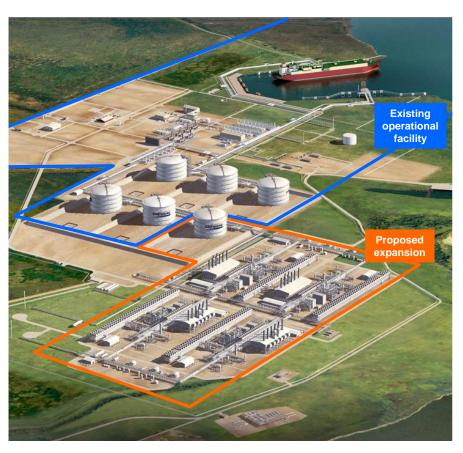
CHENIERE'S SABINE PASS LNG TERMINAL



- Operational since 2008
- Cost approximately \$1.6 billion
- Vaporization
 - Approximately 4.3 Bcf/d peak send-out
- Storage
 - 5 tanks x 160,000 cm (16.9 Bcfe)
- Berthing / Unloading
 - Two docks
 - LNG carriers up to 267,000 cm
 - Four dedicated tugs
- Land
 - 1,000 acres in Cameron Parish, La.
- Accessibility
 - Deep Water Ship Channel
 - Sabine River Channel dredged to 40 ft.
- Proximity
 - 3.7 nautical miles from coast
 - 22.8 nautical miles from outer buoy
- LNG Re-Exporting Capability

OpportunityLouisiana.com

CHENIERE'S PROJECT: BROWNFIELD DEVELOPMENT UTILIZING EXISTING ASSETS



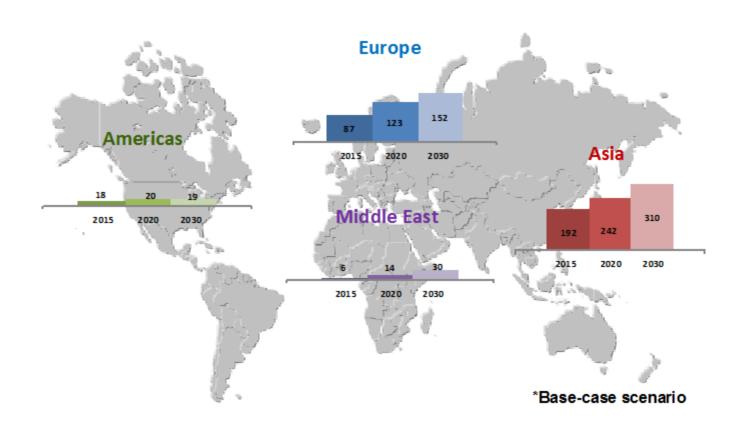
CURRENT FACILITY

- 1,000 acres in Cameron Parish, La.
- 40 ft ship channel 3.7 miles from coast
- 2 berths; 4 dedicated tugs
- 5 LNG storage tanks (17 Bcf of storage)
- 4.3 Bcf/d peak regasification capacity
- 5.3 Bcf/d of pipeline interconnections to the U.S. pipeline network

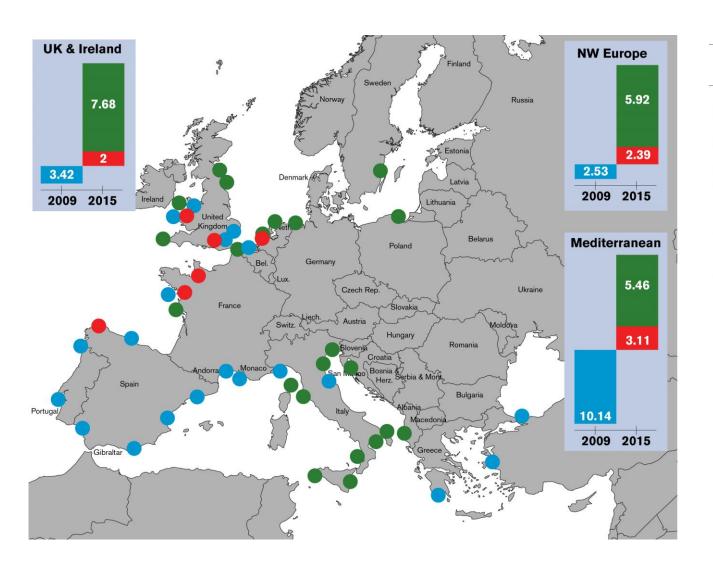
LIQUEFACTION EXPANSION

- Construction contract with Bechtel for Phase 1
- Liquefaction trains designed with ConocoPhillips' Optimized Cascade® Process technology
- Six GE LM2500+ G4 gas turbine driven refrigerant compressors per train
- Gas treating and environmental compliance
- Modifications to the Creole Trail Pipeline for bidirectional service
- Sixth storage tank needed

PROJECTED GLOBAL DEMAND EQUALS GROWTH FOR LNG



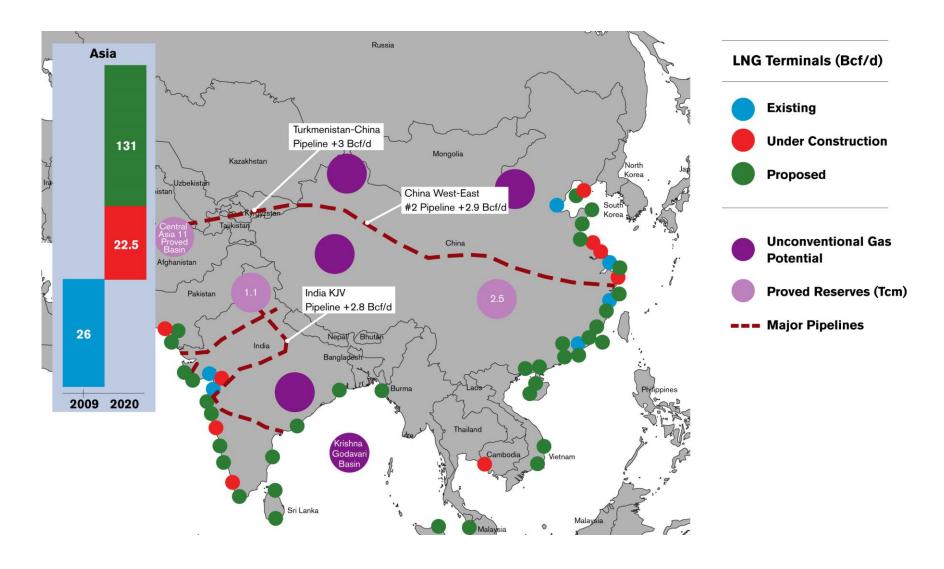
EUROPE – LNG IMPORT TERMINALS (BCF/D)



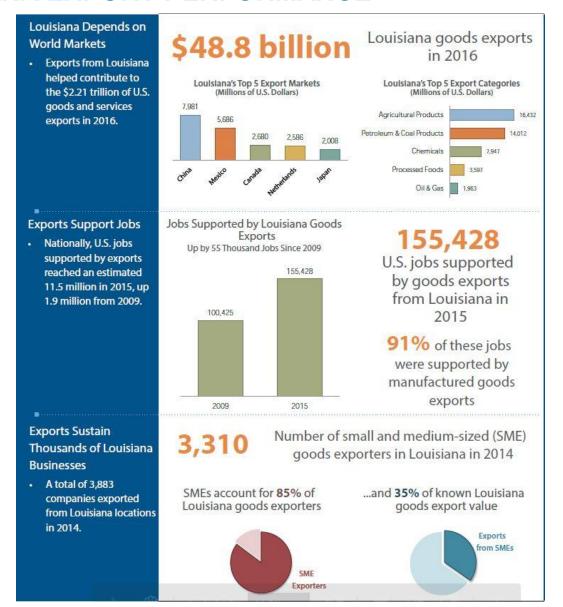


Current Importers	Potential Importers
Belgium	Bulgaria
France	Croatia
Greece	Cyprus
Italy	Germany
Netherlands	Ireland
Portugal	Poland
Spain	Romania
Turkey	Sweden
UK	Ukraine

ASIA'S EMERGING MARKETS



LOUISIANA EXPORT PERFORMANCE



LOUISIANA'S DIGITAL MEDIA INCENTIVE FUELING THE **TECHNOLOGY BOOM**













LOUISIANA'S DIGITAL MEDIA INCENTIVE PROVIDES 18% TAX CREDIT ON PRODUCTION EXPENSES AND 25% ON PAYROLL

ELIGIBILITY

LED offers this incentive to businesses in the digital media and software industry that develop products including video games, enterprise software and mobile applications

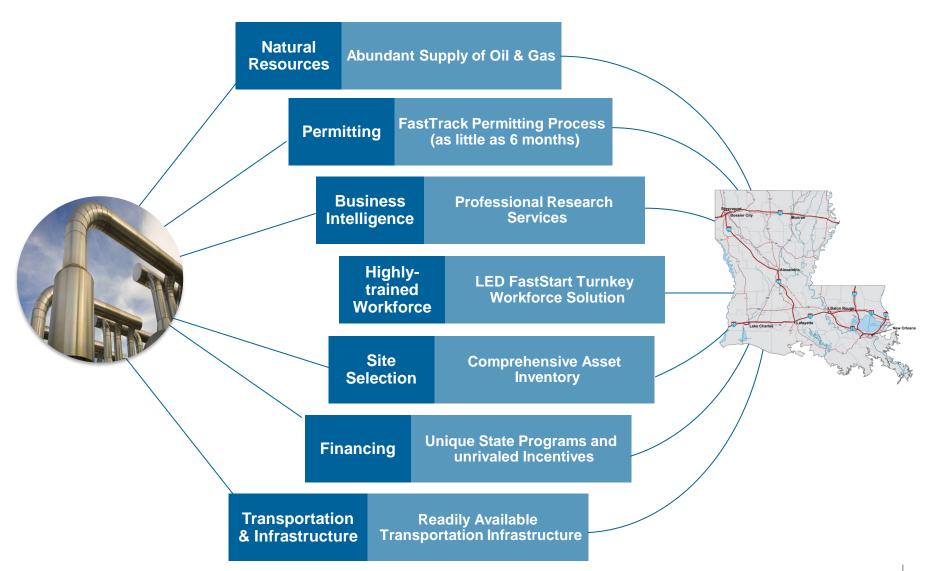
PROGRAM DETAILS

- 18% tax credit is provided for digital interactive media expenditures made in Louisiana
- 25% tax credit is provided on payroll expenditures for Louisiana residents
- There is no annual cap on tax credits
- Tax credit can be applied to state income tax liability and the state will refund any overages OR applicants can opt for 85% of the value earned as a rebate any time during the year.





LOUISIANA PARTNERSHIP STRATEGY ALIGNS ASSETS WITH PROJECT NEEDS



LOUISIANA'S ADVANTAGES - RECAP

	LOUISIANA
Workforce training programs	 LED FastStart® offers customized, comprehensive training at no cost (and no cap) for expanding firms Ranked No. 1 in U.S.
Business costs	 7.1 % lower overall costs vs. U.S. baseline
Total effective tax rate	• 1.0% (#1 in the U.S. by KPMG)
Customer service and incentives	 Ranked No. 4 on Pollina's incentives and ED agency factors
Permitting	 One permit system (NSR/Title V), issued within 180 days Flexible, performance-based approach to control technologies
Site availability	315 large sites listed in state economic development site database
Electricity rates (industrial)	 5.45 cents per kilowatt hour

THE LOUISIANA ADVANTAGE: A STATE OF OPPORTUNITY

- Louisiana's announced investments will require a wide range of goods and services to be purchased, creating thousands of jobs and opportunity for both domestic and international businesses.
- These investments underscore the unique advantages of Louisiana's outstanding business climate, abundant natural resources and robust transportation infrastructure.
- Emphasis today is on the emerging opportunities for commercial cooperation in gas, chemicals and biomass to liquids.
- We invite your consideration of partnership and participation in the investment opportunities available in Louisiana. LED will aggressively support your efforts.



DON PIERSON

Secretary

Louisiana Economic Development

225.342.5388

pierson@la.gov



OpportunityLouisiana.com



@LEDLouisiana