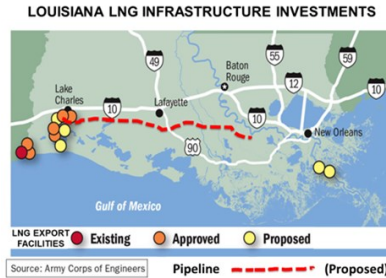
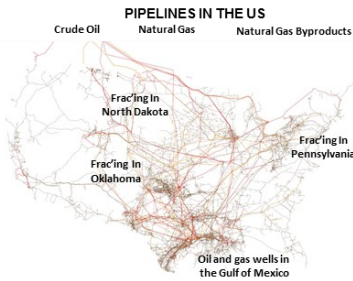




LIQUEFIED NATURAL GAS (LNG): EXPORT COMPETITION IN A WELL-SUPPLIED, FLOW SHIFTING GLOBAL ECONOMY



The Gulf Coast's petrochemical buildout provides a good example of the type of LNG value-added manufacturing-based development that is really what the region, and the US as a whole, needs.

The US Gulf of Mexico, long known for its offshore oil and gas production, has swiftly become an export nexus for America's onshore shale revolution. Ports and pipelines once geared to transport oil and gas sourced from abroad or pumped from the Gulf of Mexico into the interior of the country are now being harnessed to ship US-produced hydrocarbons to the rest of the world. Although this is potentially good news for the US Gulf, the continued growth of Liquefied Natural Gas (LNG) production and long-distance trade has traditionally been taken as a given by global energy analysts, who have premised their positive estimates on gas being both relatively scarce and demand for it virtually unquenchable. Unfortunately, current conditions in the global energy market suggest that what many have predicted as a near perpetual increase in the volume of traded LNG is in fact a bubble that is now in the process of bursting.

Petrochemicals, Not LNG

Already, investment in petrochemicals along the Gulf Coast is expected to outpace that of LNG as an export. As of April 2016, the ACC estimated a total of 274 announced petrochemical projects being built or planned, representing a combined investment of \$170.6 billion for the US as a whole. Louisiana is clearly sharing in the market growth from shale gas feedstock with the addition of 26 chemical industry related companies with a total of 37 existing or planned projects. Among the plants in Louisiana being built or expanded as a result of the influx of cheap natural gas from shale is a \$3 billion joint venture between South Korea's Lotte Chemical Corp. and LACC LLC, Atlanta, a subsidiary of Axiall Corp to construct an ethane cracker (a facility that breaks up ethane gas molecules resulting in ethylene, which is used to manufacture plastics, used in 90 percent of manufactured products) and monoethylene glycol plant, which broke ground in June 2016. Another is Sasol's integrated ethane cracker and downstream derivatives complex now under construction in Westlake, LA, that is scheduled to become operational in 2018. Meanwhile, Yuhuang Chemical aims to start construction of one of the biggest methanol production plants in the US at a 1,300-acre site in Louisiana's St. James Parish late in 2016. Altogether, the Louisiana Chemical Association estimates that over \$47 billion in new industrial investment related to cheap natural gas has already been committed in the state. Although the Gulf Coast's petrochemical buildout is prone to the same boom-bust dynamic and macroeconomic forces that are now negatively affecting LNG, it nonetheless provides a good example of the type of value-added manufacturing-based development that is really what the region, and the US as a whole, needs.

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Where there previously existed little interest for LNG as a marine fuel and bunkering...there is potential for interest in both...in response to the new U.N. fuel emissions regulations that take effect by 2020

LNG as Marine Fuel

Despite the uncertainties surrounding LNG as a marine fuel, Louisiana is home to the nation's first LNG powered fleet of offshore supply vessels operated by Harvey Gulf Maritime International (HGMI – Figure 9) who built the first LNG bunkering station in the U.S. at their offshore supply vessel (OSV) facility at Port Fourchon, LA. Where there previously existed little interest among users of the Port of New Orleans for LNG bunkering as well as there being no market demands in the region for LNG marine fuel, there is potential for interest in both to be rekindled in response to the new U.N. fuel emissions regulations that take effect by 2020. Our findings regarding the economic potential of LNG bunkering by ports as a marine fuel – in addition to its access by fleets – show that ports and shipping lines that completed these projects by 2013 are probably seeing a significant return on their investments. However, given the current volatility of global energy markets, which is projected by many to extend for the foreseeable future, existing conditions in the energy sector makes capital investment in LNG as a marine fuel a risky endeavor. The best recommendation that can be made from this research at present is for the Port of New Orleans to join with the International Chamber of Shipping (ICS) in encouraging the International Maritime Organization (IMO) division of the United Nations to continue taking the lead in globally applied emissions standards.

