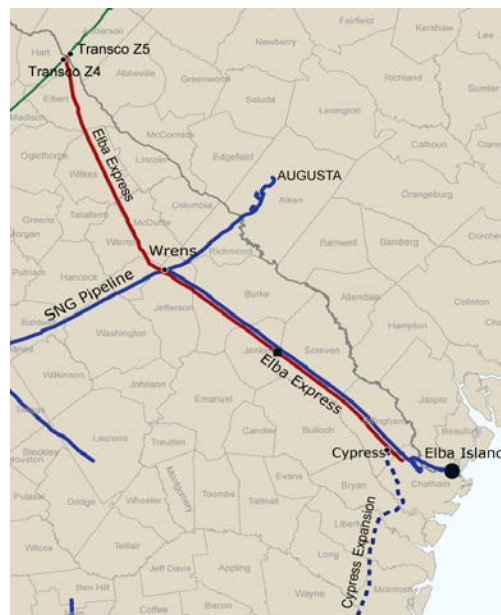


Shell Puts Small-Scale Technology To Work At Elba Island

While Cheniere's Sabine Pass continues to garner headline after headline touting it as the first liquefaction project to export from the US Lower 48, Shell and Kinder Morgan are positioning themselves to possibly get across the finish line first at their Elba Island project in Georgia. The two energy companies are aiming for the 1.5 MMt/y first phase to be in commercial service by December 2015 and the second 1 MMt/y phase producing LNG the same time the following year. The ambitious timeline hinges on the project's decision to sidestep the US Department of Energy's non-free trade agreement license process, meaning all production would be sent to destinations that have trade agreements in place with the US. Shell will take all of the liquefaction capacity in the project, as well as a 49% equity stake, while the US pipeline giant will retain a controlling interest and operate the facility located outside of Savannah. Kinder Morgan inherited Elba Island after its acquisition of fellow midstream firm El Paso in 2012.

Elba Island's time advantage also rests in its plans to deploy Shell's small-scale LNG technology at the Georgia location. Shell's Moveable Modular Liquefaction System is a liquefaction, gas processing and treating unit that can produce up to 0.25 MMt/y. Modules can also be easily

Elba Island Goes Small-Scale



Source: Poten & Partners

disassembled and deployed to multiple locations. The MMLS units are at the heart of Shell's continental strategy to fill North American highways with gas-burning vehicles and waterways with LNG-powered vessels. However, Elba Island would represent the largest deployment of the MMLS design. Shell plans to string together six MMLS units for the first phase of the project and another four modules in the second phase for a cumulative 2.5 MMt/y plant. The units are scheduled to be built in the US, likely at a site in Texas. CB&I is undertaking front-end engineering and design work, which represents a scaled-down job compared to other US LNG export projects since Shell has the liquefaction units already devised.

Before Elba's start up, the first MMLS application in North America is scheduled for Shell's Jumping Pound gas complex, which is the epicenter for the company's so-called Green Corridor that will provide LNG fuelling stations throughout the Canadian province of Alberta. Jumping Pound, west of Calgary, is already gathering up to 7.7 MMcm/d of gas production from Shell's Alberta acreage for processing. A portion of the methane will be used for LNG production, which will be taken by truck to retail filling stations operated by Flying J and sold to vehicles with gas-consuming engines. Shell is expected to start commercial operations in Alberta next year. The company also plans to install 0.25 MMt/y MMLS units at its Sarnia refining and chemical complex in Ontario and its petrochemical plant in Geismar, Louisiana after making a final investment decision on both ventures in March. Liquefaction at the two locations will be primarily used for marine fuel applications. The Gulf Coast Corridor will use LNG from Geismar as a jumping off point for bunkering around the region's busy waterways. The Sarnia location is envisioned to be a hub for LNG marine services throughout the Great Lakes.

While Shell awaits the commercial start of its first MMLS, other small-scale firms have pushed ahead with LNG fuelling plans in the US. But most of them are previous peak shaving units, such as Pivotal LNG's Chattanooga, Tennessee and Trussville, Alabama facilities, that are being used as LNG fuel distribution units. Natural gas filling station operators, Blu LNG, which is majority owned by China's ENN Energy, has a handful of LNG stations in the US with aspirations for 50 locations by the end of the year. The US company Clean Energy also has about a dozen LNG stations around the

country. The only greenfield liquefier in the US that could match the size of a MMLS is the Floridian Gas Storage project in southwest Florida, which is fully permitted by the Federal Energy Regulatory Commission and is targeting possible ISO-container exports.

Shell's MMLS units boast a flexible processing technology that can take unconventional, flared, associated and pipeline gas. Feed gas for the Elba Island facility will come from the US pipeline market after Kinder Morgan successfully reverses the 36-inch Elba Express pipeline by installing additional compressor capacity at the Hartwell station. The Express line intersects with the Southern Natural Gas system, which brings gas across the southeast US from Texas, and ends at the massive Transco line where it straddles the pipeline's Zone 4 and Zone 5 regions. Elba is also linked to the 167-mile Cypress pipeline that takes gas from the terminal straight south into northeast Florida. BG has the capacity on 0.4 Bcf/d pipeline and still has supply obligations in Florida. This is why deliveries continue to the Savannah receiving terminal, most recently a discharge from the Murwab on March 17. BG shares capacity in Elba's import terminal with Shell.

Shell is aiming to take all of its capacity at Elba to free trade countries, allowing the project to move forward without a DOE non-FTA license. The anticipation is that 1.5 MMt/y of offtake in Elba's first phase would displace Shell's monthly Q-Flex deliveries into the Altamira terminal in Mexico and allow the Anglo-Dutch giant to send those volumes to higher-priced markets. The company is an import capacity holder in the Gas de Litoral joint venture with Total and Mexico has free trade status with the US. The Hague-headquartered firm had been keen to take a larger US export position, but backed off since it lost out on the second and third trains at Freeport LNG (see LNGWM, Jan '13). Shell's acquisition of Repsol's LNG assets in February boosted its supply stake in the Americas with substantial offtake at Trinidad's Atlantic LNG and Peru LNG, leaving its export aspirations in North America to its LNG Canada project.

Kinder Morgan's other US LNG asset, the proposed 10 MMt/y Gulf LNG export venture in Pascagoula, Mississippi has progressed at a measured pace compared to its Elba Island venture. Kinder Morgan's notoriously conservative corporate philosophy has kept

the country's largest pipeline firm from taking on risk that other liquefaction sponsors have been forced to do. Kinder Morgan decided to let the two tanks at the brownfield Pascagoula site warm up as the heating value of the gas in storage elevated above US pipeline quality limits. Gulf LNG has been in discussions with liquefaction off takers and has memorandums of understanding in place. But the company has not initiated pre-FEED yet as it has balked at investing capital that is determinant on an uncertain DOE non-FTA approval process. Gulf LNG is No. 12 on DOE's non-FTA assessment list, one spot behind Elba Island, a position that might not get a serious look from the government for at least another year. Gulf LNG's marketing plan is to have a FTA buyer for at least one 5 MMt/y train to loosen DOE's grip on the project's viability.

*This is an issue of Poten's monthly LNGOpinion.
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