

USLNG Export Projects Update

THE LEAD (1): FIRST WAVE COMPLETE

For 20 years—beginning in 1986 and ending in 2006—U.S. natural gas consumption significantly exceeded production and natural gas was imported by pipeline from Canada and LNG through terminals in Louisiana, Texas, Maryland, Mississippi, and Georgia. Then came the shale revolution. (See Fig. 1, page 2.)

As a result, by about 2010 it became clear to owners of USLNG import facilities that not only would their terminals never be fully utilized, but that it would make sense to switch to liquefaction and export. So, long-term export deals were struck with global gas traders and electric power producers, massive construction loans secured, and the first wave of USLNG export projects permitted and built.

As shown in Fig. 2, the first wave of USLNG export projects is now nearly complete (a few of Elba Island's small-scale liquefaction units should be finished in Q3 2020). This means that baseload U.S. liquefaction capacity currently stands at 68 million tons per annum (mtpa), and capacity will remain at this level for the next year (or so), until Train 3 at Cheniere's Corpus Christi facility starts producing LNG.

THE LEAD (2): CAPACITY UTILIZATION FALLS

Of course, the successful completion of the first wave of USLNG export projects was overshadowed in Q2 by the news of cargo cancellations caused by an extraordinary confluence of events: two successive, warmer-than-normal winters in the Northern Hemisphere; full natural gas storage in Europe and elsewhere; the COVID-19 pandemic and resulting economic recession; and the liquefaction capacity increases described above. Many experts expect USLNG cargo cancellations to continue in Q3 2020, but LNG market conditions are predicted to improve later in the year.

PROJECTS IN OPERATION

■ Cameron LNG, Trains 1-3 (Louisiana)

Cameron LNG began producing LNG at the third train of its Hackberry, Louisiana, liquefaction and export terminal on May 18. This brings the total baseload capacity at the facility to 13.5 mtpa. McDermott was the EPC.



■ Elba Island (Georgia)

Kinder Morgan continues to add modular units at its 2.5 mtpa Elba Island liquefaction project in Savannah, Georgia. FERC gave permission to introduce feed gas to Units 7, 8, and 9 in Q2. A fire erupted on a mixed refrigerant compressor at Train 2 on May 11, but crews were able to put it out using fire fighting equipment on site. Two adjacent trains were temporarily out of service. Shell holds 100% of Elba's liquefaction capacity under its tolling agreement with the terminal.

■ Freeport LNG, Trains 1-3 (Texas)

Freeport LNG Development has completed the first three (of four planned) trains at the company's LNG export terminal on Quintana Island, Texas. The three trains represent 15.0 mtpa in baseload capacity. Freeport operates under a "tolling" model.

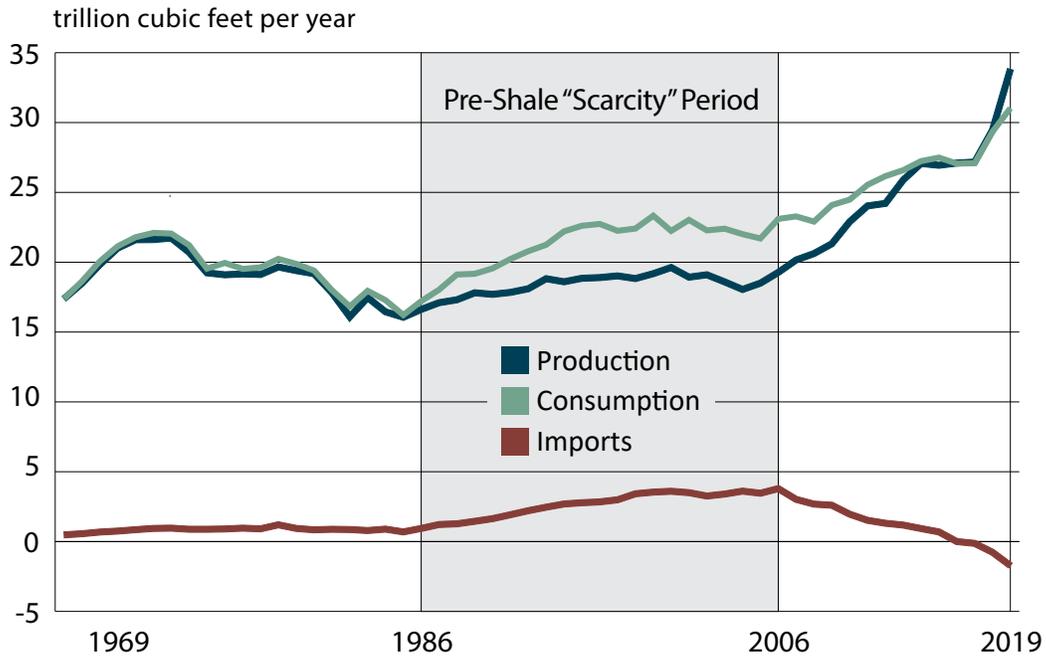
■ Corpus Christi Liquefaction, Trains 1-2 (Texas)

Both trains at Cheniere Energy's Corpus Christi LNG export project continued to operate normally in Q2, but feedgas flows declined as global demand waned.

■ Sabine Pass Liquefaction (Louisiana)

Cheniere's first LNG facility, located in Sabine Pass, Louisiana, along the Sabine Neches Waterway, also continued to operate without incident in Q2, but feedgas flows and cargoes declined from the record highs of a few months previously.

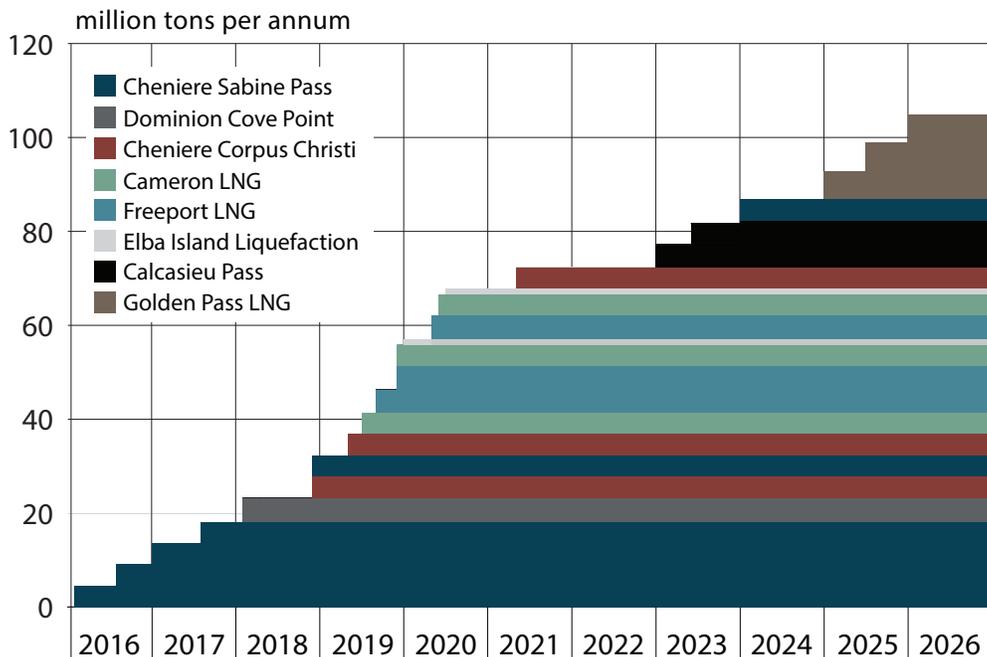
U.S. Natural Gas Production, Consumption, Imports



Source: EIA Annual Energy Outlook - 2020

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USLNG Liquefaction Capacity Growth



Source: EIA and LNG Allies (July 2020)

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PROJECTS UNDER CONSTRUCTION

■ Calcasieu Pass LNG (Louisiana)

Phase 1 of Venture Global LNG's Calcasieu Pass project (10 trains x 1 mtpa) is under construction in Cameron Parish, Louisiana, south of Lake Charles. In Q2 the company conducted a successful "string test" at the Baker Hughes facility in Italy (April 2), raised the roof of tank one (April 27) and tank two (May 20), and received the first two (of 18) brazed aluminum heat exchangers ("cold boxes") from Chart Industries (June 18).

■ Golden Pass (Texas)

Golden Pass sought permission from FERC in May to boost the capacity of the company's \$10 billion export terminal under construction south of Port Arthur, Texas, to 18.1 mtpa from 15.6 mtpa. The increase does not involve equipment changes or environmental permit adjustments but would be achieved through production efficiencies. Also in May, Siemens Gas and Power was awarded a contract from CCZ JV (a Chiyoda, McDermott, and Zachry Group JV) to supply three cryogenic boil-off gas compressor trains for Golden Pass.

PROJECTS FULLY PERMITTED—AWAITING FID

■ Annova LNG (Texas)

Annova LNG received an air permit from the Texas Commission on Environmental Quality on April 17 for the 7.8 mtpa LNG export project that the company is developing at the Port of Brownsville, Texas.

■ Delfin LNG (Offshore Louisiana)

Delfin LNG on June 25 petitioned FERC for an extension of time (until Sept. 28, 2021) to construct and place into service the facilities that were authorized in 2017 for onshore facilities to be used to transport natural gas to Delfin LNG's deepwater port offshore facilities in federal waters offshore Louisiana.

■ Driftwood LNG (Louisiana)

Tellurian, developer of the 27.6 mtpa Driftwood LNG export project, confirmed in June that the MOU executed with Petronet in 2019 was not extended beyond the May 31 deadline.

■ Freeport LNG, Train 4 (Texas)

Freeport's Train 4 plans could be impacted by the June 23 decision by the project's EPC contractor (KBR) that it

would exit the LNG construction business, but the company said other EPC contractors are interested.

■ Magnolia LNG (Louisiana)

Australia's LNG Ltd. Magnolia LNG project near Lake Charles was sold to Glenfarne Group on June 3 for \$2.0 million. Previously, Global Energy Megatrend Ltd. offered to pay \$2.25 million for Magnolia LNG, but the deal didn't close as expected on May 15. Magnolia's requested capacity increase from 8.0 mtpa to 8.8 mtpa was approved by FERC on June 15.

■ Port Arthur LNG, Trains 1-2 (Texas)

Sempra LNG said during an earnings call in May that it would postpone an FID on the 13.5 mtpa Port Arthur LNG project in Texas until 2021. Sempra has a firm 2 mtpa SPA with Poland's PGNiG (Dec. 2018) and a preliminary agreement with Saudi Aramco (May 2019) for a 25% stake in Port Arthur and 5 mtpa of LNG.

■ Rio Grande LNG (Texas)

On April 30, Rio Grande LNG and the Brownsville Navigation District amended their lease agreement, extending the effective date to May 6, 2021, (with a further possible extension to May 6, 2022). On April 22, Bechtel agreed to extend the price validity of the EPC contracts for the project to July 31, 2020.

■ Texas LNG (Texas)

Glenfarne Group (majority owner) told a gas industry publication in late June that it hopes to take FID on the 4.0 mtpa Texas LNG project at the Port of Brownsville, Texas, in 2021. As reported above, Glenfarne now also owns Magnolia LNG.

PROJECTS UNDER FORMAL REGULATORY REVIEW

■ Alaska LNG (Alaska)

On May 21, FERC authorized the 20.0 mtpa project sponsored by the State of Alaska to move North Slope natural gas to Nikiski for liquefaction and export. Alaska Gasline Development Corp. (AGDC) announced on June 25 that it had revised the cost estimate downward by \$5.5 billion to \$38.7 billion (\$1,900/ton). At its April board meeting AGDC adopted a strategic plan that calls for finding a private developer(s) to take over from the state as lead on the venture. Various parties are challenging the FERC decision and have asked the agency for a "rehearing."



- **Commonwealth LNG (Louisiana)**

Commonwealth LNG received authorization by DOE on April 17 to export 9.5 mtpa of LNG for 25-years to free trade agreement (FTA) nations. The company's non-FTA application will be reviewed separately. The 25-day comment period on Commonwealth's Coastal Use Permit Application with the State of Louisiana closed in June.

- **Jordan Cove (Oregon)**

The Jordan Cove LNG project and associated 230-mile pipeline were authorized by FERC on March 19. FERC approval of the project was met with several requests for a rehearing filed by local landowners, state officials, tribal governments, and environmental groups. FERC issued an order denying those requests on May 21. Subsequently, several parties filed lawsuits before the U.S. Court of Appeals for the D.C. Circuit. Pembina Pipeline Corp. (the project's sponsor) must still obtain several permits from the State of Oregon before construction can proceed.

PROJECTS IN FERC PRE-FILING

No news this quarter.

GENERAL U.S. LNG EXPORT COMPANY NEWS

- **LNG Ltd.**

On April 30, three PricewaterhouseCoopers (Australia) officials were appointed joint and several voluntary administrators of LNG Ltd. to review the company's business and assets. Directors Michael McAnearney, Richard Beresford, Gregory Vesey, and Michael Steuert resigned.

- **NextDecade Corp.**

NextDecade, the developer of a 27.0 mtpa LNG export terminal at the Port of Brownsville, Texas, announced on May 18 (as part of its Q1 report) that it believes various cost cutting measures will ensure that it can sustain pre-FID development activities through year-end 2021. Beginning in Q2 2020, NextDecade expects pre-FID development spending to just over \$2 million per month.

- **Tellurian Inc.**

According to a June 23 release, Charif Souki, cofounder and non-executive chairman of Tellurian Inc. has decided to take a more active role in the company as executive chairman. Souki said: "As the world recovers [from the pandemic], there is an urgent need to make up for lost time. I am re-engaging to provide additional support to

the company." Earlier (May 4), during its Q1 2020 earnings call, the company stated that it had reduced corporate overhead to approximately \$6 million per month to begin in June and had raised \$50 million through issuance of \$56 million zero coupon, unsecured notes, and amended its 2019 term loan, reducing the principal by \$22.1 million and extending maturity to Nov. 2021.

CANADIAN AND MEXICAN PROJECTS WITH U.S. GAS

- **Energia Costa Azul (Baja, Mexico)**

Sempra said on May 4 that because of its location on Mexico's Pacific Coast as well as its smaller initial size and scope, Energia Costa Azul remains on track for a June 30 FID. (This was later pushed back.) Phase 1 calls for a one-train, 2.5 mtpa facility.

- **Mexico Pacific (Mexico)**

Mexico Pacific Ltd. developer of a 12 mtpa LNG export project in Puerto Libertad, Mexico, announced in April that it had retained Mitsubishi UFJ Financial Group as financial advisor. Mexico Pacific's CEO is Doug Shanda, a former top executive at Cheniere. MPL has DOE licenses to export natural gas to FTA and non-FTA countries.

- **Goldboro LNG (Nova Scotia, Canada)**

Pieridae said in late Q2 that it had delayed a FID on Goldboro until at least June 2021. Pieridae has a 20-year SPA to sell all of the LNG from Train 1 (5 mtpa) to Uniper. Subsequently (April 18), Pieridae filed an application to construct the project with the Nova Scotia Utilities and Review Board. The project is likely to be affected by the announcement by KBR (the EPC contractor) on June 23 that it will "no longer engage in lump sum, blue collar construction services." In addition, in May 2020, Alberta's provincial energy regulator declined to approve the sale of gas infrastructure from Shell Canada to Pieridae on the grounds that there were uncertainties over which of the two companies would be liable for subsequent clean-up costs following the transfer of the assets.

