

U.S. LNG Export Projects Update

THE LEAD: CAMERON LNG BEGINS OPERATION

May 14: Production of liquefied natural gas (LNG) started at the first train of the Cameron LNG export facility in Hackberry, Louisiana has begun. The milestone was marked by President Trump who spoke at the facility that day. Lisa Glatch, Chief Operating Officer of Sempra LNG and Chair of Cameron LNG, said: “Cameron LNG expects to load cargoes in the coming weeks—another major step forward to bringing cleaner, affordable energy to global markets.” May 31: Sempra announced that the first commissioning cargo had shipped on NYK’s newly built *Marvel Crane*. Cameron LNG is owned by Sempra Energy and affiliates of Total, Mitsubishi, and Mitsui/NYK.

PROJECTS IN OPERATION

■ Corpus Christi, Trains 1-2 (Texas)

June 13: Cheniere Energy noted that Train 2 of its Corpus Christi export facility started producing LNG and that substantial completion of Train 2 is ahead of schedule.

PROJECTS UNDER CONSTRUCTION

■ Elba Island (Georgia)

June 04: Kinder Morgan (KM) announced a further delay in the startup of its Elba Liquefaction export terminal in Georgia as it continues to experience unspecified problems during commissioning. KM did not say how long the delay would last.

■ Freeport LNG, Trains 1-3 (Texas)

April 24: According to S&P Global Platts, gas deliveries to the Freeport LNG export terminal in Texas have started. Deliveries were observed from Gulf South Pipeline’s Coastal Bend Header Project, with 25 mmcf of gas nominated to the Stratton Ridge Meter Station, which interconnects with the existing Stratton Ridge Pipeline that serves the Freeport terminal.

■ Golden Pass (Texas)

April 15: FERC issued a notice to proceed, permitting Golden Pass Products and Golden Pass Pipeline to begin initial site preparation related to their proposed



liquefaction and LNG export terminal facility in Jefferson County, Texas.

■ Sabine Pass LNG, Train 6 (Louisiana)

June 03: Cheniere Energy announced that it has taken a final investment decision (FID) on Train 6 at Sabine Pass. Bechtel will be the EPC contractor and first LNG is expected in 2022.

PROJECTS FULLY PERMITTED—AWAITING FID

■ Calcasieu Pass LNG (Louisiana)

May 28: Venture Global and Stonepeak Infrastructure Partners announced definitive agreements under which Stonepeak will provide a \$1.3 billion equity investment in Venture Global’s 10 mtpa Calcasieu Pass LNG export facility in Cameron Parish, Louisiana.

■ Driftwood LNG (Louisiana)

April 19: FERC authorized Tellurian’s 27.6 mtpa Driftwood LNG export project in Louisiana and a related 96-mile pipeline intended to bring 4 bcf/d of natural gas to the facility. April 29: Tellurian has a binding open season on the Haynesville Global Access Pipeline (HGAP), a 42-inch, 160-mile system from DeSoto Parish to Gillis, Louisiana. HGAP is estimated to cost ≈\$1 billion to construct and is designed to transport up to 2 bcf/d. Construction could begin in 2022, with an in-service date of mid-2023. Tellurian is also testing

support for the Delhi Connector Pipeline (DCPL), a 42-inch, 180-mile system s from the Perryville/Delhi hub in Richland Parish to Gillis. DCPL would cost an estimated \$1.4 billion to construct with capacity to transport “at least” 2 bcf/d. May 02: On the margins of the EU-U.S. Energy Council’s business-to-business LNG conference in Brussels, U.S. Energy Sec. Rick Perry authorized Tellurian to export LNG to non-FTA (free trade agreement) nations.

■ **Lake Charles LNG (Louisiana)**

May 03: Energy Transfer and Shell issued an invitation to tender to bid on the EPC contract to convert the Lake Charles LNG import project into an export facility. This follows the signing of a project framework agreement between the two companies in March, which outlined the commercial terms and pathway to the proposed 16.45 mtpa project.

■ **Magnolia LNG (Louisiana)**

June 10: The Federal Energy Regulatory Commission (FERC) has agreed to prepare a Supplemental environmental impact statement (EIS) on the request by LNG Ltd. to increase LNG production capacity at its proposed Magnolia LNG export terminal in Louisiana. Authorized to produce 8 mtpa, Magnolia wants to boost production at the proposed Lake Charles facility to 8.8 mtpa.

■ **Port Arthur LNG, Trains 1-2 (Texas)**

April 19: FERC authorized Sempra Energy’s Port Arthur LNG project and two associated pipelines, the 34.2-mile Texas Connector, and the 130.8-mile Louisiana Connector. The first phase of the Port Arthur project envisions two LNG trains for a total capacity of 10 mtpa. May 02: DOE Sec. Rick Perry signed the authorization for Sempra to export LNG from Port Arthur to non-FTA countries.

PROJECTS UNDER FORMAL REGULATORY REVIEW

■ **Alaska LNG (Alaska)**

June 28: FERC released the draft EIS for the Alaska LNG project and related 807 mile pipeline. Although most of the impacts would not be significant, or would be reduced “to less than significant levels” by implementing recommended measures, FERC also said the project would significantly harm wetlands, permafrost, and caribou.

■ **Annova LNG (Louisiana)**

April 19: FERC released its final EIS for Annova LNG’s 6.0 mtpa liquefaction and export terminal at the Port of Brownsville, Texas, concluding that: “impacts on the environment from the proposed project would be reduced to less than significant levels with the implementation of Annova’s proposed impact avoidance, minimization, and mitigation measures and the additional measures recommended by FERC staff”

■ **Eagle LNG (Florida)**

April 12: FERC released the final EIS for Eagle LNG Partners’ 1 mtpa LNG export facility on the north bank of the St. Johns River in Jacksonville, Florida. The FEIS concludes that the project would result in limited adverse environmental impacts. However, these would be reduced to less-than-significant levels with the implementation of Eagle LNG’s proposed mitigation and the additional measures recommended by FERC.

■ **Freeport LNG, Train 4 (Texas)**

May 13: Freeport LNG has selected KBR as the EPC contract for Train 4 at its LNG export facility. KBR will replace the McDermott (formerly CB&I), Chiyoda, and Zachry consortium that built Trains 1-3. The fixed price EPC contract should be concluded this quarter, KBR noted. The company also stated that it anticipates a full notice to proceed for the Train 4 project during the second half of this year. May 28: DOE granted approval to Freeport LNG to export LNG to Non-FTA countries from Train 4 (5 mtpa) When operational, Train 4 will bring Freeport’s total export capability to over 20 mtpa. Freeport LNG’s limited partnership interests are ultimately held by Michael Smith, Global Infrastructure Partners, and Osaka Gas.

■ **Gulf LNG Liquefaction (Mississippi)**

April 17: Another of the pending LNG export projects—the Gulf LNG project in Mississippi—received its FEIS from FERC. Kinder Morgan plans to add liquefaction and export capabilities to the former LNG import terminal in two 5.0 mtpa phases.

■ **Jordan Cove (Oregon)**

May 06: The Oregon Department of Environmental Quality denied a water quality certification for the proposed Jordan Cove LNG export terminal and its feeder



pipeline, but the agency left the door open for the company to reapply. June 16: ECONorthwest prepared a report on the economic impacts of the Jordan Cove LNG (and related pipeline) project... Construction spending is projected at \$9.8 billion... and of that, \$2.88 billion would be spent directly at Oregon businesses and \$1.5 billion would go to Oregon workers. June 26: A coalition of 16 western state groups rallied in southern Oregon to demonstrate support for the Jordan Cove LNG export project. Representatives from the newly formed Western States and Tribal Nations said at a FERC hearing in Medford they support the development.

■ **Plaquemines LNG (Louisiana)**

May 03: FERC has released a final EIS for Venture Global's 20 mtpa Plaquemines project. June 12: Polish Oil and Gas Company (PGNiG) signed another SPA with Venture Global (VG) to buy 1.5 mtpa of LNG bringing the total commitment by PGNiG to 2.5 mtpa. June 27: VG said it had raised \$675 million of additional capital to be used primarily for the further development of the Plaquemines project.

■ **Rio Grande LNG (Texas)**

April 02: Shell signed a SPA with NextDecade Corp. under which Shell will buy 2.0 mtpa from NextDecade's Rio Grande LNG project on a free on board (FOB) basis with 75% of the volume pegged to the Brent crude oil price and the remainder "priced to U.S. gas indices, including Henry Hub." April 24: NextDecade, which plans to build the Rio Grande LNG export terminal at the Port of Brownsville, and the associated Rio Bravo Pipeline from the Permian Basin to the port, will pay 100% of the cost of deepening the Brownsville Ship Channel from the Gulf of Mexico to the project site and for widening the bend near the entrance to the channel to improve navigational safety. The entire cost of the Brazos Island Harbor Channel Improvement Project, including the portion not being funded by NextDecade, is estimated by the Army Corps of Engineers to be \$350 million. May 28: NextDecade announced that it has signed two EPC contracts with Bechtel for the Rio Grande LNG project. The fully wrapped lump-sum turnkey (LSTK) EPC contracts include cost, schedule, and performance guarantees. The EPC contracts are for the first three liquefaction trains, two 180,000 cubic meter storage tanks, and two marine

berths totaling \$9.565 billion. Each liquefaction train is expected to have capacity up to 5.87 million tons per annum of LNG, which would generate an EPC cost of approximately \$543 per ton for the first three trains.

PROJECTS IN FERC PRE-FILING

■ **Commonwealth LNG (Louisiana)**

June 12: Commonwealth LNG and Gunvor have signed a heads of agreement (HOA) that anticipates the negotiation and finalization of a definitive 15-year SPA for 1.5 mtpa of LNG offtake from Commonwealth LNG's export project under development in Cameron Parish, Louisiana (8.4 mtpa in total). Commonwealth says a FID is expected in 2021 and first LNG in early 2024.

■ **Delta LNG (Louisiana)**

May 03: FERC accepted the proposal by Venture Global LNG to initiate the pre-filing process for its proposed Delta LNG project, a liquefaction facility with 20 mtpa nameplate capacity and 24 mtpa peak capacity, as well as the Delta Express Pipeline (two parallel 42-inch diameter pipes spanning 287 miles) to bring feed gas to the facility. This is Venture Global's third proposed U.S. LNG export project.

■ **Port Arthur, Trains 3-4 (Texas)**

June 14: Sempra LNG has asked FERC to begin the mandatory pre-filing process for two more liquefaction trains (to be located next to trains 1 and 2) at Sempra's Port Arthur, Texas, project. The company is not requesting authority for additional storage tanks or marine facilities. The expansion will increase the project's production capacity from 13.5 to 27 mtpa. Formal FERC filing is expected in early 2020.

GENERAL U.S. LNG EXPORT COMPANY NEWS

■ **Cheniere Energy**

June 03: Cheniere Energy made four big announcements: (1) it has taken FID on Train 6 at Sabine Pass; (2) it has executed an innovative gas supply agreement with Apache (see below); (3) it has established a capital allocation framework that anticipates equity investments at Sabine Pass Train 6 and Corpus Christi Phase III at "over 50%" and a three year \$1 billion share buyback program; and (4) it has raised the "run rate" of its liquefaction trains to 4.7–5.0 million tons per annum (mtpa).



■ **NextDecade Corp.**

June 05: NextDecade elected Matthew K. Schatzman, NextDecade's CEO, to serve as chairman of the board. Schatzman assumed his additional duties effective June 04. Matthew W. Bonanno, who served as interim chairman, was appointed lead independent director, also effective June 04.

■ **Sempra LNG**

April 17: Sempra announced that Mike VanderMate has become vice president of engineering and construction for Sempra LNG. VanderMate, who has spent most of his career with Bechtel, has "34 years of experience in engineering, construction, commissioning, project management and business management."

■ **Tellurian Inc.**

April 02: Tellurian and Total signed a HOA for Total to make a \$500 million equity investment and to purchase 1 mtpa of LNG from Driftwood. The HOA also specifies that Tellurian and Total will enter into a SPA for a further 1.5 mtpa of LNG from Tellurian Marketing's LNG offtake volume. The FOB SPA will be for a minimum of 15 years, at a price based on the Platts Japan Korea Marker.

■ **Total**

June 1: Total has acquired Toshiba's LNG business in the United States, after an earlier deal with China's ENN to acquire the assets fell apart. The transaction, among other things, will give Total control over 2.2 mtpa of LNG to be produced by the third train at the Freeport LNG export terminal in Texas.

CANADIAN AND MEXICAN PROJECTS WITH U.S. GAS

■ **Goldboro LNG (Nova Scotia)**

April 01: Pieridae Energy Ltd. announced an engineering review of costs for its delayed proposal to launch LNG exports from Goldboro LNG in Nova Scotia. The review, assigned by a Pieridae to KBR, will examine changes to initial plans for a C\$10 billion (\$7.5 billion) project capable of exporting up to 1.4 bcf/d. Pieridae also set a new target of "sometime in 2019" for construction to begin.

