LNG North America

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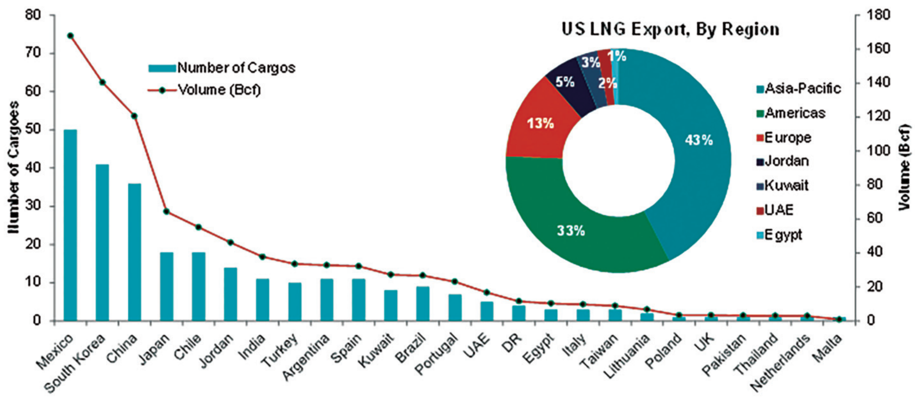
Arab States on the lookout for attractive US LNG



Saudi Arabia, the world's largest oil producer, is about to join Kuwait and the UEA in buying attractively-priced LNG. Khalid Al-Falih, the Saudi energy minister, did not rule out buying LNG from Russia although he sees it as "not the most economical option." Rival and possibly more attractively-priced supply could come from East Africa and the United States.

To date, the Saudi Kingdom has been diverting millions of barrels of crude oil every year into the power generation sector, losing out on export revenue. Hence, state-owned Saudi Aramco has been urged to try double its own gas production in the next decade and is evaluation gas imports to complement domestic supply.

Kuwait Petroleum Corporation (KPC), on the same token, has recently called off its plans to tender an estimated US$3.6 billion field development work on the massive tight gas Jurassic field in the north. KPC has just signed a 15-year agreement to import LNG from Shell to meet its rising gas demand for power generation and from the petrochemical sector.

Shell agreed on a 4-year LNG supply deal, commencing after the expiry of an existing contract in 2020. The contract is priced at 11% below a Brent benchmark and will cover 2-3 mtpa, *LNG Journal* understands.

"Gulf States buyers now are keener to buy from the spot market rather than engaging themselves in long-term commitment," said Priyank Srivastava, senior consultant, Energy & Utilities, at Protiviti's Abu Dhabi office. "Supply tenders in the Arabian region are often given to portfolio players that have the off-take arrangement of LNG from multiples sources or trading houses. It means that supply could come from various sources until the contract is in place," he explained.

The US exported 16.9 million of LNG starting from February 2016 through December 2017. Around 11% of exports were delivered to MENA region, with Jordan and Kuwait the two biggest importers of US LNG in the region.

"As the export volumes continue to build in 2018, a return to lower prices later this year is expected to pose new challenges both for the US and exporters around the world.

"And if lower global gas prices put stronger headwinds on the US export industry, more of that volume could be pushed back into

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Bechtel makes $50m equity investment in Tellurian

Tellurian Inc, developer of the Driftwood LNG project, has confirmed Bechtel Oil, Gas and Chemicals had made a $50 million investment in the company. The investment was made on the basis of a preferred equity investment with an implied Tellurian common share price of $8.16 per share.

Alasdair Cathcart, Bechtel OG&C President said: "We have dedicated our talent and innovation to design Tellurian's LNG liquefaction program. The investment reinforces our long-term partnership with Tellurian

and our mutual commitment to deliver the next wave of low-cost LNG."

The deal, announced on March 21, comes just weeks after Tellurian ended fiscal 2017 with an annual net loss of $231.5 million though insisted it had a strong balance sheet consisting of $276.8 million in assets, of which $90.9 million represented proved natural gas reserves of around 327 billion cubic feet equivalent.

When posting the loss, Tellurian pointed out that Driftwood LNG had already completed the pre-filing phase and submitted a formal application with the Federal Energy Regulatory Commission (FERC) to construct and operate the Driftwood terminal and Driftwood pipeline.

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AGENDA

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the US market – potentially a factor that's keeping benchmark, Henry Hub forwards prices at just US$2.84/MMBtu for the 2018 calendar year," Srivastava said.

It's a buyers' market

A large portion of US LNG is contracted out to big portfolio players, such as Shell which has an offtake agreement with Cheniere's Sabine Pass terminal. As one of the major portfolio players, Shell has diverse off-take arrangements from all over the world, including Qatar, Russia. Responding to a query from Qatar, Shell in June 2017 agreed to offtake 1.1 mtpa of LNG from Qatargas Train-4 over a five-year period, starting from January 2019.

"Buyers can draw a very wide net as one can simply buy the LNG from a well-supplied and increasingly flexible global market," he said. Traders, such as Trafigura, Uniper, Vitol or the trading arms of Shell, Total or BP, will commit to provide LNG from their global portfolios without reference to a particular country of origin.

Portfolio players had also been eagerly awaiting the startup of

Shell: Long-term off-take arrangement in-force

Exporter Country	Seller	Contracted Quantity (mpta)	Duration	Delivered Format
Qatar	Qatargas 4	3.6	2011/2036	DES
US	Cheniere Energy	5.5	2016/2036	FOB
Egypt	ELNG T2	3.6	2006/2026	FOB
Equatorial Guinea	EGLNG	3.3	2006/2023	FOB
Nigeria	LNG T4 & 5	3.43	2006/2026	DES
	Nigeria LNG T6	3.1	2008/2027	DES
Trinidad & Tobago	Atlantic LNG T2 & 3	1.7	2004/2023	FOB
		0.4	2004/2026	DES
		2.0	2006/2023	FOB
	Atlantic LNG T4	1.5	2007/2027	FOB
		2.0	2014/2026	FOB
Russia	Sakhalin Energy Investment	1.0	2009/2028	DES

Source: The LNG Industry GIIGNL Annual Report 2017

Exporter	Buyer	Contracted Quantity (mpta)	Duration (year)	Start	Delivered Format
Portfolio/Shell	KPC	1.07	6	2014	DES
Portfolio/BP	KPC	0.5	6	2014	DES
Portfolio/BP	KPC	1.0	4	2016	DES
Portfolio/Noble Energy	KPC	0.5	4	2017	DES
Portfolio/Shell	KPC	1.0	4	2016	DES
Qatar/Qatargas II /Qatargas	KPC	0.5	4	2016	DES

Cove Point, the second US facility to export LNG. Having commenced operation in early March, the first cargo from Cove Point is set arrived at the UK's Dragon terminal on March 21.

A dozen developers with pending proposals are closely evaluting the success of Cove Point LNG before deciding whether to move forward with their projects.

The Russian wild card

With the on-going crisis with Qatar and Iran, Saudi Arabia is looking for other suppliers to cover their gas needs. "This demand is likely to be met from increasing imports from the US and Russia," Srivastava suggested. Both countries offered to supply to the Arabian State, and Aramco forged closer ties with Novatek at the opening of Russia's Arctic LNG facility in last year December.

Novatek is interested in building a regasification export terminal and to develop relations, to carry out joint projects in Saudi Arabia. On counterpart, Saudi investors are showing interest in Russian LNG projects. Russian Energy Minister Alexander Novak said last year that Novatek was holding negotiations with investors from Saudi Arabia on their participation in its Arctic LNG 2 project, which the company plans to build on the Gydan Peninsula.

Far from Russia, Saudi Aramco had an initial conversation with the US LNG developer, Tellurian, about taking a stake in its business and entering a firm gas offtake agreement. Saudis have also held several talks with other US companies about gas export deals to the Kingdom. ■

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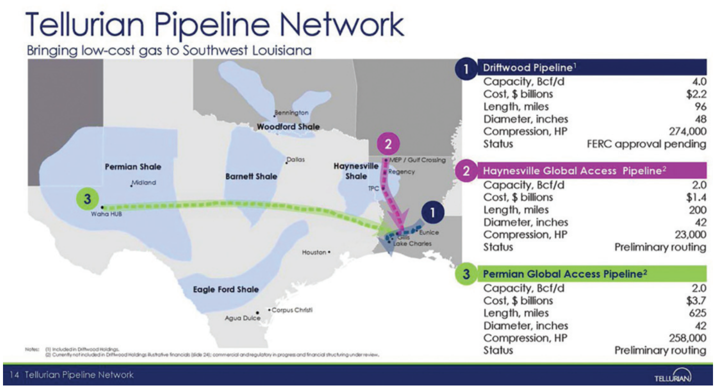
A FERC authorization deadline was set for January 10, 2019, allowing Tellurian to make a final investment decision and begin construction of the plant in the first half of 2019.

Meg Gentle, Chairman and CEO Tellurian said it was hoping to produce LNG at a cost of around $550 per tonne, one of the lowest cost liquefaction projects worldwide. To secure gas supply for Driftwood LNG, Tellurian earlier acquired almost 12,000 net acres of natural gas producing assets in the core of the Haynesville shale and said it was targeting delivery of gas for $2.25 per million British thermal units. It also revealed plans for the Tellurian Pipeline Network to expand natural gas supply alternatives for the growing demand in southwest Louisiana.

Bechtel investment comes after years of cooperation with Tellurian. Ms Gentle pointed out "Bechtel and Tellurian management have constructed 55 million tonnes per annum (mtpa) of liquefaction capacity together on various projects and have formed a respected and productive relationship. We are fortunate to have such strong strategic partners including Bechtel, GE and Total and look forward to breaking ground at Driftwood LNG in 2019.

In November 2017, Bechtel and Tellurian signed four fixed price, lump sum turnkey agreements totaling $15.2 billion for EPC of Driftwood, the 27.6 mtpa liquefied natural gas export facility proposed near Lake Charles, Louisiana.

Bechtel is a global leader in engineering, procurement and construction of LNG facilities, having delivered 41 LNG trains on 16 projects in 10 countries. Today, production on Bechtel-built facilities accounts for about one-third of global LNG capacity. ■



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Changes to US tax law help shale wildcatters achieve record results

Record results in shale oil and gas output in Appalachia and the Permian basin have been helped by President Donald Trump's latest changes to the US corporate tax law. Several shale gas drillers reported hundreds of millions in savings after being allowed to re-measure their net tax liabilities, and are now budgeting less tax expenses for the future. Production among American shale drilling companies, sampled by the consultancy Energy Aspects, grew by 1.6 Bcf/d, or 5% year-on-year and 0.5 bcf/d, or 2% quarter-on-quarter in Q4-2017.

These findings nearly match the growth figures by the US Energy Information Administration (EIA) of 5.4 bcf/d, or 5% annual growth and 2.9 bcf/d, or 4% US production growth in the quarter. Firms specializing in Oklahoma's SCOOP and STACK plays were especially successful in boosting boosted their total output in the fourth quarter, adding to surge in gas output from the Appalachian basin.

Consolidation in the US shale gas industry is speeding up nonetheless and during Q4-2017 several firms divested upstream holdings, notably QEP Resources which sold Pinedale Anticline assets that accounted for 40% of its gas production in 2016 and ConocoPhillips which finalized the sale of its San Juan assets.

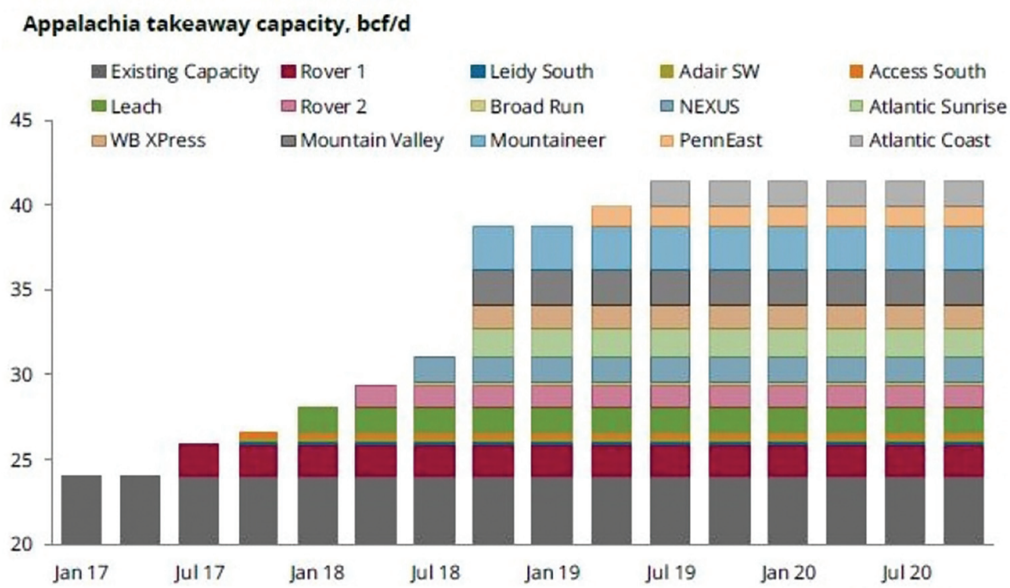
Plans to divest assets in 2018 have been communicated by several other firms: QEP considers selling acreage in the Bakken, while Ultra is looking to sell parts of its Pennsylvania resources, and Pioneer wants to divest part of its holdings in the Eagle Ford shale play.

Further output gains in 2018

At the outset of 2018, firms have increased their hedging of the year's projected production. A sample of producers, complied by Energy Aspects, shows hedging of 56% of production on average, up from the 42% that was reported in Q3-17 filings. Prices for swaps have fallen by 3 cents on average to 3.14 $/mmbtu on Q4-17, the second straight quarter of declines, reflecting the continued low-price environment at Henry Hub. The sampled firms have hedged 23% of 2019's projected production, although not every producer has committed to a position yet.

"2018 points towards impressive output gains," Energy Aspects says, projecting a 15% annual increase in gas production from firms that have reported their production guidance for this year.

An important risk factor cited by companies with assets in Appalachia is the timeliness of crucial takeaway projects like Rover Phase 2 and Atlantic Sunrise. Firms operating in Appalachia have staggered their 2018 output forecasts by quarter, with growth increasing q/q throughout the year as new pipes are projected to come online. ■



Source: Energy Aspects, Company websites

NEWS NUDGES

Shell downstream LNG

Royal Dutch Shell updated investors on its downstream growth ambitions through 2018 and beyond. "Our unique downstream business is fundamental to delivering a world-class investment case," said CEO Ben van Beurden. "Its unparalleled breadth, depth and the strength of our brand make our downstream business highly competitive, helping to generate strong free cash flows and returns," added the CEO.

Van Beurden said downstream was helping Shell to thrive during the global shift to a lower-carbon energy system. "We are making products from today's technologies as good as they can be, with better fuels and lubricants. We are also helping to deliver tomorrow's products, services and technologies. From battery-electric vehicle charging to next-generation biofuels and LNG for transport," added John Abbott, Shell Downstream Director.

Russia clears US deal

US-based energy and LNG engineering companies McDermott International and CB&I said they had received antitrust clearance in Russia for their proposed combination. "With this clearance, McDermott and CB&I have received all the required competition authority approvals for the transaction," they said.

McDermott and CB&I agreed in December to combine in an all-stock transaction to create a company valued at $6 billion. Under the terms of the deal, McDermott stockholders will own around 53 percent of the combined company on a fully diluted basis and CB&I shareholders will own about 47 percent.

KBR refinancing

KBR, the Houston-based energy and LNG project engineering company, said it had launched a refinancing programme scheduled it to be completed by early April. "KBR expects that the refinancing will consist of secured credit facilities including a revolving credit agreement, a performance letter of credit Facility, and two term loans," the company said. It also stated that it would not be issuing equity to the markets as part of this refinancing process.

Concerns over Russian LNG mount as UK braces for another cold snap

In 2018, three cargoes - each providing around 0.1 billion cm of liquefied gas - have come directly to British regas facilities from Yamal LNG in Russia. But as the UK is preparing for another cold snap, and there's talk that the country is too reliant on Russia for LNG. Murray Douglas, research director, Europe Gas, evaluates if fears are overstated and where British gas buyers can turn to secure top-up supplies.

One of those three cargoes landed in Britain from Yamal LNG was later re-exported to the United States, arriving at Boston Harbour in late January. Another cargo was sent to France, then trans-shipped and sent back to the UK. However, the trans-shipped cargo from France was only a part cargo, so the UK has received about 2.1 cargoes net of Russian LNG.

On the demand side, UK gas requirements from 1 January 2018 to 7 March 2018 were 21.15 billion cubic meters. Hence, direct Russian gas imports to the UK in 2018 account for less than 1% of total supply, so far.

In fact, the UK has several other LNG supply options aside from Russia's Yamal LNG and since the British gas grid operator turned again to LNG imports in 2005, Qatar has provided 81% of the country's LNG needs.

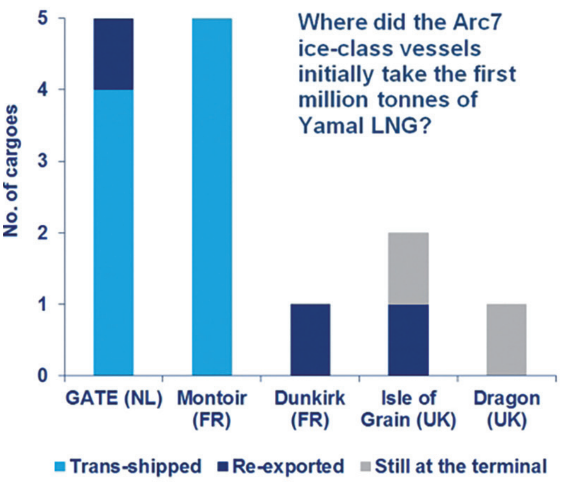
Looking at the bigger picture, Wood Mackenzie pointed out that LNG only met 8% of the UK's 74.3 bcm of gas demand in 2017. The majority of supply is still sourced directly from the UK's own production (49%) and direct pipeline links with Norway. Moreover, the UK has two pipeline interconnectors with continental Europe, allowing for gas imports via Belgium and the Netherlands.

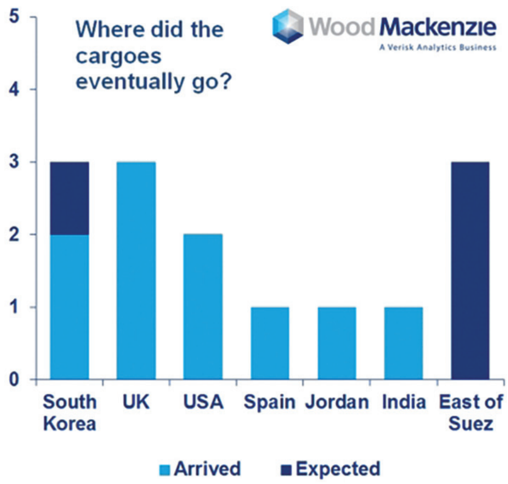
Though it is not possible to establish the source of the gas flows of these European imports, EU statistics show that Russian gas covered 37% of continental Europe's total demand in 2017.

Gazprom Group reports sales totaled 16.26 bcm to the UK in 2017, but these are not direct Russian gas flows. Rather, they are gas volumes traded in the UK by Gazprom Group. For example, the reported sales may include Gazprom Group purchasing gas from a UK North Sea producer and reselling into a UK consumer as well as imports from Continental Europe via pipeline.

"Though the amount of Russian molecules which physically enter the UK is small, the country is still intrinsically linked to the gas market in Continental Europe and by therefore extension Russia, which provides over a third of Europe's gas," Mr. Douglas cautioned.

"Consequently, any disruption in Russian gas supplies to Continental Europe will affect UK gas prices and potentially creates a need for additional LNG, which can be challenging to source."





Traffic through expanded Panama Canal on the up

The Panama Canal Authority said it expected LNG carrier traffic to increase by around 50% by the fourth quarter of 2018 as more US cargo export capacity comes on stream.

The Authority said in a statement that the upgrading of the waterway in 2016 with additional locks to handle larger vessels traversing from the Atlantic and Pacific Basins had gradually made it more popular.

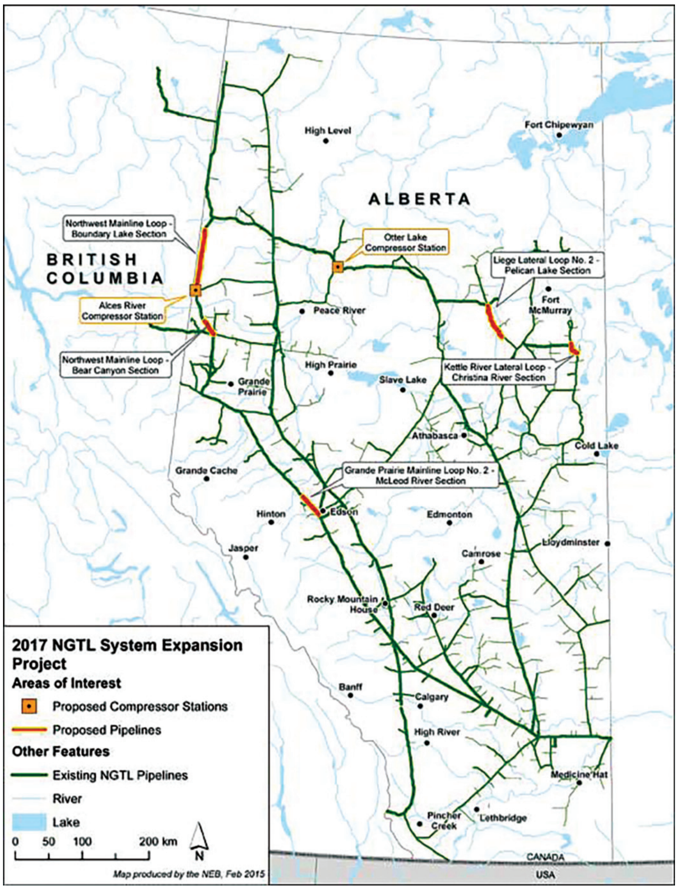
Shipping and energy companies have been more prepared to use the Canal as LNG prices and charter rates have risen in the past year.

It said that the Canal was already close to reaching the point where at least one LNG carrier per day was crossing East-West or vice versa.

Around 60 LNG carriers traversed the Canal in the final three months of 2017, an increase of 39 percent on the 43 vessels that used the route in the same quarter of 2016.

2nd bidding on TransCanada's NGTL system oversubscribed

Open Season bidding for the second capacity extension on TransCanada's Nova Gas Transmission Ltd. (NGTL) system has oversubscribed, with contracts awarded for an average term of 22 years. The NGTL system allows gas transport from the low-cost Montney shale gas play in northeastern British Columbia to the Empress-McNeill export delivery point and onward to the US border.



Low-cost Montney shale gas was initially meant to underpin Canadian LNG export projects on the Pacific Coast, like the ones planned by Shell and Petronas. With the suspension of these projects, the strategic purpose of the NGTL system has changed and it now allows for Montney gas to be exported to the higher-priced American market.

The extra capacity offered on NGTL followed a successful Open Season held in January 2018 for 1.0 Bcf/d of expansion capacity at the same delivery point, with service commencing between November 2020 and April 2021.

"The success of this Open Season reinforces the critical role that the NGTL System plays to transport clean-burning natural gas out of the Western Canadian Sedimentary Basin and expand market connectivity for producers," said Tracy Robinson, TransCanada's senior vice president for Canada Gas Pipelines. "We are committed to working collaboratively with industry and providing competitive options to connect growing basin supply to downstream markets across North America."

Shifting tack, TransCanada is now keen to facilitate Canadian upstream companies and outlet for their gas production, including access to Eastern Canada and the US Northeast through its Canadian Mainline and downstream pipeline systems. Once NGTL will be in full swing in mid-2021, it will not only serve as a route for gas exports from Montney Shale but also from the Deep Basin and Duvernay oil and liquids-rich gas formation in Alberta.

Strong interest from shippers signals there is interest for additional market access which underpins TransCanada's most recent $2.4 billion NGTL System expansion. TransCanada said NGTL was working to finalize the scope of expansion facilities required to meet the incremental service requirements resulting from this Open Season.

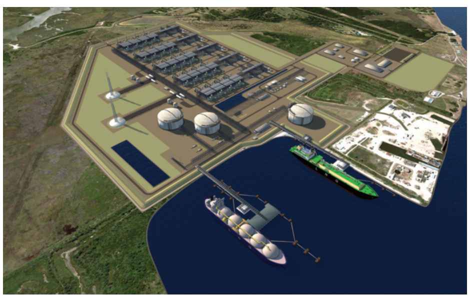
"Any expansion facilities will be in addition to NGTL's existing capital expansion programs totalling approximately $7.2 billion," the Canadian company stated. ■

Driftwood LNG launches open season on Permian Global Access Pipeline

Tellurian Inc., developer of the Driftwood LNG export project in Louisiana, has launched an open season to secure shippers for a proposed Permian Global Access Pipeline (PGAP), connecting the Permian Basin in Texas to Southwest Louisiana.

The open season started at noon central time on Wednesday, March 21, 2018 and runs through Friday, May 25, 2018 at 4 pm central time.

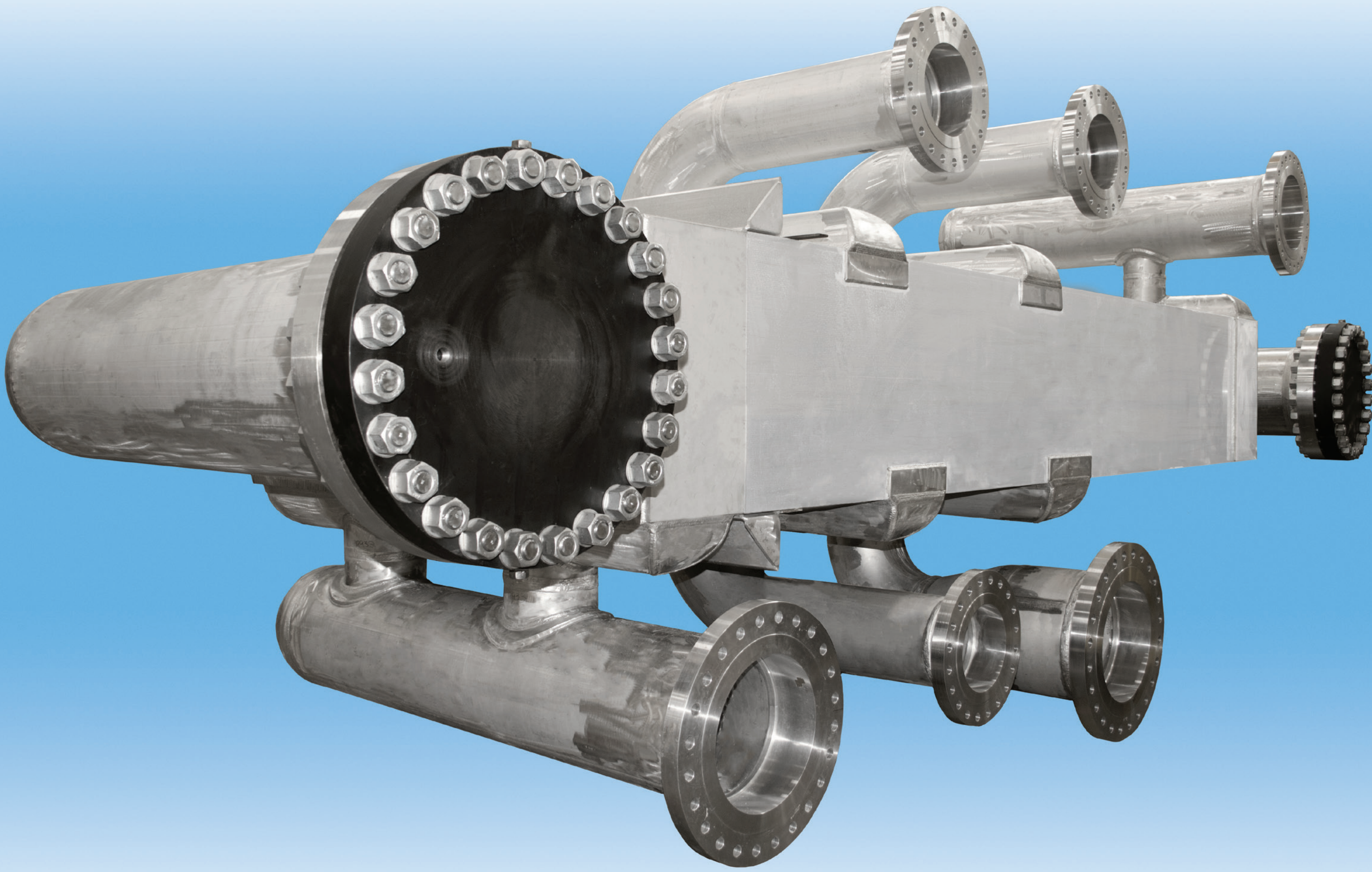
"We hope to attract interest in PGAP from both producer and consumer shippers and look forward to securing commitments to begin the regulatory permitting process in the next few months," said Tellurian CEO Meg Gentle.



Natural gas production from the Permian is expected to exceed 12 billion cubic feet per day by 2023 and continue to grow through the middle of the decade. Hence, Ms Gentle argues new pipeline infrastructure will be needed to reach growing export and industrial demand in Southwest Louisiana and to establish crude production flow assurance.

Construction for the PGAG will cost an estimated $3.7 billion and is scheduled to begin as early as 2021 for the pipeline to be in service by 2022. For Tellurian, investment in the interstate pipeline comes on top of the $15.2 billion that its plan to spend on the construction of the Driftwood LNG plant near Lake Charles in Louisiana.

The proposed pipeline will stretch for around 625 miles and connect supply sources originating at or near the Waha Hub in Pecos County, Texas and will deliver gas near Gillis in Jefferson Davis Parish, Louisiana. The pipeline system is expected to have multiple receipt and delivery locations, connecting various gathering points and third-party pipelines. ■

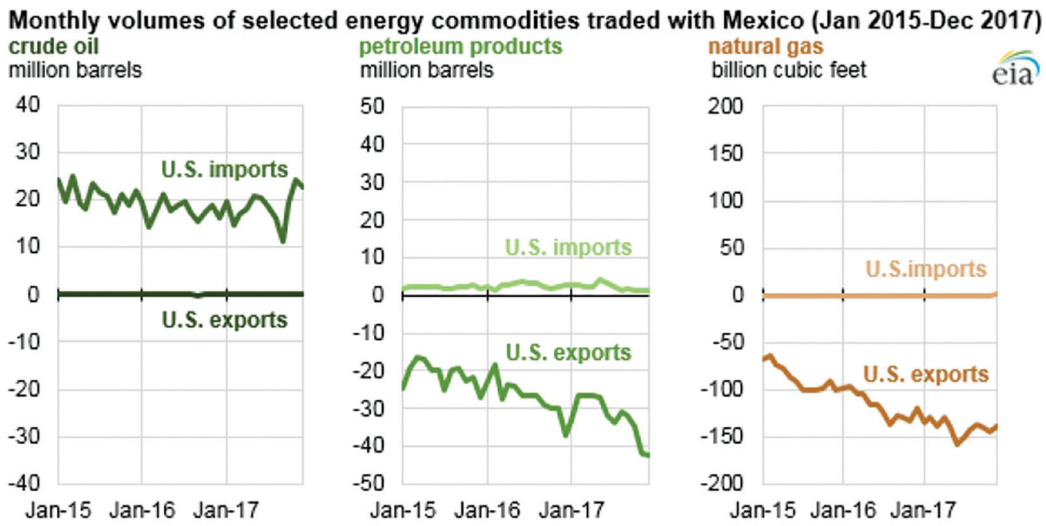


Value of U.S. energy exports to Mexico hits record high of $25.8 billion

Since the U.S. shale oil and gas revolution ended the need to import crude oil from Mexico, the trade balance shifted and U.S. energy exports have been exceeding imports from Mexico for each of the past three years. In 2017, overall U.S. energy exports to Mexico hit a record high of $25.8 billion in 2017, more than twice as much as the $11.1 billion value of imports from Mexico.

Based on the latest annual data from the U.S. Census Bureau, energy accounted for more than 10% of the value for all U.S. exports to Mexico and 4% of all U.S. imports from Mexico in 2017.

Crude oil makes up most of the U.S. energy imports from Mexico, averaging 608,000 barrels per day (b/d) in 2017. From 2007 to 2015, these crude oil imports were valued at an annual average of about $30 billion dollars, but more recently, because both U.S. crude oil imports and world oil prices have been relatively low, these imports from Mexico were valued at $7.6 billion in 2016 and $9.8 billion in 2017.



The highest value of US energy exports are petroleum products and Mexico last year imported over 1 million b/d of petroleum products valued at more than $23 billion dollars.

Natural gas exports to Mexico from the United States – either shipments by pipeline or LNG cargoes – were 4.6 billion cubic feet per day (Bcf/d) in 2017. This natural gas trade is dominated by pipeline shipments to Mexico, which made up about half of total U.S. natural gas exports last year.

By 2018, gas pipelines currently under construction or in planning stages are expected to nearly double the US pipeline capacity to Mexico, where most of the gas will be used to generate electricity. Mexico's energy ministry plans to add significant natural gas-fired electricity generating capacity through 2029.

LNG export operations began at the Sabine Pass facility in Louisiana in February 2016. From February 2016 through December 2017, U.S. LNG exports to Mexico totaled 168 Bcf, or 19% of U.S. LNG exports, making Mexico the largest destination for U.S. LNG exports. ■

Cove Point shipment is only 2nd US LNG cargo sent to the UK

The first cargo to be exported from the new Cove Point liquefied natural gas export plant on Chesapeake Bay in Maryland has arrived at the UK port of Milford Haven and is only the second US shipment to be sent to Britain since US LNG exports began in 2016, while almost 40 shipments have been sent to other European nations, mainly in the South.

The 138,100 cubic meters capacity vessel "Gemmata", operated by Shell Shipping, completed the unloading of the shipment from Cove Point, owned by Dominion Energy, at the Dragon LNG terminal in Milford Haven, owned by Shell and Malaysian energy company Petronas.

The US has shipped more than 300 cargoes since the first export plant in the Lower 48 States began operations in February 2016 at Sabine Pass in Louisiana

Despite northwest Europe suffering from a cold snap and natural gas shortages because of peak demand there was no surge of shipments heading from the US as Asian and South American destinations are still the preferred option.

With the unloading of the US cargo at the UK Dragon terminal, one of two import facilities in Milford Haven port, just three shipments have been sold into the high-priced Northwest European gas market since the US exports began. ■

Harvey Gulf files for bankruptcy protection

Harvey Gulf International Marine, the US small-scale fleet owner and liquefied natural gas bunkering specialist, has filed for Chapter 11 bankruptcy protection, though the move would not affect LNG operations.

Harvey Gulf said the filing in Houston, Texas, would not have an adverse impact on the region's emerging LNG bunkering market. The Chapter 11 route is often followed by US companies with financial over-reach to give themselves time to restructure their businesses and control debts.

Harvey Gulf has a fleet of 60 small ships serving as platform and offshore supply and support vessels and in other roles for the energy industry in the Gulf of Mexico waters of Texas and Louisiana.

Among the fleet are five vessels powered by LNG with a sixth LNG-fueled ship on order. In addition, Harvey Gulf has a facility with more than 600,000 cubic metres of LNG storage at Port Fourchon, the southernmost port in Louisiana.

Harvey Gulf in November 2017 signed a long-term LNG transport contract as part of a joint venture to deliver LNG as a maritime fuel source to various ports in Florida and the Caribbean for Shell Trading Co.

The CEO of Harvey Gulf, Shane Guidry, owns 70 percent of the joint venture and Harvey Gulf holds 30%. The venture called Quality Liquefied Natural Gas Transport owns and operates the assets providing marine transportation of LNG in the region. Guidry said at the time he was very appreciative that Shell had the confidence to service their LNG transport needs through the joint venture.

The LNG-powered ships are chartered to Shell and are part of Q-LNG Transport. They are thus not directly involved in the Harvey Gulf move for bankruptcy protection.

Harvey Gulf took delivery of its LNG-powered offshore support vessels from Mississippi's Gulf Coast Shipyard in Gulfport.

The vessels such as the “Harvey Freedom” and its sister ships are capable of running on fuel oil or LNG and can carry 78,000 gallons of LNG to meet stricter environmental standards. The vessels are 310 feet in length and operate on engines supplied by Finnish propulsion system maker Wartsila.

Three of the other ships are named the “Harvey Liberty”, the “Harvey Energy” and the “Harvey Power” and are all chartered by Shell to support its deep-water operations in the Gulf of Mexico. ■