

LNG North America

Includes:
Market Tracker Data

A MONTHLY LNG JOURNAL PUBLICATION

July/August 2020

Cargo cancellations mount at US LNG terminals, no quick recovery in sight

This summer, the Covid-19 pandemic is driving a global contraction in LNG deliveries – the first seasonal contraction in eight years. US LNG exports are particularly hard hit, with nearly 130 cargo loadings cancelled since April 2020, according to Platts data, including 40 liftings that would have been scheduled for July and around the same number for August. About two dozen of the cargo cancellations are understood to be tied to Cheniere's Sabine Pass LNG and Corpus Christi LNG plants, and analysts say a return to stronger growth is unlikely until mid-2021.

"There is no sign for a quick recovery," said Robert Sims, Wood Mackenzie's research director LNG Short-Term. The array of cargo cancellations in June has already been "significant for the market," he said, suggesting "this could lead to feedgas going as low as 5 British cubic feet per day."

Underutilization and partial shut-in of U.S. liquefaction terminals is expected to continue throughout summer 2020 as margins remain negative for many shale gas developers and exporters.

Plant utilization at the five largest US liquefaction and export facilities on June 22 was last recorded at 40 percent.

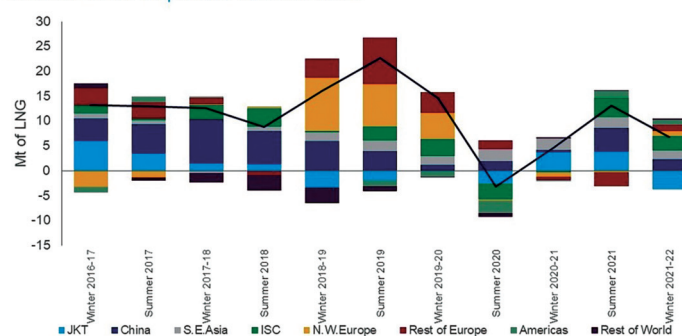
All eyes on JKM-Henry Hub price spread

Pricing dynamics this year "look similar in the summer and winter season," according to WoodMac analysis, with US LNG acting as the price-setter for the cross-basin spread. Prices differentials between the U.S. bellwether Henry Hub and the Japan-Korea-



Seasonal LNG demand year-on-year demand growth

Summer/ winter vs. previous summer/ winter



Source: Wood Mackenzie

Market (JKM) will determine how much hub-indexed US LNG will be shipped to Asia, in competition with largely oil-indexed supply

from Qatar and Australia.

Low prices have led to a downward revision in LNG supply which is currently seen across all basins

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Ship brokers expect global gas market to tighten from winter 2020/21

Poten & Partners, the global ship brokerage firm, expects the global gas and LNG markets to tighten later this year, due to slower construction and commissioning of new liquefaction and exports facilities, and higher gas demand going into the winter heating season. Combined, these effects will lead to growing market volatility.

Some buyers, particularly in India and South-east Asia, have started to look for deliveries post 2023 and even as early as next year, said Kit Ling Wong, Poten's Head of South Asia and Middle East. The brokerage had initially calculated that at least 57 US cargoes were due to be cancelled in June - it was later revealed that another 45 or so were due to be cancelled for July. In Europe, storage space is filling fast and as a result some cargoes are being diverted or even used as floating storage.

Reacting to falling demand for US LNG in Asia,



some shipping companies have chooses to slow steam part of their chartered LNG vessels as they anticipate

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and regions. "Only if there will be a robust rebound in LNG demand from Japan, Korea or India, then a price correction could begin earlier than previously anticipated," Mr. Sims said. This, in turn, would "help reduce the risk of further US supply reductions next year."

As gas prices remain subdued in Europe and Asia, the two main outlets for US LNG, free-on-board gas prices at the US Gulf Coast are only slowly recovering. The derivative contract for US Gulf Coast LNG, traded at the Intercontinental Exchange (ICE), was last seen at \$1.575/MMBtu for July delivery, \$1.700/MMBtu for August and \$1.942/MMBtu for September. The ICE-settled derivative contract is based on the average free-on-board (FOB) Gulf Coast LNG price.

The US Department of Energy's (DOE) latest available LNG export data shows that cargo prices fell at all plants, except for Cheniere Energy's Corpus Christi facility in Texas. The average year-to-date price of US LNG through April 2020 was \$4.49 per MMBtu versus

March's \$4.66/MMBtu, according to DOE export data.

Average year-to-date prices for each liquefaction and export plant were: Cove Point (Maryland) \$6.49 per million British thermal units, Cameron (Louisiana) \$5.84/MMBtu, Sabine Pass (Louisiana) \$4.80/MMBtu, Freeport (Texas) \$4.60/MMBtu, Corpus Christi (Texas) \$4.17/MMBtu and Elba Island (Georgia) \$2.99/MMBtu.

Rig-count in US shale plays at all-time low

Oil and gas producers throughout the United States have sharply reduced output since mid-March, reacting to a plunge in energy demand due to lockdowns. Rigs fell by 433, or 56 percent since March 17, with most wells shut-in occurring in oil-focused shale plays like the Permian, Eagle Ford and the Bakken region.

In natural gas-focused plays, rig count also fell although those plays already had fewer rigs to start with. The top gas-producing

regions -aside from the Permian basin, where much of the US associated gas is produced though all rigs are classified as oil-directed - were the Marcellus region in Ohio, Pennsylvania, and West Virginia and the Haynesville region in Louisiana and Texas. Exclusively gas-directed drilling rigs in the Marcellus and Haynesville regions declined by 23 percent and 26 percent, respectively, from mid-March to May 12.

Changes in rig counts follow changes in oil prices, normally with a lag time of about four months. "However, the current drop in rig count followed the recent decrease in the oil price much more rapidly than in the past," analysts at the U.S. Energy Information Administration (EIA) pointed out.

The spot price of West Texas Intermediate fell from \$46.78 per barrel (bbl) in early March to \$20.51 per bbl at the end of the month, and the rig shut-ins began already in mid-March. "The quick reduction in active rigs reflects the sudden loss of petroleum demand

related to coronavirus-related mitigation efforts that also resulted in recent increases in the amount of crude oil placed in storage," EIA analysts commented.

Gas prices already low before the pandemic

Similarly, natural gas rig activity has decreased along with the natural gas price, though gas prices have been falling over a longer period than oil prices. Oversupply has kept building on global gas markets long before the recent lockdowns to contain the coronavirus pandemic, with Henry Hub gas prices having already at multi-year lows in early 2020.

"Record-high dry natural gas production in autumn and winter 2019, low demand because of warm weather, and relatively small withdrawals from storage during the winter heating season (November 1-March 31) have led to a sustained decrease in the gas price," EIA analyst said, indicating prices are likely to remain low for the foreseeable future. ■

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to have some of their voyages cancelled this summer. The reported July cancellations - roughly double the figure for June - represent nearly two-thirds of the average US LNG volume that was produced monthly when the coronavirus began to spread in January.

Total, Naturgy and JERA cancelled cargoes

Though economies in Asia and Europe are gradually recovering after painful lockdowns, gas buyers are still scaling back their off-

take volumes. According to S&P Global Platts reports, at least half of the reported US cargo cancellations were meant to be exported from Cheniere Energy's two Gulf Coast terminals. Shell, Naturgy and commodity trader Trafigura is understood to be among the offtakers to have cancelled July cargoes from the Cheniere's Sabine Pass and Corpus Christi terminals. Total was said to have cancelled at least two US LNG cargoes for July, though it was unclear from which terminals. It has commitments at Cameron LNG in Louisiana and at Cheniere's Sabine Pass. Japanese buyers Osaka Gas and JERA cancelled three July cargoes from Freeport LNG in Texas, market sources said.



LNG tanker, ordered by JERA, arrives at a Japanese port.

Shut-ins or maintenance

US LNG is sold based on tolling agreements and these contracts often call for offtakers to pay a fixed fee when cancelling cargoes. However, the clauses could prove complicated if customers declare force majeure, which may be possible if the pandemic continues or deepens. But Cheniere recently said that it did not believe the market disruptions from the virus

would provide a valid legal basis for a force majeure claim by one of its counterparties.

Being prudent and trying to cut costs, several US LNG terminal operators have resorted to partially shut-in some of liquefaction trains, or scheduled an extended maintenance period during this summer. The hope is that economics improve as demand picks up in the upcoming winter season. ■

LNG North America

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Subscription included with
LNG Journal

Global gas demand rebounds, lead by China – BP Review

Calling the world's emergence from the Covid-19 pandemic "a pivotal moment" for global economies, BP chief executive Bernhard Looney said there are signs that global gas demand is starting to rebound led by the U.S. and China.

Growth in China's gas consumption, however, has slowed down significantly compared to the previous year, as the effects of Beijing's coal-to-gas switching are fading. "In volume terms, demand grew by 78 billion cubic metres (Bcm), led by the United States (27 Bcm) and China (24 Bcm)," BP said in its benchmark 2019 Statistical World Energy Review.

Primary energy consumption increased 1.3 percent with renewable power making up over 40 percent of that growth. "Global natural gas consumption growth averaged 2% in 2019, below its 10-year average and down sharply from the exceptional growth seen in 2018 of nearly 5.3 percent.

Supply far outweighs demand

On the supply side, gas production was up 132 Bcm or 3.4%, outpacing the growth in consumption.

Supply from the United States made up nearly two thirds of net

global growth in gas supply, according to BP figures with the volumetric increase of 85 Bcm just shy of 2018's record increment (90 Bcm).

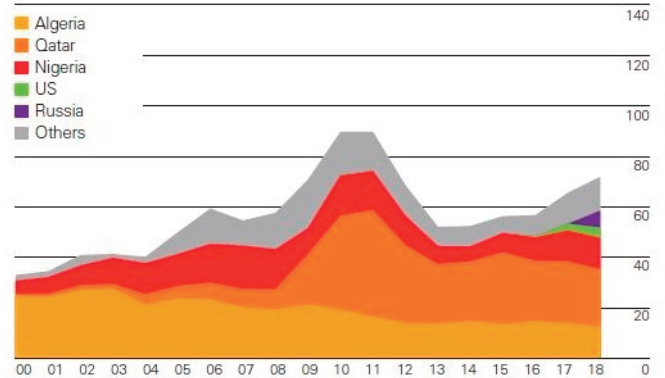
Australia added another 23 Bcm and China some 16 Bcm to the global gas supply in 2019, the Review states. Much of the surplus supply was used to feed a rising number of liquefaction terminals.

Global LNG export volumes grew by 54 Bcm, or 12.7 percent last year, the largest annual increase ever, driven by record volumes from the United States (19 Bcm) and Russia (14 Bcm) as well as continued growth from Australia (13 Bcm), BP analysts noted. In terms of LNG imports, nearly all incremental supply was seen headed to Europe in 2019, not Asia as was the case in years before.

"European LNG imports rose by 49 Bcm, representing an unprecedented 68 percent increase," BP analysts said. Growth was widespread, with 11 Bcm headed to the UK, some 10 Bcm to France and 7 Bcm to Spain. ■

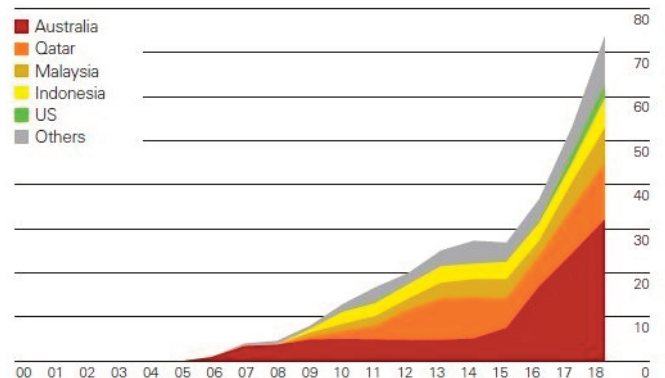
LNG imports by source: Europe

Billion cubic metres



LNG imports by source: China

Billion cubic metres



U.S. imports less Canadian gas amid rising AECO spot prices

Imports of Canadian pipeline gas to the western United States have fallen substantially as spot prices at the NOVA/AECO-C (AECO) trading hub in Alberta reached near parity with Henry Hub. In April and May, imports fell to an average of 6.2 billion cubic feet per day (Bcf/d), according to Genscape pipeline flow estimates.

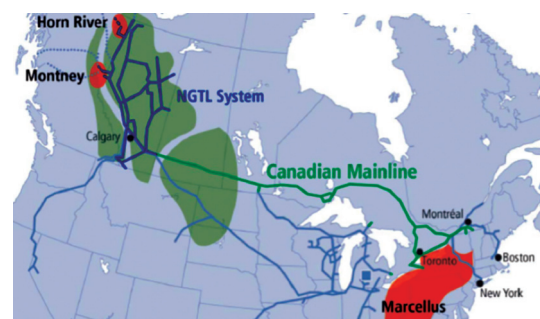
Spot prices at the NOVA/AECO-C (AECO) trading hub used to be between \$1 per million British thermal units (MMBtu) and \$2/MMBtu below Henry Hub spot prices from mid-2017 until late 2019. However, from October 2019 through March 2020, there was little difference in spot prices at those two points.

Canadian gas put into storage

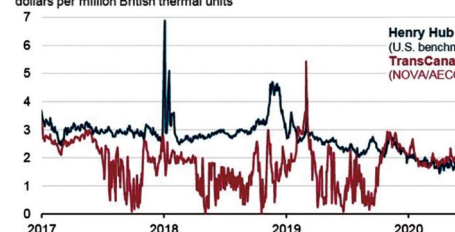
In April and May - at the height of the coronavirus lockdowns - AECO natural gas spot prices increased while Henry Hub gas prices plunged.

The narrowing of AECO and Henry Hub prices was first noticeable when the Canadian in September last year, when the Canadian Energy Regulator ap-

proved a temporary service protocol (TSP) for the NOVA pipeline



Daily natural gas spot prices at selected U.S. and Canadian hubs (Jan 1, 2017–June 1, 2020)
dollars per million British thermal units



Source: U.S. Energy Information Administration, price data from Natural Gas Intelligence

proved a temporary service protocol (TSP) for the NOVA pipeline system. The TSP increases service flexibility on the pipeline by handling gas flows to storage facilities at times when the system is constrained.

In March and April 2020, Alberta's natural gas inventories were at multiyear lows of slightly more than 300 billion cubic feet. Hence, most production from Western Canada was put

into storage and not exported to the United States.

Imports not seen to recover before 2021

Imports of Canadian gas at the border crossing in Montana and North Dakota were 0.4 Bcf/d and 0.3 Bcf/d less in January through May 2020, compared with the first five months last year, U.S. Government data shows.

Gross imports of Canadian pipeline gas are expected to fall from 7.4 Bcf/d in 2019 to 7.0 Bcf/d in 2020 - the lowest level since the mid-1990s. Demand for Canadian gas is forecast to start recovering with the upcoming winter season and could reach an estimated 7.9 Bcf/d in 2021. ■

Freeport LNG forced to delay FID on Train-4 until 2021

Developers of the Freeport LNG export plant at Quintara Island in Texas have confirmed the Final Investment Decision (FID) on building a fourth train had to be delayed until 2021 due to depressed demand in most markets and record low gas prices.

“As with most LNG projects around the world, Covid-19 and other market challenges have negatively impacted our development efforts. “As such, we do not expect to reach FID on Train 4 this year,” said the CEO of Freeport LNG, Michael Smith.

“Given we are a brownfield expansion, if market conditions improve, we can easily be in a position to start construction by mid-2021,” he indicated. But the Freeport CEO said earlier he was unsure when the Train 4 expansion could be advanced, given that no firm long-term offtake contracts are in place. A preliminary accord with the Japanese trading house Sumitomo over 2.2 mtpa from Train-4 was signed in 2018 but expired without being finalized.

In May 2020, Freeport put its third liquefaction train into operation based on a tolling and offtake

agreement with Total and the South Korean utility customer SK E&S.

Freeport’s first three trains, with 13.4 mtpa capacity combined, have been contracted under use-or-pay liquefaction tolling agreements with customers including BP of the UK, the German utility Uniper and the Japan utilities JERA and Osaka Gas.

Low margins, slump in demand

In February 2020, just before the Covid-19 shutdowns when the virus outbreak had been confined to China, Mr. Smith cited a list of challenges facing FIDs such as record low prices and weaker than expected demand in Asia. He said this had created a perfect storm of headwinds for producers looking to construct new liquefaction plants or additional process-



ing Trains.

“I don’t think there’s going to be a lot,” Smith said at the time regarding additional sanctioned US capacity. “The margins for everyone have come down,” he stated, and that was before the oil price crash in mid-March 2020.

More than a dozen US develop-

ers are pursuing projects for new plants or additional production capacity and have yet to announce positive FIDs.

Only Venture Global has been moving to the construction stage with two new projects in Louisiana, Calcasieu Pass and the Plaquemines facility. ■

Edge LNG to capture and liquefy gas from stranded Marcellus well

Edge Gathering Virtual Pipelines 2, better known as Edge LNG, has been selected by EXCO Resources to capture and liquefy gas from a stranded well in the Marcellus Shale. The gas is being trucked to electric utility customers in the Northeast (NE) of the United States.

Initial gas gathering operations are underway at the EXON wells and expected to continue through 2022.

Under the contract, Edge will both produce the LNG at the Marcellus wells and purchase it from EXCO Resources. This LNG will then be sold and delivered to customers in the northeast region via its truck-based virtual pipeline, where it will be used to provide natural gas to homes and businesses. Edge hopes to generate surplus LNG beyond this agreement for sale to its own customer base.

Mobile Cryobox liquefaction technology

To gather the stranded gas, Edge LNG deploys its mobile, truck-delivered liquefied natural gas (LNG) equipment to the Marcellus site.

At the heart of the operation are three trailer-mounted Cryobox liquefaction units that can be delivered to any site accessible by road.

The unique liquefaction process, created by Galileo Global Technologies, is used exclusively by Edge LNG in North America.



After set-up and safety checks, production can begin within hours.

Trucking LNG remedies infrastructure constraints

In the Marcellus Basin, Edge LNG is already gathering and monetizing stranded gas on behalf of various other upstream companies,



whereby the natural gas is delivered by truck to electric utilities, mostly in New England, to fuel some of their decentralized power stations.

Trucked LNG helps overcome the bottleneck in New England gas infrastructure, where pipeline constraints keep limiting the

amount of natural gas that can be transported to utilities and local businesses. To avert energy shortage at times of peak demand during the winter, regional utilities regularly had to import LNG by having cargoes shipped to the Everett regas terminal, situated at Boston harbour. ■

Australia LNG Ltd offloads US project to private infrastructure firm

Glenfarne, a privately held energy infrastructure firm, has agreed to buy Magnolia LNG from its parent, Australia's LNG Ltd, for \$2.25 million, according to the voluntary administrators appointed to review the parent company's assets.

The sale to the formerly largely unknown buyer follows the April 13 withdrawal of a takeover offer for LNG Ltd that the parent com-

pany had previously said it was "the best chance to save" the 8.8 mtpa export project."

A deal with London-based

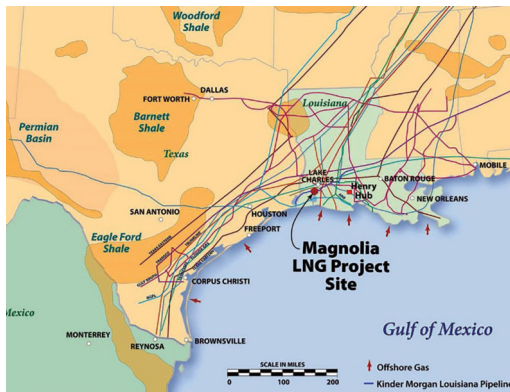
Global Energy Megatrend Ltd. fell also through at the last minute and it was finally bought by a Delaware-based entity. The buyer is owned by Glenfarne Group LLC, that company itself disclosed in a statement.

Glenfarne, with offices in London and Lafayette, Louisiana, is a privately held industrial energy developer and operator with plans

to complete the Magnolia LNG project. The company is interested in becoming an integrated natural gas firm by acquiring and participating in US gas fields and pipelines and operating liquefaction facilities.

"Magnolia LNG is a well-known and high-quality project," said Brendan Duval, founder of Glenfarne. The new owner of Magnolia LNG wants to bring funding, marketing, development and construction experience to build and then operate the liquefaction and export plant. The project has not yet reached a final investment decision.

Glenfarne also is the majority owner, through a subsidiary called Alder Midstream, of another LNG project on the US Gulf Coast, Texas LNG Brownsville. The 4 mtpa project has all state and federal permits, though has not yet begun construction. ■



ExxonMobil's LNG-to-Power investment in Vietnam creates outlet for US LNG

The Vietnamese government has welcomed ExxonMobil's plan to invest in the country's energy infrastructure. The U.S. oil major is looking to set up an LNG-to-Power generation supply chain with a combined capacity of 3,000 MW in the Mekong Delta region, creating an outlet for LNG exports.

To that end, ExxonMobil will need to ensure a continuous stream of LNG supply - either from its Golden Pass LNG venture in the U.S. or sourced through natural gas exploration offshore Vietnam, or from neighbouring countries.

The government in Hanoi is also keen for ExxonMobil to go ahead with a proposed 4,000 MW integrated LNG-to-Power plant in the northern part of Vietnam. The 4,000 MW venture is meant to be built in the northern port city of Haiphong, adding and could be completed between 2025 and 2030.

ExxonMobil has been seeking to progress oil and gas production

activities offshore Vietnam for several years, though with little success. Pre-FEED was competed on the Ca Voi Xanh field in 2018, but activities stalled ever since even though the field is though large enough to provide electricity for a city the size of Hanoi for more than 20 years.

Hanoi seeks to double power gen capacity by 2030

Vietnam's vibrant economy is facing severe energy shortages from 2021 as construction of new power plants cannot keep up with rising electricity demand. The government in Hanoi hence set out

guidelines to boost generating capacity from currently 54 GW to 125 GW by 2030.

The construction spree is meant to raise the share of renewable energy sources to nearly 20 percent by 2030, while reducing reliance on emission-intensive thermal fuels. Coal, in particular, currently accounts for 38 percent of Vietnam's installed power generation capacity.

Natural gas is meant to become one of the backbones of Vietnam's future electricity mix, with the government supporting initiatives to develop LNG regas to import up to 8 MMcm of gas per annum. ■

Tellurian's LNG supply accord with India's Petronet lapses

Tellurian Inc., the developer of the Driftwood LNG plant in Louisiana, has confirmed that a memorandum with Petronet LNG has lapsed. Though the MOU was not renewed when it expired at the end of May, Tellurian stressed, talks with the Indian company were continuing.

Tellurian's accord with Petronet, first signed in Houston in September 2019, covered a possible equity investment in the project of up to \$2.5 billion as well as 5 mtpa of supplies. It was seen as a landmark deal for Driftwood LNG to reach FID on the proposed 26 mtpa project on the west bank of the Calcasieu River.

However, the Petronet-Tellurian agreement suffered its first setback in February 2020 when it was announced that the informal agreement would become a formal transaction by the start of June 2020.

Driftwood LNG still has other supply agreements in place with Total and the global commodities trading house Vitol. As a principal investor, Total agreed to purchase 1 mtpa of LNG from Tellurian ventures and an additional 1.5 mtpa from Tellurian's offtake volumes from Driftwood.

Total's aggregate investment in the Tellurian portfolio will be around \$907 million once a FID will be taken, though this looks likely to be delayed. Construction for the Driftwood plant has already been contracted to Bechtel. ■





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Decline in US production may push up Henry Hub spot prices to over \$3/MMBtu in 2021

U.S. Energy Information Administration (EIA) expects a rebound in Henry Hub spot gas prices due to falling production in the Appalachian and Permian Shale, where low oil prices led to shut-ins of wells. Dry gas production is seen average 84.9 Bcf/d in 2021, pushing up Henry Hub prices to \$2.89/MMBtu. Rising demand in upcoming winter could push up prices back to \$3.08/MMBtu by early 2021.

In the Appalachian region, low natural gas prices are discouraging producers from engaging in natural gas-directed drilling, and in the Permian region, low oil prices reduce associated gas output from oil-directed wells. In 2021, forecast dry natural gas production averages 84.9 Bcf/d, rising in the second half of 2021 in response to higher prices.

Overall U.S. dry gas production reaches a record of 92.2 Bcf/d in last year, but is forecast to plunge to 89.8 Bcf/d in 2020 due to low oil prices, with monthly production falling from an estimated 93.1 Bcf/d in April to 85.4 Bcf/d in December.

On the demand side, the EIA expects total gas consumption will average 81.7 billion cubic feet per day

(Bcf/d) in 2020, down 3.9% from the 2019 average primarily because of lower manufacturing activity due to the coronavirus outbreak.

LNG will be forecast to average 5.8 Bcf/d in the second quarter and 4.8 Bcf/d in the third quarter of 2020. U.S. gas exports are declining through the end of the summer in reaction to lower global demand, with some LNG buyers having deferred or cancelled cargoes.

Heightened uncertainty

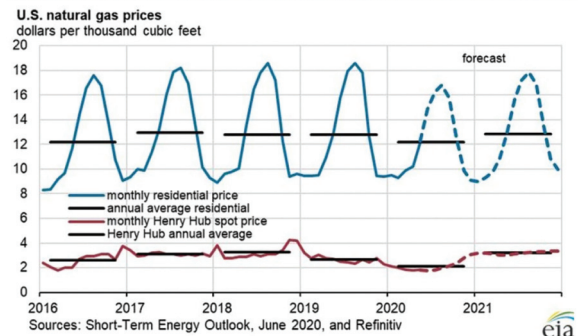
The EIA stressed its Short-Term Energy Outlook (STEO) remains subject to heightened levels of uncertainty because the effects on energy markets of mitigation efforts related to the COVID-19 outbreak are still evolving. Lock-

downs to contain the spread of the pandemic caused significant changes in energy supply and demand patterns.

Crude oil prices, in particular, have fallen significantly since the beginning of 2020, after demand fell off a cliff when most countries went on lockdown during March and April. Brent crude oil traded as low as \$18 per barrel in April, down from an average of \$64/b in 2019.

Analysts at the EIA said prices are likely to recover to an average

\$23/bbl during the second quarter of 2020, before increasing to \$32/bbl during the second half of the year. Global oil inventories fill up fast which puts upward pressure on prices, but much depends on whether reduced travel and fuel use will persist as some restrictions related Covid-19 remain in place.



Drilling rig in the Permian Basin

US refill season records three triple-digit injections as LNG exports slow

The 2020 US natural gas storage refill season (April 1 - October 31) has started out strong, exceeded 100 Bcf in four out of the past six weeks. "No other refill season recorded more than three triple-digit net injections at this point in time," analysts said, pointing to a slowdown in exports.

Strong gas production is outpacing consumption with the surplus being put in storage or exported. Currently, the Lower 48 states' cumulative net injections of natural gas exceed the five-year average by 16%, data by the U.S. Energy Infor-

mation Administration (EIA) shows.

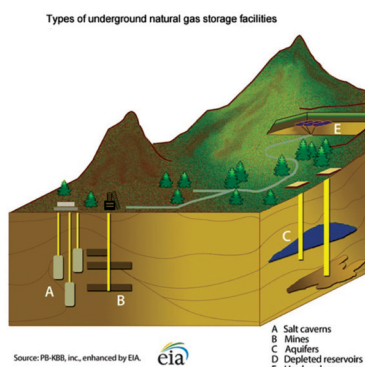
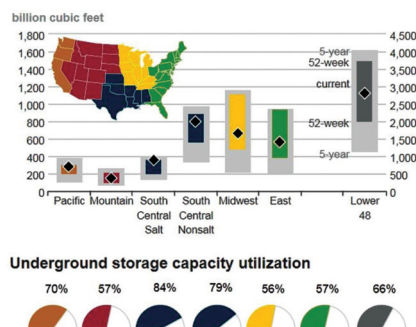
Net injections into working gas storage reached a record 102 billion cubic feet (Bcf) for the week ending May 29, and cumulative injections were as high as 709 Bcf by that date.

Pace might slow over the summer

The pace of storage injections might slow over the summer if gas production falls significantly after major upstream companies have slashed their capital spending and shut in some wells. Market observers will close watch the rig counts, the number of new well completions, and the availability of fracturing crews to estimate whether the drop in domestic supply will be enough to stabilize prices, considering the substantial drop in industrial gas demand due to the coronavirus crisis.

Summer temperatures in the main storage regions will also influence how much gas will be used by peaking power plants to meet the need for air conditioning. This amount, in turn, affects the amount of natural gas available for summer injections.

EIA data shows that this year, working gas stocks entered the refill season at a relatively high level following a warm 2019/20 winter heating season. Yet, total net injections for the Lower 48 states reported so far in 2020 are the third largest ever reported, going back to 1994, when working natural gas stocks exceeded 1,500 Bcf entering the refill season.



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Siemens strives to get SeaFloat onstream in Dominican Republic by early 2021

Though travel restrictions are still in place in the Dominican Republic to contain the coronavirus, Siemens is striving to deliver a barge-mounted power plant, based on SGT-800 gas turbine, on time and on budget. The 145 MW Estrella del Mar III is due to start operations by spring 2021.

Siemens claims the SeaFloat barge-mounted power plant will supply the Dominican Republic with electricity at a lower cost than a land-based fossil power plant. Installed on behalf Seaboard, an independent power producer (IPP), Estrella del Mar III will be moored offshore Santo Domingo.

Cheaper than land-based plant

Once operational in spring 2021, the floating power plant will provide the Dominican Republic with “a quality proven power plant at a lower cost in comparison to a similar land-based power plant,” the project partners stressed.

Due to site constraints with limited free land, the customer

selected a SCC-800 2x1 SeaFloat concept with two Siemens SGT-800 gas turbines and one SST-600 steam turbine. The turbine gensets are of single lift package design for floating applications, utilizing a frame-based design with a three-point mount. “This allows increasing the plant size in comparison to a land-based power plant,” Siemens underlined.

Turnkey ‘plug and play’ concept

Siemens will realize the project under a turnkey ‘plug and play’ concept, whereby the German OEM will design and build the 145 MW combined-cycle power plant.

Singapore-based ST Engineering will be responsible for the engi-



Render of a SGT-800 SeaFloat power plant with adjacent LNG tanker

neering design, procurement and construction (EPC) of the floating power barge, the balance of plant and the installation works. Fluence Energy, a JV company of Siemens and AES, will provide a 5MW/10 MWh battery that will be integrated in the power plant for frequency regulation control, allowing it to

operate at full capacity with highest fuel efficiency.

Siemens SeaFloat power plants are adaptable for various needs. While most market requests are for the SGT-800 gas turbine, further solutions are available based on the based on the SGT-A65 and SGT-8000H series. ■

Golar reaches COD acceptance for 1.5GW Sergipe Power plant in Brazil

Golar Power’s 1.5 GW Sergipe power project in Brazil has received Commercial Operation Date (COD) acceptance which triggers the start of earnings under a 25-year Power Purchase Agreement (PPA) and the associated charter for FSRU Golar Nanook. Combined pre-inflation revenue could amount to over \$1.8 billion.

COD on the Sergipe power plant will earn Golar approximately 6.9 billion Brazilian Reals, or \$1.3 billion, in pre-inflation adjusted revenue less operating costs over the next 25 years, the company said in its first quarter interim results. Acceptance of the charter for FSRU Golar Nanook will bring an additional \$549 million in revenue, less operating costs, over the same period.

“We expect Sergipe to take advantage of merchant power opportunities where the marginal cost of power exceeds the LNG purchase price, currently below \$2 per MMBtu

delivered ex-ship in Brazil,” said Golar LNG chief executive Ian Ross.

Short time-to-cash-flow

“The first three small-scale customers have now been formally signed up and LNG distribution operations are expected to start in 2021,” Ross said, stressing the Brazil FSRU and integrated power project is characterised by a “short time-to-cash-flow” and a “very strong project return.”

Going forward, Golar Power seeks to convert the small-scale letters of intent it has into binding

sales agreements over the course of this year, and sign new ones. To date, some 200 potential customers signalled interest to pursue various small-scale LNG opportunities, the Golar CEO disclosed, which demonstrates a “robust consumer appetite to reduce both energy costs and environmental footprints.”

FID on Barcarena FSRU expected in mid-2021

Financial close on a floating LNG import terminal in Barcarena is expected later this year or early next year, with the associated 605 MW power station meant to take a financial investment decision (FID) in mid-2021. The Golar LNG CEO said he expects to reach supply agreement with industrial customers over the next four months for gas offtake from the Barcarena-based FSRU, scheduled to start operations in 2022.

He also wants to finalize ar-

rangements for locating a Floating Storage Unit (FSU) at Suape over the course of the year.

Together Petrobras, Golar is working to overlay its geographical coverage of LNG distribution onto BR Distribuidora’s 7,600 Brazilian fuel stations. The aim is to create the necessary infrastructure to convert current diesel, heavy fuel oil and coal consumers to cleaner-burning gas through the provision of a stable and secure LNG supply.

Throughout Latin America, Golar Power is working to develop an additional 10.6 GW of gas-fired power plants to underpin the development of additional floating regas terminal, some of which are currently in the permitting process. All these FSRU projects have downstream monetization routes through a combination of power generation, gas consumption by industry and small-scale LNG distribution via cabotage and ISO containers to end users. ■





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Massachusetts looks beyond LNG, aims to phase out all fossil fuels

The public regulator in Massachusetts investigates whether the Boston Everett LNG import terminal might have to close, given that the U.S. northeastern state wants to phase out all fossil power stations. Burning imported LNG so far helps keep the lights on in Boston during the winter season.

Everett LNG, in operation since 1971, is used primarily to balance peak demand during the winter season, when gas consumption for heating is prioritized. The terminal feeds regasified LNG into two interstate gas pipelines and the Mystic Generating Station, deemed 'system-relevant' for regional energy supply security.

But the Attorney General Maura Healey argues Massachusetts needs make large cuts in its use of fossil fuels to meet the state's goal of

net-zero greenhouse-gas emissions by 2050.

"If the state's Department of Public Utilities opens the investigation, Massachusetts would become the third state to launch a formal process to phase out natural gas," Healey said in a statement. California and New York are already looking at how to best transition away from using gas for heating and use electrified systems, powered by renewables, instead.

Exelon mulls closing uneconomical gas power units

Gas-fired power generation is not always economical in New England. In fact, Exelon two years ago approached the U.S. Federal Energy Regulatory Commission (FERC) suggesting it would only keep its two large Mystic gas power blocks and the adjacent Everett LNG import facility operational between 2022 and 2024, if it gets permission to collect \$1 per month from all elec-

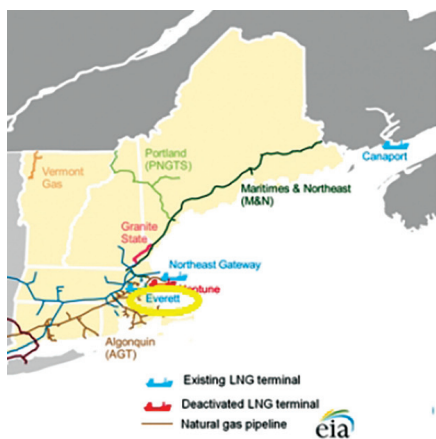
tricity customers in New England.

Estimating the future costs of operation, Exelon said at the time its annual fixed revenue requirement for the two plants totals nearly \$219 million in 2022-2023 and nearly \$187 million in 2023-2024.

Mystic is "system relevant", says ISO New England

Trying to put pressure on the regulator, Exelon had floated plans to retire Mystic's two gas power units at the end of May 2022 rather than continue to lose money. However, the regional power grid operator insisted it needed the 1,700 MW capacity of the two gas power blocks to keep the system in balance.

Pipeline constraints limit the amount of natural gas that can be transported to New England, hence ISO New England urged the regulator that Exelon needs to keep the Mystic plants running because it can rely on imported LNG. ■



Californian regulator terminates license for gas power project

The California Energy Commission has withdrawn the license for the Palmdale Energy Project, just north of Los Angeles, after the developer Palmdale Energy signaled it was unable to secure a customer for the gas-fired plant. Attitudes in California have changed as consumers favour carbon-neutral power generation over fossil fuels.

Some observers said the Palmdale Energy Project was the victim of fierce opposition from environmental and community groups. The Antelope Valley, where the power plant was to be built, already has a smog problem so residents filed a lawsuit challenging the EPA's reliance on fossil energy sources. Ultimately, the developer and the Palmdale City Council agreed to shelve the project.

Palmdale Energy, a subsidiary of Summit Power Group, had purchased the project in 2015. It was first proposed in 2001 to help reign in California's energy crisis and rolling blackouts at the time.

The city of Palmdale has spent some \$9.25 million on the project in recent years as the proposed power plant evolved from a 570 MW hybrid unit, based on gas and solar, to the most recent 645 MW gas-only power plant.

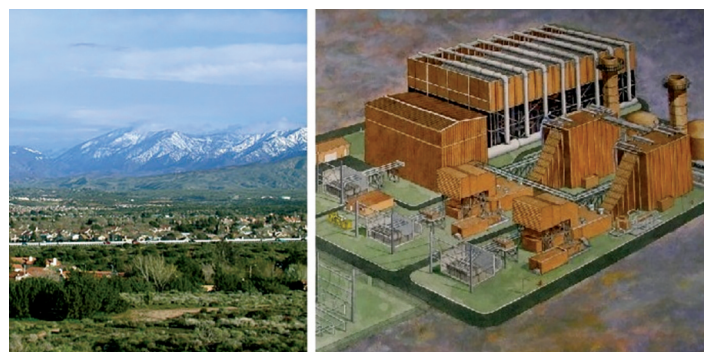
Renewables favours over fossil fuels

Over the course of ten years, Californian lawmakers developed a renewable portfolio standard that requires 60 percent of the state's electricity mix be renewable by 2030. Some 34 percent of California's energy mix was renewable last year, and energy storage is

also strongly on the rise as a balancing tool.

The Bill 2514 mandated the California Public Utilities Commission (CPUC) to adopt an energy

storage program and procurement target. As a result, the regulator set a target of 1,325 MW installed energy storage by then end of 2020. ■



Render and location of cancelled Palmdale Energy Project

US LNG May - June

LNG Journal

- May - June exports at 5.81mmt on 30th June
- Significant month-on-month drop of 1.41mmt (-39%) in June
- Total shipments down marginally over same two-month period last year
- Avg. US capacity utilisation at 62% for the two-month period

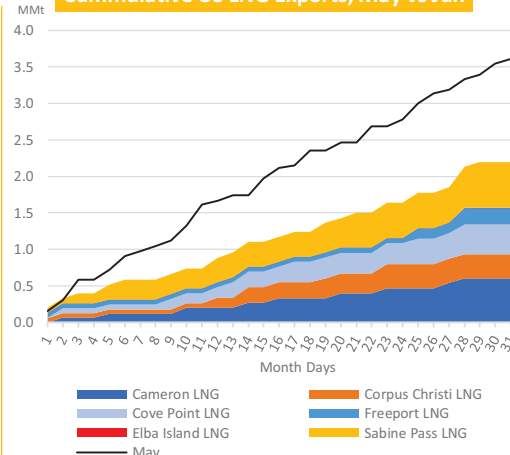
US LNG exports for the period covering May and June stood at 5.81mmt with a delivery horizon of 16 August at the time of writing. Meanwhile, average capacity utilisation for the period had retreated from 98% in March-April to just 62% for May-June. Accordingly, US LNG exports in May-June were down 3.25mmt (-36%) on their preceding period of March-April, pointing to numerous cargo cancellations. This also means total US LNG exports for the period fell slightly below their y/y levels, shipping 0.03mmt (-1%) less in May-June this year than in 2019.

The period decline was predominantly due to considerably lower performance in June as US LNG shipments retreated by 1.41mmt (-39%) m/m. This continues a pattern we have observed since the January-February period when shipments from January to February decreased by 0.54mmt (-11%). Although total volumes shipped would briefly expand again in March, the following m/m decrease in April was faster than in February at 0.61mmt (-12%). Since then, the m/m decrease had accelerated to the 1.41mmt seen in June. We submit that the shorter length of June vis-à-vis May was not a factor as at the time of writing our shipping data only indicated the potential for two additional exports if the month had been a day longer.

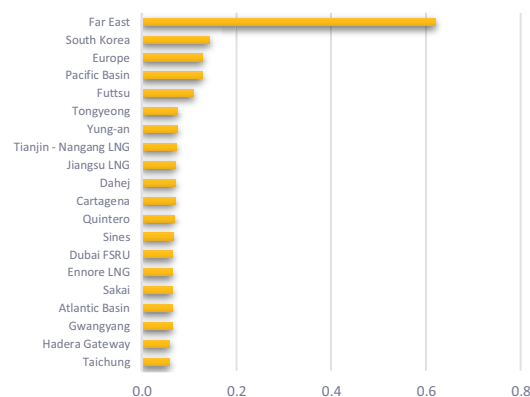
Several factors have converged in

subduing US LNG exports, in our view. Although Chinese LNG demand recovered considerably from its trough in February, US LNG exports could not continue to capitalise despite some initial gains. Whilst US LNG exports to China held steady in March and April at 0.37mmt, these shipments collapsed to just a single cargo of 0.07mmt in June. Notably, Northeast Asian LNG demand as whole has not expanded as usual in the run up to summer as anti-COVID-19 measures reduce economic activity, thereby effecting the scope for growing US sales to other Pacific demand centres. Meanwhile, Australia is arguably better positioned to serve any regional impromptu demand flareups, both in terms of shipping times and landed prices. Similarly, LNG exports to Mexico, the United Kingdom, Turkey and Chile vanished in June after already beginning to decline in April. Our data indicates that competing sources of supply, likely with different cost structures, managed to expand into an oversupplied market. For example, two thirds of market share of US LNG in Chile were claimed by Equatorial Guinea's EG LNG in June. The data suggests to us that fixed cost due to liquefaction fees and the absence of regular nearby offtakers (e.g. Mexico) increases the difficulty of shipping US LNG profitably. Concurrently, Europe's role as LNG sink diminished as storage remains full.

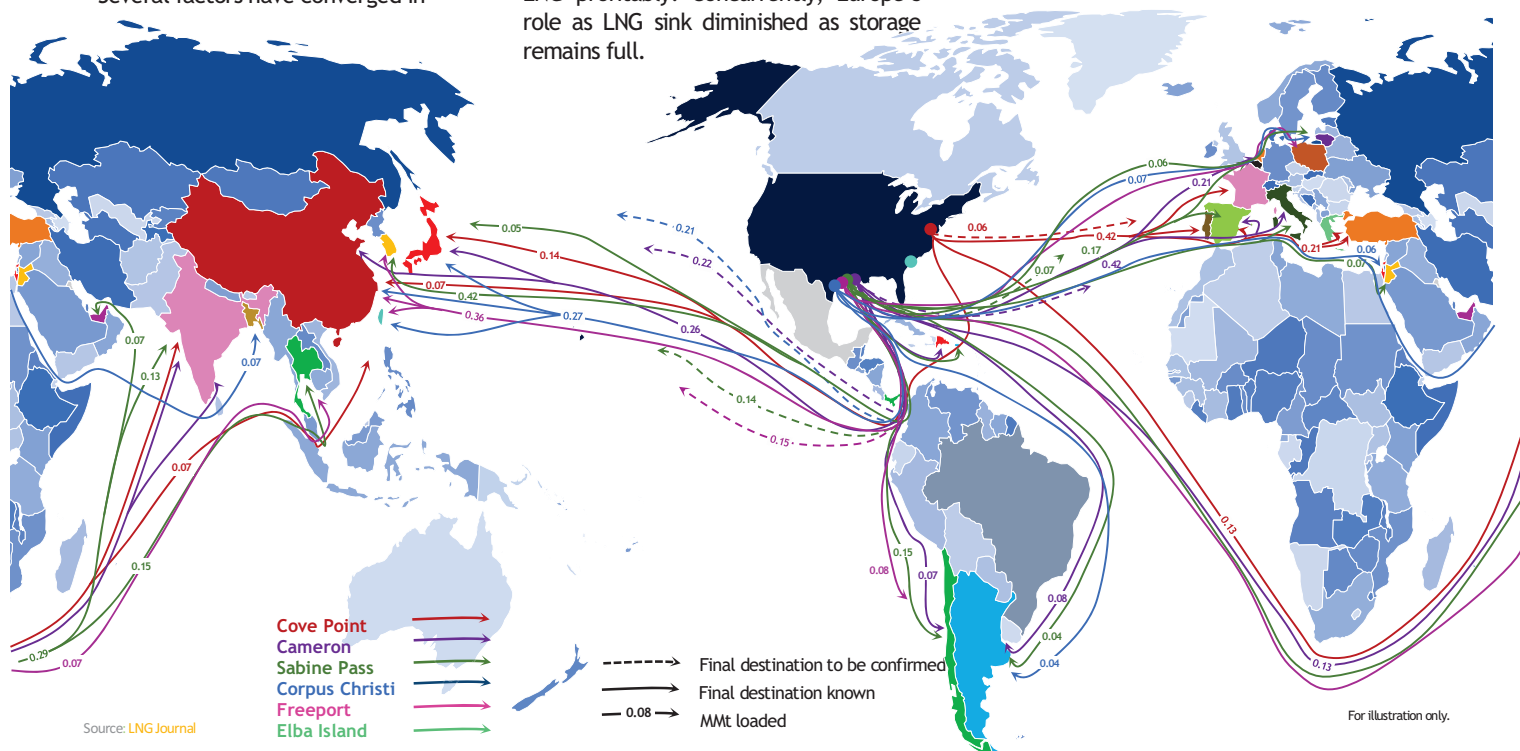
Cummulative US LNG Exports, May vs Jun



In-transit LNG w/ Closest Known Destination (mmt)



Source: LNG Journal



Source: LNG Journal

For illustration only.

US LNG Still in Transit

At the time of writing, 34 cargoes (2.15mmt) shipped since mid-May remain in transit, with 14 (0.92mmt) still lacking confirmed destinations within the Pacific and Atlantic Basins. We are currently expecting 15% (0.33mmt) of in-transit US LNG exported since mid-May to arrive at

destinations throughout the Atlantic Basin and Europe. At the same time, with only two shipments aboard the *BW Tulip* and the *Patris* earmarked for the Middle East, the Pacific Basin is expecting the remaining 83% (1.78mmt) of in-transit LNG, with 0.85mmt currently headed for the Far

East. Our LNG Market Tracker indicates there are two US LNG shipments still to arrive in China via the *Flex Ranger* and the *Energy Glory*. We are anticipating their arrivals between 7th and 15th July.

Previous Export Port	Vessel Name	IMO	Destination	Arrival	MMt*
Elba Island LNG	–	–	–	–	–
Cove Point LNG	LNG Sakura	9774135	Sakai	01/07/2020	0.06
	Energy Glory	9752565	Jiangsu LNG	15/07/2020	0.07
	Energy Liberty	9736092	Sines	25/07/2020	0.07
	Exemplar	9444649	Europe	18/07/2020	0.06
Cameron LNG	Meridian Spirit	9369904	Dahej	14/07/2020	0.07
	Energy Universe	9758844	Cartagena	12/07/2020	0.07
	British Achiever	9766542	Far East	05/07/2020	0.04
	Marvel Kite	9760782	Far East	16/08/2020	0.08
Freeport LNG	Neo Energy	9324277	Pacific Basin	05/07/2020	0.06
	Diamond Gas Orchid	9779226	Futtsu	10/08/2020	0.06
	Palu LNG	9636735	Quintero	16/07/2020	0.07
	SK Resolute	9693173	Far East	10/07/2020	0.08
Corpus Christi LNG	Diamond Gas Rose	9779238	Futtsu	22/07/2020	0.05
	Kita LNG	9636723	Atlantic Basin	18/07/2020	0.06
	Trinity Glory	9350927	Ennore LNG	14/07/2020	0.06
	Flex Rainbow	9709037	Far East	29/07/2020	0.07
Sabine Pass LNG	Sohshu Maru	9791212	Yung-an	09/07/2020	0.08
	LNG Juno	9774628	Far East	03/08/2020	0.08
	Adriano Knutsen	9831220	Far East	10/07/2020	0.08
	Flex Ranger	9709025	Tianjin - Nangang LNG	07/07/2020	0.07
Grand Total	Patris	9766889	Hadera Gateway	12/07/2020	0.06
	Arwa Spirit	9339260	Far East	19/07/2020	0.05
	Iberica Knutsen	9326603	Taichung	07/07/2020	0.06
	Hoegh Galleon	9820013	Far East	09/07/2020	0.07
Grand Total	Maran Gas Andros	9810379	Japan	03/07/2020	0.00
	BW Tulip	9758064	Dubai FSRU	01/07/2020	0.06
	Gaslog Salem	9638915	Gwangyang	09/07/2020	0.06
	LNG Jurojin	9666998	Yokkaichi	01/07/2020	0.00
Grand Total	Castillo de Santisteban	9433717	Far East	05/07/2020	0.07
	Cool Runner	9636797	Europe	06/07/2020	0.07
	K. Mugungwha	9373010	South Korea	26/07/2020	0.07
	SM Eagle	9761827	Tongyeong	22/07/2020	0.08
Grand Total	SM Seahawk	9761839	South Korea	28/07/2020	0.08
	Hyundai Ecopia	9372999	Pacific Basin	02/07/2020	0.06
Grand Total	34				2.15

*Values are based on journey time to date in accordance with draught at departure and in-transit BOR. Eventual journey times will thus affect the amounts delivered.

Source: LNG Journal

Monthly US LNG Exports (MMt) as of 30th June

Elba Island LNG

We still have not seen another Elba Island LNG export since January. The plant remains nominally under construction, having received FERC authorisation to start feeding gas into its sixth modular liquefaction unit on 20th April. The completion process had a temporary setback due to a fire in mid-May, though construction has resumed since.

Cameron LNG

Cameron LNG exports were significantly higher in May than in June, amounting to 0.72mmt compared to 0.60mmt. Over the past two months, 0.43mmt (33%) were destined for the Pacific in general whilst an additional 0.26mmt (20%) were shipped to the Far East. Plant utilisation in May stood at 107% whilst by end-June it fell by 17pp m/m to 90%. We are currently expecting the *Point Fortin* to load a cargo with departure on 1st July.

Cove Point LNG

Cove Point LNG was the only US LNG plant which managed to increase month-on-month output in June. The facility had shipped 0.80mmt since the beginning of May at the time of writing, with the majority (0.36mmt, 45%) destined for South Europe, followed by 0.25mmt (31%) for the Far East. Meanwhile, monthly plant utilisation increased by 5pp to 94% in June over the 89% seen in May. However, we are not expecting another cargo loading before the end of the month.

Freeport LNG

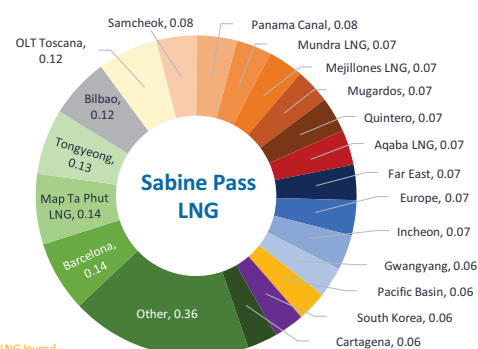
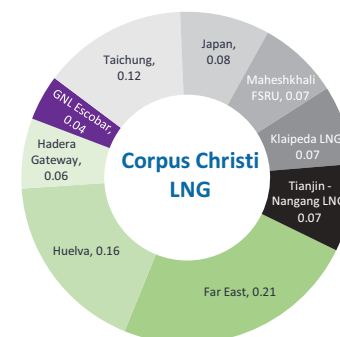
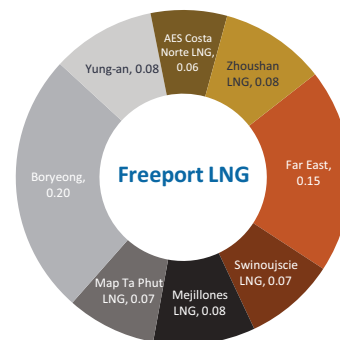
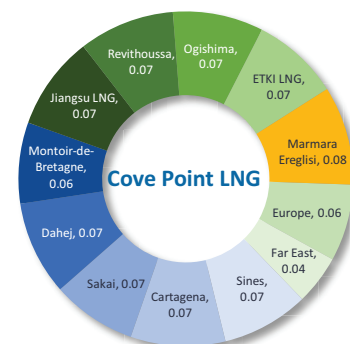
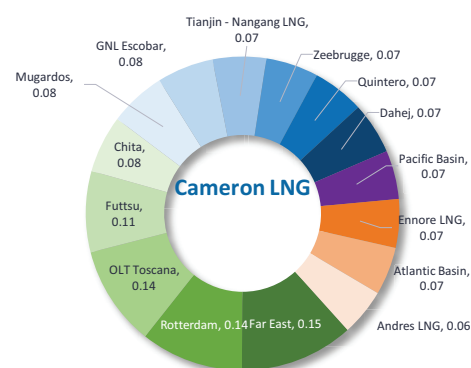
Freeport LNG has slashed exports since March, with utilisation declining from 75% at the beginning of May to just 31% in June. Accordingly, export volumes declined from 0.55mmt in May to just 0.22mmt in June. Freeport LNG saw the majority (0.51mt, 65%) of its LNG being shipped to destinations in the Far East, followed by 0.14mmt (19%) to other Pacific destinations. At the time of writing, our market visibility did not indicate another departure before the end of the first week of July.

Corpus Christi LNG

In line with most of its fellow exporting plants, the facility in Texas saw utilisation retreat from 72% May on exports of 0.54mmt to just 44% in June, when shipments had tumbled by 0.21mmt to 0.33mmt. Notably, most of Corpus Christi supply is usually shipped to destinations in Europe and the Atlantic Basin, but this changed in May-June. In total, 0.48mmt (55%) were shipped to the Far East, whilst only 0.22mmt (25%) found their way to Europe. At the time of writing our LNG Market Tracker showed the Gaslog Warsaw had begun loading a cargo, with the possibility of increasing the plant's June exports to around 0.40mmt.

Sabine Pass LNG

Sabine Pass LNG's exports stood at just 0.63mmt in June, thus representing drastically lower monthly output by 0.78mmt compared to the 1.41mmt seen in April. Capacity utilisation over the past two months has thus collapsed, averaging just 52% since the beginning of May compared to full utilisation for March-April. Sabine Pass's exports to the Far East and Southeast Asia, which grew consistently until April, have fallen back to roughly February levels of 0.78mmt for the period of May-June. As of the time of writing, we are expecting the *Maran Gas Psara* to be lifting the next cargo from the plant, potentially increasing June exports by 0.07mt.



Source: LNG Journal

US LNG Exports Past and Present (MMt)

To Country	2019							2020						Grand Total
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
South Korea	0.38	0.64	0.40	0.14	0.91	0.50	0.76	0.84	0.27	0.59	0.50	0.33	0.28	6.53
Japan	0.29	0.34	0.35	0.52	0.50	0.36	0.50	0.57	0.43	0.41	0.37	0.22	0.18	5.04
Spain	0.28	0.08	0.34	0.71	0.25	0.40	0.26	0.51	0.36	0.45	0.47	0.63	0.07	4.81
United Kingdom	-	-	0.01	0.07	0.46	0.85	0.56	0.69	0.57	0.42	-	-	-	3.63
France	-	-	0.07	0.12	0.28	0.47	0.32	0.11	0.41	0.46	0.31	0.06	-	2.61
Chile	0.37	0.18	0.12	0.19	0.14	0.08	0.14	0.09	0.22	0.08	0.28	0.23	0.07	2.18
Turkey	-	-	-	-	0.07	0.15	0.05	0.70	0.49	0.12	0.36	0.14	-	2.09
India	0.07	0.07	0.15	0.28	0.17	0.13	0.14	0.07	-	0.36	0.36	0.14	0.14	2.08
Mexico	0.34	0.49	0.25	0.20	0.14	0.06	0.20	0.14	0.07	0.15	-	-	-	2.03
Netherlands	0.06	0.07	-	0.07	0.13	0.21	0.34	0.12	0.30	0.28	0.20	0.14	-	1.92
Italy	0.07	0.19	0.11	0.07	-	0.13	0.26	0.13	0.33	0.21	0.07	0.12	0.14	1.83
Brazil	0.23	0.12	0.22	0.15	0.06	0.07	-	0.17	0.21	0.14	-	-	-	1.39
Portugal	0.14	0.13	0.14	0.05	0.08	-	0.08	0.07	0.11	-	0.22	-	0.07	1.07
China	-	-	-	-	-	-	-	-	-	0.37	0.37	0.23	0.07	1.03
Taiwan	-	-	0.15	-	0.07	0.07	0.07	0.19	0.14	0.12	-	0.14	0.06	1.01
Poland	-	0.07	0.07	-	0.07	0.07	0.13	0.05	0.12	0.07	0.08	0.13	-	0.88
Belgium	-	-	-	0.07	-	0.06	0.12	0.11	0.20	0.08	0.06	0.11	-	0.82
Pacific Basin	-	-	-	-	-	-	-	-	-	-	-	0.18	0.58	0.76
Argentina	0.22	0.32	-	-	-	-	-	-	-	-	-	0.15	-	0.70
Greece	-	-	-	-	-	-	0.12	0.21	-	0.19	0.07	-	0.07	0.66
Pakistan	-	0.08	-	0.12	0.08	0.07	0.06	0.06	0.07	-	0.07	-	-	0.60
Do. Republic	0.06	-	-	0.09	0.06	0.07	0.02	0.01	-	0.08	0.08	0.06	-	0.53
Singapore	0.06	0.07	-	-	0.05	-	0.05	-	-	0.22	0.06	-	-	0.51
Thailand	-	-	-	0.05	-	-	-	-	-	0.08	0.15	0.22	-	0.50
Jordan	0.14	0.08	0.07	0.07	-	-	-	-	-	-	-	0.07	-	0.43
Jamaica	-	0.01	0.12	-	-	-	0.02	-	0.05	-	0.13	0.05	-	0.39
UAE	0.07	0.07	0.06	0.07	-	-	-	-	-	-	-	-	0.07	0.33
Lithuania	-	-	-	-	-	-	0.07	-	-	-	0.06	0.07	0.06	0.26
Panama	0.07	-	-	-	-	0.01	-	0.01	0.07	0.01	-	0.06	-	0.22
Bangladesh	-	-	-	-	-	-	0.07	0.07	-	-	-	0.07	-	0.21
Kuwait	-	0.07	0.07	-	-	-	-	-	-	-	0.07	-	-	0.21
Atlantic Basin	-	-	-	-	-	-	-	-	-	-	-	-	0.20	0.20
TBC	-	-	-	-	-	-	-	-	-	-	-	0.05	0.08	0.13
Israel	-	-	-	-	-	-	-	-	-	0.06	-	-	0.06	0.12
Colombia	-	-	0.06	-	-	-	-	0.03	0.01	-	-	-	-	0.10
Malaysia	-	-	-	-	-	0.07	-	-	-	-	-	-	-	0.07
Malta	-	-	-	-	-	-	-	0.03	-	-	-	-	-	0.03
Puerto Rico	-	-	-	0.01	-	-	-	-	-	-	-	-	-	0.01
Grand Total	2.88	3.05	2.75	3.05	3.52	3.84	4.35	4.98	4.43	4.94	4.33	3.61	2.20	47.92

Source: LNG Journal

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