

LNG Unlimited

LNG JOURNAL PUBLICATION

2 October 2018

Egyptians opt for Israeli supplies for domestic gas boost and LNG

US company Noble seals infrastructure accords for East Mediterranean with Mideast partners

LNG Journal editor

Noble Energy, the US company with natural gas assets in the East Mediterranean offshore Israel, said it had executed multiple infrastructure agreements to support delivery of natural gas from the Israeli Leviathan and Tamar fields to Egypt.

Noble said the accords were significant steps forward in supplying natural gas from the world-class Tamar and Leviathan fields to regional customers through existing infrastructure.

Prolific fields

The US company's partners in the Tamar and Leviathan fields are subsidiaries of Israel's Delek Group. The Leviathan field has around 22 trillion cubic feet of reserves and the Tamar field has 11.25 Tcf of resources in place.

Noble operates the Leviathan and Tamar fields with just under a 40 percent holding. Tamar has been on stream since 2013 and supplies Israel and customers in Jordan, while the Leviathan field is scheduled to come on stream in 2019.

"The agreements represent another major milestone toward Egypt's goal to become a regional energy hub, providing access to both growing domestic markets and existing LNG export facilities," said J. Keith Elliott, Noble Energy's Senior Vice President for Offshore activities.

Egypt has two LNG export plants and both were closed until recently because of a lack of domestic feed-gas.



Pipeline to reopen from Ashkelon in Israel to El Arish in Egypt

They are the Idku liquefaction plant, where Royal Dutch Shell has already restarted limited exports, and the Damietta facility of Union Fenosa Gas, which is a stakeholder company shared between Italian oil and gas company Eni and Spain's Naturgy Energy Group.

Noble said that its agreements would secure capacity to deliver natural gas to Egyptian company Dolphinus from the Leviathan field while also allowing for interruptible sales from Tamar into Egypt.

Noble said it was acquiring an effective 39 percent equity interest with Middle East partners in the Eastern Mediterranean Gas Company (EMG), which owns the EMG pipeline.

The EMG Pipeline is 90 kilometres in length and is located primarily offshore, connecting the Israel pipeline network from Ashkelon to the Egyptian pipeline network near El Arish.

"Noble will own an effective, indirect interest in the pipeline of approximately 10 percent," said the US company.

"In addition, and upon closing of the transaction, Noble and its partners will enter into an agree-

ment to operate the pipeline and secure access to the pipeline's full capacity," explained Noble.

"Technical evaluation and flow reversal planning work on the EMG Pipeline is ongoing," said Noble.

"Key conditions required prior to closing the agreements include gaining necessary regulatory and government approvals, obtaining technical third-party recertification of the EMG Pipeline, completing final transaction due diligence and confirming sustained gas flow," stated Noble.

The US company estimated pipeline acquisition costs at around \$200 million. The closing of all transactions for the Israel-Egypt gas supply agreements are in early 2019.

Initial natural gas delivery through the EMG Pipeline is expected to occur from the Tamar field to Dolphinus in Egypt, under the company's existing Tamar sales agreement.

"At start-up of the Leviathan field by the end of 2019, the company anticipates selling at least 350 million cubic feet of natural gas per day to contracted customers in Egypt," said Noble.

UNLIMITED AGENDA

PROJECTS

Pembina raises Canadian project profile in pursuing Jordan Cove LNG

2

PIPELINES

US firm secures its cross-border pipeline feed-gas for Mexico plant

3

TERMINALS

Fluxys boosts LNG traffic from Russia shipments and loads will rise in 2019

5



ARBITRAGE

French major Total aims for expansion of volumes and arbitrage activity

6

CORPORATE

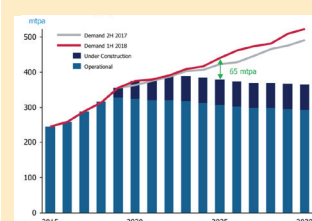
US LNG pioneer T. Boone Pickens given honorary Clean Energy place

7

EXPORTS

Santos proposes to meet its portion of forecast supply gap after 2020

8



Pembina Pipeline boosts Canadian projects and forecasts will underpin Jordan Cove LNG progress

LNG Journal editor

Pembina Pipeline Corp., the Canadian owner of the Jordan Cove LNG export project in the US northwest state of Oregon, said it would be developing additional pipeline and terminal infrastructure in the provinces of Alberta and British Columbia while pursuing the US liquefaction venture.

Pembina gave an operational update as it adjusted its gross earnings forecast for 2018 to between \$2.75 billion to \$2.85Bln.

"Pembina's base business is performing well," said Scott Burrows, Senior Vice President and Chief Financial Officer and whose company took over Jordan Cove LNG when it acquired Canadian company Veresen Inc. in 2017.

Strength

"We are seeing increased throughput on our conventional pipelines and fractionators, strong results from the assets acquired previously from Veresen and higher marketing revenues due to widening frac spreads," said Burrows.

Pembina said in its operations update that it continued to experience strong demand for

transportation services across the liquids-rich areas of the Western Canada Sedimentary Basin.

Since sanctioning the Phase VI expansion earlier in 2018, Pembina has continued to add long-term firm service commitments on the Peace and Northern Pipeline systems.

"Our strategic position in the liquids-rich areas of the Alberta and BC Montney continues to provide opportunities for us to expand," stated John de la Mare, Vice President of Conventional Pipelines.

"Pembina's staged approach to the expansion of the Peace pipeline provides timely and reliable transportation service to meet our customers' specific needs.

"As a result, we have continued to increase long-term volumes under commitment since the Phase III expansion of Peace went into service last year," added De la Mare.

Pembina's northeast BC pipeline was placed into service in October 2017 and serves to connect liquids volumes from the northeast BC Montney shale basin for transportation into the Edmonton area via Pembina's downstream systems, namely the Plateau, Pouce Coupe and Peace pipelines.



Location of proposed LNG facility at Coos Bay in Oregon

That's as US congressmen from the western US states of Colorado and Utah have voiced support for Jordan Cove LNG as an outlet to Asia for Rocky Mountain region natural gas and huge shale-gas resources from the Piceance Basin.

Jordan Cove is described by Pembina as one of its "value chain extension projects" to be sited at Coos Bay in Oregon and comprising five small-scale liquefaction Trains each with 1.5 million tonnes per annum of output for a total of 7.8 MTPA.

It will also include two full-containment LNG storage tanks with a total storage capacity of 320,000 cubic metres, gas treating facilities, an export terminal and access to more than 25 billion cubic feet per day of gas supply from Western Canada and the US Rockies.

The FERC published a Notice of

Schedule at the start of September 2018 for Jordan Cove as well as 11 other US LNG export ventures.

For Pembina's Jordan Cove project, the notice outlined an anticipated publication date of the Draft Environmental Impact statement in February 2019, with a decision on the Final Environmental Impact Statement in November 2019.

The new schedule reflected FERC's efforts in recent months to streamline its review process for LNG project applications.

Pembina's venture had previously been rejected by the FERC because of a perceived lack of market interest.

However, Jordan Cove confirmed in May 2018 that it had signed preliminary accords with Jera Co Inc. and Itochu Corp. of Japan to supply LNG. It first filed with FERC in September 2017. ■

LNG Canada project of Shell and Asian partners is on track to move forward in fourth quarter

LNG Canada, the project in British Columbia led by Royal Dutch Shell, is still on track to move forward in the fourth quarter of 2018 as the nation's energy sector struggles in the wake of the booming US energy business.

"The overall conditions for LNG Canada to go ahead in 2018 are quite good," said Andy Calitz, Chief Executive of the joint venture.

"That is, and feels, so very different to 2016 when the project was delayed," added Calitz.

Shell and its four partners, Mitsubishi Corp., Malaysian

energy company Petronas, Chinese major PetroChina and Korea Gas Corp., are scheduled to decide by the end of the year whether to construct the plant.

This is dependent on positive support for the multi-billion venture rather than blocking tactics from the provincial government of British Columbia and the federal authorities in Ottawa.

The final decision to proceed was postponed twice in 2016 because of a toughening regulatory environment for energy projects in Canada and the economics of constructing the liquefaction plant

and associated facilities weighed down by costly conditions.

The liquefaction plant is to be constructed at a brownfield site near the town of Kitimat that had been an energy products terminal before being acquired by Shell in October 2011.

The plant is expected to cost around US\$11Bln using modular construction methods.

Additional costs of up to US\$20Bln will include feed-gas supplies for TransCanada's multibillion-dollar Coastal GasLink, pipelines and other facilities, taking total costs to just over US\$30Bln. ■

LNG Canada already holds a 40-year export licence from the Canadian National Energy Board for exports of domestic gas overseas, though further final permits are required, including a go-ahead notice from the federal government.

The Shell-led project is working closely with the Haisla First Nation whose traditional lands are in the Kitimat coastal region.

At the end of May 2018 the LNG Canada project also announced a deal to bring Malaysian energy company Petronas into the project. ■

UK import venture has extension for US tolling deal

LNG Ltd, the developer of two North American LNG export projects, said it had extended the financial closing date for an offtake agreement with Meridian LNG Holdings Corp., the owner of an import venture proposed for offshore Cumbria in northwest England.

The developer, with fully approved plans to build the Magnolia LNG plant at Lake Charles in the US state of Louisiana and at Point Tupper in Richmond County in the Canadian Atlantic Coast province of Nova Scotia, said the Meridian binding offtake agreement would now run until December 31, 2018.

"This three-month extension allows both parties to maintain commercial flexibility," said LNG Ltd., a company based in Perth, Western Australia, and listed on the Australian Securities Exchange.

"All other provisions of the governing agreements not specifically amended by this extension remain in full force and effect," it added.

LNG's agreement with Meridian LNG was first signed in July 2015 and included firm capacity rights at the US Magnolia plant for up to 2 million tonnes per annum of LNG for an initial term of 20 years with an option to extend by a further five years.

The Meridian LNG project in the UK was formed by the Canadian equity fund West Face Capital that had merged with Liberty Natural Gas of the US.

The UK LNG facility if it proceeds would be offshore the Port of Barrow, currently owned and operated by Associated British Ports.

Meridian has been assembling strategic assets in recent years to develop a business in the global gas value chain.

In addition to its liquefaction tolling agreement with the Magnolia project, it has a gas sales agreement with German utility and energy company Uniper.

US firm secures its cross-border pipeline feed-gas for Mexico plant

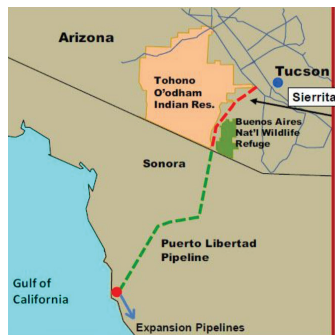
LNG Journal editor

US pipeline natural gas supplies for Mexico have been approved by regulators to provide feed-gas for the US company Mexico Pacific Ltd to export LNG to Asia and other regions from a liquefaction plant proposed for the Mexican state of Sonora.

The US Department of Energy's Office of Fossil Energy approved MPL's application to export 1.7 billion cubic feet per day via existing cross-border natural gas pipelines.

Arizona

The pipelines include the Kinder Morgan Sierrita Gas Pipeline, which extends to the US-Mexico border near Sasabe in Arizona and would inter-connect with the planned



Suppliers include Kinder Morgan's Sierrita Pipeline

LNG plant with 12 million tonnes per annum of capacity.

The US feed-gas export permit is for 20 years and the project plans for construction to start by early 2020 and to be on stream by 2023.

From MPL's facility, which would be sited on the shore of the Gulf of California adjacent to the Mexican port of Puerto Libertad, the LNG could be delivered to other markets in Mexico or to nations with a Free Trade Agreement with the US.

It would be adjacent to the Sonora Pipeline of US Sempra Energy's Mexican subsidiary, Infraestructura Energetica Nova (IEnova).

In its application to the DOE, the US developers identified other export pipelines through which gas may be transported to the IEnova pipeline, including the Comanche Trail, Roadrunner and Trans-Pecos intrastate pipelines in West Texas.

The MPL venture is backed by a US equity fund and has already awarded preliminary engineering work to the Franco-US energy and LNG project company TechnipFMC.

The Puerto Libertad project site is contained within 1,100 coastal acres and the harbour depths are in excess of 20 metres and capable of accommodating the largest LNG carriers.

MPL said TechnipFMC would provide project management and construction support to help the joint venture construct its plant and to make progress to a final investment decision in the second half of 2019.

With offices in Houston, Texas, MPL is a venture comprising DKRW Energy Sonora Holdings and Aecom Capital, a New York-based equity fund that invests in energy and infrastructure projects.

MPL has additional Mexican regulatory permits for 12 MTPA of output and proposes the initial construction of up to four mid-scale modular processing Trains, each with 1 MTPA of output.

MPL President Josh Loftus formerly worked with global accountants and consultants Ernst & Young where he was a business development manager in the energy sector in Houston.

He previously held several senior roles with the General Electric Company, including at GE Oil & Gas.

Loftus received a BA in economics and business administration from the University of Missouri and an MBA from the University of Notre Dame in Indiana.

Dominion's Cove Point off line until mid-October and as it sells plants

Dominion Energy has begun a scheduled three-week maintenance at the Cove Point liquefied natural gas export plant, leaving Sabine Pass as the only US LNG cargo exporter through mid-October 2018, as it also sold three power plants in the US Northeast and Louisiana.

"The Dominion Energy Cove Point LNG terminal has begun a scheduled maintenance and inspection outage. The outage is scheduled to last about three weeks," said the company.

"One of the initial actions is to depressurize systems and equipment used to produce liquefied

natural gas, in preparation for servicing them. Inert nitrogen gas is used to purge the systems and equipment of hydrocarbon gases and make them safe to service," it explained.

"The flaring process is carefully monitored and the site gas detection systems are functioning normally to protect the safety and health of the public and the employees," added Dominion.

Cove Point began commercial operations in April 2018 and the facility has a nameplate capacity of 5.25 million tonnes per annum of LNG from a single Train.

The Cove Point plant is relatively

small in comparison to Cheniere Energy's Sabine Pass plant where 18 MTPA of LNG is being produced from four Trains and where two more Trains are being constructed.

The liquefaction plant is producing LNG for a Japanese joint venture comprising Sumitomo Corp. and Tokyo Gas as well as a second customer, Gas Authority of India.

The Asian companies have signed 20-year tolling contracts with Dominion.

The maintenance at Cove Point came as Dominion sold its interests in three US power plants for \$1.32 billion.

Powering the Energy Future through LNG



Where no natural gas pipeline exists Chart offers complete solutions for LNG as a primary fuel for power generation, or as a secondary fuel where natural gas pipeline capacity is constrained.

- Diesel, propane, LPG and oil displacement
- Remote locations and islands
- Peak shaving
- Emergency back-up and curtailment
- Temporary power generation

Email: LNG@ChartIndustries.com

www.ChartLNG.com



Innovation. Experience. Performance.®

NEWS NUDGES

Train 4 plan for Qatar

Qatar Petroleum said its decision first made last year to increase production capacity at the Ras Laffan complex from the current 77 million tonnes per annum would now include a fourth liquefaction Train to take total output to 110 MTPA, an increase of 43 percent. "Qatar Petroleum has embarked on a project to develop additional gas from the North Field and build three new LNG mega-trains. Based on the good results obtained through recent additional appraisal and testing, we have decided to add a fourth LNG mega-train and include it in the ongoing front-end engineering of the project," said Qatar Petroleum President and Chief Executive, Saad Sherida Al-Kaabi. "When the project is completed and all four new trains are online, Qatar's LNG production capacity will reach 110 MTPA. This will increase Qatar's total production capacity from 4.8 to 6.2 million barrels of oil equivalent per day," added Al-Kaabi.

Equinor in Aker pact

Equinor, the Norwegian energy major and European LNG export plant operator, has signed a strategic global collaboration agreement with engineering company Aker Solutions to ensure mutual and continuous improvement on current and future subsea projects within the domains of quality, technology, execution and cost. "Aker Solutions and Equinor's ongoing collaboration has consistently generated mutually beneficial technology developments, working process simplifications and standardizations," said Luis Araujo, Chief Executive of Aker.

Fluxys LNG boosts traffic from Russia shipments and loads set to rise in 2019

Fluxys Belgium, the natural gas infrastructure company and operator of the Zeebrugge LNG import terminal, posted a first-half profits rise as shipping activity rose, including more carriers arriving for the trans-shipment of cargoes from the Yamal export plant in Russia.

Zeebrugge rolled out its new service for direct LNG trans-shipments between two vessels in May 2018 and activity increased beyond the first half to July and into August, a record month for the terminal in terms of ship traffic.

Volumes

"Ship traffic for the terminal of large volumes of LNG rose during the first half compared to the same period in 2017," said Fluxys.

The improved performances of the Fluxys LNG terminal and its natural gas network were outlined in first-half earnings.

The regulated turnover of Fluxys Belgium for the first half of 2018 amounted to 250.1 million euros (\$293.8M), little changed from the revenue posted in the same period of 2017 when it was 250.7M euros.

First-half net profits rose 6 percent to 24.3M euros com-



Zeebrugge transfer between Ice-class carrier and convention vessel

pared with 22.9M euros in the first six months of 2017.

As Russia's Yamal LNG export plant has been ramped-up since it started operations at the end of 2017, more shipments have been pointed at Zeebrugge and other European terminals.

The first Yamal-Zeebrugge ship-to-ship transfer took place in the first half between the Ice-class LNG carrier "Eduard Toll" and the conventional Russian LNG vessel "Pskov".

The Zeebrugge terminal and the Russian marketing company, Yamal Trade, have signed a 20-year agreement for the trans-shipments, which will gather pace as all three processing Trains enter production at the Yamal plant in 2019

and a fifth LNG storage tank is commissioned at Zeebrugge.

Zeebrugge also has 140 additional annual berthing rights on offer for direct ship-to-ship transfers.

"The berthing rights are available at a competitive price on a first come, first served basis," said terminal owner Fluxys.

In addition to the terminal services for large LNG volumes from Russia and elsewhere, Zeebrugge also offers a range of services associated with the emerging small-scale LNG market.

"The number of operations involving the loading of small LNG carriers and LNG trailers remained stable compared to the first half of 2017," said Fluxys.

Norwegian natural gas deliveries to Europe head for record volumes

Gassco, the Norwegian natural gas pipeline operator and one of the main competitors to LNG, hit a record for summer season deliveries to Europe and will soon be opening its new Polarled pipeline to carry even more volumes from the Norwegian Continental Shelf.

Gassco exported 36.8 billion cubic metres from May through August, a small increase from the same period of 2017, which was a record year for gas exports.

"The basis for these high deliveries is European and British demand for Norwegian gas as a secure and reliable energy source," said Gassco Chief Executive Frode Leversund.

"Not only has Norway's Continental Shelf delivered larger volumes than before, but the transport system has also handled these increased quantities well," added Leversund.

The Norwegian company said more gas was usually exported in the winter months, when demand for heating increases, but this summer's sales have almost matched the normal winter level.

Gassco transported 117.4 Bcm through the pipeline systems from Norway to continental Europe and the UK during 2017.

This was the highest volume sold in 40 years of Norwegian gas exports, and nine times Norway's

annual hydropower output.

The pipeline gas supplies from Norway last year were the equivalent of 87 million tonnes of LNG, which combines the most recent annual LNG output of Qatar and that of Algeria. Both nations supply large LNG volumes to Western Europe.

The Norwegian deliveries compare favourably in terms of energy security with the more than 180 Bcm shipped by pipeline to Western Europe by Russia's Gazprom.

Gassco also expects to receive the first gas through its new 482-kilometres Polarled pipeline later in 2018.

French major Total aims for more LNG expansion and arbitrage activities because of Asian demand

LNG Journal editor

French energy major Total, with stakes in LNG liquefaction plants and projects in Australia, Russia and the US said it envisaged Atlantic Basin expansions at Cameron LNG in Louisiana and in Nigeria as well as new joint ventures elsewhere.

Total said its LNG expansion plans were supported by natural gas and oil field joint ventures in regions such as Algeria, Argentina and the North Sea.

Ramp-up

The company said that on the LNG front it was ramping up 20 million tonnes per annum of capacity at the Ichthys LNG joint venture with Japan's Inpex Corp. in Australia and at Yamal LNG in Siberia at its venture with Russia's Novatek.

Its global portfolio now amounted to 40 MTPA underpinned by formidable shipping and trading assets. The company additionally has 20 MTPA of regasification capacity.

The Total operational updates came at presentations to investors in New York, led by Total Chairman

and Chief Executive Patrick Pouyanne and Chief Financial Officer Patrick de La Chevadiere, as well as a team of other executives.

"We are building a responsible energy company on core strengths and growing markets," said CEO Pouyanne.

"We are integrating climate into strategy and taking into account all anticipated market trends," added the CEO.

The French company said it had taken advantage of the cycle since 2015 to acquire, at a cost of less than \$2.5 per barrel of oil equivalent, more than 7 billion boe of low breakeven resources, representing

25 percent of its current upstream portfolio.

"We also see a growing commoditization of LNG markets and arbitrage opportunities arising between the US, Europe and Asia," said Laurent Vivier, Total's senior Vice President for Gas, in his presentation at the New York event.

"There is strong LNG demand growth in Asia, driven by constructive government policies there," stated Vivier.

CEO Pouyanne said Total was now seizing the favorable cost environment to sanction both major projects and short-cycle opportunities.

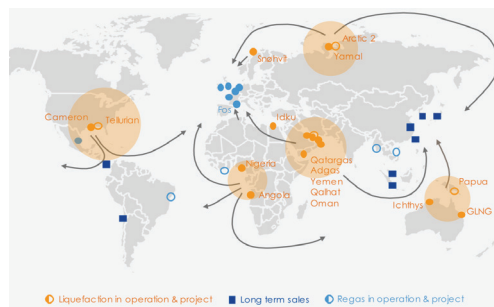
"The upgraded portfolio has a rich pipeline of major projects to be sanctioned by 2020 that will add more than 700 kboe per day of production, thus contributing to a 5 percent average growth from 2017 to 2022," the CEO stated.

Total said its major project start-ups from 2018 through 2020 include Yamal LNG, Vaca Muerta shale-gas operations in Argentina, the Timimoun natural gas project in Algeria, Ichthys LNG in Australia and the Kaombo North project in Angola.

The company said it was also pushing ahead with the expansion of LNG output in Papua New Guinea and with the Yamal LNG Train 4, Nigeria LNG Train 7, Cameron LNG in Louisiana and its Trains 4 and 5 expansions as well as more coal-seam-gas assets for Gladstone LNG in Queensland, Australia.

Total noted that it was also a partner of Tellurian Inc. and its Driftwood LNG project in Louisiana and as an original shareholder in Qatar's Ras Laffan LNG complex, it was seeking to support the planned Qatari expansion to 100 MTPA from the current 77 MTPA.

Total also confirmed it was advancing as a partner of Novatek in the Arctic LNG II project on the Gydan Peninsula of Russia with plans for 20 MTPA and where it would hold a 22 percent stake.



Portfolio for output, regasification and trade

The whole LNG Market at your fingertips

- Increased market visibility through a quick "lowdown of the market" on Monday morning and detailed "bird's eye" view of the past month
- Break-down and illustration of complex LNG trade relations backed by real data to increase feel for the market
- Access to pre-digested primary market data
- Consistent & systematic market perspectives
- Market and fleet overview in one convenient package

LNG Unlimited



www.lngunlimited

Chinese LNG import growth is boosted by Australia loads

Chinese liquefied natural gas imports rose in August by 50 percent compared with the same month a year ago as the nation imported 4.71 million tonnes compared with 3.14MT in August 2017.

Total LNG imports in the first eight months of 2018 were higher at 32.63MT versus 22.12MT for the same period of 2017, a rise of around 47.5 percent.

China is also aiming to gradually reduce large winter jumps in LNG imports and natural gas demand by building up storage capacity to guarantee availability.

The LNG surge in the 2017-2018 winter season had been spurred by a government-led campaign aimed at ending air pollution in the 30 largest northern cities caused by coal and coke burning.

China, whose network of LNG import terminals now numbers 19 facilities, overtook South Korea in 2017 to become the world's second-largest importer of LNG after Japan.

Chinese LNG demand has also led to a rise in the number of LNG carriers shipping cargoes from the Atlantic Basin to Asia.

Higher shipping day charter rates also favour Australian cargoes for Asian countries over US and Atlantic Basin shipments.

China took its LNG terminal network to 19 as two more facilities were formally brought into service in August at Zhoushan in the eastern Zhejiang province and at Dapeng New District in the southern province of Guangdong.

Imports to China during July 2018 had amounted to 4.15MT compared with the 3.12MT received in the same month of 2017. ■

US LNG pioneer T. Boone Pickens given honorary Clean Energy place

Clean Fuel Corp., the California-based company co-founded by US oil tycoon T. Boone Pickens who is one of the main advocates of LNG fuel for trucking, has put two Total executives on its board after the French energy major bought a stake in 2018 and has retained Pickens as an honorary director.

Total said that Nasdaq-listed Clean Energy had named Momar Nguer, President of Total Marketing Services, and Philippe Montaneme, Senior Vice President of Strategy Marketing Research, to its board.

Vision

Total, a leading participant in the LNG market, completed the purchase of a 25 percent stake in Clean Energy through Total Marketing in June of 2018.

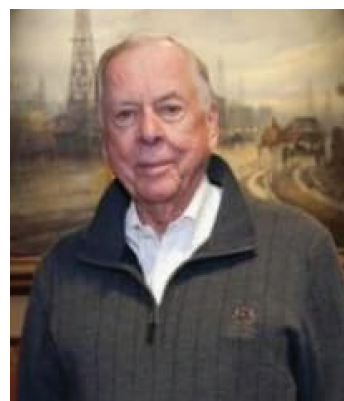
Total purchased 50.8 million shares of Clean Energy's common stock for \$83.4 million to become the company's largest stockholder.

Clean Energy is based in Newport Beach and is a leading provider of natural gas fuel for transportation and has a network of filling stations completed in 2017 from southern

California to the Canadian border as well as elsewhere in the US.

The US company has around 550 fuel stations across the country and in Canada as it continues with its growth strategy for LNG, compressed natural gas and biogas fuel distribution.

Clean Energy also announced that co-founder Pickens had notified the board that he had decided to retire as a director as part of his recent curtailment in his activity and he was immediately voted to be a Director Emeritus, entitling him to attend future board meetings.



Pickens, who turned 90 this year, remains firm LNG believer

"Clean Energy is incredibly fortunate to have had the entrepreneurial leadership for the last 23 years of one of history's great oilmen in Boone," said Andrew J. Littlefair, President and Chief Executive of Clean Energy.

"His vision in the establishment of and continued contribution to Clean Energy and its successes is hard to measure," added Littlefair.

"But as the company has moved into its own leadership position in the alternative fuel market, we will benefit greatly from the guidance and counsel of two seasoned executives of one of the world's most visionary energy companies in Momar and Philippe," added the Clean energy CEO.

Pickens, who turned 90 earlier this year, said that he still remained a great believer in the potential of natural gas as a heavy-duty fuel.

"I'm grateful for the recognition Clean Energy has given me. This transition to Director Emeritus will allow me to more fully focus on recovering from some recent health setbacks," said Pickens. ■

Skangas increases industrial LNG supply portfolio in Nordic region

Skangas, one of the most prominent participants in the Nordic LNG market, has signed up a paper mill as its newest customer as it builds its industrial, shipping and heavy-duty road transport supply portfolio.

Skangas, founded in Norway and acquired by Finnish natural gas network owner Gasum, said it signed an LNG agreement with the Finnish paper mill company Metsa Tissue Corp.

Metsa, based in the Finnish town of Mantta, has signed the deal with Skangas to receive LNG for its production process as a replacement for liquefied petroleum gas.

"The fuel switch from LPG to LNG will improve competitiveness and cut the company's carbon dioxide emis-

sions," said Metsa.

LNG will be delivered to the Mantta mill by road tanker from the Skangas LNG import terminal at the Finnish port of Pori.

Skangas Chief Executive, Kimmo Rahkamo, said he was pleased to have Metsa on board as a new customer.

"It's great that Metsa is switching to cleaner energy and at the same time the Finnish LNG market is growing," said Rahkamo.

"LNG is an excellent alternative as a fuel for the various paper industry processes and also for energy production," added the CEO.

In cooperation with the Technical Services of its parent company, Gasum, Skangas said it would carry out the modification and equipment

installation work relating to the fuel change. as part of its environmentally-friendly LNG customer service for diverse industrial needs in the Nordic region.

"We're aiming to constantly improve the mill's environmental performance," said the Metsa mill manager Kari Karttunen.

"LNG will reduce carbon dioxide emissions from our production, which was the decisive factor in our decision to make the switch," added Karttunen.

"We celebrated the 150th anniversary of the Mantta mill in September and we're developing our operations so that we'll be producing tissue and cooking papers sustainably in the future," stated Karttunen. ■

Australian LNG stakeholder Santos proposes to meet its portion of forecast global supply gap

LNG Journal editor

Australian LNG stakeholder Santos said it would concentrate on continuing to supply feed-gas to the Darwin LNG plant, operated by partner ConocoPhillips since 2006, as well as developing other Australian natural gas assets and expanding Papua New Guinea LNG output to meet rising Asian demand.

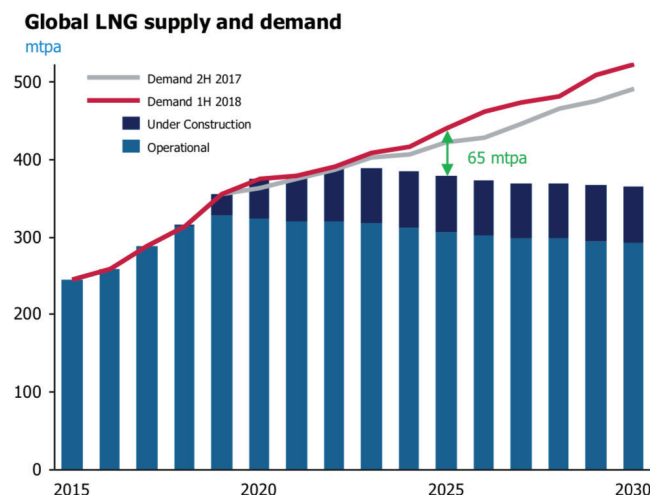
Santos said it was targeting a final investment decision on the Barossa backfill for Darwin LNG by the end of 2019.

Concept

The concept includes a floating production storage and offloading facility (FPSO), six subsea production wells to be drilled in the initial phase, support in-field subsea infrastructure and a gas pipeline to Darwin.

The Barossa gas field development would extend the operating life of the Darwin LNG plant for more than 20 years. First gas expected by late 2023.

The Darwin plant exports around 3.5 million tonnes per annum of LNG from a single liquefaction Train to Japanese utilities Tokyo Electric Power, now under the Jera Global Trading banner, and Tokyo Gas.



Santos graphic on the forecast global LNG supply gap

Santos listed other priorities as the PNG LNG expansion and the proposed inclusion of the P'nyang gas field.

"The LNG market needs new supply from 2022. The supply gap of 65 million tonnes per annum is forecast in 2025, aligning with Santos's LNG portfolio growth opportunities," stated the Adelaide-based company.

It would also concentrate on developing its south Australian Cooper Basin assets and Gladstone LNG in Queensland, while taking advantage of its acquisition of natural gas and

oil company Quadrant energy.

The Santos plans were explained by Chief Executive Officer Kevin Gallagher at the company's Investor Day in Sydney.

Its target was to increase production to more than 100 million barrels of oil equivalent by 2025, almost doubling current levels of production.

"Our strategy has been to establish a disciplined low-cost operating model that delivers strong cash flows through the oil price cycle," said Gallagher.

"Subject to regulatory approvals, the recently announced acquisition

of Quadrant Energy will further reduce our breakeven oil price and deliver ownership of a high quality portfolio of low-cost, long-life conventional Western Australian natural gas assets," he added.

Santos plans to expand its presence in the Western Australia domestic natural gas market with Quadrant by way of significant long-term opportunities as a result of contract roll-offs.

"It would also give us a leading position in the highly prospective Bedout Basin, including the recent significant oil discovery at Dorado," stated Gallagher.

The CEO said Santos intended to ramp-up its sales at GLNG, where it is operator, to 6 MTPA of LNG by the end of 2019.

"Santos has an East Coast dual-market strategy and is positioned to benefit from commitments to the domestic natural gas markets and strong Asian demand for LNG," said Gallagher.

Santos added that its capital expenditure for the Train 3 expansion at the PNG LNG plant would be between US\$300 million to US\$400M over three years and up to 70 percent would be project financed.

Australia-listed Energy World Corp seals its Singapore bank transaction for Asian LNG

Energy World Corp., the Australian-listed company with LNG projects in the Philippines and Indonesia, has completed a transaction Standard Chartered Private Equity of Singapore to keep its ventures moving forward.

EWC said Standard Chartered had decided to reinvest the entire proceeds of its existing US\$50 million exchangeable convertible note previously issued by EWC's wholly owned subsidiary, Energy World Philippines Holdings, into a new instrument structured as a US\$50M loan to EWC.

"Closing of the transaction is expected by 14 October," said EWC.

Brian Allen, Executive Director of EWC, said he was pleased with the restructured deal with Standard Chartered, which extends funding the bank has provided since 2013 for up to another three years.

"With these agreements in place, and the continued strong support of our major shareholder, we are well positioned to focus on completing our projects in the Philippines, Indonesia and Australia," said Allen.

EWC is progressing with its Philippines LNG and power hub and small-scale liquefaction plant at Sengkang in Indonesia where its production sharing contract is expected to be renewed.

Construction on the Pagbilao Power Plant and LNG Hub terminal in Quezon Province of the Philippines has continued throughout 2018.

So far, the jetty and regasification infrastructure as well as one storage tank at the LNG terminal have been completed.

The Philippines Department of Energy has confirmed its intention to import LNG as the most economic and cleanest source of fuel for electricity generation.

In Indonesia, EWC said in its recent earnings that revenue from gas sales decreased to US\$6.5M due to lower volumes of gas delivered. The fall in volumes was

a result of decreased flow rates at the Kampung Baru wells.

"While this has not had a significant impact on operations, new compressors have been ordered to increase gas pressure going forward and thus to increase gas sales," said the company.

EWC is expecting to be granted a 20-year extension to its Indonesia natural gas production sharing contract.

The company's small-scale Sengkang liquefaction venture and power project is located on the South Sulawesi coast in eastern Indonesia.