

# NGS' NG/LNG SNAPSHOT

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### PM Modi's constituency Varanasi to go green with CNG, PNG services

PM Narendra Modi's constituency Varanasi is ready to go green with CNG and PNG services, harvesting the first fruits of PM's Rs 13,000-crore energy lifeline for reviving industrial activity in the region. About 5,700 homes have received PNG connection and two CNG stations have been constructed by state-run gas utility GAIL, while the crematorium at Harishchandra ghat too has been converted to run on clean-burning natural gas, people working on the project in the city told TOI. State-run gas utility GAIL, which is implementing the project, is making trial runs by filling the pipeline network with CNG to remove impurities such as moisture and sulphur etc. Commercial service will start this month. GAIL has laid a 27-km-long spur line to connect the network to the main trunk pipeline being laid under the energy lifeline project, known as 'Urja Ganga'. GAIL is running ahead of schedule with the project and expects to complete the first phase from Phulpur in UP to Dobhi, Patna and Baruani in Bihar by July, six months ahead of the December 2018 deadline. This will help launch CNG and PNG services in Patna, Ranchi and Jamshedpur by August or so. The project is aimed at speeding up industrial activity in eastern region by supplying gas to help revive fertiliser and power plants, refineries, steel plants and other industries. It also aims at extending the convenience of PNG and CNG services to key eastern cities.

[Source: Energyworld, Economic Times](#)

### Expand CNG area: Green tribunal

The National Green Tribunal ordered the Bengal government to allow the supply of the environment-friendly compressed natural gas to major parts of the Calcutta Metropolitan Area (CMA) and not just the area under the Calcutta Municipal Corporation. CMA comprises the area under the Calcutta civic body as well as urban centres in adjacent districts. Metro had on April 11 reported that the state had filed an affidavit before the eastern zonal bench of the tribunal stating it had allowed the "area of operation within Calcutta Municipal Corporation only". The state was referring to the area of operation of the proposed joint venture between GAIL, a central organization, and Greater Calcutta Gas Supply Corporation (GCGSC), a Bengal government agency. The joint venture will be in charge of supplying the green fuel. The bench directed both agencies to finalize the agreement to supply the gas to major parts of the Calcutta Metropolitan Area within three days. "The bench pointed out that the pollution level in Howrah city was no less than that of the CMC area and the logic of the state to restrict the supply of the fuel to the CMC area is not tenable," said environment activist Subhas Dutta, the petitioner in the case.

<https://www.telegraphindia.com/calcutta/expand-cng-area-green-tribunal-224708?ref=calcutta-new-stry>

### 475 polluting industrial units switch to cleaner PNG fuel, more to follow - Delhi

Of the 1,500-odd polluting industrial units operating in Delhi's industrial and redevelopment areas, around one-third have already shifted to Piped Natural Gas

(PNG), officials in the Delhi Pollution Control Committee said. More have applied to shift to the cleaner fuel. The shift to PNG from other polluting fuels such as coal, rubber and plastic would help bring down industrial pollution levels in the national Capital. A study by IIT Kanpur in 2016 stated that industries contribute around 10%-11% of the PM10 and PM2.5 load, apart from adding significantly to the levels of other pollutants such as sulphur dioxide and nitrogen dioxide. As per the Master Plan of Delhi, industries are permitted only in industrial and redevelopment areas. There are 28 industrial areas and 22 redevelopment areas in the city. Any industry which operates outside these areas is illegal, irrespective of the fact whether they are polluting or not. The Supreme Court-mandated panel Environment Pollution (Prevention and Control) Authority on Friday had asked the IGL officials to come up with deadlines for installing pipelines. EPCA has also asked other gas supplying companies such as Adani Gas and Haryana City Gas to submit a list of the districts and towns where they are supplying PNG. Efforts are on to expedite the process to reach those areas in NCR districts where PNG hasn't reached yet.

[http://paper.hindustantimes.com/epaper/showlink.aspx?bookmarkid=SSWFPX211D-D&preview=magnifier&linkid=657428cc-7343-4270-a007-7b1d14ebab2a&pdaffid=uByrD-ciaEx%2b%2bWxh5AXvAIA%3d%3d\[Edited\]](http://paper.hindustantimes.com/epaper/showlink.aspx?bookmarkid=SSWFPX211D-D&preview=magnifier&linkid=657428cc-7343-4270-a007-7b1d14ebab2a&pdaffid=uByrD-ciaEx%2b%2bWxh5AXvAIA%3d%3d[Edited])

### Adani Gas hikes CNG price by 4%, PNG by 8%

Adani Gas, which distributes natural gas in Ahmedabad and Vadodara, announced a hike of 4% in the price of CNG and a steep increase of over 8% in domestic PNG. The revision comes a day after Gujarat Gas hiked prices CNG, PNG prices by 4.5-5%.

Adani Gas, which supplies gas to about 2.85 lakh households in Ahmedabad and Vadodara, revised domestic PNG price from Rs 560.65 per MMBtu to Rs 606.72, an increase of 8.2%. As far as CNG is concerned, the Adani Group revised the price from Rs 47.80 per kg to Rs 49.70. It said it caters to about 1.50 lakh CNG users in the two cities. Adani Gas said the hike comes in the wake of revision of domestically produced natural gas by the Ministry of Petroleum and Natural Gas. Incidentally, natural gas prices were revised on April 1, and it has taken more than a fortnight for the two Gujarat-based gas distribution companies to hike retail prices. While revision of CNG prices by both companies is in line with the expected hike of 4%, the hike in PNG price is much more. Gujarat Gas hiked PNG price by over 5%, while Adani Gas's hike is 8.2%. Industry players said that the higher hike was because the rupee has weakened against dollar in recent weeks, making imports like natural gas expensive.

<http://www.dnaindia.com/business/report-adani-gas-hikes-cng-price-by-4-png-by-8-2606476>

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### Motor insurance: How fuel type impacts car insurance premium

If you dig a little deeper, you will realise that the insurance premium for a petrol car is less than that for a diesel car or a CNG/LPG fitted car. Motor insurance premium is derived majorly from factors such as Insured Declared Value (IDV), cubic capacity of vehicle's engine, fuel type and various other add-ons that you may opt for while buying insurance for your car. Here, talking particularly about the difference in fuel type, insurance premium for a new pre-fitted CNG vehicle is maximum as compared to the insurance premium of the same car running on either petrol or diesel. However, if you have got a CNG kit installed in your old car, the premium difference will be substantial. You will have to pay an additional Rs 60 to insure third-party liabilities as per Indian Motor Tariff, whereas the increase in own damage premium varies from insurer to insurer and this could be 4% of the value of your CNG kit. For example, a good quality CNG kit can cost around Rs 50,000. Now, assuming your insurer asks for a 4% of the kit value as premium increase, you will have to shell out an additional Rs 2,000. Buying a CNG vehicle or getting a CNG kit installed at a later stage is a wise thought, as it will not only be easy on your pocket in the long run but is environment friendly too.

<https://www.financialexpress.com/mon-ey/motor-insurance-how-fuel-type-im-pects-car-insurance-premium/1136560/>

### Gas pipeline work to start next week in Patna

GAIL India Limited will start pipeline laying work for supplying piped natural gas to residents in Patna. The gas major intends to start this facility in the state capital by October this year. GAIL has planned to lay a pipeline ring along the major routes of the Patna and the beginning would be made by laying a pipeline between Phulwarisharif and Jagdeo Path. "The work has already been awarded and the pipeline laying work would start next week. We are starting from Phulwarisharif because there only our city gas station would be set up," a GAIL official said. The city gate station (CGS) would be like the main facility from where gas supply would be made throughout the city. It would have metering and distribution facility to keep tabs on the gas supplied to the city and also about the functioning of the pipeline that would be laid across the city. The CGS has to be set up on a 1.5 acre plot of government land and work on this facility would start as soon as the land is handed over to GAIL.

<https://www.telegraphindia.com/states/bihar/gas-pipeline-work-to-start-next-week-226248>

### 50-km gas pipeline to be laid in Bathinda

Gujarat State Petronet Limited will lay 50-km gas pipeline and would also supply piped natural gas to households in the district. The company has already initiated the process of taking permission and completing other formalities before starting ground work on this. The company has written an application to the Municipal Corporation of Bathinda (MCB) seeking permission for the laying of the gas pipeline in the city. The state government has fixed Rs 50 per meter rent, which will be Rs 25 lakh for the 50-km pipe line annually. The Petroleum and Natural Gas Regulatory Board has authorised five companies in the state to lay gas pipeline in Bathinda, Amritsar, Jalandhar, Ludhiana, Fatehgarh Sahib, Roopnagar and SAS Nagar. In the state government approved policy, it has made many documents mandatory for taking approval from various departments. The company has to attach map of laying the pipeline, along with a common application form. It also has to submit the map location, route plan, land detail, work plan (area wise and time wise), methodology to be used for laying the pipeline. It will have to deposit processing fee as well. It will also have to give information regarding depth, thickness, height and cross section of the pipe.

<http://www.tribuneindia.com/news/bathinda/50-km-gas-pipeline-to-be-laid-in-bathinda/579137.html>

## NATIONAL: NATURAL GAS/PIPELINES/COMPANY IN THE NEWS

### First growth in India's natural gas production in six years

India's natural gas production grew for the first time in six years in 2017-18. Gas output grew 2.35 per cent to 32,649 Million Standard Cubic Meter (MMSCM) primarily due to production from onshore blocks offsetting a decline in production from offshore blocks, an ETEnergyWorld analysis of fresh data from the oil ministry shows. The reversal in the six-year declining trend assumes significance coming at a time when the government is targeting a quick ramp up in the share of natural gas in the overall energy basket, arrest a consistent declining trend in its domestic crude oil production and reduce its mounting crude oil import bill which increased 25% to \$88 billion last fiscal and is expected to increase by 20% to \$105 billion in 2018-18. The increase in production after years of a consistent decline is a major relief for the domestic economy which has been starved of cheaper domestic gas, a situation that was translating into increasing reliance on costly regasified-LNG. Overall gas production by private companies and Joint Ventures from Production Sharing Contract (PSC) fields declined for the seventh straight year in 2017-18, falling by 8% to 6,338 MMSCM as compared to the previous fiscal. Both private and PSU upstream companies have planned to increase their production cumulatively by about 30 BCM by 2022," he said. Natural gas production by Oil India, the second-largest state-owned oil and gas producing company, dipped in 2017-18 to 2881 MMSCM after recording continuous growth in the previous three years. India's total CBM production in Jharkhand, Madhya Pradesh and West Bengal increased 30% to 735 MMSCM last financial year from 565 MMSCM recorded in 2016-17. The country natural gas consumption increased by 5% to 58,159 MMSCM in 2017-18 while natural gas import dependence increased to 45.4% from 44.5% in previous fiscal (2016-17).

<https://energy.economictimes.indiatimes.com/news/oil-and-gas/first-growth-in-indias-natural-gas-production-in-six-years/63904860>

## Essar to invest Rs 900 crore in Raniganj CBM block

The CBM block located in West Bengal has already received funds to the tune of Rs 4,000 crore for drilling wells and developing infrastructure. Ruia family-owned Essar Oil and Gas will invest Rs 900 crore in drilling 150 more wells on its Raniganj CBM block in West Bengal to more than double gas output to 2.3 MMSCMD by 2021, its Managing Director and CEO Vilas Tawde said. Essar Oil and Gas Exploration and Production Ltd (EOGEPL) has so far drilled 348 wells on the blocks and is producing 1 MMSCMD of gas from coal seams. The company is selling entire production of coal-seam gas or CBM from the block to state-owned GAIL India Ltd. "The April price is USD 8.164 per MMBtu on net calorific value (NCV) basis," he said. GAIL in February outbid Matix Fertilizers and Chemicals Ltd, Graphite India Ltd and Positron Energy Pvt Ltd to buy entire output from Raniganj. Raniganj East block is India's most prolific CBM block, holding 1 Trillion cubic feet of recoverable reserves. The firm is eyeing a turnover of Rs 600 crore from the CBM business in 2018-19 and expects it to double in next two years. Its CBM assets include five blocks, holding an estimated 10 Tcf of gas reserves spread over 2,700 square kilometres across West Bengal, Jharkhand, Chhattisgarh, Madhya Pradesh and Odisha. Raniganj East in West Bengal is the only block operational till now. Other four blocks are Rajmahal in Jharkhand, Talcher and Ib valley in Odisha and Sohagpur in Madhya Pradesh. It is also on the lookout for CBM mining projects globally but will keep off "matured markets" like the US and Australia.

<https://energy.economictimes.indiatimes.com/news/oil-and-gas/essar-to-invest-rs-900-crore-in-raniganj-cbm-block/63923579>

## India to launch natural gas trading hub

The government plans to launch a natural gas trading hub by October, creating an Indian gas benchmark which will spark a surge in consumption of the cleaner-burning fuel. Oil regulator PNGRB has sought bids to hire a consultant to help develop a regulatory framework for operationalising the gas trading/exchange hub. Currently, the government fixes the price of the bulk of domestically produced natural gas. The rate, arrived at using price prevalent in gas-surplus nations of US, Canada, UK, and Russia, is

USD 3.06 per MMBtu for six month period beginning April 1. In comparison, the cost of imported LNG into India is around USD 7.5.

"The Government has envisaged ushering into a gas-based economy by increasing the share of natural gas in the primary energy mix of the country from current level of about 6 per cent to 15 per cent by 2030," PNGRB said. For this, the thrust is on increasing the availability of natural gas by enhancing the domestic production, encouraging the import of Liquefied Natural Gas (LNG), completion of national pipeline grid and speedier roll out of City Gas Distribution network in the country. The PNGRB said the oil ministry has asked it to initiate steps for framing of necessary regulatory framework to enable the establishment and operation of a GTHE. The regulator said it wants to hire a consultancy firm to provide assistance in carrying out a detailed study on various pre-requisites. PNGRB would visit USA, UK, and Australia, where the gas trading hub is successfully operating, to decide if there is a need to amend existing regulations. The target for launch of the gas trading hub has been set for October. A hub is used as a central pricing point for a network that could aid better price discovery for domestic as well as imported gas. It isn't clear if the government would abandon fixing the gas price and allow the rates to be discovered on the hub. The world's biggest natural gas hub is the Henry Hub in the US state of Louisiana. Britain has National Balancing Point (NBP) as the main gas hub.

## Higher price spurs Reliance-BP to step on the gas in KG D6 block

Reliance Industries Ltd (RIL) and BP plc said they are moving ahead with the integrated development of the discovered deep-water gas fields in Block KG D6 off India's eastern coast by sanctioning the 'satellite cluster' project. The announcement comes a few days after the Centre hiked the price of gas produced locally from deep water, ultra-deep water, high temperature and high-pressure fields by 7.6% to \$6.78 per MMBtu for the first half of FY19 from \$6.30 per MMBtu, spurring the gas producer to start development. The 'satellite cluster' is a dry gas development and comprises four discoveries with five well sub-sea development in 1,700 metres water depth, up to 15 km east and south-east of the producing

D1D3 fields in KG D6. The 'satellite cluster' is the second of three projects in the Block KG D6 integrated development. The first of the projects — development of the 'R-Series' deep-water gas fields — was sanctioned in June 2017. Together, the three projects will develop about 3 TCF of discovered gas resources with a total investment of ₹40,000 crore (\$6 billion). They are expected to bring a total 30-35 MMSCM (1 billion cubic feet) of gas a day new domestic gas production on stream, phased over 2020-2022.

Gas production from the integrated development is expected to help reduce India's import dependence and account for over 10% of the country's projected gas demand in 2022, benefiting domestic consumers. India consumes over 5 BCF a day of natural gas and aspires to double consumption by 2022.

<https://www.thehindubusinessline.com/news/higher-price-spurs-reliance-bp-to-step-on-the-gas-in-kg-d6-block/article23606514.ece>

## Essar Oil renamed as Nayara Energy

Essar Oil, owned by Russian firm Rosneft and partners, on Thursday said it plans to change its corporate identity to Nayara Energy. Rosneft and its partners completed the \$12.9-billion acquisition of Essar Oil last August, entering the world's fastest-growing Indian energy market. "Essar Oil (EOL) is seeking approval to change its corporate identity to Nayara Energy. The new corporate identity for EOL is in line with the company's strategy to create a new brand and identity, reflecting the new ownership and its ethos," the company said in a statement. Rosneft owns 49.13 per cent of the company while global commodity trading and logistics giant, Trafigura and Russia's UCP Investment Group own another 49.13%. EOL operates a 20 MMTPA refinery at Vadinar in Gujarat and 4,473 petrol pumps. The new owners of Essar Oil aim to scale up the company's petrol pump network to 6,000 outlets. The new name, coined from 'Naya' (new) and 'Era', strongly signifies the company's progressive vision to succeed in the dynamic Indian and global energy markets, the company said in a statement. In a message to employees, CEO B Anand said, "With the backing of our new shareholders, we are confident of steering the company to a new era."

<http://www.mydigitalfc.com/companies-and-markets/essar-oil-renamed-nayara-energy>

## US Energy Secretary to meet oil minister Dharmendra Pradhan

US Energy Secretary Rick Perry is arriving here today to hold bilateral talks with his Indian counterpart Dharmendra Pradhan on enhancing energy cooperation. His visit comes on the heels of the conclusion of the 16th International Energy Forum (IEF) ministerial here that returned to India after a gap of 22 years and which was attended by the US Under Secretary of Energy. According to a US Department of Energy statement issued in Washington, “the trip will conclude with the inaugural Strategic Energy Partnership meeting co-chaired by Secretary Perry and India’s Minister of Petroleum and Natural Gas Dharmendra Pradhan.” In the backdrop of the shale oil and gas “revolution” in the US, the Indo-American energy cooperation has been growing in the last few years. The first LNG shipment from the US, from the state of Texas, reached India last month to provide a thrust to the country’s move towards a gas economy. Earlier, the first oil shipment from America had also landed in Odisha. In this connection, The US-India Business Council (USIBC) has lauded the launch of

the Strategic Energy Partnership. “USIBC member companies participating in the delegation during Secretary Perry’s visit to India include Westinghouse and ExxonMobil,” it added.

<https://energy.economictimes.indiatimes.com/news/oil-and-gas/us-energy-secretary-to-meet-oil-minister-dharmendra-pradhan/63778036>

## India and the USA announced the formation of a joint task force on natural gas

India and the United States of America announced the formation of a joint task force on natural gas aimed at increasing the share of gas in India’s primary energy mix. The announcement was made by US Secretary of Energy, Rick Perry. He said, “This task force will meet Prime Minister Narendra Modi on Monday [April 23].”

“Cooperation across the energy sector must be the cornerstone of our relationship,” Perry added. An official statement said, “The task force provides a team of US and Indian industry experts with a mandate to propose, develop, and convey, innovative policy recommendations to the Government of India in support of its vision for natural gas in the country’s economy. The work of the task force

is expected to advance the strategic and economic interests of both the United States and India.” Perry and Minister for Petroleum and Natural Gas, Dharmendra Pradhan, also held discussions that outlined their vision for a Strategic Energy Partnership.

“Under the Partnership, the United States and India will pursue four primary pillars of cooperation. These are oil and gas; power and energy efficiency; renewable energy and sustainable growth; and coal. Both parties may consider establishing additional pillars of cooperation based on mutual agreement,” the statement added.

[Source: LNG Global](#)

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## Government wants more oil/gas, but hits producers hard

With the government wanting to reduce oil/gas dependency by 10% by 2022 and 50% by 2050, you would think it would go out of its way to encourage investors by removing onerous levies 70% of all oil/gas profits go to the government and by rolling out new sops. Instead, it continues with the old anti-industry policies and keeps adding new ones to them. The fact that the two largest private producers Reliance and Cairn are locked in court battles with the government, of course, tells its own story of how unfriendly the policy environment is. If the government’s high levies weren’t bad enough, when Cairn found more oil and wanted to extend its licence to extract this, instead of being grateful for increased self-sufficiency, the government decided to hike its share of profits by a whopping 10 percentage points three years ago. And when, two years ago, the government decided to move from a high—and fixed—cess on oil, this resulted in it rising from Rs 4,500 per metric tonne in 2016 to Rs 6,600 today, or a hike of 47%. Last year, the government compounded the industry’s problems by issuing service tax notices on ‘cost petroleum’ (the share of oil/gas the companies get to compensate for their costs), cash calls (the amount a consortium leader asks others to pay for production costs) and royalty paid to the government. While industry outrage resulted in this getting partially fixed, the industry is still being asked to pay an 18% GST on the royalty it pays the government.

It gets worse. As Business Standard reported, the government is planning a de facto cap on the costs oilcos can recover. Right now, under the law, oilcos can recover all their investments from the oil/gas extracted, after which the profits are shared with the government. This profit-share depends on the investment multiple (IM), which is the revenue divided by the capex—so the more the investment, the lower the IM, and the lower the IM, the lower the government’s profit share. The new government directive says even if an oilco invests more—this depresses the IM—the share of profits accruing to the government must not fall. Apart from the fact that this is contrary to the contracts the government has signed with the oilcos, which allows full cost-recovery, since oilcos will now not be able to recover their investments quickly enough, they will scale back their investments so as to ensure the IM doesn’t fall. But that’s not all. The government is proposing that, for all pre-NELP contracts, the private oilco must now pay its share of the royalty and cess—typically, 30% of production—that, under the law, their PSU oilco partners were to pay. When these fields were given to private oilcos before 1997-98, the government told them that, if any oil/gas was found, ONGC/OIL would have to be given a 30% share in the venture for free; in return, ONGC/OIL would pay all the royalty/cess. So, ONGC/OIL got a free entry into valuable fields that they did not discover, and the government now wants to revoke the terms under which these fields were given out. In the case of Cairn’s Rajasthan fields, which were also pre-NELP, the government forced Vedanta to agree to pay cess/royalty as a pre-condition to allowing the deal to go through. With this kind of oil/gas policy, it is not clear if the government wants the oilcos to invest more in finding oil/gas to reduce India’s import-dependency.

<https://www.financialexpress.com/opinion/govt-wants-more-oil-gas-but-hits-producers-hard/1139080/>

## Hydrocarbon sector: Import intensity on the rise despite PM's roadmap for relief

In March 2015, speaking at the global hydrocarbon meet 'Urja Sangam' here, Prime Minister Narendra Modi delivered a passionate call for time-bound reduction in India's onerous import dependence for oil and gas. He also set a target for the stakeholders to reduce the country's import dependence for oil from around 77% then to 67% by 2022 and 50% by 2030, with a commensurate increase in domestic production. Three years later, the high import intensity, which over long years has had a pronounced deleterious effect on the national exchequer, the current account and the economy as a whole, has only risen worse, even the rate of increase hasn't abated despite Modi's urging; in fact, the rate has lately gone up a bit. According to official data from the Petroleum Planning and Analysis Cell (PPAC), against domestic consumption, India's oil imports were 78.3% in FY15 (the year the prime minister laid the roadmap for cutting import intensity) and the figure has since grown to 80.6% in FY16, 81.7% in FY17 and further to 82.8% in FY18. Import dependence for gas too has risen steadily (from 36.2% in FY15 to 45.4% in FY18), although its domestic production touched a five-year high in FY18. The emphasis on a gas-based economy as part of efforts to cut emission intensity of the gross domestic product aided import of gas (LNG). And the future, at least the immediate one, doesn't look brighter either. Clearly, there is no quick fix to the issue of high import dependence for hydrocarbons. Domestic production of both oil and gas needs to be augmented with appropriate policy interventions. On the gas side, production is expected to improve faster. Reliance Industries last week announced investments of Rs 40,000 crore in the Krishna-Godavari finds, which are expected to add 30-35 MMSCMD in gas production spread over 2020-2022. The Cabinet recently granted relaxation to Coal India along with its subsidiaries from applying for grant of licence for extraction of coal bed methane (CBM) in its coal-bearing areas. The total available coal-bearing area with CBM prospects in the country is around 26,000 sq km.

<https://www.financialexpress.com/industry/hydrocarbon-sector-import-intensity-on-the-rise-despite-pms-roadmap-for-relief/1144646/>

## Unbundling gas supply will level playing field: Shell

Energy giant Shell has told the government that separating gas marketing and transportation business in the country will provide a level playing field to other gas suppliers and boost gas demand in India. "The experiences of developed gas markets globally have demonstrated that for gas markets to be competitive, gas transmission and marketing businesses need to be unbundled," Shell India Chairman Nitin Prasad wrote to the Oil Ministry two weeks ago. "This will ensure non-discriminatory access to the network and deter vertically integrated companies from taking undue advantage of their monopolistic position, thus preventing conflicts of interest." Shell's Prasad didn't clarify if his firm has faced any discrimination in accessing natural gas pipelines in the country in the past, but said, in an emailed response to ET's query: "Shell strongly believes that open and transparent markets with a level

playing field for all players are the best ways to make domestic gas markets grow." GAIL and Gujarat State Petroleum Corp (GSPC) are the two state-owned companies that straddle both gas transportation and marketing and may have to be split if the government were to bar single ownership of the two businesses. No immediate comment was available from GAIL on the government plan.

<https://www.newstread.com/business/industry/energy/unbundling-gas-supply-will-level-playing-field-shell/>

**All news and features carried in this NGS NG/LNG Update are compiled from various sources - print and web editions, and have been duly acknowledged.**

## GAIL officers' panel opposes unbundling plans

The GAIL Officers' Committee has written to the office of the Prime Minister expressing its "shock and anguish" over reports that the government was considering unbundling the Maharatna company's marketing and transport businesses. Several media reports have emerged over the last month quoting government officials saying that the sector regulator Petroleum and Natural Gas Regulatory Board (PNGRB) has been asked to resolve the apparent conflict of interest arising out of the fact that GAIL (India) Limited is both a transporter and marketer of natural gas. "The Central Executive Council (CEC) of GAIL Officers' Association (GOA) met on March 24, 2018 at Noida to deliberate on the issue of unbundling of GAIL (India) Limited," the Council said in a resolution, which it also conveyed to the Prime Minister's Office. GAIL's businesses of trading and transportation are in compliance with the existing regulatory framework, and third-party access is given to all in a fair, transparent and equitable manner, the resolution went on to say. "In the entire history of the company, there has not been a single instance wherein GAIL has abused its position to deny any other company access to its infrastructure," the Association said.

"Leading organisations such as RIL, IOC, BPCL, Adani Energy and big CGD companies like MGL, Mumbai and IGL Delhi continue to use GAIL's infrastructure to serve their customers. To say, therefore, that the proposed unbundling is meant to prevent monopoly abuse of GAIL is incorrect and non-tenable." "We, as a forum, therefore lodge our protest against such unwarranted actions and request the authorities to maintain the status quo of GAIL... in order to achieve the benevolent objectives for which this company was formed in 1984," it added. "We, as a collective, request the government to ensure participation of people in policy formulation and openness in taking decisions because such unilateral action may lead to failure of performing gas company of government, which has not only become the youngest Maharatna, but has been delivering the objective of spreading use of natural gas throughout the country from more than three decades since its inception," the Officers' Association's resolution said.

<http://www.thehindu.com/business/gail-officers-panel-opposes-unbundling-plans/article23620319.ece>

## Government tweaks production sharing contracts midway, oil and gas reform hit

In a severe jolt to ambitious plans of reducing crude oil imports by 10% by 2022 by enhancing indigenous production of petroleum products, the government has decided to change the terms of oil and gas contracts mid-way for higher earnings for itself while delaying cost recovery for oil companies. The move invited immediate reactions from the industry with companies, including Cairn India, Reliance, BP, Focus Energy and Hindustan Oil Exploration Company (HOEC), delaying signing of work contracts for current year (FY19), putting investments worth billions of dollars on hold. Sources said the management committee, which approves investment and work programmes for contractors of oil and gas blocks, has changed the terms of several existing production sharing contracts (PSCs) starting FY19. The changed terms have fixed a floor for government's share of profit petroleum in running contracts, irrespective of the investment multiple -- the basis of sharing revenues from oil and gas blocks between the operators and the government.

Under the PSC regime, oil companies are allowed to recover their cost first before earnings from blocks is shared with the government. In this system, government's share or profit petroleum is decided on the basis of pre-tax investment multiple (PTIM is the ratio of cumulative net cash income to the cumulative exploration and development cost). Mails sent to Cairn India remained unanswered while RIL could not be contacted. Sources, however, indicated that companies have already flagged the issue with the government and want immediate action. Government sources said they were studying the development. For Vedanta's oil and gas vertical Cairn India, the fear is that changed terms would adversely impact its investment plan in Rajasthan's Barmer block, country's most prolific oil and gas field. What has peeved the industry is government's double talk on attracting investments in the oil and gas sector. While on one hand big reforms has been carried through introduction of industry friendly open acreage licencing policy (OALP) and freedom of pricing and marketing for small and difficult fields, existing investors who have pumped in billions of dollars to enhance domestic production have been offered unattractive contract terms, which has also been changed mid-way.

Source: [Financial Chronicle/Indian Oil & Gas](#)

## NATIONAL: LNG DEVELOPMENT/SHIPPING

### BPCL seeks LNG cargoes for July 2018-March 2019

Bharat Petroleum Corp Ltd has issued a tender seeking four liquefied natural gas (LNG) cargoes for July 2018 to March 2019 delivery, two industry sources said on Wednesday, April 25. The cargoes are for delivery in July, September, December and March into the Dahej terminal, one of them said. The tender closes on April 26 with offers to remain valid until May 10.

[http://www.business-standard.com/article/reuters/bpcl-seeks-lng-cargoes-for-july-2018-march-2019-118042500644\\_1.html](http://www.business-standard.com/article/reuters/bpcl-seeks-lng-cargoes-for-july-2018-march-2019-118042500644_1.html)

### Adani inks pact with IOC to offer LNG re-gasification services at Dhamra

Adani Ports and Special Economic Zone Ltd (APSEZ) has signed a long-term agreement with Indian Oil Corporation Ltd (IOC) to provide liquefied natural gas (LNG) re-gasification services on a use-or-pay basis to the state-run refiner, at its upcoming LNG import terminal at Dhamra in Odisha. As per the contract, IOC has booked 3 MMTPA re-gasification capacity spread over 20 years. IOC plans to supply the gas to its refineries at Paradip in Odisha and Haldia in West Bengal. In fact, the terminal will play a strategic role in supplying gas to Bangladesh and Myanmar as well, said Karan Adani, CEO, APSEZ. The proposed Dhamra LNG import terminal is designed for an initial capacity of 5 MMTPA, expandable up to 10 MMTPA. Initially, it will have two full containment type tanks of 180,000 cubic meters capacity each. It will be the first of its kind in India and second LNG terminal on the east coast after IOC's Ennore terminal in Tamil Nadu. It will have a jetty capable of handling a wide range of LNG supply vessels, including the largest Q-max fleet from Qatar. The terminal will be capable of reloading LNG to service proximate markets via the marine route and will also have truck loading gantries to help grow the nascent LNG-by-truck market.

<https://www.thehindubusinessline.com/economy/logistics/adani-inks-pact-with-ioc-to-offer-lng-re-gasification-services-at-dhamra/article23568730.ece>

### H-Energy for early start-up of Jaigarh LNG terminal

H-Energy, a unit of real estate group Hiranandani, aims to bring its Jaigarh LNG terminal online in Q4 2018. The company has leased the GDF Suez Cape Ann FSRU for the project, which is expected to arrive in early May. The FSRU has been chartered by H-Energy for a period of 5 years. The Floating Storage Re-gasification Unit (FSRU) has a storage capacity of 145,000 m<sup>3</sup> and is equipped with re-gasification capacity to operate the project at approximately 4 million tons per annum. The FSRU is also capable of reloading LNG onto other LNG vessels. H-Energy has also awarded the EPCM contract for constructing its 60 km Tie-in pipeline from Jaigarh port to Dabhol. The contract was awarded to Engineers India Ltd (EIL) which is one of the leading Consultancy and EPC companies in India. The pipeline construction is expected to get completed by Q3 2018. H-Energy has invested \$261 million in building the terminal and is in discussions with several potential suppliers.

Source: [Indian Oil & Gas](#)

## Expanded Panama Canal feels benign impact of U.S. oil and gas exports to Asia

Even by the harshest of gauging parameters, the Panama Canal is nothing short of an engineering marvel and testament to human ingenuity. Currently in its 104th year of serving as a man-made marine shortcut between the Atlantic and Pacific oceans, this fascinating inter-oceanic artery operates through a system of dual-lane lock complexes. The number of transits by LPG tankers rose from 449 in 2016 to 876 in 2017 and transits by LNG tankers rose to 163 from 17 in the year-ago period. Furthermore, in the calendar year of 2017 – the first full-year of the expanded Canal's operation – there were 1,039 transits of LPG and LNG tankers. The figure compares favorably with the number of transits by containerized cargo ships (at 2,493 transits); dry-bulk vessels (at 2,915) and chemical tankers (at 1,959) in the same period. Fueled by shale, U.S. exporters have plenty to be happy with the expansion. Prior to its expansion, the Panama Canal could only accommodate Panamax vessels of up to about 80,000 deadweight (dwt) and a draft of under 39.5 feet. However, following the expansion, and what the PCA describes as "other logistical improvements", the Canal can currently accommodate the aforementioned Neopanamax class vessels, capable of carrying 120,000 dwt; the preferred capacity size of 80% of the world's LNG fleet. Yet as U.S. LPG, LNG and condensate transits continue to rise, it might be minded to be more accommodative and restrained in raising toll charges. Revenue bonanza or not, the expanded Panama Canal is likely to face its

own shale gale over the coming years as much of the industry already has.

<https://www.forbes.com/sites/gauravsharma/2018/04/16/expanded-panama-canal-feels-benign-impact-of-u-s-oil-and-gas-exports-to-asia/3/#3ea93d443854> [Edited]

## Panama Canal to carry 30 million tonnes of LNG by 2020 as global demand grows

The Panama Canal may carry five times as much LNG in 2020 as it did last year as production of the fuel expands in the United States and Asian import demand rises, the head of the canal's governing agency told Reuters. LNG volumes traversing the Canal could hit 30 MMT a year before the end of 2020, said Quijano, who leads the Panama Canal Authority, up from 6 million tonnes last year. Demand for LNG has risen significantly in the last three years as the increase of supply, especially from onshore shale fields in the United States and offshore reserves in Australia, has made it more competitive. Many countries including China have also been switching to gas more rapidly than expected, away from dirtier coal, for environmental reasons. In the United States shipments are expected to surge over the next few years as several LNG projects are under construction, with total U.S. capacity slated to reach nearly 70 MMTA, up from 18 MMTA in 2017. "Right now on average, we're running six (LNG) vessels per week, but in the very near future, you will have several plants exporting and that starts to add up," Quijano said in an interview with Reuters. U.S. LNG exports through the canal are set to rise to as much as 11 MMTA this year and to around 20 MMT

in 2019, he said.

Reflecting a quickening in traffic, three gas tankers transited the Canal in a single day for the first time on April 17. And since June 2017, there have been 15 days in which two LNG ships passed through the Canal in a 24-hour period. Shipments of LNG through the Panama Canal began to rise after a third set of locks was added in 2016, Quijano said, and the authority projects growing demand for the supercooled fuel will boost such transits through the early part of the 2020s.

[Source: LNG Global](#) [Edited]

## China shale gas output to nearly double over three years: consultancy

China's shale gas production will likely reach 17 BCM in 2020, nearly double the 2017 level, as local oil companies make big progress with drilling technology and cost cutting, consultancy Wood Mackenzie said in a note on Tuesday, April 17. Nearly 700 new wells will come onstream between 2018 and 2020 at three key projects - Sinopec's Fuling, and PetroChina's Changning-Weiyuan and Zhaotong - all located in the country's southwest, and at a total cost of \$5.5 billion, Woodmac estimated. The forecast 17 BCM of output in 2020 falls short of Beijing's goal of 30 BCM, which was slashed by more than half from the government's initial target set in 2012. That means the world's No.3 gas user will need to keep its imports of LNG at elevated levels. Woodmac has separately forecast China's LNG imports will increase by a quarter to nearly 49 MMT this year, from record highs in 2017. Despite estimates that China is home to the world's largest recoverable shale gas resource, its shale formations tend to be deeper, more fractured and located in densely populated mountainous terrains, leading to higher costs and complications in drilling. However, state firms have managed to reduce well costs significantly - by 40% for exploration wells versus 2010 and 25% for commercial wells versus 2014 - by deploying local service companies, home-manufactured equipment and improving drilling technologies, said Yang. Explorations and joint studies by global majors such as Shell, BP, Exxon and Total at Chinese shale blocks have yielded little success. Shell, which pledged billions of dollars of investment in China's shale sector, pulled out of shale operations in Sichuan several years ago.

[Source: LNG Global](#)

## Uzbekistan to join Turkmenistan-India \$8 billion gas pipeline project

Turkmenistan, which sits on the world's fourth biggest gas reserves and borders Afghanistan, started laying the Afghan section of the pipeline this year which will also cross Pakistan. Uzbekistan plans to join an \$8 billion project to build a natural gas pipeline from Turkmenistan to India, Uzbek President Shavkat Mirziyoyev said on Monday, although it was unclear whether Tashkent might eventually ship gas through it. Uzbekistan also exports gas, mainly to China and Russia, although its export volumes are much lower than the Turkmen ones due to higher domestic consumption. "We have agreed that Uzbekistan will also take part in this project," Mirziyoyev told reporters after meeting his Turkmen counterpart Kurbanguly Berdymukhamedov, who visited Uzbekistan. He provided no details, but said Uzbek experts would travel to Turkmenistan to discuss Tashkent's role in the pipeline. Turkmenistan and Uzbekistan, both ex-Soviet Central Asian republics, each produce more than 60 billion cubic metres of gas a year. China dominates Turkmen exports while Uzbek gas sales are split roughly equally between China and Russia. <https://www.hindustantimes.com/india-news/uzbekistan-to-join-turkmenistan-india-8-billion-gas-pipeline-project/story-6VA8IgBsLAGpz7VCzAtlYL.html>

## The Permian oil and natural gas “Growth Wall” is short-sighted

The “Permian growth wall” predictions are quite premature to me: “Growth in Permian Basin output has been largely a case of a moving goal post that continues to challenge all forecasts.” The Permian centered in West Texas is an oil and natural gas production machine. It’s at the heart of the U.S. shale revolution and energy production complex. The low costs, established infrastructure, and proximity to the Gulf refinery and export markets (for both Mexico and LNG) have all made the Permian highly attractive for developers. In fact, breakeven oil costs in the play can be just \$40 per barrel, compared to a WTI oil price today of \$69, the highest since November 2014. The Permian is unique in that it produces loads of both oil and gas, with the latter coming out almost “free” because it comes along as a byproduct of oil extraction. Despite producing over 10 Bcf/d of gas, the Permian hasn’t had a single gas-directed rig since May of 2016 – yet gas production has risen 45%. The Permian now holds about 55% of all U.S. oil rigs in the fields, a figure that has stayed in the range of 32-56% since 2011. Since April 2016, Permian oil production has increased around 55%, especially impressive in the low price environment. But the boom has been creating bottlenecks because the pipelines are being filled more quickly than expected. And refinery maintenance and the delay of Energy Transfer Partners’ Permian Express pipeline expansion have restricted flows out of the region. At some point over the next few months, the Permian’s production of 3.1 million b/d will collide with its takeaway capacity of 3.2 million b/d, which could depress local prices even more and make the region the “worst oil and gas market in the country.”

The pipeline problem in the Permian has allowed trains to compensate. Once production exceeds capacity, 400,000-500,000 b/d of crude will have to move out of the Permian by rail and potentially truck over the next few years, or until more pipelines can start commercial service. At \$6-8 per barrel, shipping crude by rail from the Permian to the Gulf Coast can be double or triple the cost of moving it by pipeline, with trucking double or triple the price of rail. Truck and rail, however, do offer a key benefit by adding destination flexibility and less exposure to more rigid long-term contracts. But the anti-pipeline movement should know that, not just cheaper, pipelines are 4.5 times safer than rail and more of them will help reduce gas flaring. We know that pipeline help is surely coming to West Texas. The resource potential there is just too massive for it not to be. “At least 2.4 million b/d of potential new Permian oil pipeline capacity has been proposed by a half-dozen operators, and those who have progressed to open season have reported strong customer interest.” Despite the bottlenecks “Permian oil production is projected to almost double again to 5.3 million b/d from 2017 by the end of 2020, according to Morningstar,” perhaps crushing OPEC’s dreams. For natural gas, some 8-8.5 Bcf/d of takeaway capacity expansions in the Permian have been proposed. For example in December, Kinder Morgan, DCP Midstream, and a unit of Targa Resources announced their plan to build the \$1.7 billion Gulf Coast Express Pipeline Project to carry nearly 2 Bcf/d of gas starting in October 2019.

<https://www.hellenicshippingnews.com/the-permian-oil-and-natural-gas-growth-wall-is-short-sighted/>

## INTERNATIONAL: LNG DEVELOPMENT

### U.S. LNG gets a big cheer in one of Russia’s small neighbors

One of Russia’s European neighbors is fully embracing U.S. liquefied natural gas. Lithuania, the Baltic state that used to be completely dependent on gas piped in from Russia, is turning to LNG from Norway to the U.S. to help negotiate better prices from its former Soviet ruler. The country of just 2.8 million people is now the biggest European buyer of U.S. LNG after Spain and Portugal. The U.S. has been trying to encourage Europeans to buy more of its gas and vehemently opposes the expansion of a pipeline directly from Russia to Germany that bypasses Ukraine and other eastern European transit nations. Lithuania signed two agreements with the Freeport LNG project in Texas during a meeting with President Donald Trump in Washington earlier this month, deepening its ties with the U.S. and the rivalry with Russian gas. Lithuania secured half of its gas needs with LNG last year. Lithuania’s Klaipėdos Nafta AB agreed with Freeport to jointly develop small-scale LNG facilities and floating storage and regasification units worldwide, and the other deal was a framework agreement on buying LNG in the future, Vaiciunas said. Freeport is due to start at the end of this year or in early 2019, and the parties are yet to fix the pricing and volumes of supplies, he said. Lithuania opened an LNG terminal in 2014, giving it a tool to negotiate better prices from Russia’s Gazprom PJSC, which the Baltic nation said were some of the highest in Europe. LNG has had a “transformative effect on prices in Baltic States,” Maros Sefcovic, vice president and commissioner for the Energy Union at the European Commission, said in a separate interview in Berlin. Average household gas prices in Lithuania fell 24% in 2015, the first full year of operations of the Klaipėda LNG terminal. Russia’s outlook for its gas prices rising 18% this year creates “new competition opportunities for U.S. gas, not only in Lithuania but also for Europe,” Vaiciunas said. Over the past two years Russian gas produced at low-cost Siberian fields and piped via pipelines to Europe has largely beat economics of U.S. LNG supplies to Europe. Lithuania expects the 50-50 ratio between LNG and pipeline gas imports to remain, its energy minister said.

<https://www.hellenicshippingnews.com/u-s-lng-gets-a-big-cheer-in-one-of-russias-small-neighbors/>

### Exxon Mobil offers PNG LNG cargo for May delivery to North Asia -traders

U.S. energy major Exxon Mobil has offered a liquefied natural gas (LNG) cargo from its recently restarted Papua New Guinea plant for delivery into the Japan, Korea, Taiwan (JKT) region in May, two traders with knowledge of the matter said. Exxon Mobil has offered the cargo on a delivered ex-ship (DES) basis, they said on Tuesday, asking not to be identified. Bids are due on April 25 and are valid until April 27. The cargo will be delivered on the Kumul LNG tanker, one of the traders said. The PNG LNG plant was recently restarted after a major earthquake triggered a shutdown in February.

<https://www.hellenicshippingnews.com/exxon-mobil-offers-png-lng-cargo-for-may-delivery-to-n-asia-traders/>

## Bullish outlook for the LNG market

The future outlook of the LNG market is a bullish one, according to industry leaders who spoke at the inaugural Sea Asia LNG Forum. Speakers at the forum noted the significant potential of the LNG market in the long-run. In particular, the city state of Singapore is expected flourish in its role as a service centre for LNG, especially with a large number of LNG ships expected to go onstream and eventually needing to drydock each year. During the Shipping and Regasification Markets and Developments session, Peter Fitzpatrick, Vice President, Global Marine at ABS commented, "Singapore is a growth market because LNG ships require reliable, on-time delivery from drydocking, a service Singapore has been providing and will continue to do so." "We see LNG overhaul as a growth area for Singapore, and not just drydocking, but major modifications work with a number of significant projects on LNG vessels being undertaken here in the yards." The LNG Forum 2018 is a Sea Asia conference organised by UBM (Seatrade) and the Singapore Maritime Foundation.

<https://www.lngindustry.com/liquid-natural-gas/26042018/bullish-outlook-for-the-lng-market/>

## Bangladesh finalizes LNG deal with Oman Trading International

Bangladesh has finalized a 10-year deal to import 1 MMTA of LNG from Oman Trading International, two energy officials with direct knowledge of the matter told Reuters. The deal with Oman Trading is Bangladesh's second LNG import agreement after Qatari producer RasGas, which has since merged with sister company Qatargas, to cover the country's domestic natural gas shortfall. The LNG will be priced at 11.9% of the three-month average price of Brent plus a \$0.40 per MMBtu constant, one of the officials said. The deal with Oman Trading will be signed soon, the officials said. Bangladesh is all set to receive its maiden shipment of LNG from Qatar soon, said Mohammad Quamruzzaman, managing director of the Rupantarita Prakritik Gas Co, a unit of state-owned oil firm Petrobangla. The pricing with RasGas is 12.65% of the three-month average price of Brent oil plus a constant of \$0.50 per MMBtu. Bangladesh, a country of more than 160 million people, could import

as much as 17.5 MMT of LNG a year by 2025, as its domestic gas reserves dwindle and demand grows.

<https://www.maritimeprofessionals.com/news/bangladesh-finalizes-deal-with-oman-316635>

## SPEC opens the first LNG import terminal in Colombia

Sociedad Portuaria El Cayao (SPEC) began operations at the first Colombian LNG regasification terminal at Cartagena de Indias, positioning the country as one of the main new players in the LNG regional market.

The country is now enlarging its natural gas offerings in order to satisfy national energy demand and guarantee reliable and competitive supply for thermal power plants in the region. "The new terminal will support Colombian thermal power generation and will prevent blackouts during dry season," says Jose Luis Montes, SPEC's General Manager. After 16 months of construction, SPEC is opening this terminal that is formed by a floating storage and regasification unit, a 760 meter pier and 10km pipeline that

connects the terminal with the country's National Transportation System. Montes has highlighted and expressed gratitude for the Government support that has played a key role in developing this initiative. "We've been developing this project for 9 years. Since day one, we've tried to find the best solution together, to guarantee natural gas supply to the main thermoelectric generators in the region. Now we have achieved our goal, thanks to the government predictions, who precisely estimated that gas demand would surpass the countries production," said Montes. Additionally, SPEC General Manager emphasized the role of surrounding communities that have embraced and supported the project, which is going to contribute to the social and economic development of six neighbouring areas.

[Source: LNG Hub](#)

## Bangladesh receives first imported LNG from Qatar

Excelerate Energy's floating storage and regasification unit (FSRU) Excellence arrived at Bangladesh's Moheshkhali Port on April 23 bringing with it a commissioning cargo from Qatar. The \$180 million project was co-developed by Petrobangla, Excelerate Energy and the International Finance Corporation, a member of the World Bank Group. "Bangladesh suffers from two crippling energy shortages: electricity and gas," says Wood Mackenzie's director of gas and LNG research Nicholas Browne. "Grid based power shortages result in load shedding and expensive diesel generation. Meanwhile, residential, CNG, industrial and power users all struggle to access as much gas as required, while domestic gas has already started to decline. Pipeline pressure is frequently very low. The FSRU has an annual capacity of 3.8MMT. Excelerate Energy will operate the terminal for 15 years receiving a fee of \$90 million per year. After this, ownership will transfer to Petrobangla. An onshore gas pipeline connects the FSRU to the main demand center in Chittagong, the second largest city in Bangladesh. There, it will supply existing power plants currently running short of gas. QatarGas will supply 1.8 MMTA of LNG between 2018 and 2022 and 2.5 MMTA of LNG between 2023 and 2032. Beyond this several other projects and LNG contracts are gaining momentum. In December 2017, financing was approved for a terminal and a 750 MW power plant by Reliance Energy. In January 2018, Bangladesh Power Development Board signed an MoU With Pertamina to develop 1.4 GW of new gas-fired capacity, together with a dedicated FSRU and related LNG supply. Then in March 2018, Summit Power, Mitsubishi and Diamond Gas agreed an MoU to construct a terminal and 2.4 GW of power capacity. Meanwhile PetroBangla has agreed several supply MoUs, including with AOT, Gunvor, Oman LNG and Pertamina.

<https://www.maritime-executive.com/article/bangladesh-receives-first-imported-lng-from-qatar#gs.Hh18NTg>

## Freeport LNG delays start of Texas export terminal to September 2019

Freeport LNG, a privately held U.S. liquefied natural gas company, said on Thursday, April 19, it pushed back the projected start date for its \$13 billion export terminal under construction in Texas by about nine months to around Sept. 1, 2019. Freeport LNG now expects the first liquefaction train to enter service around Sept. 1, 2019, with the second and third trains seen in service around Jan. 1 and May 1, 2020, respectively, said Zdenek Gerych, a spokesman at Freeport. Previously, the three trains under construction had been expected to enter service between the fourth quarter of 2018 and the final quarter of 2019. Each train will have the capacity to liquefy about 0.7 billion cubic feet (bcf) per day of gas. One bcf is enough gas to supply about five million U.S. homes for a day. The reasons for the delay were undetermined at this point and under investigation, Gerych said. S&P Global Platts said the delay stemmed from flooding of some yards where equipment was stored during Hurricane Harvey, which triggered massive flooding in the Houston area in August 2017. Freeport is building its facility on Quintana Island, about 67 miles (108 kilometers) south of Houston on the Gulf Coast. A consortium of Chicago Bridge & Iron Co NV (CB&I), Zachry Group and Chiyoda Corp are building the Freeport facility, with CB&I leading the project. Freeport has 20-year use-or-pay contracts to supply LNG to Osaka Gas Co Ltd and JERA from Train 1, BP Plc from Train 2 and Toshiba Corp and South Korea's SK E&S from Train 3. In addition, Freeport was still developing Train 4 at the facility, which could enter service in 2023 or 2024 if the company's marketing efforts go well, Gerych said.

<https://www.hellenicshippingnews.com/freeport-lng-delays-start-of-texas-export-terminal-to-september-2019/>

## Pieridae Energy files to build natural gas liquefaction plant in Goldboro

Calgary-based Pieridae Energy Ltd has taken another step toward developing a multi-billion-dollar liquefied natural gas plant in Guysborough County, N.S. On Friday, April 13, the Nova Scotia Utility and Review Board disclosed it had received an application from the company to build a natural gas liquefaction plant, marine

terminal, storage facility and power plant at Goldboro. In its application, Pieridae says the proposed export plant will produce 10 MMT of LNG per year with storage capacity for 380,000 cubic metres of LNG. The facilities would be adjacent to Maritimes and Northeast Pipeline, where natural gas from Nova Scotia's offshore natural gas fields makes landfall. Those fields are winding down and Exxon Mobil is preparing to decommission its gas plant at Goldboro. Pieridae wants to bring cheap shale gas from across North America for export, primarily to Europe. The other proposal is for Bear Head at the Strait of Canso. But Pieridae's project is further ahead. Earlier this year it hired the investment bank Morgan Stanley to help raise \$10 billion in equity and project financing. In its application, Pieridae

appears ready to commit. Pieridae says it has received a detailed front-end engineering and design study from Chicago Bridge and Iron, Golder Associates and Dillon Consulting that will be the basis for permitting the project. The utility and review board has hired Lloyd's Register to evaluate safety issues associated with Pieridae's plans to build and operate the LNG facility. The regulator does not have any jurisdiction over environmental or economic issues associated with the facility. It will hold a public information session on May 14 at the Goldboro to outline its role and answer questions from the public. Pieridae secured a Class 2 provincial environmental assessment four years ago.

[Source: LNG Global](#)

## China's Sinopec Tianjin LNG terminal starts commercial operations

China Petroleum and Chemical Corp., or Sinopec, said that its newly built Tianjin LNG terminal has started commercial operations. The terminal comprises an LNG receiving terminal, pipelines, docks and associated facilities. It has an annual transfer capacity of 3 MMT, which can supply around 4 BCM/year of gas to the China market, the company said. The Tianjin LNG terminal, which is connected to Sinopec's Shandong natural gas pipeline, the Ordos-Anping-Cangzhou natural gas pipeline as well as the company's natural gas storage facilities in northern China, supplies natural gas to the Beijing-Tianjin-Hebei-Shandong regions through its pipeline networks, Sinopec said. The Tianjin LNG terminal received its first commissioning cargo on February 6, S&P Global Platts reported previously. Sinopec's Tianjin LNG terminal is expected to ease the tightness in supply of natural gas in the northern regions, market sources said. China launched a policy to encourage the use of gas for heating instead of burning coal in January in an effort to combat air pollution. This had boosted gas demand and caused a brief period of supply shortages in the northern regions, Platts reported previously.

<https://www.hellenicshippingnews.com/chinas-sinopec-tianjin-lng-terminal-starts-commercial-operations/>



## Finland's growing LNG refueling network welcomes first Volvo FH HD truck

Volvo has introduced the first LNG-powered heavy-duty truck offering a viable alternative for heavy regional and long-haul operations in Finland. Announced to the market in late 2017, the Volvo FH LNG is a concrete alternative to diesel engines for long-haul applications, including for towing full trailers. A clean and cost-effective alternative, liquefied natural gas (LNG) is becoming a more common fuel for heavy-duty vehicles on Finland's roads. "As regards heavy-duty fleets, LNG is the best alternative to diesel among the currently available solutions. The tank-to-wheel carbon dioxide emissions of the new Volvo FH LNG truck are at least 20% lower than those from fossil fuel use. The demand for the new model has been a positive surprise, and the first orders have already been submitted to the factory," says Volvo Business Solutions Manager Vesa Soppi. Finland's first Volvo FH LNG truck was refueled at Gasum's Turku gas filling station. Manufactured in Gothenburg, Sweden, the gas-powered 6x2 truck can be ordered in Finland from Volvo Finland AB dealers. LNG stations are being planned for locations including Kuopio, Lahti, Oulu and Seinäjoki. Gasum aims to expand its LNG filling station network also to Sweden and Norway during this year. The purpose of the gas filling station network expansion is to respond to the growing demand for LNG to fuel heavy-duty fleets seen throughout the Nordic countries. According to the Vehicular and Driver Data Register, there are more than 4,600 gas-fueled vehicles in use in Finland. The number increased by around 1,000 over the first quarter of 2018.

[Source: NGV Global \[Edited\]](#)

## NGV Global: Natural Gas Regulations Update

The International Organization for Standardization (ISO) is an independent, non-governmental organization with a membership of 161 national standards bodies.

The United Nations Economic Commission for Europe (UNECE) includes 56 member States in Europe, North America and Asia. However, all interested United Nations member States may participate in the work of UNECE. Over 70 international professional organizations and other non-governmental organizations take part in UNECE activities.

Globally, natural gas mobility is an evolving industry that continues to thrive, expand and consolidate despite market challenges. Natural gas vehicles (NGV) operate in more than 80 countries and natural gas propulsion is taking vessels along inland waterways and across oceans. Regulation and standards are a vital component of this industry. Such is the context in which several documents were tabled at the UNECE Group of Experts on General Safety (GRSG) meeting on 10-13 April 2018 in Geneva. NGV Global was in attendance to ensure the best interests of the worldwide natural gas for transportation industry were kept to the fore. Discussed were proposed changes to UNECE R.110 (CNG/LNG Vehicles) including CNG cylinder inspections, and expansion to applications for on-board vehicle appliances. NGV Global brings considerable expertise to these meetings, confirming its ongoing commitment to ensuring best practice for the industry. The Association, now more than 30 years since inception, participates on no less than 14 ISO committees covering gaseous fuels technology, ships and marine technology, cryogenic vessels, cylinder design, measurement, classification and more.

The Geneva meeting is the latest in a series of meetings seeking to resolve issues pertaining to CNG cylinder inspections. The same regulation applies to LPG tanks. Other participants in discussions include contracting parties, NGOs, and equipment and vehicle manufacturers. Out of these meetings has come an amendment to R.110, now adopted, that requires new designs for protective covers on CNG cylinders so that they can be opened without the use of tools in order to expose the cylinder for inspection. New designs for CNG cylinder protective covers will be required for retrofitters by September 2019 and for vehicle approval (OEM vehicles) by September 2021. A proposal was adopted to harmonize R.110 with ISO regarding CNG cylinder testing procedures and was due to a transposition error in the table that otherwise would have affected these procedures. R.110 was proposed for amendment by the addition of terminology covering new requirements for components used in LNG/CNG systems such as a 'CNG accumulator' and a 'CNG compressor'. R.110 terminology with respect to the regulated inclusion of a gas flow adjuster was introduced by OICA, the Association of International Car Manufacturers, for future amendment. Natural gas heaters and refrigeration systems are already permitted under existing provisions. It has been proposed to add a natural gas-fired generator to this list, providing power for the driver in sleeper cabs overnight or to maintain battery charge during high electrical power use with loading or lifting equipment, etc. The change is specifically for Liquefied Natural Gas (LNG)-powered trucks in order to reduce the tank pressure and to prevent or delay venting.

<http://www.ngvglobal.com/blog/ngv-global-natural-gas-regulations-update-0420>

## Japan's first large LNG trucks made and monitored by Isuzu

Isuzu Motors Co., Ltd. is working with the support of Japan's Ministry of the Environment to reduce emissions from heavy transport vehicles, strengthen related technology and deliver demonstration projects. Considerable effort has gone into the development of LNG powered trucks and two vehicles have been built, with testing to commence early in June. In support of the project Isuzu is collaborating with Shell Japan to set up an L(LNG) + CNG refuelling station for the trucks. A testing period of unspecified length will assist Isuzu to determine market interest and refine the technology before deciding on size of production. Already the expectation is that the new vehicles will have a range exceeding 1,000 kms using LNG, a high energy density fuel (1.5 gallons of LNG has the same energy density as one gallon of gasoline). Isuzu has been promoting the uptake of natural gas vehicles for about 20 years from the viewpoint of energy security and environmental load reduction, etc. In order to promote the diffusion of natural gas vehicles, the company has developed mass production models.

[Source: Isuzu Motors Co. Ltd/NGV Global](#)



## Chart to install pioneering LNG vehicle fueling station in Croatia

Chart Ferro has been awarded a contract for the design, manufacture and commissioning of Croatia's very first LNG vehicle fueling station. The skidded design incorporates Chart's recently introduced 60m<sup>3</sup> horizontal cryogenic storage tank together with many other innovative features for enhanced reliability and economy.

Chart's proprietary Saturation on the Fly (SoF) vaporization technology ensures that the station is capable of fueling all LNG vehicles available on the market today, regardless of whether they're equipped with spark ignited or compression engines. SoF eliminates additional pre-cooling and also improves the station's overall heat management. Additional energy efficiencies are realized through re-engineering of the station's panel pipework and our in-house, MID certified, dispenser technology is a further integral part of the total solution.

The Croatian station is scheduled to be commissioned and fully operational during fall 2018. Chart has installed four permanent fueling stations for natural gas vehicles in Finland, the most recent (December 2017) being close to Helsinki Vantaa airport. Chart was also the installer of Austria's first LNG refuelling installation, officially opened at Ennshafen in Austria by RAG, a major European gas storage operator, in cooperation with Iveco Austria, last October.

[Source: Chart Industries/NGV Global.](http://www.ngvglobal.com/blog/chart-industries-ngv-global)

## Russia's NGV refuelling infrastructure rolls out for 2018 FIFA World Cup

Gazprom continues to roll out Russia's natural gas refueling network, building new CNG stations and platforms for mobile refuelers, as well as installing CNG modules at the existing filling stations. In particular the Gazprom Board of Directors has been evaluating readiness of the NGV refueling infrastructure for the 2018 FIFA World Cup Russia™. Infrastructure development has been especially intensive in Moscow, St. Petersburg, the Republics of Bashkortostan and Tatarstan, the Altai, Krasnodar, Perm and Stavropol Territories, and the Regions of Leningrad, Moscow, Nizhny Novgorod, Novosibirsk, Omsk, Samara, Sverdlovsk, Tomsk and Volgograd. In 2017, Gazprom constructed and renovated 23 CNG refueling facilities. The Company's sales in the natural gas vehicle fuel market grew by 9.5% compared to 2016, from 480 MMSCM to 526 MMSCM. In 2018, Gazprom continues to build new CNG stations, including for the purposes of the World Cup which will run from 14 June to 15 July. A total of 47 CNG stations will be active in the host cities (Moscow, St. Petersburg, Kaliningrad, Kazan, Nizhny Novgorod, Rostov-on-Don, Samara, Saransk, Sochi, Volgograd, and Yekaterinburg). Another seven stations will be put in operation by the start of the tournament. The Management Committee was tasked to continue working toward developing the NGV market in Russia and preparing the NGV refueling

infrastructure for servicing the participants and guests of the 2018 FIFA World Cup Russia™.

<http://www.ngvglobal.com/blog/russias-ngv-refuelling-infrastructure-rolls-out-for-2018-fifa-world-cup-russia-0419>

## UK's Cadent flags interest in IVECO daily CNG vans

Cadent, the UK's largest gas distribution network serving 11 million homes and an adopter of IVECO conventional fuel Daily vans, has signalled its intention to explore using CNG-powered vehicles for future fleet replacements – with IVECO's gas models forming a key part of the International Van of the Year 2018-winning Daily Blue Power range. The new vans will be integrated into their emergency response fleet. The Daily Hi-Matic Natural Power is the first CNG-powered LCV with an eight-speed automatic gearbox in the industry. It features the 3.0-litre four-cylinder F1C engine that generates 136PS to deliver best-in-class torque of 350Nm. This engine is more robust and guarantees more torque and driveability than ordinary CNG car-derived engines, delivering a performance without compromise. In real driving conditions and in an urban context, CO<sub>2</sub> emissions of the CNG engine are 3% lower than those of the equivalent diesel version. If biomethane is used to run the CNG engine, CO<sub>2</sub> emissions can be very close to zero, with a 95% reduction.

<http://www.ngvglobal.com/blog/uks-cadent-flags-interest-in-iveco-daily-cng-vans-0416>

## First zero-emission CNG hybrid agricultural vehicle announced

Efficient Drivetrains, Inc. (EDI) announced the integration of its EDI PowerDrive™ 4000 into a Class-4 General Motors Low Cab Forward platform, creating an industry-first truck for agriculture applications. The vehicle combines the benefits of a CNG and Plug-in Hybrid technology and is geared to help agriculture fleets switch from petroleum-based liquid fuels to domestically available, cleaner burning natural gas and electricity. The zero-emissions vehicle features a unique technology collaboration between Efficient Drivetrains and A-1 Alternative Fuel Systems, integrating the EDI PowerDrive™ Plug-in Hybrid powertrain, and the A-1 CNG Frame-Mount (FM) natural gas system into a General Motors Class-4 work truck commonly utilized by the agriculture industry. The truck will be operated in San Joaquin Valley, a 250-mile-long region susceptible to air pollution due to its bordering mountain ranges. While in operation in San Joaquin Valley, the new vehicle provides 40+ miles of zero-emissions driving, and range extension utilizing cleaner CNG, resulting in a significant elimination of particulate matter that its traditional diesel counterparts expel. Vehicle operators will experience the expected full power OEM truck performance without change to driver behavior, with the added benefit of zero-emissions driving, cleaner air for their workforce and the surrounding community, and significantly reduced fuel costs.

<http://www.ngvjournals.com/s1-news/c3-vehicles/first-zero-emission-cng-hybrid-agricultural-vehicle-announced-in-the-us/>



## WinGD natural gas marine technology earns emissions reduction award

WinGD, leading developer of low-speed gas and diesel engines of Switzerland, took home the Marine Propulsion Emissions Reduction Award last week, in Amsterdam, during the Sulphur Cap 2020 Conference. The Emissions Reduction Award is awarded for an innovation that can “demonstrate actual or potential reductions in emissions as a result of its implementation.” WinGD two-stroke 12-cylinder X92DF (dual-fuel) engines will power a series of nine 22,000 TEU containerhips for CGA CGM. WinGD’s X-DF technology is designed to reduce emissions far below the IMO Tier III limits, utilising their signature high efficiency, reliable, low-pressure gas admission system. In November 2017, CMA CGM announced it would outfit its new mega

vessels with WinGD 12X92DF engines, rated 63,840 kW at 80 rpm, making them the most powerful gas and dual-fuel engines ever built. X-DF engines are the only marine low-speed engines able to operate with low-pressure natural gas, which complies with IMO Tier III NOX limits, without requiring after treatment systems or complex engine technologies. Given our 120 year history in the design of merchant ship propulsion, we embrace our responsibility in improving the environmental footprint of the shipping industry. It is this outcome that continues to drive our innovation and collaborative partnerships as we seek to discover further revolutionary solutions. The new targets set by the IMO are an important step to drive the maritime energy trans-

formation.  
<http://www.ngvglobal.com/blog/wingd-natural-gas-marine-technology-earns-emissions-reduction-award-0425>

## LNG is prime contender for new-builds: DNV GL Alt-Fuels white paper

Classification society DNV GL has issued a new white paper which assesses a range of alternative fuels and technologies. Entitled Alternative fuels and technologies for greener shipping, the paper examines the price, availability, regulatory challenges and environmental benefits of alternative fuels and technologies, including LNG, LPG, hydrogen, fuel cells, and hybrid and battery technologies, and comparing them to the use of conventional fuel with scrubbers and new low sulphur alternatives. Through this white paper DNV GL intends to offer the shipping industry insights that will help them in their preparations for the upcoming Global Sulphur Cap, which is due to come into effect on 1 January 2020. The technologies and fuels considered in the white paper are many of the most commonly used in the shipping industry today: LNG, LPG, methanol, biofuel, hydrogen, battery systems, fuel cell systems, and wind-assisted propulsion. The white paper identifies and examines the factors that will affect the uptake and acceptance of alternative fuels and technologies in shipping, including: environmental compatibility, availability, fuel costs and the international rules within the IGF Code. Over the short term, the white paper foresees that the vast majority of conventionally fuelled vessels already in service will either switch to low sulphur conventional fuels, or implement a scrubber system while continuing to use heavy fuel oil (HFO). For newbuilding vessels, the sulphur cap could be a major driver for alternative fuels, and DNV GL’s Gerd Würsig, Business Director Alternative fuelled ships, at DNV GL –Maritime, believes that LNG is the prime contender among them: Natural gas from LNG is the cleanest fossil fuel available today. Nevertheless, methane release (slip) must be considered when evaluating the CO2 reduction potential of LNG as ship fuel (maximum value is roughly 26% compared to HFO). Low-pressure Otto-cycle gas engines burning LNG comply with the IMO Tier III NOX limit without requiring exhaust gas treatment.

<http://www.ngvglobal.com/blog/lng-is-prime-contender-for-newbuilds-dnv-gl-alt-fuels-white-paper-0417>

## Wärtsilä signed to maintain LNG systems onboard Viking Grace

The technology group Wärtsilä and Finnish ferry company Viking Line have signed an Optimised Maintenance agreement for the Wärtsilä LNGPac system onboard passenger ferry Viking Grace. This is the first Optimised Maintenance agreement ever made for Wärtsilä LNGPac, a complete gas handling system for ships fuelled by liquefied natural gas (LNG). Viking Grace was the first passenger ferry to utilise LNG as a fuel source. The agreement also includes Condition Based Maintenance (CBM) and online support for the Wärtsilä LNGPac system. The Optimised Maintenance agreement, signed in late 2017, enables the planning and scheduling of Viking Grace’s maintenance procedures to suit the ship owner’s business operations, thus improving their long-term cost predictability. It also increases performance reliability and maximises the vessel’s uptime, benefiting the vessel’s owner as well as its passengers. A new feature for the LNGPac agreement is Wärtsilä’s Condition Based Maintenance system that gathers information on the average gas flow, the temperatures of the heat exchangers, the use of energy, and the pressure of the LNG pumps. The data helps in planning and scheduling the above-mentioned maintenance procedures that improve cost predictability and uptime. Wärtsilä LNGPac is a complete fuel gas handling system for LNG fuelled ships. On Viking Grace, it comprises onboard liquid natural gas bunkering, two storage tanks, and handling equipment with related safety and automation systems that have been developed by Wärtsilä. In addition to the Wärtsilä LNGPac, Viking Grace has four



Wärtsilä 50DF main engines running on LNG and the propulsion systems, all maintained by Wärtsilä since the vessel went into operation in 2013. In February 2018, Wärtsilä and Viking Line agreed to extend the Optimised Maintenance agree-

ment for another five years. Viking Grace can accommodate 2,800 passengers, and it sails between Turku, Finland and Stockholm, Sweden in the Baltic Sea.

<http://www.ngvglobal.com/blog/wartsila-signed-to-maintain-lng-systems-onboard-viking-grace-0420>

**Switch to LNG for shipping fuel not enough to meet strict carbon regulations – analyst**

Switching to liquefied natural gas (LNG) to fuel ocean-going vessels may not be enough for shippers to comply with long-term emissions regulations and they will have to find additional ways of reducing emissions, JBC Energy said on Tuesday, April 17. The International Maritime Organization (IMO) on Friday, April 13 reached an agreement to cut carbon dioxide (CO<sub>2</sub>) emissions by at least 50% by 2050 compared with 2008 levels. Shipping accounts for 2.2% of world CO<sub>2</sub> emissions, according to the IMO, the United Nations agency responsible for regulating the shipping industry. According to JBC's calculations a switch to LNG-fuelled shipping, which has a CO<sub>2</sub> emission factor about 27% lower than the fuel oil that currently powers the vast majority of ships, "will not by itself be enough." Even if the entire global shipping fleet were to switch to LNG from the fuel oil and gasoil that currently power the fleet, the industry would still be short of its CO<sub>2</sub> reduction targets by 350 MMT, said JBC. Instead, the industry will have to find additional ways to cut CO<sub>2</sub> emissions, including efficiency gains, carbon capture and storage, hybrids and batteries. The IMO has adopted mandatory rules for new vessels to boost fuel efficiency as a means of cutting carbon emissions from ship engines but a final plan is not expected until 2023. LNG will likely play an important role in reducing emissions as the first round of regulations come into force, but the final 2023 plan will have the biggest impact, said JBC. Moreover, the switch to LNG would have large ramifications for the oil industry. "There is a lot at stake in the long term, as the entire bunker fuels (fuel oil, gasoil, and gasoline) demand of over 5 million barrels per day would effectively cease to exist," said JBC.

<https://www.hellenicshippingnews.com/switch-to-lng-for-shiping-fuel-not-enough-to-meet-strict-carbon-regulations-analyst/>

**LNG Bunkering Market to register high demand rate Worldwide: Top manufactures, challenges and drivers by 2025**

Bunkering is the process of transferring fuel to a vessel or a facility in the form of conventional marine fuels or LNG. The density of LNG is around half that of heavy fuel oil. This translates to around 1.8 times LNG needing to be bunkered to obtain same range in comparison to bunkering heavy fuel oil. Increasing number of vessels or ships are using LNG owing to the need for cleaner fuels coupled with stringent government regulations to reduce chemical emissions. This in turn is expected to drive growth of the LNG bunkering market.. Ship-to-ship LNG bunkering is projected to be the fastest growing segment over the forecast period. This is attributed to its advantages such as quick transfer operations and high capacity of 700-7500 tons. Moreover, ship-to-ship operations are feasible for all types of vessels. In 2017, the Port of Gothenburg, Europe, conducted its first ship bunkering using liquefied natural gas.

Offshore support vessel segment dominated the global LNG bunkering market in 2016, owing to it being relatively cost effective in terms of offshore exploration and production activities. Europe was the largest revenue contributor to the global market in 2016, accounting for 42.17% share. This is due to presence of largest bunkering hub, Norway in the region, as it offers over 18,000 LNG bunker stations. Moreover, rising concerns for minimizing the environmental impact and augmenting investments towards rebuilding and upgrading LNG infrastructure is anticipated to further boost growth of LNG bunkering market in Europe. In 2017, the European Union (EU) member states approved the European Commission's proposal of investing US\$ 24.18 billion to support seven actions for developing efficient and sustainable transport and energy infrastructure including that for LNG bunkering. Asia Pacific is projected to be the fastest growing market for LNG bunkering, exhibiting a CAGR of 61.8% over the forecast period. This is attributed to growing production activities in this region coupled with increasing energy demand. According to International Energy Agency, demand for energy from Southeast Asia between 2000 and 2013 had increased by over 50%. Petronas Company invested US\$ 1.16 billion for FLNG project in Malaysia with a capacity of 1.2 MTPA in 2016. Maritime and Port Authority of Singapore also announced funding of US\$ 1.45 billion for six vessels under a pilot program in 2017, to test procedures for operations and safety protocols for LNG bunkering. This is expected to drive growth of the market.

<https://www.coherentnews.com/lng-bunkering-market-to-register-high-demand-rate-worldwide-top-manufactures-challenges-and-drivers-by-2025/>

**TECHNOLOGICAL DEVELOPMENT FOR CLEANER ENVIRONMENT /BIO-METHANE****Three new bio-methane production units doubles Air Liquide's capacity**

Since the beginning of 2018, Air Liquide has commissioned three new bio-methane production units, in the United States, in France and in the United Kingdom. This has doubled the company's bio-methane production capacity which now stands at 60 MW, the equivalent of 500 GWh for a full year of production. Used as fuel in vehicles, renewable natural gas or bio-methane is also called bio-NGV. Over the course of the last four years, the Group has decided around EUR 100 million (USD 123 million) in investments in bio-methane production. Today, the Group operates 10 production units around the world, designed to purify biogas in order to transform it into bio-methane and inject it into the natural gas network. The three new bio-methane production units commissioned by Air Liquide are located in the United States (Walnut, Mississippi), in France (Cestas, near Bordeaux), and in the United Kingdom (Northwick, near Birmingham). Air Liquide has developed technologies and expertise that cover the entire bio-methane value chain: the purification of biogas for its transformation into bio-methane, injection into the natural gas networks in collaboration with local players, liquefaction, distribution for clean vehicle fleets fueled by bio-NGV. Biogas purification technology is based on the use of patented polymer membranes manufactured by Air Liquide.

<http://www.ngvglobal.com/blog/three-new-bio-methane-production-units-doubles-air-liquides-capacity-0419>

### U.S. exports innovative small-scale H2 refueling appliance to Japan

The U.S. Department of Energy (DOE) and Japan's New Energy and Industrial Technology Development Organization (NEDO) recently announced a collaboration on hydrogen and fuel cell safety research and development (R&D) data sharing to accelerate progress in hydrogen technologies with mutual goals of energy security, resilience, and economic growth. In the spirit of this collaboration, DOE's Fuel Cell Technologies Office announced that SimpleFuel, winner of the \$1 million H2 Refuel H-Prize, is exporting one of the world's first hydrogen refueling appliances to Japan. With this first U.S. export of cutting-edge technology innovation to long-time hydrogen collaborator, Japan, the H-Prize showcases how federal prizes can be used to incentivize American entrepreneurs to accelerate technology advancement. The H2 Refuel H-Prize competition successfully challenged America's innovators to deploy an on-site hydrogen generation system to fuel hydrogen vehicles, which can be used in homes, community centers, small businesses, or similar locations.



SimpleFuel's home scale refueling appliance can provide a 1-kilogram fill to vehicles in 15 minutes or less at 700 bar using hydrogen produced via electrolysis, with a cost-effective design that minimizes setback distances and reduces the physical footprint of the system. This approach complements the conventional retail fueling stations currently being funded by states and the private sector. SimpleFuel is a collaboration of three companies: IVYS Energy Solutions, McPhy Energy N.A., and PDC Machines. With support from the Japanese Environmental Ministry of the Central Government, the SimpleFuel appliance will run on solar or grid electricity for use with a Toyota Industries fuel cell forklift truck at the Kesen Precut Cooperative. Kesen Precut manufactures high quality wood and wood chip products for the Japanese market with two production facilities in Sumida Town and Rikuzentakata.

<http://www.ngvjournal.com/s1-news/c5-products/u-s-innovative-small-scale-hydrogen-refueling-appliance-exported-to-japan/>

### Bio-gas: Nafed signs MoU with IOC

Ministry of Petroleum and Natural Gas has signed an MoU with National Agriculture Cooperative Marketing Federation Limited (NAFED) for collecting agricultural and food waste for conversion into energy by IOC's biogas and Bio-CNG plants. This information was shared by Union Petroleum and Natural Gas Minister Dharmendra Pradhan during the "Thanks Giving function" organized by Nafed at Dr Ambedkar International Centre in Delhi. It bears recall that Nafed paid all dues to lenders recently out of its own pocket i.e. from earnings made from service-charges for its procurement of grains and organized a gala event to say thanks to the Agriculture Ministry that helped Nafed overcome its financial crisis. The minister said "Nafed Managing Director Sanjeev Chadda had come to and expressed his desire to sign an MoU with Indian Oil Corporation (IOC). For a few minutes, I was a little confused and wondered if Nafed was doing the grain procurement work then why the Agri Cooperative was eager to sign an MoU with IOC". "Later on, Chadda clarified that the cooperative would supply IOC agriculture waste like stubble which could be converted into biogas and Bio-CNG. I welcomed the move and assured him the idea would soon be given concrete shape," Minister informed the gathering. "Converting biogas and bio-CNG will not only help curb the menace of stubble burning but also create an additional income for farmers. It will also reduce the country's fuel import bill", Minister noted. Meanwhile, IOCL is taking the lead in terms of setting up plants for generation of Bio-CNG so that farmers can supply biomass instead of burning it. IOCL will buy back Bio-CNG and sell the same.

<http://www.indiancooperative.com/nafed/bio-gas-nafed-signs-mou-with-ioc/>

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