Gas to Power Journal
Peakload Power and Energy Storage

Focus on flexible capacity & hybrid projects

Weekly News 23 June 2023

GAIL India issues swap tender for 12 LNG cargoes

India's largest gas distributor GAIL is understood to have issued a swap tender, offering 12 cargoes for loading from the US Sabine Pass terminal and seeking cargoes for delivery into its Dhamra regas terminal this year and in early 2024 to meet growing gas demand for power generation. The tender closes on June 22.

Dharma LNG terminal at India's east coast

Situated in Orissa, on the east coast of India, the Dhamra LNG terminal has a capacity of 5 mtpa and is jointly owned by the Adani Group and TotalEnergies. India's GAIL has reserved capacity at the terminal, with slots for at least 1.5 mtpa regas capacity booked for 20 years under an arrangement with the Adani Group.

Heat wave boosts gas-burn and LNG imports

Scorching temperatures and lower spot LNG prices have prompted a jump in gas-burn for power generation and LNG imports in India, with cargoes sourced from Qatar, Mozambique and the US. As early as mid-April, six cities in India's north and eastern regions recorded temperatures above 44°C, which boosted demand for air-conditioning and propelled up the share of natural gas in the country's power generation mix.

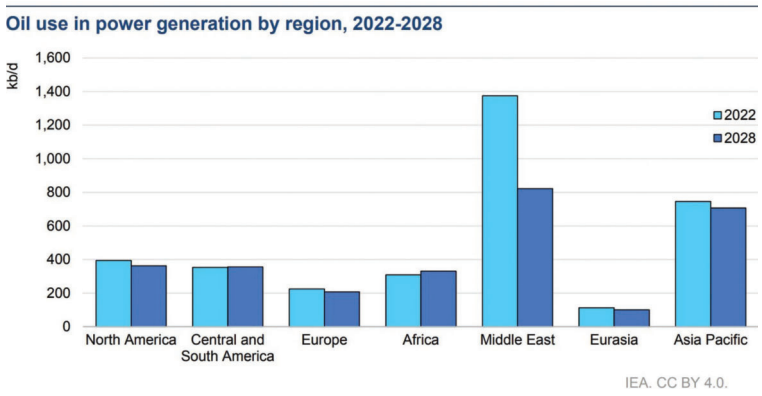
Softening spot LNG prices in recent months supports the jump in imported cargoes as India's total gas consumption had already risen 3.3% year-on-year to 14.5 bcm in the first quarter, according to fig-

continued on page 2

Gas and renewables to replace oil in Middle Eastern power sector

Though global upstream oil and gas investment is on track to rise by 11% in 2023 to $528 billion, Middle Eastern countries seek to eliminate the use of oil for power generation, the International Energy Agency (IEA) finds. Saudi Arabia, Kuwait and Iraq have ambitious plans for renewables and gas-fired plants to replace oil-fired ones almost entirely by 2028.

Saudi Arabia's economy used to rely heavily on oil, with 420 thousand barrels per day (kb/d) burnt to generate electricity in 2021 alongside 30 kb/d of gasoil and 290 kb/d of fuel oil. However, the country plans to generate its entire electricity needs from natural gas and renewables by 2030, at the latest.



By the end of 2024, some 4.87 GW of new-build wind and solar power capacity is meant to generate 15.1 TWh of electricity and displace roughly 70 kb/d of oil, according to Saudi government figures. The oil giant Saudi Aramco reckons that substitution by natural gas will eventually displace 500 kb/d of oil demand,

continued on page 2

AGENDA

Continued from page 1, top story

ures of the Gas Exporting Countries Forum (GEFC). To pre-empt fuel shortages and blackouts, the Indian Ministry of Power introduced a set of emergency rules to ensure that gas peaking plants can run at full capacity.

A staggering number of 31 gas-fired power station with a combined 24.9 GW capacity have for long been stranded or run at sub-optimal levels due to a lack of fuel. To avoid blackouts during a crunch period from mid-April to the end of May, the India's power ministry procured 4 GW of electricity from gas-fired power stations through a tender. But to operate 12.5 GW of existing gas generating capacity as peaking plants, the government would have to revise its gas allocation strategy. ■

MAN Energy Solutions sells gas turbine business to China

Volkswagen-affiliate MAN Energy Solutions has decided to sell its gas turbine business to China's CSIC Longjiang GH Gas Turbine Co., as the German manufacturer shifts focus to decarbonisation solutions. To date, the company has produced and serviced gas turbines of up to 8 MW in Oberhausen and Zurich for use as mechanical drives or for power gen.

"This product area is now no longer central to our growth strategy," MAN Energy Solutions said in a statement.

MAN Energy Solutions had already taken the decision to separate from the product area as part of its "Performance 2023" program and the sale of the gas turbine business is "a logical next step" to turn the company into a solution provider for sustainable energy supply.

The sale agreed with CSIC Longjiang GH Gas Turbine Co. a five-year site guarantee in Oberhausen and Zurich, ensuring the further development of the gas turbine series and the preservation of jobs at the two sites under the new ownerships.

The gas turbine business currently has approximately 80 employees in Oberhausen as well as some 20 employees in the maintenance of installed turbines at MAN PrimeServ in Zurich. The sale will have no effect on the other employees at the company's sites in Oberhausen (around 1,600) and Zurich (around 800) or on the other products manufactured there.

CSIC Longjiang GH Gas Turbine Co. (GHGT), develops small and medium-sized gas turbines in a 5 to 50 MW range as well as high performance and combustion technologies. These turbines are used for power generation, mechanical drive, and offshore engineering while research is being carried out on low NOx, hydrogen and ammonia combustion. GHGT is a subsidiary of China State Shipbuilding Corporation (CSSC) and is headquartered in Harbin. ■

Gas to Power Journal

Publisher
Stuart Fryer

Editor
Anja Karl
Tel: +44 (0)7733 684 682
anja@gastopowerjournal.com

Advertising
David Jeffries
Tel: +44 (0)7973 642 086
djeffries@lngjournal.com

New Business & Databases
Stephan Venter
Tel: +44 (0) 207 017 3407
venter@gastopowerjournal.com

Subscriptions
Margarita Tokere
Tel: +33 (0)7 67 62 58 77
margarita@gastopowerjournal.com

Layout & Production
Vivian Chee
Tel: +44 (0) 208 995 5540
chee@btconnect.com

Continued from page 1

mainly in the power sector.

Iraq, too, fosters ambitious plans to displace oil. The war-torn country ins 2020 used 140 kb/d of crude oil, 30 kb/d of fuel oil and 15 kb/d of gasoil to generate electricity but ministers aim to add 12 GW of renewable power by 2030. Moreover, some 2.5 Bcf/d of additional gas processing capacity is meant to be added by 2027 and the Kurdistan Regional Government has started to build two large gas pipelines that will boost the volume of gas available to fuel power stations.

Kuwait plans to develop 3.5 GW of renewable capacity by 2030 and to progressively replace oil-fired capacity with natural gas in the coming years. The emirate opened its first fixed LNG import terminal in mid-2021 and the Al Zour terminal is designed to import 22 Mt of LNG per year.

Overall, IEA analysts project oil-burn in the Middle Eastern power sector will fall by by 550 kb/d over the forecast period to 820 kb/d in 2028. More than half (280 kb/d) of this decline will be in direct use of crude oil, with the remaining decrease roughly evenly divided between fuel oil and gasoil. However, most countries will keep some oil-fired capacity for flexibility to meet peak demand. ■

Qatar's second large LNG supply deal with China may alter power mix

China National Petroleum Corporation (CNPC) will procure 4 million tons of LNG from QatarEnergy over 27 years in a move that tilts China's power gen mix more towards natural gas. With the largest coal ports in China situated near some large LNG import terminals, power producers in the area can easily switch fuel to maximise their returns.

Apart from purchasing large volumes of LNG, CNPC will take an equity stake in Qatar's North Field LNG project. That stake equals to about 5% of one liquefaction train with 8 mtpa capacity. QatarEnergy is selling 5% in these trains to what it calls "value-added partners," which also include China's Sinopec. The North Field expansion is estimated to cost over $30 billion and Qatar plans to retain a 75% majority stake in the project.

QatarEnergy Q-Max tanker

China's LNG imports could jump 15%

With China's industrial gas use rapidly rebounding after lockdowns were lifted, the country's overall demand growth will rise 6% this year and LNG imports could jump up to 15% compared to 2022-levels, the International Energy Agency (IEA) finds.

Gas-burn in the Chinese power sector is likely to rise even further after the government's zero import tax policy on thermal coal will come to an end this December. An influx of cheap thermal coal imports and fast renewables build-out has reduced gas-burn for power generation while the city gas segment saw a 7% growth as the economy is reopening.

The pandemic had caused an unprecedented 20% plunge in China's LNG imports which facilitated a swift growth in LNG deliveries to Europe which struggled to replace missing Russian supplies. By March 2023, however, China's imports of the super-chilled gas recovered to double-digit figures with analysts anticipating full-year inflows to rise between 10% and 15% year-on-year while remaining below record 2021-levels. ■

Bangladesh signs fresh deal with Oman to import LNG

Petrobangla, Bangladesh's state oil and gas company, has signed a contract with the Omani firm OQ Trading for an additional 0.25–1.5 mtpa of LNG deliveries. OQ Trading is already supplying 1 mtpa of LNG to Bangladesh with most of the volumes used for power generation while shipments under the new deal will start in 2025.

Under the sales and purchase agreement, OQ Trading agreed supply 250,000 tonnes per annum of shipments as early as 2025 and up to 1.5 million tonnes per annum (mtpa) from 2026. Details of the contract were not disclosed but Wood Mackenzie understands that a flurry of Omani LNG deals was sealed with a link to Brent oil prices in the mid-to-high 13%s.

Tawfiq-e-Elahi Chowdhury, energy adviser to the Prime Minister of Bangladesh, hailed the deals as instrumental in ensuring energy security in Bangladesh. Natural gas makes up about 60% of the country's power generation mix, with the balance coming mostly from coal.

Petrobangla's Moheshkhali FRSU

Returning to the spot market

In February, Bengali gas buyers re-entered the spot market as the country urgently needed LNG to fuel gas-fired peaking power plants to ensure uninterrupted electricity supply during the agricultural irrigation season and for export-orientated industries. "The process of importing LNG from the spot market has been adopted as a necessary measure to meet the demand for natural gas," Bangladeshi Prime Minister Sheikh Hasina told parliament. She urged utility buyers to import more LNG as prices for cargoes have plunged by nearly 50% over the last two months.

A spot tender issued in mid-February saw prices under $17 per million British thermal units, down from around $38/MMBtu in November. But additional spot LNG shipments will likely need to extend into the summer to fuel power stations and avoid crippling blackouts.

Though Bangladesh produces around 24 Bcm per year of domestic gas from more than 20 fields, it has to import at least 7 Bcm of LNG to meet rising demand. Trying to increase domestic supplies, the government is courting Oman to get involved in exploring gas offshore Bangladesh. ■

Permian production keeps growing

Gross natural gas withdrawals in the US Permian region set an annual record high last year at 21.0 billion cubic feet per day (Bcf/d), 14% above the 2021 average, and output kept rising going into 2023. Midstream companies aim to bring an additional 4.2 Bcf/d of takeaway pipeline capacity onstream by the end of 2024.

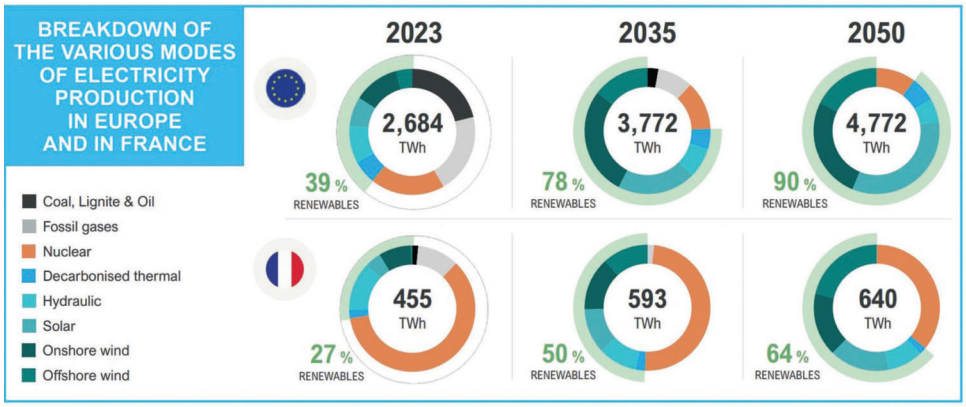
The build-out in the region's gas infrastructure will allow more production to reach industry and power producers as well as LNG export terminals on the US Gulf Coast. First in line is the Whistler Pipeline Capacity Expansion with three new compressor stations that will boost capacity by 0.5 Bcf/d to 2.5 Bcf/d once it enters service in September 2023.

The Permian Highway Pipeline Expansion is expanding compression, increasing capacity by 0.55 Bcf/d to 2.65 Bcf/d. The project is slated to start up in November 2023. Similarly, the Gulf Coast Express Pipeline is expanding compression, increasing capacity by 0.6 Bcf/d to 2.65 Bcf/d by December 2023. Meanwhile, the Matterhorn Express Pipeline is adding 2.5 Bcf/d of takeaway capacity by the fourth quarter of 2024, transporting gas from the Waha Hub to Katy, Texas. ■

Europe needs 600 MW of flexible capacity to balance RES build-out

The French energy group ENGIE has modelled a 'Net Zero emissions' scenario for Europe that would require 78% of electricity coming from wind and solar power sources by 2035, and up to 90% by 2050. To balance soaring intermittent power supply, 600 MW of additional flexible capacity like batteries, pumped storage and gas power stations needs to be developed.

"Massive growth in renewable energies is essential," ENIGIE finds, suggesting "only they can quickly and cost-effectively meet the increasing demand linked to the electrification of end-uses." However, to meet the EU's climate commitments, industry and households also need to save more energy and use it in a more efficient way, with the aim of achieving a 34% reduction in energy consumption by 2050.



Flexible backup capacity needs to be added quickly, incentivised by appropriate remuneration models e.g. for load shedding, batteries and decarbonised combined-cycle gas power plants. Moreover, ENGIE urges regulators to speed up the issuing of permits required for adding flexible capacity.

Converting gas plants to hydrogen

Gas-fired power plants will need to be converted to run on green hydrogen or biomass. If no new gas plants are built, Engie calculates that the energy transition will cost €37 billion more per year as that capacity would need to come from renewables and battery storage. "To manage electricity demand peaks, the over-dimensioning of renewables does not make economic sense," ENGIE stressed.

Hydrogen as an emission-free fuel is expected to play a key role in transport, for certain industrial uses as well as in the power sector. Demand for hydrogen could increase 8-fold by 2050, ENGIE reckons, suggesting 75% of the clean fuel will be used for transport and 25% for the hard-to-abate industries, e.g. steel. The French utility is confident at almost half of this hydrogen will be produced locally.

Existing gas grids could be adapted to a totally carbon-free energy mix at a "limited cost," ENGIE said, while upgrading and expanding the electricity grid to accommodate fast-rising volumes of renewable energy is likely to cost billions of Euros. ■

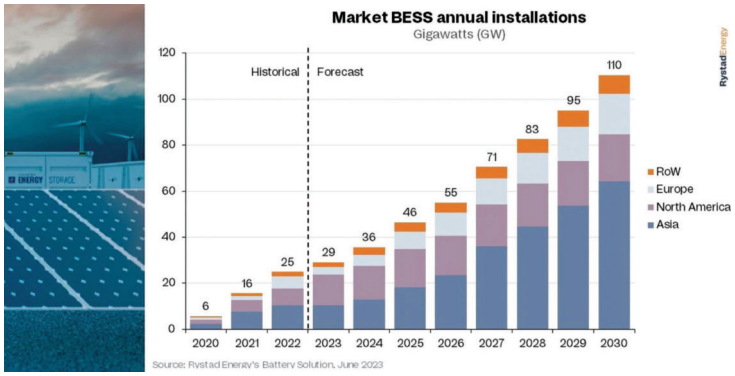
Battery storage additions to surpass 400 GWh per year by 2030

Energy storage is becoming a crucial backup for the green energy transition, with Rystad Energy projecting annual battery storage installations to surpass 400 gigawatt-hours (GWh) by 2030 – a tenfold rise on the current build-out. Incentives under the U.S. Inflation Reduction Act already boosted renewable capacity by 40% and spurred more than 20 GW of new battery capacity.

As result, the total installed US battery capacity will exceed 130 GW by 2030. Over in Europe, there are various local funding for battery energy storage, for example, a £32 million energy storage funding program in the UK.

Global additions in battery energy storage systems (BESS) expanded 60% in 2022 over the previous year, with total new installations exceeding 43 GWh. A further 74 GWh will be added this year – a 72% increase – primarily driven by cost reduction in BESS systems in addition to incentives in North America, governmental funding programs in Europe, coupled with robust renewable capacity expansion in mainland China.

China's recent coal capacity expansion is primarily for backup and does not translate into immediate increase in generation. In fact, average coal capacity factors in China have been declining steadily since 2010. Meanwhile, the country has matured its solar and battery production capacity to meet domestic demand and growing exports. "To decrease reliance on coal and gas as back-up power generation sources, countries must invest in BESS now," urged energy storage analyst Sepehr Soltani.

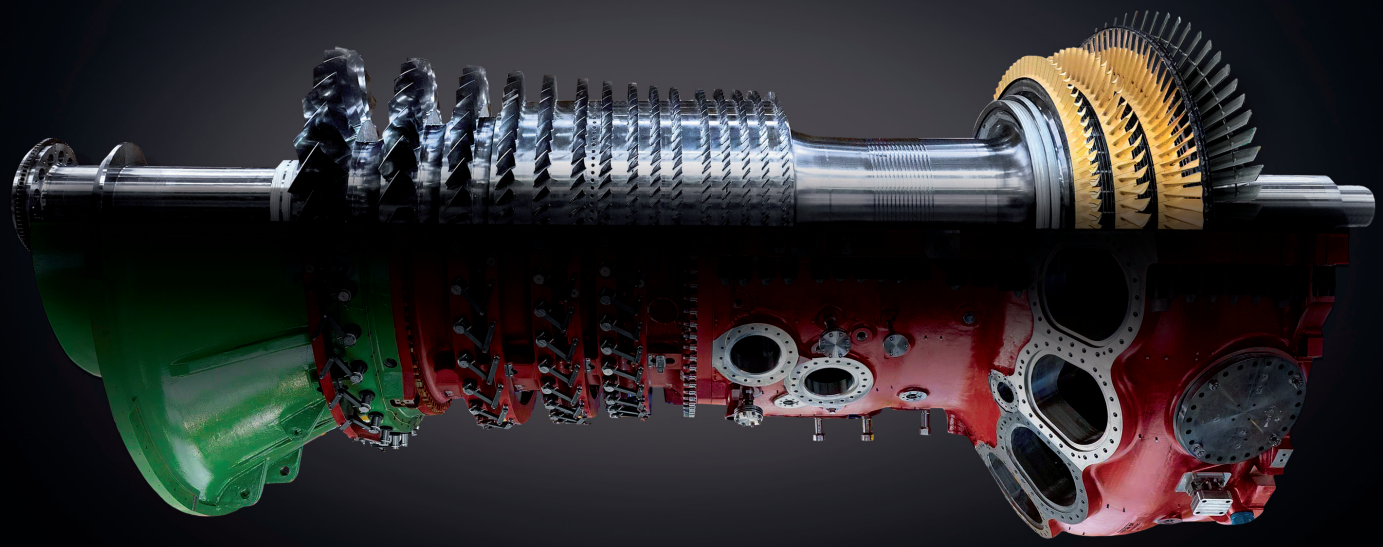


By 2030, Rystad expect the annual BESS installation will hit 110 GW, with 58% of the total developed in Asia. North America will account for about 20 GW and Europe will have 18 GW installed, with the remaining 8 GW from the rest of the world.

"This is a shift from current trends, as the projected installation at the end of 2023 is expected to be dominated by North America, which will account for 45% of total BESS capacity," Soltani commented on the emergence of Asia as the leading battery market. ■

ITALIAN ENERGY

BRIGHTER FUTURE



Ansaldo Energia's GT36 gas turbine is the top of the range for performance and power in our portfolio. With our products and solutions, from EPC to service, from digital twin to remote monitoring, Ansaldo Energia is ready to face the challenges of the energy transition towards a cleaner and more sustainable future.

ansaldo | energia

Gas resource holders face tough choice between LNG and ammonia

As the energy transition accelerates, gas resource holders face a tough choice: continue developing new LNG export facilities or pivot into blue ammonia. For those seeking scale over the next 15 years, the prize is still LNG rather than blue ammonia, but for profitability and value, blue ammonia could prove more attractive, Wood Mackenzie finds.

"Demand for LNG is expected to grow by just under 70% over the next 25 years to reach 700 metric tonnes per annum (mtpa) by 2050. But neither growth nor revenue is locked in for LNG. As the energy transition gathers pace, gas stakeholders are questioning whether longer-term demand for LNG is so assured," said Giles Farrer, Head of Gas and LNG Asset Research.

In Wood Mackenzie's Accelerated Energy Transition (AET-1.5) scenario, the world consumes far less gas. The market will still need 160 million mtpa of new LNG supply to be developed by 2040, but beyond this time, developers face the risk of declining prices and underutilisation as demand reduces to 500 mtpa by 2050.

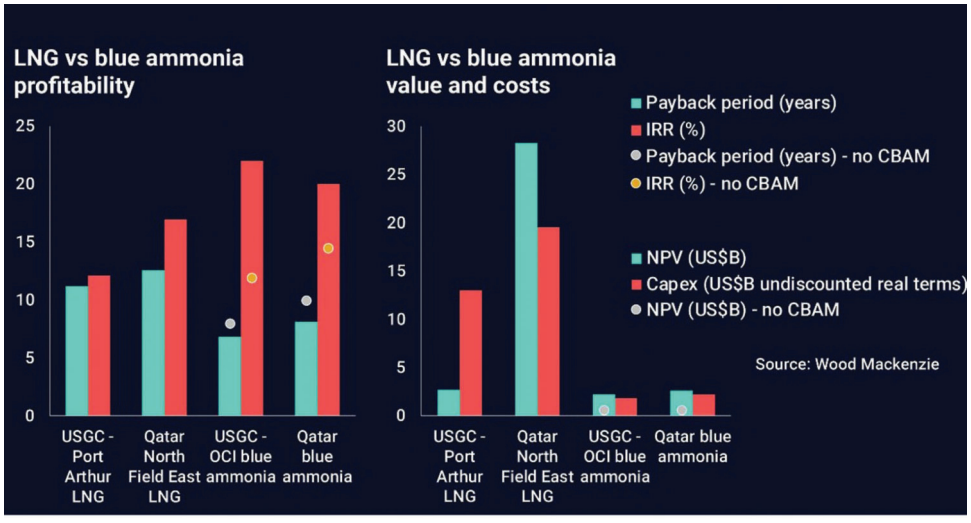
Blue ammonia, produced from low emission hydrogen, generated through gas reforming with carbon capture and combined with air-sourced nitrogen, has quickly risen to the top of the pile as a credible alternative to LNG for gas monetisation.

Like-for-like comparisons are difficult, however, due to different commercial structures and relative taxation, analysts cautioned. Location and available incentives impact profitability and payback periods: The US 45Q tax credit, for instance, improves projects' competitiveness against markets with lower nominal feedgas costs. More project developers – especially in the US Gulf Coast – hence look to export blue ammonia to Europe and in many cases, these are backed by major LNG players.

"Shorter payback periods for blue ammonia could be particularly attractive for those with first-mover advantage in accessing Europe. And if the world was going to edge closer to Wood Mackenzie's AET-1.5 scenario, lower LNG prices and higher carbon prices would further strengthen the attractiveness of blue ammonia vs LNG," Douglas explained.

Export-led projects will look first to markets offering incentives such as Europe's Carbon Border Adjustment Mechanism (CBAM) which is expected to increase ammonia prices by 60% and make exports competitive against carbon-intensive alternatives. "Locking in European demand through long-term contracts could deliver internal rates of return for blue ammonia that are higher than those of LNG, halving payback periods," he reckons.

In terms of size of the market, approximately US$250 billion of additional investment in pre-FID LNG liquefaction projects is required to meet Wood Mackenzie's base case forecasts by 2050. In contrast, US$24 billion of investment is required for blue ammonia for exports. In Wood Mackenzie's AET-1.5 case, the case for blue ammonia investment is much stronger, with US$80 billion required compared with US$160 billion for LNG. ■



Form Energy to deploy 100-hour iron-air battery for Georgia Power

Grid-scale US energy storage developer Form Energy is moving ahead under an agreement with Georgia Power, part of Southern Company, to deploy a 15 MW/1500 MWh iron-air battery system in Georgia. The multi-day battery could last up to 100 hours and is expected to come online as early as 2026, subject to regulatory approvals.

Once onstream, the long duration iron-air battery will strengthen Georgia's electric grid against normal day-to-day, week-to-week, and season-to-season weather variability, in addition to extreme weather events. The utility provides electricity to 2.7 million customers in all but four of Georgia's 159 counties.

Committed to shift to a cleaner energy mix, Georgia Power's latest Integrated Resource Plan (IRP) features the 265 MW lithium-ion McGrau Ford Battery facility located in Cherokee County, as well as an additional 500 MW of battery storage. Other Georgia Power BESS projects underway include a 65 MW project in Talbot County (Mossy Branch) and a 13 MW project with the US Army at Fort Stewart near Savannah.

Looking ahead, the utility said it planned to evaluate opportunities in the 5-15 MW range, also based on iron-air batteries. The technology delivers electricity for 100 hours at a price of less than $20/kWh which is said to be competitive with conventional power plants and at less than 1/10th the cost of lithium-ion. ■

Edison upgrades gas power plant near Venice to co-fire hydrogen

Italian utility Edison has inaugurated a gas-fired power station in Porto Marghera near Venice that has been upgraded to partly run on hydrogen. Investment to upgrade the 780 MW plant amounted to around €400 million and the revamped facility now has an efficiency of 63%, facilitating lower carbon and nitrogen oxide emissions.

Edison CEO Nicola Monti conceded that although the plant has different technologies to decarbonise, it was not ready yet to also co-fire hydrogen simply due to a lack of affordable fuel. "Unfortunately, green hydrogen production is not yet competitive compared to natural gas. We will definitely get there within a few years," he said.

Bird's eye view of Porto Marghera

Ansaldo Energia built the GT36 gas turbine for the repowered Marghera plant.

Still, Italy's industry minister Adolfo Urso called the upgraded plant "strategic for Italy" as it is one off the most efficient and sustainable ones of its kind in Europe. Going ahead, Edison wants to source enough hydrogen to not only run the Porto Marghera plant but all of its new generation combined-cycle gas power stations on this clean-burning fuel.

With a total of 7.2 GW installed capacity across Italy, Edison generates some 7% of the country's electricity needs. Striving to decarbonise its power gen portfolio, the utility plans to invest €10 billion by 2030, half of which dedicated to expanding renewables and around another third to make gas power plants hydrogen ready. ■

German regulator spurs grid investment with higher interest rates

Germany's Federal Network Agency (BNetzA) is seeking to accelerate the power gird expansion by raising the equity interest rates for new projects by 40%, allowing companies to reap a higher return on their invested capital. Adjusted for tax, the regulated equity yield for 2024 is now 7.09% for new investment, the regulator said.

Equity rates have caused some controversy in recent months, as BNetzA was initially reluctant to raise rates despite urgent calls from transmission system operators. The regulator had feared that costs for grid users – consumers, industry or commerce – would increase with higher rates.

However, the German electricity grid urgently needs to be expanded to ensure it can handle a shift away from utility-scale fossil power plants towards more decentralised, intermittent renewable energy sources. To achieve the government's target of becoming climate neutral by 2045, the country's industry will increasingly rely on electricity as their main energy source which requires new distribution lines. ■

Eskom puts out RFP to run two South African plants on gas, not diesel

South Africa's utility Eskom has issued a request for proposal (RFP) to operate the Gourikwa power station in Mossel Bay and Ankerling power station in Atlantis on natural gas, rather than diesel. The fuel switch is expected to safe Eskom 28% of the cost spent on diesel, although it is only affordable if the gas is bought long-term.

Gas supply contracts with a tenure of five to ten years are considered ideal for Eskom to stabilise fuel costs for diesel-to-gas conversion projects. If approved and enacted, the first use of gas at these power stations could take place by the end of 2024, or in early 2025.

Ankerling is an open-cycle power plant, comprising of 4 x 148 MW units that were commissioned in June 2007 and 5 x 147 MW units that stared commercial operations in February 2009. The OCGT's total installed capacity is 1,327 MW. As Ankerlig has no direct pipeline to a fuel depot, the diesel has been brought in by road tanker.

Gourikwa is yet another diesel-fuelled OCGT, consisting of 3 x 148 MW units that were completed in June 2007 and 2 x 148 MW units was declared commercial during November 2008. The total installed capacity is 740 MW. The operator Eskom said the OCGT is dispatched for peaking power and also used to regulate network voltage fluctuations.

Shifting to greener energy

South Africa's state utility Eskom is under pressure to reduce its reliance on coal. World Bank lending requirements stipulate a shift to green energy – "technology, they might only be able to implement in 2030 and at a huge cost," said Bhavtik Vallabhjee, Head of Power Utilities at Absa Bank.

Infrastructure projects in Africa takes 8 years on average to move from ideation to coming online, so developers need partners who are prepared to invest for the long-haul. But the South African government has set a target for renewable energy sources to contribute a cumulative 10 000 GWh of energy. State-run Eskom will have installed 17,742 of wind between 2019 and 2030, but the utility said it would be able to offer customers a maximum of 300 GWh per annum of renewable energy from the Sere wind farm – a far cry of the overall target. ■

Eskom's Ankerling OCGT

LNG Journal Subscription Package

Your LNG Journal subscription includes broad coverage of LNG across the globe – from trade and shipments through to LNG prices, plus in-depth technical coverage. With over 20 years of LNG reporting experience, we remain the market leading source of information for decision makers in the LNG industry.

LNG Daily News
Delivered to your inbox and online

LNG Journal
The flagship LNG monthly

LNG Unlimited
Your weekly summary of LNG news

LNG Market Tracker
Weekly empirical insight into the LNG market

LNG North America
Bi-monthly report on LNG in the US, Canada

LNG Fuelling
In-depth look at LNG as a fuel

LNG Shipping News
Bi-weekly coverage of LNG shipping

LNG China
Bi-monthly review of LNG in China

LNG Monthly Markets
Key developments in LNG markets

Gas to Power Journal
Peakload Power and Energy Storage

Subscription Contacts

For new subscriptions or general subscription queries please contact:

Stephan Venter
venter@lngjournal.com
+44 207 017 3407

To renew an existing subscription or to upgrade your package, please contact:

Gabi Weck
gabi@lngjournal.com

Sign up now for an Online Subscription at only US$1190; €920 or £830

Discount options are available for multi-users

Contact us for more information or to arrange a free trial