



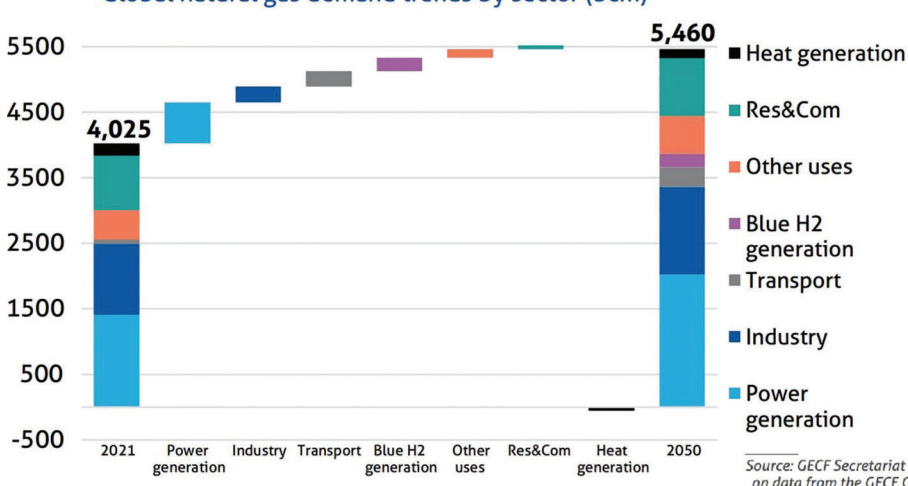
GEFC expects gas demand to rise 36% by 2050, driven by power sector

The Gas Exporting Countries Forum (GECF) forecasts natural gas demand will increase by 36% to 5,460 billion cubic meters (bcm) in 2050, with power generation accounting for 43% of additional volumes through to 2050. Clean air policies are anticipated to make gas overtake coal by around 2025 and become the most utilised fuel just after 2040.

Coal- and oil-to-gas switching are taking place on a large scale, driven by more stringent air quality regulations and carbon emission trading schemes in Europe and parts of the United State. Meanwhile, the rapid build-out of increasingly cost-competitive renewable energy sources will make gas-fired power generation a critical source of system flexibility.

But GEFC analysts also see new avenues for natural gas demand, particularly through the growing use as a source for blue hydrogen generation. The transport sector, in particular, could adopt hydrogen

Global natural gas demand trends by sector (bcm)



fuels – next to its growing electrification.

In a regional perspective, Asia Pacific is seen as the "largest growth engine" contributing to half of the global net demand increase during the outlook period. Europe, in contrast, will be "the only region to experience an evident declining trend,"

continued on page 2

JERA expects to post full-year profit on lower LNG procurement costs

Japan's largest power producer JERA now expects to reap a net profit of around 100 billion yen (\$769 million) for the year to March 31, revising its earlier forecast loss of 200 billion yen, due to significantly lower LNG procurement in a mild winter. JERAGM, the company's trading unit also cached in from reselling some LNG cargoes to Europe.

"We had assumed a tight global LNG market during the winter, but the market has eased thanks to warmer weather in Europe, improving our procurement environment in terms of volume and prices," Tetsuo Yoshida, the head of finance, told a post-earnings news conference on Monday.

The Tokyo-based company reported a 113% surge in fiscal third-quarter revenues to the end of December of 6.08 trillion yen (\$46.8 billion) compared with 2.8 trillion yen (21.97 billion) in the prior-year quarter. JERA said revenues jumped amid profitable fuel



JERA's LNG-fuelled Anegasaki power complex

trading activities and a rise in electricity sales.

Still, JERA incurred a 100.2 billion yen (\$772 million) loss in the fiscal third quarter versus a

continued on page 2

AGENDA

MARKETS

Gas displaced most coal-fired power generation in Pennsylvania 2

COMPANIES

Wärtsilä order intake falls in Q4, expects demand to pick up in 2023 3

Czech investor snaps up UK power producer InterGen 3

HYDROGEN

Equinor awards FEED contract for H2H Saltend project to Linde 4

PROJECTS

NextEra adds 8 GW of renewables & storage to its project pipeline 5

Wärtsilä engines to provide 108 MW balancing power in North Dakota 5

Continued from page 1, top story

analysts noted, as implementing the REPowerEU plan is seen to have a strong impact.

On the supply side, North America is expected to uphold its position as the world's largest gas producer with regional gas production forecast to grow by 285 bcm to reach 1,420 bcm by 2050. The Middle East will emerge as the world's second-largest gas producer overtaking Eurasia, with output forecast to jump by 520 bcm to 1,190 bcm by 2050.

Africa is seen as only region where gas

production growth will more than double, from 260 bcm in 2021 to 585 bcm in 2050. In contrast, Europe's gas production is forecast to fall while Eurasia could add more than 155 bcm to its current production, driven by Russia, which may contribute more than 59% of this growth.

Looking at trade flows, LNG shipments are forecast to overtake long-distance pipeline trade by 2026 and reach 1,170 bcm per year by 2050. With pipeline exports to Europe declining and dwindling domestic production in Europe and parts of Asia Pa-

cific, LNG is becoming the preferred natural gas supply source.

Though EU countries currently spend considerable amounts in LNG import infrastructure, things will likely look very different after 2030 as the green energy transition progresses. Asia Pacific, in contrast, will keep importing LNG as South and South East Asian nations drive growth. Analysts expect current share of 72% of Asia Pacific in the world's LNG trade will be "sustained over the long term" and account for 67% by 2050. ■

Gas displaced most coal-fired power generation in Pennsylvania

Abundant low-cost gas supply from the Marcellus Shale has helped gas-fired power plants displace most coal-fired plants in Pennsylvania. Over the past 20 years, the share of gas generation increased from 2% to 52% while the contribution of coal power fell from 57% to just 12%, according to US government statistics.

Fracking and horizontal drilling helped gas production in Pennsylvania soar from 0.1 trillion cubic feet (Tcf) in 2001 to 7.6 Tcf in 2021, making the amount of gas produced in the state second only to Texas. Meanwhile, coal production in Pennsylvania dwindled, falling from 74.1 million tons to 42.5 million tons over the same period.

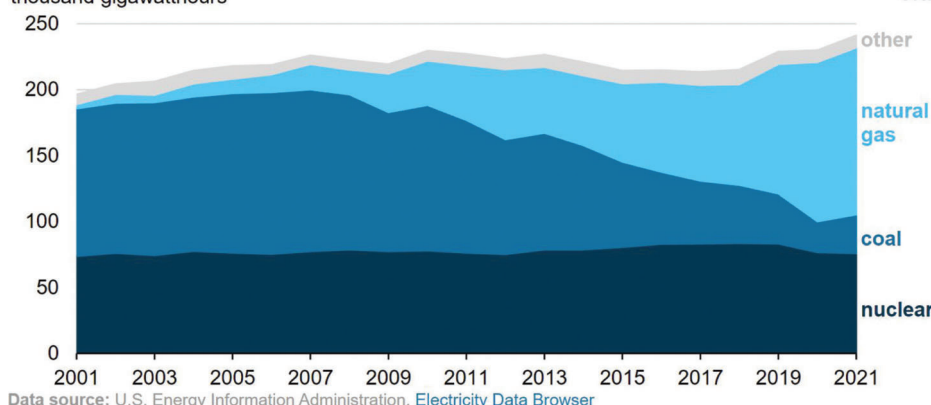
With access to inexpensive natural gas, utilities and power plant operators began to close aging coal-fired power plants in Pennsylvania, many of which were built in the 1970s and 1980s, and to replace them with new natural gas-fired combined-cycle plants. Modern CCGTs are more efficient than the typical coal-fired power unit and do not occur the same costs to comply with emission rules.

Though coal's share in Pennsylvania's power mix started declining in 2007, it stayed the largest source of in-state electricity generation until 2015, when nuclear power surpassed coal. Pennsylvania is home to eight nuclear reactors at four nuclear power plants, so when the Three Mile Island (819 MW) nuke closed in 2019 new signifi-

cant investment in new CCGTs made gas finally surpass nuclear as the state's largest source of electricity.

Today, Texas has the most coal-fired capacity of any US state with 23.6 GW, or 9% of the national total while Indiana and Ohio have at least 15 GW of operating coal-fired capacity. ■

Annual utility-scale electricity generation by source in Pennsylvania (2001–2021)
thousand gigawatthours



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

profit of 18.4 billion yen (\$141.7 million) in the same three months in 2021 due to higher cost for buying spot LNG cargoes in replacement for halted shipments from the US Freeport LNG plant due to the June 2022 fire.

JERA is a main customer of Freeport LNG along with two other Japanese utilities Kansai Electric and Osaka Gas. During the first quarter of 2022 before the accident, the Freeport plant exported 55 cargoes to Asian and European import terminals.

The Japanese LNG and power gen major

buys on average 35 million tonnes of LNG per year and controls a fleet of about 20 LNG carriers. The company currently operates and provides fuel for a total of 26 power plants in Japan and imports LNG into 11 of Japan's network of 37 terminals.

"We own the entire supply chains for fuel and thermal power generation, from fuel upstream business (development of gas fields) to transportation and storage (fuel terminal operation) to power generation and wholesaling," Yoshida said, highlighting the company's full market exposure. ■

Wärtsilä order intake falls in Q4, expects demand to pick up in 2023

Finish marine and energy equipment maker Wärtsilä has posted a 24% drop in order intake to €1,638 million in the fourth quarter but CEO Hakan Agnevall expects the demand environment to improve this year. "Our strong order book supports our ambitions for 2023," he said though the decline in equipment sales compared to services weighs on the operating result.

The share of equipment orders taken before the acceleration of cost inflation in early 2022 is "significantly smaller," Agnevall conceded, stressing Wärtsilä "aims to improve profitability by climbing the service value ladder, and by turning around the Energy Storage and Voyage business units."

Despite geopolitical tensions and an uncertain business environment, Wärtsilä managed to grow its full-year order intake by 6% to €6,074 million and net sales by 22% to €5,842 million. The service business saw order intake grow 17% to €3,066 million, exceeding the equipment order intake in absolute terms.

Equipment net sales increased by 33% and was strongly supported by growth in Energy equipment deliveries. "We have seen that the demand for balancing power has been growing and we have signed important orders for both thermal balancing power and energy storage solutions throughout the year. In the fourth quarter, for example, we signed a con-

tract to deliver a new grid-scale energy storage facility in the UK, and dual-fuel balancing engines for two new power plants in the USA, among others," the Wärtsilä CEO noted.

Operating result down 9%

However, the company's comparable operating result fell by 9% to €325 million, as cost inflation outweighed higher sales volumes and amid a less favourable sales mix between equipment and services. "Particularly the profitability of projects taken before the acceleration of cost inflation in the beginning of 2022 has suffered," the Wärtsilä CEO explained.

Striving to save costs, he announced plans back in July to centralise our 4-stroke engine manufacturing in Europe to Vaasa, Finland and to scale down manufacturing in Trieste, Italy. These moves are expected to save about €35 million per year by 2025 and factoring in some €130 million in transformation costs, the cash flow impact would be approximately €75 million. ■

Czech investor snaps up UK power producer InterGen

Creditas Group, majority-owned by the billionaire Pavel Hubáček, has acquired InterGen's UK operations from the former owners Sev.En Energy and Guandong Energy for an undisclosed amount. The sale includes three combined-cycle and one open-cycle gas power plants with a combined capacity of 2.8 GW as well as the 450 MW Gateway battery energy storage project.

Following the sale, Creditas Investment will own and operate all of InterGen's power gen assets in the UK as well as its growth projects such as the 'Gateway Energy Centre' which was awarded a 15-year capacity market agreement in February 2022 and its due to start

operations in 2025. The deal also includes several similar large-scale battery projects which are at a development stage.

Creditas has been active in the energy sector since 2013 and its division UCED is the fourth largest energy distributor in the Czech Republic. Energy is a core investment area of the group, which primarily targets companies engaged in the production, distribution and trading of electricity, gas and heat. Creditas CEO Jiří Hrouda said the group was delighted to expand its operations outside of the Czech Republic which allows applying its know-how on a larger scale and exploit synergy effects from different markets. ■



InterGen's Rocksavage CCGT is part of the deal

NFE unit to manage Puerto Rico's power system

Genera, part of the US LNG firm New Fortress Energy (NFE), has been selected by the Puerto Rico Electric Power Authority (PREPA) to operate, maintain, decommission and modernise the state's thermal power generation system of about 3,600 MW. Genera will manage the operating budget, fuel contracts and federal funds for the generation fleet on behalf of PREPA.

The independently managed NFE subsidiary, headquartered in San Juan, was chosen by the Puerto Rico Public-Private Partnerships Authority (P3A) for a 10-year operation and maintenance agreement for the US Caribbean territory's entire power gen infrastructure. The selection was made in a competitive tender, that began in May 2020, based on contender's operational and technical expertise, approach and methodology and estimated cost savings.

Key features of Genera's proposal selected by the P3A include significant cost-savings for the benefit of Puerto Rico's ratepayers through fuel management and streamlined operations; focus on distributed power and microgrids to improve reliability and efficiency across the generation system; retirement of "antiquated power plants" while ensuring there is low-cost cleaner generation in load centers to transition to renewables, and a commitment to hire local staff.

F3A director Fermín Fontanés Gómez called the public-private partnership with Genera a milestone in the island's energy history. "After this [tender] process that lasted more than two years, we are getting closer to reaching the goals established in the Integrated Resource Plan (IRP) to move towards an energy generation model based on renewable resources," he said. ■



LNG-fuelled decentralised power station in Puerto Rico

Equinor awards FEED contract for H2H Saltend project to Linde

Norway's Equinor has awarded a Front-End Engineering Design (FEED) contract for H2H Saltend to Linde Engineering, and a service contract to BOC. Due operational by 2027, H2H Saltend is a 600 MW hydrogen production plant with carbon capture which will use Linde Engineering's hydrogen and air separation, combined with Johnson Matthey's LCH technology.

Asbjørn Haugsgjerd, Equinor's project director for H2H Saltend underlined "Linde have demonstrated their expertise and commitment throughout the rigorous selection process over the last year and through their previous work with this technology and operations."



Saltend Chemicals Park, where the H2H project is due operational in 2027

Replacing gas with hydrogen

H2H Saltend is sited at the Saltend Chemicals Park, to the east of Hull, where it will reduce the park's emissions by up to one third. To achieve this, hydrogen will directly replace natural gas in several industries and will be blended into gas at the Equinor and SSE Thermal's on-site Saltend power station. To ensure steady supply of the clean-burning fuel, some 890,000 tonnes of hydrogen per year will be stored near the production site.

The project forms part of Equinor's wider 'Hydrogen to Humber' ambition to deliver 1.8 gigawatts (GW) of low carbon hydrogen production within the region,

nearly 20% of the UK's national target.

The infrastructure to produce, transport and store hydrogen for industrial consumers and power producers are aimed to make the Humber, currently the UK's most carbon intensive industrial region, net-zero by 2040. "With Linde Engineering, BOC and Johnson Matthey on board we are even better positioned to deliver this vision," Haugsgjerd said.

Zero Carbon Humber alliance

Both Equinor's H2H Saltend hydrogen plant and Keadby Hydrogen power station are being developed in partnership with SSE Thermal. Once in full swing, the H2H Saltend project will allow regional power generators to switch from natural gas to low-carbon hydrogen which is estimated to reduce CO2 emissions by 1.1 million tons per year starting from 2026-27.

Thereafter, Equinor plans to supply hydrogen to Keadby Hydrogen power station which is targeted to start-up in 2028-29 and help curb CO2 emissions reduction by nearly 2 million tons per year. ■

EDP and Cepsa team up to produce green hydrogen at Algeciras

Portuguese power producer EDP and the Spanish oil firm Cepsa aim to produce up to 1 GW hydrogen from renewables in Algeciras, Spain. EDP chief executive Miguel Stilwell d'Andrade called the accord a "milestone for converting the thermal power plant in Los Barrios," which will host 100 MW electrolyser from solar power and 255 MW li-ion battery storage.

Both partners seek to use the green hydrogen to produce sustainable fuels like ammonia and methanol as they vowed to promote decarbonisation of industry and heavy land, air, and maritime transport.

Turning thermal plants into H2 hubs

EDP claims to have set up "unique and realistic projects" in Spain to transform its thermal power plants into sites linked to renewable energies, green hydrogen, energy storage and the flexibility of the electricity system. The 568 MW coal-fired Los Barrios power station at Algeciras Bay will be the first one to be turned into a green hydrogen plant, supported by €3.7 million in Spanish government funding for the electrolyser.

Next in line are plans for a 100 MW electrolyser for EDP's former coal plant in

Astrurias, an equally-sized one at Aboño in Asturias, and another one with 25 MW capacity at its IAM Caecius project in Teruel. In total, the 225 MW of electrolyzers are planned generate and supply green hydrogen which will open up a new revenue stream for EDP.

The oil firm Cepsa, meanwhile, is approaching renewable energy developers as it targets for 2 GW equivalent in electrolysis capacity for hydrogen production spread



Los Barrios coal power plant (658 MW)

across is 220,000 barrels per day Huelva refinery and its 240,000 b/d Algeciras refinery by 2028 and 2030. For its plans at Huelva, Cepsa will develop 200 MW of electrolysis capacity with the Spanish gas grid operator Enagas. ■

NextEra adds 8 GW of renewables & storage to its project pipeline

US utility Next Era Energy has added 8,000 MW of renewables and energy storage capacity to its project pipeline, having deployed 5,000 MW of green power sources last year. As the share of gas generation falls, NextEra vows customers will gain more cost certainty in their electric bills as fuel price volatility decreases to a negligible factor by 2045.

NextEra's parent company Florida Power & Light have submitted a plan to the Florida Public Service commission to recover about \$21 billion of incremental fuel costs incurred in 2022. The fuel cost recovery would be offset by approximately \$1 billion this year based on the recent drop in projected natural gas prices.

In view of continuous cost advantages of renewables, NextEra extends its development expectations through 2026. "We now believe that between 2023 and 2026 we will place into service approximately 32,700 megawatts to 41,800 megawatts of new renewables and storage," CEO John Ketchum said when reporting "strong" full-year financial and operating results.

For the full year 2022, FPL reported net income of \$3.701 billion, compared to \$3.206 billion in the previous year. Growth was primarily driven by

continued investment in the business, with the NextEra CEO pointing out the company had invested \$19 billion in renewables and storage deployment last year, despite supply chain constraints and higher interest rates.

He also said NextEra was "emboldened" by the US Inflation Reduction Act and other supportive policies.

"With the passage of the Inflation Reduction Act, we are better positioned than ever before to offer low-cost renewables and other clean energy solutions to customers into the latter half of the decade and beyond," Ketchum said. In view of signifi-



NextEra experts fine-tune solar panels

cant growth opportunities at NextEra and its parent company Florida Power & Light, he expects to grow 6% to 8%, off the 2024 adjusted earnings per share range for 2025 and 2026. ■

Lakeland Electric implodes McIntosh units, clears site for recip engines

Contractors of Lakeland Electric have imploded the retired Units 1, 2, 3 at the McIntosh power plant in Florida to make space for a reciprocating engine power plant, supplied by MAN Energy Solutions. A 260-foot stack and a 90-foot selective catalytic reduction (SCR) unit were brought down, with a controlled demolition of the boiler scheduled for March.

Total Wrecking & Environmental had detonated explosives to make the stack of McIntosh Unit 3 to fall, followed by a second set of explosions to bring down the SCR unit – a "bittersweet moment," according to the plant's general manager Mike Beckham.

Wärtsilä engines to provide 108 MW balancing power in North Dakota

Six Wärtsilä 50SG gas engines to be installed at a new balancing power plant in North Dakota will supply a combined net output of 108 MW. Delivery of the engines for the Pioneer Generation Station Phase IV is scheduled for early 2024 as the plant is intended to be fully operational by the summer of 2025.

Basin Electric Power Cooperative, the operator of flexible gas power project had ordered the engines in October last year in an effort to balance the inherent variability of energy from renewable sources, notably wind and solar. The fast-ramp engines can reach full output within minutes, ensuring a reliable supply of electricity regardless if the sun shines or the wind blows.

"The Pioneer Generation Station Phase IV power plant project will serve the grow-

ing needs of the cooperative's members with reliable, affordable, and responsible electricity. Load forecasts show member cooperatives will require more electricity by 2025," said Todd Telesz, Basin Electric CEO and general manager.

Basin Electric has earlier purchased twelve Wärtsilä 34SG engines for a 112 MW gas peaking plant in North Dakota. Reciprocating engine power plants are increasingly deployed across the United States, allowing higher renewable production while being available at short notice, if needed.

"In addition to their grid balancing capabilities, our gas engine solutions need a relatively low gas pressure to sustain full rated capacity. Unlike high-pressure alternatives that require a gas pressure of 20 to 60 bar (300 to 900 psi), our engines need only 6 to 12 bar (90 to 180 psi) which helps to ensure supply reliability at all times," explained Wärtsilä's director for engine power plants in North America, Jon Rodriguez. ■



Pioneer Generation Station near Williston, North Dakota

JERA launches upgraded LNG-fuelled Anegasaki power Unit 1

Japan's largest power producer JERA has brought its revamped LNG-fuelled Anegasaki power Unit 1 into operation. The unit's aging equipment has been replaced with a state-of-the-art gas turbine combined-cycle system with 650 MW generating capacity. Upgrades of Unit 2 and Unit 2, with 650 MW each, are planned to be completed in April and August, respectively.

Gas-fuelled power generation is gaining attractiveness for JERA as LNG procurement costs are less than expected due to lower demand from rival European buyers in a mild winter. "We had assumed a tight global LNG market during the winter, but the market has eased thanks to warmer weather in Europe, improving our procurement environment in terms of volume and prices," Tetsuo Yoshida, the head of finance, told a post-earnings news conference. ■

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