



UK needs new unabated gas power plants for backup through 2030

Despite efforts to reach Net Zero, the UK government will have to approve new gas-fired power stations to stabilise the grid. The National Engineering Policy Centre finds that unabated, i.e. non-CCS fossil gas capacity will need to be called upon in at least 25% of hours across the year through 2030, as new nuclear capacity will not be ready in time.

All but one of Britain's 15 nuclear power stations will go offline by 2030, and construction of EDF's 3.2 GW Hinkley Point C nuclear power system is beset by delays and cost overruns. Modelling by LCP-Delta shows that even in a highly decarbonised system, Britain will need some firm and/or dispatchable gas power plants as many ageing coal and nuclear units are scheduled to be phased out later this decade.

To avoid a capacity gap, policy signals will need to encourage existing gas-fired capacity to close down while still needed, extending the life of some, where possible, analysts recommend. But still – "with this done, it may still be necessary to build new gas-fired capacity," they reckon.

To make this counterintuitive measure politically palatable and consistent with the path to fully decarbonised energy, operators



Construction progresses at Hinkley Point C

need to be mandated to make new plants 'low-carbon-ready'. This means locating them near routes of future hydrogen pipelines and using turbines that can be retrofitted to run on clean-burning fuels such as hydrogen or ammonia.

Analysts acknowledge that only a subset of hydrogen and CCS solutions can be realised in time for 2030 because of a lack of a fully developed infrastructure, long lead times and supply chain immaturity. Beyond ensuring that short-term unabated gas is

continued on page 2

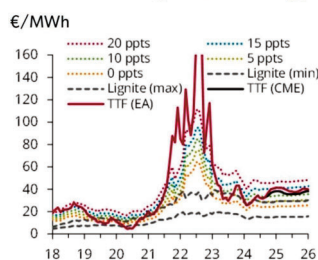
Active hurricane season, Norwegian outages support TTF prompt prices

Prompt prices at the TTF, Europe's benchmark gas trading hub, have scope to move higher this summer as an active hurricane season in the US and Norwegian gas field outages limit supplies. Energy Aspects reckons that TTF bal-summer prices are "well balanced" between the 5- and 10-ppt fuel-switch triggers at €28.60–33.30/MWh – but Oct-24 prices "look undervalued."

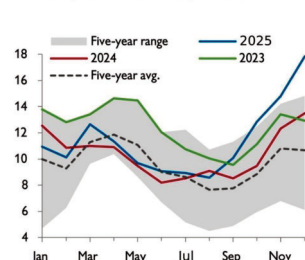
“We believe there will be enough contango in the curve late in the injection season to support a high end-October carryout, and enough space in underground storage for the TTF to price above the 10-ppt trigger and less competitively versus coal in the power sector in October to commit more gas to storage," analysts commented in their latest market update.

Structurally weak demand, due to sluggish economic growth in Europe and gas saving policies,

TTF vs coal-to-gas fuel-switch triggers,



European LNG receipts, bcm



already-high stocks offer a buffer of flexibility against unplanned supply outages. This is expected to limit upside of TTF prompt prices.

"The curve has hardly reacted to an outage

continued on page 2

AGENDA

DEMAND

US gas-burn for power gen spiked during July heatwave

2

SUPPLY

Arkansas utility to build \$2bn in power plants as reserve margins rise

3

Japan becomes key outlet for US LNG as gas-burn soars during heatwave

3

MIDDLE EAST

China's CSCES and Siemens Energy to upgrade Baiji power plant in Iraq

5

EWEC seeks proposals to develop 2.5 GW Taweelah C project

5

Continued from page 1, top story

convertible to CCS/hydrogen, a sensible strategy in their view involves two things:

- Taking FIDs on the two 'Track 1' clusters in Teesside and HyNet in the north west of England, which have supply chains and contracts lined up ready for FID in September 2024, for delivery by 2030. "Green-lighting these projects would mean that the UK has finally started on CCS, after three failed at-

tempts, whereas even a few months delay in deciding would require the projects to return to the supply chain for revised quotes leading to potentially much greater delays," analysts commented.

- Pursuing a wider expansion of CCS and, with it, blue hydrogen production. In the short term this might mean 'Track 1 expansion' projects (e.g. Keadby) and Track 2 pro-

jects (e.g. Peterhead). It would also require addressing operational limitations to the extent to which power-related CCS facilities can be operated variably to balance the system.

Between them, these projects offer the opportunity for 2–3 GW of dispatchable capacity to be on the electricity system by 2030. ■

US gas-burn for power gen spiked during July heatwave

Power plant operators in the United States generated 6.9 million MWh of electricity from natural gas in the Lower 48 states on July 9, 2024, which is "probably" the most in history, US government analysts noted. The US Energy Information Administration (EIA) began to collect hourly data about natural gas generation in January 2019 and never recorded a similar spike.

The spike in gas-burn on that day was caused by sweltering heat in most of the country and a steep drop in wind generation. According to the US National Weather Services, temperatures were well above average on July 9 – particularly on the West Coast and East Coast.

Contribution from wind power units, meanwhile, totalled 0.3 million MWh on July 9, 2024, much lower than the 1.3 million MWh daily average in June this year – requiring gas peaking plants to jump in and fill the gap in electricity supply.

EIA analysts anticipate the second highest gas consumption in the power sector this summer at around 38 Bcf/d as climate change results in more cooling degree days and higher electricity use for air conditioning. Compared with last month's forecast,

the EIA increased gas-burn for power generation by 2% this year and 3% for 2024.

Gas-directed drilling drops

On the supply side, US dry gas production is forecast to reach almost 103 billion cubic feet per day (Bcf/d) in the second half of this year, down slightly from earlier estimates of about 104 Bcf/d on average during April and May. "The drop in forecast production reflects less gas-directed drilling because of a more than 75% decline in the Henry Hub gas spot price compared with its recent peak in August 2022," the EIA explained in its latest Short-Term Energy Market Outlook (STEO). However, an-

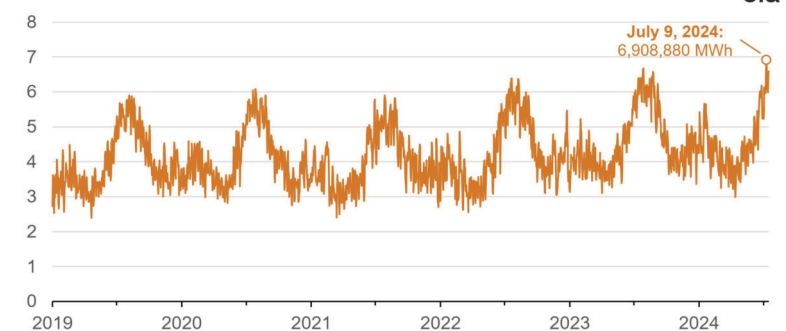
alysts anticipate growth of associated gas production in the Permian Basin will "mostly offset declines in dry gas output."

Comparatively low gas prices, rising contribution of renewable energy and coal plant retirement will see the share of coal in the power sector fall by 13% year-on-year. However, due to the need for more electricity output this summer, the dispatch of coal-fired units could be slightly higher than anticipated earlier.

When power demand peaks this July and August, the U.S. benchmark Henry Hub gas spot price will likely notch up to around \$3.00/MMBtu, up from an average of \$2.35 in May. ■

Daily natural gas electricity generation in the Lower 48 states (Jan 1, 2019-Jul 16, 2024)

million megawatthours (MWh)



Data source: U.S. Energy Information Administration, Hourly Electric Grid Monitor

Gas to Power Journal

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Continued from page 1

extension at Freeport," analysts pointed out. Energy Aspects maintains the view that Russian pipeline imports should hold broadly flat y/y until end-2024. "There is, however, non-negligible risk that European firms awarded damages against Gazprom seek to seize payments for Russian gas imports – though they will only likely be able to seize one month's worth of payment before Gazprom cuts supply," analysts noted.

Stocks are already at 89.5 bcm in late July, which is 11.6 bcm above the 2019-23 average. Demand throughout the summer and going into October is hence expected to ease by 0.2 bcm y/y at 92.9 bcm. Modelling

shows this will support 21.9 bcm of injections (-3.4 bcm y/y) for European storage to fill to 105.8 bcm by end-October, despite a 3.6 bcm y/y decline in supply driven by lower LNG imports.

Hurricane risk abounds given that the US National Oceanic and Atmospheric Administration predicts an 85% chance of an above-normal hurricane season on a La Niña weather pattern and warmer-than-average ocean temperatures. During the most active hurricane season in the Atlantic basin on record, in 2022, there were 4.4 million tons of unplanned outages at US LNG export plants. ■

Arkansas utility to build \$2bn in power plants as reserve margins rise

Arkansas Electric Cooperative Corp's (AECC) CEO Buddy Hasten reckons \$2 billion will have to be spent on new dispatchable generating capacity to meet rising reserve margin requirements. Amid greater infeed of variable renewable power, the reserve margin in Southwest Power Pool (SPP) is expected to increase from 15% to 36% and from 9% to 26% in Midcontinent Independent System Operator (MISO).

“AECC needs to add new power supply,” Hasten said, specifying: “By 2030, we need to add 1,850 megawatt (MW). We need 850 MW in SPP and about 1,000 MW in MISO.”

The new-built gas capacity is meant to more than offset two coal-fired power stations that are scheduled to retire in 2028 and 2030. Combined the coal-fired plants provide 1,168 MW and if AECC manages to add 1,850 MW of new gas-fuelled capacity,

the surplus 682 MW would help increase reserve margins.

Requirements for reserve margins keep rising as firm dispatchable nuclear and coal power plants close. Considering the continuous built-out of solar and wind energy sources, the remaining thermal assets, “they’ve got to run more perfectly because there’s fewer of them to spread out problems against,” Hasten pointed out.

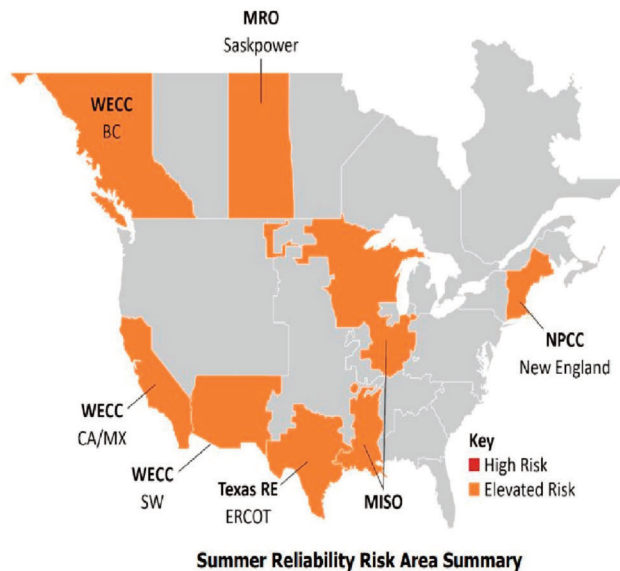
To meet short-term demand, AECC plans to add two gas-fired turbines to the 170 MW

Thomas B. Fitzhugh Generating Station in Ozark. The new turbine will add about 100 MW to the plant’s overall capacity.

Uncertainty abounds as to how AECC will get the remaining 1,750 MW of capacity built that are needed to safeguard grid stability. New environmental regulations stipulated that large gas-fired plants can only run 40% of the time. Moreover, high interest rates make project financing more challenges while load grows amid a rise in semiconductor manufacturing in the US and the surge in data centres.

“We’re now starting to see real load growth again,” said Hasten, noting that U.S. electricity usage is projected to rise by 27% by 2050. “We’ll go from that 4,000 terawatt-hours up to over 5,000 terawatt-hours. That’s a lot of load growth.”

About half of the requests for electricity offtake that are on AECC’s table are from data centres. “They would sign a contract this second if I would sign it,” he said. “But I have to figure out how I’m going to feed them.” ■



Japan becomes key outlet for US LNG as gas-burn soars during heatwave

Asia, and especially Japan, emerges as the preferred destination for US LNG, fuelled by increasing summer gas demand for power generation and cooling due to the ongoing heatwave. Rystad Energy understands that Japanese utilities seek additional volumes for August-September of 68 million tons in Q2 2024 – a significant surge from previous years.

Weather forecasts from the Japan Meteorological Agency are pointing toward an 80% probability of above-average temperatures across Japan until early August. The rainy season has ended in most regions of Japan except Tohoku and Hokuriku.

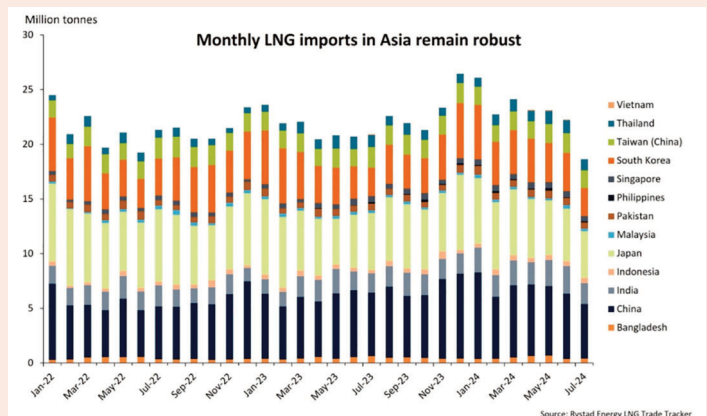
South Korea also forecasts a high probability of ongoing heatwaves, hence Asia’s key gas importers and power generators keep buying more of the super chilled fuel. LNG imports into Asia are forecast to stay robust, if not increase, as ongoing heat-

waves are likely to continue. The region imported around 68 million tonnes in the second quarter of 2024, which is 14% and 10% higher compared to the same period in 2022 and 2023, respectively.

In Japan’s Ibaraki Prefecture, the 350 MW Kashima Kyodo unit 3 gas-fired power plant, co-operated by Jera and Nippon Steel, has faced an outage since 19 July due to turbine issues and, as of 24 July, has no planned restart date. According to a Japan Electric Power Exchange filing, Kashima Kyodo unit 5, with 300 MW nameplate

capacity, also halted operations from 23-25 July to adjust for fuel availability.

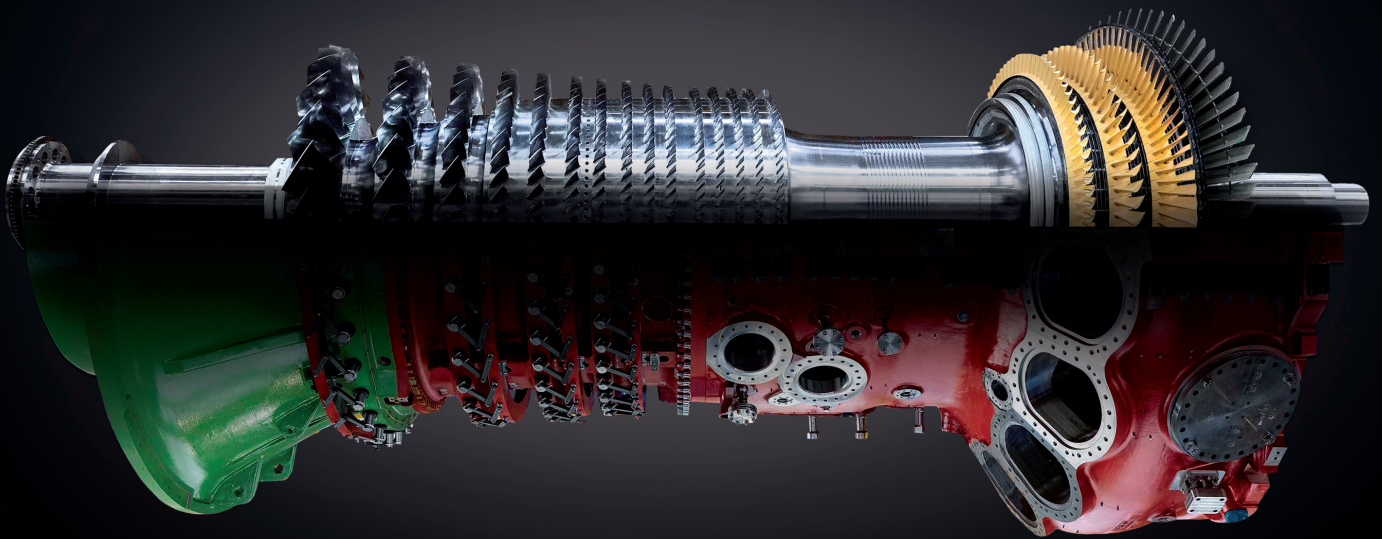
To balance supply, Tohoku Electric announced the restart of the 825 MW Onagawa 2 nuclear power plant will be delayed by two months, pushing it back from September to November 2024. ■



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China's CSCES and Siemens Energy to upgrade Baiji power plant in Iraq

Iraq's cabinet has signed an agreement with China State Construction Engineering Corp (CSCEC) and Siemens Energy to rehabilitate and upgrade the Baiji power plant 2. Powered by combined-cycle gas turbines, the 1,521 MW plant is situated north of the capital, Baghdad, and – once upgraded, it will help alleviate Iraq's crippling electricity shortages.

All primary equipment for the CCGT, notably gas and steam turbines, generators, transformers and control centres will be supplied and installed by Siemens Energy. The German OEM will also oversee the implementation of the project, including first fire of the gas turbines just prior to commissioning.

CSCES, in turn, will be in charge of the project's finances and will provide supporting components and auxiliary systems.

To maximise uptime, the Baiji Unit2 will have dual fuel capability. Natural gas will be the power plant's main fuel source, but if supplies run low, the plant can also generate electricity from heavy fuel oil. That way, the CCGT can run almost continuously to alleviate repeated power shortages in greater Bagdad and Diyala province north-east of the Iraqi capital.

Diyala province has suffered a massive

power outage after Iran ended electricity deliveries via two transmission lines. Iran stopped supplying 250 MW of electricity while the region needs 900 MW as peaking power demand soars in the sweltering summer heat. Turkey, meanwhile, started to supply 300 MW from a power station near Mosul to Iraq's northern provinces.

Construction starts on two CCGT expansions

Earlier this week, ground was broken on a 132 MW combined-cycle gas turbine unit in the Iraqi province of Najaf and a similar-sized one in Haidariyah. Construction is expected to take two years and the plants will be built by a Chinese EPC contractor.

Iraq's Prime Minister Mohammed Shia al-Sudani inaugurated the expansion projects for the Al-Haidariya and Al-Najaf gas-fired power plants. Together, the two new units will add about 495 MW of power generation capacity – giving a much-needed boost to the grid to help avert future power shortages.

The plant expansions are understood to be part of a strategic agreement with Siemens Energy. Several gas power plants



Birds eyes view of Baiji power station

will be upgraded or expanded under this accord, notably three plants in Najaf, Karbala, and Baghdad in a first phase, followed by two plants in Basra and Diyala, with a combined capacity of up to 7,500 MW.

To that end, the Iraqi PM underlined the government is making efforts "to secure fuel, utilize associated gas, enhance the efficiency of transmission and distribution sectors, and optimize operational procedures."

Some 80% of Iraq's power generation mix is based on gas, much of which imported from Iran under a 5-year contract for 50 million cubic meters daily. But the country lost almost 5,000 MW of electricity output after Iran decided to halt gas supplies to the southern regions of Iraq and decrease deliveries to the wider Bagdad region. ■



Ground-breaking ceremony

EWEC seeks proposals to develop 2.5 GW Taweelah C project

UAE's Emirates and Water Electricity Company (EWEC) has issued a request for proposals to develop the Taweelah C Independent Power Project (IPP) as a carbon capture-ready combined-cycle gas turbin (CCGT) project. Taweelah C is meant to start commercial operations in the third quarter of 2028, generating up to 2.5 GW of electricity.

The CCGT will be situated in the Al Taweelah Power and Desalination Complex, around 50 kilometres north-east of Abu Dhabi. The flexible plant will be able to balance a large-scale build-out of variable wind and solar power sources in the emirate and cater for demand swings and peaking power needs.

"Taweelah C's efficient and carbon-capture-ready technology will have an important role to play in enhancing the flexibility of our generation system," EWEC CEO Othman Al Ali said, signalling out natural gas a key transformation fuel for the UAE phase out fuel oil-fired units and balance renewables in a bid to meet Abu Dhabi's 2035 targets.

Winning bidder named in Q4-24

The IPP project will have developers enter into a long-term agreement with EWEC as the sole procurer of electricity. The contract will comprise development, financing, construction, operation, maintenance, and ownership of the power plant, with the successful developer or consortium owning up to 40% of the entity, while the remaining equity will be held by the Abu Dhabi government.

The request for proposals (RFP) shared with bidders provides comprehensive requirements and proposed technical

parameters of the project to help firms and consortiums develop their proposals.

Responses to the RFP and selection of the successful bidder are expected in the fourth quarter of 2024. ■



Germany seeks lithium deal with Serbia to bolster battery production

German chancellor Olaf Scholz has approached Serbia's president Aleksandar Vucic to enter a Loznica deal for extracting and trading lithium sourced in in Europe's largest mine near the town of Loznica. Lithium is vital for producing batteries and deal is meant help Europe's automotive and energy industry to rely less on raw materials from Australia and processed lithium from China.

A letter of intent is planned between Serbia and carmakers Daimler and Stellantis, as well as British-Australian mining company Rio Tinto and German state-owned development bank KfW. The European Union supports Serbia on the "sustainable extraction of resources" – in a bid to pre-empt the China's government get a grip on the mining project.

European carmakers and utility-scale battery producers are heavily reliant on importing lithium as a raw material from Australia and south America, or processes lithium from China. The government in Beijing is hence eager to support Chinese firms to help extract lithium from the Loznica mine, process the raw material in China and sell it at a higher price to battery makers in the West.

Investors splash out on lithium extraction

Despite headwinds in the venture capital sector, start-ups raised a record \$1.6 billion

last year for battery recycling and lithium extraction and refining technologies, the International Energy Agency (IEA) finds. Battery demand for storing clean energy has increased by two-thirds over the past two years.

"The market size of critical minerals doubled over the past five years and now exceeds \$320 billion – broadly similar to market size for iron ore mining," IEA analyst pointed out. Energy transition minerals have moved centre stage in the mining industry amid tripling in overall demand for lithium, a 70% jump in demand for cobalt, and a 40% rise in demand for nickel.

Though clean energy technology costs continue to fall due to innovations and economies of scale, high price for raw materials reverse this trend. Many critical minerals experienced broad-based price



Lithium mining

increases in 2021 and early 2022, accompanied by strong volatility, particularly for nickel and lithium. Prices then moderated in the latter half of 2022 and into 2023 but remain well above historical averages, analysts explained.

In response, spending in critical minerals increased by nearly a third last year. Lithium staged a 50% jump in investment, closely followed by spending on copper and nickel which is expected to support their affordability and speed of clean energy transition. ■

Low-carbon technologies most exposed to high interest rates

The high capital intensity of nuclear power and renewables make them vulnerable to interest rate increases and low returns mean future projects will be at risk. In contrast, due to low gearing, many companies in the metals and mining as well as the oil and gas sectors are relatively unaffected by higher interest rates.

If record interest rates persist, the higher borrowing costs will adversely affect renewables and nascent low-carbon technologies, Wood Mackenzie finds. In the US, a 2% rise in the risk-free interest rate pushes up the levelised cost of electricity (LCOE) by as much as 20% for renewables, but only by 11% for a

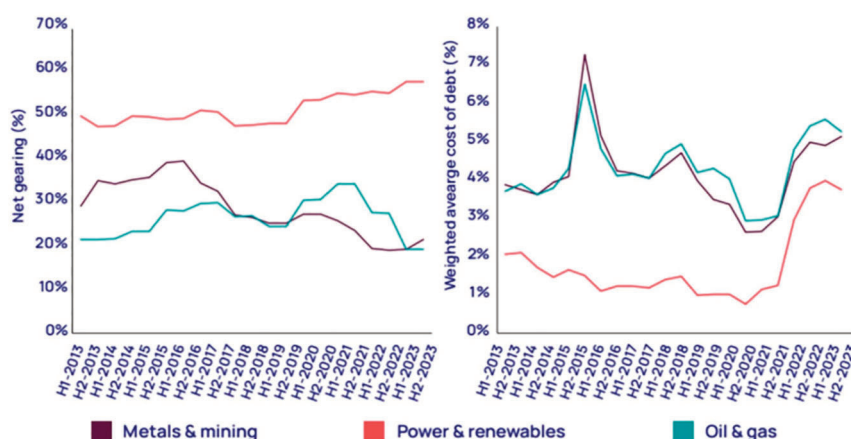
combined-cycle gas turbine plant.

"Interest rates, which have risen sharply in the past two years, may not come down as far or as quickly as markets anticipate," said Peter Martin, WoodMac's head of economics said, suggesting this could slow down the pace of the clean energy transition.

The competitive of renewables over fossil power sources is also suffering when borrowing costs are high: In the US, on-shore wind can generate electricity at an LCOE of \$40/MWh, 50% of the cost of gas-fired generation. However, WoodMac analysis finds that higher interest rates are eroding that advantage.

"While power and renewables companies have higher gearing, they do compare favourably with other peer groups on a cost-of-debt basis. But this is precisely what makes them more sensitive to interest rates. Mechanisms to reduce price and offtake risk enable power and renewables companies to obtain debt more cheaply than the relatively risky oil and gas and metals and mining sectors. ■

Cost of debt rising fastest for the highly geared power and renewables sector



Source: Wood Mackenzie Corporate Strategy and Analytics Service, Factset. Net gearing represents net debt over book value. Sector averages are weighted to companies' book value

Source: Wood Mackenzie Corporate Strategy and Analytics Service, Factset. Cost of debt sector averages are weighted to total debt, in US dollars.

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