

# ***WORLD POWER SYSTEMS REVIEW***

***15 August 2022***

**1 August 2022**

## **South Africa's Eskom confirms contract awards for 1,440MWh battery storage**

South Africa's primary electricity supplier Eskom has announced details of forthcoming major battery storage deployments, including project sites and sizes. The utility and electricity grid operator said on Friday (31 July) that it intends to have the first 343MW of a 500MW national energy storage rollout announced by South Africa's president Cyril Ramaphosa online by December 2024. Eskom selected two battery energy storage system (BESS) providers, South Korea's Hyosung Heavy Industries and Chinese company Pinggao Group, from bidders in a competitive solicitation process.

The 343MW of BESS will be four-hour duration, meaning a total of 1,440MWh capacity. The systems will be built in two phases. Phase 1 will see 199MW/833MWh of battery storage built, alongside 2MW of solar PV, while Phase 2 will see 144MW/616MWh of BESS installed together with 58MW of solar PV. The battery storage systems will help manage peak load on the electricity network, as well as providing other applications like ancillary services. In April, Hyosung revealed that it had received an Eskom letter of acceptance for a separate 48MW/192MWh project near the city of Durban.

The rollout is being financially supported by groups including the World Bank and the African Development Bank, the latter providing US\$58 million support. Projects will be sited at remote areas with limited access to the electricity distribution network, but which are nonetheless not far from renewable energy plants operated by independent power producers (IPPs). Eskom described the buildout as a flagship proof-of-concept programme for the role of batteries on the South African grid in enabling the integration of large-scale solar PV and wind into the energy mix, while increasing network stability, reliability and security of supply. The utility will also build a research and development and testing centre for battery storage systems in Rosherville, Gauteng province.

Phase 1 will see BESS deployed at eight sites, with systems ranging from 1.54MW/6.16MWh for the smallest and 80MW/320MWh at the largest, to be commissioned by the end of June 2023. Phase 2 comprises installations at four sites, ranging from 17MW/68MWh to 70MW/280MWh, for completion by December 2024.

It is well-documented that keeping lights on in the country has been a challenge for Eskom and South African authorities. One big step already taken by Eskom was the launch of so-called Risk Mitigation Power Procurement Programme tenders, through which it has contracted for energy from dispatchable resources, including natural gas and a significant volume of solar-plus-storage projects. Of the total 2GW awarded through that tender process, around 430MW/1,300MWh of energy storage paired with renewables was included. Its biggest winner, Norwegian renewable energy developer Scatec, recently began work on an awarded 540MW of solar PV and 225MW/1,140MWh of battery storage.

Eskom group chief executive André de Ruyter described energy storage as one of the "key initiatives to assist in addressing the country's electricity challenges in the long-term," and fitting the aims of South Africa's long-term Integrated Resource Plan.

***Energy Storage***

***<http://www.energy-storage.news/>***

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## **Litgrid held a synchronous connection training session for Baltic states' electricity system dispatchers**

Baltic states' electricity transmission system dispatchers took part in a training session to test scenarios for disconnection from Russia and Belarus, isolated operation and synchronous connection to the continental European grid. The training was organised by a

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team from the Lithuanian electricity transmission system operator “Litgrid”. According to Donatas Matelionis, the Head of “Litgrid” System Management Department, when preparing for synchronisation with the continental European grids and taking into account Russia’s war against Ukraine, the most pressing topic is the preparation to be ready to start synchronous operation now, if necessary.

“During the training, the dispatchers worked in a scenario where the Baltic countries have to disconnect from the Russian and Belarusian electricity grids, switch to stand-alone operation, and then synchronously connect to the continental European grids via an interconnector with Poland.

The training of the operational staff allows us to ensure preparedness for various failures in the electricity system, including scenarios where the Baltic countries’ electricity system would need to operate in isolated mode and synchronously connect to the continental European grids in case of an emergency,” said D. Matelionis.

According to the Head of the System Management Department, the specialists managing the electricity transmission system in the Baltic states and Lithuania regularly participate in training exercises. He said that the training is not only about improving knowledge and preparing for different scenarios, but also about strengthening teamwork with colleagues from other countries, with whom we will be working in the same synchronous zone after synchronisation.

After a two-year break, the annual Baltic States’ Dispatcher Training was held live instead of remotely. The three-day training was attended by 16 participants from Lithuania, Latvia and Estonia, organised, prepared and delivered by “Litgrid” team of specialists. During the training, all phases of unplanned disconnection from the IPS/UPS system and connection to the continental European grid were discussed and simulated in the Dispatcher Training System.

This exercise is in addition to the training held in Poland this spring, during which dispatchers from the three Baltic countries, together with the Polish operator’s team, practised synchronous connection without full preparation.

“Litgrid” is also currently preparing for an isolated operation test, during which the entire Lithuanian electricity system will be temporarily disconnected from the IPS/UPS synchronous zone for the first time and will operate in island mode.

To date, Lithuania, Latvia and Estonia, together with Russia and Belarus, operate in an IPS/UPS system where the electricity frequency is centrally regulated in Russia. Connection to continental European grids and synchronous operation with Poland, Germany and other continental European countries will be secured no later than 2025.

More than 40% of the work needed for synchronisation has now been completed and 5 synchronisation projects have been implemented. These include the extension of the 330 kV Bitėnai transformer substation, the construction of the 110 kV Pagėgiai-Bitėnai line, the reconstruction of the 330 kV Lithuanian Power Plant-Vilnius line, the extension of the “LitPol Link” and the optimisation of the North-eastern Lithuania transmission network.

*Litgrid*

<http://www.litgrid.eu>

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## **UK: CrowdFlex wins OFGEM funding for domestic flexibility**

National Grid Electricity System Operator (ESO) have been awarded a second grant from Ofgem’s Strategic Innovation Fund (SIF) as part of a wider project that looks to understand how domestic flexibility can be used to help manage the grid. The CrowdFlex project is exploring consumer behaviour in order to understand how domestic flexibility can support the coordination of energy consumption, generation and grid management and will

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now move into the second, Alpha, phase of delivery. A successful discovery phase, completed in early 2022, established that the energy industry would like to see domestic flexibility resources play an active role in energy markets and services. Such resources have the potential to greatly reduce system operation costs while minimising the need for additional capacity and network reinforcement (thereby reducing costs for the end consumer).

Following funding confirmation for the Alpha phase, the team will look to develop:

- understanding of system needs and utilisation of domestic assets.
- plans for testing flexibility services in a real-world trial, including stacking multiple services
- greater clarity around data needs and statistical modelling approaches for forecasting flexibility
- better understanding of potential regulatory barriers.
- a plan to successfully engage with consumers, incentivise them to change their behaviour and ensure the trial can deliver the expected commercial and CO2 reduction benefits.

The funding announcement is an exciting next step to realising the role of domestic flexibility in the transition to net zero emissions,” said Nina Klein, Innovation Manager at National Grid ESO. In the next phase we will gain a better understanding of the system challenges like peak demand, constraints and the potential balancing solutions which distributed domestic assets could provide. The benefits of using domestic flexibility can be passed on to all electricity consumers, potentially saving billions in costs alongside reducing carbon emissions.

In addition to supporting the path to net zero emissions, CrowdFlex will be a critical vehicle for delivering economic impact through flexibility incentives, including time-of-use tariffs. These tariffs offer consumers cheaper electricity prices when demand is low or generation is high. Through the UK’s largest ever domestic flexibility study, CrowdFlex found that time-of-use tariffs can help customers reduce their evening peak demand by up to 23%.

The CrowdFlex project’s flexibility modelling is also contributing to an ambitious industry-wide mission launched by National Grid ESO in 2021 to digitise the GB energy system. The Virtual Energy System will be a digital twin of the physical energy system, working in parallel to enable an open, unified, real-time view of every part of the GB energy system. Developed and owned by and for the industry, this virtual environment will be a shared, digital national asset - generating insights, new ideas and the ability to model solutions to cut real-world carbon emissions, support the transition to net zero, and deliver long-term value to industry and consumers.

The CrowdFlex project is being delivered by a consortium from across the energy sector; partners include Centre for Net Zero, Element Energy, Octopus Energy, Ohme Technology, Scottish and Southern Energy Networks and Western Power Distribution.

National Grid ESO and partners will also be continuing the Common Framework project which aims to understand what standards should be set out with participants to facilitate collaboration and compatibility between digital twins within the Virtual Energy System.

**NGESO**

<http://www.nationalgrideso.com/>

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## **Why the Texas grid causes the High Plains to turn off its wind turbines**

While wind farms in the region could help power and lower energy costs for at least 9 million homes, significant infrastructure upgrades would be needed to supply electricity

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from the region to other parts of the state. The state's High Plains region, which covers 41 counties in the Texas Panhandle and West Texas, is home to more than 11,000 wind turbines — the most in any area of the state. The region could generate enough wind energy to power at least 9 million homes. Experts say the additional energy could help provide much-needed stability to the electric grid during high energy-demand summers like this one, and even lower the power bills of Texans in other parts of the state.

But a significant portion of the electricity produced in the High Plains stays there for a simple reason: It can't be moved elsewhere. Despite the growing development of wind energy production in Texas, the state's transmission network would need significant infrastructure upgrades to ship out the energy produced in the region.

And when the rest of the state is asked to conserve energy to help stabilize the grid, the High Plains has to turn off turbines to limit wind production it doesn't need.

"Because there's not enough transmission to move it where it's needed, ERCOT has to throttle back the [wind] generators," energy lawyer Michael Jewell said. "They actually tell the wind generators to stop generating electricity. It gets to the point where [wind farm operators] literally have to disengage the generators entirely and stop them from doing anything."

Texans have already had a few energy scares this year amid scorching temperatures and high energy demand to keep homes cool. The Electric Reliability Council of Texas, which operates the state's electrical grid, warned about drops in energy production twice last month and asked people across the state to lower their consumption to avoid an electricity emergency.

The energy supply issues have hit Texans' wallets as well. Nearly half of Texas' electricity is generated at power plants that run on the state's most dominant energy source, natural gas, and its price has increased more than 200% since late February, causing elevated home utility bills.

Meanwhile, wind farms across the state account for nearly 21% of the state's power generation. Combined with wind production near the Gulf of Mexico, Texas produced more than one-fourth of the nation's wind-powered electric generation last year. Among the top 10 states with the most wind turbines, Texas ranks the highest with over 10,000 more turbines than second-ranked Iowa.

Wind energy is one of the lowest-priced energy sources because it is sold at fixed prices, turbines do not need fuel to run and the federal government provides subsidies. Texans who get their energy from wind farms in the High Plains region usually pay less for electricity than people in other areas of the state. But with the price of natural gas increasing from inflation, Jewell said areas where wind energy is not accessible have to depend on electricity that costs more.

"Other generation resources are more expensive than what [customers] would have gotten from the wind generators if they could move it," Jewell said. "That is the definition of transmission congestion. Because you can't move the cheaper electricity through the grid."

A 2021 ERCOT report shows there have been increases in stability constraints for wind energy in recent years in both West and South Texas that have limited the long-distance transfer of power.

"The transmission constraints are such that energy can't make it to the load centers. [High Plains wind power] might be able to make it to Lubbock, but it may not be able to make it to Dallas, Fort Worth, Houston or Austin," Jewell said. "This is not an insignificant problem — it is costing Texans a lot of money."

Some wind farms in the High Plains foresaw there would be a need for transmission. The Trent Wind Farm was one of the first in the region. Beginning operations in 2001, the wind farm is between Abilene and Sweetwater in West Texas and has about 100 wind

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turbines, which can supply power to 35,000 homes. Energy company American Electric Power built the site near a power transmission network and built a short transmission line, so the power generated there does go into the ERCOT system.

But Jewell said high energy demand and costs this summer show there's a need to build additional transmission lines to move more wind energy produced in the High Plains to other areas of the state.

Jewell said the Public Utility Commission, which oversees the grid, is conducting tests to determine the economic benefits of adding transmission lines from the High Plains to the more than 52,000 miles of lines that already connect to the grid across the state. As of now, however, there is no official proposal to build new lines.

"It does take a lot of time to figure it out — you're talking about a transmission line that's going to be in service for 40 or 50 years, and it's going to cost hundreds of millions of dollars," Jewell said. "You want to be sure that the savings outweigh the costs, so it is a longer process. But we need more transmission in order to be able to move more energy. This state is growing by leaps and bounds."

A report by the American Society of Civil Engineers released after the February 2021 winter storm stated that Texas has substantial and growing reliability and resilience problems with its electric system.

The report concluded that "the failures that caused overwhelming human and economic suffering during February will increase in frequency and duration due to legacy market design shortcomings, growing infrastructure interdependence, economic and population growth drivers, and aging equipment even if the frequency and severity of weather events remains unchanged."

The report also stated that while transmission upgrades across the state have generally been made in a timely manner, it's been challenging to add infrastructure where there has been rapid growth, like in the High Plains.

One of the issues often brought up with wind and solar farms is that they may not be able to produce as much energy as the state needs all of the time. Earlier this month, when ERCOT asked consumers to conserve electricity, the agency listed low wind generation and cloud coverage in West Texas as factors contributing to a tight energy supply.

Hensley said this is where battery storage stations can help. According to the U.S. Energy Information Administration, utility-scale batteries tripled in capacity in 2021 and can now store up to 4.6 gigawatts of energy. Texas has been quickly developing storage projects. In 2011, Texas had only 5 megawatts of battery storage capacity; by 2020, that had ballooned to 323.1 megawatts.

Solar is another resource that could help stabilize the grid. According to the Solar Energy Industries Association, Texas has about 13,947 megawatts of solar installed and more than 161,000 installations. That's enough to power more than 1.6 million homes.

This month, the PUC formed a task force to develop a pilot program next year that would create a pathway for solar panels and batteries on small-scale systems, like homes and businesses, to add that energy to the grid. The program would make solar and batteries more accessible and affordable for customers, and it would pay customers to share their stored energy to the grid as well.

*The Texas Tribune*  
<http://www.texastribune.org>

**3 August 2022**

## **The U.S. power grid added 15 GW of generating capacity in the first half of 2022**

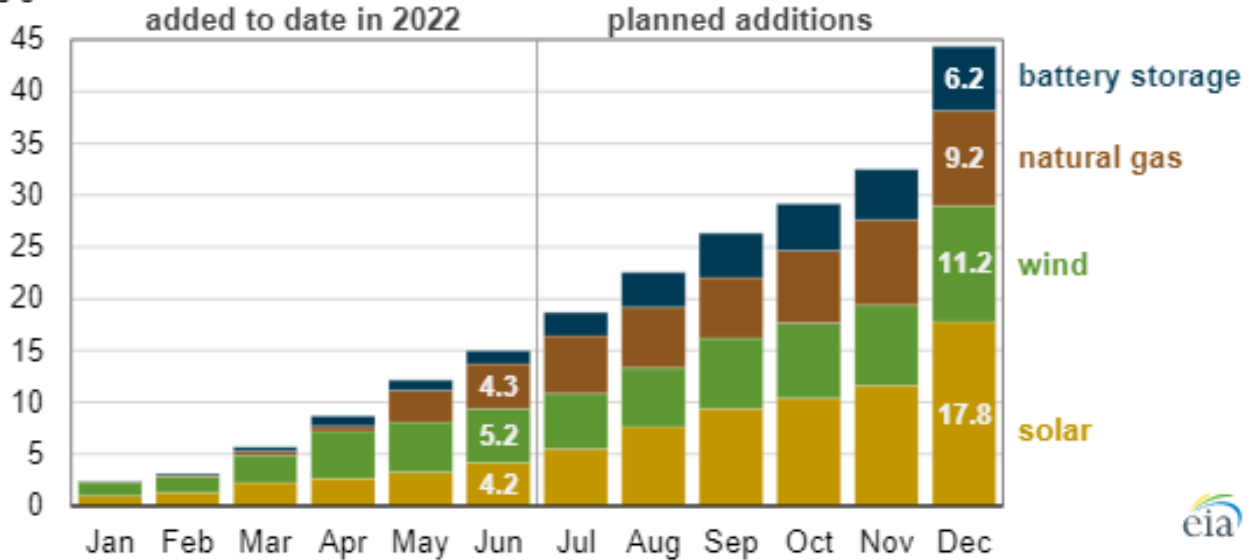
According to our latest inventory of electric generators, 15 gigawatts (GW) of new utility-scale electric generating capacity came online in the United States during the first half

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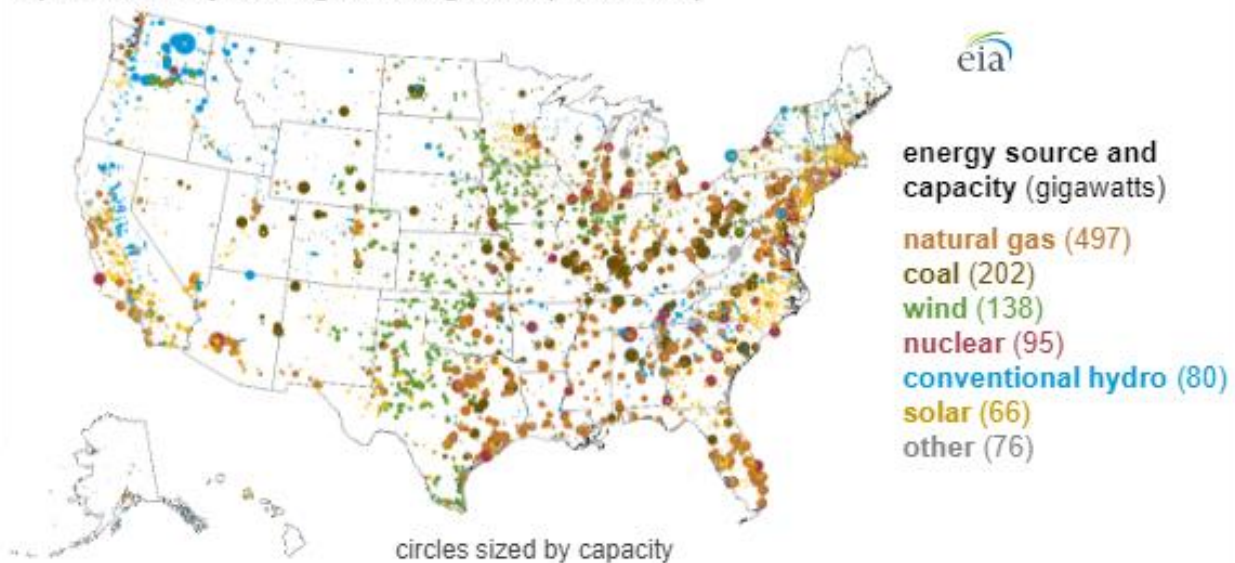
of 2022. Based on the most recently reported plans, developers could add another 29 GW of capacity in the second half of the year.

Cumulative utility-scale electric generating capacity additions (2022)  
gigawatts



Our Preliminary Monthly Electric Generator Inventory compiles information on all U.S. utility-scale power plants (plants with a nameplate capacity of at least 1 megawatt [MW]) that are currently operating, planning to come online, or retired. The inventory includes all utility-scale plants that have retired since 2002. We update this inventory once a month with preliminary data and then finalize that data annually with a survey that provides additional information about the power plants. Our Preliminary Monthly Electric Generator Inventory includes information through the preceding month; for example, the inventory published in July includes information through June.

Operable utility-scale generating units (June 2022)



Operating capacity: Wind generation accounts for the largest share, 34%, of the 15.1 GW of capacity that came online in the United States during the first half of 2022, followed by natural gas, solar, and battery storage. More than 40% of the wind capacity added so far in 2022 is located in Texas, 2.2 GW of the 5.2 GW wind total. The largest renewable projects

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that came online in the first six months of 2022 include the 999 MW Traverse Wind Project in Oklahoma, the 492 MW Maverick Creek Wind in Texas, and the 440 MW solar and battery storage project at Slate Hybrid in California.

**Planned capacity:** Developers and project planners report plans to add 29.4 GW of new capacity in the United States in the second half of 2022. Nearly half of that planned capacity is from solar (13.6 GW), followed by wind (6.0 GW). As in previous years, many projects plan to come online in December because of tax incentives. Respondents to our survey currently plan to add 3.7 GW less solar capacity in 2022 than what they had expected at the beginning of the year. Pandemic-related challenges in supply chains and a U.S. Department of Commerce tariff investigation are likely causes for this decrease.

**Retired capacity:** Of the 15.1 GW of electric generating capacity that U.S. operators plan to retire during 2022, more than half (8.8 GW) was retired in the first half of the year. Coal-fired power plants will account for 76% of the retirements this year, followed by natural gas (12%) and nuclear (9%). The largest U.S. coal power plant retirements in 2022 include the 1,305 MW William H. Zimmer plant in Ohio, which retired in May, and the 1,205 MW Morgantown Generating Station in Maryland, which retired in June. In addition, the 769 MW Palisades nuclear power facility in Michigan retired in June.

**EIA**

<http://www.eia.gov/>

## **3 August 2022**

### **Masdar secures financial close for solar facility in Azerbaijan**

Emirati state-owned energy firm Masdar has achieved financial close for its Garadagh solar photovoltaic plant in Azerbaijan. The 230MW solar project is the company's first in Azerbaijan and the country's first independent solar project funded by foreign investment. Garadagh will have the capacity to generate 500 million kilowatt-hours of electricity a year, which will be enough to power more than 110,000 homes, while displacing more than 200,000t of carbon emissions annually. The project is scheduled to become operational next year and is expected to create jobs in the region.

Masdar CEO Mohamed Jameel Al Ramahi said: "The Garadagh plant is Masdar's first project in Azerbaijan and therefore we are proud to reach this significant milestone in its development. "The Garadagh project will serve as a benchmark for Azerbaijan's clean energy journey, with the nation committed to transforming its energy sector and driving sustainable development."

Garadagh is co-financed by the Abu Dhabi Fund for Development, the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD) and the Japan International Cooperation Agency (JICA). Azerbaijan plans to increase the share of renewable sources in its installed power capacity to at least 30% by 2030.

Azerbaijani Energy Minister Parviz Shahbazov said: "The successful achievement of the next critical milestone in the project is proof of our determined approach to the joint cooperation and commitment of the parties towards the realization of the project. "This and other projects will further contribute to the realisation of the country's nationally determined contributions (NDCs) by 2050, declared on the sidelines of the COP26 Conference."

In June this year, Masdar signed two agreements to develop 4GW worth of clean and renewable energy projects in Azerbaijan. The deals include the potential to develop an additional 6GW in a second phase, increasing the projects' total production capacity to 10GW.

**Power Technology**

<http://www.power-technology.com/>

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## **World's largest underground hydrogen storage project**

Aces Delta, a joint venture between Mitsubishi Power Americas and Magnum Development LLC, plans to build an underground storage project with a capacity of 300 GWh in Delta, Utah. Advanced Clean Energy Storage I, LLC recently won a \$504.4 million loan guarantee from US Department of Energy's (DOE) Loan Programs Office for the construction of the storage facility. The project will store hydrogen generated by the Intermountain Power Agency's IPP Renewed Project – an 840 MW hydrogen-capable gas turbine combined cycle power plant located in the area.

"The plant will initially run on a blend of 30% green hydrogen and 70% natural gas starting in 2025 and incrementally expand to 100% green hydrogen by 2045," Aces Delta said in a statement. US-based contractor WSP USA has secured an engineering, procurement and construction management contract (EPCM) to build the two underground hydrogen storage caverns, each with a capacity of 150 GWh. "This stored green hydrogen becomes an energy reserve that can be released to produce fuel for electric power generation at any time," said WSP USA.

The storage caverns and the power plant will form the Advanced Clean Energy Storage hub, which Aces Delta says will convert renewable energy via 220 MW of electrolyzers to produce up to 100 metric tons of green hydrogen per day. The development of the project began in May 2019. "Central Utah is the ideal location for this project, and Utah is a business-friendly state for projects like this," said Craig Broussard, CEO of Magnum. "Magnum's site adjacent to the Intermountain Power Project is positioned to take full advantage of existing regional electricity grid connections, fully developed transportation infrastructure, ample solar and wind development capacity, a skilled workforce currently transitioning away from coal, and, of course, the unique salt dome opportunity." Magnum Development also owns a domal-quality salt formation in the western United States and five operational salt caverns for liquid fuel storage.

[pv-magazine](http://www.pv-magazine.com/)

<http://www.pv-magazine.com/>

**4 August 2022**

## **Low Rhine water level to hit output at two German coal plants**

Low water levels on the Rhine, Germany's main shipping artery, will affect output over the coming month from two major coal-fired power stations, adding another problem to Europe's largest economy that is already grappling with lower Russian gas supply. The Staudinger 5 plant east of Frankfurt has 510 megawatts (MW) of capacity and is operated by Uniper and situated on the Main, a major Rhine tributary.

Its output may be irregular until Sept. 7 "due to a limitation of coal volumes on site" caused by the low level of the Rhine, according to the transparency site of Deutsche Boerse-owned power bourse EEX. Another document posted on Thursday said the 1,100 MW Datteln plant in the northern Ruhr area, also operated by Uniper, may see irregular output to Sept. 7 for the same reason. Together, the two plants account for 4.2% of Germany's total coal-fired power capacity.

Germany last month agreed to reactivate its coal-fired power plants or extend their lifespans in response to its worst energy crisis in generations, triggered by dwindling supplies of Russian gas. But shallow river levels following a hot, dry summer mean that barges taking coal feed stock to generating plants can only sail with partial loads. Similar conditions caused a fall in output at power stations and hit profitability at chemical manufacturing plants in 2018.



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"Much of the needed hard-coal is transported from the Dutch ports of Amsterdam, Rotterdam and Antwerp by barges," Deutsche Bank said in a research note, adding that reduced shipping cut economic growth by 0.2% percentage points in 2018. A reference Rhine waterline level at Kaub, where vessels need about 1.5 metres of clearance to sail fully loaded, fell to only 55 centimetres on Thursday. Kaub hit 25 cm at one point in 2018.

Thyssenkrupp, Germany's largest steelmaker, declared force majeure in 2018 after the Rhine's extremely low water levels disrupted the delivery of raw materials to its sites. "As part of our low water task force, we are continuously monitoring the situation on the river Rhine. We are taking various measures in the course of the current low water situation," a spokesperson for the company said. "On this basis, we consider our raw material requirements currently to be secure." A heat wave this week has also boosted transport prices on the river as fewer vessels can travel on it and pass through choke points, tightening transport space. Low water likewise affects power prices as well as other commodities such as mineral oil products and grains. Warming rivers in recent weeks have also curtailed French supplies of cooling water to nuclear plants, contributing to tightness in the European power system and driving up spot electricity prices.

*Reuters*

<http://www.reuters.com/>

## **4 August 2022**

### **Vogtle 3 approved to load fuel**

The US Nuclear Regulatory Commission (NRC) has authorised Southern Nuclear Operating Company to load nuclear fuel and begin operation at Vogtle Unit 3 in Georgia, marking the transition of the AP1000 unit from construction oversight into the operating reactor oversight process.

Plant owner Georgia Power said the regulator's so-called 103(g) finding for the plant - confirming that unit has been constructed and will be operated in conformance with the terms of its combined construction and operation licence (COL) and NRC regulations - is a historic milestone for the project. The finding clears the way for the operator to load fuel and begin the start-up sequence for the new unit. "Today's finding by the NRC helps ensure we have met our commitment to building Vogtle 3 and 4 with the highest safety and quality standards," Georgia Power Chairman, President and CEO Chris Womack said. "These new units remain a strong long-term investment for this state, and, once operating, are expected to provide customers with a reliable and resilient, clean, emission-free source of energy for the next 60 to 80 years."

Vogtle 3 is also the first unit to receive authorisation to start up under the NRC's COL process, which the regulator introduced in 1989. Prior to that, US nuclear power plants were licensed under a two-step process requiring both a construction permit and an operating licence. "This is the first time we've authorised a reactor's initial start-up through our Part 52 licensing process," Andrea Veil, director of the NRC's Office of Nuclear Reactor Regulation, said. "Before authorisation, we independently verified that Vogtle Unit 3 has been properly built and will protect public health and safety when it transitions to operation. Our resident inspectors at Vogtle will keep a close eye on Unit 3 as the fuel load and startup testing move forward."

The process of satisfying the 398 ITAACs (inspections, tests, analyses, and acceptance criteria) outlined in the COL - all verified independently by the NRC - was completed on 29 July. The on-site team is now working on final preparations to load fuel, begin startup testing and bring the unit online, Georgia Power said. The company has previously said it is targeting the end of October to complete loading of the fuel - which is already on site - into the reactor, in order to achieve an in-service date at the end of the first

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quarter of 2023. Over the following several months, start-up testing will demonstrate the integrated operation of the primary coolant system and steam supply system at design temperature and pressure with fuel inside the reactor, before the plant is brought to initial criticality and synchronised to the grid. Construction of Vogtle 3 began in March 2013 and unit 4 in November that year. Southern Nuclear and Georgia Power, both subsidiaries of Southern Company, took over management of the project to build the units in 2017 following Westinghouse's Chapter 11 bankruptcy. Unit 4 is now over 96% complete, with a target in-service date of December 2023. The new units at the Waynesboro site - which is already home to two operating pressurised water reactors - are co-owned by Georgia Power (45.7%), Oglethorpe Power (30%), MEAG Power (22.7%) and the municipality of Dalton (1.6%).

*World Nuclear News*  
<http://world-nuclear-news.org/>

**4 August 2022**

## **Development approval given for 1,000MWh battery storage at Australian coal plant site**

The Department of Planning and Environment in New South Wales, Australia, has given development approval to a proposed 500MW/1,000MWh battery storage project at the site of a retired coal plant. Developer Greenspot announced this morning that it had been handed the favourable decision on its Wallerawang 9 Battery project, which it has been developing for construction at the site of Wallerawang coal power plant in Lithgow.

The coal-fired power station was retired by its owner EnergyAustralia in 2014 and its chimney stacks finally demolished last November. Its removal took two 500MW generators of dirty but dispatchable power off the local network. Greenspot's battery facility would have an approved dispatch capability of 500MW, helping to integrate variable renewable energy from solar PV and wind and contributing stability services to the grid. Retired or retiring coal – and other fossil fuel – generation sites connected to the grid are considered useful real estate for siting battery plants as they can make use of valuable existing infrastructure including grid interconnection points, logistical access and water as well as data networks.

Various other coal plant sites around Australia are being redeveloped into battery storage and sometimes solar-plus-storage sites instead, including Eraring, Australia's largest single power plant site, which owner Origin Energy wants to replace with a mix of batteries, virtual power plant (VPP) and gas peakers. Eraring is also in New South Wales and as part of the transition plan, in March this year the state government launched a tender for contracts to work on the 700MW/1,400MWh Waratah Super Battery which would in part take its place.

Wallerawang 9 Battery would also be close to the Central-West Orana Renewable Energy Hub, which the New South Wales government is supporting, to bring an additional 3GW of wind and solar generation into the region by the middle of this decade. The project, expected to require about AU\$400 million (US\$279 million) investment, is therefore in an important strategic location, the developer said. Approval was waved through under the state government's Priority Assessment Program that determined the battery energy storage system (BESS) project could be categorised as a State Significant Development Project and should be accelerated in the public interest. Greenspot specialises in real estate investments to rehabilitate fossil fuel sites and repurpose them to benefit their local communities and the company said it plans to create a multi-use precinct around the Wallerawang site.

The BESS would connect to the same 330kV substation as another project of the same size proposed by developer Neoen. The France-headquartered company already has two of Australia's biggest battery storage assets in its portfolio and wants to construct

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its Great Western Battery at a site nearby. The Great Western Battery has also been designated as a State Significant Development Project too.

*Energy Storage*

<http://www.energy-storage.news/>

**5 August 2022**

## **Switzerland's new energy asset: hydro plant with capacity to charge 400,000 car batteries**

Switzerland is adding a much-needed cog in the wheel to its energy supply with an underground hydropower plant that says it has capacity to store enough electricity to charge 400,000 car batteries simultaneously. Developers of the 2.2 billion Swiss franc (\$2.30 billion) Nant de Drance plant in the canton of Valais, which came online in July, say the facility operates like a giant battery. Its six turbines tucked in a cavern 600 metres below ground between the Emosson and Vieux Emosson reservoirs have capacity of 900 MW, making it one of the most powerful pumped storage plants in Europe.

During peak demand, Nant de Drance produces electricity from hydropower. But when output from sources such as wind and solar exceeds demand, the plant stores the surplus electricity by pumping water into the higher Vieux Emosson reservoir. "In doing so, there are losses like any storage, but the yield is very good. We have about 80% efficiency over the complete cycle," director Alain Sauthier told Reuters on a tour this week. The plant, which has taken 14 years to build, will be officially opened next month.

It takes less than five minutes to switch from full pumping mode to full power generation. At 360 cubic metres per second, the volume of water passing through its turbines corresponds to the summertime flow of the Rhone river through Geneva. "The amount of energy that can actually be stored in this facility is simply gigantic, about 20 gigawatt hours," Sauthier said. "This means that with a full tank in Vieux Emosson, you can recharge 400,000 electric car batteries simultaneously."

Typically, the plant pumps water into storage in the afternoon, at night and on weekends, then generates power in the morning and evening when prices are higher, Sauthier said. "I would say it's not only important for Switzerland, it's also an important plant at European level because it will contribute to the stability of the network in Europe and to the security of supply in Europe," he said. That is no mean feat at a time Switzerland faces rolling four-hour regional blackouts should Europe's energy crisis lead to winter power shortages.

*Reuters*

<http://www.reuters.com/>

**10 August 2022**

## **MISO benefit-cost analysis of \$10.3B transmission plan offers framework for national model: ACORE report**

The Midcontinent Independent System Operator's benefit-cost analysis of a set of \$10.3 billion transmission projects, approved last month, offers a framework for a national model in measuring transmission benefits, according to a report released Tuesday by the American Council on Renewable Energy.

MISO's methodology for determining the benefits transmission projects can provide was developed with stakeholders, which helped build confidence in the results, panelists said during a webinar on the report.

"This MISO effort really helped move the ball forward, not just in MISO, but elsewhere as a model," said Rob Gramlich, Grid Strategies president and the report's author.

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The ACORE report comes as the Federal Energy Regulatory Commission is proposing to revise its rules for transmission planning, including by possibly requiring grid planners to use certain metrics to measure a project's benefits.

FERC proposed a dozen categories of metrics planners should consider, such as reduced loss of load probability and production cost savings. Currently, there isn't a standard process for assessing benefits, and some grid planners don't do it at all, according to Gramlich.

"When the benefits of proposed transmission lines are fully calculated, the advantages of new lines are made clear to regional planners," Gregory Wetstone, ACORE president and CEO, said in a statement. "Building off MISO's forward-leaning process, our analysis offers a roadmap for FERC and other planning entities that, if adopted, will result in a cleaner, lower-cost electric grid."

When MISO assessed the benefits of Tranche 1 of its long-range transmission plan, or LRTP, the grid operator used six benefit metrics, including congestion and fuel cost savings, avoided cost of local generation projects and decarbonization.

MISO found that its \$10.3 billion transmission plan would produce benefits totaling \$37.3 billion, providing the seven zones in its northern and central footprint with benefits exceeding costs by at least 2.2 times.

A showing of benefits across its footprint helped secure broad political support from all states, Gramlich said in the report. "That support is essential for overcoming the hardest obstacle to building transmission – securing buy-in from each state to broadly allocate the cost of the transmission across the region," Gramlich said.

MISO's LRTP process should be a model for the nation, especially with a climate bill that appears poised to pass Congress, according to Devin McMackin, ITC Holdings federal policy specialist. MISO's benefits metrics are a "good starting point" for setting national requirements, McMackin said, noting that a common set of standards will be needed to support interregional transmission planning.

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**11 August 2022**

## **California adopts 25 GW planning goal for offshore wind by 2045**

The California Energy Commission on Wednesday voted to adopt offshore wind energy preliminary planning goals ranging from 2,000 MW to 5,000 MW by 2030, and 25,000 MW by 2045 — up from an initial proposed goal of 10,000 MW to 15,000 MW goal by 2045 — as part of the state's broader push to decarbonize its electric grid.

Agency staff proposed the goals in response to Assembly Bill 525, legislation passed last year that directed the commission to establish planning goals for offshore wind and a strategic plan to develop the resource in federal waters off the California coastline.

"This is truly excellent news for California's offshore wind industry, workers and electricity ratepayers. These goals set an ambitious course and show that California is very serious about going big on offshore wind, to drive economies of scale and generate the very substantial clean power, climate and jobs benefits that this renewable energy resource can generate for our state," Adam Stern, executive director of trade group Offshore Wind California, said at the agency meeting.

California Gov. Gavin Newsom, D, signed an agreement to open up the state's coastline for offshore wind development last year; this May, the Bureau of Ocean Energy Management followed up with a proposed sale notice for leases off the Northern California and Central California coasts.

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Also in May, the CEC released a draft report that proposed a preliminary planning goal of 3,000 MW of offshore wind by 2030 and a 10,000 MW to 15,000 MW goal for 2045. In the final report, the agency is now envisioning between 2,000 MW and 5,000 MW of offshore wind by 2030, with the upper range potentially coming from either building out the full potential of the Morro Bay wind energy area or building in a combination of the Morro Bay and Humboldt areas. For 2045, the agency is now proposing a planning goal of 25,000 MW.

The increase in the 2045 planning goal comes, in part, because of a letter penned by Newsom to regulators last month, urging that they create a planning goal of at least 20 GW of offshore wind by 2045, according to the CEC.

The agency's staff is cognizant that the goals may need to be updated periodically as the floating offshore wind industry evolves, technology advances, and lessons are learned from early deployments, Rhett deMesa, project manager with the commission, said during the meeting.

"It is also important to emphasize that these planning goals are not procurement targets. Any future procurement authorization of offshore wind will have to go through all necessary resource planning, procurement and permitting requirements," deMesa added.

Offshore wind is a constant, quite predictable resource, which means it can serve as a kind of "firm power," even if it doesn't meet that traditional definition, according to CEC Commissioner Andrew McAllister. "So it is a big piece of the puzzle that's actually taking shape in front of us," he said at the meeting.

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