

WORLD POWER SYSTEMS REVIEW

1 March 2024

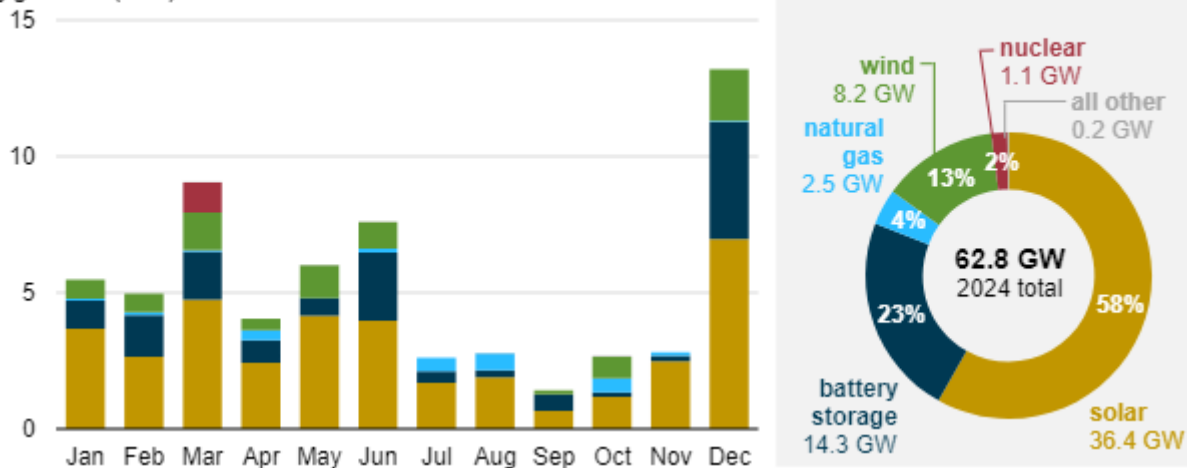
15 February 2024

Solar and battery storage to make up 81% of new U.S. electric-generating capacity in 2024

Developers and power plant owners plan to add 62.8 gigawatts (GW) of new utility-scale electric-generating capacity in 2024, according to our latest Preliminary Monthly Electric Generator Inventory. This addition would be 55% more added capacity than the 40.4 GW added in 2023 (the most since 2003) and points to a continued rise in industry activity. We expect solar to account for the largest share of new capacity in 2024, at 58%, followed by battery storage, at 23%.

Solar. We expect a record addition of utility-scale solar in 2024 if the scheduled 36.4 GW are added to the grid. This growth would almost double last year's 18.4 GW increase, which was itself a record for annual utility-scale solar installation in the United States. As the effects of supply chain challenges and trade restrictions ease, solar continues to outpace capacity additions from other generating resources.

U.S. planned utility-scale electric-generating capacity additions (2024)
gigawatts (GW)



More than half of the new utility-scale solar capacity is planned for three states: Texas (35%), California (10%), and Florida (6%). Outside of these states, the Gemini solar facility in Nevada plans to begin operating in 2024. With a planned photovoltaic capacity of 690 megawatts (MW) and battery storage of 380 MW, it is expected to be the largest solar project in the United States when fully operational.

Battery storage. We also expect battery storage to set a record for annual capacity additions in 2024. We expect U.S. battery storage capacity to nearly double in 2024 as developers report plans to add 14.3 GW of battery storage to the existing 15.5 GW this year. In 2023, 6.4 GW of new battery storage capacity was added to the U.S. grid, a 70% annual increase.

Texas, with an expected 6.4 GW, and California, with an expected 5.2 GW, will account for 82% of the new U.S. battery storage capacity. Developers have scheduled the Menifee Power Bank (460.0 MW) at the site of the former Inland Empire Energy Center natural gas-fired power plant in Riverside, California, to come on line in 2024. With the rise of solar and wind capacity in the United States, the demand for battery storage continues to increase. The Inflation Reduction Act (IRA) has also accelerated the development of energy storage by introducing investment tax credits (ITCs) for stand-alone storage. Prior to the IRA, batteries qualified for federal tax credits only if they were co-located with solar.

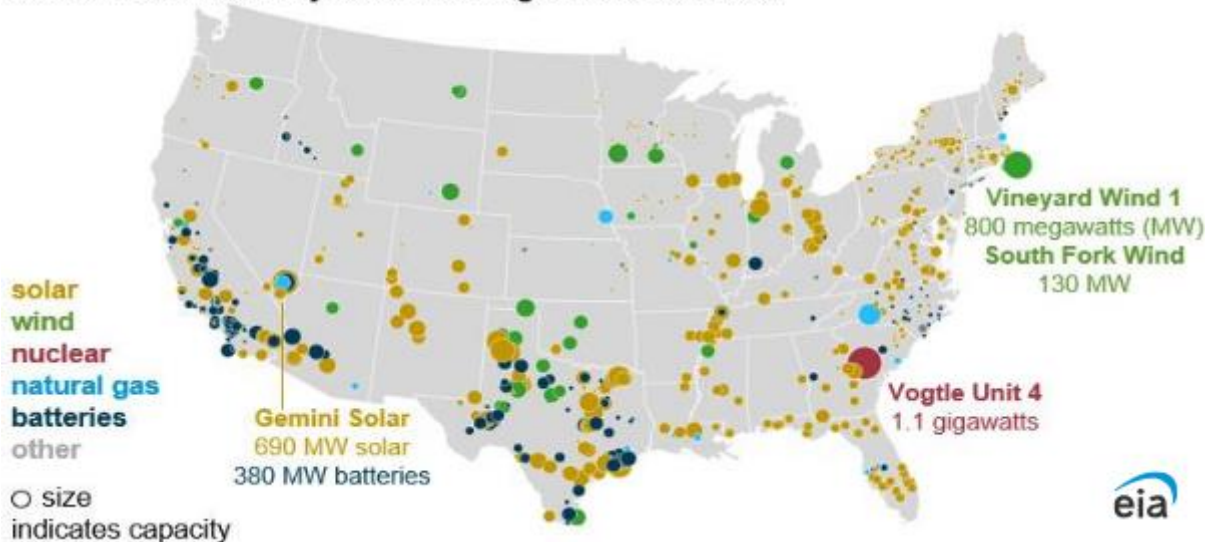
Wind. Operators report another 8.2 GW of wind capacity is scheduled to come on line in 2024. Following the record additions of more than 14.0 GW in both 2020 and 2021, wind capacity additions have slowed in the last two years.

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Two large offshore wind plants scheduled to come on line this year are the 800-MW Vineyard Wind 1 off the coast of Massachusetts and the 130-MW South Fork Wind off the coast of New York. South Fork Wind, which developers expected to begin commercial operation last year, is now scheduled to come on line in March 2024.

Planned 2024 U.S. utility-scale electric generator additions



Natural gas. For 2024, developers report 2.5 GW in planned natural gas capacity additions, the least new natural gas capacity in 25 years. Notably, in 2024, 79% of the natural gas capacity added is to come from simple-cycle, natural gas turbine (SCGT) plants. This year will be the first time since 2001 that combined-cycle capacity was not the predominant natural gas-fired technology. SCGT power plants provide effective grid support because they can start up, ramp up, and ramp down relatively quickly.

Nuclear. Start-up of the fourth reactor (1.1 GW) at Georgia's Vogtle nuclear power plant, originally scheduled for last year, has moved to March 2024. Vogtle Unit 3 began commercial operation at the end of July last year.

IEA

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

18 February 2024

Georgia's Largest Hydropower Plant Set for Upgrade With Ebrd and EU Backing

The European Bank for Reconstruction and Development (EBRD) has announced it is providing a sovereign loan of €28 million to facilitate the modernization and rehabilitation of the Enguri hydropower plant, the largest electricity facility in Georgia. This initiative is complemented by a grant of €7.05 million from the European Union (EU).

The funding, directed to Engurhesi LTD, the plant's operating company, is slated to address critical issues concerning the structural integrity of the Enguri dam, alongside essential repairs to the underground tunnel and penstock. These measures aim to enhance the plant's operational reliability and ensure a more sustainable power generation and grid system. Moreover, the investment will be used to help minimize water leakages within the headrace tunnel while unlocking opportunities for additional renewable energy production. The allocated funds will also facilitate the construction of vital infrastructure, including roads for dam monitoring, improvements to electricity grid safety and reliability, and the establishment of a fish passage downstream of the Enguri dam.

Constructed in the 1970s, the Enguri hydropower plant, along with the Vardnili hydropower plants, forms a crucial energy complex that meets approximately 30% of Georgia's electricity demands, playing a pivotal role in driving economic growth and stability.

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The EBRD's involvement in the Enguri hydropower plant's rehabilitation dates back to 1998. This latest financial injection builds upon previous rehabilitation phases supported by the EU, aligning with the EU's Global Gateway Strategy. This strategy, implemented through the Economic and Investment Plan, aims to fortify energy, digital, and transport connectivity in the Eastern Neighbourhood region, with particular emphasis on Georgia.



Overall, the EBRD, in collaboration with its donors, has channelled approximately €205 million into supporting the Enguri plant since 1998, signifying a sustained commitment to Georgia's energy sector. With the EBRD's cumulative investments in Georgia reaching around €5 billion across 290 projects, predominantly in the private sector, this initiative marks another significant step towards fostering sustainable development and energy independence in the region.

Waterpowermagazine

<http://www.waterpowermagazine.com>

21 February 2024

Australian Gov't Initiates Consultation on Sixth Area for Offshore Wind Development

The Australian Government has launched a consultation on an offshore wind development zone in the Indian Ocean off the Bunbury region in Western Australia (WA) that could host up to 20 GW of offshore wind. The Commonwealth is seeking feedback on a proposed area, which is 7,674 square kilometres and at least 20 kilometres from shore at its closest point off Cape Naturaliste and Bunbury and 36 kilometres from Busselton.

According to the Ministry for Climate Change and Energy, the proposed zone is an ideal location for offshore electricity generation because of the high-speed winds in the Indian Ocean, and its proximity to large energy users. It could enable up to 20 GW of offshore wind to be developed. Submissions on the proposed area are open from today (20 February) until 3 May 2024. The ministry says that an offshore wind project can only start construction if it is in a legally declared area, is awarded a feasibility licence and commercial licence, and receives environmental approval.

“Offshore wind will be a critical new clean energy industry for Western Australians as electricity demand increases, helping to provide thousands of jobs along the way. The Albanese Government is committed to genuine consultation on offshore wind – that’s why we want communities, industry and businesses to have their say on an offshore wind area off WA from the very beginning,” said Minister for Climate Change and Energy, Chris Bowen. The zone is said to be able to deliver up to 12,000 jobs in construction and 6,000 ongoing jobs.

Western Australia is the sixth region that is considered to be suitable for future large-scale offshore wind projects in the Down Under. The first two areas that have been declared

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for offshore wind development are the zone off Victoria's Gippsland coast and the New South Wales (NSW) Hunter region. The initial community consultation phase for the proposals in the Southern Ocean Region off Victoria and South Australia, as well as the NSW Illawarra region, has concluded. Danish renewable energy company Copenhagen Energy said that the announcement made today marked an important milestone in the development of offshore wind in WA.

The company has submitted plans for initial consideration under the EPBC Act for three offshore wind farms in WA with its Leeuwin Offshore Wind Farm planned for Commonwealth waters in the Bunbury region. "Our project has a lot to offer WA environmentally, socially and economically. It will help the State and Federal Governments achieve their carbon-reduction targets, create new jobs and provide the impetus for regional development using local suppliers," said Joy Francis-Hayes, Copenhagen Energy Development Manager, Australia.

Offshorewind
<http://www.offshorewind.biz/>

22 February 2024

Economic Impact of Nuclear to Southeast USA Highlighted

The nuclear energy industry in southeast USA generates an annual economic impact of almost USD43 billion, supporting 152,598 jobs and generating USD13.7 billion in labour income, says a study released by the Southeast Nuclear Advisory Council (SENAC).

The study - [The Economic Impact of the Nuclear Industry in the Southeast United States](#) - was conducted by E4 Carolinas, the trade association for Carolina energy companies and organisations. It presents a comprehensive analysis of the economic impacts of the nuclear energy sector in the five-state region consisting of Georgia, North Carolina, South Carolina, Tennessee and Virginia.

Nuclear power constitutes 37% of utility-scale net electricity generation in the region, compared with the national average of 19%. The region hosts 25 of the USA's 93 operational nuclear reactors and has a comprehensive network of companies, research universities, and national laboratories supporting the industry, including community colleges and educational programmes that contribute to a skilled workforce for the nuclear industry.

The study "represents a collaboration between industry leaders, educational institutions, and energy non-profits", SENAC said. "It serves as a baseline for understanding the benefits of nuclear power and its integral role in regional economic growth and the global clean energy transition." The report says nuclear energy generates "an impressive" annual economic impact of USD42.9 billion, with USD3.7 billion in annual tax revenues across the five-state region. It also found the average employment multiplier effect across the five-state region is 2.8, meaning for every ten jobs directly created by the nuclear industry, an additional 18 jobs are generated elsewhere.

The nuclear industry's employment multiplier effect is significantly higher than the average industry in these states. The study says the average wage in the nuclear industry outpaces regional averages by 65.5%, with an average wage of USD89,972 across the five-state region, "underscoring the sector's role in providing high-quality employment opportunities".

"Because of such strong multiplier effects, future investments in new nuclear power plants have the potential to generate significant economic benefits for a local region," the report concludes. "This study estimates that for every USD100 in revenue generated by a new nuclear power plant in the five-state region, approximately USD200 in total economic output would be created."

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As part of its recommendations and conclusions, the study underscores the need for states to establish economic development plans centered around nuclear power, emphasising that the southeastern US is uniquely positioned to capitalise on emerging technologies and opportunities in the nuclear sector. The study also encourages a broader perspective on achieving clean energy goals, suggesting greater consideration of nuclear energy and advocating for its inclusion in clean energy standards and policy discussions

"This report demonstrates two clear findings: the existing civilian nuclear industry provides a massive economic impact for the southeast region, and by supplying USD3.7 billion in tax revenues, is a critical element in overall state and local finances," said Jeff Merrifield, SENAC Co-Chair, Chair of E4 Carolinas, and a Partner of Pillsbury Law. "Additionally, with the largest nuclear workforce in the US, the southeastern United States, represented by the five states in the report, will be a vital supplier of jobs and technologies to enable the next generation of advanced nuclear energy technologies.

Jim Little, SENAC Co-Chair and Industry Representative, South Carolina Governor's Nuclear Advisory Council, added: "The economic benefits reported here are only part of the picture, as nuclear energy also provides a pathway to meeting the anticipated increased demand for power and reduced carbon emissions, while maintaining the low-cost energy and reliability goals important to our region. The southeastern US is at the forefront of nuclear technology development, particularly in Generation IV nuclear technologies and small modular reactors, heralding a new era of safety and cost-efficiency."

"Intuitively, we always knew there was a large benefit to our local and regional economies attributable to nuclear power," said E4 Carolinas President Ken Canavan. "Thanks to this study, we can unequivocally state that the economic benefits are tremendous and include substantial jobs and tax base, and an annual economic impact of \$43 billion for the five-state region."

SENAC is an advisory council created to support the advanced nuclear technology research and planning grant received by E4 Carolinas in 2021 from the US Department of Commerce, Economic Development Administration covering five states in the Southeast USA (Georgia, North Carolina, South Carolina, Tennessee and Virginia). SENAC's objective is to bring together industry, academia, and government to connect, promote, educate, and inform the development and deployment of advanced nuclear reactor technology in the region.

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

22 February 2024

DEWA, Masdar achieve financial close on 1.8GW sixth phase of MBR solar park

Dubai Electricity and Water Authority (DEWA) and Abu Dhabi Future Energy Company (Masdar) have achieved financial closing of the 1.8GW sixth phase of the Mohammed bin Rashid Al Maktoum (MBR) solar park in the UAE. The Abu Dhabi-based clean energy company was chosen by DEWA as the preferred bidder to build and operate the sixth phase of the MBR solar park in September 2023. To be developed using photovoltaic (PV) solar panels based on the independent power producer (IPP) model, the sixth phase of the MBR solar park entails a total cost of AED5.5bn (\$1.5bn).

For this phase of the solar park, DEWA incorporated Shuaa Energy 4 in partnership with Masdar. DEWA owns 60% of the new company while the remaining 40% is held by Masdar. The solar project's lending group includes Abu Dhabi Commercial Bank, Commercial Bank of Dubai, HSBC, First Abu Dhabi Bank, Abu Dhabi Islamic Bank, Standard Chartered Bank, and Warba Bank. Masdar CEO Mohamed Jameel Al-Ramahi said: "The UAE continues to demonstrate leadership in delivering cutting edge clean energy solutions

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which have attracted the interest and confidence of the investment community, locally and internationally.

“Accessing capital is fundamental to accelerating the global energy transition and this expansion of the Mohammed bin Rashid Al Maktoum Solar Park is an important milestone for the UAE in its own clean energy journey.” Located in Dubai, the MBR solar park is aimed to have a production capacity of 5GW by the end of this decade with investments totalling AED50bn (\$13.61bn). The sixth phase of the solar park is estimated to deliver clean energy to about 540,000 residences upon its completion. It will also offset 2.36 million tonnes of carbon emissions per year.

Besides, phase six of the MBR solar park has achieved the lowest levelised cost of energy (LCOE) of \$1.62 per kilowatt hour (kWh) in the solar park. The sixth phase of the MBR solar park is scheduled to become operational in stages between 2024 and 2026.

DEWA CEO and managing director Saeed Mohammed Al Tayer said: “DEWA is implementing the sixth phase of the solar park in cooperation with Masdar, Abu Dhabi Future Energy Company based on the Independent Power Producer (IPP) model, using the latest solar photovoltaic bifacial technologies with single-axis tracking. “The current production capacity at the solar park is 2,627MW and the total capacity under construction is 2033 MW. The 1,800MW sixth phase of the solar park will see the total production capacity increase to 4,660MW by 2026.”

NS Energy

<http://www.nsenegybusiness.com>

22 February 2024

Italy's Udinese to fit solar panels on stadium roof

Italian Serie A soccer team Udinese Calcio have teamed up with local utility Bluenergy Group to cover the roof of the club's stadium with solar panels, in a move they hope will increase support for green energy in the country.

The installation, work on which has just begun, will comprise more than 2,400 panels and will produce a daily average of 3,000 kilowatt hours (Kwh), Udinese and Bluenergy said in a statement, adding this will cover part of the needs of the arena. The two partners are also considering adding a battery storage system to enhance the efficiency of the solar plant, expected to be operational in October. Family-owned Bluenergy has been a partner of Udinese since 2018, supplying the club with energy exclusively from renewable sources for the last few years. It recently acquired naming rights to the stadium.

Udinese is one of the few Serie A clubs owning the arena where it plays, which is on the outskirts of the city of Udine, in north-east Italy. The country aims to generate nearly two thirds of its electricity from renewable energy sources by 2030, the energy ministry said last June in its draft Plan for Energy and Climate. However, the development of solar and wind farms faces multiple challenges including a lengthy process to win permits and in some cases resistance from local administrations and the public who fear damage to both the landscape and agriculture.

Reuters

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

22 February 2024

PJM, 3 other RTOs propose steps to improve gas-electric sector coordination, boost reliability

In the years since Winter Storm Uri there have already been improvements to cross-sector coordination, the RTOs said — pointing to improved generator performance during a

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pair of winter storms last month — but some issues persist nationally and others can be addressed regionally or by states.

“These more recent experiences underscore the value of better aligning both the purchase of commodity and delivery of natural gas,” according to the position paper. “If anything, these most recent positive experiences underscore the value of focusing on additional enhancements, building on the work of each of the regions, to better align these two industries.”

Addressing the potential for co-dependent infrastructure will require pipeline and other gas supply stakeholders to work with RTOs and electric distribution utilities “to ensure that there are redundant sources of power available to critical facilities,” according to the paper. And because the conversion of compression stations and processing facilities to utilize electric power was driven partly driven by federal environmental permitting requirements, “closer coordination with federal and state environmental regulators is needed to address the co-dependency vulnerabilities,” the RTOs said. Among the other coordination approaches suggested, the RTOs said they want to improve fuel scheduling flexibility and to see the development of “packages of firm transportation and storage and other pipeline services” to better meet changing electric system demands.

“There are significant differences in the level of scheduling flexibility available to generators to respond to RTO dispatch instructions, particularly during constrained system conditions,” they said, and the degree of pipeline scheduling flexibility is “heavily influenced by the degree of storage available on the system and the extent to which the pipeline is fully subscribed during peak conditions.” Improvements to weekend and holiday gas trading can also assist power generators, the RTOs said.

The Federal Energy Regulatory Commission and state regulators should consider investigating opportunities to “enable an end to multiday trading requirements of natural gas over weekends and holidays that significantly strain natural gas/power coordination and dispatch,” the paper said. The Natural Gas Supply Association, which represents gas producers, said it was reviewing the RTOs’ suggestions and its members “are committed to gas-electric coordination and ensuring reliability in the energy system. “While the gas industry did not have specific input to this paper, they should generally be aware that these concerns have been raised in the past,” a spokesperson for the New England grid operator said in an email. There are multiple efforts underway to improve coordination between the gas and electric sectors.

In November, the National Association of Regulatory Utility Commissioners launched a 15-month effort to improve coordination by bringing together a group of state regulators and stakeholders. And in December, FERC and the North American Electric Reliability Corp. recommended the electric power and natural gas sectors should collaborate on a “blackstart system restoration plan” to bring the grid back online in the event of a widespread blackout.

Utility Dive

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

22 February 2024

New York’s First Offshore Wind Farm Completed

A couple of days ago, South Fork Wind, the joint venture between Ørsted and Eversource Energy, said via social media that the final wind turbine set sail to the project site from the State Pier Terminal in New London, Connecticut, over the weekend. According to social media posts from Ørsted’s team on 21 February, the final wind turbine was installed on 20 February. The 132 MW South Fork Wind, located some 56 kilometres east of Montauk Point, comprises twelve Siemens Gamesa 11 MW wind turbines installed on monopile foundations.

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All monopile foundations and the project's offshore substation were installed in Summer 2023, and the wind turbine components started arriving in New London around the same time. Van Oord's offshore installation vessel Aeolus installed the first turbine at the end of November 2023 and shortly after this, in early December 2023, the offshore wind farm delivered its first power to the grid. With a generation capacity of 132 MW, South Fork Wind can power about 70,000 Long Island homes and eliminate up to six million tonnes of carbon emissions each year, the equivalent of taking 60,000 cars off the road, according to its developers. Currently owned by Ørsted and Eversource, the offshore wind farm will soon see a change in ownership as Eversource Energy is in the process of selling its 50 per cent stake in South Fork Wind and Revolution Wind projects to Global Infrastructure Partners (GIP), but will maintain its previously announced tax equity investment in South Fork Wind. The transaction is expected to close in mid-2024.

Offshorewind
<http://www.offshorewind.biz/>

23 February 2024

Indian PM Modi inaugurates two reactors at Kakrapar atomic power station

Indian Prime Minister Narendra Modi has officially inaugurated two new pressurised heavy water reactors (PHWRs) at the Kakrapar atomic power station (KAPS) in Gujarat, western India. Built by the Nuclear Power Corporation of India (NPCIL), the Unit 3 (KAPS-3) and Unit 4 (KAPS-4) projects have a capacity of 700MW each. Both units of the Kakrapar nuclear power plant entailed a total cost of over INR225bn (\$2.71bn). The KAPS-3 and KAPS-4 projects are expected to generate approximately 10.4 billion units of clean electricity annually.

The nuclear reactors will also benefit consumers of multiple states including Gujarat, Madhya Pradesh, Chhattisgarh, Goa, Maharashtra, and the union territories of Dadra and Nagar Haveli and Daman and Diu. Modi, on social media platform X, said: "Went to the Kakrapar Atomic Power Station. Two new Pressurised Heavy Water Reactors were dedicated to the nation." Located near Surat, the Kakrapar atomic power station has a total of four pressurised heavy water reactors. KAPS 1 and KAPS 2 of the nuclear facility have a capacity of 220MW each. The environmental clearance for the KAPS 3 and KAPS 4 reactors were secured from the Ministry of Environment and Forest in 2006. Unit 3 entered into commercial operation in late June 2023, while Unit 4 achieved first criticality in December 2023

The newly inaugurated reactors are said to be the largest indigenous PHWRs and have advanced safety features. NPCIL awarded Larsen & Toubro (L&T)'s infrastructure operating company the contract for the construction of the main plant civil works of KAPS 3 and KAPS 4 at the Kakrapar facility in 2009. Earlier this month, the Indian Prime Minister laid the foundation stone for phase-1 of the Talabira thermal power project in Sambalpur, Odisha in eastern India. The power project will have a generating capacity of 2.4GW.

NS Energy
<http://www.nsenergybusiness.com/>

25 February 2024

Judge ruling favors Riot in case against energy officials

Riot Platforms and The Texas Blockchain Council (TBC) have secured a favorable ruling in their lawsuit against multiple U.S. energy officials, including the U.S. Department of Energy (DOE).

According to a filing dated Feb. 22 in the U.S. District Court for the Western District of Texas, Riot and the TBC successfully convinced the district judge that immediate harm

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would occur without a temporary restraining order (TRO) to halt further data collection. On Feb. 25, the court granted a TRO preventing the Energy Information Administration (EIA) — which is part of the DOE — from compelling crypto miners to participate in a survey and sharing collected data. The TRO prohibits the EIA as well as the Office of Management and Budget (OMB) from requiring crypto miners to respond to the survey and share any data already collected.

The TBC and Riot Platforms argued that the potential damages include non-recoverable costs of compliance, a credible threat of prosecution, and the disclosure of proprietary information. The court's decision was based on evidence presented by the plaintiffs, demonstrating potential damages such as non-recoverable compliance costs, threats of prosecution for non-compliance, and risks of disclosing proprietary information.

Crypto News
<http://crypto.news/>

26 February 2024

Kazakhstan Seeks to Harness Huge Wind Energy Potential

Kazakhstan may soon become one of the world leaders in wind power generation, the country's Minister of Energy, Almasadam Satkaliev told a parliamentary commission on February 23rd. According to the minister, as the world's ninth-largest country, Kazakhstan has significant potential for the development of the renewable energy sector, with its vast territory highly suited to wind and solar power generation.

Kazakhstan's climate is favorable for the construction of wind power plants as the country has wind corridors with wind speeds of more than five meters per second, a requirement for the operation of turbines. Experts estimate the potential of wind energy in Kazakhstan at 920 billion kWh per year. The Caspian Region, south Kazakhstan, and the Shelek Corridor and Dzhungar Gate located in the southeast have the most potential

The minister also noted the possibilities for the utilization of solar energy. The southern regions of the country see 2,200-3,000 hours of sun per year, among the most in the world. The best areas for solar generation are the Aral Sea region and south Kazakhstan.

In 2023, Kazakhstan consumed 115 billion kWh of electrical energy, compared with 112.9 billion kWh in 2022, and produced 112.8 billion kWh, the same amount as in 2022. Last year Kazakhstan imported 3.4 billion kWh, and exported 1.4 billion kWh. In 2024, the country plans to generate 115 billion kWh.

According to the minister, renewable energy has shown steady growth, and since 2014 its capacity has increased more than 16-fold — from 178 MW in 2014 to 2,868 MW in 2023.

In 2023, the volume of electricity generated by renewable energy facilities amounted to 6.675 billion kWh, including 3.8 billion kWh from wind power plants, 1.8 billion kWh from solar plants, and 993.8 million kWh from hydropower plants. That accounted for 5.9% of the total electricity generation in the country. Kazakhstan's goal is to achieve a 15% share of renewable energy sources in power generation by 2030, and a 50% share by 2050.

EV Wind
<http://www.evwind.es>

27 February 2024

Raccoon mischief triggers blackout in Toronto, trapping people in elevators

An inquisitive raccoon fiddled with electricity equipment in Toronto and cut power for thousands in the downtown core late on Thursday, knocking out traffic lights in Canada's largest city and trapping some people in elevators.

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Crews investigating the outage determined that the nocturnal mammal made contact with equipment at a downtown Toronto station, Utility Hydro One (H.TO), opens new tab said on social media. A spokesperson for Hydro One said the raccoon did not survive the contact. According to think-tank Electricity Canada, squirrels are by far the most common culprit when it comes to animal-related outages, followed by raccoons and birds.

The power outage on Thursday hit areas about 2 km (1.24 miles) from the CN Tower landmark and left about 7,000 people in the dark for nearly three hours. The city's fire department said it had to respond to "a higher number of elevator rescues" due to power cuts. Some traffic lights were also turned off in downtown Toronto, which is also home to the busy Union Station rail transport hub, according to a Reuters witness.

Reuters

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

28 February 2024

Germany opens 5.5 GW tender for North Sea wind energy

Germany's Federal Network Agency today initiated an auction for three areas in the North Sea designated for hosting 5.5 GW of wind capacity. Developers keen on these sites, situated about 110 km (68.35 miles) northwest of Borkum Island near the Dutch exclusive economic zone border, have until August 1 to submit their proposals, the agency said on Wednesday.

The Federal Maritime and Hydrographic Agency (BSH) conducted a preliminary investigation of the areas, gathering data on the marine environment, subsoil conditions, and wind and oceanographic parameters. Last week, BSH confirmed the suitability of the zones for tendering by the Federal Network Agency. The data collected during the investigation will be made available to all interested parties as part of the call for proposals. Successful bidders no longer have to carry out these studies.

The selection of winners in the bidding process will be determined by a point-based system. Up to 60 points are allocated based on the financial value of the bids, while qualitative criteria can contribute an additional 35 points. These qualitative criteria encompass factors such as the percentage of renewable electricity utilized in turbine production, the adoption of environmentally sustainable commencement practices, and the duration of long-term electricity supply contracts to third parties

In the previous tender for pre-examined areas in 2023, which allocated a combined capacity of 1,800 MW, the total revenue generated amounted to EUR 784 million (USD 851.1m). Another tender for two North Sea zones of a combined 2.5 GW is already underway with a June 1 deadline.

Renewables Now

<http://renewablesnow.com/>

28 February 2024

European First-Of-Its Kind Photovoltaic (PV), Wind Power & Storage Combination

Global renewable energy company BayWa r.e. and Ampt, the #1 DC optimizer company for large-scale photovoltaic (PV) systems, announce the successful deployment of a unique combination of wind and solar generation together with battery storage within the microgrid at the Fraunhofer Institute for Chemical Technology (ICT) campus in Pfingstal, Germany.

BayWa r.e. installed three new rooftop arrays and one new ground-mounted system to expand renewable energy utilization onsite. These PV systems with a total capacity of 690 kWp are now connected to the power grid without their own inverters, but via an existing 2 MW wind turbine. A 10 MWh flow battery energy storage system completes the triad.

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Technically highly sophisticated, it represents a progressive plant combination of wind and solar energy including battery storage, which is unique in Europe in this form.

Leveraging Ampt String Optimizers, each of the different technologies was integrated through a shared DC bus – commonly referred to as a “DC-coupled” architecture. In this way, the generation variability across the PV systems can be managed and the different systems united at a high and fixed voltage to increase system efficiency.

“We are delighted to bring this milestone project to life. Ampt’s technology simplified a technically very complex project,” said Andrea Grotzke, Global Director of Energy Solutions at BayWa r.e. “The way we have added solar to the existing wind energy and battery storage system is unique, and in successfully completing this project we were able to further improve our own expertise and capabilities. We are pleased with the result of this innovative power solution symbiosis and our ability to meet our customer’s individual requirements.”

The main campus of the Fraunhofer Institute ICT has over 100 laboratories, as well as several pilot plants and three test centres on a 21-hectare site. This project will make a valuable contribution to their increasingly climate-neutral operation.

Ampt String Optimizers are DC/DC converters that perform maximum power point tracking (MPPT) and recover energy losses due to voltage and technology differences. Through individual string MPPT, Ampt optimizers mitigate the energy losses caused by shade from surrounding buildings on the Fraunhofer ICT campus. The optimizers are programmable and provide string-level data, which enhances visibility of the system functions as well as operation and maintenance capabilities.

“Combining both rooftop and ground-mounted solar in seven different orientations and two module sizes in one common microgrid with wind power and batteries is a significant challenge. This project is a testament to the capabilities of our industry-leading power conversion technology to simplify control of the diverse systems spread across a site,” said Levent Gun, CEO, Ampt. “We look forward to expanding our relationship with BayWa r.e. and continuing to deploy our technology to solve the challenges of our customers in solar and energy storage applications.”

EV Wind

<http://www.evwind.es>

28 February 2024

ERCOT CEO Cool to Linking to Neighboring RTOs

ERCOT CEO Pablo Vegas on Tuesday threw cold water on the possibility of linking the ISO and the national grid’s other two interconnections.

Reacting to “one of the important topics that comes up on a regular basis,” Vegas told his Board of Directors that interconnecting the Texas grid with its neighbors is a complex issue requiring extensive analysis and input from legislators and regulators. Connecting with other grids is not just a reliability and resilience issue, he said, but one of economics.

“It’s really a question as to whether it would be the most economical way to improve reliability and resiliency by interconnecting the grid to other grids, or would the dollars spent be better served and give us better reliability if we were to invest inside of Texas in additional transmission and other resources to help with reliability and resiliency,” Vegas told the directors during their bimonthly meeting. “That’s really the fundamental question. We’re not debating that there could be reliability or resiliency benefits by having interconnections. The question is, is it the best way to spend the dollars to get them?”

During severe weather conditions, he said, ERCOT’s neighbors would also likely be dealing with the same storms, making it less likely they could share energy with the Texas

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grid operator. Vegas also warned that the interconnections could have a “chilling” effect on new generation investment in ERCOT.

“[DC ties] could have the effect of making it less economically advantageous to build power plants inside of ERCOT,” Vegas said. “You could see scenarios where it would make more economic sense to build them right outside of our economy, potentially benefiting from some of the capacity market and revenues that would be available in the SPP market or in the MISO market, and then selling that power back into ERCOT when market pricing is high.

“There’s a lot of really important considerations,” he added. “You really need to model the economic impact between regions when [they’re] interconnected to fully understand the cost benefit or the cost impact on the ERCOT market. Those models don’t exist today. Those have to be developed and really assessed to understand the true economic impact inside of ERCOT and outside of our economy.”

An economic study is coming, said University of Texas engineering professor Michael Webber. Webber posted during the board meeting that his research team has conducted an analysis of the economic, environmental and reliability benefits of connecting ERCOT to neighboring grids. The study has been presented and will be published “soon,” he said.

The calls for interconnection outside of Texas have grown since the 2021 winter storm. During that February, ERCOT was forced to shed load to keep the system balanced as generators dropped offline in the frigid temperatures. U.S. Rep. Greg Casar (D-Texas) introduced a bill earlier this month mandating interconnections between ERCOT and its neighboring grids. He says the bill would reduce load shed like that during Winter Storm Uri and allow low-priced renewable energy to be sold outside the Texas grid.

The legislation was roundly derided by speakers at an ERCOT conference after it was released. Texas does have four DC ties — two with the Eastern Interconnection and two to Mexico totaling about 1,200 MW — that are used for scheduled and emergency trades and are not treated as interstate interconnections.

A proposed DC tie, Pattern Energy’s Southern Spirit 345-kV link into the SERC Reliability region, gained regulatory approval in 2022 after seven years of review. FERC has said the project, formerly known as Southern Cross Transmission, would not trigger its jurisdiction over Texas. (See “SCT Proceeding Closed,” Texas Public Utility Commission Briefs: Sept. 29, 2022.) The Public Utility Commission of Texas and ERCOT have both taken steps to address the issue. The PUC has opened a proceeding on DC ties’ minimum deliverability and planning assumptions and asked stakeholders to submit feedback (55984). The commission is expected to discuss the item during its March 7 open meeting.

At ERCOT, stakeholders have tabled a revision to the planning guide (PGRR105) since September over cost-allocation concerns. The measure would add DC ties to the list of resources subject to minimum deliverability conditions. Vegas, echoing ERCOT’s comments in the PUC’s docket, told the board that any interconnections will require transmission infrastructure on both sides of the tie to “fully leverage and import the energy across them.”

“You really need to think about the economic cost overall and the economic cost of having those ties and what it means to pricing between ERCOT and the other regions that it’s connected to,” he said. “When pricing is high in ERCOT and lower in areas outside, there is the potential that you could see benefit in lowering the cost to residents inside of ERCOT in that circumstance. The flip is also true. When pricing is higher outside and lower inside of ERCOT, you could see a raising of the pricing inside of ERCOT as the price arbitrage is normalized through these DC ties.”

R Street Institute’s Beth Garza, who doubted during the ERCOT market summit that Casar’s bill would go anywhere, told RTO Insider she was “intrigued” by Vegas’ questioning

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of whether interconnection costs would be reasonable compared to other actions to improve reliability.

“He and the ERCOT board have vigorously challenged the [Independent Market Monitor’s] estimate of the cost of other reliability enhancements,” she said, pointing to the ERCOT contingency reserve service product. The IMM has said the new ancillary service created artificial supply shortages that produced “massive” inefficient market costs totaling about \$12.5 billion last year through Nov. 27. “We really need to look at the true cost, the economic impacts to the market, the economic impacts to the decision-making around generation and how generation would develop,” Vegas said. “And those are important issues that should be worked through the Public Utility Commission.” There were no questions from the board when Vegas finished his comments.

RTO Insider

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GE Vernova launches new portfolio of Grid Automation solutions to enhance grid resilience

GE Vernova’s Grid Solutions business (NYSE:GE), announced the launch of GridBeats, a comprehensive portfolio of software-defined automation solutions aimed at streamlining grid digitalization and enhancing grid resilience.

The GridBeats portfolio provides innovative digital solutions for the power grid to tackle these challenges. GridBeats enhances grid resilience and reliability with faster controls, artificial intelligence/machine learning (AI/ML)-based automation, and improved cybersecurity. It improves visibility across the grid, from larger areas down to specific equipment, thanks to precise sensors and dependable communication networks. With software-defined automation, it also offers greater flexibility. With these features and more, GridBeats aims to modernize grid operations, boost performance, and speed up the shift toward sustainable energy.

The portfolio includes:

- GridBeats: Zonal Autonomous Control – This cutting-edge solution allows you to divide your grid network into autonomous zones, enhancing resilience and reliability when disruptions occur.
- GridBeats: Integrated Digital Substation – Features modern top-down engineering tools, software-defined centralized protection and control, and advanced wide-area applications. Fast deployment reduces time to value, increasing reliability and enabling flexibility for the future grid.
- GridBeats: EnergyAPM – Reduces downtime and maintenance costs through predictive and prescriptive diagnostics that utilize both online and offline operational data and physics-based digital twins of assets.
- GridBeats: Device Management – Increases visibility across your entire fleet down to the individual secondary asset level. With technologies such as auto-detection, remote provisioning, and health monitoring, this solution enhances system reliability and reduces operation and maintenance (O&M) costs.
- GridBeats: Network Management System – Maximizes your communications network’s return on investment (ROI) by increasing system throughput and uptime, improving the utilization of networked devices, and enabling you to discover, monitor, and act on your multi-vendor network.

“With the ongoing emphasis on climate change, we are witnessing the most significant transformation of the grid in over a century,” said Nicolas Gibergues, Grid

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Automation Senior Executive & Business Line Leader, at GE Vernova's Grid Solutions. "In response, GE Vernova has rolled out GridBeats, a suite of Grid Automation software solutions designed to assist utilities in adapting to these changes while ensuring their grid operates smoothly."

This announcement reaffirms GE Vernova's dedication to providing innovative solutions that meet the grid's changing needs. With more than 100 digital substations currently operational in the world, GE Vernova's Grid Solutions business is set to continue its 130-year legacy of excellence in Grid Automation with GridBeats, marking a new era in energy management and grid reliability.

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