

WORLD POWER SYSTEMS REVIEW

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17 July 2023

500 MW Fécamp Offshore Wind Farm produces first power

The 500 MW Fécamp offshore wind farm in Normandy, France, has started producing the first electricity and feeding it into the grid after the first wind turbine was installed at the beginning of this month. Following the load-out of the first four wind turbines from the port of Cherbourg, DEME Offshore's Innovation proceeded with the installation of the components of the first Siemens 7 MW wind turbine on the construction site located between 13 and 24 kilometres off the coast of Normandy. After a few days of tests and trials, the first kWh from the unit were transmitted last weekend into the national grid from the Sainneville substation.

The Fécamp offshore wind farm features 71 Siemens Gamesa 7 MW wind turbines, installed on gravity-based foundations. The wind farm is expected to be put into operation by the end of this year when it will produce the equivalent of the annual electricity consumption of 770,000 people or 60 per cent of the inhabitants of Seine-Maritime. The project is being jointly developed by Eolien Maritime France (EMF), a joint venture between the French company EDF Renouvelables; EIH S.à.r.l, owned by Enbridge Inc. and CPP Investments; and Skyborn Renewables (formerly wpd offshore). Fécamp is the third commercial-scale wind project offshore France to reach the turbine installation phase, following the now-inaugurated Saint-Nazaire, and the Saint-Brieuc offshore wind farm.

[Offshorewind.biz](http://www.offshorewind.biz)

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

17 July 2023

PJM releases Winter Storm Elliott Report

PJM has released its Winter Storm Elliott Event Analysis and Recommendation Report, which reviews the circumstances leading up to the December 2022 storm, assesses performance of the system during the event and identifies recommendations to help improve grid reliability.

The report (PDF) emphasizes that PJM maintained system reliability and served customers throughout the extreme weather that affected the region Dec. 23–25, and even was able to support its neighbors during certain periods. PJM operators were able to avoid electricity interruptions, although they had to implement multiple emergency procedures and issue a public appeal to reduce energy use. “PJM was prepared for the 2022/2023 winter, as well as Winter Storm Elliott, based on the information available, and conducted extensive preparations and communications with members, adjacent systems and the natural gas industry in advance of the storm, in addition to the regular steps PJM takes each year to prepare for winter,” according to the report.

PJM's annual pre-winter analysis indicated the system would have enough generation to meet load even under a combination of extreme and unlikely conditions, including pipeline disruptions, close-to-zero wind/solar generation, high outages and extreme weather. Despite numerous refinements to both the capacity market rules and winter preparation requirements since the 2014 Polar Vortex, “Winter Storm Elliott created a convergence of circumstances that strained the grid,” according to the report.

Elliott's rapidly falling temperatures coincided with a holiday weekend, which combined to produce unprecedented demand for December. PJM's load forecasts for Dec. 23 and Dec. 24 were approximately 8% under the actual peak. Recognizing the forecasting challenges presented by the volatile weather patterns and the holiday weekend, PJM operators scheduled prudently on both days, calling for generation resources in excess of the actual load and reserve requirements.

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This situation was further complicated by the unexpected loss of generation resources. Most outages were caused by equipment failure, likely from the extreme cold, but broader issues of gas availability also added to the outage rate. PJM's analysis of its experience keeping the lights on throughout the storm for 65 million customers in 13 states and Washington, D.C., drives 30 recommendations contained in the report. The recommendations focus broadly on:

- Addressing winter risk with enhancements to market rules, accreditation, forecasting and modeling
- Improving generator performance through winterization requirements, unit status reporting and testing/verification
- Tackling long-standing gaps in gas-electric coordination, including timing mismatches between gas and electric markets, the liquidity of the gas market on weekends/holidays, and the alignment of the electricity market with gas-scheduling nomination cycles
- Evaluating how the Performance Assessment Interval (PAI) system of rewarding or penalizing generator performance is impacted by exports of electricity to other regions, whether excusal rules can be simplified, PAI triggers need to be refined, and if the contributions of Demand Response and Energy Efficiency are accurately valued
- Pursuing opportunities with Generation Owners, other members and states to improve education, drilling and communication regarding PJM's emergency procedures, Call for Conservation and PAIs

Many of these recommendations are being developed through the Critical Issue Fast Path – Resource Adequacy process or other forums, including the Electric Gas Coordination Senior Task Force, Operating Committee and Market Implementation Committee.

PJM Insidelines
<http://insidelines.pjm.com/>

18 July 2023

France to raise regulated household electricity prices by 10% from August

The French government has decided to raise regulated household electricity prices by 10% starting from August, a government official said on Tuesday, confirming a report from newspaper Les Echos.

The government official added that this will be the only price hike until February 2024. The 10% increase is much lower than the one proposed by the French Energy Regulatory Commission (CRE), which - based on current market prices - recommended an increase of 74.5%. "We are in a phase of returning to normal, or in any case of returning to a new balance after the energy crisis that we experienced, even if obviously energy prices remain high," said the government source, emphasizing that the French would continue to benefit from some of the lowest prices in Europe.

In May, Finance Minister Bruno Le Maire said France's cap on electricity prices would be phased out and end at the end of next year. European electricity prices soared last year, mainly driven by the fallout from the war in Ukraine. France also saw record-low nuclear output as state-owned utility EDF repairs reactors affected by stress corrosion.

Reuters
<http://reuters.com>

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US geothermal energy company pilot shows 24/7 carbon-free power production possible

Advanced geothermal company Fervo Energy has successfully tested horizontal drilling technology pioneered by the oil and gas industry, setting records for both flow and

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power output from an enhanced geothermal system, and allowing 24/7 carbon-free power production, the company said July 18.

"By applying drilling technology from the oil and gas industry, we have proven that we can produce 24/7 carbon-free energy resources in new geographies across the world," Tim Latimer, Fervo Energy CEO and co-Founder, said in a statement.

"The incredible results we share today are the product of many years of dedicated work and commitment from Fervo employees and industry partners, especially Google," Latimer said.

Firm, zero-carbon, dispatchable resources are needed to fully decarbonize the electricity sector and "geothermal power can play that role," according to a research paper that Fervo submitted to the open scholarly communication tool, EarthArXiv, on July 18. According to the US Department of Energy's GeoVision Study and EarthShot Initiative, breakthroughs in enhanced geothermal system technologies could unlock over 100 GW of clean, firm power across the country, the paper said.

Leveraging technology innovations from the unconventional oil and gas industry provides a pathway to access new geologic resources and improve project economics in a way that could "enable geothermal developers to mimic the rapid scale-up observed in shale development over the past two decades," Fervo said in the paper.

The company completed the well test at its full-scale commercial pilot, called Project Red, in northern Nevada. The 30-day well test achieved a flowrate of 63 liters/second at high temperature enabling 3.5 MW of electric production, Fervo said in the statement. Data collected as part of the pilot project "will enable rapid advancement in geothermal deployment," with the company's next horizontal well pair planned to achieve more than double the power output of the pilot design, according to the statement.

In 2021, Fervo and Google signed the "world's first corporate agreement" to develop advanced geothermal power with the goal of the partnership being to power Google's Cloud region in Las Vegas with an "always-on," carbon-free resource that will reduce the company's hourly reliance on fossil fuels, Fervo said. "Achieving our goal of operating on 24/7 carbon-free energy will require new sources of firm, clean power to complement variable renewables like wind and solar," Michael Terrell, senior director for Energy and Climate at Google, said. "We partnered with Fervo in 2021 because we see significant potential for their geothermal technology to unlock a critical source of 24/7 carbon-free energy at scale, and we are thrilled to see Fervo reach this important technical milestone," Terrell said.

The pilot site is located adjacent to the Blue Mountain geothermal power plant in northern Nevada, owned by Cyrq Energy. The plant has a capacity of 39 MW and can annually generate 240,000 MWh of power, according to the DOE. Fervo's project delivered an uplift in high-temperature geothermal flow rates to increase the power capacity at the facility, the research paper said. Specifically, the project involved designing and constructing a three-well drilling program, including two horizontal wells that formed an injection and production doublet system and a deep vertical monitoring well.

"In successfully completing this project, we have demonstrated that no major technical barriers exist to deploying horizontal EGS systems in similar metasedimentary or igneous formations up to temperatures of approximately 400 degrees Fahrenheit," the company said in the paper. Data from the project demonstrates a "clear innovation pathway" to increasing the power capacity up to 8 MW of electric power per production well, Fervo said. The pilot project results support the findings of the DOE's Enhanced Geothermal Earthshot and show that geothermal energy could supply over 20% of US power demand and compliment wind and solar power to reach a fully decarbonized grid, the company said. US oil and gas producer Devon Energy said July 18 that it has made a \$10 million strategic

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investment in Fervo. "This investment is a good match for Devon's new energy ventures strategy," David Harris, Devon's chief corporate development officer and executive vice president, said in a statement.

SP Global
<http://www.spglobal.com/>

19 July 2023

Construction starts on first UK-Germany power cable

Construction was underway on the 1.4-GW NeuConnect interconnector, the first power cable between Germany and the UK, the project company said July 19.

NeuConnect's main contractors, Prysmian and Siemens Energy, have started works in the UK with construction on the German side to begin early 2024. Start of operations was planned for 2028. "NeuConnect will be the first ever power line between the UK and Germany and is central to my mission to bolster national energy security while also strengthening our important ties with a North Sea ally," UK Energy Security and Net Zero Secretary Grant Shapps said in a statement. The GBP2.4 billion (\$3.1 billion) project, the single-largest Anglo-German infrastructure investment, is led by global investors Meridiam, Allianz Capital Partners, Kansai Electric Power and TEPCO.

Some 725 km of land and subsea cables will link the Isle of Grain in Kent to Wilhelmshaven, Germany, helping to integrate renewable energy sources in both countries. NeuConnect will construct new converter stations connected by subsea cables travelling through British, Dutch and German waters. The first phase of subsea cable installation will start next year, it said. Meanwhile, subsea cabling of the new Denmark-UK cable was completed July 13 with the 1.4-GW Viking Link on track to start before the end of the year.

Britain flipped to net power exports in the week ending July 16 after net imports hit record highs in May boosted by the full 4 GW capacity on interconnectors from France as well as the 1.4 GW NorthSeaLink cable from Norway. Germany, meanwhile, registered record net imports since closing its final three nuclear reactors in April, mainly as a result of lower wind and improved hydro in the Nordics and Alps as well as record-high carbon costs. Analysts at S&P Global Commodity Insights forecast Britain holding a net export position between August and November at an average 0.7 GW, with the wide discount between UK carbon allowances (UKAs) and EU ETS prices driving the competitiveness of British gas versus EU fossil-fuel generation, they said in a July 13 report.

Platts, part of S&P Global, last assessed UK power for 2024 at Eur134.91/MWh (\$151/MWh) compared to an exchange-settled Eur137.79/MWh for Germany's Cal 2024 baseload contract.

SP Global
<http://www.spglobal.com/>

19 July 2023

SNP cuts down millions of trees to build wind farms on public land in huge blow to environmental credentials

The SNP has been slated after it was revealed Ministers rubber-stamped plans to cut down almost 16 million trees to build wind farms on public land. The revelation came despite the nationalist party boasting about its green credentials, and being involved in a coalition with the Scottish Greens.

Mairi Gougeon, the Scottish Government's Rural Affairs Secretary, admitted that they had felled millions of trees in order to build more turbines. It forms part of the SNP administration's plans to make Scotland net zero over the next decade. But this confession was labelled "astonishing" by the Scottish Tories who highlighted the "significant damage"

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that getting rid of woodland can do to the wildlife. It was estimated that 15.7 million trees had been felled since 2000. This was done on publicly-owned land which is managed by Forestry and Land Scotland (FLS) and is the equivalent of 1,700 per day. According to the Daily Telegraph, Ms Gougeon insisted that there was a planning presumption in favor of protecting woodland, despite the amount being chopped down.

She added that wind farm developers would be expected to undertake "compensatory planting elsewhere". The government is aiming to add about 20,000 more turbines over the next few years so that they can generate 20GW of power, to add to the 19,000 they already have. But communities have been up in arms about the construction of massive turbines in their scenic areas, including Aberdeenshire, the Highlands and Dumfries. Plans have been lodged by developers for turbines up to 850 feet tall which is the size of more than 60 double decker buses.

Ms. Gougeon wrote to Scottish Tory MSP Liam Kerr about wind farm developments and revealed that the equivalent of about 7,858 hectares of trees had been chopped down to make way for wind farms since 2000. There is an average of 2,000 trees per hectare. She said: "This gives an estimated total of 15.7 million trees which have been felled in order to facilitate windfarm development. Removal should only be permitted where it would achieve significant and clearly defined additional public benefits. Where woodland is removed in association with development, developers will generally be expected to provide compensatory planting in order to avoid a net loss of woodland."

And she claimed that many of the felled trees will have been "replanted on site" or replaced elsewhere, with the vast majority of them being part of a commercial crop that would have been chopped down anyway "at the end of their rotation". "I've been contacted many times by rural communities all over the country questioning the location of these developments, sharing legitimate concerns not just about the visual impact but also damage to wildlife and business. Now we learn there's significant damage when it comes to trees."

North East MP Mr. Kerr still aired his concerns about this initiative. He said: "Most people will be astonished to see the number of trees cut down to make way for wind farms. He added that ministers "must be alive" to the "significant costs" that could be incurred with the siting of wind farms. FLS said it had planted more than 500 million trees since 2000 and the quantity felled for wind farms equated roughly to its annual harvesting programme. The SNP have been in power at Holyrood since 2007.

Scottish Daily Express

<http://www.scottishdailyexpress.co.uk/>

19 July 2023

Egypt cuts power to ease loads during heat wave

Egypt will face regular power cuts until the middle of next week as the government limits consumption of gas during a heat wave, the cabinet said on Wednesday. Residents have reported power cuts in several areas in Cairo this week, as temperatures have risen above 40 degrees during a heat wave that has affected southern Europe and North Africa and coincided with extreme temperatures elsewhere in the Northern Hemisphere. Egypt has an electricity supply surplus after rapidly expanding capacity over the past decade, but demand for power, much of it generated by natural gas, rises in the summer as people use more air conditioning.

Authorities had begun load shedding, or planned power cuts, after pressure in the gas network fell due to increased consumption, the cabinet cited Prime Minister, Mostafa Madbouly, as saying. "We are currently in a period of temporary load shedding until the network returns to normal pressures," he said.

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Since last year, the government has been trying to reduce local natural gas consumption in order to free up more gas for export and earn badly needed hard currency. Madbouly said continuing to rationalize electricity consumption was important. Egypt became self-sufficient in natural gas in late 2018 and is seeking to develop its position as a regional energy hub for liquefying gas and re-exporting it.

Reuters

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

20 July 2023

Spain: dismantling of Garoña begins following transfer of ownership

Garoña's 446 MWe boiling water reactor began operations in 1971 and was deemed by the regulator, CSN, to be suitable for operation until 2019 given certain technical upgrades. In September 2012, operator Nuclenor - a joint venture of Endesa and Iberdrola - missed the deadline to submit an operating license renewal application for Garoña, meaning that it had to shut by the time its license expired on 6 July 2013. However, the reactor was closed in mid-December 2012 to avoid a full year of retroactive tax charges for which Nuclenor would have been liable if it was operating on 1 January 2013.

In February 2014, the industry succeeded in lobbying for regulatory changes that made it possible for a reactor closed for reasons unrelated to safety or radiological protection to be granted a new operating license within 12 months of its shutdown. Nuclenor submitted a license renewal application for Garoña to the Ministry of Energy, Tourism and the Digital Agenda in May 2014, requesting a license for Garoña to operate until 2031. The ministry subsequently forwarded this to CSN for evaluation. In February 2017, CSN gave conditional approval for the restart and continued operation of Garoña, but said Nuclenor would be required to make a number of safety upgrades. However, in August of that year, the energy minister announced that the government had decided not to approve the renewal of Garoña's operating license. In May 2020, Enresa applied to the Ministry for Ecological Transition and Demographic Challenge (MITECO) for the transfer of ownership of the Garoña plant and the first phase of its dismantling.

Following approval by MITECO earlier this year, the signing before a notary of the transfer of ownership of the plant took place on 19 July, allowing the first phase of the dismantling project to begin. It is estimated that the dismantling of Garoña will take about 10 years. The decommissioning strategy selected for the plant is immediate dismantling in two phases.

In Phase 1 (2023-2026), the main activities will be the loading of the used fuel into containers and its transfer from the storage pool to the on-site interim storage facility. This phase also includes the dismantling of the turbine building in order to prepare for the second phase of dismantling. Phase 2 (2026-2033), with the fuel outside the reactor building, will involve the dismantling of the reactor, as well as the rest of the buildings with radiological implications, continuing with the decontamination, declassification activities and demolition of buildings, and concluding with the environmental restoration of the site.

The total estimated cost of decommissioning Garoña is about EUR475 million (USD532 million), which will come from the national radioactive waste fund, which Enresa manages and which is financed by contributions from the owners of operating nuclear power plants. Enresa President José Luis Navarro said the decommissioning of Garoña represents "a great challenge" for the public company, for which "we are prepared". He added, "We have the technical means and a great human team to deal with this dismantling", noting that both Enresa's experience in dismantling and the extensive capabilities offered by companies in the Spanish nuclear sector "allow us to undertake this project with guarantee".

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More than 30 Enresa staff and some 70 from Nuclenor will be joined by staff from other specialized contracted companies that will collaborate in the process, Enresa said. In total, during the first phase of dismantling, 350 direct jobs will be created. "Dismantling the nuclear facilities that have ceased their activity is part of the essential public service that Enresa provides to Spanish society," Navarro said, assuring that it will be done with "professionalism, rigor, security and transparency".

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

20 July 2023

Biden-Harris Administration announces First Ever Offshore Wind Lease sale in the Gulf of Mexico

The Department of the Interior announced today it will hold the first-ever offshore wind energy lease sale in the Gulf of Mexico, advancing the Biden-Harris administration's work to deploy 30 gigawatts (GW) of offshore wind energy by 2030 and reach a carbon-free electricity sector by 2035. The areas to be auctioned on August 29, 2023, by the Bureau of Ocean Energy Management have the potential to generate approximately 3.7 GW and power almost 1.3 million homes with clean, renewable energy.

"Today's announcement marks another historic step in the Biden-Harris administration's efforts to create a clean energy future. By catalyzing the offshore wind energy potential of the Gulf of Mexico, we can tackle the climate crisis, lower energy costs for families and create good-paying jobs," said Secretary Deb Haaland.

"The Gulf of Mexico is poised to play a key role in our nation's transition to a clean energy future," said BOEM Director Elizabeth Klein. "Today's announcement follows years of engagement with government agencies, states, ocean users, and stakeholders in the Gulf of Mexico region. We look forward to continued collaboration in the years to come."

President Biden's Investing in America agenda and "Bidenomics" strategy are growing the American economy from the middle out and bottom up – from rebuilding our nation's infrastructure, to driving over \$490 billion in private sector manufacturing and clean energy investments in the United States, to creating good paying jobs and building a clean energy economy that will combat climate change and make our communities more resilient. The Administration is making a once-in-a-generation investment in America's infrastructure and our clean energy future and taking the next steps to bring offshore wind energy to additional areas around the country.

The lease sale announced today follows the Biden-Harris administration's third approval earlier this month of a commercial-scale, offshore wind energy project in the United States and is part of the leasing path announced by Secretary Haaland in 2021. The Final Sale Notice (FSN), which will publish in the Federal Register on July 21, 2023, includes a 102,480-acre area offshore Lake Charles, Louisiana, and two areas offshore Galveston, Texas, one comprising 102,480 acres and the other 96,786 acres. The FSN provides detailed information about the final lease areas, lease provisions and conditions, and auction details. It also identifies qualified companies who can participate in the lease auction. Details on the FSN, along with a map of the area can be found on BOEM's website.

Earlier this year, the Department announced the Proposed Sale Notice for offshore wind energy development in the Gulf of Mexico. During the 60-day comment period, BOEM received comments on several lease stipulations that supported BOEM's commitment to engage with underserved communities, ocean users and other stakeholders. Some of these stipulations, which are part of the FSN, include:

- Bidding credits to bidders who commit to supporting workforce training programs, developing a domestic supply chain for the offshore wind energy industry,

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- Bidding credits for establishing and contributing to a fisheries compensatory mitigation fund or contributing to an existing fund to mitigate potential negative impacts to commercial and for-hire recreational fisheries caused by offshore wind energy development in the Gulf of Mexico, and
- Requiring that lessees provide a regular progress report summarizing engagement with Tribes and ocean users potentially affected by proposed offshore wind energy activities.

In the past two years, the Biden-Harris administration has made progress towards catalyzing a new clean energy industry, by investing in workers and communities, while protecting biodiversity and ocean co-use. BOEM expects to review at least 16 Construction and Operations Plans of commercial, offshore wind energy facilities by 2025, which would represent more than 27 GW of clean energy for the nation.

DOI

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

24 July 2023

PJM issues RTO-Wide Hot Weather Alert for July 26–28

PJM has issued a Hot Weather Alert for July 26–28 for its entire footprint in anticipation of above 90-degree temperatures.

A Hot Weather Alert helps to prepare transmission and generation personnel and facilities for extreme heat and/or humidity that may cause capacity problems on the grid. Temperatures are expected to go above 90 degrees across the footprint, which drives up the demand for electricity.

PJM is expecting to serve a forecasted load across the RTO of approximately:

- 144,500 MW on July 26
- 150,700 MW on July 27
- 152,800 MW on July 28

The forecasted summer peak demand for electricity is approximately 156,000 MW, but PJM has performed reliability studies at even higher loads – in excess of 163,000 MW.

PJM has approximately 186,000 MW of installed generating capacity available to meet customer needs, with sufficient resources available in reserve to cover generation that is unexpectedly unavailable or for other unanticipated changes in demand.

Last year's peak demand was approximately 149,000 MW.

A dedicated team of operators uses sophisticated technology to balance supply and demand and direct the power grid 24/7 from PJM's control rooms. They prepare multiple potential scenarios that could be impacted by weather, emergency conditions or equipment failure. They adjust resource output with changes in demand and ensure that no transmission lines or facilities are overloaded. The team also watches for unusual conditions and reacts to them to protect the electricity supply. Read more about how PJM forecasts electricity demand on the PJM Learning Center.

Insidelines PJM

<http://insidelines.pjm.com/>

25 July 2023

Kyrgyzstan to introduce emergency in energy sector

Kyrgyzstan will introduce an emergency situation in the energy sector. President Sadyr Zhaparov signed the Decree “On the emergency situation in the energy sector of the Kyrgyz Republic”, his press service said, Azernews reports, citing Kabar.

The emergency situation will be introduced in order to take urgent measures to bring Kyrgyzstan out of the energy crisis associated with climate challenges, low water inflow in the Naryn River basin, and a lack of generating capacity in the face of rapidly outpacing

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growth in energy consumption. According to the decree, from August 1, 2023, an emergency regime will be introduced in the energy industry of Kyrgyzstan, valid until Dec. 31, 2026.

Azer News

<http://www.azernews.az/>

25 July 2023

Azerbaijan to create joint venture with three countries

Azerbaijan will set up a joint venture with three countries to transfer "green energy" from the Caspian Sea to Europe, Azernews reports. Minister of Energy of Azerbaijan Parviz Shahbazov wrote about this on his Twitter. "In Bucharest, we signed a memorandum of understanding with colleagues from Georgia, Romania and Hungary on the establishment of a joint venture between the four countries to implement a project involving the transfer of green energy from the Caspian Sea to Europe," the minister wrote.

The joint venture will involve a 1,100 km (685 mile), 1,000 MW cable running from Azerbaijan to Romania. The European Commission has earmarked 2.3 billion euros (\$2.4 billion) to support the construction of the cable, which would be the longest of its kind in the world. The project is part of the European Union's efforts to diversify energy resources away from Russia amid the Ukraine war. The cable is expected to be completed by the end of 2023 and will help to increase the capacity of the existing Baku-Tbilisi-Kars railway line.

In addition, the European Commission has signed a memorandum of understanding with Azerbaijan to double imports of Azeri natural gas to at least 20 billion cubic metres (bcm) a year by 2027. This will help to compensate for cuts in supplies of Russian gas and contribute significantly to Europe's security of supply. The Trans-Caspian International Transport Route, which starts from Southeast Asia and China, runs through Kazakhstan, the Caspian Sea, then Azerbaijan and Georgia and to further European countries. Georgia's Batumi and Poti Black Sea ports have been part of the regular feeder line of the route, while the state-run Georgian Railway has been a regular member of the route's coordinating committee.

Azer News

<http://www.azernews.az/>

25 July 2023

Kairos seeks construction license for two-unit Hermes plant

Kairos Power has submitted an application to the US Nuclear Regulatory Commission (NRC) for permission to build the Hermes 2 plant next to the Hermes molten salt test reactor it plans to build at Oak Ridge, Tennessee. The two-unit demonstration plant would produce and sell electricity.

The NRC is now assessing the application, which was submitted by Kairos on 14 July, to determine if it is acceptable and complete enough to begin the formal technical review process. In June, the NRC issued a Final Safety Evaluation Report for the company's application to build the first Hermes molten salt test reactor - a 35 MW (thermal) non-power version of the company's fluoride salt-cooled high temperature reactor, the KP-FHR, at Oak Ridge. The company expects to receive that construction licence later this year.

Hermes 2 is described by Kairos as an iteration that would demonstrate the complete architecture of future commercial plants at a smaller scale, building on the learnings from the Hermes reactor. Comprising two 35 MW (thermal) reactors - each the same size as the original test reactor - sharing a power generation system, Hermes 2's objectives would be to further reduce risk on the path to commercializing the KP-FHR technology, demonstrating licensing, construction, operations, training, and decommissioning of a multi-reactor plant to help achieve cost certainty for the first commercial unit.

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According to the application, the earliest start date for construction of Hermes 2 is expected to be July 2025 with the first unit projected to be completed by July 2027 at the earliest and December 2027 at the latest. Construction of the second unit is expected to be completed one year after the first unit. An 11-year operating period is projected for each of the two test reactors. Kairos CEO Mike Laufer said Hermes 2 will leverage experience from the Hermes demonstration reactor to advance the company's mission in East Tennessee. "While a few important details must fall into place before we can fully commit to building it, Hermes 2 presents a unique opportunity to accelerate commercial deployment of KP-FHR technology while bringing value to the local community over the long term," he said. The NRC has made Kairos Power's application for the Hermes 2 construction permit publicly available. The company will require a separate licence to operate the reactor.

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

25 July 2023

UK funding seeks to speed up Sizewell C development

UK government ministers have announced the release of GBP170 million (USD218 million) funding to take forward development work to prepare the Sizewell C site "for future construction, procure key components from the project's supply chain, and expand its workforce". The money is part of the GBP700 million investment scheme to fund Sizewell C's continuing development so it can get to the point of a final investment decision. At its peak during construction, Sizewell C is projected to support 10,000 jobs across the UK.

The UK's Energy Security Secretary Grant Shapps said that following the launch of the arms-length Great British Nuclear organization last week the announced investment "demonstrates the government's commitment to the continued development of Sizewell C, which represents the bridge between the ongoing construction of Hinkley Point C and our longer-term ambition to provide up to a quarter of the UK's electricity from homegrown nuclear energy by 2050".

Nuclear and Networks Minister Andrew Bowie added: "The steps we're taking today will speed up the development of one of our biggest projects, Sizewell C, towards final approval, which would enable construction to start as soon as possible, supporting thousands of jobs for communities in Suffolk and across the country." The plan is for Sizewell C to feature two EPRs producing 3.2 GW of electricity, enough to power the equivalent of around six million homes. It would be a "replica" of the Hinkley Point C plant, under construction in Somerset. EDF Energy submitted a development consent order (a planning application) for the plant in May 2020, which was granted in July last year.

EDF agreed in October 2015 with China General Nuclear (CGN) to develop the Sizewell C project to the point where a final investment decision could be made. EDF had an 80% stake and CGN a 20% stake but the UK government's attitude to Chinese involvement in such UK projects has since changed and in November last year it paid GBP679 million to become a 50% partner alongside EDF, with CGN exiting the project. In March this year, the UK's Environment Agency granted environmental permits - a radioactive substances activity permit, a combustion activity permit and a water discharge activity permit - for the plant.

EDF said in November that construction of the plant remained subject to a final investment decision and said the "final investment decision remained subject to the achievement of certain key stages, in particular the ability to raise the necessary financing to carry out the project as well as the deconsolidation of the project from the Group's balance sheet", adding that it planned to "retain only a minority stake in the final investment decision - a maximum of 20%". It said it hoped to make a final investment decision in 2023. The UK's

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energy strategy unveiled in April set the target for eight new reactors plus small modular reactors to produce 24 GWe capacity by 2050, meeting about 25% of the UK's projected electricity demand. The UK currently generates about 15% of its electricity from about 6.5 GW of nuclear capacity.

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

27 July 2023

FERC Transmission Reform Paves Way for Adding New Energy Resources to Grid

Today FERC took an historic step in the modernization of the nation's transmission grid by streamlining the interconnection process for transmission providers, providing greater timing and cost certainty to interconnection customers, and preventing undue discrimination against new sources of power generation.

"This new rule will enable America's vast power generation resources to connect to the grid in a reliable, efficient, transparent, and timely manner, and in doing so, help provide more reliable, resilient, and affordable electricity for all consumers," FERC Chairman Willie Phillips said. "This is a watershed moment for our nation's transmission grid." Phillips underscored the need for today's reforms by noting that at the end of 2022, more than 2,000 gigawatts of generation and storage were waiting in interconnection queues throughout the country – that is as much electricity generation capacity as all the power plants now operating around the country. Projects now face an average wait of up to five years to connect to the grid.

Today's final rule includes several key areas of reforms, including institution of a first-ready-first-served cluster study process, with increased financial commitments for interconnection customers, to improve the efficiency of the interconnection process and minimize delays; imposition of firm deadlines and penalties if transmission providers fail to complete their interconnection studies on time incorporation of technological advancements into the interconnection process, including consideration of advanced transmission technologies in the interconnection study process; and an update of modeling and performance requirements for inverter-based resources to ensure continued system reliability.

"Our transmission policies must keep pace with the rapid changes in the makeup of our nation's power generation resource mix," Phillips said. "Today's rule is an important milestone. But there is so much more to do. The Commission is working diligently on how to address the key issues of regional transmission planning and cost allocation. We need to take a longer-term, forward-looking approach to planning for essential transmission facilities and to allocate the costs of those facilities in a just and reasonable manner while enhancing the reliability and resilience of the grid." Today's rule, which came out of a Notice of Proposed Rulemaking issued in June 2022, will take effect 60 days after publication in the Federal Register. Compliance filings are due 90 days after publication in the Federal Register.

FERC
<http://www.ferc.gov/>

27 July 2023

In May, solar sets a record-high 7.3% of U.S. electrical generation as all renewables combined account for 26.0%

The latest issue of EIA's "Electric Power Monthly" report (with data through May 31, 2023) reveals that in the first five months of this year, electrical generation by solar (including small-scale distributed systems) grew by 11.8%, compared to the same period in 2022. This

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was driven in large part by growth in "estimated" small-scale (e.g., rooftop) solar PV whose output increased by 25.6% and accounted for nearly a third (31.9%) of total solar production. For the five-month period, solar was 5.5% of total U.S. electrical generation.

In just the month of May, solar electrical output was 16.3% higher than a year earlier, propelled by a 27.6% increase in small-scale solar - substantially faster than any other energy source. As a result, solar hit an all-time monthly high of 7.3% of the nation's total electrical generation, approaching that of hydropower (8.3%). This growth trend had been building since the beginning of 2023 when solar was 3.5% of total generation in January, followed by 4.4% in February, 5.5% in March, and 7.1% in April.

For May alone, solar combined with wind accounted for 16.9% of the nation's electrical generation. For the first five months of 2023, solar and wind together were 17.7% of total U.S. electrical generation - up from 17.0% for the same period a year earlier. For the five-month period, solar plus wind easily surpassed coal's share (14.6%) as electrical generation by the latter plummeted by 28.7%.

The full complement of renewable energy sources (i.e., including biomass, geothermal, and hydropower) accounted for over a quarter (26.0%) of the nation's electrical generation - up from 25.6% a year earlier notwithstanding declines in wood + biomass (down 7.6%), hydropower (down 7.1%), and geothermal (down 1.8%). Further, electrical generation by the mix of renewables exceeded that provided by nuclear power - whose output fell by 0.6% - by more than a third (36.6%).

"Solar's march to dominance among renewable energy sources continues unabated having surpassed electrical generation by biomass and geothermal and closing in on hydropower," noted the SUN DAY Campaign's executive director Ken Bossong. "Moreover, the mix of solar, wind and other renewables is now comfortably out-producing both coal and nuclear power as well."

EIA

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

31 July 2023

ENTSO-E releases today the Annual Report 2022

The ENTSO-E [Annual Report 2022](#) is now available on our website. We gathered in this publication the most complete information about the activities and products developed by the Member TSOs from January to December 2022.

These relate to the implementation of the legal mandates and of the Pan-European All TSOs tasks (facilitated by ENTSO-E) in seven key areas: System Operation; Market; System Development; Transparency Regulation; Research, Development and Innovation; Cybersecurity, Interoperability and Data; and the TSO-DSO partnership and demand side flexibility.

While delivering legally mandated tasks, this year's report again shows the TSOs' commitment as key enablers of the carbon-neutral economy on a pan-European level. This ambition concerns all aspects of ENTSO-E's work as the increase of variable renewable generation and the electrification of several sectors, among others, impact all the activities of Transmission System Operators (TSOs). Concretely, this ambition culminated in the publication of the "ENTSO-E Vision: A Power System for a Carbon Neutral Europe".

Several other achievements can be highlighted: the enhancement of our cooperation with the distribution system operators that led to the signature of the Memorandum of Understanding (MoU) between ENTSO-E and the EU DSO Entity as well as the Declaration of Intent to jointly develop the Digital Twin of the EU electricity grid; the synchronisation of Continental Europe with the power systems of Ukraine and Moldova; the Observership

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Agreements signed with Ukrenergo and TEİAŞ; the go-live of the PICASSO and MARI balancing platforms; and the additional efforts to assess adequacy risks in 2022.

Moreover, in the context of the electricity prices crisis, ENTSO-E and TSOs also supported European and national policy makers in identifying and implementing emergency measures in electricity markets (in particular Council Regulation (EU) 2022/1854 on an emergency intervention to address high energy prices) to ensure security of supply and to partially alleviate the burden of high prices on consumers.

The successful implementation of these activities shows the commitment of TSOs towards a climate-neutral economy in line with the European Commission Green Deal's initiative, and relies on the input provided by stakeholders, experts and interested citizens. This Annual Report has been submitted for public consultation from 29 Jun to 21 July 2023.

ENTSO-E

<http://www.entsoe.eu>