

WORLD POWER SYSTEMS REVIEW

1 December 2023

15 November 2023

Iran, Turkey Power Grids Connected

The spokesman for Iran's Electricity Industry said that the power grids of Iran and Turkey have been connected and the two countries can exchange up to 400 megawatts of electricity.

Speaking on the sidelines of the 23rd Iran International Electricity Exhibition on Tuesday, Mostafa Rajabi Mashhadi said that the construction operation of power plants with a capacity to generate 5,500 megawatts of electricity has started in the country. Turning to the situation of the export of electricity, Rajabi Mashhadi said Iran has electricity exchange (import and export) with all neighboring countries. Iran presently imports electricity from Turkmenistan and Armenia and exports it to neighboring Iraq, Afghanistan and Pakistan, the spokesman added. He added that the power grids of Iran and Turkey have also been connected.

Talks are underway with Afghanistan regarding the development of cooperation in the electricity sector, he further emphasized.

Tasnim News Agency
<http://www.tasnimnews.com/>

16 November 2023

ENTSO-E Winter Outlook 2023-2024 – Press release

The ENTSO-E Winter Outlook 2023-2024 highlights an improved adequacy outlook compared with 2022-2023 with limited electricity supply risks in remote areas. European TSOs continue to monitor the adequacy situation throughout the winter period.

The ENTSO-E Winter Outlook 2023-2024 has been published today. The report offers an overview of the security of the electricity supply across Europe for the 2023-24 winter season, as well as a retrospective on summer 2023. Despite some traces of risks, the adequacy picture is more optimistic than last year's outlook. All identified risks to the energy supply during the upcoming season are driven by weather conditions.

In Ireland and Northern Ireland, the availability of aging gas power plants remains the main challenge. Adequacy situation will depend on wind generation availability in case there would be many unplanned outages of those units. Risks are also observed in Malta and Cyprus, where limited or no interconnection with continental power system exists.

The EU's gas storage is currently filled to almost 100 percent of their capacity across Europe (GIE Aggregated Gas Storage Inventory), ensuring preparedness and confidence in the security of supply for the winter ahead. Critical Gas Volume (CGV) decreased by approximately 10 percent compared to last winter. These conditions combined with a significant expansion of the renewable generation fleet, as well as a lower number of planned outages compared with last winter, create a favorable environment for adequacy and a lower reliance on gas.

The ENTSO-E Winter Outlook also reports the prospects for the coming winter in the Ukrainian and Moldovan power systems as well as additional efforts taken by Ukrenergo and Moldelectrica, to ensure stability of the power system after synchronization with the Continental European power system in March 2022. Ukrenergo and Moldelectrica continue working closely with ENTSO-E and its Members towards further integration. Ukrenergo and Moldelectrica, have now been welcomed by ENTSO-E as Observer Members. This winter, ENTSO-E will continue ensuring a strong cross-border cooperation and close coordination at all levels to safeguard the European power system balance between supply and demand.

ENTSO-E
<http://www.entsoe.eu/>

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Elia and Statnett will investigate the economic and technical feasibility of a hybrid interconnector that will link Norway to Belgium

The grid operators Elia (Belgium) and Statnett (Norway) are investigating the feasibility of constructing a high-voltage direct current (HVDC) hybrid interconnector that would link Belgium and Norway to offshore windfarms. If it is constructed, the subsea cable will link the high-voltage grids of both countries together whilst also being connected to Norwegian offshore wind farms (making it a hybrid interconnector). The study being undertaken for this potential project has no impact on the realisation of TritonLink, the hybrid interconnector which is due to be constructed between Belgium and Denmark.

Complementary partners Norway and Belgium are highly complementary in terms of their energy profiles. Whilst our country holds a limited amount of renewable energy production potential, Norway holds much more potential due to its favorable geographic location. In addition to a high hydropower capacity, Norway's large continental shelf allows for significant amounts of offshore wind energy to be produced, and its wind conditions are different from those in Belgium. When there is less wind here, there are generally high amounts of wind production in Scandinavia.

Norway is exploring various options regarding the construction of hybrid interconnectors with its European counterparts. The Norwegian grid operator, Statnett, is planning to sign similar collaboration agreements with Germany's TenneT and Amprion, Great Britain's National Grid, and Denmark's Energinet, in addition to Elia. The realisation of such projects will ultimately be decided by the Norwegian government.

Elia

<http://www.elia.be/>

17 November 2023

Deputy Ruler of Abu Dhabi Inaugurates World's Largest Single-Site Solar Power Plant Ahead of COP28

Abu Dhabi Future Energy Company PJSC – Masdar, and its partners Abu Dhabi National Energy Company (TAQA), EDF Renewables and JinkoPower, together with procurer Emirates Water and Electricity Company (EWEC), have inaugurated the world's largest single-site solar power plant ahead of the UAE hosting the UN climate change conference, COP28.

The 2GW Al Dhafra Solar PV project was inaugurated by HH Hazza bin Zayed Al Nahyan, Deputy Ruler of Abu Dhabi and in the presence of HH Lt. General Sheikh Saif Bin Zayed Al Nahyan, Deputy Prime Minister and Minister of the Interior. Zayed Al Nahyan, said: "As the UAE prepares to host COP28, this pioneering project reflects the country's ongoing commitment to raising its share of clean energy, reducing its carbon emissions and supporting the global efforts on climate action" His Highness added: "We are witnessing, day after day, project after project, that the UAE is at the global forefront of developing and adopting innovative clean energy solutions. We are achieving energy security, while also contributing to building a bright future for future generations to come."

Located 35 kilometers from Abu Dhabi city, the landmark solar plant was built in a single phase and generates enough electricity to power almost 200,000 homes, displacing 2.4 million tonnes of carbon emissions every year. Al Dhafra Solar PV spans more than 20 square kilometers of desert and created 4,500 jobs during the peak of the construction phase. It uses almost 4 million solar panels which deploy innovative bi-facial technology, ensuring sunlight is captured on both sides of the panels to maximize yield.

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In less than fifteen years, the UAE has become a global leader in solar energy. In 2009, Masdar switched on the country's first solar project at 10MW - today, Al Dhafra Solar PV represents a plant that is 200 times that size. As the countdown to COP28 in the UAE begins, this mega project initially achieved the world's lowest tariff at financial close, and demonstrates the country's longstanding commitment to decarbonization, at home and around the world.

The UAE is also a world leader in solar energy use, according to the latest data from The Energy Institute Statistical Review of World Energy, ranking second globally in terms of per capita solar energy consumption. In under a decade, the country has surpassed leading nations by installing solar energy, as part of the country's energy diversification.

The delivery of the project was made possible after global energy leaders formed a strategic partnership and harnessed their combined expertise. Al Dhafra Solar PV, planned and procured by EWEC, has broken records in terms of cost for utility-scale solar projects. Initially the project led to one of the most competitive tariffs for solar power set at AED 4.97 fils/kWh (USD 1.35 cents/kWh), which upon financial close, was further improved to AED 4.85 fils/kWh (USD 1.32 cents/kWh).

PR Newswire

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

17 November 2023

Sweden plans 'massive' expansion of nuclear energy

In October last year, Sweden's incoming centre-right coalition government adopted a positive stance towards nuclear energy, with the Christian Democrats, the Liberals, the Moderates and the Sweden Democrats releasing their written agreement on policies - referred to as the Tidö Agreement. With regards to energy, the agreement said the energy policy goal is "changed from 100% renewable to 100% fossil-free". In the Tidö Agreement, it is assumed electricity demand of at least 300 TWh in 2045, double the current demand.

The agreement also said necessary regulations should be developed to create the conditions for the construction and operation of small modular reactors (SMRs) in Sweden. In addition, the permitting process for nuclear power plants must be shortened.

In January this year, a formal proposal to amend Sweden's legislation on nuclear power was presented by Prime Minister Ulf Kristersson and Climate and Environment Minister Romina Pourmokhtari. It aims to remove the current law limiting to 10 the number of reactors in operation, as well as allowing reactors to be built on new sites, rather than just existing ones. The proposed legislative amendments were open for consultation for three months. The government made a final decision on 28 September to introduce the bill to parliament. The changes to the law are proposed to enter into force on 1 January 2024.

The government has now presented a roadmap for new nuclear power in Sweden, which it says "clarifies the government's target and provides long-term conditions for new nuclear power". The roadmap includes an in-depth agreement on four points. Firstly, it calls for the government to appoint a nuclear power coordinator who will support the work of removing obstacles, facilitating and promoting new nuclear power. In addition, the coordinator will identify the need for additional measures. An important role for the coordinator will be to gather all relevant parties to get a clear direction for effective expansion.

Secondly, the state's financial responsibility needs to be clarified through a risk-sharing model. The government has previously proposed that government credit guarantees for SEK400 billion (USD38 billion) be introduced for nuclear power. However, the government has assessed that these credit guarantees alone will not be enough to stimulate new production. In order to strengthen the conditions and provide additional incentives to

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invest in nuclear power, an investigator must propose a risk-sharing and financing model where the state shares the risk.

The government has instructed the National Debt Office to take preparatory measures to be able to issue government credit guarantees for investments in new nuclear power. The National Debt Office must assist the Ministry of Climate and Business in the work of designing the detailed regulations for the credit guarantees. As part of the assignment, the National Debt Office must make an assessment of how credit guarantees for investments in new nuclear power affect the risk in the combined guarantee portfolio.

Thirdly, the new policy will make it possible for new nuclear power with a total output of at least 2500 MWe to be brought online by 2035 at the latest. Fourthly, it paves the way for a "massive expansion of new nuclear power by 2045". "Given the long-term needs for fossil-free electricity until 2045, an expansion is needed that could, for example, correspond to ten new large-scale reactors," the government said. It noted that the exact amount and type of reactors needed "depends on several things, including the need and rate of expansion in the electricity system, technological development, and where in the country new consumption and production are located".

"We are now delivering a pearl string of decisions to pave the way for new nuclear power," said Deputy Prime Minister and Minister for Energy, Business and Industry Ebba Busch. "Sweden is laying the foundations to become a leading nuclear power nation again and a power factor for the green transition in the West." Finance Minister Elisabeth Svantesson added: "New nuclear power is necessary for a stable and reliable energy system, for both consumers and businesses. It is therefore natural that the state will have to take a large financial role in terms of the expansion. The last few years have shown how expensive it is not to build nuclear power.

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

20 November 2023

Finland's OL3 Nuclear Reactor Suffers Unexpected Outage

Finland's Olkiluoto 3, Europe's largest nuclear power generator as measured by output, suffered an unexpected outage on Sunday due to a turbine problem, Nordic power bourse Nord Pool said in a statement. The 1.6 GW unit, known as OL3, was expected to reconnect on Monday at around 1000 GMT, an extension of the outage by 11 hours compared to the initial estimate, according to the regulatory statement.

Plagued by construction delays, OL3 began regular electricity output in April this year, some 14 years behind schedule. Finland has said the nuclear reactor, Europe's first in 16 years, is expected to meet around 14% of the country's electricity demand, boosting energy security.

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

20 November 2023

Natural gas combined-cycle power plants increased utilization with improved technology

The average utilization rate (or capacity factor) for the entire U.S. fleet of combined-cycle natural gas turbine (CCGT) electric power plants has risen as the operating efficiency of new CCGT units has improved. The CCGT capacity factor rose from 40% in 2008 to 57% in 2022. Increased efficiency improved the competitiveness of newer CCGT units against other fuel sources and older CCGT units.

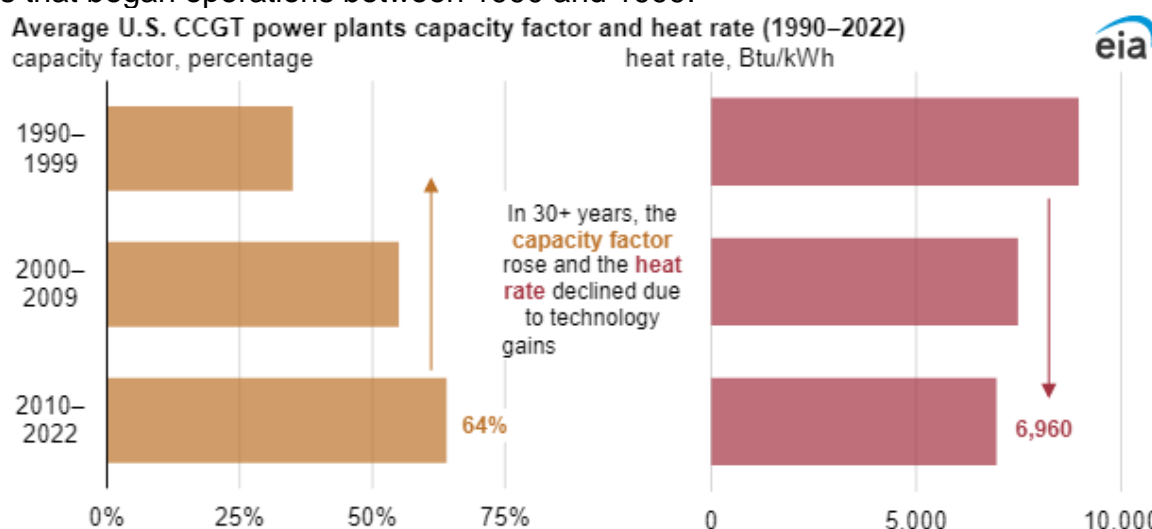
Two factors affect the utilization of a CCGT unit: the efficiency of the generator and the delivered cost of natural gas. More advanced H- and J-class natural gas turbine

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technology entered the market in the mid 2010s, increasing the efficiency of newer natural gas-fired power plants. Lower natural gas prices typically increase capacity factors at natural gas-fired power plants because the electricity generated is cheaper than from other sources, such as coal-fired plants. In 2012 and 2015, annual average capacity factors of CCGT units increased by more than seven percentage points when the annual Henry Hub natural gas price declined

Grid operators generally dispatch generators sequentially from lowest to highest cost. Because CCGT units built between 2010 and 2022 typically have the lowest operating costs, they are dispatched more frequently compared with older CCGT power plants. In 2022, the capacity factor of CCGT units that began operations between 2010 and 2022 averaged 64%, compared with 55% for those that began operations between 2000 and 2009 and 35% for units that began operations between 1990 and 1999.



About one-half of today's CCGT capacity was built between 2000 and 2006. This sudden increase in the number of CCGT plants was in response to power shortages that occurred in the late 1990s, coinciding with new and more efficient F-class natural gas turbines entering the market. Now, many of these CCGT plants are about 20 years old, which could lead to lower capacity factors as the units age.

Lower heat rates, the ratio of the amount of fuel required to generate a unit of electricity, are the result of increased efficiency of newer CCGT power plants. CCGT power plants built between 2010 and 2022 have the lowest average heat rate among all CCGT plants, at 6,960 British thermal units per kilowatthour (Btu/kWh) in 2022, which is 7% lower than units built between 2000 and 2009.

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

20 November 2023

Eiffage signed contract for civil engineering works with EDF for first two EPR2-type reactors

Eiffage, through its subsidiary Eiffage Génie Civil, just signed the contract with EDF to carry out the main civil engineering works for the first pair of EPR2-type nuclear power plants on the site of Penly. The contract has a value greater than 4 billion euros. The tender of this contract began in 2019. The contract includes the construction of two units, including 69 civil structures.

The preparatory works should begin in mid-2024 once the administrative authorisations are granted to EDF. The civil engineering phase will include the construction

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of the reactor buildings containment – a 70 metres tall dome with a 50 metres diameter – and the turbine hall buildings. It also includes a six-level operation building with a total floor space of 15,000 m² in a design and construction framework. This work will require synergies between several of the Group's areas of expertise.

Eiffage will be striving to boost the local economy, prioritising local jobs and social employment. At its peak, this civil engineering phase will involve almost 4,000 people, and will generate 1.3 million working hours of social employment and jobs for people with disabilities. In cooperation with the project stakeholders, the Group will also develop training programmes essential to the revival of the French nuclear industry. This new contract awarded to Eiffage demonstrates the Group's ability to manage major projects and support large industrial companies in meeting the challenges of decarbonisation and energy sovereignty in France.

NS Energy

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

21 November 2023

Largest solar power project in Europe halted

Romania's state-owned Hidroelectrica canceled a tender within its 1.5 GW solar power project in the Oltenia province. It would be the largest investment in Europe in the sector. Legislative issues led to the termination of a public call for a contractor for a feasibility study and other documentation for a photovoltaic plant on 2,200 hectares of grade 5, unproductive agricultural land in the Dolj county. Government-controlled hydropower plant operator Hidroelectrica canceled the tender, arguing that it would be "impossible" to conclude the contract, Economica reported.

The site for the solar power plant is between Piscul Sadovei and Dăbuleni in Oltenia, Romania's main coal hub. Envisaged at 1.5 GW, it would be the biggest in Europe. The land, in the country's southwest, belongs to the State Property Agency (ADS) and the plan was to develop the project through a concession and under a turnkey deal. The deadline for submitting bids was December 11. According to ADS, there is a possibility of using the area for electricity production and agricultural activities at the same time.

Hidroelectrica has earmarked EUR 604,000 for the studies. Earlier, Romania awarded a national importance status to the Dolj project. It was also supposed to include a 300 MW energy storage facility. The solar irradiation level is 1.4 MWh per square meter per year, the highest in the country. The solar power plant was planned to be linked to the 400 kV Șânțăreni-Kozlodui power line. Annual output was estimated at 1.75 TWh. Hidroelectrica, Romania's largest electricity producer, intended to invest over EUR 1.2 billion in the facility, the article notes.

Private companies in the renewables sphere have been complaining that the law forbids them to build projects on more than 50 hectares outside urban areas. Rezolv Energy and Monsson are developing a 1.04 GW solar power project in Arad in Romania's west. In neighboring Bulgaria, German company Profine Energy intends to install a floating solar power plant. It initially considered 500 MW to 1.5 GW in size, but it recently lowered the upper limit to 800 MW.

Balkan Energy News

<http://balkangreenenergynews.com/>

21 November 2023

Romania's Electrica Confirms Plans for 500 MW Gas-Fired Power Plant

Romania's electricity supply and distribution group Electrica, with the state as the main shareholder, confirmed plans to build a state-of-the-art combined cycle gas power

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plant, “integrating a hydrogen component and storage capabilities,” with a maximum installed capacity of 500 MW.

The new facility is planned for development on the site of a former power plant at Fantanele in Mures County. “We have currently started market research for the feasibility study,” said the company’s CEO, Alexandru Chirita, on the occasion of unveiling the company’s Q3 financial report, Economica.net reported. In addition, the company explores other renewable energy projects, with a capacity of approximately 200 MW, as a step towards reaching its target of 1 GW by 2030.

As regards the company’s Q3 results, Electrica announced its net profit dropped by 22% y/y to RON 418 million (EUR 84 million) in January-September. EBITDA, however, increased by 13.5% y/y to RON 1.25 billion (EUR 250 million). The volumes of distributed and supplied energy were lower by 6.2%, respectively by 10% compared to the same period of last year. The company’s market capitalisation rose 19% ytd this year to RON 3.3 billion (EUR 660 million).

Romania Insider

<http://www.romania-insider.com/>

21 November 2023

Biden-Harris Administration Approves Sixth Offshore Wind Project

The Biden-Harris administration today announced its approval of the Empire Wind offshore wind project – the sixth approval of a commercial-scale offshore wind energy project under President Biden’s leadership. Today’s announcement supports the Administration’s goal of deploying 30 gigawatts of offshore wind energy capacity by 2030.

Empire Wind US LLC proposes to develop two offshore wind facilities, known as Empire Wind 1 and Empire Wind 2. The lease area is located about 12 nautical miles (nm) south of Long Island, N.Y., and about 16.9 nm east of Long Branch, N.J. Together these projects would have up to 147 wind turbines with a total capacity of 2,076 megawatts of clean, renewable energy that the Bureau of Ocean Energy Management (BOEM) estimates could power more than 700,000 homes each year. The projects would support over 830 jobs each year during the construction phase and about 300 jobs annually during the operations phase.

“Under President Biden’s leadership, the American offshore wind industry is continuing to expand rapidly — creating good-paying union jobs across the manufacturing, shipbuilding and construction sectors,” said Secretary Deb Haaland. “Today’s approval of the sixth offshore wind project adds to the significant progress towards our Administration’s clean energy goals. Together with the labor community, industry, Tribes, and partners from coast to coast, we will continue to expand clean energy development in a manner that will benefit communities, strengthen our nation’s energy security, and address climate change.”

“BOEM and our partners have already achieved so much in pursuit of the Administration’s goal of reaching 30 gigawatts of offshore wind energy capacity by 2030,” said BOEM Director Elizabeth Klein. “Extensive engagement with Tribes, other government partners, ocean users, concerned citizens, and more has helped us to avoid or reduce user conflicts while facilitating the responsible development of offshore wind projects. We look forward to continuing our work with them as we move this industry forward.”

Bidenomics and the President’s Investing in America agenda are growing the American economy from the middle out and bottom up – from rebuilding our nation’s infrastructure, to driving over half a trillion dollars in new 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 the climate crisis and make our communities more resilient.

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Since the start of the Biden-Harris administration, the Department of the Interior has approved the nation's first six commercial-scale offshore wind energy projects. BOEM has held four offshore wind lease auctions, which have brought in almost \$5.5 billion in high bids, including a record-breaking sale offshore New York and New Jersey and the first-ever sales offshore the Pacific and Gulf of Mexico coasts. BOEM has also advanced the process to explore additional opportunities for offshore wind energy development in the U.S., including in the Gulf of Maine and offshore Oregon and the U.S. Central Atlantic coast. The Department has also taken steps to evolve its approach to offshore wind to drive towards union-built projects and a domestic-based supply chain.

Invaluable feedback was gathered through nation-to-nation consultations with Tribes, input from federal, state and local agencies, and from public meetings and comments in analyzing the project's potential environmental impacts and developing possible alternatives and mitigation measures.

The Record of Decision includes measures aimed at avoiding, minimizing, and mitigating the potential impacts that may result from the construction and operation of the project. Among those measures, Empire Wind, LLC has committed to establishing fishery mitigation funds to compensate commercial and for-hire recreational fishers for any losses directly arising from the project.

The Record of Decision will be published in the Federal Register in the coming days and can be found on the BOEM website.

DOI

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

22 November 2023

ENTSO-E welcomes Moldelectrica as an Observer Member

Today, in a significant stride towards the strengthening of European TSO cooperation, ENTSO-E welcomes Moldelectrica as its newest Observer Member. Following a successful emergency synchronisation of the Continental European Power System with the Moldovan and Ukrainian grids on 16 March 2022, the signing of the Observer Membership Agreement marks a meaningful moment in the evolution of the partnership between Moldelectrica and the European electricity TSO members of ENTSO-E.

The community of European TSOs formed by ENTSO-E operates with a shared responsibility, united in ensuring the continuous supply of electricity across Europe. The agreement between Moldelectrica and ENTSO-E reflects the dedication of the European TSOs to reinforce and pave the way for further technical collaboration aimed at bolstering the stability, efficiency, and security of the European interconnected power network.

ENTSO-E

<http://www.entsoe.eu/>

24 November 2023

Finland to Auction Five Offshore Wind Power Sites

Finland will launch an auction for five offshore wind power sites with up to 500 turbines in Finland's public water areas, it said on Thursday. "The total surface area of the five offshore wind power sites to be included in the auction procedure is about 860 km² and their calculated maximum capacity is about 7,500 megawatts," the government said in a statement.

Finland's state-owned management company in charge of land and water areas will handle the auctions and lease the sites located on Finland's western coastline to selected partners for up to 50 years, it said. "The wind power from the sites to be auctioned is

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expected to increase Finland's annual electricity production by more than a third," Minister of Climate and the Environment Kai Mykkanen told reporters.

Reuters

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

25 November 2023

Baltic Power Issues Operations and Maintenance Tender

Baltic Power, a joint venture between Poland's Orlen Group and Canada's Northland Power, has launched a request for information (RFI) as part of the tender process for operations and maintenance (O&M) work for the 1.2 GW offshore wind project in the Polish Baltic Sea. The work scope has been divided into the following areas: above-water wind turbines, foundations and transition pieces (TPs); below-water wind turbines, foundations, and TPs via remotely operated vehicles; offshore substation topside maintenance; array and export cables; and onshore substation.

Baltic Power has revealed that it is searching for firms to survey, service, and inspect the abovementioned areas. At this stage of the procurement process, the buyer says it seeks to understand the capability within the market to undertake all or certain aspects of the scope deliverables. Therefore, the potential providers can indicate as part of their response to the RFI whether they wish to provide a single service or a combination of services, including an interest to maintain the entire Balance of Plant (BoP) O&M scope, according to Baltic Power.

The deadline for questions from respondents is 28 November, while the deadline for responses on the RFI is 15 December. Located approximately 22 kilometres off the Polish coast near Plaza Wydmy Lubiatowskie, the 1,140 MW Baltic Power offshore wind farm will comprise 76 Vestas 15 MW wind turbines and provide clean energy to over 1.5 million Polish households, once in full operation in 2026. In September, Orlen and Northland Power reached a financial close for Baltic Power, which moved the project into the construction stage and initiated the signing of firm contracts.

Offshore.biz

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

28 November 2023

Continental European TSOs announce completion of synchronization project with Ukrenergo and significant increase in export capacity from Continental Europe to Ukraine

The Continental European TSOs are pleased to announce that Ukrenergo, the Ukrainian TSO, has achieved compliance with the key technical requirements necessary to enable a permanent interconnection between the power systems of Continental Europe and Ukraine. The Synchronisation project with Ukrenergo began in 2017, with the signing of the Agreement on Conditions for the Future Interconnection of the power system of Ukraine with the power system of Continental Europe. Today's announcement signals the full implementation of the conditions included in this Agreement.

On 16 March 2022, an emergency synchronisation was achieved as a signal of solidarity between the Continental European TSOs and Ukrenergo. Since then, Ukrenergo has made extraordinary efforts, under difficult wartime conditions, to achieve full compliance with the operational rules. The Continental European TSOs have also decided to increase the capacity limit for electricity trade from Continental Europe to Ukraine and Moldova to 1,700 megawatts, based on system security and stability simulations, reflecting an increase of 500 MW from the previous limit.

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<http://www.entsoe.eu/>

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Commission sets out actions to accelerate the roll-out of electricity grids

Interconnected and stable energy networks are the backbone of the EU's internal energy market and key to enable the green transition. To help deliver the European Green Deal the Commission is proposing today an Action Plan to make sure our electricity grids will operate more efficiently and will be rolled out further and faster. The Commission has already put in place a supportive legal framework for the rollout of electricity grids across Europe. With the EU markets fully integrated, a modernised infrastructure network will ensure citizens and business can benefit from cheaper and cleaner energy.

Electricity consumption in the EU is expected to increase by around 60% between now and 2030. Networks will have to accommodate a more digitalised, decentralised and flexible system with millions of rooftop solar panels, heat pumps and local energy communities sharing their resources, more offshore renewables coming online, more electric vehicles to charge, and growing hydrogen production needs. With 40% of our distribution grids more than 40 years old and cross-border transmission capacity due to double by 2030, €584 billion in investments are necessary.

The Action Plan aims to address the main challenges in expanding, digitalising and better using EU electricity transmission and distribution grids. It identifies concrete and tailor-made actions to help unlock the needed investment to get European electricity grids up to speed. The actions focus on implementation and swift delivery to make a difference in time for our 2030 objectives:

- Accelerating the implementation of Projects of Common Interest and developing new projects through political steering, reinforced monitoring and more proposals;
- Improving the long-term planning of grids to accommodate more renewables and electrified demand, including hydrogen, in the energy system by steering the work of system operators as well as national regulators;
- Introducing regulatory incentives through guidance on anticipatory, forward-looking investments and on cross-border cost sharing for offshore projects;
- Incentivising a better usage of the grids with enhanced transparency and improved network tariffs for smarter grids, efficiency, and innovative technologies and solutions by supporting the cooperation between system operators and recommendations by the Agency for the Cooperation of Energy Regulators (ACER);
- Improving access to finance for grids projects by increasing visibility on opportunities for EU funding programmes, especially for smart grids and modernisation of distribution grids;
- Stimulating faster permitting for grids deployment by providing technical support for authorities and guidance on better engaging stakeholders and communities;
- Improving and securing grid supply chains, including by harmonising industry manufacturing requirements for generation and demand connection.

EU

<http://ec.europa.eu/>

30 November 2023

New technology installed beneath Detroit street can charge EV's as they drive

Crews have installed what's billed as the nation's first wireless-charging public roadway for electric vehicles beneath a street just west of downtown Detroit.

Copper inductive charging coils allow vehicles equipped with receivers to charge up their batteries while driving, idling or parking above the coils. The quarter-mile segment of

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14th Street will be used to test and perfect the technology ahead of making it available to the public within a few years, according to the Michigan Department of Transportation.

Demonstrations were held Wednesday at Michigan Central innovation district, a hub for advancing technologies and programs that address barriers to mobility. The district also is where Ford Motor Co. is restoring the old Michigan Central train station to develop self-driving vehicles. The technology belongs to Electreon, an Israel-based developer of wireless charging solutions for electric vehicles. The company has contracts for similar roadways in Israel, Sweden, Italy and Germany. The pilot initiative in Michigan was announced in 2021 by Michigan Gov. Gretchen Whitmer. "Alongside Michigan's automotive expertise, we'll demonstrate how wireless charging unlocks widespread EV adoption, addressing limited range, grid limitations, and battery size and costs," said Stefan Tongur, Electreon vice president of business development. "This project paves the way for a zero-emission mobility future, where EVs are the norm, not the exception."

When a vehicle with a receiver nears the charging segments, the coils beneath the road transfer electricity through a magnetic field, charging the vehicle's battery. The coils only activate when a vehicle with a receiver passes over them. Tongur told reporters the roadway is safe for pedestrians, motorists and animals. The state Department of Transportation and Electreon made a five-year commitment to develop the electric road system. The DOT is expected to seek bids to rebuild part of busy Michigan Avenue, where inductive charging will also be installed.

As electric vehicles increase in popularity in the United States, the Biden administration has made its plan for half a million EV charging stations a signature piece of its infrastructure goals. The wireless-charging roadway helps puts Michigan and Detroit at the forefront of electric vehicle technology, officials said. "In Michigan, we want to stay ahead of the curve. We want to lead the curve," Michigan DOT Director Bradley C. Wieferich said. No decisions have been made on revenue models in Michigan, Tongur said. "The technology is smart," he said. "The technology knows who you are—you're a verified and authentic user—you can get a charge."

TechXplore

<http://techxplore.com/>

30 November 2023

Nigeria commissions new minigrid control center

The Nigerian Rural Electrification Agency (REA) and the Korea Institute for Advancement of Technology have commissioned a new control center capable of hosting data from all the minigrids in the country.

The state-of-the-art energy management system (EMS), which is located at the REA's headquarters in Abuja, was constructed during phase one of the Korean Energy Project, a bilateral partnership between the governments of Nigeria and South Korea. "Collaborations such as these will help bridge the gap between the served and the unserved," said Adebayo Adelabu, Nigeria's Minister of Power.

Many of Nigeria's remote communities have never had access to the national electricity grid, and, as such, must rely on fossil fuel-powered generators, which can be both expensive and an unreliable power source. To combat electricity access disparities in the country, the REA has made significant investments in rural minigrid development in recent years. One of the largest minigrid markets in the world, there are now over 100 minigrids in operation across Nigeria and more are on the way.

Minigrids, sometimes referred to as remote microgrids, are typically used in remote areas that do not have access to a central grid. Minigrid systems use software to control distributed energy resources like solar panels and battery storage, providing remote

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communities with reliable, clean and affordable power. The deadline for prequalification applications for grants from the Nigerian National Project, a minigrid program the REA is administering on behalf of the United Nations Development Program, Rocky Mountain Institute and the African Development Bank, has recently passed.

In October, the agency announced it had signed a memorandum of understanding with the Africa Mini-Grid Developers Association that is expected to accelerate the pace of minigrid development even more. Other players, such as the World Bank and Sholep Energy, are active in the country, and Husk Power is vowing to build 500 minigrids in Nigeria by 2026.

“Rural electrification requires unique granular data, said Kim Young-Chae, the Korean ambassador to Nigeria. “The integrated energy management system [enables] efficient planning and design concepts [and] can host all minigrids’ data.” Young-Chae added that the EMS will strengthen the position of the REA in its role as the central coordinator for rural minigrids.

In addition to the minigrid control center, the Korean Energy Project will build four stand-alone minigrids in nonelectrified areas of the Federal Capital Territory, the region that includes the capital city Abuja. The REA announced that two of these minigrids – a 900-kW interconnected solar minigrid in Rubochi and a 100-kW solar minigrid in Ikwa – have broken ground and are expected to be commissioned in the first quarter of 2024. The two remaining minigrids should be operational by the end of 2024, according to Ahmad Salihijo Ahmad, managing director and CEO of the REA. The four minigrids are expected to have a combined capacity of 1.6 MW.

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India turns to coal as hydro generation falls

India produced a record amount of electricity from coal in October to make up for a shortfall in hydro generation following lower-than-normal monsoon rains. Coal remains fundamental to the country’s energy security, despite rapid deployment of wind and solar generation, underscoring the challenge of reducing emissions.

Notwithstanding the ambitions expressed at the UN climate conference in Dubai, for the foreseeable future, India will depend on its mines and rail network to satisfy rapidly growing electricity demand and ensure reliability. Total electricity demand met increased by 24 billion kilowatt-hours (kWh) (+21%) in October compared with the same month a year earlier. But hydroelectric generation fell by 5 billion kWh (-30%) as unusually low monsoon rainfall depleted water resources.

Total precipitation across most of India, the Himalayas and Tibet has been less than 80% of the long-term average since the start of the rainy season in June. The volume of water stored in the 150 reservoirs monitored by India’s Central Water Commission was 20% below the level in 2022 and 7% below the average for 2013-2022 on Nov. 23. Reservoirs are managed to provide a mix of hydroelectricity and irrigation; depletion would have been even more severe if hydro generation had not been curbed to save water for agriculture.

Despite big increases in installed capacity, solar and wind generation were unable to make up the deficit. Wind increased by 0.3 billion kWh (+10%) while solar was up 1.3 billion kWh (+16%). Instead the electricity system turned to gas (1.6 billion kWh, +103%) and especially coal (28 billion kWh, +33%) to meet demand.

Coal-fired generators produced a seasonal record of 111 billion kWh in October 2023 up from 84 billion kWh in October 2022. Coal satisfied 80% of electricity demand up from 73% a year earlier, while the hydro share fell to 9% from more than 15%.

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India's installed solar capacity has risen by almost 47 million kilowatts (+24% per year) while wind capacity is up by 9 million kilowatts (5% per year) since the start of 2018. Over the same period, coal generation capacity has increased by just 9 million kilowatts (1% per year) and gas-fired capacity has been essentially unchanged.

But coal units have much higher utilisation and are particularly critical to meet load in the shoulder seasons of March-April and September-October, when renewable generation is lower but air-conditioning load is relatively high. In the final analysis, India's electricity system remains overwhelmingly reliant on coal for baseload and ensuring reliability. To cope with rising electricity demand and poor hydrological conditions, India boosted mine production and the volume hauled by the railways to generators to record rates in October. Coal output was up by 13 million tonnes in October and by a total of 87 million tonnes since January compared with a year earlier.

The volume dispatched to power producers was up 8 million tonnes in October and by 35 million tonnes in the first ten months. Even so, coal stocks at generators were severely depleted in September and October, and by the end of October had been reduced to just 7.5 days at the required level. Inventories had been reduced near to three-year lows and close to levels that sparked the fuel crisis and blackouts in September 2021. Coal production and dispatch will have to remain high throughout the winter, when consumption is lower, to rebuild stocks ahead of the next shoulder season.

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