WORLD POWER SYSTEMS REVIEW

15 July 2023

1 July 2023

Colombia's clean power share sinks to 78.3% in May

The clean share in Colombia's total power production fell to below 80% in May as hydro inflows declined significantly during the first two weeks of the month before recovering in the second half, national grid operator XM Compania de Expertos en Mercados has said.

The nation's renewables share, which includes both large-scale hydro and the so-called non-conventional renewables, was 78.31% in May, down from 89.5% in April. Together, the clean power plants generated 169.48 GWh per day on average in the 31-day month, representing a drop of 10.32% from the daily averages in April, XM's latest figures show.Average daily power production from non-renewable sources, mainly coal and gas, rose by 110.95% month-on-month to meet the domestic demand, while electricity imports from Ecuador surged by 422.5% over the same period, XM said. Details on clean power production follow in the table below:

Source:	Daily average production in May (in GWh/day):	month-on-month change:	Share in May:
Bagasse biomass	0.895	-52.92%	0.53%
Biogas	0.025	60.68%	0.01%
HPPs with reservoir	145.431	-9.58%	85.81%
Wind	0.582	-4.75%	0.34%
Run-of-river hydro	20.244	-13.00%	11.95%
Solar PV	2.302	-2.44%	1.36%

Renewables Now
http://renewablesnow.com/

2 July 2023

China's largest ultra-high voltage cross-river power transmission project put into operation

China's largest ultra-high voltage (UHV) power transmission project across the Yangtze River, the longest river in the country, was completed and put into operation Sunday.

The 500-kV power transmission project, spanning 2,550 meters across the Yangtze, stretches from the city of Taizhou to Wuxi in East China's Jiangsu province, with a total length of 178 km and a total investment of over 1.5 billion yuan (about $207.6 million), according to the State Grid Jiangsu Electric Power Co., Ltd. The project includes two power transmission towers measuring 385 meters high each, the tallest of their kind in the world. It is estimated that the maximum annual power transmission of the project can exceed 26 billion kWh, which is equivalent to the annual electricity consumption of a medium-sized Chinese city.

It is expected to increase Jiangsu's cross-river power transmission capacity by 30 percent, greatly promoting the consumption of clean energy like offshore wind power in the

Yangtze River Delta and reducing carbon dioxide emissions by about 10 million tonnes every year. "We have overcome a series of technical difficulties and set many industry records. The overall project and the equipment were 100 percent Chinese-made," said project manager Chen Bing. The 500-kV power transmission project, spanning 2,550 meters across the Yangtze, stretches from the city of Taizhou to Wuxi in East China's Jiangsu province, with a total length of 178 km and a total investment of over 1.5 billion yuan (about $207.6 million), according to the State Grid Jiangsu Electric Power Co., Ltd.

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China Daily
http://www.chinadaily.com.cn/

2 July 2023

Australian Developer Secures Funding to Speed Up 2 Gwh Pumped Hydro Project

Genex said the AUD 44.5 million ($29.63 million) structured funding package will be used to shore up financing for the company's flagship 250 MW/2 GWh Kidston Pumped Storage Hydro project in northern Queensland and to develop its multi-stage Bulli Creek solar and battery project near Toowoomba. J-Power, which is among Genex's largest shareholders following an AUD 25 million equity investment announced in 2019, has agreed to provide a corporate loan facility of AUD 35 million as a standby source of funding for the 250 MW, eight-hour pumped hydro project. Genex said the funding may not be needed but in the wake of a drilling incident late last year that set construction back, the replenishment of the project contingency is considered prudent to ensure the project remains on track for energization in 2024.

It was estimated the incident, which resulted in water unexpectedly leaking into a tunnel, added AUD 10 million to AUD 15 million to the project's cost. "While the costs of the water ingress event at the Kidston pumped storage hydro project last year have been fully funded, we consider it prudent that additional funding is secured against any further unforeseen events during the balance of the construction program," Genex Chief Executive Officer James Harding said. "The loan facility with J-Power gives us significant buffer to complete the construction of the project." On top of the loan facility, J-Power will also establish a joint development fund for Genex's Bulli Creek solar and battery project which is expected to be developed in five stages. The first stage will entail the delivery of a 400 MW/1,600 MWh big battery. while the second proposed stage would deliver a 475 MW to 675 MW solar project. The joint development agreement gives J-Power a 50% interest in the project courtesy of upfront acquisition funding of AUD 2.5 million and a further $6 million in upfront funding for third party development costs.

Pv-magazine
http://www.pv-magazine.com/

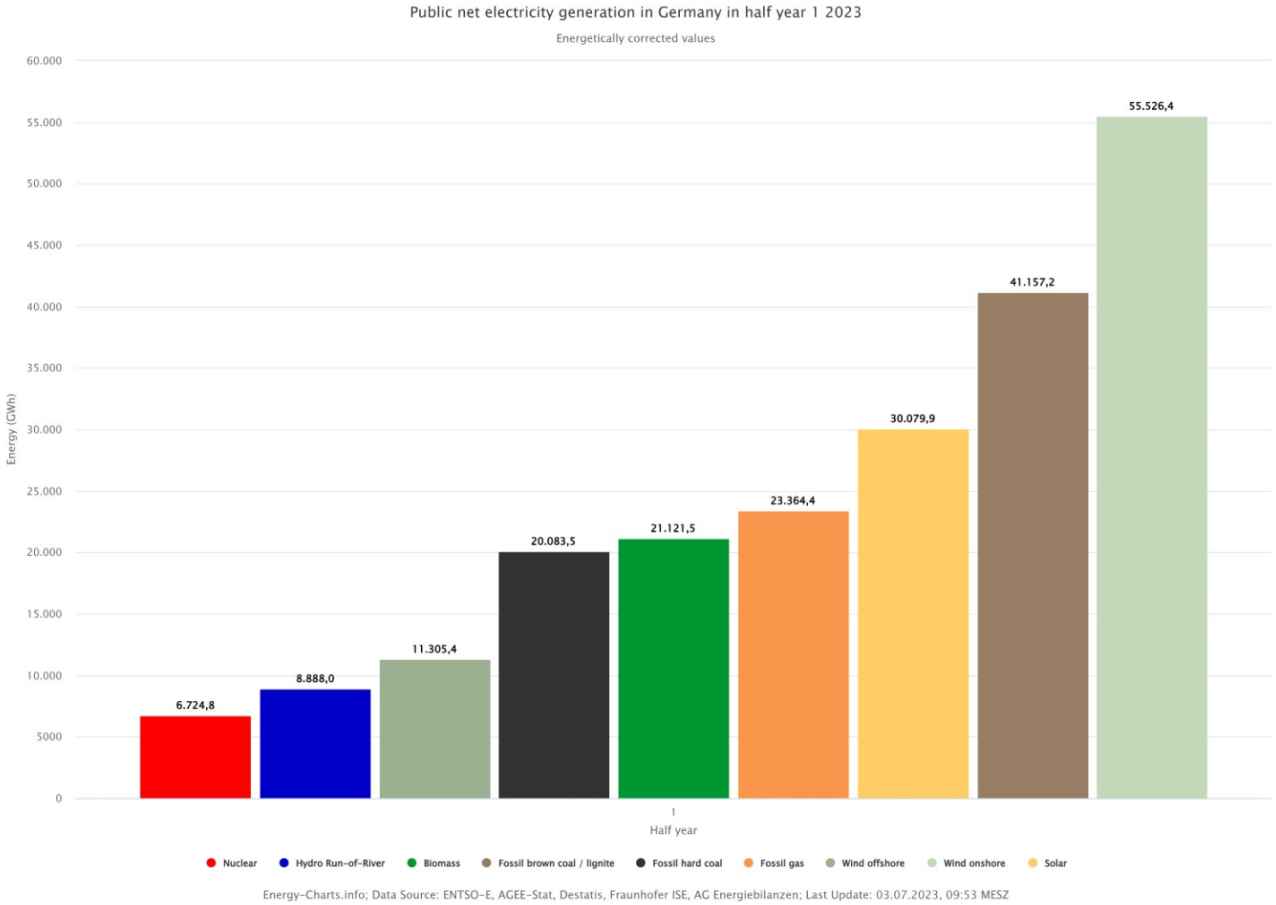
3 July 2023

German Net Power Generation in First Half of 2023: Record Renewable Energy Share of 57.7 Percent

Today the Fraunhofer Institute for Solar Energy Systems ISE presented the data on net public electricity generation for the first half of 2023 from the Energy-Charts data

platform. Renewable generation, with a share of 57.7 percent of the net electricity generation for public power supply, that is, the electricity mix that comes out of the socket, was significantly higher than the first half of 2022 (51.8 percent). The share of renewable energies in electricity consumption was 55.5 percent. With the first six months of 2023, solar and wind power plants fed a total of 97 terawatt-hours (TWh) into the public grid, compared to 99 TWh in the first half of 2022. The electricity production from lignite was down 21 percent, hard coal was down 23 percent, natural gas was down 4 percent, and nuclear declined by 57 percent, compared to 2022 values.

The first half of 2023 saw a normalization of energy prices, with natural gas prices and electricity exchange prices returning to pre-Ukraine war levels but still above 2021 prices. The impact of the nuclear phase-out, with the shutdown of the last nuclear power plants Isar2, Emsland and Neckarwestheim2 in April 2023, has been absorbed well. Factors such as increasing production from renewable sources, weather and higher production in neighboring European countries are significantly stronger than the effect of shutting down the three nuclear plants. The approximately 30 TWh from the reactors was offset by reduced exports, increased imports, and the addition of solar and wind capacity.



Load was 234 TWh in the first half of the year (H1 2022: 250 TWh), continuing the declining trend. Electricity production decreased from 252 TWh to 225 TWh compared to the first half of 2022. Exports of electricity to France decreased after the French nuclear reactors came back online. Exports to Austria and Switzerland decreased due to the countries' higher in-house generation and lower consumption. In the first quarter of 2023, more electricity than usual was imported because electricity prices in neighboring countries were favorable.

Wind energy was by far the most important renewable energy source. Wind turbines produced 67 TWh in the first half of 2023, down slightly from the first half of 2022 (about 68

TWh). February was a weak wind month, lowering the overall result. Photovoltaic systems fed approximately 30 TWh into the public grid in the first half of the year, a slight decrease from the previous year's 31 TWh, for which the weak month of March was mainly responsible. Solar power plants thus accounted for 12.5 percent of net public power generation. On May 4, they set a record: for the first time, solar plants in Germany fed more than 40 GW of power into the grid. With about 15 TWh of solar and wind power generation, June set a new monthly record for a June month. Hydropower produced 9.3 TWh in the first half of the year, up from 8.2 TWh a year earlier. Biomass power generation was on par with last year at 21 TWh.

In total, solar, wind, hydro, and biomass renewables produced about 130 TWh in the first half of 2023, down slightly from 131 TWh a year earlier. The share of net public electricity generation, i.e., the mix of electricity that actually comes out of the socket, was about 57.7 percent, well above the first half of 2022 (51.8 percent). The last three nuclear power plants generated 6.7 TWh until their shutdown on April 15. In the first half of 2022, the figure was 15.8 TWh. Coal-fired power generation also fell: Lignite-fired power plants generated about 41.2 TWh, a sharp decline of 21 percent from 2022 (52.1 TWh). Net production from coal-fired power plants also decreased by 23 percent, from 26.2 TWh in 2022 down to 20.1 TWh in 2023. Electricity generation from natural gas decreased only slightly from 24.3 TWh to 23.4 TWh. In addition to gas-fired power plants for the public power supply, gas-fired plants in the mining and manufacturing sectors also supply the industrial own consumption. These approximately produced an additional 24 TWh for industrial captive use.

The volume-weighted average electricity price in the day-ahead auction was 100.54 euros/MWh. This is a significant decrease compared to the first half of 2022 with 181.28 Euro/MWh. The average price for natural gas in the first half of 2023 was 45.29 euros/MWh. In the first half of 2022, the price was 99.84 euros/MWh. The average CO_2 certificate price per metric ton of CO_2 in Germany has risen to 86.97 euros, double the 2021 amount, while the volume-weighted average electricity price in the day-ahead auction was 100.37 euros/MWh.

The addition of photovoltaic capacity is currently within the target corridor of the German climate protection goals: From January to May alone, 5 GW was added, which would meet the target of 9 GW in 2023. Wind expansion, on the other hand, is not on track: By the end of May, 1 GW had been installed onshore and 0.23 GW offshore, indicating that the target of 4 GW will not be reached. There has been great movement in the field of battery storage. In the first half of 2023, 1.7 GW of storage capacity with a storage capacity of 2.4 GWh was added, so that 5.6 GW of capacity with 8.3 GWh of capacity is now installed in Germany. By the end of the year, this capacity will increase to 10 to 11 GWh.

Fraunhofen
https://www.ise.fraunhofer.de/

4 July 2023

Western Australian's second big battery begins construction

Construction has begun on the $625 million Stage Two Battery in Kwinana, which is being funded by the Western Australian Governments to help deliver clean, reliable and affordable energy for the future.

Kwinana Battery Stage Two will provide 200MW of energy capacity with 800MWh of energy storage – four times that of Kwinana Battery Stage One. The big battery is being built on 3ha at the former Kwinana Power Station, adjacent to the first grid-scale battery. As Western Australia's second grid-scale battery energy storage system, the new battery will comprise 288 shipping container-sized battery modules and will feature 72 inverter units.

These inverters use new-generation technology to support grid stability by storing electricity when demand is lowest and delivering it back into the grid during peak times. More than 160 jobs will be created during the construction of the second big battery, which is expected to be completed by late 2024. Western Australia's first transmission-connected big battery was switched on in June 2023 and provides 100MW or 200MWh.

Big batteries are an important initiative under the Western Australian Government's Energy Transformation Strategy and commitment to net zero emissions by 2050. Western Australian Premier, Roger Cook, said the State Government is getting on with delivering its plan for cleaner, reliable and affordable energy.

"The start of construction for Western Australia's second grid-scale battery energy storage system is an important milestone in the State's energy transformation. "Western Australia is a leader in the uptake of residential solar energy, and these big batteries help to ensure our energy system remains reliable as we transition away from coal-fired power. "It is particularly fitting that we're building the infrastructure of the future at the site of the old Kwinana Power Station – keeping the Kwinana industrial strip front and center as our energy system transitions to a new future."

Western Australian Energy Minister, Bill Johnston, said the big battery features new technology and will strengthen the reliability of the power supply to the State's main electricity grid. "Western Australia is unique in its energy security because we are not connected to other networks," Mr Johnston said. "Our energy management sets us apart from the rest of Australia. "By investing in renewable energy and battery storage solutions, the Government is safe-guarding the long-term resilience and flexibility of our electricity network." The Western Australian Government is investing $3.8 billion into renewable energy infrastructure, including a 500MW battery energy storage system in Collie. The development application for the Collie big battery is expected to be submitted to the Shire of Collie in late 2023.

Energy
http://www.energymagazine.com.au/

5 July 2023

Biden-Harris Administration Approves Third Major Offshore Wind Project in U.S. Waters

The Department of the Interior's Bureau of Ocean Energy Management today announced it has approved the plan for construction and operations of the Ocean Wind 1 project offshore New Jersey. Located about 13 nautical miles southeast of Atlantic City, the project will have an estimated capacity of 1,100 megawatts of clean energy – capable of powering over 380,000 homes – and is expected to create more than 3,000 good-paying jobs through development and a three-year construction cycle.

Today's announcement marks the Biden-Harris administration's third approval of a commercial-scale, offshore wind energy project in the United States, joining the Vineyard Wind project offshore Massachusetts and the South Fork Wind project offshore Rhode Island and New York, both now under construction and being built by union labor. These projects represent significant progress toward the Administration's goals of developing 30 gigawatts of clean, renewable offshore wind energy by the year 2030, while protecting biodiversity and multiple uses of the ocean.

"Ocean Wind 1 represents another significant step forward for the offshore wind industry in the United States," said BOEM Director Elizabeth Klein. "The project's approval demonstrates the federal government's commitment to developing clean energy and fighting climate change and is a testament to the state of New Jersey's leadership in supporting sustainable sources of energy and economic development for coastal communities."

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.

"Construction is already underway on two wind projects off the coasts of Massachusetts and New York. Today's announcement gives the greenlight for construction of another. This project, off the coast of New Jersey, will supply enough energy on its own to power nearly half a million homes. This massive expansion in clean energy construction didn't just happen. It's not an accident. It's Bidenomics in action. Big, bold, and building things," said White House National Climate Advisor Ali Zaidi.

The Record of Decision (ROD) documents the decision to approve Ocean Wind LLC's plan to construct up to 98 wind turbines and up to three offshore substations within its lease area. The decision also documents the extensive range of monitoring and mitigation measures that Ocean Wind will undertake to reduce the potential for impacts to protected species, such as marine mammals, sea turtles, and Atlantic sturgeon. These measures include vessel speed restrictions and clearance zones during construction.

Ocean Wind has also committed to three fisheries mitigation programs: a direct compensation program for reimbursement of lost revenues, a navigational safety fund for navigation equipment upgrades, and a reimbursement program for lost or damaged commercial fishing gear. BOEM worked with Tribes, federal, state, and local government agencies and reviewed comments provided by industry, ocean users, and other key partners and stakeholders to develop these measures.

On June 24, 2022, BOEM published a draft Environmental Impact Statement (EIS), initiating a 45-day public comment period, which was later extended until Aug. 23, 2022. During this time, BOEM held three virtual public meetings to solicit additional feedback on the draft EIS from Tribal nations, local community members, commercial fishing interests, and other ocean users. BOEM received over 1,300 comments from Federal, Tribal, state, and local government agencies; non-governmental organizations; and the general public during the comment period.

BOEM held Tribal consultation meetings with Delaware Nation and Delaware Tribe of Indians in June 2021, and with Delaware Tribe of Indians and Shinnecock Indian Nation in November 2022. BOEM also held five meetings as part of the National Historic Preservation Act Section 106 process with 37 consulting parties (made up of Tribal nations, federal agencies, state agencies, local governments, nongovernmental organizations, private property owners, and the lessee), to identify avoidance and mitigation measures for potential impacts to historic and cultural resources and properties.

BOEM considered the information obtained from these meetings when developing the final EIS, a critical step to ensure the project can move forward while balancing the needs and interests of everyone who may be affected by the development.

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/

6 July 2023

McDermott starts construction on TenneT's 980MW BorWin6 HVDC project

McDermott has commenced the construction of the 980MW BorWin6 high-voltage, direct current (HVDC) offshore grid connection project in Germany for transmission system operator TenneT. The start of construction was marked by a first steel-cutting ceremony at McDermott's Jebel Ali fabrication yard in Dubai, UAE. The 235km long BorWin6 project will transmit electricity through underground cable by utilising low-loss direct current technology (DC) from the offshore converter station BorWin kappa to the onshore converter station located in Büttel, Schleswig-Holstein. At the Büttel converter station, the direct current is converted into three-phase alternating current (AC) and sent into the extra-high voltage grid.

McDermott onshore senior vice president Vaseem Khan said: "We have successfully delivered engineering from our HVDC centre of excellence in The Hague, and are on track to begin construction for this important offshore grid connection project. "During this next phase we will leverage our strategically located fabrication yards to drive execution excellence while maintaining our industry-leading safety record."

In November 2022, TenneT awarded the contract for the offshore and onshore converter stations of the BorWin6 project to a consortium made up of McDermott and Global Energy Interconnection Research Institute and C-EPRI Electric Power Engineering (GEIRI / CEPRI). Under the contract, McDermott is responsible for the converter stations while GEIRI/C-EPRI would focus on electrical engineering.

McDermott is also delivering engineering, procurement, construction, installation, and commissioning (EPCIC) services for an HVDC offshore converter platform located offshore Germany. BorWin6 project is TenneT's fifth project off the coast of Borkum that will use extra-high voltage direct current transmission technology after the BorWin1, BorWin2, BorWin3, and BorWin5 projects. The offshore grid connection project is scheduled to be commissioned in 2027.nApart from Dubai, McDermott will execute the fabrication at its other yard in Batam, Indonesia. Recently, McDermott secured another EPCIC contract from TenneT for two 2GW HVDC grid connection systems offshore Germany.

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

7 July 2023

ISO New England called energy emergency, turned to operating reserves after transmission failure

A "transmission equipment failure" Wednesday evening sent the New England grid operator scrambling to draw down capacity reserves as demand rose higher than anticipated. The failure occurred shortly after 6 p.m., and "significantly reduced imported electricity coming to New England," the independent system operator said in a Thursday blog post. "At the same time, consumer demand for electricity was slightly higher than expected. This combination left the region short of the resources required to meet consumer demand and required operating reserves."

In response, ISO New England declared an Energy Emergency Alert Level 1 and utilized the region's 30-minute operating reserves. An EEA Level 1 is the lowest of three emergency levels defined by the North American Electric Reliability Corp., and is called when an operator is concerned about maintaining contingency reserves.

The New England grid operator typically maintains about 625 MW in its 30-minute reserves and up to 2,250 MW in its 10-minute reserves. The ISO does not yet have details about the equipment failure or extent of the capacity shortage, according to spokesman Matt

Kakley. “We’ll have more information in the coming days as the data is reported and verified,” he said in an email.

The transmission outage occurred during the system’s evening peak, meaning “sufficient resources were not able to respond quickly enough to avoid the capacity deficiency,” the grid operator said. Because of the short duration of the event, however, ISO-NE said it was not necessary to ask the public to reduce consumption.

The capacity deficiency was addressed within half an hour, though the region maintained defensive operating procedures for 3.5 hours “as peak demand receded and the power system returned to normal operations,” the grid operator said. A problem with data feeds to the ISO-NE web site and mobile app, however, “caused these platforms to report erroneously that system conditions were abnormal for several hours after the event.”

Transmission planning has been a major focus as states and grid operators look to maintain grid reliability. In June, eight Northeastern states requested the U.S. Department of Energy help fund and support an interregional transmission planning collaboration across ISO-NE, the New York Independent System Operator and the PJM Interconnection. The grid operators support the effort. NYISO can export 1,600 MW to ISO-NE, according to a May report from the grid operator. There is no direct transmission connection between PJM and New England, however.

Utility Dive
http://www.utilitydive.com/

7 July 2023

World's largest salt-light complementary solar project put into use in China

The world’s biggest combined solar power station and salt farm has been plugged into the grid in China, with a capacity to meet the electricity needs of 1½ million households, according to its operator.

State-owned China Huadian Corporation said the Huadian Tianjin Haijing power station, was connected to the grid in the northern municipality of Tianjin on Saturday. The station comprises a vast array of solar panels erected over more than 13 square kilometres of the Changlu salt fields, one of the country’s oldest coastal salt farms. The “salt-light complementary” system generates both electricity and salt, using double-sided solar panels that absorb direct sunlight from above as well as sunlight reflected from the water below.

China Huadian said the station had an installed capacity of 1 gigawatt and would generate 1.5 billion kilowatt-hours of electricity each year. The green electricity produced would help reduce carbon emissions without affecting the environment of the salt fields, according to the company.

State broadcaster CCTV said the panels were spaced farther apart than other plants to optimise energy and salt production and tilted at a specific angle to minimise shading of the water surface.The salt fields are also used to breed shrimp, an aquaculture business that will continue in conjunction with the solar project.

The project’s chief, Yang Fan, told CCTV that the facility was a “new composite industrial model of floating photovoltaic power generation, brine evaporation, and aquaculture”. State news agency Xinhua said the annual yield of a shrimp farm in the city of Binzhou, Shandong province, increased after a solar project was built on top of the farm. According to the report, production increased because the panels shaded the shrimp ponds, lowering the water temperature between 1 and 2 degrees Celsius. China Huadian chairman Jiang Yi said the project increased the company’s installed capacity to over 200GW.

Jiang said the company was operating other “gigawatt projects”, including a solar hydrogen plant designed to produce 600 cubic metres of hydrogen per hour. The National Energy Administration aims to have 490GW of installed solar power capacity throughout the

country by the end of the year. According to the China Electricity Council, there was 430GW of such capacity up and running by March.

South China Morning Post
http://www.scmp.com/

7 July 2023

Skyborn Moves Forward with 2.8 GW Swedish Offshore Wind Farm

The Fyrskeppet offshore wind farm is expected to generate up to 11 TWh fossil-free electricity when completed, which could be enough to meet eight per cent of Sweden's current electricity consumption, said Skyborn. The project is planned to feature up to 187 wind turbines and have a maximum capacity of 2,800 MW.

"Fyrskeppet Offshore will secure the power supply to meet the increasing demand for renewable energy, and also provide cities that are central to the Swedish economy with a favourable green transformation to enhance future competitiveness, and help attract and retain investment in the region", said Hanna Magnusson, Interim Managing Director of Skyborn Sweden.

Skyborn is also developing Eystrasaltbanken in the Bothnian Sea off Hudiksvall, and the 1 GW Storgrundet offshore wind farm off Söderhamn.In total, Skyborn's development portfolio in Sweden is four offshore areas with a power production potential of 40 TWh annually. A few months ago, the Swedish Energy Agency issued a report that provides a basis for the country's marine planning to enable 120 TWh of offshore wind energy production (or 30 GW in generation capacity).

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

7 July 2023

Province of Ontario to Deploy Additional GE Hitachi BWRX-300 Small Modular Reactors

The Province of Ontario announced today that it is working with Ontario Power Generation (OPG) to begin planning and licensing for the deployment of three additional GE Hitachi Nuclear Energy (GEH) BWRX-300 small modular reactors (SMRs) at the Darlington New Nuclear Project site. A total of four BWRX-300 SMRs are now planned for deployment at the site east of Toronto.

"OPG and the Province of Ontario have staked a leading position in the deployment of new nuclear with a project that will offer significant energy and economic benefits to Ontario and Canada," said Jay Wileman, President & CEO, GEH. "As a global clean energy leader, the Province of Ontario is an ideal home for this innovative project. We look forward to working closely with the SMR project partners as we build a fleet of new reactors together and demonstrate nuclear project excellence here in Canada."

Today's announcement about three potential additional units builds on January's announcement about a contract to build a single BWRX-300 at OPG's Darlington site, the first commercial contract for a grid-scale SMR in North America. "We are looking forward to a long partnership with OPG as we turn the BWRX-300 design into a reality here at the Darlington site," said Sean Sexstone, Executive Vice President, Advanced Nuclear, GEH. "The Ontario supply chain has embraced the BWRX-300 project and we are encouraged by the leadership we have seen to meet manufacturing quality and schedule requirements to support this project and our integrated team."

Advanced nuclear technologies like the BWRX-300 are a key pillar of GEH's energy transition leadership. In addition to helping customers achieve decarbonization goals, the BWRX-300 is designed to reduce construction and operating costs below other nuclear power generation technologies. Specifically, the BWRX-300 leverages a unique

combination of existing fuel, plant simplifications, proven components and a design based on an already licensed reactor. GE's support for the Canadian nuclear industry dates to the early 1950s. The company helped build the first Canadian nuclear power plant, the Nuclear Power Demonstration (NPD) reactor that became the basis for the entire CANDU fleet.

GE
http://www.ge.com/

10 July 2023

Turkey 'aiming for 20 GW of nuclear by 2050s'

In comments reported in a variety of Turkish media outlets, Bayraktar said the country wanted to speed up efforts on the planned second nuclear power plant, in Sinop, and a third plant in the Thrace region, in the country's northwest. According to the Daily Sabah he said that the country's energy demand was continuously growing and "our first priority is to ensure the security of supply in a sustainable manner we must reduce dependency on outside sources", while also making Turkey carbon neutral by 2053.

This means "radical changes are needed in all areas", and he highlighted plans for large-scale expansion of wind and solar power in the country, as well as energy-efficiency measures. He called the four-unit Akkuyu plant, being built by Russia's Rosatom, "the world's largest nuclear construction site", and said planning was under way for the next two proposed plants, with talks taking place with Russia, South Korea and China. Last month Reuters reported Sari Salih, the head of nuclear infrastructure at the energy ministry, as saying Turkey was in talks with Russia and South Korea over its planned second nuclear plant, with China over the third proposed plant and with the UK, USA and France over SMR technology.

Together with proposed small modular reactors, Bayraktar said: "By the 2050s, Turkey will have a nuclear-installed power of over 20,000 MW. In other words, it will be almost the size of four Akkuyus. Some of them may be large-scale power plants and others small modular reactors, which are very important for the transformation of our industry in energy." The Akkuyu plant, in the southern Mersin province, is Turkey's first. Rosatom is building four VVER-1200 reactors, under a so-called BOO (build-own-operate) model. Construction of the first unit began in 2018. The 4800 MWe plant is expected to meet about 10% of Turkey's electricity needs, with the aim being to have all four units up and running by 2028.

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

10 July 2023

Mitsubishi Turbines Will Power New 1.6-GW Uzbekistan Gas-Fired Plant

A new 1,600-MW natural gas-fired power plant project in Uzbekistan reached another milestone, with Mitsubishi Power announcing it received an order for two of the company's M701JAC gas turbines for the combined cycle facility.

The Syrdarya 2 plant is being developed in the Syrdarya region of Uzbekistan. Mitsubishi Power on July 10 said it has signed an equipment supply agreement with Harbin Electric International Co. Ltd., the Chinese contractor for the project. The plant is expected to enter commercial operation in 2026. The World Bank in May of this year said it approved a payment of as much as $29 million to the National Electric Grid of Uzbekistan to support the plant's construction. The International Finance Corp., a member of the World Bank Group, earlier this year supported the project by allocating a $150 million financing package and helping gather more than $1 billion in private financing needed to build and commission the Syrdarya 2 plant.

The World Bank has said its country program in Uzbekistan is among its largest in Europe and Central Asia, comprising 27 projects with net commitments of about $5.7 billion. Uzbekistan is reliant on natural gas for more than 70% of the country's power generation, even as officials push for the use of more renewable energy resources. The government, which has acknowledged the slow integration of renewables, has said new gas-fired power plants are needed to replace inefficient older thermal units and support demand for electricity.

The Syrdarya 2 project, which will join the 1,500-MW Syrdarya 1 plant expected to come online this year, supports Uzbekistan's goal to improve energy efficiency while awaiting the deployment of large-scale renewable energy resources. Officials said the new plant will support an estimated 15% of the country's electricity demand, while boosting the country's installed power generation capacity by about 10%.

Mitsubishi Power on Monday said the M701JAC gas turbines are the latest model in the company's air-cooled J-Series. Officials said the Syrdarya plant should have a thermal efficiency rating of more than 60%, or twice as efficient as some of Uzbekistan's current thermal generating units. The new Syrdarya plants are expected to replace generation from the existing Syrdarya thermal power plant, which was commissioned between 1972 and 1981. That station uses a combination of fuel oil and natural gas, with eight 300-MW units and two 325-MW units. The Uzbekistan Ministry of Energy in June 2020 said its would decommission some of those units and modernize others at Syrdarya.

The Syrdarya 2 plant is sited about 150 kilometers, or 93 miles, south of Tashkent, the capital of Uzbekistan. The plant will be built, owned, and operated by a consortium of Enersok FE LLC (Enersok), owned by the French electric utility EDF; Qatari power company Nebras Power QPSC; Japanese trading company Sojitz Corp.; and Japanese energy firm Kyuden International Corp. The electricity produced by the plant will be sold to Uzbek state-owned power company JSC National Electricity Grid of Uzbekistan under a 25-year power purchase agreement. "The Syrdarya 2 power plant will contribute to the steady and sustainable economic development of Uzbekistan by providing reliable, and low-cost energy," said Chancel Regis, general director of Enersok. "We look forward to working with Mitsubishi Power, which has a proven track record in this country and advanced technologies, for the successful completion of this project."

Sardor Umurzakov, the country's deputy prime minister and minister of Investment and Foreign Trade, in announcing the power purchase agreement for the plant last year said, "The project will help resolve key issues in Uzbekistan's energy generation sector. Firstly, the project will increase the stability of energy generation and supply. Secondly, modern technology will ensure the efficient use of natural gas and water. Finally, the successful implementation of the project will provide additional confidence for potential investors to invest in Uzbekistan's energy sector."

Officials have said the gas consumption savings from the plant's initial operation could be as much as 3.5% of the country's annual natural gas consumption, or as much as 1.7 billion cubic meters of gas, due to the plant's higher thermal efficiency. This also would contribute to a net carbon emissions reduction of as much as 2.8 million tons of carbon dioxide, according to officials.

Uzbekistan's government has called for carbon neutrality in the country's power sector by 2050, primarily through construction of high-efficiency, low-carbon power generation infrastructure. The program prioritizes the replacement or modernization of existing gas-fired power plants.

"Uzbekistan will require significant power generation and infrastructure to meet the needs of its growing population and economy. The modern Syrdarya 2 CCGT plant will provide more reliable and affordable electricity, helping to address the country's energy

shortages and increase the security and stability of its electricity supply," said Marco Mantovanelli, World Bank Country Manager for Uzbekistan, earlier this year. "It will increase the flexibility of the power system and enable large-scale renewable energy generation deployment and integration in the grid over the medium-to-long term. These measures will contribute to the clean energy transition in Uzbekistan and the energy sector decarbonization plans by 2050."

Mitsubishi Power, in addition to supplying the two gas turbines for the project, also is supplying technical advisers to support installation and commissioning. Mitsubishi also is executing a long-term service agreement for the facility. Mitsubishi Power said it has now received orders for 12 large-frame gas turbines, including the F and JAC-series, for seven projects in Uzbekistan. The company also has supplied its H-25 series of small- and medium-sized gas turbines for an urban distributed natural gas-fired cogeneration, or combined heat and power, facility being developed in Tashkent.

POWER
http://www.powermag.com/

12 July 2023

Fluence to install two 100-MW grid boosters for Tennet in Germany

Transmission system operator Tennet has selected Fluence Energy Inc (NASDAQ: FLNC) to build two grid boosters in Schleswig-Holstein and Bavaria to increase the transmission capacity of the German power grid. The battery-based energy storage systems, featuring the Fluence Ultrastack technology, have a combined capacity of 200 MW. They will be installed at the substations in Audorf Sued in Schleswig-Holstein and Ottenhofen in Bavaria.

The grid boosters at the two strategically located grid nodes will lead to the integration of more renewable energy as they enable the grid to operate with a higher transmission load.The projects at the two substations are moving towards implementation and have secured the necessary land early on, TenneT's COO Tim Meyerjuergens said. The focus now is to swiftly complete the approval procedures without unnecessary delays so that the grid boosters can contribute to grid stability as intended by 2025.

The two grid boosters are pilot projects outlined in the 2019 electricity grid development plan. In the revised grid development plan for 2037/2045, transmission system operators anticipate the incorporation of up to 54.5 GW of large-scale energy storage systems in the German grid. The successful implementation of TenneT's grid boosters will open the door for future extensive projects where storage is utilised as a transmission asset.

Renewables Now
http://renewablesnow.com/

13 July 2023

TC Energy's Ontario Pumped Storage project reaches final evaluation stage

TC Energy said that the Canada Ministry of Energy will begin a final evaluation of its proposal to build the 1GW Ontario Pumped Storage project before making a decision later this year. The Canadian energy company plans to construct the pumped storage facility just north of Meaford on land owned by the Canadian Department of National Defense (DND) in the territory of the Saugeen Ojibway Nation. TC Energy will co-develop the Ontario Pumped Storage project with the Saugeen Ojibway Nation. The project is designed to store enough clean electricity to power one million homes for 11 hours.

It is expected to have a total stored energy capacity of 8,000MWh with an efficiency of 70%-75%. Besides, the project will boost the economy and maximise the value of Ontario's electricity by generating about C$12.1bn ($9.1bn) in energy system cost benefits.

The pumped storage facility will also generate over 1,000 direct jobs in the area and in Ontario. According to TC Energy, the Ministry of Energy has instructed the Independent Electricity System Operator (IESO) to carry out a final analysis of the Ontario Pumped Storage project for justifying its role as part of the province's electricity system.

The IESO is anticipated to provide its analysis to the ministry by 30 September 2023. Simultaneously, the ministry expects to start consultations on Ontario's Regulatory Registry and the Environmental Registry of Ontario regarding the capability to rate regulate the Ontario Pumped Storage project through the Ontario Energy Board. The final decision on the pumped storage facility will be made by the Minister of Energy by 30 November 2023.

TC Energy power and energy solutions executive vice-president and president Corey Hessen said: "Ontario Pumped Storage will be a critical component of Ontario's growing clean economy and will deliver significant benefits and savings to consumers. Ontario continues to attract major investments that will have large power needs — many of which are seeking zero-emission energy before they invest."

TC Energy aims to make a final investment decision (FID) on the pumped storage project in 2024. The Ontario Pumped Storage project secured a conditional motion of support from the Municipality of Meaford in February 2023. Municipality of Meaford Mayor Ross Kentner said: "The Municipality of Meaford recognizes the significant stimulus a project like this would have on the local economy, and the benefits it would bring as a whole to Ontario's electricity system. "We look forward to continuing to work with TC Energy to develop a community benefits agreement that will ensure we move into the future stronger and better for years to come". Subject to receipt of regulatory and corporate approvals as well as a successful partnership agreement with the Saugeen Ojibway Nation, the Ontario Pumped Storage project is scheduled to be commissioned in the early 2030s.

NS ENERGY
http://www.nsenergybusiness.com/

13 July 2023

DTE Electric agrees to speed Michigan coal plant retirements, renewable and energy storage buildout

DTE Electric agreed to shut down its coal-fired generation by 2032, three years earlier than proposed last year, and add 3.8 GW of renewable generation by the end of this decade, 400 MW more than planned, according to a settlement agreement filed Wednesday with Michigan regulators.

The DTE Energy utility subsidiary will also add 780 MW of storage by 2030, up from 360 MW, support distributed generation on its system equaling up to 6% of its peak load, up from a 1% cap, and donate $38 million to low-income bill payment assistance and energy upgrade programs under the agreement on its proposed resource plan. DTE expects it will spend more than $11 billion over the next 10 years on the plan, which must be approved by the Michigan Public Service Commission. The agreement reduces costs for ratepayers by about $2.5 billion compared to DTE's proposal and its previously approved integrated resource plan, according to the Detroit-based utility company.

The agreement accelerates and amplifies elements of DTE Electric's integrated resource plan, dubbed CleanVision, that the utility proposed in November. Under the agreement, DTE Electric will seek to add about 2,480 MW of utility-owned renewable generation by 2030 and enter into power purchase agreements for 1,320 MW of renewable energy. It will also add 505 MW of utility-owned energy storage and 275 MW of third-party storage by the end of the decade.

If DTE Electric gets more than half of the planned resources through PPAs, it will be able to receive a financial incentive through a "financial compensation mechanism" based

on the after-tax weighted average cost of capital of the company's total capital structure, according to the agreement. The agreement accelerates the retirement of the 3,066-MW, coal-fired Monroe power plant, the third largest source of carbon emissions among U.S. generators. Two units will be shuttered by the end of 2028, as in DTE Electric's initial proposal, but the utility agreed to retire the two remaining units by the end of 2032, three years earlier than proposed. DTE Electric will consider retiring the last two units as soon as 2030. The agreement includes DTE Electric's plan to convert the two units at its 1,270-MW coal-fired Belle River power plant to gas-fired peakers in 2025 and 2026. It also pre-approves $125 million in cost recovery for the conversion.

DTE Electric will be able to securitize about $1 billion in its coal plant assets under the agreement. Any remaining net book value of the Monroe plant as of Dec. 31, 2024, will be recovered through a regulatory asset with a 9% return on equity amortized over 15 years. The utility agreed to seek state and federal funding to reduce the cost of the coal plant retirements and the conversion of the Belle River plant to gas. The agreement includes a 2% energy efficiency savings target through 2027, up from a proposed 1.5% savings rate. DTE Electric's demand response target grows from 855 MW this year to 906 MW in 2027 under the agreement.

The utility agreed to target 150 MW of new DR through a bidding process for Midcontinent Independent System Operator "zonal resource credits" for contract terms of three or more years by MISO's 2027/28 planning year. In addition, starting in October 2024, DTE Electric will post annual political disclosure reports on its website detailing contributions of more than $5,000 in aggregate made by DTE entities to any other entity, including non-profit organizations, according to the agreement.

DTE Electric will file its next IRP by December 2026, two years earlier than scheduled. It will develop a plan to engage with overburdened communities on the IRP. Parties to the agreement include PSC staff, Michigan Attorney General Dana Nessel and environmental, labor and business groups. "This legal settlement commits DTE to an expeditious transition away from burning coal that is compelled by economics, public health, and climate science," Shannon Fisk, Earthjustice attorney and director of state electric sector advocacy, said in a statement.

Utility Dive
http://www.utilitydive.com/