

WORLD POWER SYSTEMS REVIEW

15 May 2023

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California regulators approve PG&E, Energy Vault green hydrogen and battery microgrid

The California Public Utilities Commission on Thursday approved a proposal from Pacific Gas & Electric for a hybrid battery energy storage and hydrogen fuel cell system that will provide power to a Northern California substation that is prone to wildfire-related electricity shutoffs.

The 8.5 MW microgrid, which will be developed by Energy Vault, is expected to generate up to 293 MWh during a 48-hour period, although actual generation may vary depending on the length of the power outage and other factors, PG&E said in its proposal to the commission. "This is a cool use case. I'm hoping this is potentially replicable," Jin Noh, interim executive director of the California Energy Storage Alliance, said. However, "I know every microgrid project is custom to that location and the need. So I think that is going to be the challenge of the day — how do we scale these microgrid solutions despite the fact that everything is custom in nature when it comes to the needs of any particular application?"

California utilities have been deploying proactive power outages — called public safety power shutoffs — during weather conditions that increase the risk that their infrastructure might cause wildfires. From 2013 through 2019, the state's three large investor-owned utilities companies deployed 33 such outages, according to the CPUC.

This microgrid's use of green hydrogen fuel cells and batteries marks a departure from PG&E's earlier practice of using diesel generators for backup power during outages. California regulators directed PG&E to begin transitioning to cleaner sources of backup power in 2021, by procuring a minimum of one clean substation microgrid project that could be used during wildfire-related outages.

The microgrid, proposed to regulators last December, is expected to begin operating in 2024 for a planned period of 10.5 years. Unlike the traditionally-used diesel generators, this project will lead to no emissions of criteria air pollutants, PG&E noted in its December letter to the commission. If successfully developed, the microgrid "would represent a major advance in microgrid development and a very significant step toward cleaner forms of microgrid generation," the utility added.

The microgrid project represents a good starting point in terms of understanding the technical capabilities of this type of fuel cell-plus-storage configuration, according to Noh. "I assume having this type of structure familiar and contracted and tested will allow these types of resources to target different needs as well," he added. "Energy Vault is pleased with the CPUC's approval of our innovative microgrid project with PG&E in Calistoga. We are committed to supporting local communities to have access to resilient and clean power," Marco Terruzzin, the company's chief commercial and product officer, said in an email.

Utility Dive

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

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NSW awards 1.4GW solar, wind in debut tender

The New South Wales government in Australia has announced a 1.4GW tranche of renewable energy projects awarded contracts in the first of a 10-year rolling tender programme. Two solar projects, one wind farm and one battery energy storage system secured Long Term Energy Service Agreements (LTESAs), reflecting around A\$2.5bn investment.

ACEN Australia won backing for its 720MW New England Solar Farm in the New England Renewable Energy Zone and 400MW Stubbo Solar Farm in the Central West Orana Renewable Energy Zone. Goldwind Australia's 275MW Coppabella Wind Farm in the

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Southern Tablelands was also successful, alongside RWE Renewables Australia's 50MW/400MWh Limondale BESS in the South West Renewable Energy Zone.

The renewables tender programme is designed to secure generation capacity to replace the state's coal-fired power stations, which are due for closure over the coming decade. NSW has now locked in 4.1GW of its legislated 12GW 2030 renewable generation target. Minister for Energy Penny Sharpe said: "This tender has shown how much demand there is to invest in NSW to build renewable energy and it is very welcome that this investment will also support 3,300 jobs over the next 10 years. "The Minns government's focus will be to ensure that the projects are delivered as quickly as possible." The contracts were assessed and awarded by AEMO Services. It expects them to be connected and operational as early as 2025/26. Further renewable energy tenders are due to be held in NSW every six months.

Renews.biz
<http://renews.biz/>

1 May 2023

The world's first geological hydrogen storage facility was put into operation in Austria. It works with surplus solar energy from the summer season

Two years after the start of the project, at the end of April 2023, the world's first hydrogen storage in an underground porous reservoir was put into operation in Gampern, Upper Austria. This was announced by RAG Austria, which is the initiator of the project and the technology leader. In the future, this geological storage facility will be able to convert the surplus solar energy from the summer season from approximately 1,000 single-family homes into hydrogen and store it seasonally. In this research project, the only one of its kind in the world, renewable solar energy is converted into green hydrogen in a climate-neutral way using electrolysis and stored in its pure form in former natural gas reservoirs.

"In our pioneering demonstration facility, we will transfer 4.2 gigawatt-hours (GWh) of summer electricity in the form of hydrogen to the winter season, ensuring a renewable energy supply," said RAG Austria CEO Markus Mitteregger. "We are mapping the entire value chain and focusing on the perfect interplay of production, conversion, storage and future paths for the use of green hydrogen," Mitteregger added. In the future, this geological storage facility will be able to convert the surplus solar energy from the summer season from approximately 1,000 single-family homes into hydrogen and store it seasonally.

"In Gampern, Upper Austria, we are demonstrating what is possible and necessary to ensure a secure supply of green energy throughout the year and thus enable the energy transition," emphasized Mitteregger. The work of RAG Austria and its partners is extremely important for businesses, policy makers and authorities for the future transformation of energy systems. The results of the Underground Sun Storage demonstration project will make it possible to reintroduce gas storage with its huge volume into the energy system of the future, including as hydrogen and green energy storage.

"Rapid ramp-up of hydrogen production is essential. It is not enough to push for the expansion of renewable energy sources. Solar and wind energy from the summer months must be storable and thus transferred to the winter when the wind is not constant and the sun and water do not supply enough energy to cover the increased demand. Experts predict that in Austria alone there will be a seasonal shift of 10 terawatt hours (TWh) of energy per year by 2030. Underground solar storage is the first step in this direction, which must be followed by others," Mitteregger further noted.

"Climate protection is one of the main tasks of our generation. Our goals are ambitious: 100% renewable electricity in and from Austria by 2030 and climate neutrality in Austria by 2030. To achieve these climate goals, we need investment, innovation and

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cooperation. In no case must we concentrate on a few individuals. technology, but we must remain open to new technologies. With the first geological hydrogen, RAG is targeting exactly this technological openness that we so urgently need: stored green hydrogen makes a significant contribution to year-round security of supply while replacing fossil natural gas, thereby reducing our dependence. A situation that is beneficial for all parties, both for the climate and the location,” added Austrian Federal Minister of Finance and Mining Magnus Brunner.

Led by the Austrian company RAG, hydrogen will be produced by 2025 in a customized demonstration facility and stored in an underground gas reservoir for future use in the region as a material or energy source, possibly also directly through hydrogen power plants that will serve to secure electricity supplies and heat. At the same time, interdisciplinary scientific and technical research for the energy future will be carried out in real conditions on a small former natural gas reservoir. These investigations will be complemented by the development of suitable processes and the development of suitable processing technologies, modeling of future energy scenarios and techno-economic analyses, including the use of hydrogen as a substitute for fossil natural gas, direct use in energy-intensive industries, requirements and processing technologies, and the possibility of using hydrogen with high cleanliness.

CEE Energy News

<http://ceenergynews.com/>

2 May 2023

Indiana utilities gain ‘right of first refusal’ to build transmission lines amid MISO buildout

Indiana’s incumbent utilities will have a right of first refusal to build transmission lines approved by a regional transmission organization under a bill signed Monday by Gov. Eric Holcomb, R. The bill effectively freezes out competitive transmission companies such as LS Power Transmission from building power lines in the state. Utilities that could benefit from the law include AES Indiana, CenterPoint Energy, Duke Energy Indiana and Northern Indiana Public Service Co. “The decision by Gov. Holcomb to sign this anti-competitive, anti-consumer and inflationary legislation is regrettable,” Paul Cicio, chair of the Electricity Transmission Competition Coalition, said in a statement.

The group contends a lack of competitive pressures will lead incumbent utilities to build more costly transmission facilities. Utilities argue they are better positioned to build transmission lines in their areas and ROFR laws will give states more oversight. Indiana’s grid is mainly in the Midcontinent Independent System Operator’s footprint. MISO last year approved a roughly \$10.3 billion transmission expansion plan that includes segments running across Indiana.

MISO is developing a second expansion round slated to be approved in mid-2024 that could cost \$20 billion to \$30 billion. In states without ROFR laws, the projects will be put out to bid. Including Indiana, seven MISO states have ROFR laws, according to MISO. Lawmakers in several states have been exploring adopting ROFR laws this year while the Iowa Supreme Court ruled against that state’s law in March. A ROFR bill became law in Mississippi while legislation was defeated in Montana and Oklahoma.

Utility Dive

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

2 May 2023

French appeals court clears government buyout of EDF

An appeals court in France on Tuesday rejected a complaint against the terms of the country’s government buyout of power giant EDF, Reuters reports. Rejection of the

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complaint, filed by an association for the defense of minority shareholders, clears the way for a full nationalization of the energy company. The court of appeals “rejected all of the plaintiffs’ demands”, according to a document seen by Reuters.

The head of the association declined to comment, saying the group needed time to understand possible legal options following the decision. Minority shareholders argued that the offered buyout price of €12 per share was too low. In July last year the French government announced its plans to take full control of EDF, after Prime Minister Elisabeth Borne unveiled plans to nationalize the debt-laden company in the same month. The finance ministry said in a statement at the time that it had offered \$12.26 (€12) per share, or \$9.85bn (€9.7bn) total, to buy out the remaining 16% minority stake.

Currently, the government owns 95.82% of the company’s share capital and at least 96.53% of voting rights. It has pledged to reopen the tender offer for 10 additional trading days, after which it will initiate squeeze-out proceedings. EDF’s debt troubles continued into the end of last fiscal year, with the company posting a record net loss of \$13.5bn (€12.7bn) for 2022, after repairs to its nuclear fleet choked power output. The company also posted a net financial debt of \$68.6bn (€64.5bn), up 50% from 2021.

In November last year, a spokesperson confirmed that 26 of 56 reactors in the country were not operating. By February, this fell to 13, with 43 operational. The company’s statement cited stress corrosion on 16 of its reactors as a key reason for output decline. Separately, EDF began legal proceedings against the government in August last year, claiming \$8.8bn (€8.3bn) in damages. These relate to government measures forcing the company was forced to sell more of its power to rivals at prices below market rates, in an attempt to counter its near-monopoly position in France.

Power-Technology

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

2 May 2023

Turkiye officially launches Europe's largest solar power plant

The official opening of the Karapinar solar plant in Konya, in southcentral Türkiye, Europe’s biggest solar power plant with 1,350 megawatts (MW) of installed capacity, will take place on Tuesday.

According to the plant developer, Kalyon Enerji, more than 3 million solar panels at the facility are to generate 3 million kilowatt-hours of electricity annually, enough to provide power to 2 million people and prevent the use of US\$450 million of fossil fuel equivalent resources. Kalyon Enerji developed the plant as part of the country’s Renewable Energy Resource Zone (YEKA), a government initiative to establish renewable facilities in areas with a high concentration of at least one renewable energy source, such as wind or solar power.

YEKA projects use investments from local investors and/or consortiums for the manufacture of equipment and the construction of large-scale electricity generation facilities. The facility differs from others listed as large solar parks in that it is funded by a group of investors or consortiums rather than a single investor. The plant covers an area of 20,000 decares and is situated in an area with the highest solar exposure.

AA

<http://www.aa.com.tr/>

3 May 2023

300MW PV Plant Connects to Grid in Rabigh Saudi Arabia by CEEC Guangdong

Recently, the 300 MW photovoltaic power plant built by China Energy Engineering Group Guangdong Power Engineering Co., Ltd. (CEEC Guangdong) in Rabigh, Saudi

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Arabia, was successfully connected to the grid and put into operation. The contract value was estimated to be about 1.2 billion yuan.

The 300 MW Rabigh project is located on the Red Sea coast in western region of Saudi Arabia, approximately 150 kilometers north of Jeddah. It is one of the key projects in the Saudi government's 'Vision 2030' to aggressively develop new energy and promote the energy transition strategy.

The Rabigh project will generate an average of 2,240 kWh per kilowatt per year. Total power generation in the first year will be 894 GWh, providing 45,300 households with green and clean electricity, reducing carbon dioxide emissions by approximately 779,900 MT, effectively optimizing the Saudi energy structure and protecting the local ecological environment.

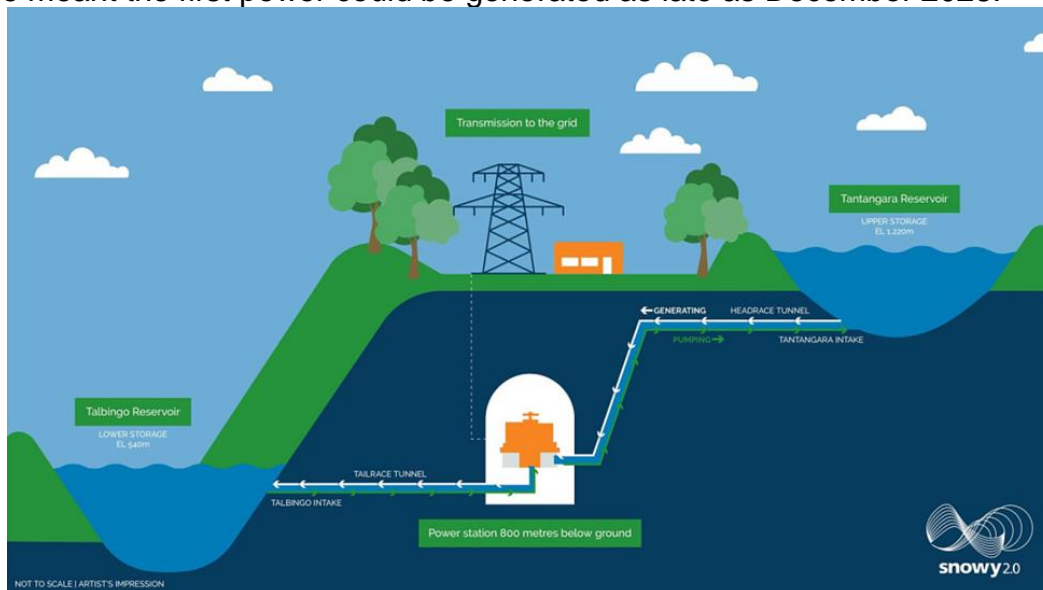
pvertime

<http://www.pvertime.org/>

3 May 2023

Australia's biggest hydropower project faces delay to 2028

Australia's biggest hydropower project faces a delay of up to two years, likely pushing its start-up out to 2028, the company said on Wednesday, in the latest setback for the A\$5 billion (\$3.33 billion) renewable energy project. The Snowy 2.0 project is now expected to cost more due to the delay, which the government-owned company blamed on a shortage of skilled workers, complex designs, soft ground and supply chain disruptions. The updated guidance meant the first power could be generated as late as December 2028.



The setback comes as the federal government aims to get 82% of the east coast market's power from renewables by 2030, up from 30% now. The government had first hoped Snowy 2.0 would be built by 2021, but that deadline was later pushed out to 2026. The market will need power from the Snowy 2.0 project to help replace capacity from three coal-fired power stations due to close by 2028. "We are proactively managing the inevitable issues and challenges that arise in a complex project like this," Snowy Hydro CEO Dennis Barnes said in a statement. Barnes did not specify the expected cost blowout, which the company said "remained under review." The company last year dismissed as "fiction" a media report that said the project was facing an additional A\$2.2 billion in costs.

Snowy 2.0 is expected to add 2,000 megawatts of capacity, pumping water uphill into a dam when power prices are low and releasing the water downhill to generate power when prices and demand are high. It will store enough energy to power 3 million homes for a week.

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The construction, which involves boring 27 km (17 miles) of waterway tunnels connecting two existing dams and excavating a vast cavern between them for an underground power station, was paused in March on a key section after a ground collapse.

Reuters

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

3 May 2023

Israel Adding Energy Storage to Support Grid Integration for Renewables

Israel's governmental energy agency said the country plans to build four major battery energy storage system (BESS) projects in the northern Gilboa mountain region. The Ministry of Energy and Infrastructure on May 2 said the projects are the first step in a "program of great importance for the energy sector." The program is designed to support construction of large-scale energy storage facilities along the power grid. Officials on Tuesday said the program will enable the country to build BESS projects at strategic locations as needed by the transmission and distribution network, and also leverage different energy storage technologies.

Israel Katz, the energy and infrastructure minister, said the initial buildout will total 800 MW/3,200 MWh. The four facilities will each have 200 MW of capacity, and each will have four hours of storage duration. Katz said the large-scale storage projects are the "first of their kind" in Israel "with a significant capacity," and represent the country's continued move toward the use of more renewable energy resources.

Officials said a buildout of BESS projects also would help Israel's power sector remain self-sufficient, without interconnection to neighboring countries' power systems. Israeli officials have a goal of supplying at least 30% of the country's electricity needs from renewable energy by 2030. Much of that would come from the region's abundant solar power resources. PUA, the country's energy regulatory agency, has said Israel needs about 2 GW/8 GWh of energy storage online in order to best integrate renewable energy onto the power grid. Israel today burns fossil fuels for much of its electricity production, with natural gas—nearly all of it produced domestically—providing about two-thirds of power output. The PUA in April of this year began a program to subsidize electricity customers that pair solar power with energy storage. The program is designed to reward those who store solar energy, then use that energy for their own use during periods of higher demand for electricity.

Officials said the projects in Gilboa will store energy from renewable energy projects across the northern part of Israel. That energy then can be sent to urban areas in Israel at times of peak electricity demand. The four BESS projects, spread across 71 acres, will be built near an existing national power transmission line. Israel's northern region also is home to several existing and planned industrial complexes, along with numerous solar power arrays.

Power Mag

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

4 May 2023

New York Power Authority given broad authority to own, operate, build and finance renewable energy projects

The New York Legislature on Tuesday passed a \$229 billion Fiscal Year 2024 budget that directs the New York Power Authority, or NYPA, to build, own and operate renewable energy projects. The move is intended to help the state reach targets established in a 2019 law to cut statewide greenhouse gas emissions by 85% over 1990 levels by 2050. The bill also requires six peaker plants in New York City operated by NYPA to be shut by 2030, five

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years sooner than called for by Democratic Gov. Kathy Hochul. Critics say they are among the most polluting oil and gas plants and are typically sited in low-income neighborhoods.

Gavin Donohue, president and CEO of the Independent Power Producers of New York, said NYPA's expanded role in energy markets is unnecessary. "There's no shortage of private companies" seeking to finance and build renewable energy projects in New York, he said Wednesday in an interview. The legislation calls for NYPA to "plan, design, develop, finance, construct, own, operate, maintain and improve, either alone, or jointly with other entities," renewable energy projects that could include new solar and wind farms and energy storage projects.

Assembly member Robert Carroll, D-Brooklyn, the bill's primary sponsor, said that following a four-year lobbying effort, the Build Public Renewables Act that was included in the budget will transform NYPA "from a moribund agency to the most dynamic builder and owner of public renewables in the nation." Lee Ziesche, a spokesperson for Public Power NY, which lobbied for the Build Public Renewables Act, said advocates got three of four provisions they sought. In addition to the expanded role for NYPA and shutting peaker plants, the legislation will favor union labor in building renewable energy projects.

The one provision sought by several unions, their allies in the Legislature and the Democratic Socialists of America that failed to make it into the legislation was a requirement that the NYPA board include representatives of community groups, labor unions and others that backers said would make the agency's governance more democratic. Others, such as the free-market think tank Empire Center for Public Policy, said such a governing body would pull NYPA away from providing affordable and reliable energy. Opponents to a broader state role in renewable energy development pushed back against the Build Public Renewables Act.

The Alliance for Clean Energy, for example, opposed Hochul's proposal to authorize NYPA to develop, finance and operate renewable electricity generating plants. ACE, which includes environmental groups such as the Natural Resources Defense Council, and power companies such as Invenergy among its members, did not comment on the budget's passage. It has previously said empowering NYPA would not solve transmission constraints, onerous permitting, nonstandardized project taxation and a lengthy and costly interconnection process.

Donohue of the Independent Power Producers of New York said "many of us in the business question if NYPA has the bandwidth" to fulfill much of what will be required in the legislation. NYPA operates 16 generating facilities and more than 1,400 circuit-miles of transmission lines. He also said the role of democratic socialists is partly driving the politics of energy in New York where Democrats are in the majority in both chambers of the legislature, and Hochul, too, is a Democrat. Still, Donohue said "a lot has to play out" between now and 2025 when the NYPA provisions take effect.

Much of the attention from environmentalists and the construction and energy industries on the budget was on New York's status as the first state in the U.S. to ban natural gas in most new buildings. Another measure, the NY HEAT Act was intended to make emission reduction targets a regulatory objective and failed to make it into the state budget.

Utility Dive

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

4 May 2023

TenneT maps out superhighway-connected energy hubs with Target Grid

TenneT has announced its Target Grid, a 2045 grid vision and energy system design from a North West European perspective, mapping power superhighways and energy hubs and placing the North Sea as the main energy source for neighbouring countries.

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With Target Grid, the Dutch-German TSO is proposing a network of Direct Current (DC) superhighways and energy hubs, the DC grid (electricity superhighways), and a significantly improved existing Alternating Current (AC) grid. This combination of energy hubs – connected by the superhighways – aims to ensure that renewable electricity can be transported long distances from the North Sea to consumers and industry and that the electricity grid remains reliable.

Target Grid is based on the highest electrification scenarios of the Dutch I13050 (Integrated Infrastructure Survey 2030-2050) and the German NEP2023 (Grid Development Plan). In these scenarios, the Netherlands and large parts of Germany will need a network configured to support a fully renewable energy system, which is sufficiently robust to ensure security of supply. The Target Grid maps out such a future grid that is capable of meeting society's growing electricity demand.

Smart-Energy
<http://www.smart-energy.com/>

4 May 2023

India's largest oil company targets 10 GW of renewables by 2030

ONGC, India's largest crude oil and natural gas company, aims to reach 10 GW of renewable energy capacity by 2030 with a capital expenditure of \$12.18 billion. It had 348 MW of installed renewables capacity as of May 30, 2022, and is targeting 5 GW by 2025.

The company said it sees favorable government policies and viability gap funding for offshore wind as key enablers of the energy transition. It has already signed a memorandum of understanding with the government of the Indian state of Rajasthan to set up 5 GW of renewable energy projects. To achieve its goal, ONGC has partnered with Norway's Equinor and Indian developer Greenko.

Under the agreement with Equinor, the two sides will collaborate on renewables, low-carbon fuel, carbon capture storage (CCS), and carbon capture utilization and sequestration (CCUS) opportunities in India. ONGC and Greenko, meanwhile, plan to jointly explore opportunities in renewables, green hydrogen, and its derivatives, including green ammonia.

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

5 May 2023

Ten European energy giants establish Hydropower Alliance

The energy crisis has turned investors' sight back to hydropower. Despite a continuous drought in Europe and strong public opposition to such projects, especially small hydroelectric units, the newly-established Hydropower Alliance is seeking assurances for companies in the segment. The European Commissioner for Energy Kadri Simson met with its representatives in Brussels. She said the Hydropower Alliance united the biggest players and that they have a combined 111 GW in capacity. Hydropower is a crucial source of renewable electricity for the European Union, according to Simson.

Enel, EDP, EDF, Engie, Iberdrola, Fortum, Statkraft, Uniper, Vattenfall and Verbund said hydropower is an essential pillar of the energy transition, adding that investments are necessary to achieve climate neutrality by 2050, ANSA reported. Their technology provides "affordable, dispatchable and safe renewable electricity," the platform reads. Hydropower facilitates the integration of large quantities of renewable energy from intermittent sources into the system, providing flexibility including storage, the article adds. The utilities highlighted the role of repowering existing facilities and installing more of them for the EU's goals.

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The Hydropower Alliance asked the 27-member bloc's executive body to "create an adequate, reliable and sustainable economic, political and legal framework for investments." It pointed to the need for a strategy like the ones for other kinds of renewables and said hydropower should be included in the list of strategic technologies, the news outlet learned. So far, the EU's approach was mostly to refurbish and upgrade existing plants. Locals and environmentalists, usually hostile to new projects as harmful, argue there is little potential left untapped, at least as far as sustainability is concerned. Moreover, after last year's extreme drought across the continent, hydropower reservoirs are drying up again. It raises the question of the viability of proposed investments. The association of French hydropower operators, FHE, claims that the country's output in the sector could grow by a fifth and that it is equivalent to last winter's entire coal and gas imports.

The role of pumped storage is particularly relevant. Such systems can keep excess electricity from wind and solar power plants when demand drops, and deliver it to the grid when there is a deficit, for instance upon unpredicted and unfavorable changes in the weather. It is the only conventional energy storage technology for now as batteries are expensive and in short supply. The resistance to hydropower projects is also strong in the Western Balkans, which aren't part of the EU, and elsewhere in Southeastern Europe. In March, Albania declared the Vjosa, one of the last wild rivers in the continent, a national park with the highest level of protection. The decision followed a decade-long struggle against proposed dams.

Balkan Energy News

<http://balkangreenenergynews.com/>

5 May 2023

RWE Breaks Ground for the Onshore Substation for Thor Offshore Wind Farm

RWE has started construction on the onshore substation for its Danish offshore wind farm Thor. The groundbreaking ceremony marks the beginning of one of the largest Danish contributions to the green transition. Thor will be the country's largest offshore wind farm to date and will create many jobs and vocational training positions locally. Today's groundbreaking ceremony takes place in the presence of Steffen Damsgaard, Chairman of the Technology & Environment Committee of the Municipality of Lemvig, Troels Ranis, Senior Vice President of Confederation of Danish Industry, Kristian Jensen, CEO of Green Power Denmark, Peter Weinreich-Jensen, Director of Siemens Energy Denmark and Pia Lanken, CEO of RWE Renewables Denmark.

Erik Flyvholm, Mayor of Lemvig: "This is perhaps one of the most important groundbreaking ceremonies in Lemvig in recent times. It is the beginning of a massive wind project and the beginning of an energy adventure in Northwestern Jutland to the benefit of the climate, the region and the municipality. I wish for a fruitful partnership with RWE that will benefit both parties." The onshore substation will be built in the municipality of Lemvig. Siemens Energy will carry out the civil engineering and construction works together with MT Højgaard Danmark, one of Denmark's leading companies for large-scale building and infrastructure projects.

Pia Lanken, CEO of RWE Renewables Denmark: "I am very excited to be part of today's groundbreaking ceremony, which will be a big step forward for Denmark's green transition. We already work closely with the local community, politicians, fishermen and educational institutions. It is crucial that we are in dialogue with these stakeholders because we want to contribute to local development. This is one of the reasons why we have committed to employing at least 30 vocational trainees for this major project."

RWE also expects to recruit at least 60 local people to work on the operation and maintenance of Thor offshore wind farm. Thor will supply green electricity to more than one

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million Danish households. RWE will build Thor offshore wind farm in the Danish part of the North Sea, approximately 22 kilometers off the coast of Thorsminde. With a planned capacity of more than 1,000 MW, Thor will be Denmark's largest offshore wind farm to date. Once it is fully operational, which is scheduled for the end of 2027 at the latest, Thor will be able to produce enough green electricity to supply the equivalent of more than one million Danish households.

It is not only the electricity produced that will help solve the climate crisis. Sustainable solutions will also be deployed at Thor offshore wind farm. This means, among other things, that half of the 72 wind turbines will be equipped with CO₂-reduced steel towers from Siemens Gamesa. The towers' steel plates are made of greener steel that produces at least 63 percent less CO₂ emissions compared to conventional steel. RWE will be the first developer in the world to utilise Siemens Gamesa's GreenerTowers. In 2010 RWE built and now operates the Danish Rødsand 2 offshore wind farm, located south of the Danish island of Lolland.

Evwind

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

6 May 2023

TenneT Awards Eur 5.5 Billion Offshore Wind Cable Contracts

TenneT has awarded NKT, Nexans, and a consortium of Jan De Nul, LS Cable, and Denys with contracts to install 525 kV HVDC cable systems for ten offshore wind projects in the Netherlands and Germany. The total volume of the contracts for the production and installation of the ten cable systems amounts to approximately EUR 5.5 billion. With this agreement, TenneT completes the process of the large-scale tender cable launched in November 2022 for grid connection systems dedicated to a total of fourteen offshore and one onshore corridor project.

NKT will realise the connections for Nederwiek 3, landing onshore at either Geertruidenberg or Moerdijk and the connections for Doordewind 1 and Doordewind 2, landing at Eemshaven, in the Netherlands. NKT President and CEO Alexander Kara said: "We are very satisfied to once again be selected as a key partner for the ambitious 2GW Program which confirms our strong position in the high-voltage DC power cable market. We recently announced the contract award from TenneT for Ijmuiden Ver and Nederwiek 2, which are also part of the 2GW Program and will be some of the world's first offshore wind farms to apply the 525 kV XLPE HVDC technology to offshore power cables."

Nexans has been awarded a contract for the cable connections of BalWin3 and LanWin4, to be connected at Wilhelmshaven as well as LanWin2 in Lower Saxony, to be connected in the Heide area in Schleswig-Holstein, Germany. The initial value is EUR 1.7 billion, with major subcontracted works to be added once the project-specific call-offs are signed, Nexans said. The French cable maker will be responsible for the full Engineering, Procurement, Construction and Installation – including civil works (EPCI) of over 2,160 kilometres of subsea and land cables.

The consortium of Jan De Nul, LS Cable, and Denys will realize the cable connections in Lower Saxony, to BalWin4 and LanWin1, both to be connected in Unterweser area, and LanWin5 in the Rastede area, Germany. This consortium has also been awarded the contract for the TenneT part of the onshore 525 kV DC corridor NordOstLink in Schleswig-Holstein Germany, a partner project with 50Hertz. The combined DC cable length of the awarded portfolio to the consortium is almost 2,000 kilometres. The scope of work of the contracts includes cable design, engineering, production, delivery, project management, onshore-, offshore- and nearshore installation of 525 kV HVDC cables and all jointing works in submarine and on land sections.

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The selected parties expect to start activities in the course of 2023. The expected start for onshore cable laying activities will be after 2025. For offshore, the cable laying activities will be in 2026. All 2 GW offshore projects are expected to be operational by 2031. The NordOstLink project is expected to be operational in 2032. “After recent awarding of the first five cable connections and the announcement of the suppliers for the sea- and land-based converter stations, we are again very proud to announce the partners for the multi-year agreement to produce and install the cables for these crucial and innovative grid connection systems for the energy transition. Together, we will deliver around 7,000 kilometers of HVDC cable for fifteen on- and offshore grid connection systems in Germany and the Netherlands by 2032 with this award alone,” Tim Meyerjürgens, COO of TenneT, said.

New to the 2 GW direct current (HVDC) solution based on 525 kV is that it requires only one cable system, and therefore limits the impact on the environment, nature, and the seabed, TenneT said. A cable system will consist of four cables, a ‘plus’ and ‘minus’ pole cable, a metallic return cable, and a fiber optic cable. TenneT, together with market parties, started to develop a research and development (R&D) initiative for the 2 GW, 525 kV HVDC grid connection system in 2020. With twice the size of current connection systems, the new 2 GW standard needs an offshore cable system operating at a 525 kV HVDC voltage level and uses innovative extruded insulation types. The certification of cable suppliers in 2022 is a result of the constructive and intensive dialogue between TenneT and the relevant market parties involved, the TSO said. Together, the collaboration has provided insights on the required functionality and performance of this innovative HVDC system.

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China's first deep-sea floating wind power platform finishes offshore construction

Offshore construction work on Haiyou Guanlan, China's first deep-sea floating wind power platform, has been completed. The CNOOC announced that it has completed laying a 5,000-meter dynamic subsea cable. The cable opens a power transmission artery connecting the offshore oil and gas platforms of the Wenchang oilfield to Haiyou Guanlan, which is off the coast of south China's Hainan Province.

Haiyou Guanlan's subsea cable is designed to operate at a depth of 120 meters, including three conductors with a cross-section of 70 square millimeters for 35-kilovolt cables and three 12-core optical fibers. One end of the subsea cable is fixed to gas platforms of the Wenchang oilfield, and the other end is connected to Haiyou Guanlan. The subsea cable can meet a strict requirement of stable operation for 25 years, even in complex and harsh subsea conditions. With an installed capacity of 7.25 megawatts, the average annual power generation capacity of Haiyou Guanlan can reach 22 million kilowatt-hours. This means it will save nearly 10 million cubic meters of fuel gas each year and can meet the annual electricity demand of 30,000 Chinese people. It can also reduce carbon dioxide emissions by 22,000 tons.

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Floating PV in Portugal Can Exceed National 7 GW Target

Researchers from the University of Évora have concluded in a study that the installed capacity of floating solar systems can exceed the 7 GW target defined in the country's National Energy and Climate Plan 2030.

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Researchers from the Renewable Energies Chair at the University of Évora in Portugal have concluded in a study on floating photovoltaic systems in Portugal that the installed capacity can exceed the national goal of 7 GW, defined in the National Energy and Climate Plan (PNEC) 2030 for PV energy in the electrical sector.

Researchers identified the region of Alentejo in south-central and southern Portugal as the area with the greatest potential as it combines water surfaces and solar resources. The University of Évora said in a statement that even applying an 85% reduction to the total surface of water available at the national level, “the potential of floating photovoltaic solar energy systems can reach at least an estimated national capacity of 10.8 GW.”

“The analysis results from a mapping of the potential areas for floating photovoltaic solar systems applied in the national territory, establishing a relationship between the availability of solar radiation and the geographical distribution of the bodies of water in the different regions of the country,” said Luís Fialho, a researcher at the University of Évora's Renewable Energies Chair. The renewable energy department information shows that the Renewable Energy Chair is currently supervising Sierra Brava, the largest European experimental plant for floating photovoltaic systems, owned by Acciona Energía, which comprises five different technologies with a total power of 1,125 MW.

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