

# ***WORLD POWER SYSTEMS REVIEW***

***15 February 2022***

**1 February 2022**

## **California ISO releases first-ever 20-year Transmission Outlook**

To help enable and accelerate the integration of new renewable electricity resources onto the grid, the California Independent System Operator (ISO) has published a draft of its first-ever 20-Year Transmission Outlook. The long-range blueprint for the interconnected high-voltage system was developed at the same time as the ISO's customary annual 10-year Transmission planning process.

"There is a critical need for more proactive, long-term transmission planning and coordination," said Elliot Mainzer, ISO president and CEO. "In developing the 20-year Outlook, we have worked closely with the California Energy Commission (CEC), California Public Utilities Commission (CPUC) and a diverse group of stakeholders to begin delineating the long-term architecture of the California grid and better align power and transmission planning, resource procurement and interconnection queuing. This type of forward-looking planning and coordination is essential to meeting the state's energy policy goals in a reliable and cost-effective fashion and strengthening interconnections with our partners across the West." Over the past year, the ISO collaborated with the CEC and CPUC to evaluate diverse generating resources, land-use patterns and transmission alternatives. Primary drivers of the 20-year roadmap are the state's goals of getting all electricity from carbon-free resources by 2045, and further electrifying the transportation, industrial, and residential sectors.

The draft Outlook is based on the planning assumption that nearly 120 gigawatts (GW) will need to be added to the energy grid by 2040 to meet California's rising demand for electricity, including utility scale solar, energy storage, geothermal, offshore wind plants and clean-energy resources from out-of-state. The 20-year Transmission Outlook will help expedite key decisions about optimal power and transmission development options and guide the interconnection of new resources to the grid. With typical lead times of eight to 10 years for many of these transmission projects, it is critical to expand the planning horizon and bring together a wide cross-section of stakeholders to identify and set priorities for different possible solutions.

"California is working very diligently to ensure resource adequacy during this transition to a carbon-free system," Mainzer added. "Last year, the state brought 79 clean-energy projects onto the grid, the most it has ever added in a single year. This improved transmission planning and coordination with regulatory agencies and other partners will help ensure that California can sustain and even exceed that pace and meet the challenge of achieving a reliable clean-energy grid." The 10-year plan provides for the approval of new transmission infrastructure over a shorter timeframe and triggers permitting and construction activities through a formal process required under its federal tariff. The 2021-2022 10-year plan recommends approval of \$2.9 billion in projects to improve reliability and access to renewable generation in the next decade. Those projects may be initiated later this year, subject to approval by the ISO Board of Governors in March.

**CAISO**

<http://www.aiso.com>

**2 February 2022**

## **Brussels unveils plan for 'green' gas and nuclear label**

The European Commission unveiled on Friday night a draft green label for nuclear and gas power plants, which aims to facilitate the financing of facilities that help combat climate change.

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The draft text, which has been under discussion for months and is still provisional, was sent to member states on 31 December, shortly before midnight, according to several sources contacted by AFP. It sets out the criteria for classifying investments in nuclear or gas-fired power plants for electricity generation as "sustainable", with the aim of directing "green finance" towards activities that contribute to reducing greenhouse gases. France, which wants to revive its nuclear industry - a stable, low-carbon source of electricity - and central European countries such as Poland and the Czech Republic, which need to replace their highly polluting coal-fired power stations, have been calling for such a text. Such a classification allows for a reduction in financing costs, which is crucial for the projects concerned and for the states willing to support them.

Environmentalists oppose the recognition of gas-fired power plants (which emit CO<sub>2</sub>) and nuclear power, because of the production of radioactive waste. And a small group of countries, led by Germany, have fought to exclude the atom.

But both the pro-gas and pro-nuclear groups agree that renewable energies (wind, solar, etc.), already labelled by the Commission, suffer from intermittent production and will not be able to provide low-cost electricity in the coming years, and that their production can be controlled. The Brussels proposal, consulted by AFP, sets conditions for the inclusion of nuclear and gas, including a time limit.

For the construction of new nuclear power plants, projects will have to have obtained a building permit before 2045. Work to extend the life of existing plants will have to be authorised before 2040. Guarantees regarding waste treatment and the dismantling of nuclear installations at the end of their life are also required. As regards gas, described as a "transitional energy source", investments will be recognised as "sustainable" for plants with low CO<sub>2</sub> emissions. The Commission has set drastic thresholds: less than 100g of CO<sub>2</sub> per kWh, a threshold that experts say is unattainable with current technologies. However, a transition period is foreseen: power plants obtaining their construction permit before 31 December 2030 will see this threshold raised to 270 g of CO<sub>2</sub> per kWh on condition that they replace existing infrastructures that are much more polluting and meet a series of criteria.

*Euro News*

<http://www.euronews.com>

**2 February 2022**

## **DOE, DHS, HUD Launch Joint Effort with Puerto Rico to Modernize Energy Grid**

The U.S. Department of Energy (DOE) today joined the Departments of Homeland Security (DHS) and Housing and Urban Development (HUD), and the Commonwealth of Puerto Rico to launch a new effort to accelerate work to strengthen the island's grid resilience and advance new initiatives to enhance Puerto Rico's energy future. The parties executed a Memorandum of Understanding (MOU) that enhances collaboration among federal agencies and the Commonwealth, and kickstarts the PR100 Study. The PR100 Study is a community-driven and locally tailored roadmap to help Puerto Rico meet its target of 100% renewable electricity, improve power sector resiliency, and increase access to more affordable energy and cleaner air. Dozens of grid modernization projects will start construction this year, and Puerto Rico's utility will sign contracts for at least 2 GW of renewable energy and 1 GW of energy storage projects. The Biden-Harris Administration remains committed to helping states and territories reach their clean power targets to move the nation closer to achieving President Biden's 2050 goal of a net-zero carbon economy.

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“The Biden-Harris Administration is helping Puerto Rico strengthen the island’s resilience, and in the process unlock its potential for cheap and abundant renewable energy,” said Secretary of Energy Jennifer M. Granholm. “Today’s commitments and the launch of the PR100 Study show that 2022 will be a year of action to modernize Puerto Rico’s grid and increase energy resilience as we accelerate our work with Puerto Rico to execute data-driven, community-tailored pathways towards 100% clean electricity. DOE is proud to partner with Governor Pierluisi to help deliver a more reliable grid, good-paying jobs, lower utility bills, and healthier air to the more than 3 million American citizens living in Puerto Rico.”

From emergency restoration to planning for the long-term recovery of Puerto Rico’s energy sector, DOE, DHS through FEMA, and HUD have been providing hands-on technical assistance to help Puerto Rico plan and prepare to execute over \$12 billion in Federal recovery and grid modernization funds, efforts that are delivering concrete change in 2022:

- **First FEMA Permanent Work Projects Will Begin Construction** – FEMA, the Central Office for Recovery, Reconstruction and Resilience (COR3), the Puerto Rico Electric Power Authority (PREPA), and LUMA Energy have established working groups and collaboration processes to reconstruct the island’s electric grid. It is expected that at least 138 projects will be under construction bidding or have begun initial construction activities, including island-wide substation repairs, the replacement of thousands of streetlights across five municipalities, and the creation of an early warning system to improve dam safety.

- **Clean Energy Projects Will Move Toward Construction** – To achieve its clean energy goals, Puerto Rico is procuring 3750 MW of renewable energy and 1500 MW of energy storage, enough clean energy to power over 1 million homes. Over the last year, DOE has provided technical assistance to the Government of Puerto Rico to align the procurement process with global best practices and ensure access to capital to ultimately lower electricity costs for ratepayers who currently pay twice the national average. PREPA is currently in final negotiations of the first tranche of proposed projects: 844 MW of renewable energy, 220 MW of energy storage, and two Virtual Power Plants.

- **Implementation of \$1.9 billion in HUD grant funding for electrical power system improvements and enhancements** – In 2022, the Puerto Rico Department of Housing (PRDOH) will implement an action plan to enhance electrical system reliability and resilience. Puerto Rico’s proposed plan includes the development of both small and large microgrids. The action plan, funded through HUD’s Community Development Block Grant (CDBG) disaster recovery program and developed with assistance from DOE, focuses on community investments for vulnerable populations and low-and moderate -income households.

- **Emergency Preparedness Tool Will Launch Ahead of the 2022 Hurricane Season** – DOE and the Pacific Northwest National Laboratory (PNNL) are developing a tool that will combine detailed models of the Puerto Rico electric system with hurricane forecasting to help the Government of Puerto Rico better prepare in the days leading up to a hurricane in order to accelerate the immediate response and save lives. This tool is being developed specifically for Puerto Rico in close partnership with the utility.

As dozens of new energy recovery projects move rapidly towards construction, DOE is leveraging the world-class expertise and advanced modeling capabilities of its National Labs with the launch of the Puerto Rico Grid Resilience and Transition to 100% Renewable Energy (PR100) Study, designed to ensure that funded energy recovery actions align with Puerto Rico energy policy and resilience needs, are coordinated across sectors, and align with industry best practices. Led by the National Renewable Energy Laboratory (NREL), the

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study will connect local decisionmakers and communities with tools, training, and analytical support to enable planning and operation of the Commonwealth's power grid with greater resilience against disruption as it moves toward its 100% renewable energy goal.

*DOE*

<http://www.energy.gov>

## **2 February 2022**

### **China and Argentina sign nuclear project deal**

The nuclear power plant, to be sited near Lima, about 100 kilometres north west of Argentina's capital, Buenos Aires, will use China's Hualong One technology - the HPR1000 reactor, which will use enriched uranium as fuel and light water as coolant and moderator, with a rated gross power of 1200 MWe and an initial life of 60 years.

The contract was signed by the director of Nucleoeléctrica Argentina José Luis Antúnez and CNNC President Yu Jianfeng in an online event also attended by the countries' ambassadors to each other, and other dignitaries. It is part of cooperation agreements between the two countries, including the one signed in 2015 for cooperation on the construction project for a pressurised water reactor in Argentina.

The two companies said it was the beginning of a new cycle of cooperation and mutual understanding "which both companies foresee will be of auspicious prosperity for both nations, allowing the strengthening of ties for the peaceful development of nuclear energy generation, nuclear science and technology and industrial development". In a statement, CNNC said it was a deal that would help "green and low-carbon development, jointly address climate change, help achieve the global goal of carbon peaking and carbon neutrality and jointly build a nuclear energy community with a shared future for mankind".

Hualong One is a third generation nuclear power plant jointly developed by China National Nuclear Corporation and the China General Nuclear Power group. The development in Argentina will be the second outside China, following one in Karachi in Pakistan. The construction project is part of Argentina's nuclear action plan agreed in June, which involves an investment of more than USD8 billion. Argentina's nuclear sector has three pressurised heavy water reactors with a total generating capacity of 1641 MWe across the Atucha 1, Atucha 2 and Embalse power plants.

*World Nuclear News*

<http://www.world-nuclear-news.org>

## **3 February 2022**

### **Iberdrola's 880MW pumped hydro plant in Portugal to go online in mid-2022**

Iberdrola expects its 880MW pumped hydro plant at the Tâmega energy storage complex in northern Portugal to become fully operational in the middle of this year. It has just connected the first of four 220-MW turbines at the Gouvães hydroelectric power plant, which will provide 880MW of pumped hydro energy storage (PHES) alongside two run-of-river hydroelectric plants which bring the complex's total hydroelectric power to 1,158MW. Gouvães and one other will go online in mid-2022 while a third will start in mid-2024.

The Gouvães plant will increase Portugal's pumped hydro power by 30% from where it is today. The Tâmega energy storage complex is being built on the Tâmega river with €1.5 billion (US\$1.69 billion) of investment by Iberdrola, with the help of a €650 million loan from the European Investment Bank (EIB). It will be able to produce 1,766 GWh per year and will

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be a hybrid plant with two attached wind farms totalling 300MW. The wind power will partially be used to drive the water back up to the Gouvães reservoir, as well as being fed into the grid. The Gouvães plant ranks as one of the larger pumped hydro projects of recent years.

It is the same size as a recently proposed 900MW project in Wyoming, US, and a bit smaller than India's 1.2GW project in Andra Pradesh. The latter will be combined with 2GW of solar and 400MW of wind power, awarded to developer Greenko through a competitive tender process, recorded as the lowest priced renewables-plus-storage project in the world when it was approved in 2018.

Australia's first new pumped hydro project in nearly 40 years is 250MW and currently under construction. Elsewhere a 500MW project in California and a 450MW project in Scotland are at different stages of gaining approval. Tâmega will provide around half the pumped hydro power of the largest existing pumped hydro plant in Europe, the 1,780MW Cortes-La Muela in Valencia, Spain, which was built in the 80s.

*Energy Storage News*

<http://www.energy-storage.news>

7 February 2022

## Robot dog for PV plant monitoring

Spanish renewable energy company Acciona is using a robot dog to monitor the performance of a utility scale solar plant it is operating in the Desert of Atacama, in northern Chile.

Called Spot, the robot is being used as a replacement for drones, the company explained. "The maximum payload of a drone can be about five kg, while Spot can carry almost 15 kilos," said Carlos Crespo, head of Acciona's robotics and artificial intelligence group. He also explained that drones are able to move faster than Spot and, however, their batteries usually last only up to 30 minutes of autonomous operation, while the robot dog can operate for up to 90 minutes.



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The device has a built-in thermal vision system that generates thermographic reports on the status of the different PV plant components, as it walks between the panel rows following a programmed route. According to the robot developer – US-based Boston Dynamics – the big benefit of the robot legs is that they are terrain-independent.

“A robot with legs has the most traversability, and it can be used regardless of the type of terrain at a given site. And Spot’s built-in, state-of-the-art navigation stack – all of the software and the hardware that the robot needs to get from point A to point B – is quickly making Spot the ‘go-to’ resource,” the company said in a statement.

Boston Dynamics sold its first robot dog in 2020 at a price of \$74,500. It has been used so far by various industries for a wide variety of applications. Initially, Spot was used to inspect the construction works of active infrastructure tunnels, according to the US manufacturer. Acciona decided to incorporate the quadrupedal robot into its operations in 2019.

*pv-magazine*

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

**7 February 2022**

## **NGESO’s Voltage Pathfinder results in multi million pound consumer savings and delivers engineering solutions needed for tomorrow’s greener grid**

National Grid ESO has today announced the results of the Pennines Voltage Pathfinder worth £22.5m, securing reactive power capability until 2034 and saving consumers millions of pounds. As part of introducing greater competition onto the network, National Grid ESO’s second voltage pathfinder compares market-based solutions against transmission owner solutions.

Dogger Bank C’s transmission asset and National Grid Electricity Transmission (NGET) will between them provide 700 MVAR of reactive power capability in the North East of England and West Yorkshire regions between 2024 and 2034.

Julian Leslie, Head of Networks at National Grid ESO said: “These services take us another step closer to 100% zero carbon operation, showcasing Britain’s innovation in engineering and driving competition within the system, ultimately saving consumers millions of pounds. Reactive power capability is vital for managing voltage and being able to operate a zero carbon system of the future so we’re excited to see that an offshore wind farm’s transmission asset will deliver reactive power to support the wider network for the first time in Britain.”

As Britain’s system operator, National Grid ESO has an obligation to ensure that voltage is managed within strict guidelines to ensure the safe and secure provision of electricity to consumers and businesses. The Voltage Pathfinder identified two areas where reactive power solutions would be needed in the years ahead and introduced competition to ensure the most cost-effective services were selected.

In the North East of England, Dogger Bank C wind farm’s transmission asset will help stabilise voltage on the grid after the expected closure of Hartlepool nuclear power station in March 2024. In the West Yorkshire area, the Pathfinder process found that the counterfactual submitted by NGET was the most economic option for the ESO to manage voltage in the best interests of consumers.

NGET’s delivery of shunt reactors at high voltage substations, will provide a reactive power service following the closure of other power stations in the area.

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Lydia Ogilvie, Director of Network Strategy and Operations at National Grid Electricity Transmission (NGET) said: "As agreed with the ESO and Ofgem we cannot bid into the pathfinder process in the way other market participants can. Our agreed role for this pathfinder has been to provide a baseline to enable the ESO to compare the economic benefits of a fixed-term contract to a long-term regulated asset solution. The analysis undertaken by ESO in this instance suggests that there is an economic case for NGET to develop 500 MVAR reactive capability in West Yorkshire. We will work with ESO and Ofgem to further understand the results and the consumer savings outlined and progress with the required projects to deliver the best outcomes for consumers."

Steve Wilson, SSE Renewables Project Director for Dogger Bank Wind Farm, said: "Dogger Bank Wind Farm is continually pushing the boundaries of what can be achieved through the delivery of an offshore wind farm, breaking records and setting new milestones here in the UK and globally."

"Today's announcement that Dogger Bank C will become the first UK offshore wind farm to use the functionality of its transmission assets to support National Grid ESO in balancing the network at the lowest cost is further proof of the outstanding innovation that our Dogger Bank team continually strives to deliver. It also demonstrates the significant positive impact that offshore wind energy, and Dogger Bank in particular, is having on delivering the UK's net zero carbon electricity system while driving down long-term energy costs for British consumers."

**NGESO**

<http://www.nationalgrideso.com>

## **8 February 2022**

### **Ireland: New record for wind-generated electricity reached on Saturday**

A new record for wind-generated electricity was reached on Saturday, according to the operator of the national electricity grid, Eirgrid. In a statement this afternoon, Eirgrid said the record high of 4,584 megawatts was reached on Saturday at 1:15pm, which it noted was just before Ireland kicked off against Wales at the Aviva Stadium.

This was equal to 86% of demand across the island at the time. It surpasses a previous record of 4,489 megawatts reached in February last year. "For over 24 hours from Saturday morning, engineers in our control centres in Belfast and Dublin managed a power system that comprised over 70% wind power," said Eirgrid Chief Executive Mark Foley.

**RTE**

<http://www.rte.ie>

## **8 February 2022**

### **China: Sinopec Completes Carbon Capture Project**

Sinopec has completed the construction of China's first megaton carbon capture, utilization and storage (CCUS) project. This will reduce carbon emission by 1 million tons per year, the equivalent of planting nearly 9 million trees and shutting down 600,000 economy cars.

The construction of the Project was initiated in July, 2021 and is consisted of two parts – Sinopec Qilu's carbon dioxide capture and Shengli Oilfield's carbon dioxide displacement and storage. The carbon dioxide captured by Sinopec Qilu will be transported to Shengli Oilfield for further displacement and storage via green transport mode, achieving

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an integrated application of carbon capture, displacement and storage to seal the carbon dioxide underground and drive the oil out – turning the waste into treasure.

Sinopec Qilu has newly constructed a liquid carbon dioxide recovery and utilization unit with a capacity of 1 million tons per year, which includes compression unit, refrigeration unit, liquefaction refining unit and supporting facilities to recover carbon dioxide from the tail gas of coal-to-hydrogen plant with a purification rate of over 99 percent.

Between now and 2025, Sinopec will build another megaton CCUS demonstration project in partnership with Sinopec Nanjing Chemical Industries Co., Ltd. in its affiliated Sinopec East China oil and gas fields and Sinopec Jiangsu Oilfield to achieve the industrialized development of CCUS and widen the prospects as China advances to achieve carbon peak and carbon neutrality.

*World Energy*  
<http://www.world-energy.org>

**10 February 2022**

## **Brazil: contract signed allowing resumption of Angra 3 works**

Electronuclear said the consortium made up of Ferreira Guedes, Matricial and ADtranz can now press ahead with the work to complete unit 3 of the Angra nuclear power plant in Rio de Janeiro. The consortium was chosen last July after a successful bid of BRL292 million (USD56.1 million) for the tender. After completing the appeal stages, the three companies successfully underwent a compliance assessment, before the Electronuclear board, at the end of January, approved the signing of the contract.

Electronuclear said: "With the contract signed the consortium will start mobilising the construction site to, soon, restart the construction of the plant." The so-called critical path acceleration plan includes the completion of the concrete superstructure of the Angra 3 reactor building. The company added: "In addition, an important part of the electromechanical assembly will be carried out, which includes the closing of the containment steel sphere and the installation of the used fuel pool, the polar bridge and the semi-gantry crane."

There will be a separate tender held to complete the civil works and electromechanical assembly of the plant. Construction of the unit was halted for a second time in 2015, but is 65% complete. Electronuclear said last July it hopes to start operations in November 2026.

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

**10 February 2022**

## **France remains Europe's biggest power exporter despite winter imports**

France maintained its position as the biggest net exporter of power in Europe in the second half of 2021, despite an extreme reliance on imports at the beginning of winter.

The French situation caused additional stress on European power prices, whereas during the summer, French exports mitigated the impact of the gas crisis. That was the standout highlight of a new report on the European electricity market by energy data analyst EnAppSys.



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The report describes the value of imports and exports in Europe during the last six months of 2021. It found that France's total net exports amounted to 21.5TWh, with most of the power flowing to Italy (7.5TWh) and Great Britain (6TWh).

Jean-Paul Harreman, director of EnAppSys BV, said: "Although France remained the biggest net exporter of power in Europe since the start of 2021, activity on the interconnectors changed significantly between autumn and winter. In Q3, exports from France to neighbouring countries remained consistently high, reaching an all-time largest export volume of 21.6TWh. Q4 was much more variable, and France became a major importer moving into winter as day-ahead prices rose on the continent and high French electrical heating demand pushed up prices relative to neighbouring countries over much of November and December, incentivising more flows into France. Even structural importers of French power such as Italy and Great Britain at times reversed their interconnector flows to alleviate the tightness in France. This cold December for France came alongside high demand, low wind and hydro generation, followed by a series of nuclear maintenance outages toward the end of the year, which contributed to the lowest nuclear availability levels in recent history. During this time, France mainly relied on imports from Belgium and from Spain, which switched from being a net importer to a net exporter during the last six months of the year. Peak French imports were as high as 13 GW."

The second largest net exporter across the period was Sweden with 13.8TWh, and Norway was in third place with 8TWh. This comes despite Scandinavia being hit by the coldest seasonal temperatures in 50 years from November to December, the effect of which was further amplified by the heavy electrification of heating systems in Norway.

When net exports as a percentage of demand were taken into consideration, France only exported 9.8% of its energy demand. In comparison, Bosnia ranked first with a net export of 35%, followed by Bulgaria (31%) and Czechia (24%). As a result, Sweden, which in the first half of the year was the second largest net exporter at 16% of demand, fell to fourth place in the second half of the year despite net exports increasing to 23% of demand. Italy remained the biggest net importer during the last six months of 2021, sourcing 20TWh from outside the country, of which 9.4TWh came from Switzerland and 7.5TWh from France.

Britain remained Europe's second biggest net importer, recording a net import of 12.9TWh, up slightly from 12.3TWh in the previous six months. This was sourced mainly from France (6.05TWh), with 3.47TWh imported from the Netherlands and 3.41TWh from Belgium. Potential import capacity in Britain increased by 1.4GW as the North Sea Link (NSL) came online on October 1. This is the first direct link to Norway, which generates the vast majority of its electricity from hydropower and is therefore less sensitive to carbon (EU ETS) prices. These prices increased substantially from €57.81/tce (\$66.10) on July 1 to €79.39/tce (\$90.77) on December 31, meaning countries with a lower-carbon fuel mix benefit from relatively cheaper power and there is an increased likelihood of exports to other countries with higher prices.

Jean-Paul Harreman said: "Since the beginning of its operation, the overall trend on NSL has been the exporting from Norway to Britain at maximum capacity. Imports to Norway from Britain were seen on only 12 days across its first three months of operation (usually overnight). Originally the NSL was scheduled to operate at half capacity for the first month. However, this restriction has since continued as Statnett, the Norwegian transmission operator, claimed constraints around the interconnector station mean they are unable to export more than 700MW. This comes during a time of relatively low hydro reserves in Norway whilst the energy markets across Europe are under stress from high wholesale prices. An additional reduction in expected import capacity was suffered in Britain after a fire

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at National Grid's IFA 1 converter station on September 15 took one 1GW bipole out of action until October, with the other still offline, which accounts in part for the reduction in French import and export volumes during the last quarter. The full 2GW capacity on IFA 1 is expected to return by March 28, 2022."

*Power Engineering*

<http://www.powerengineeringint.com>

**10 February 2022**

## **Form Energy announces partnership with Georgia Power to test 100-hour iron-air battery**

Georgia Power will collaborate with Massachusetts-based startup Form Energy to deploy an energy storage project of up to 15 MW/1500 MWh using a novel iron-air-exchange flow battery technology, the companies said Wednesday.

Form, which is backed by the Bill Gates-led investment fund Breakthrough Energy Ventures, has a battery design it says can offer up to 100 hours of electricity storage at a price of less than \$20/kWh. The partnership with Georgia Power marks the company's largest announced deployment.

In its 2022 Integrated Resource Plan (IRP) released in January, Georgia Power requested approval to own and operate 1,000 MW of energy storage by 2030 with a focus on long-duration storage. Georgia Power parent company Southern Company is an investor in Form Energy through the Energy Impact Partners firm and highlighted the company in its IRP.

*Utility Dive*

<http://www.utilitydive.com>

**10 February 2022**

## **SJVN plans to build 10GW solar projects in Rajasthan, India**

Satluj Jal Vidyut Nigam (SJVN) has revealed plans to develop 10GW of solar power projects in Rajasthan, India over the next five years. The solar projects are estimated to require an investment of INR500bn (\$6.67bn). The Indian power generation and transmission company has submitted a letter of intent (LOI) in this connection to the Rajasthan state government.

SJVN plans to set up solar power projects/parks on the land banks to be assigned by Rajasthan Renewable Energy. According to SJVN, the commercial production of the projects will begin in a phased manner. The electricity produced by the facilities will be transmitted to the beneficiaries via the nearest substations. The company plans to sign power purchase agreements for the produced energy through competitive tariff-based opportunities present in the market.

It stated: "SJVN has proposed to develop Solar Power Projects in Rajasthan as the state has largest solar power potential in the country. It receives the highest solar radiation (5.72 Kwh/m<sup>2</sup>/day) and also has the highest number of more than 325 clear sunny days in a year. All these factors work in our favour of developing the Projects."

The company further stated that the solar power projects in Rajasthan will help it reach its goals of 5GW by 2023, 25GW by 2030, and 50GW by 2040. Besides, the projects will contribute simultaneously towards the Indian government's renewable capacity addition target of 500GW by the end of this decade.

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SJVN is a joint venture between the Indian and the Himachal Pradesh governments. Founded in 1988, the public sector undertaking is mainly engaged in hydroelectric power generation and transmission. In September last year, the company received 1GW solar power project contract in the bidding organised by Indian Renewable Energy Development Agency (IREDA).

**NS Energy**

<http://www.nseenergybusiness.com>

**11 February 2022**

## **DOE Establishes \$6 Billion Program to Preserve America's Clean Nuclear Energy Infrastructure**

The U.S. Department of Energy (DOE) today released a Notice of Intent (NOI) and Request for Information (RFI) on the implementation of the Bipartisan Infrastructure Law's \$6 billion Civil Nuclear Credit Program. The nuclear credit program supports the continued operation of U.S. nuclear reactors, the nation's largest source of clean power. Both the NOI and RFI are critical first steps to help avoid premature retirements of nuclear reactors across the country, preserving thousands of good-paying clean energy jobs while avoiding carbon emissions. The nuclear credit program is DOE's most recently announced program to support the President's clean energy goals and ensure that communities across the country continue to see the benefits of sustainable energy infrastructure.

Nuclear power currently provides 52% of the nation's 100% clean electricity, and the Biden-Harris Administration has identified the current fleet of 93 reactors as a vital resource to achieve net-zero emissions economy-wide by 2050. Shifting energy markets and other economic factors have already resulted in the early closure of 12 commercial reactors across the United States since 2013. These closures have led to an increase in carbon emissions in those regions, poorer air quality, and the loss of thousands of high-paying jobs.

The newly enacted Bipartisan Infrastructure Law created the Civil Nuclear Credit Program (CNC), allowing owners or operators of commercial U.S. reactors to apply for certification and competitively bid on credits to help support their continued operations. Today's RFI seeks input on the structure and execution of the CNC Program, including the certification process and eligibility criteria, invitations to submit bids for credits, and the allocation of credits.

The Department seeks input from all interested parties, including but not limited to nuclear reactor owners and operators, state and local regulators and officials, Tribes, impacted community partners, environmental advocacy groups, and other partners involved in clean energy and electric generation, distribution, and planning.

Under the law, applications must prove that the reactor will close for economic reasons and demonstrate that closure will lead to a rise in air pollution. DOE must also determine that the U.S. Nuclear Regulatory Commission has reasonable assurance that the reactor will continue to operate safely. Credits will be allocated over a four-year period beginning on the date of selection to reactors that are certified by the Department.

DOE is also issuing a Notice of Intent informing interested parties of the Department's plans to seek applications and provide potential applicants the opportunity to submit voluntary, non-binding expressions of interest in the CNC Program.

**DOE**

<http://www.energy.gov>

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## **Counterfeit parts found in U.S. nuclear plants -inspector general**

Counterfeit parts have been discovered in U.S. nuclear plants, potentially increasing the risk of a safety failure, the inspector general of the federal nuclear industry regulator said in a report released on Thursday.

The report is a blow to a U.S nuclear industry that has shrunk in recent years due to competition from renewable power and plants that burn natural gas and lingering public concerns following high-profile mishaps including a 2011 tsunami at Japan's Fukushima plant. "Counterfeit parts are safety and security concerns that could have serious consequences in critical power plant equipment required to perform a safety function," the report from the inspector general's office of the Nuclear Regulatory Commission (NRC) said.

The report, which looked into concerns that the counterfeit parts are present in most, if not all power plants, sampled a plant in each of the NRC four regions and found data showing fake parts were used in a plant in the U.S. Midwest. In addition, it said a "well placed NRC principal" told the inspector general about two component failures at plants in the U.S. Northeast that plant operators determined involved fake parts. And a recent inspector general audit report revealed that the parts are present at nuclear operating plants, it said without further details.

U.S. Department of Energy staff had identified more than 100 incidents involving counterfeit, fraudulent or suspect items (CFSI) in agency reactors in fiscal year 2021 alone, the report said. Counterfeit parts found at reactors have included an emergency service water pump shaft, temperature sensors used to identify steam line breaks, and breaker switches meant to prevent fires, it said. The report did not name nuclear reactors involved or the origin of the parts.

The report added that the NRC may also be underestimating the number of counterfeit parts in plants "because it does not require licensees to report CFSI except in extraordinary circumstances, such as those involving the failure of equipment that performs a significant safety function." The NRC said it is reviewing the report. "While the report's findings include the ongoing presence of CFSI at U.S. reactors, nothing in the report suggests an immediate safety concern," said spokesperson Scott Burnell. "The NRC's office of the Executive Director for Operations is thoroughly reviewing the report and will direct the agency's program offices to take appropriate action."

The Department of Energy did not immediately respond to a request for comment. An advocacy group said the report shows the NRC needs to work harder to counter the problem. "This troubling report shows that the NRC needs to do much more to ensure that counterfeit or fraudulent parts with potentially dangerous defects are kept out of US nuclear power plants -- including strengthening requirements for plant owners to report and correct such problems as soon as they are discovered," said Edwin Lyman, director of nuclear power safety at the Union of Concerned Scientists, nonprofit group.

The administration of President Joe Biden has said it believes nuclear reactors will play an important role in decarbonizing the nation's economy to fight climate change, because they do not emit significant amount of greenhouse gases. Nuclear power backers also point out that reactors do not release particulate pollution, which fossil fuel plants do, that can harm human health.

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

# ***WORLD POWER SYSTEMS REVIEW***

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## **France plans to build up to 14 new EPR nuclear reactors by 2050**

France has unveiled its energy strategy to 2030, including a recovery plan for civil nuclear power in the country. As part of the plan, France is expected to build 6 new next-generation EPRs (European Pressured Reactors II) and to launch studies for the construction of 8 additional EPRs as well as SMRs (Small Modular Reactors) to have 25 GW of new nuclear capacity by 2050. The first new EPR should be commissioned in 2035 and the lifetime of existing nuclear reactors would be expanded after 50 years. Meanwhile, EDF has signed an agreement to purchase the nuclear activity of GE Steam Power. In addition, France is targeting 100 GW of solar capacity by 2050 (a ten-fold increase), 36 GW of onshore wind (doubling) and 40 GW of offshore wind across around 50 offshore wind parks. Most of power generation would then be covered by renewables and nuclear.

In May 2021, EDF submitted plans to build six new EPRs to the French government. The new EPR 2 reactors would be built by pairs at Penly, Gravelines and Bugey or Tricastin, enabling to reduce costs and construction times. The group would wait until the commissioning of its Flamanville EPR project, since the French government has delayed a decision on new nuclear reactors until after the Flamanville 3 project is commissioned (now expected in 2023-2024). The cost for 6 new reactors is estimated at €46bn.

*Enerdata*

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**14 February 2022**

## **Orsted and Eversource start building New York's 'first' offshore wind project**

The 130MW project will be owned by utilities Eversource and Orsted as part of efforts to help New York state achieve its energy transition and greenhouse gas emissions reduction targets through the deployment of renewable energy capacity.

New York has set a target to deploy 9,000MW of offshore wind energy capacity by 2035, approximately 30% of the state's total electricity and enough energy to power up to 6 million households. The goal is also expected to help the state create 10,000 jobs.

Offshore wind energy capacity is expected to play a key role in helping New York to achieve a zero-carbon grid by 2040.

South Fork Wind is being built 35 miles east of Montauk Point and will comprise twelve 11MW turbines developed by Siemens Gamesa. Once operational, the project will produce enough electricity to power 70,000 homes. A transmission network developed for the project will transport energy to meet demand in the Town of East Hampton.

Over a 25-year period, the plant is expected to avoid the emissions of 6 million tonnes of carbon, the equivalent of removing 60,000 cars from the road for a year. The project is one of the initiatives selected under a 2015 Long Island Power Authority request for proposals to address growing power needs on the east end of Long Island.

*Power Engineering*

<http://www.powerengineeringint.com>