

WORLD POWER SYSTEMS REVIEW

15 December 2022

1 December 2022

Renewable electricity growth is accelerating faster than ever worldwide, supporting the emergence of the new global energy economy

The growth of the world's capacity to generate electricity from solar panels, wind turbines and other renewable technologies is on course to accelerate over the coming years, with 2021 expected to set a fresh all-time record for new installations, the [IEA says in a new report](#). Despite rising costs for key materials used to make solar panels and wind turbines, additions of new renewable power capacity this year are forecast to rise to 290 gigawatts (GW) in 2021, surpassing the previous all-time high set last year, according to the latest edition of the IEA's annual Renewables Market Report.

By 2026, global renewable electricity capacity is forecast to rise more than 60% from 2020 levels to over 4 800 GW – equivalent to the current total global power capacity of fossil fuels and nuclear combined. Renewables are set to account for almost 95% of the increase in global power capacity through 2026, with solar PV alone providing more than half. The amount of renewable capacity added over the period of 2021 to 2026 is expected to be 50% higher than from 2015 to 2020. This is driven by stronger support from government policies and more ambitious clean energy goals announced before and during the COP26 Climate Change Conference.

“This year's record renewable electricity additions of 290 gigawatts are yet another sign that a new global energy economy is emerging,” said IEA Executive Director Fatih Birol. “The high commodity and energy prices we are seeing today pose new challenges for the renewable industry, but elevated fossil fuel prices also make renewables even more competitive.” The growth of renewables is forecast to increase in all regions compared with the 2015-2020 period. China remains the global leader in the volume of capacity additions: it is expected to reach 1200 GW of total wind and solar capacity in 2026 – four years earlier than its current target of 2030. India is set to come top in terms of the rate of growth, doubling new installations compared with 2015-2020. Deployments in Europe and the United States are also on track to speed up significantly from the previous five years. These four markets together account for 80% of renewable capacity expansion worldwide.

“The growth of renewables in India is outstanding, supporting the government's newly announced goal of reaching 500 GW of renewable power capacity by 2030 and highlighting India's broader potential to accelerate its clean energy transition,” said Dr Birol. “China continues to demonstrate its clean energy strengths, with the expansion of renewables suggesting the country could well achieve a peak in its CO2 emissions well before 2030.” Solar PV remains the powerhouse of growth in renewable electricity, with its capacity additions forecast to increase by 17% in 2021 to a new record of almost 160 GW. In the same time frame, onshore wind additions are set to be almost one-quarter higher on average than during the 2015-20 period. Total offshore wind capacity is forecast to more than triple by 2026.

The IEA report expects this record growth for renewables to take place despite today's high commodity and transport prices. However, should commodity prices remain high through the end of next year, the cost of wind investments would go back up to levels last seen in 2015 and three years of cost reductions for solar PV would be erased. Despite rising prices limiting growth, global biofuel demand in 2021 is forecast to surpass 2019 levels, rebounding from last year's huge decline caused by the pandemic. Demand for biofuels is set to grow strongly to 2026, with Asia accounting for almost 30% of new production. India is expected to rise to become the third largest market for ethanol worldwide, behind the United States and Brazil.

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Governments can further accelerate the growth of renewables by addressing key barriers, such as permitting and grid integration challenges, social acceptance issues, inconsistent policy approaches, and insufficient remuneration. High financing costs in the developing world are also a major obstacle. In the report's accelerated case, which assumes some of these hurdles are overcome, average annual renewable capacity additions are one-quarter higher in the period to 2026 than is forecast in the main case.

However, even this faster deployment would still fall well short of what would be needed in a global pathway to net zero emissions by mid-century. That would require renewable power capacity additions over the period 2021-26 to average almost double the rate of the report's main case. It would also mean growth in biofuels demand averaging four times higher than in the main case, and renewable heat demand almost three times higher.

IEA

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

1 December 2022

Badeel and ACWA Power to develop the MENA region's largest solar energy plant in Saudi Arabia

The Water and Electricity Holding Company (Badeel), a wholly owned company by the Public Investment Fund (PIF), and ACWA Power, a leading Saudi developer, investor, and operator of power generation, water desalination, and green hydrogen plants worldwide, today signed power purchase agreements to develop a 2,060 MW solar photovoltaic (PV) plant in Al Shuaibah, Makkah province (the project). This is the largest facility of its kind in the Middle East to date. The project is expected to achieve commercial operation by Q4 2025.

The project will be jointly owned by Badeel and ACWA Power. Each company will hold a 50% equity stake through the establishment of "Shuaibah Two Electrical Energy Company", a joint company dedicated to the development of the project. In the same context, the Shuaibah Two Electrical Energy Company announced the signing of the power purchase agreement for the project with the Saudi Power Procurement Company (SPPC), the offtaker within this project that is a concrete representation of the energy transition in play—a giga scale development in sustainable energy that will play a key role in translating Saudi Vision 2030 goals.

"This marks a key achievement toward PIF's commitment to developing 70% of Saudi Arabia's renewable energy by 2030. Utilities and Renewables is one of PIF's priority sectors as part of its domestic strategy, which focuses on unlocking the capabilities of promising sectors to enhance Saudi Arabia's efforts in diversifying revenue sources," said Yazeed A. Al-Humied, Deputy Governor and Head of MENA Investments at PIF. Mohammad Abunayyan, ACWA Power Chairman said, "Under the guidance of our visionary leadership and the Ministry of Energy, Saudi Arabia continues to accelerate its ambitious plans for diversifying its energy mix to include renewable energy. It is a great honour to partner with Badeel and SPPC in developing this milestone project which will set a benchmark for sustainable energy development in the region."

"Solar power is a key component in unlocking positive economic, environmental, and social outcomes for the betterment of communities across our great nation. We remain committed to developing local capabilities in technology, supply chain, and talent and ensure they are realized to their fullest potential," he added. Badeel and ACWA Power will build, own, and operate Al Shuaibah 2 facility and the electricity produced will be sold to SPPC. When complete, it will power 350,000 homes. Shuaibah 2 is ACWA Power's sixth solar energy facility in Saudi Arabia. In addition, ACWA Power's KSA portfolio comprises 13 power, water desalination, and green hydrogen plants. Badeel and ACWA Power are also

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developing the Sudair Solar PV 1500 MW project; which was the first cornerstone renewable energy project in PIF's program.

Solar Quarter
<http://solarquarter.com/>

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AMEA Power achieves financial close for 1GW renewable energy projects in Egypt

UAE-based renewable energy developer AMEA Power has achieved financial close to develop 1GW of wind and solar energy projects in Egypt with an investment of \$1.1bn. AMEA Power will develop, own, and operate a solar photovoltaic (PV) plant and a wind farm, each with a capacity of 500MW. The projects are said to expand its clean energy portfolio in Egypt to 2GW.

To be located in the Aswan governorate, the solar PV plant is being financed by World Bank's International Finance Corporation (IFC), Dutch Entrepreneurial Development Bank (FMO), and the Japan International Cooperation Agency (JICA). The wind farm, which will be located in the Red Sea Governorate, is being developed in collaboration with Sumitomo. The latter will own a 40% stake in the Egyptian wind farm.

A consortium of banks that include Japan Bank for International Cooperation (JBIC) and IFC will finance the project. Commercial International Bank, Standard Chartered Bank, Sumitomo Mitsui Trust Bank, and Sumitomo Mitsui Banking will participate in the wind project as co-lenders under Nippon Export and Investment Insurance (NEXI) cover.

IFC North Africa and Horn of Africa regional director Cheick-Oumar Sylla said: "These projects highlight the private sector's essential role helping to deliver clean, affordable power, especially at a time of growing challenges from climate change and pressures on the environment. "Egypt has ambitious renewable energy goals and we are proud to support AMEA's expansion into Africa as well as its partnership with Egypt to accelerate the country's renewable energy transition."

The solar and wind projects have completed their feasibility studies. Both are underpinned by power purchase agreements (PPAs) with the Egyptian Electricity Transmission Company (EETC) and usufruct agreements with the New and Renewable Energy Authority (NREA). The solar and wind projects are expected to contribute to the Egyptian government's efforts to increase the supply of electricity generated from renewable sources to 42% by 2035. AMEA Power chairman Hussain Al Nowais said: "These landmark projects reflect the long-term commitment, ambition and growth of AMEA Power. "The Company is leading the development of renewable energy across Africa, which through its global and regional partnerships, will deliver clean energy to millions of people around the continent."

NS Energy
<http://www.nsenegybusiness.com/>

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Gravitricity launches gravity energy storage pilot in India

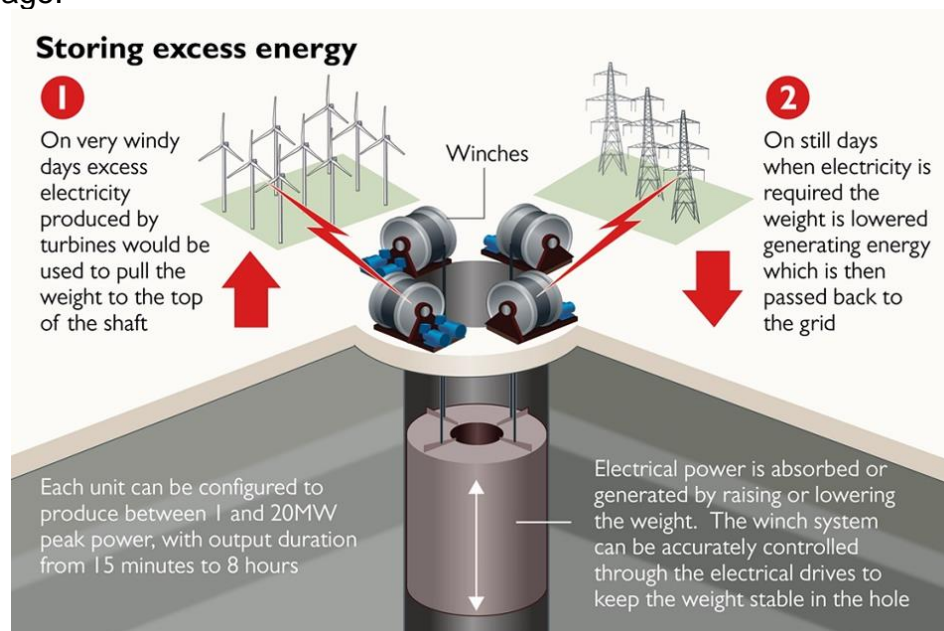
Gravitricity, a Scottish energy storage specialist, has launched a project to demonstrate the feasibility of its gravity energy storage technology for grid balancing in India, as the nation has a growing share of renewables in its power mix.

The company has secured GBP 194,000 (\$232,750) from the UK government's Ayrton Fund to find a demonstration site in India for its gravity energy storage technology. The Ayrton Fund, which is part of the UK's International Climate Finance commitment, aims to give developing countries access to the latest cutting-edge tech to help reduce their emissions and meet global climate change targets.

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Gravitricity has developed a gravity-based energy storage system that works by raising heavy weights (up to 12,000 tons) in a deep shaft and then releasing them when energy is required. The gravity storage technology could be ideal for India, which aims to install more than 500 GW of renewables by 2030, up from 100 GW in 2021. This rapid increase in variable renewables generation – much of it solar – will bring with it a need for energy storage.



Gravitricity claims its system can operate for up to 50 years and store energy at half the cost of lithium-ion batteries. In India, it has partnered with Panitek Power on the 12-month project, which aims to identify and shortlist sites for a demonstration scheme. Gravity storage is a relatively simple technology. It doesn't rely on any rare earth metals, and has a very long lifespan, so it can be manufactured and deployed locally, said Chris Yendell, project development manager at Gravitricity.

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

2 December 2022

Pyramid power - New-wave floating wind design ups sails for French Atlantic debut

The first of a new-look pyramid-shaped floating wind power design from Eolink is set to be installed in the French Atlantic in 2024 following new investment from Spanish developer Acciona Energy and project management firm Valorem.

The final investment decision (FID) clears the way for construction of a 5MW version of the concept, a slimline design that promises a reduction of the mass of steel greater than 30%, as part of the €22m (\$23m) France Atlantique project at the SEM-REV test site off the country's west coast. "The entry of Acciona Energia and Valorem as capital investors in Eolink makes it possible to complete the financing of the project. Historical investors Breizh Up, Force29 and the Finistère Angels remain investors and so confirm their support for Eolink," the company said in a statement. "This step marks the formalization of the financing and marks the beginning of the phase of manufacturing."

For France Atlantique, Eolink has partnered with the Ecole Centrale de Nantes, which operates the SEM-REV. Valorem will take charge of the turbine-platform assembly and operation and maintenance of the unit once online. The pilot floating unit, which will measure 52 metres x 52 metres and weigh 1,100 tons, will fly a 143-metre-diameter rotor star.

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“A modular design using steel panels, such as is the common practice in the shipbuilding industry, will facilitate the process of industrialisation with a view to deploying the technology on a large scale,” said Eolink. Manufacture of the France Atlantique unit will begin “before the end of 2022”, with mooring and anchoring installed next spring and final commissioning a year later.



Eolink, which earlier this year won a €6m award from the French government for work on a 20MW floating wind concept, is one of next-generation designers that is departing from offshore oil-inspired platforms, along with companies including Denmark's Stiesdal Offshore Technologies, Spain's X1Wind and Saitec, Norway's World Wide Wind and the US' T-Omega. Consultancy DNV calculates floating projects currently make up over 15% of the total offshore wind deployment in the pipeline for switch-on by mid-century, equal to some 264GW of the 1,750GW slated to be installed.

Recharge

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

5 December 2022

The Morocco-UK Power Project to power 7 million homes in the UK by 2030

As the United Kingdom reels under the pressure of rising energy prices, a silent transformation is taking place nearly 2,485 miles (4,000 kilometers) away to curb its dependence on conventional forms of power generation.

A desert at Guelmim Oued Noun in central Morocco will primarily play host to the Morocco-UK Power Project, which aims to develop 10.5GW of renewable energy from solar and wind power, of which 3.6GW would be supplied to the UK, for an average of 20+ hours a day. The zero-carbon energy will be transported using four 2,361-mile (3,800 kilometers) subsea HVDC cables, helping the UK to fulfill eight percent of its energy requirements by 2030. The project also includes the setting up of a 20GWh battery facility to ensure a near-constant supply of power.

The use of HVDC cables can ensure the energy loss from the transmission can be brought down to as low as two percent from nearly 30 percent with conventional alternating-current (AC) systems. The project will also be the longest to use such submarine cables, with the largest network now only measuring 447 miles (720 kilometers) between Britain and Norway. The project aims to utilize the desert's high solar intensity and convection current winds for achieving the proposed output. The proposed outlay is planned to be achieved by building facilities in approximately 200 kilometers square of available area. The company behind the project, Xlinks, has already signed an agreement with the National Grid of the

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UK to provide two 1.8GW connections in Devon, helping to supply clean power to over seven million homes in the UK.

Morocco is also spearheading a move towards clean energy by setting a target of achieving 52 percent of its power capacity from renewable energy by 2030. The project can help the UK to have a zero-carbon electricity network by 2035 to meet its sixth carbon budget, and aid in the race to achieve net-zero emissions by 2050.

Moving onto the cost of energy supplied, the company claims that the use of the Contracts for Difference (CfD) scheme in the UK "would make the project a source of revenue rather than cost, delivering energy at £48 (US\$63.43)/MWh CfD, below the government Department for Business, Energy and Industrial Strategy's (BEIS') central forecast for energy prices," Xlinks told Energy Storage News. The project is also set to generate about 10,000 jobs, both in Morocco and the UK combined, over the course of the next eight years.

The amount of resources and energy needed to deliver such a large-scale project with batteries, aluminum cables, and solar equipment raises the question of how much renewable energy projects just offset the carbon footprint to a different location. The argument of offloading advanced nations' carbon outputs to other developing parts of the world with such projects has also attracted criticism lately.

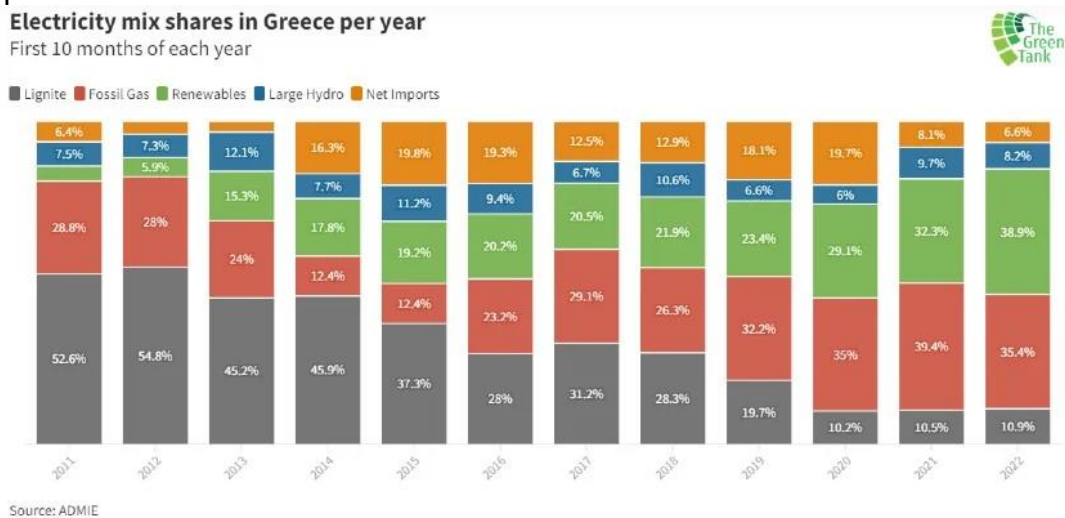
Interesting Engineering
<http://interestingengineering.com/>

5 December 2022

Greece produces record 47.1% of electricity from renewables so far in 2022

The share of electricity demand in Greece covered from renewable sources climbed to an unseen 47.1% in the first ten months of the year. Net imports covered 6.6%, the least since 2013. In October alone, demand was 9% lower than in the same month of 2021.

Electricity production from renewables including large hydropower plants amounted to 20.2 GWh in the ten months through October, according to data released by Greece's Independent Power Transmission Operator – IPTO or Admie. It exceeded the combined share of fossil gas and lignite, at 19.9 GWh, for the first time so far for the period, Green Tank reported.



Fossil fuels were still ahead in the first nine months of the year, but an increase in renewable electricity production, a significant decline in electricity demand, high gas prices and other economic parameters reversed the trend. Power output from fossil gas and lignite dropped 58% and 23%, from October 2021. Renewables including large hydro met 47.1% of demand in the first ten months or five percentage points more year over year. The share

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of net imports was 6.6%, the lowest level since 2013. Total demand tumbled 9% in October on an annual basis. At 3.65 GWh, it was the fourth-lowest result for any month in the past ten years. Green energy's share and total output surged despite a decline in the large hydro segment, caused by drought. Lignite accounted for 10.9% from January through October, just 0.4 points more than in the same period of 2021.

Renewables without large hydro achieved the highest percentage increase (18.4%) in production, to 16.7 GWh, beating gas for the first time and becoming the largest source. Monthly production from renewables was the second-highest so far, trailing the record from July. On October 7, the demand in Greece's electric power system was covered 100% from renewable energy sources for at least five hours for the first time. Greek renewables and especially solar are set for a record year, as 888 MW was added in the first six months and the combined capacity of new installations is expected to rise even further in the second half.

Balkan Green Energy News
<http://balkangreenenergynews.com/>

5 December 2022

Brazil's Ceara state grants enviro approval for 4.6-GW solar project

The Brazilian state of Ceara on Friday granted environmental approval for a 4.6-GW solar photovoltaic (PV) project which will generate power for the production of green hydrogen in Brazil's northeast. The approval was given by Ceara's state council on the environment Coema.

The Kuara Solar Complex is being developed by Brazilian energy firm Omega Energia SA in the municipalities of Aracati and Icapui. The PV complex will consist of 8 million solar panels, covering an area of some 8,000 hectares (19,768 acres). No financial information was disclosed in the press release. According to the local government, Kuara's output will be used to power a green hydrogen plant that a unit of Australian Fortescue Metals Group Ltd is planning to build in the northeast of Brazil.

Last month during the COP 27 summit in Egypt, Ceara and Fortescue Future Industries (FFI) reaffirmed their plan under which large-scale green hydrogen production could begin in the state as early as 2027. The feasibility studies on the project are underway and if the results are positive, FFI expects to make a final investment decision by 2024. Under the deal with the Australian investor, the state of Ceara has pledged to encourage large-scale investments in the development of a green hydrogen hub in the Pecem Industrial and Port Complex, as well as to help provide investment and legal certainty.

Renewables Now
<http://renewablesnow.com/>

7 December 2022

China: PV industry on steady growth path

China's photovoltaic or PV industry is on a fast track of development with new installations and exports hitting record highs, and will stay resilient amid mounting challenges from fiercer global competition and trade uncertainties, experts said.

They made the remarks after reviewing a statement by the US Department of Commerce on Friday that some Chinese solar manufacturers had circumvented tariffs by assembling equipment in Southeast Asia before shipping them to the United States. Some of the companies concerned, such as BYD Hong Kong, Trina and Vina Solar, said it was a preliminary determination by the US Department of Commerce, and had no impact on them so far. Media reports said the companies assured they will follow up on the subsequent processes.

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The US Department of Commerce said on Friday it will conduct further verifications in the coming months and the final determination is currently scheduled for May 1, by which time the companies concerned will get the opportunity to comment on the findings. Jiang Yali, a solar analyst at energy research provider BloombergNEF, said the anti-circumvention tariffs have a two-year exemption period, so the short-term impact is not significant.

"In fact, US orders of anti-dumping duty and countervailing duty on solar cells and modules will have a bigger influence on their companies and projects, as the inability to expand production capacity enough within a short time to meet domestic demand will only increase the cost of equipment purchases for local projects," she said. Experts said China's PV industry is facing challenges from trade barriers and other countries' preferential policies to support local PV players. Yet, China's PV industry is on a fast track of development, buoyed by market demand and policy support under China's green commitments. In the first 10 months of this year, China's newly installed PV capacity hit a record 58 gigawatts, up 98.7 percent year-on-year, said the China Photovoltaic Industry Association. The total export volume of China's PV products (silicon wafers, cells, modules) was about \$44.03 billion during this period, a record high and year-on-year increase of 90.3 percent, the CPIA said.

"With a complete photovoltaic industry chain and comparatively low production costs, China owns a majority of the world's PV supply chain. The country now supplies over 78 percent of the world's crystalline silicon and more than 90 percent of the globe's silicon wafers," Jiang said. The International Energy Agency released a report in July that said China's share today in all the manufacturing stages of solar panels exceeds 80 percent, and the country is home to the world's top 10 suppliers of solar PV manufacturing equipment.

The IEA also said that China has been instrumental in bringing down costs worldwide for solar PV, with multiple benefits for clean energy transitions. Wang Bohua, the honorary secretary-general of the CPIA, said many domestic PV manufacturers are now ramping up output to tap the burgeoning market, which may intensify competition and lead to overcapacity.

Wang said Chinese PV manufacturers are also facing fierce global competition as overseas producers are stepping up efforts to promote the development of local PV manufacturing. In October, the European Commission endorsed a new Solar Photovoltaic Industry Alliance, with the aim of scaling up manufacturing technologies. The commission said on its website the alliance will help the European Union reach over 320 GW of newly installed PV capacity by 2025, and almost 600 GW by 2030. The US is also supporting its PV development through incentives. In August, the US introduced the Inflation Reduction Act of 2022, which stipulates \$30 billion in production tax credits to accelerate domestic manufacturing of solar panels, wind turbines, batteries and processing of critical minerals.

China Daily

<http://www.chinadaily.com.cn/>

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California Lease Sale Winners Are: RWE, Equinor, CIP, Ocean Winds, and Invenergy. Floating Wind Farm Capacities Higher than Initially Estimated

The winners of the first US offshore wind lease sale on the Pacific coast and the first-ever to procure floating wind capacity in the country are: RWE Offshore Wind Holdings, Equinor Wind US, Invenergy California Offshore, California North Floating (Copenhagen Infrastructure Partners), and Central California Offshore Wind (Ocean Winds).

The US Bureau of Ocean Energy Management (BOEM) has brought in USD 757.1 million to the Treasury from the winning bids for the five lease areas and said that this well exceeded the first lease sales that were held in the Atlantic. The lease sale included a 20 per cent credit for bidders who committed to a monetary contribution to programmes or

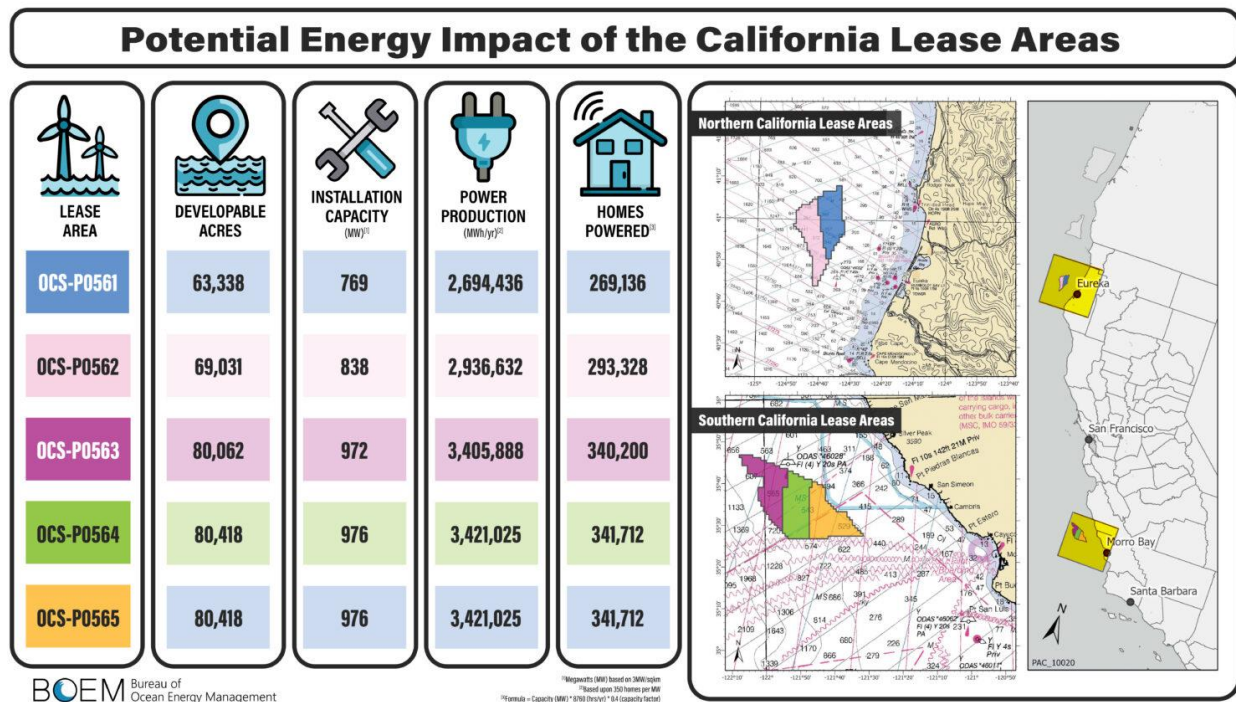
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initiatives that support workforce training programmes for the floating offshore wind industry, the development of a US domestic supply chain for the floating offshore wind energy industry, or both.

This credit will result in over USD 117 million in investments for these programmes or initiatives, BOEM says. As offshoreWIND.biz wrote today, based on the US Department of the Interior's note before the New York Bight lease sale and its subsequent results, the California offshore wind auction will also yield much bigger installation capacities than initially estimated due to advancements in offshore wind technology.

Equinor, RWE, Ocean Winds, and CIP have announced immediately after being revealed as provisional winners that their lease areas have the potential to host around 2 GW (Equinor), 2 GW (Ocean Winds), 1.6 GW (RWE), and over 1 GW (Copenhagen Infrastructure Partners) of installed capacity. Shortly after this, Invenergy also said via social media that its lease area has an installation capacity of 1.5+ GW. This is well beyond the originally estimated lease area capacities and almost double the expected total capacity of 4.5 GW, which now climbed to at least 8.1 GW.



The lease area won by RWE (OCS-P 0561) is the smallest of the five offered offshore California and it is one of the two areas auctioned off in the Humboldt Bay lease area. CIP, through its project company California North Floating, has won the lease for the other site in that area (OCS-P 0562). In the Morro Bay lease area, the two biggest lease areas (both covering 80,418 acres) are secured by Ocean Winds (OCS-P 0564) and the US renewable energy developer Invenergy (OCS-P 0565). Equinor has secured the rights for the third Morro Bay lease area, which covers a little over 80,000 acres (OCS-P 0563).

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

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India announces plans to build more nuclear power plants

The Indian government has said it intends to build more nuclear power plants to boost the country's clean energy generation. Union Minister of State for Science and Technology

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Jitendra Singh said that the government has, in principle, given approval for five new locations for building nuclear power plants in the future.

Singh's statement was given as a written reply to a question in Lok Sabha, the lower house of the Indian Parliament. The government has given administrative and financial approval for building ten locally designed, pressurized heavy water reactors (PHWRs) in fleet mode.

These PHWRs are planned to be built over the next three years and each PHWR will have 70MW of capacity, amounting to a total capacity of 700MW. PHWRs use uranium as fuel and heavy water as a moderator. The Indian government is currently building 11 reactors, with a total capacity of 8.7GW. The price of electricity produced from nuclear power is comparable to that of conventional power sources such as thermal power. India currently operates 22 nuclear reactors, with a total capacity of more than 6.7GW.

A 700MW reactor named KAPP-3 has also been connected to the country's grid. Following thermal, hydroelectric and renewable sources, nuclear is the fifth-largest production source of electricity in India, as reported by Mint. The public sector entity, Nuclear Power Corporation of India (NPCIL), is responsible for designing, building, commissioning and operating nuclear power reactors in the country. NPCIL operates under the Indian government's Department of Atomic Energy (DAE). Earlier this year, Indian energy company Azure Power signed an expression of interest (EoI) with the Karnataka state government to develop 1.7GW of renewable capacity. The company plans to invest a total of Rs133bn (\$1.7bn) to develop the projects, which will include solar, wind and hybrid energy assets.

Power Technology

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

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Adani Green commissions 450 MW hybrid wind-solar plant in India

Adani Green Energy Ltd. (AGEL), the renewables unit of the Adani Group, has become the world's largest wind-solar hybrid power developer with the commissioning of its third wind-solar hybrid power plant in the Jaisalmer district of Rajasthan.

The developer now has a cumulative operational hybrid capacity of 1,440 MW, including its newly commissioned 450 MW power plant in Jaisalmer.

The Jaisalmer plant consists of 420 MW of solar and 105 MW of wind. It has a power purchase agreement with Solar Energy Corp. of India (SECI) at a tariff rate of INR 2.67 (\$0.032)/kWh over 25 years.

AGEL's other two operational wind-solar plants include 390 MW and 600 MW in Jaisalmer. It commissioned the plants in May and September, respectively. The company now has a total operational generation capacity of 7.17 GW.

pv-magazine

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

12 December 2022

National Grid stands down coal plants on standby in icy weather

Great Britain's electricity system operator has stood down two coal-fired power stations that were put on emergency standby to keep the lights on amid a spell of cold weather.

Earlier on Monday, National Grid's electricity system operator (ESO) said the two "winter contingency coal units" would be available if required as temperatures dip below zero and demand soars. It said the public should continue to use energy as normal. But the units will not now be needed, with Great Britain's energy needs met by other sources, including

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an anticipated pickup in wind power. Police say no suggestion more are missing in Solihull lake where three children died after falling through ice – as it happened

The government this summer asked the owners of coal-fired power stations to slow closure plans as ministers looked to shore up energy supplies. The coal plants in North Yorkshire that were preparing to operate on Monday are owned by the energy company Drax. They would only operate if instructed to do so by National Grid, and Drax would not have been able to sell the electricity on the open market. A Drax spokesperson said: “National Grid ESO instructed the units to be warmed earlier today so that they were ready to generate power should the country require it. That instruction has since been stood down.”

It comes as snowfall and ice caused travel disruption and forced school closures across the UK. The drop-in temperatures prompted UK power prices to hit a record high on Sunday. Great Britain’s electricity generation system has rapidly moved away from coal in recent years: its first coal-free day was achieved in 2017, while in 2020 the island ran without coal-powered electricity for a month during a sunny May. The use of zero-carbon renewables has increased rapidly to replace it, but the UK has also increased its reliance on natural gas, a fossil fuel. That reliance has proved problematic during 2022 after Russia invaded Ukraine.

Great Britain was heavily dependent on burning gas for electricity generation over the weekend, with low winds and cloudy skies. On Saturday, gas generated 62% of electricity in Great Britain, according to National Grid data. Nuclear power stations generated 14%, while wind and solar accounted for 8% and 1% respectively. Coal accounted for 4%. (Northern Ireland’s energy system operates separately.) “This measure should give the public confidence in Monday’s energy supply,” National Grid ESO said. “The ESO as a prudent system operator has these tools for additional contingency to operate the network as normal and the public should continue to use energy as normal.”

EDF, the French energy giant, said the nuclear fleet in the UK was running at full available capacity for the first time this winter after the return of Hartlepool Unit 1 from a planned refueling outage. EDF operates the fleet, in which the British Gas owner, Centrica, is a minority investor. National Grid warned in October that severe conditions could trigger planned power cuts this winter. Fintan Slye, the executive director of the ESO, said that was still a possibility. But he told BBC Radio 4’s Today programme: “We remain cautiously optimistic through the winter that we will be able to manage it. We have enough supplies secured through the rest of the day that we can manage that and ensure there’s no disruption to customers’ supplies.”

National Grid will run a test of its “demand flexibility scheme”, which encourages households to reduce their energy use during peak times, on Monday evening. Octopus Energy said its customers had been paid £1m for reducing their energy usage during the company’s first four “saving sessions” as part of the scheme. Customers saved on average more than £4 across the four sessions, with the top 5% of savers bringing in almost £20.

The Guardian

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

14 December 2022

DOE hails fusion technology breakthrough on path to achieving abundant zero-carbon energy

Fusion works by combining light atoms, such as hydrogen, into heavier products, such as helium, releasing tremendous energy extracted as heat that holds the key to producing energy. Some waste is produced, but less than what is left behind in a nuclear power plant.

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Scientists and Energy Secretary Jennifer Granholm said the development “will pave the way for advancements in national defense and the future of clean power. The pursuit of fusion ignition in the laboratory is one of the most significant scientific challenges ever tackled by humanity, and achieving it is a triumph of science, engineering, and most of all, people,” said Kim Budil, director of Lawrence Livermore.

Research into fusion has made progress in recent years with broad applications of 3-D printing allowing low-cost production of parts used by fusion machines and numerous designs for testing. Budil detailed to reporters following the announcement the time and work needed to commercialize fusion ignition.

“There are very significant hurdles, not just in the science, but in the technology,” she said. “This is one igniting capsule one time and to realize commercial fusion energy you have to do many things. You have to be able to produce many, many fusion ignition events per minute and you have to have a robust system of drivers to enable that. Commercializing fusion ignition will probably take decades, Budil said. “Not six decades I don’t think. Not five decades, which we used to say,” she said. “I think it’s moving into the foreground and probably with concerted effort and investment a few decades of research on the underlying technologies could put us in a position to build a power plant.”

Andrew Sowder, senior technical executive at EPRI, the Electric Power Research Institute, said the announcement is a “big deal” because scientists have tried for decades to draw out more energy in research than is put in. “For the first time, it really shows that a reaction can produce more power than it consumes,” he said. “Maybe it’s anticipated, but it’s always like many things: a surprise when it actually happens,” he said in an interview Monday. Sowder said the initial success with fusion energy is comparable to the space program when it launched some 60 years ago.

“I would say this would be kind of like getting the first man in orbit,” he said. “You’re not to the moon yet, but you’ve shown you can get the person in space and they survived and they came back alive. This is kind of a first step.” The real work now begins to “turn it into something that can produce economic, practical electricity for the grid and possibly other uses,” Sowder said. “The hard part is building a machine to make something reliably and cost-effective, something that’s competitive with other sources. “It has to be cost-competitive to make it to market,” Sowder said. “The beauty of fusion is it checks a lot of boxes,” Sowder said. “It produces energy when you want it to, it’s a small package, no carbon. It’s scalable. “This becomes an important tool in the toolbox for energy as well as for climate concerns. The more tools you have the better,” he said.

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In the spring, the Lithuanian electricity system will operate completely independently for the first time: “Litgrid” is planning an exclusive test

The test is planned to be carried out on April 22, during which the connections to the IPS / UPS system – Latvia, Belarus and the Kaliningrad region – will be disconnected from the Lithuanian electricity system. Electricity will be supplied to consumers by power plants operating in Lithuania, as well as direct current connections with Poland and Sweden. The balance and frequency of the electricity system will be managed by Litgrid dispatchers.

“In the engineering sense, the test of isolated work is one of the most complex and interesting projects that we implement in preparation for synchronization with continental European networks. For the first time in history, the Lithuanian electricity system will operate completely independently, so we are preparing for the test responsibly: we are working with electricity producers, distribution operators, priority important users, transmission system

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operators of other countries. This year we successfully tested our country's power plants, we will continue the preparatory work," says Rokas Masiulis, CEO of Litgrid.

The test of isolated work was planned for the autumn of this year, but it was decided to postpone it due to the situation in the electricity market. Postponing the test to next year also allows it to be expanded to include a 200 MW system of electricity storage devices, which is scheduled to be installed by the end of this year.

This year, in preparation for the test, an isolated work test study was conducted, information systems were prepared, the country's most important electricity consumers were checked and the country's largest power plants were tested, and the electricity system infrastructure was prepared. In the last year, Litgrid has already carried out two important tests of the electrical system. The first isolated test of a part of the Lithuanian electricity system was successfully carried out in 2020, and in 2021. Litgrid, together with the Polish electricity transmission system operator PSE, conducted an emergency test with the Polish electricity system via the extended LitPol Link connection. Through this connection, the electricity networks of all the Baltic countries will be synchronized with the electricity networks of continental Europe.

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