

WORLD POWER SYSTEMS REVIEW

1 May 2023

15 April 2023

Germany's last three nuclear power stations to shut this weekend

Germany's three remaining nuclear power stations will shut down on Saturday, 12 years after the Fukushima disaster in Japan accelerated the country's exit from atomic energy. The closures mark the conclusion of a stop-start approach to atomic energy and a victory for the country's vociferous anti-nuclear movement. The facilities shutting are in Emsland, in the northern state of Lower Saxony, the Isar 2 site in Bavaria, and Neckarwestheim, in Baden-Württemberg in the south-west.

The shutdowns leave a conundrum for energy policymakers attempting to balance growing electricity demand in one of Europe's industrial superpowers and efforts to decarbonise, against the backdrop of uncertainty caused by the war in Ukraine. Germany last year delayed the closure of the three sites – which provided about 6.5% of the country's electricity in 2022 – after Russia reduced European gas supplies, triggering concerns about a shortage of energy over the winter.

The country began phasing out nuclear power more than two decades ago amid a long-fought campaign against the technology, but, in 2010 Angela Merkel, then chancellor, announced an extension to the life of the country's 17 nuclear plants until 2036 at the latest. This policy was swiftly reversed the following year after an earthquake and tsunami caused the meltdown of reactors at the Fukushima Daiichi nuclear plant in Japan, triggering fresh anti-nuclear protests and political resolve to exit the technology.

Nuclear accidents at Three Mile Island in the US in 1979 and Chernobyl in 1986 had already entrenched the push against nuclear in Germany, which had begun earlier in the 1970s. Germany has switched off 16 reactors since 2003. The final shutdowns have raised questions about security of energy supplies and the outlook for Germany's carbon emissions. The country plans to close all coal-fired power plants by 2038, with the first round of closures planned in 2030.

However, its parliament approved emergency legislation to reopen mothballed coal-fired power plants to aid electricity generation last year. A push to build more terminals to import liquefied natural gas has also been accelerated since the Ukraine war began. Coal accounted for just over 30% of Germany's electricity generation in 2022, ahead of wind – responsible for 22%, gas-fired generation at 13% and solar at 10%. Biomass, nuclear and hydroelectric power made up the bulk of the remainder.

The thinktank Ember has estimated that Germany and Poland will be the EU's two largest producers of coal-fired electricity in 2030, responsible for more than half of EU power sector emissions by that point. Advocates of nuclear power argue that it provides a low-carbon, reliable alternative to fossil fuels for electricity generation. Critics say new projects are costly, frequently delayed and present environmental concerns over the disposal of nuclear waste. Tom Greatrex, chief executive of the UK's Nuclear Industry Association, said the phaseout would worsen carbon emissions and "for a country supposedly renowned for its logical and evidence-driven approach is environmentally damaging, economically illiterate and deeply irresponsible. At a time of heightened concern about energy security, Germany will be abandoning assets that can displace 34bn cubic metres of gas a year."

But Tom Burke, chair of the thinktank E3G, played down fears over energy security, and said a mild winter and high levels of gas storage in Europe meant concerns about power supplies next winter had eased. He said Germany's renewables industry was growing and that improving grid connections and battery storage across the country would be key to moving the country's energy system away from fossil fuels.

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

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17 April 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.

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.



This image of the future electricity grid – with connections over land, at sea and between countries – has, states the TSO, been missing until now. When it comes to grid efficiency, Target Grid designs the energy system from a North West European perspective, with the North Sea as the main energy source for neighboring countries

Electricity production will be connected with immediate use through electricity transport, prioritizing conversion over generation and anticipates a market-driven

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deployment of battery energy storage. When it comes to grid stability, Germany and the Netherlands are faced with similar challenges. According to the TenneT, these include more than a doubling of electricity consumption, five to ten times larger generation capacity, significant levels of required flexibility and, for each country, approximately 70GW of offshore wind renewable energy that has to reach industries and households. Getting these large volumes of electricity to the right place in the future requires a new approach to realise the high-voltage grid of the future.

Next steps

- With the presentation of Target Grid, TenneT is kicking off a dialogue with stakeholders aiming to further develop the plan. Five principles are of importance here:
 - Development of an unambiguous North Sea country strategy 2050 with clear agreements between the North Sea countries.
 - Additional location policy to develop demand centers for energy at the right locations.
 - Timely licensing to develop the energy corridors TenneT has included in Target Grid.
 - An adjustment of the electricity market model is recommended to facilitate the cross-border exchange of electricity from offshore wind and to properly share the costs for this.
 - Finally, TenneT sees the supply chain for critical infrastructure components coming under pressure given the high offshore wind ambitions in the world and the limited supply of critical components, availability of (dock)yards, installation vessels and manpower. TenneT recommends a (European) coordinated strategy to ensure sufficient and, through the years, stable supply chain capacity.

Smart-Energy

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

18 April 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/>

18 April 2023

Saipem completes work at Scotland's largest offshore wind farm

Italy's Saipem has completed the installation of multiple offshore wind turbine foundations for the Seagreen wind farm project offshore Scotland, despite delays due to an accident involving its flagship crane vessel Saipem 7000 last year.

The Italian engineering, construction and installation giant said on Tuesday that the installation work on 114 offshore wind turbine foundations has been completed for the landmark project. The wind farm is being developed by Seagreen Wind Energy — a joint

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venture between the UK's SSE Renewables and French giant TotalEnergies. Saipem said it carried out the installation activities on behalf of the key client Seaway 7.

The £3 billion (\$3.7 billion) Seagreen wind farm is set to become Scotland's largest with 1.1 gigawatts of capacity when fully complete, enough "to power over 1.6 million homes" Saipem said. The company added that the "installation of the foundations has been carried out by the Saipem 7000 vessel, one of the largest semi-submersible crane vessels in the world, during a series of offshore campaigns". Gianalberto Secchi, chief operating officer of Saipem's offshore wind business, noted that the completion of the installation project consolidates the company's "strategic positioning in the offshore wind sector".

SSE in November said that it had taken a £57 million (\$67.8 million) hit buying high-priced power as a result of delays to the Seagreen offshore wind project, caused in part by an accident that required repairs to the Saipem 7000 last year. The vessel was involved in a "lifting incident" last April after leaving Scotland for Norway for maintenance midway through its schedule for installing jacket foundations for Seagreen turbines. Saipem said after a preliminary investigation that the main block wire broke during the test-lifting operation. The vessel returned to Scottish waters in June.

TotalEnergies bought its 51% stake in Seagreen in 2021 in a deal that marked the French supermajor's first large-scale foray into offshore wind and forms part of a plan to reach 35 GW of renewable electricity capacity worldwide by 2025, with 12 GW of that it described as under development.

Upstream

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

19 April 2023

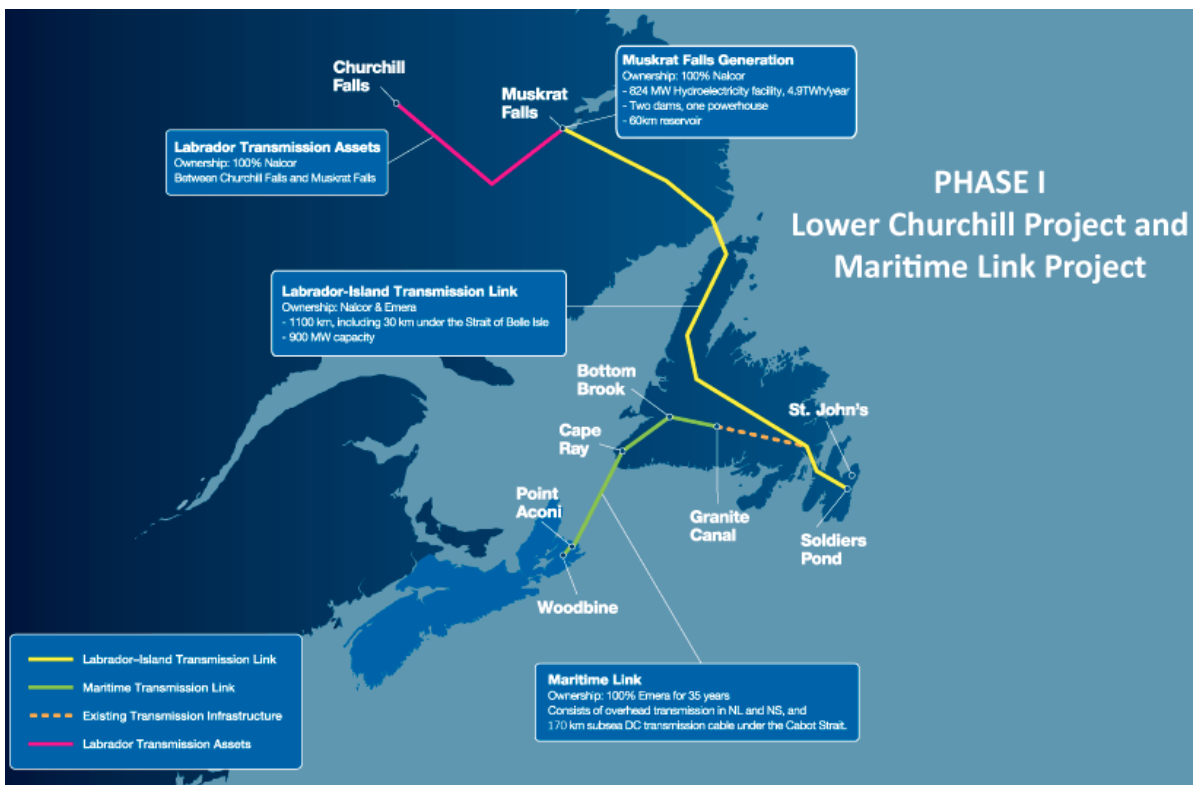
900 MW HVDC Newfoundland Transmission Line Successfully Commissioned

After nine years of planning, delays and billions in cost overruns, a massive new transmission line that will eventually be capable of carrying 900 MW of hydroelectric-generated energy from central Labrador to the island of Newfoundland is finally complete. The Labrador Island Link (LIL) is a 1,100 km high-voltage direct current (HVDC) transmission line that runs from central Labrador, crossing the Strait of Belle Isle, and extending to Soldiers Pond on the Avalon Peninsula. It is owned and operated by Nalcor Energy.

Jennifer Williams, the chief executive officer of Newfoundland and Labrador Hydro, the utility that serves the island, spoke with local reporters on April 12 and said finishing the project is a big relief for her and for those who worked on the project. Executed across a geographically immense area, the project involved eight sites of varying sizes and project influence, spanning more than 1,600 km, and logistical challenges with four sites in a remote, sparsely populated area in Labrador. The sites were divided into multiple contracts, requiring careful planning to ensure integration of O&M.

The project also involved integrating new technology into an existing grid and energy control center, which proved difficult. In November 2022, a software issue caused an outage for more than 58,000 people. The Newfoundland and Labrador System Operator, acting independently, said in early April that LIL assets have demonstrated acceptable performance to enable commissioning and said it was satisfied that the assets will support reliable system operation. The company also concluded its formal review process to confirm that the technical specifications required to achieve commissioning have been met and are compliant with project financing requirements. This was a necessary part of the final commissioning process with project partners, including the Federal Government.

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The project financing parties have acknowledged that commissioning occurred on April 14, 2023, through the issuance of a Commissioning Confirmation Certificate. Together with the previously commissioned assets, the Muskrat Falls Generating Station and the Labrador Transmission Assets, commissioning of the LIL also marks the successful commissioning of the Lower Churchill Project. The next step is to review project costs and continue to work with the provincial government to finalize the details of rate mitigation.

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

19 April 2023

The Government of India to facilitate Bhutan-Bangladesh electricity trade

The Government of India (GoI) has agreed to facilitate the export of electricity from Bhutan to Bangladesh through India. Bangladesh plans to initially import around 1,500MW of electricity from Bhutan. According to the foreign and external trade ministry, the proposed trilateral hydropower cooperation among Bhutan, Bangladesh, and India, both the government, India and Bhutan expressed their commitment towards greater sub-regional cooperation, including in the energy sector, which would lead to increased inter-linkages between the economies for the mutual benefit of all stakeholders.

Foreign Minister Dr Tandi Dorji said that GoI committed to facilitate the trade of electricity to Bangladesh, adding that GoI however is concerned that the current grid line in India doesn't have the capacity to carry the amount of electricity to Bangladesh. Nepal also uses the Indian grid line to transport electricity to Bangladesh through India.

"GoI has instructed Bhutan and Bangladesh to finalise on modalities of export," Lyonpo said. Lyonpo said that GoI is concerned as to whether Bangladesh has enough grid capacity to transport power from India. Although Adani Group is constructing the transmission line to supply power from India to Bangladesh, it has limited capacity to carry the electricity.

Bhutan and Bangladesh should finalise as to how much electricity would be exported and from which hydro project. Lyonpo said that as yet the only option to export electricity to

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Bangladesh would be through the sale of excess electricity during summer. An official from Embassy of Bangladesh in Thimphu said that the modality of trade of electricity would be decided after the bilateral agreement between Bhutan and Bangladesh.

South Asian Voice
<http://southasianvoices.org/>

19 April 2023

Further increase in the trade capacity with the Ukraine/Moldova power system

On 18 April 2023, the Transmission System Operators (TSOs) of Continental Europe agreed to increase the electricity trade capacity from Continental Europe to Ukraine/Moldova to 1,050 megawatts (MW), which represents an increase of 200 MW from previous trade capacity upgrade. This increase will be applicable as soon as the interconnection between Ukraine/Moldova and Continental Europe will be reinforced, which is currently planned in May 2023. In the next weeks, the TSOs will assess whether further increases of the trading capacity between Continental Europe and Ukraine-Moldova can be envisaged, in both directions.

The commercial exchanges of electricity between Continental Europe and Ukraine/Moldova started in June 2022 after the successful synchronisation of the respective power systems a few weeks earlier. Since then, the capacity available for trading between the two power systems has been regularly increased reaching threshold of 850MW max. import capacity and 400MW max. export capacity at all hours.

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

20 April 2023

Dutch Power Prices Turn Negative as Green Power Floods Grid

Prices fell to as low as -€739.96 a megawatt-hour between 1 and 2 p.m. in Amsterdam's Epex Spot SE exchange, with the weighted average staying negative for every hour from 10 a.m. to 5 p.m. The surge of clean electricity has outstripped demand, showcasing power grids' struggle to accommodate large variations in renewables.

While strong availability is usually a good thing, the Netherlands had about 16 gigawatts of clean power flooding the grid at a time when consumption was low, according to consultant Enappsys. Power cables connected to neighboring markets weren't exporting much either, reducing demand. "This was unexpected and something we will see again," said Jean-Paul Harreman, a director at Enappsys. The situation is another example of how far Europe has come from the energy crisis that had driven prices to record highs last year and threatened shortages over the winter. The region's gas market too has flipped from being short of supply to a glut.

Negative prices are common in the summer and during public holidays if it's particularly windy. Grid managers have the option to turn down supply or boost demand. The Dutch operator, Tennet BV, issued an alert on Wednesday asking for less flows into the market. An initial day-ahead power auction was canceled on Tuesday as traders struggled to price contracts as more supply than was needed hitting the grid. A second auction cleared with a negative price for the peak-load contract.

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Bloomberg
<http://www.bloomberg.com/>

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Bangladesh suffers widespread power outages during relentless heat

Bangladesh is being forced to cut power to millions of people as a relentless heatwave leads to a surge in demand for power and thereby creates massive electricity supply shortfalls during the Muslim fasting month of Ramadan.

Greater use of irrigation pumps by farmers and an increase in commercial activity during Ramadan have also contributed to increased power demand, officials say. Power shortages have been most severe at night, government data showed. The port city of Chittagong, along with the textile, pharmaceutical and jute manufacturing hub of Mymensingh, have been among the worst-affected places.

"We'll need more diesel to run the captive power plants to continue our production. That will raise production costs, but the buyers will not pay more," Shahidullah Azim, vice president of the Bangladesh Garment Manufacturers and Exporters Association told Reuters.

The average maximum temperature in Dhaka was 4.3% higher during the seven days to Wednesday compared with the week before and 12.5% higher than the same period last year, government data showed. The maximum temperature soared to 42.8 Celsius (109 Fahrenheit) on Wednesday in the west of the country.

"People, especially children and the elderly, are suffering a lot. We express our sincere sympathy and sorrow for this untold suffering," Minister of Energy Nasrul Hamid said in a Facebook post late on Tuesday.

"The current unprecedented heatwave, which has resulted in maximum temperatures hitting the highest level in over 50 years, has increased the demand for electricity much more than expected," Hamid said. The weather office has warned that there is no end in sight as the country prepares for the Eid al-Fitr holiday at the end of Ramadan this weekend.

Overall electricity supply fell short of demand by 6.6% over the seven days to Wednesday, government data showed, as demand surged nearly 14% compared with the preceding seven days.

Neighboring India is also seeing extreme heat, leading to power demand surging and some shortages emerging in the eastern states. India recorded a peak power demand - a measure of maximum power requirement during the day - of 215.9 gigawatts (GW) this month, with the government forecasting it to rise to as much as 229 GW this month.

Reuters

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

21 April 2023

FERC approves CAISO, NYISO, utility plans for ambient line ratings to boost transmission capacity

The Federal Energy Regulatory Commission on Thursday largely approved plans by the California and New York grid operators, plus four utilities, to use ambient-adjusted ratings, called AARs, to measure how much electricity their transmission lines can carry.

Plans submitted by Arizona Public Service, Black Hills Power, Louisville Gas and Electric and Tampa Electric take effect in mid-2025.

FERC in December 2021 ordered all transmission owners to consider ambient conditions when determining how much power can flow through their power lines. Generally, transmission owners use conservative assumptions about the worst-case, long-term air temperature and other weather conditions when setting line ratings. Those line ratings, called seasonal or static ratings, are typically updated only when equipment is changed or weather assumptions are revised.

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AARs, which are already used by some utilities, take into account near-term changes in temperature and solar heating values to measure capacity on transmission lines. They can increase the effective capacity on transmission lines, making them more efficient and in some cases reducing renewable energy curtailment.

They will allow utilities to squeeze more capacity out of the existing system at minimal cost, according to FERC Commissioner Allison Clements. FERC has dockets open, including an inquiry about dynamic line ratings, in its interconnection and transmission planning proposed rulemakings, she said Thursday during the agency's monthly meeting.

"I'm looking forward to moving forward with opportunities to promote various kinds of grid-enhancing technologies, which are really no-brainers when it comes to the commission's responsibility to ensure fair rates," Clements said.

FERC approved compliance plans by the California Independent System Operator and the New York ISO, subject to additional compliance filings they must make to the agency. NYISO, for example, expects transmission owners in its footprint will calculate AARs on a rolling 48-hour basis with submissions by transmission owners to NYISO at least every hour, according to FERC's decision.

The grid operator and transmission owners are still developing the procedures for AAR submissions. FERC gave NYISO until Nov. 12, 2024, to file those procedures with the agency.

UtilityDive

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

22 April 2023

TenneT inks contracts worth €30bn to develop North Sea energy infrastructure

Dutch-German TSO TenneT has signed the official contracts to seal what is being hailed as Europe's largest-ever tender for clean energy infrastructure. The contracts were signed with the Hitachi Energy/Petrofac cooperation and the three consortium partnerships, including GE/Sembcorp (SMOP), GE/McDermott and Siemens Energy/Dragados.

The total volume of the orders for the components totals around 30 billion euros (\$33 billion) and will result in 14 offshore grid connection systems in the German and Dutch North Sea to be implemented by 2031. The contracts form part of TenneT's 2GW programme designed to harvest large amounts of offshore wind in the North Sea and bring it to land. The offshore grid connection systems in the German-Dutch North Sea will have a transmission capacity of 2GW and will use novel converter technology to convert three-phase current into direct current.

TenneT had awarded eleven of these energy infrastructure systems at the end of March 2023, eight of them in the Netherlands and three in Germany. Three more German systems were added today. The latest contract to be awarded was to the Siemens Energy/Dragados consortium, for the German projects BalWin3, LanWin4 (both with connection to the onshore grid in Wilhelmshaven) and Lan-Win2 (connection in the Heide area). The contract value for the consortium of Siemens Energy and Dragados Offshore is close to €7 billion (\$8 billion). Siemens Energy will manufacture the main electrical components, such as switchgears, transformers and converter technologies, at its factories in Europe. The Spanish consortium partner Dragados Offshore is responsible for the construction and offshore installation of the platforms.

The contracts awarded in March include:

- GE/McDermott received the orders to implement the corresponding components for the German offshore projects BalWin4 and LanWin1, which are to be connected in Unterweser.

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- Hitachi Energy/Petrofac has been awarded five Dutch projects to be connected in Borssele (IJmuiden Ver Alpha, Nederwiek 1), Eemshaven (Doordewind 1 and Doordewind 2) and Geertruidenberg or Moerdijk (Nederwiek 3). This cooperation will also implement the German connection LanWin5, which is to be connected in the Rastede area.
- GE/SMOP were awarded three Dutch projects to be connected in Maasvlakte, Rotterdam (IJmuiden Ver Beta, IJmuiden Ver Gamma and Nederwiek 2).

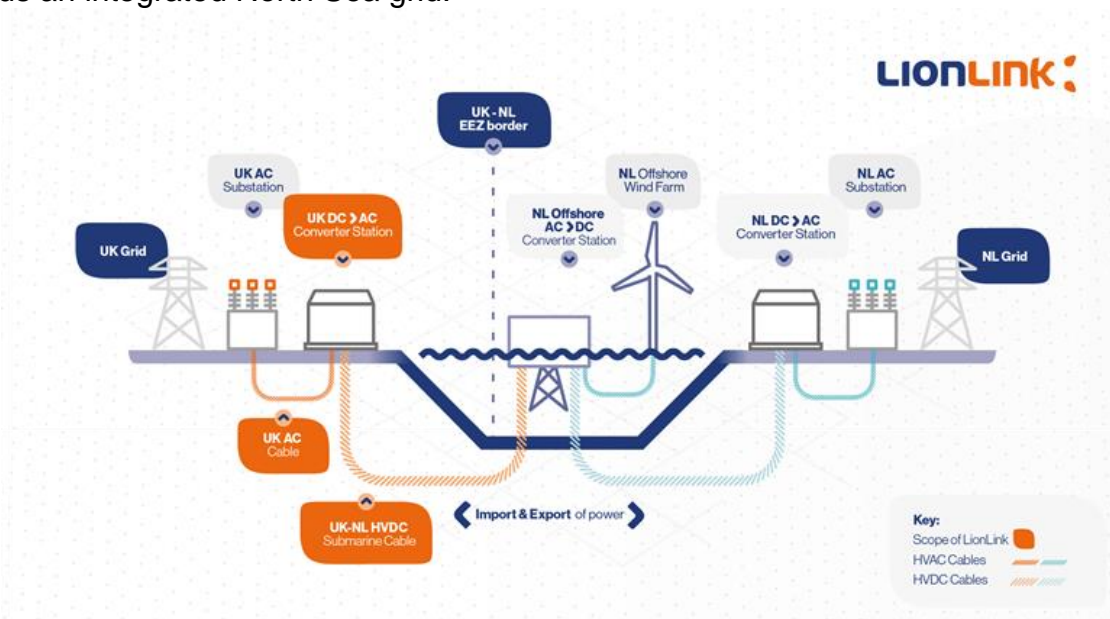
All agreements apply to both the offshore and onshore converter stations and the associated HVDC technology. The commissioned suppliers will start with the preparatory work with immediate effect.

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

23 April 2023

LionLink: 'World's largest cross-border power line' to be built by UK and Netherlands

TenneT and its UK project partner National Grid Ventures (NGV), will develop a Multi-Purpose Interconnector, called LionLink. This project will deliver a new electricity link between the Netherlands and the United Kingdom. LionLink would support decarbonisation, energy independence and strengthen British, Dutch and European security of supply. The development would be the first of its kind for the UK and the Netherlands, and the first step towards an integrated North Sea grid.



Like a conventional interconnector, LionLink enables cross-border electricity transmission and trade. The project is referred to as a Multi-Purpose Interconnector because it will connect the two countries via a Dutch offshore wind farm. LionLink could supply up to 1.4 to 2 gigawatts (GW) of electricity. LionLink will benefit from the strong and established long-term partnership between the UK and the Netherlands. The British and Dutch energy markets were first connected in 2011 via the BritNed interconnector, which has played an important role in supporting energy security in the winter of 2022. LionLink will connect the Dutch and UK grid via subsea cables, which will connect to a Dutch offshore wind farm via an offshore converter platform.

The offshore converter platform will be in the Dutch North Sea and owned by TenneT. The platform will have a fixed capacity of 2 GW, which will be connected to a Dutch offshore windfarm. Via 66 kilovolt cables, the energy from the offshore wind turbines is transported

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to the platform. Here, four transformers increase the voltage before the electricity enters the converter halls. In these halls the energy is converted to 525 kV DC, in order to prepare it for transmission to land. The connection operates on 525 kV high voltage direct current - allowing highly efficient energy transmission over long distances.

LionLink will transmit electricity under the North Sea through submarine cables. All the cables will be buried underground from the landfall site to the converter station and then underground again from the converter station to the substation.

At the converter station, the electricity will be transformed from high voltage direct current (HVDC) into high voltage alternating current (HVAC), which is necessary to enable the electricity to be fed into the onshore high voltage grid.

TenneT

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

25 April 2023

Oceans of Energy to Build Offshore Solar Array at Hollandse Kust Noord Offshore Wind Park

This is set to be the first offshore solar farm in the world to be connected, installed, and operated within a wind farm in high wave conditions. The offshore solar farm will be realized in 2025, while the wind park will be operational by the end of 2023, according to Oceans of Energy. With offshore solar added to offshore wind, it is possible to also produce energy on sunny but less windy days and hence increase the utilization of the offshore power grid infrastructure. The solar panels will be situated in between the offshore wind turbines, an efficient way of sharing the sea space.

Allard van Hoeken, founder and CEO of Oceans of Energy, said: “We are very pleased that Crosswind and their shareholders Shell and Eneco have trust in Oceans of Energy for realizing this first off amazing project. We will add offshore solar to offshore wind. Our performance and our system will be key for the success of the innovational part of the offshore wind farm. This is a large responsibility as Hollandse Kust Noord will function as an example for combined offshore wind and solar parks in the future.”

Maria Kalogera, innovations manager at CrossWind, added: “Offshore floating solar is an exciting area of renewable energy development that is poised to play an important role in the energy transition. This project marks a significant milestone for our CrossWind innovations team as we continue to push on our commitment to create better energy solutions for the future.”

CrossWind’s Hollandse Kust Noord project is a 759 MW offshore wind park that will use cutting-edge technologies and engineering solutions to improve the flexibility of offshore wind parks. The project has many first-offs, including being the first wind park in the world with an offshore combination of battery storage and round-trip green hydrogen produced from offshore wind power on a megawatt scale. Once constructed, the offshore wind farm will be generating at least 3.3 TWh of clean energy per year.

OffshoreBiz

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

26 April 2023

National Grid breaks ground on new substation in London

A major milestone has been reached in the construction of a new 400kV electricity substation in Bengeworth Road, Lambeth with teams from National Grid and Linxon making a start on the construction of the substation. The new substation in the heart of London is part of National Grid’s London Power Tunnels project, a seven-year, £1 billion project, to rewire South London via deep underground tunnels. This vital work to replace ageing high-

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voltage cables will expand capacity and help keep Londoners connected to secure and reliable electricity supplies.

It is being built on UK Power Network's existing substation site boundary at Bengeworth Road and will connect in the centre of the LPT route from Wimbledon to Crayford. The substation will play a critical role in ensuring homes and business across London are powered, voltage limits on the transmission network remain stable and enabling clean, green energy to be transported to where it is needed most.

The high voltage substation will be built using Hitachi Energy's SF6 free gas insulated switchgear technology in a UK first, and forms part of National Grid's ambition to have no SF6 in electrical assets by 2050. Breaking ground at Bengeworth Road marks the first major milestone in the development of this new substation, which forms part of our £1bn project to completely rewire South London.

The Bengeworth Road Substation will be complete in 2026. National Grid has a continued programme of investment into the UK energy transition, which will see £16bn invested from 2021-2026 to support the UK's net zero goals. It has launched the largest overhaul of the grid in generations, The Great Grid Upgrade, will enable millions of UK homes and businesses to use renewable energy to power the things they love in years to come.

NS Energy

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

26 April 2023

Kansai seeks to extend lifetime for Takahama units

Under regulations which came into force in July 2013, Japanese reactors have a nominal operating period of 40 years. One extension to this - limited to a maximum of 20 years - may be granted, requiring amongst other things, a special inspection to verify the integrity of reactor pressure vessels and containment vessels after 35 years of operation.

Kansai said it had carried out special inspections and evaluations of the two units, and not found any issues likely to cause problems if the operating period was to be extended to 60 years, saying that it had put together a facility management programme for the extended operation including the replacement of the steam generators. It added: "We will continue to strive to improve the safety and reliability of nuclear power plants and with the understanding of the local community and others we will utilise nuclear power generation as an important power source."

The Takahama plant, in Fukui prefecture, is home to four reactors. Takahama 1 and 2 - both 780 MWe (net) pressurised water reactors (PWRs) - entered commercial operation in 1974 and 1975 respectively, while units 3 and 4 - both 830 MWe PWRs - both began commercial operation in 1985. Takahama 1 and 2 became the first Japanese units to be granted a licence extension beyond 40 years under revised regulations, but are currently out of service pending the completion of a bunkered back-up control centre, as required by the regulator. Kansai has previously said it plans to restart units 1 and 2 in mid-2023.

World Nuclear News

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

26 April 2023

PJM, New Jersey Reach Next Milestone in Pursuit of State's Offshore Wind Goals

The New Jersey Board of Public Utilities today announced the latest milestone in its historic collaboration with PJM to advance the state's offshore wind goals through the grid operator's competitive transmission planning process.

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Today's formal request made by the NJBPU on behalf of the state of New Jersey asks PJM to solicit transmission solutions to serve an additional 3,500 MW of offshore wind energy, totaling 11,000 MW by 2040.

Through its unique State Agreement Approach, PJM will initiate a second competitive solicitation process on behalf of the NJBPU. This process will examine whether an integrated array of open-access transmission facilities, both onshore and potentially offshore, can achieve New Jersey's expanded offshore wind goals in an economical and timely manner. This evaluation is conducted as part of PJM's Regional Transmission Expansion Planning process, and the results will be shared with the NJBPU for a final decision to determine which, if any, additional projects they may wish to pursue.

The NJBPU in November 2020 invoked the State Agreement Approach to incorporate New Jersey's initial offshore wind goals (7,500 MW by 2035) into PJM's regional transmission planning process. That culminated in the NJBPU awarding \$1.1 billion in projects to construct the onshore transmission facilities necessary to deliver those 7,500 MW to New Jersey customers, while minimizing community and environmental impacts and customer costs.

"New Jersey has been a pioneer in developing infrastructure needed to achieve its ambitious offshore wind policies," said NJBPU President Joseph L. Fiordaliso. "NJBPU recognized early on the value of PJM's independent, competitive and proven transmission planning process, and we look forward to continuing to achieve New Jersey's offshore goals reliably and as cost-effectively as possible."

In today's order (PDF), the NJBPU staff also recommends that the Board explore the interest of other East Coast states in coordinating regional offshore transmission solutions, potentially including a regional offshore "backbone" transmission system.

Following today's formal request from the NJBPU and building upon past studies, PJM will include New Jersey's needs for offshore-wind-related transmission improvements in a competitive proposal window tentatively set to open in 2024.

Transmission developers may submit proposals for the development of reliable and cost-effective transmission solutions to help bring offshore wind energy to consumers, and may also include grid-to-onshore substations, onshore substations to offshore collector farms, and an offshore transmission backbone. Additional information and updates will be available through PJM's Planning Community webpage and through PJM's Transmission Expansion Advisory Committee.

The State Agreement Approach (SAA) was incorporated into the PJM Operating Agreement in 2013, with the implementation of the Federal Energy Regulatory Commission's Order 1000. With that order, FERC required regional grid operators to "provide for the consideration of transmission needs driven by public policy requirements in the regional transmission planning processes."

The SAA may be used by any state, or combination of states, to advance state public policy goals, as long as the state (or states) agrees to pay all costs of the project's build-out included in the PJM Regional Transmission Expansion Plan.

UtilityDive

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Demand for Electric Cars Is Booming, With Sales Expected to Leap 35% This Year After a Record-Breaking 2022

The global auto industry is undergoing a sea change, with implications for the energy sector, as electrification is set to avoid the need for 5 million barrels of oil a day by 2030. Global sales of electric cars are set to surge to yet another record this year, expanding their

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share of the overall car market to close to one-fifth and leading a major transformation of the auto industry that has implications for the energy sector, especially oil.

The new edition of the IEA's annual [Global Electric Vehicle Outlook](#) shows that more than 10 million electric cars were sold worldwide in 2022 and that sales are expected to grow by another 35% this year to reach 14 million. This explosive growth means electric cars' share of the overall car market has risen from around 4% in 2020 to 14% in 2022 and is set to increase further to 18% this year, based on the latest IEA projections.

"The trends we are witnessing have significant implications for global oil demand. The internal combustion engine has gone unrivalled for over a century, but electric vehicles are changing the status quo. By 2030, they will avoid the need for at least 5 million barrels a day of oil. Cars are just the first wave: electric buses and trucks will follow soon," said IEA Executive Director Fatih Birol. The overwhelming majority of electric car sales to date are mainly concentrated in three markets – China, Europe and the United States. China is the frontrunner, with 60% of global electric car sales taking place there in 2022. Today, more than half of all electric cars on the road worldwide are in China. Europe and the United States, the second and third largest markets, both saw strong growth with sales increasing 15% and 55% respectively in 2022.

Ambitious policy programmes in major economies, such as the Fit for 55 package in the European Union and the Inflation Reduction Act in the United States, are expected to further increase market share for electric vehicles this decade and beyond. By 2030, the average share of electric cars in total sales across China, the EU and the United States is set to rise to around 60%. The encouraging trends are also having positive knock-on effects for battery production and supply chains. The new report highlights that announced battery manufacturing projects would be more than enough to meet demand for electric vehicles to 2030 in the IEA's Net Zero Emissions by 2050 Scenario. However, manufacturing remains highly concentrated, with China dominating the battery and component trade – and increasing its share of global electric car exports to more than 35% last year.

Other economies have announced policies to foster domestic industries that will improve their competitiveness in the EV market in years to come. The EU's Net Zero Industry Act aims for nearly 90% of annual battery demand to be met by domestic battery manufacturers. Similarly, the US Inflation Reduction Act places emphasis on strengthening domestic supply chains for EVs, batteries and minerals. Between August 2022, when the Inflation Reduction Act was passed, and March 2023, major EV and battery makers announced investments totalling at least USD 52 billion in EV supply chains in North America.

Despite a concentration of electric car sales and manufacturing in only a few big markets, there are promising signs in other regions. Electric car sales more than tripled in India and Indonesia last year, albeit from a low base, and they more than doubled in Thailand. The share of electric cars in total sales rose to 3% in Thailand, and to 1.5% in India and Indonesia. A combination of effective policies and private sector investment is likely to increase these shares in the future. In India, the government's USD 3.2 billion incentive programme, which has attracted investments worth USD 8.3 billion, is expected to increase battery manufacturing and EV rollout substantially in the coming years.

In emerging and developing economies, the most dynamic area of electric mobility is two- or three-wheel vehicles, which outnumber cars. For example, over half of India's three-wheeler registrations in 2022 were electric, demonstrating their growing popularity. In many developing economies, two- or three-wheelers offer an affordable way to get access to mobility, meaning their electrification is important to support sustainable development.

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