

# ***WORLD POWER SYSTEMS REVIEW***

***15 March 2023***

**1 March 2023**

## **Energy bills may rise again without government plan to deliver 2035 clean power target, NAO warns**

Household bills could rise if the government further delays its plan to rid the power network of polluting fossil fuels by 2035, the National Audit Office (NAO) has warned. Energy officials committed to the target almost 18 months ago, but their plan to deliver it was delayed by the energy crisis as they focused instead on tackling soaring bills, the auditors said. However today the NAO warned it was not clear when the new energy and net zero department would come up with a plan to decarbonize the grid, and this delay could drive up household bills even further. "The longer it takes before government finalizes its delivery plan, the greater the risk that it won't achieve that ambition to decarbonize power by 2035, or that doing so will cost consumers more," warned Simon Bittlestone, NAO's director of value for money studies. "Decarbonizing power is really the backbone of achieving net zero, as we're all likely to switch to electric vehicles and potentially use electricity to heat our homes, but it will require a step change investment and modernization," he told Sky News.

Generating electricity accounts for 13% of Britain's emissions. Some 40% of UK electricity comes from burning fossil gas. Although the country has so far decarbonized faster than any other G7 country, according to government data, demand for electricity is set to soar 60% by 2035 as the economy continues to shift away fossil fuels. Meeting that demand requires an enormous surge in renewable wind and solar power, including by building three times as much offshore wind capacity in eight years as in the last two decades.

The government should prioritize lifting an effective ban on onshore wind, urged Stuart Dossett, senior policy adviser at think tank Green Alliance. The shortfall in the UK is "slowing us down from moving as quickly as we need to move to cut carbon emissions and to bring energy bills down," added Mr Dossett. Recent UK prime ministers have changed their minds on onshore wind, and Rishi Sunak's administration is currently running a consultation on relaxing rules.

The report detailed how Britain's outdated grid is already costing taxpayers, and will only increase without a plan. That's because when power generated from a plant exceeds demand, or what the grid can accommodate, energy companies have to limit their output, which costs money that is paid by the consumer. The grid also needs upgrading and expansion so it can transmit power from where it is made, for example in Scotland, to where it is needed, potentially in Cornwall. The auditors warned the government must make up its mind which technologies will be used to power the UK during cloudy and calm days, including batteries for short-term power, longer duration energy storage like compressed air, hydrogen from renewables and nuclear.

*Sky News*

<http://news.sky.com/>

**1 March 2023**

## **US installed grid-scale battery storage capacity reached 9GW/25GWh in 'record-breaking' 2022**

The US utility-scale battery storage sector achieved its highest-ever annual deployments in 2022, a year in which solar PV and wind underperformed against expectations. According to the latest edition of Clean Power Quarterly, published by trade group American Clean Power Association (ACP), which collects stats for the full year 2022 as well as the fourth quarter, 4,027MW and 12,155MWh of battery energy storage was deployed in the country last year. That exceeded the previous record, set just a year before in 2021, when 3GW/9.5GWh was commissioned. That amounted to an increase in

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cumulative operating battery storage of 80% in megawatt terms, bringing it to a total of 9,054MW, and a total 25,185MWh of energy storage capacity – an increase of 93% in megawatt-hours. During the fourth quarter, 850MW/2,375MWh of battery storage was commissioned. That was an increase of 31% year-on-year. However, with solar PV installations down 5% and wind power down 37% for the same period, there was a 21% drop in total installations across the three key technologies tracked by ACP. A similar trend was seen throughout the year, which tallied with ACP's third quarter report findings.

California remains the US' leading state for battery storage, with 4,938MW of cumulative installations to the end of 2022, and in fact more battery storage than solar PV was commissioned in the Golden State for the year. In terms of development pipeline, ACP said the energy storage sector had rebounded in Q4 2022 from weakened second and third quarter growth rates, with a 17% increase from Q3 seen. The total battery storage development pipeline in the US as counted in the report adds up to 16,711MW/45,638MWh, again, record levels for the technology. California leads that pipeline with 5,846MW in development, while the US' second biggest market, Texas' ERCOT, is host to a 3,802MW pipeline. Only two other states, Arizona (1,911MW) and Nevada (1,693MW) have more than a gigawatt of projects in the development pipeline. That said, 14 states have more than 100MW in development and half of the country's states have at least some battery storage in development.

Across the US, ACP noted that almost 70% of development battery energy storage system (BESS) projects are planned to be paired with solar PV and wind. It remains to be seen if the introduction of the standalone energy storage investment tax credit (ITC) will spur higher proportions of non-hybrid and co-located storage in those pipelines, as seems likely. Of projects commissioned in 2022 meanwhile, over half of a total 88 battery storage projects (48) were hybrids and the remainder standalone. Across the nation's network of grids and wholesale markets, Texas leads for BESS in its interconnection queues, with 67GW awaiting connection, PJM Interconnection in second place with 50GW and California's CAISO grid with 48GW in third. With grid connection queues often saturated with more projects than could ever be connected in some cases, CAISO actually stopped adding new megawatts to its queue in 2022 after being heavily oversubscribed in 2021.

*Energy Storage*

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

**1 March 2023**

## **Argentina power line fire sparks huge blackout amid heat wave**

Large swathes of Argentina were left without power on Wednesday afternoon after blackouts in the national grid due to a fire, officials said, as the country endures a major heat wave that has increased demand for energy. Parts of the capital Buenos Aires, and the central regions of Santa Fe, Neuquen, Cordoba and Mendoza, have experienced blackouts, according to a statement from the Energy secretariat. The failure put 10,000 megawatts offline, a source at an energy company told Reuters. A source for the secretariat added that the supply was slowly resuming. The country's economy ministry has requested an investigation into how the fire was started. Several blackouts have occurred in the country since January amid high electricity demand.

*The Business Standard*

<http://www.tbsnews.net/>

**2 March 2023**

## **India approves investment for its largest hydropower project**

The government has approved the investment for the 2,800-megawatt (MW) Dibang Multipurpose Project in Arunachal Pradesh, the largest hydropower project in India. In a

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disclosure, National Hydroelectric Power Corp (NHPC) said the project, which is expected to be completed built in nine years, costs around \$3.9b (INR318.76b) at May 2021 price level. NHPC said the project is expected to produce 11,223 million units of energy in a 90% dependable year.

Its development will involve a 278 metres high dam, the highest in India once completed, which will be located on the Dibang river in Lower Dibang Valley. The Arunachal Pradesh government will get 12% free power from the project upon completion, whilst 1% free power will be allocated to the Local Area Development Fund.

*Asian Power*

<http://asian-power.com/>

**2 March 2023**

## **World's first-ever artificial energy island to be built in the North Sea**

Elia, an electricity transmission system operator, is building an artificial island in the North Sea to function as an energy hub. In addition to connecting offshore wind farms with the mainland, it will also connect to the electricity grids of neighboring countries.

As countries look to achieve net-zero status for carbon emissions, renewable sources of energy sources are going to be a crucial part of their plans. Given the disadvantages of intermittency, renewable sources of energy need to be connected in large grids to ensure that the energy supply can be maintained to match the demand.

Belgium-based Elia also plans to build an energy island in the North Sea as a means to connect its offshore wind farms in the Princess Elisabeth Zone to its mainland. Located 28 miles (45 km), the Princes Elisabeth Zone is Belgium's second offshore wind zone and has a planned capacity of 3.5 GW. Spread over an area of 108.5 square miles (281 square kilometers), the zone consists of three separate areas which will host the offshore wind parks off the Belgian coast. The energy island planned by Elia will centralize energy produced by Belgian offshore wind farms and supply it to the mainland via undersea cables. Additionally, it also aims to become the landing point for two hybrid interconnectors between the U.K. and Denmark, a company press release said.

To bring up the island, Elia plans to construct an outer perimeter wall with a series of concrete structures on the seabed and then fill up the area with sand. Infrastructure for energy transmission will be built upon this, while high walls will protect the structures from strong waves, wind, rain, and flooding. The island will also feature a port and helipad that will allow staff to visit and carry out maintenance activities. Electricity transmission infrastructure, such as AC substations, will also be built to minimize energy losses. Construction is scheduled to begin in 2024 and is expected to be completed by 2026. Connections with wind farms and the mainland are scheduled to be completed by 2030.

*Interesting Engineering*

<http://interestingengineering.com/>

**2 March 2023**

## **White House releases national cyber strategy, shifting security burden**

The Biden administration unveiled its highly anticipated national cyber strategy Thursday, a policy blueprint designed to combat the rising threat of malicious activity against the U.S. from foreign adversaries and criminal cyber actors.

Developed after years combating a surge in ransomware and nation-state threat activity, federal authorities will seek to reorder priorities in how the nation manages digital security. Officials want to shift the burden for cyber resilience away from under-resourced consumers of technology and place more responsibility on multibillion-dollar technology

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giants that for years have sold their customers software and computer systems full of technical flaws.

“Today, across the public and private sectors, we tend to devolve responsibility for cyber risk downwards,” Kemba Walden, acting national cyber director, said during a conference call with reporters Wednesday. “We ask individuals, small businesses and local governments to shoulder a significant burden for defending us all. This isn’t just unfair, it’s ineffective.”

Authorities want to realign incentives to protect the country from immediate threats while building resilience through long-term investments.

The strategy builds on five core pillars:

- **Defend critical infrastructure:** Establish minimum standards to secure key industrial sectors, while boosting public-private collaboration and modernizing federal government networks.
- **Disrupt and dismantle threat actors:** Strategic use of all instruments of national power to disrupt adversaries, while engaging the private sector and working with global partners to combat ransomware.
- **Shape market forces to drive security and resilience:** Shift liability for secure software and services, support data privacy and promote investments in new infrastructure.
- **Invest in a resilient future:** Reduce technical vulnerabilities, build a diverse cyber workforce and prioritize next-generation cyber research and development.
- **Forge international partnerships to pursue shared goals:** Leverage global partnerships to combat ransomware, help nations defend themselves and work to develop secure global supply chains.

Anne Neuberger, deputy national security advisor for cyber and emerging technology, said the Biden administration has already begun working on minimum standards for critical industry sectors like pipelines and rail. Additional minimum standards are in the works for even more sectors, she said during the call.

Cybersecurity and Infrastructure Security Agency Director Jen Easterly previewed a major component of the strategy in an address Monday at Carnegie Mellon University where she called on the technology industry to embrace a “secure by design” philosophy. The goal is to build resilience into products during the development phase instead of forcing customers to continually update software and search for vulnerabilities in existing products.

Google last month signaled it would support efforts to promote more responsible development practices, noting earlier efforts to embed protections like two-step verification by default into its online accounts.

*Utility Dive*

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

**3 March 2023**

## **Elering completes first major synchronization investment**

The fully upgraded Balti-Tartu high-voltage line was energised on Tuesday, which makes it the first of the investments completed within the scope of the major synchronisation project. The price of the works was ca €35 million.

The upgrades of the Tartu-Valmiera overhead line will also be completed in a few months. The Balti-Tartu and Tartu-Valmiera lines together form one Estonian-Latvian link, and the completion of the upgrades will make it possible to start the full reconstruction of another Soviet-era link with Latvia as early as this summer. “Upgrading the lines in the direction of Latvia is essential so that we can disconnect ourselves from the electricity system controlled by Russia and join the European frequency area with Latvia and Lithuania,” said member of the Elering management board Kalle Kilk. “These are the

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connections that will link the Baltic power networks more strongly into a single entity and also form a 'power highway' to Central Europe."

The Balti-Tartu high-voltage line received new masts and lines over 133 kilometres. In addition to the powerful 330-kilovolt transit line, it also carries the conductors of several 110-kilovolt overhead lines of local importance. Placing two lines on the same masts allowed Elering to dismantle 150 kilometres of obsolete 110-kilovolt overhead lines. This change concerns around 750 hectares of land, which landowners will be able to use without restrictions from now on.

Elering funded the upgrades of the Balti-Tartu line from both European Union (EU) funds and income from auctioning transmission capacities. Rates for Estonian consumers will not be raised by the cost of the upgrades. The main contractors for the line upgrades are Enersense and Leonhard Weiss. Preparations for connecting Estonia and the other Baltic states to the Continental European power system and frequency area should be completed by the end of 2025. Although the corona crisis and Russian aggression in Ukraine have made construction activities and the accessibility of materials more complicated, the major synchronisation projects remain on their originally planned schedules.

*Elering*

<http://www.elering.ee/>

## **3 March 2023**

### **Biden admin offers \$1.2 bln for distressed, shut nuclear plants**

The Biden administration has pledged another \$1.2 billion to help extend the operating life of older or distressed nuclear power plants, with Energy Secretary Jennifer Granholm saying nuclear power is needed to support the nation's clean energy goals.

The funding, announced by the Dept. of Energy (DOE) on March 2, is the second tranche of financial aid included in the \$6 billion Civil Nuclear Credit Program that was created by the Bipartisan Infrastructure Law passed by Congress in 2021. "President Biden's \$6 billion investment in the Civil Nuclear Credit Program made it abundantly clear that preserving the domestic nuclear fleet is critical to reaching America's clean energy future," said Granholm. "Expanding the scope of this Bipartisan Infrastructure Law funding will allow even more nuclear facilities the opportunity to continue operating as economic drivers in local communities that benefit from cheap, clean, and reliable power."

The president's climate team has said nuclear power, as a source of carbon-free electricity, should be preserved and expanded to reach the administration's goal of 100% clean electricity production by 2035. The administration also wants to keep reactors online while the country continues to build more power generation from renewable energy resources.

There are currently 92 operating nuclear reactors across the U.S., according to the DOE, after the closure of 13 units in the past decade. The money in this second round of funding is available to plants at risk of closure within a few years. It also is available to nuclear power plants that have stopped operating after Nov. 15, 2021. The money could support reopening the 800-MW Palisades Nuclear Generating Station in Michigan that was closed in May 2022. The plant, which was operated by Entergy and is now owned by Holtec International, had its application for funding rejected during the first round of financial aid from the credit program. Michigan Gov. Gretchen Whitmer has been a proponent of bringing Palisades back online.

Holtec officials in February said it would take more than \$1 billion to reopen Palisades, which had operated for more than 50 years. The group has applied for a different source of funding, from the DOE's Loan Programs Office, to reopen the plant located in Covert Township. Holtec bought the plant in June of last year for decommissioning, before making

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its first application to restart the facility the following month. Patrick O'Brien, director of government affairs for Holtec, in an emailed statement after Thursday's announcement wrote, "This is great news for the industry, and our country, to consider nuclear so vital for our energy future that the idea of what we are trying to accomplish with Palisades, returning a shutdown nuclear plant back to operation, is something that should happen."

Pacific Gas & Electric (PG&E), operator of the Diablo Canyon Nuclear Power Plant in California, was awarded \$1.1 billion in conditional funding during the first award cycle. The Nuclear Regulatory Commission on Thursday approved PG&E's request for an exemption that could allow the 2,300-MW plant to continue operating past its scheduled 2025 closure date. Applications for the second round of program funding will close on May 31.

*PowerMag*

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

**3 March 2023**

## **The theft of power plants has deprived Africa of electricity**

One of the richest and most influential countries in Africa – South Africa – is sinking into chaos. The country almost lost the main resource that determines the entire life of modern civilization – electricity. This already has enormous domestic ramifications, but will have even greater political ramifications. How did such a large country get here?

A real energy crisis is raging in South Africa. President Cyril Ramaphosa has already called it "an existential threat to the economy and social fabric of our country" and he is by no means exaggerating. Every day in different parts of the country there is a 12-hour power cut. The media is full of articles about the chaos that occurs in the consumer market because of this – when animals on farms die and goods in stores simply spoil. And it's not just the goods that spoil. Thus, in January, the population was even advised to bury the dead for a maximum of four days, as due to constant power outages, bodies in morgues were decomposing.

And it's not about the spike in oil prices (South Africa's energy sector is more than 80% dependent on coal). It is about populism, greed and disregard for basic economic principles. The main culprit for the current tragedy was the South African tradition of cheap electricity (mostly for the companies) – for many years energy was actually subsidized by the state. According to the Washington Post, South Africans had the cheapest electricity in the world until 2007, when mass blackouts began due to insufficient funding for capacity maintenance and the country's growing demand for electricity.

The authorities allegedly took into account the mistakes and in the period from 2008 to 2012 they almost doubled the electricity tariffs. It was assumed that this money would be used, among other things, to maintain the coal-fired power plants. They probably did flow there in the beginning – but the maintenance situation is back to where it was before. The coal-fired power plants stopped operating, and the money allocated for repairs, according to a specially created government commission to investigate the incident, was systematically looted because of a "corruption culture" in the state corporation ESKOM, which is responsible for the national electricity.

The situation reached a critical point in 2018 – since then a cascade of outages began, increasing each year. The logic of what is happening is apparently simple: some plants are out of order, they try to compensate them with energy from others (no less old), an overload occurs and they also stop working. The authorities tried to remedy the situation by subsidizing private energy companies as well as by developing renewable sources. However, for some reason, no attention was paid to the maintenance of existing coal-fired power plants. "Maintenance is not a new project, you will not have a ribbon-cutting event at

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the opening,” South African economist Haya Sithole explains his version of what is happening. As a result, today ESKOM’s plants are generating about half of their total capacity – and at the same time, coal plant accidents continue.

The authorities now intend to invest billions of dollars in ESKOM so that the company can refurbish all its coal plants – but this will take time. At least a few years. New coal-fired power plants can take up to ten years to build. The American media suggest that South Africa choose the promising solar energy – according to them, it takes less than two years to build new plants. But first, solar power is unreliable. Secondly, the creation of new plants and storages for this energy requires huge funds, which the authorities do not have (the American authorities seem ready to help, but they have no guarantees that the allocated dollars will not repeat the fate of those that were sent to repair the coal-fired power plants). Third, the government does not have these two years.

And it’s not just that February’s regular blackouts are costing the country about \$51 million a day. The fact is that these suspensions could cost Cyril Ramaphosa and the country’s ruling African National Congress party power. The management of ESCOM do not want to be blamed for the current situation – because, given the scale of the events, they are threatened with real prison sentences. Therefore, the outgoing director of ESCOM Andre de Ruyter said that the power plants have become a real feeder for the African National Congress.

“No director of a state-owned company in South Africa has allowed himself such sharp criticism of the party,” writes the Financial Times. The rating of the ANC has already seriously fallen (if in 2019 57% of voters voted for him in the elections, now only 40% are ready to vote), so he urgently needs to find and identify someone who is not from his own ranks. It will therefore support the ESKOM corruption story to the hilt and has already demanded that Ruyter immediately disclose the alleged known cases of corruption among senior party members – in the hope that Ruyter will not have “receipts” available.

Meanwhile, the South African opposition has joined this demand – only in the hope that there will be evidence of it. They understand that the shutdowns affect all sections of the population, and the unemployment rate in the country has already reached 33%. And if they manage to shift the blame for what is happening to the ruling African National Congress, then it will not rule for long.

*Brazil Postsen*  
<http://brazil.postsen.com/>

**6 March 2023**

## **Bahnhof wants to build a nuclear power station for its new Stockholm data center**

Swedish data center operator Bahnhof wants to build a nuclear reactor to power a new data center, according to local news reports. The company, famous for its Pionen facility styled like the lair of a James Bond villain, is putting together plans for a small modular reactor (SMR) on an industrial site in the Hjorthagen area of Stockholm which would provide electrical power for a new data center, as well as 30,000 households, along with heat for homes and offices.

Details of the project are scant, in the article, which appears to be prompted by a survey of 20 large Swedish businesses, which found Bahnhof was one of three large electricity consumers who would be prepared to invest their money in a new nuclear plant that would supply their needs in future. The other pro-nuclear organizations are gas company Linde and mining firm Boliden. Bahnhof has seven data centers in Swedish cities and is looking into using nuclear power at a facility currently under construction in Hjorthagen. The company is well known in the data center world for its underground Pionen

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data center in central Stockholm, which is built in a former government nuclear bunker, and has backup power provided by diesel engines recovered from submarines.

Sweden is an energy exporter with a lot of hydropower and other renewable energy (around 40 percent), as well as around 31 percent from nuclear reactors, but it still produces 28 percent of its electricity from oil and coal. In response to global heating, and the energy crisis brought on by Russia's invasion of Ukraine, Sweden has recently announced that previous limits to nuclear energy expansion in the country will be lifted, with a new €25 million (\$26.4m) investment in nuclear research, alongside renewed investment in wind power. Small modular reactors (SMRs) have been proposed as a way to take the risk out of nuclear power, which has historically been plagued by huge cost overruns on giant reactor projects. By contrast, SMRs are intended to be built to a standard design that can be tested and approved centrally and then built reliably in factories, as components that can be shipped to their eventual destination.

Some data center operators are said to be interested in the idea. Leaders in the field include NuScale in the US, and Rolls-Royce in the UK. Sweden also has local SMR expertise, including the company Kärnfull Next, which has signed an agreement with Finnish utility Fortum to jointly explore opportunities for SMRs in Sweden. Kärnfull is also working with Japan's Hitachi. Meanwhile, Swedish energy company Uniper has applied for a grant to research SMR applications in the country.

*DCD*

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

**7 March 2023**

## **UK Grid Uses Back-Up Coal for First Time as Cold Snap Hits**

Britain's National Grid Plc called on a new back-up coal-fired reserve to generate power for the first time, after the market failed to provide enough electricity during the worst supply crunch this winter. It's a first for the grid operator, which was asked by the government to maintain coal-fired power capacity to cope with a historic energy crisis. The reserve units were later stood down by National Grid after peak evening demand eased.

Tuesday's conditions of low wind, high demand and a dearth of imports due to strikes by power-station workers in France left the grid struggling to maintain a safe buffer, also known as an operational margin. Wind generation has dropped to less than half its usual level, as freezing temperatures are forecast for London on Wednesday morning. "Although it's never positive to use coal, it's better than having the lights go out," Adam Bell, head of policy at consultancy Stonehaven, said by phone. "Right now, in the middle of an energy crisis, it's a sensible thing to do." The grid operator called on Electricite de France SA's two contingency units at West Burton A station in England to generate power on Tuesday to secure an adequate buffer to meet demand. Both were later disconnected from the grid but relying on them highlights the lengths National Grid had to go to to deal with a late-winter cold snap.

"Snow, ice and low temperatures are the main themes of this week's forecast, with the UK under an arctic maritime air mass," the Met Office's Chief Meteorologist Matthew Lehnert said in a statement on the forecaster's website. The situation is "worrying" according to consultants LCP Delta. "French strikes have put pressure on their forecast available margins," impacting the ability to source power via two cables linking Britain and France, the analyst group said. The coal contingency program was an exercise of caution that's costing British households almost £400 million through charges spread across energy bills. The UK is set to have just one coal plant — Uniper SE's facility at Ratcliffe — operating from April, and even that's expected to close in 2024.



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After phasing out coal generation, the government aims to have a net zero grid by 2035. It's a tough target that will require an accelerated build-out of renewable energy capacity while maintaining reliability. The grid also said on Tuesday afternoon that it would no longer need households to turn down demand on Wednesday, after earlier suggesting that might be necessary. It has initiated its Demand Flexibility Service in previous tight days, paying households to turn down the use of their power to maintain a safe buffer.

*Bloomberg*

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

**7 March 2023**

## **Sweden remains Europe's largest net power exporter**

Sweden retained its position as the biggest net power exporter in Europe during the second half of 2022. That was the standout highlight of a new report on the European electricity market by energy data analyst EnAppSys.

The report describes the value of imports and exports in Europe during the last six months of 2022. It found that Sweden's total net exports amounted to 17TWh, with most of the power flowing to Finland (8TWh) and Denmark (4TWh). Jean-Paul Harreman, director of EnAppSys BV, said: "Sweden always has a steady flow of exports to Finland and the Baltics due to a constant price difference in favour of Swedish nuclear and hydro generation. The flows to continental Europe via Poland, Denmark and Germany are also relatively constant. "With other traditionally large exporters saw much lower exports (Norway, due to a dry summer) or even imports (France, due to low nuclear availability), Sweden's more diversified fuel mix ensured it retained its position as Europe's largest exporter."

Throughout the whole of 2022, Britain was in a net export position on average, with a net export of 4.1TWh of power leaving GB for continental Europe and Ireland. France had the largest net volume of imports from GB. Clement Bouilloux, EnAppSys' French territory manager, said: "The persistent low availability of French nuclear power put added pressure on the European wholesale market as France has historically been a primary exporter in Europe. In total, 16.4TWh of power was imported by France in 2022, compared to the 43TWh of export in the previous year.

"In addition, Germany was the third highest net exporter with total net exports of 9TWh. This meant that Germany lost its position to Spain as the second biggest net exporter to Europe, with Spain almost doubling its net export to 11.6TWh as a result of the Iberian exception and its gas price cap. The price cap was implemented from June 15 for a price of 40€/MWh, making Spanish power extremely competitive all over Europe. As a consequence, Spain was able to export additional 5.1 TWh compared to the first half of 2022, filling almost half of the additional French needs of 11.4 TWh."

Spain fared well in 2022 during the electricity crisis, as the diversification of its gas imports made it less dependent on gas from Russia. Thanks to an Iberian price cap on gas prices for power generation, its gas assets saw a massive increase in utilization from mid-June. Its storage and regasification infrastructure allowed it to receive gas from North Africa and North America, which allowed it to keep its reserves at optimal levels, with ships waiting for days to empty their cargoes.

The high temperatures recorded during the end of the year, unusually high for this period, helped to keep gas prices stable. The trend has continued into the first months of 2023, as France continues to struggle to restart its nuclear plants, temperatures and gas stocks remain at high levels for this time of year and renewable generation, mostly solar, has been increasing in recent weeks. As the price-cap remains in place, Spain will continue to export cheaper power into France.

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Gabor Szatmari, EnAppSys territory manager for Central and Eastern Europe (CEE), said: “When net exports as a percentage of demand was taken into consideration, Bulgaria saw the highest percentage of its power generation exported (30.7%). With a large share of its power generated by nuclear and lignite, high gas prices moved Bulgarian power to the cheaper side of the merit order, with a lot of export to Greece, which has a very high gas dependency. Bulgaria also exported significant volumes of power to Romania and Serbia, which both struggled with low hydro during the summer months.

“In the first half of 2023, we are likely to see Norway and France gradually moving up the ranking for highest exporters as Norwegian hydro reserves have filled up and French nuclear power is slowly coming back online.” Italy remained the biggest net importer during the first six months of 2022, sourcing 21TWh from outside the country, of which 9.9TWh came from Switzerland and 7TWh from France.

*Power Engineering*

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

**8 March 2023**

## **The world's first submerged liquid-cooled energy storage power station made in China**

The world's first submerged liquid-cooled energy storage power station, the 70MW/140MWh energy storage power station project in Baohu, Meizhou, Guangdong, was officially put into operation on March 6. The energy storage power station is equivalent to the “power bank” of the city. When the power consumption of the grid is low, it converts electrical energy into chemical energy and stores it in the battery; Participate in peak shaving and frequency regulation, play a role in peak shaving and valley filling, and improve new energy consumption capacity.

According to reports, the energy storage battery in the energy storage power station will continue to generate heat during operation, and cooling is an important factor affecting the safety of the energy storage power station. Previously, energy storage batteries were mainly cooled by air cooling and liquid cooling. Both of these two cooling technologies have the disadvantages of slow cooling speed and long cooling time. In the Meizhou Baohu energy storage power station, the battery is directly immersed in the coolant in the cabin to achieve direct, rapid and sufficient cooling of the battery, and the heat dissipation efficiency of the battery is increased by 50% compared with the traditional method. It can realize that the battery operating temperature rise does not exceed 5 degrees Celsius, and the temperature difference between different batteries does not exceed 2 degrees Celsius. The project took only more than 4 hours from the start of construction to the trial operation.

*Gamingdeputy*

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

**8 March 2023**

## **National Grid releases 5-point plan to expedite grid connections**

National Grid ESO is initiating a five-point plan to expedite grid connections for electricity transmission-related projects. The Electricity System Operator's (ESO) analysis shows that only 30-40% of transmission projects in the queue make it to fruition, but the queue operates on a first-come-first-served basis. This can result in projects further up the queue holding back those that are more readily able to supply the UK with needed energy, even if those further up the queue are not ready to plug in. The plan is the ESO's resolution for the short term, a five-point plan to speed up connections as follows:

- Operating a Transmission Entry Capacity Amnesty until April 2023, allowing developers to terminate their connection contracts without incurring liabilities, freeing up capacity in the queue.

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- Updating modelling assumptions to reflect current connection rates and reducing the assumption that most projects in the queue will connect.
- Changing the treatment of storage, including batteries, on the network to allow them to connect faster and free up capacity for other projects.
- Developing new contractual terms for connection contracts to manage the queue more efficiently so that those projects that are progressing can connect and those that are not can leave the queue.
- A 'soon-to-be-made' offer of an interim option for storage projects to connect to the network sooner, but with the caveat that they may be required to turn off more frequently when the system is under stress without initially being paid to do so.

This, however, is a short-term resolution. The existing connections process in the UK was designed 20 years ago for a time when connection applications were made by a small number of large fossil fuel generators. The country's progress on decarbonization has led to a large volume of applications to connect to the electricity transmission system.

Connections applications now come from a diverse range of generation and storage projects at varying sizes and scales across Great Britain. Therefore, there is a need for wider reform. Julian Leslie, ESO Head of Networks and Chief Engineer, said: "We recognize the frustration some of our connections customers are experiencing and through this package of short-term initiatives and longer-term reforms we are determined to address the challenges with the current process which was not designed to operate the sheer scale of applications we are receiving today." The ESO has begun a programme of longer-term reform as part of its Connections Reform Project. The project is now in the design phase to identify longer-term solutions, to be set out in the coming months before implementation later this year.

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

**12 March 2023**

## **Narita airport to get 40% of energy needs from solar**

Japan's busiest international travel hub is going green. Narita Airport near Tokyo says it will install a solar panel system that will eventually supply a big portion of its energy needs.

The initiative is a joint venture of Narita International Airport Corporation and Tokyo Gas. They have created a firm that will install a vast array of solar panels next to runways and on building rooftops. The panels are expected to cover about 200 hectares by the time they are all in place at the end of fiscal 2045. The system will generate 180 megawatts of power. Narita officials say that's enough to provide 40 percent of the airport's annual energy needs. The venture is expected to cost roughly 100 billion yen, or about 740 million dollars.

*NHK World Japan*  
<http://www.nhk.or.jp/>

**13 March 2023**

## **Iran-Pakistan Electricity Exchange Volume to Increase by about 200MW**

The volume of electricity exchange between Iran and Pakistan will surge by about 200 MW. Iranian Minister of Energy Ali Akbar Mehrabian in his meeting with visiting Pakistani Energy Minister Khurram Dastgir Khan in Tehran on Sunday said that the volume of electricity exchange between the two countries will rise by about 200 megawatts within the framework of a new agreement. Turning to the cultural commonalities between the two countries, Mehrabian said that, in addition to the common civilizational and religious capacities, Iran and Pakistan have enjoyed longstanding cultural roots including the Persian language and distinguished poets such as Iqbal Lahouri.

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Referring to the special emphasis of the Iranian administration on deepening and developing Iran's relations with its neighbors, he said Iran and Pakistan have established good economic cooperation. Iran's energy minister put the value of the annual economic exchanges between Iran and Pakistan at \$2 billion. The Pakistani energy minister, for his part, emphasized the need for developing and deepening relations between the two countries and added, "It is hoped that the two countries would witness the expansion of electricity exchanges in the future."

The amicable relations between Iran and Pakistan are beyond the regional and international events and the two countries share strong cultural, historical and geographical commonalities, Khurram Dastgir Khan stated.

*Tasnim News*  
<http://www.tasnimnews.com/>