WORLD POWER SYSTEMS REVIEW

15 October 2025

1 October 2025

Terna completes first MACSE auction: 10 GWh of energy storage capacity awarded

Contracted facilities from the first MACSE auction to enter into operation in 2028; bids more than four times demand. Clearing prices well below reserve premium.

On 30 September, Terna held the first auction under the MACSE (Electricity Storage Procurement Mechanism). A total of 10 GWh of storage capacity was procured in Southern Italy and the islands, covering 100% of the required demand. The auction results highlighted significant market interest, with bids exceeding demand by more than four times and weighted average clearing prices of €12,959/MWh-year (Central-South: €14,566/MWh-year; South and Calabria: €12,146/MWh-year; Sicily: €15,846/MWh-year; Sardinia: €15,029/MWh-year), all well below the reserve premium of €37,000/MWh-year.

"The auction results show strong competition and robust market interest. We are looking at an associated investment volume of around € 1 billion euros, which will enable greater renewable integration while further reducing reliance on thermoelectric generation and related natural gas consumption," said Giuseppina Di Foggia, Terna's Chief Executive Officer and General Manager. "Upcoming auctions will follow the evolution of renewable generation and grid development: since 2023, 17 GW of new renewable capacity has already been commissioned. Terna is at the forefront of ensuring a more resilient, smarter, and increasingly sustainable power grid."

The MACSE framework, designed by Terna on the basis of Legislative Decree 210/2021 and ARERA Resolution 247/23, was approved by the Ministry of Environment and Energy Security in October 2024, following the European Commission's approval in December 2023.

The contracted facilities from the first MACSE auction—lithium-ion battery systems—are scheduled to enter into operation in 2028.

The first auction was conducted across four distinct zones: Central-South, South and Calabria, Sicily, and Sardinia. For each area, Terna defined minimum and maximum volumes to be procured.

The outcome of the process is fully consistent with Terna's forecasts regarding the technology's maturity by 2028 and the expected cost trajectory, with the observed cost reduction fully captured by the auction results.

The storage capacity procured through the mechanism will play a fundamental role in operating the electricity system over the coming years, as the share of non-programmable renewable sources continues to grow. It will enable their full integration into the system while providing the ancillary services required to ensure grid security and adequacy.

Terna
http://www.terna.it

1 October 2025

Belgium's Tihange 1 nuclear reactor ends 50 years of service

Unit 1 of the Tihange nuclear power plant has been taken offline for the final time after 50 years of operation and disconnected from the grid. Its closure is in line with Belgium's nuclear phase-out policy, under which three other reactors have already been shut down.

Operator Electrabel, the Belgian subsidiary of France's Engie, said the 962 MWe (net) pressurised water reactor was shut down at 23:21 local time on 30 September. It entered commercial operation on 1 October 1975.

Belgium's federal law of 31 January 2003 required the phase-out of all seven nuclear electricity generation in the country. Under that policy, Doel 1 was originally set to be taken

out of service on its 40th anniversary – 15 February 2015. However, the law was amended in 2013 and 2015 to provide for Doel 1 to remain operational for an additional ten years and it was retired in February this year. Duel 3 was closed in September 2022 and Tihange 2 at the end of January 2023. Unit 2 of the Doel plant is set to shut in November.

According to the Belgian Nuclear Forum, Tihange 1 - which is 50% owned by EDF Belgium - has produced more than 327 TWh of carbon-free electricity over its operating lifetime. "On an annual basis, this represents an average of 6.5 TWh, or the annual consumption of around 1.8 million households," it said.

Tihange 1 has now entered the decommissioning phase in preparation for its actual dismantling. Fuel will be unloaded from the reactor and cooled in the storage pool, so it can later be transported to temporary storage. Afterwards, the primary circuit will be chemically cleaned. The decommissioning phase is not scheduled to begin until 2028 and will continue until 2040.

The government had reportedly hoped to keep the reactor operating for longer and requested Engie not to carry out any irreversible work.

However, Engie has ruled out extending the operation of Tihange 1, The Brussels Times reported. Speaking at a press briefing on 29 September, site director Antoine Assice said the necessary preparatory work should have started five years ago. In addition, a prolonged operation of unit 1 would hinder the dismantling of Tihange 3, which is already under way. Also, the financial costs involved would be prohibitive.

"We are focused on the dismantling, which involves thousands of planned actions executed in strict alignment with our strategy and the agreement reached with the government," Assice was quoted as saying. "There will be no extension of this or any other nuclear unit."

Belgium's last two reactors - Doel 4 and Tihange 3 - were scheduled to close in November 2025. However, following the start of the Russia-Ukraine conflict in February 2022 the government and Electrabel began negotiating the feasibility and terms for the operation of the reactors for a further ten years, to 2035, with a final agreement reached in December, with a balanced risk allocation.

In May this year, Belgium's federal parliament voted by a large majority to repeal the 2003 law which set out a phase-out of nuclear power and ban on the construction of new nuclear generating capacity.

World Nuclear News
http://www.world-vuclear-news.org

1 October 2025

AEMO publishes electricity reliability update reflecting power station retirement changes

The Australian Energy Market Operator (AEMO) today published an update to the 2025 Electricity Statement of Opportunities (ESOO), the 10-year reliability outlook for the National Electricity Market (NEM).

The update was triggered by material changes to the retirement dates for two power stations, which affect the 2025 ESOO reliability forecasts released in August.

This includes the delayed retirement of three units at the Torrens Island B Power Station (600 megawatts) in South Australia from 1 July 2026 to 1 July 2028, and the earlier potential closure of the Gladstone Power Station (1,680 MW) in Queensland from 2035 to 31 March 2029.

NEM ESOO Update shows that the previously forecast reliability gap for South Australia under the ‘Committed and Anticipated Developments’ outlook in 2026-27 is no longer expected. As a result, AEMO will not request the Australian Energy Regulator to consider imposing an obligation on retailers and liable entities to enter sufficient contracts

through the retailer reliability obligation (RRO) for South Australia in 2026-27. While forecast reliability gaps emerge in Queensland from 2029-30 due to the earlier closure notification from CS Energy for the Gladstone Power Station, no RRO instruments apply at this stage as a result of this update.

AEMO Executive General Manager System Design, Nicola Falcon, said: "The delayed retirement of AGL's Torrens Island B power station has improved the short-term reliability outlook in South Australia. Bringing forward the Gladstone Power Station's retirement by six years flags the need for the timely delivery of planned longer-term investment. More broadly across the National Electricity Market, the delivery of new generation, storage and transmission, along with the operation of consumer energy resources to support reliability, remain critical with considerable power station retirements and increasing demand forecasts," she said.

AEMO
http://www.aemo.com.au

2 October 2025

Energy Department Announces Termination of 223 Projects, Saving Over $7.5 Billion

The U.S. Department of Energy today announced the termination of 321 financial awards supporting 223 projects, resulting in a savings of approximately $7.56 billion dollars for American taxpayers.

Following a thorough, individualized financial review, DOE determined that these projects did not adequately advance the nation's energy needs, were not economically viable, and would not provide a positive return on investment of taxpayer dollars.

The awards were issued by the Offices of Clean Energy Demonstrations (OCED), Energy Efficiency and Renewable Energy (EERE), Grid Deployment (GDO), Manufacturing and Energy Supply Chains (MESC), Advanced Research Projects Agency-Energy (ARPA-E) and Fossil Energy (FE). "On day one, the Energy Department began the critical task of reviewing billions of dollars in financial awards, many rushed through in the final months of the Biden administration with inadequate documentation by any reasonable business standard," Secretary Wright said. "President Trump promised to protect taxpayer dollars and expand America's supply of affordable, reliable, and secure energy. Today's cancellation's deliver on that commitment. Rest assured, the Energy Department will continue reviewing awards to ensure that every dollar works for the American people."

Of the 321 financial awards terminated, 26% were awarded between Election Day and Inauguration Day. Those awards alone were valued at over $3.1 billion.

In May 2025, Secretary Wright issued a Secretarial Memorandum entitled, "Ensuring Responsibility for Financial Assistance," establishing a new policy for evaluating financial awards. The policy authorized program offices to request additional information from awardees. It also required that awards be reviewed on a case-by-case basis to identify waste, safeguard taxpayer dollars, protect America's national security, and advance President Trump's commitment to deliver affordable, reliable, and secure energy for the American people.

Using this review process, DOE evaluated each of these awards and determined that they did not meet the economic, national security or energy security standards necessary to justify continued investment.

As outlined in the Secretary's memorandum, award recipients have 30 days to appeal a termination decision. Some of the projects included in this announcement have already begun that process.

DoE
http://www.energy.gov

2 October 2025

Data centers 'primary reason' for high PJM capacity prices: market monitor

Load from data centers drove up revenue in the PJM Interconnection's last capacity auction by $7.3 billion, or 82%, to $16.1 billion, according to Monitoring Analytics.

- Data center load drove up revenue in the PJM's last capacity auction by $7.3 billion, or 82%, to $16.1 billion, according to the grid operator's market monitor.
- Combined with PJM's previous capacity auction, existing and forecast data center load resulted in $16.6 billion in capacity auction revenue, or about half of the $30.8 billion in revenue from the two auctions, Monitoring Analytics said in a report.
- "Data center load growth is the primary reason for recent and expected capacity market conditions, including total forecast load growth, the tight supply and demand balance, and high prices," the market monitor said.

Capacity prices — a cost that is ultimately paid for by electricity consumers — surged in PJM's last two July capacity auctions. The 2024 auction results led to double-digit electric bill increases for some utility customers in PJM's footprint, which covers parts of 13 Mid-Atlantic and Midwest states and the District of Columbia.

PJM holds capacity auctions to help ensure that it has adequate power supplies to meet future needs. In the last auction, PJM bought capacity for a one-year period that starts on June 1. The grid operator is preparing to hold its next auction in early December to buy capacity for a year beginning on June 1, 2027.

Monitoring Analytics contends it is "misleading" to say that PJM's recent capacity market results simply reflect tightening supply and demand. "The current conditions are not the result of organic load growth," it stated. "The current conditions in the capacity market are almost entirely the result of large load additions from data centers, both actual historical and forecast." Also, the "extreme uncertainty" in data center load forecasts is unprecedented and "raises questions about the meaning of clearing a capacity auction based on those forecasts," Monitoring Analytics said.

In June, the market monitor recommended requiring new data centers to supply their own generation instead of tapping into existing power supplies in PJM.

"The impact of the uncertain forecast of data center load on other customers would be limited or eliminated" by the requirement, Monitoring Analytics said in the report.

PJM is in the middle of a fast-track stakeholder process to develop new rules for adding large data centers to its system with a goal of filing a proposal before the end of the year at the Federal Energy Regulatory Commission.

As part of the process, PJM is proposing to bolster its load forecasting for data centers and other large loads, according to an Oct. 1 presentation from PJM staff. Under the proposal, state utility commissions could review and provide feedback on large load adjustments before they are included in PJM's load forecast.

Utilities would also have to ask if any data center proposals in their service territory are duplicative proposals. Staff suggested requiring large load customers to post financial security for the capacity they plan to buy in an auction.

PJM has dropped a proposal for "non-capacity-backed load" that was widely opposed by its stakeholders, according to the presentation.

On the issue of a price cap and floor for PJM's capacity auctions, the last auction would have been $3.2 billion, or 20%, higher except for a cost cap that grew out of an agreement between the grid operator and Pennsylvania Gov. Josh Shapiro, a Democrat, according to the market monitor's report. The impact of data center development on PJM's auction results will increase sharply in the 2028/2029 base capacity auction scheduled for June, when the maximum and minimum price caps in the agreement expire, Monitoring

Analytics said. Separately, the Union of Concerned Scientists this week found that utility ratepayers in PJM will pay about $4.4 billion for data center-related transmission projects that were approved in 2024 with similar results expected this year.

Utility Dive
http://www.utilitydive.com

2 October 2025

PJM Proposes Simplified Connection Path for Distribution-Level Resources

PJM filed proposed reforms with FERC Oct. 1 to simplify its rules for connecting generation resources at the distribution level across PJM's footprint, a move that would enable PJM staff to reallocate time and resources to their work on transmission-level interconnections and provide greater clarity to project developers earlier in the interconnection process.

The PJM Members Committee unanimously endorsed the proposed Tariff changes (PDF) Sept. 25. If accepted by the Federal Energy Regulatory Commission (FERC), these amendments to PJM's Tariff would:

- Create significant time-savings and efficiencies for PJM staff, allowing them to devote greater resources to the processing of transmission-level interconnection projects.
- Provide greater clarity on cost and scope for developers and transmission owners much earlier in the interconnection process.
- Affirm the important role of PJM's state and local regulatory authority partners in setting the rules that govern the physical interconnection of resources to the distribution facilities that they regulate.

The modifications involve eliminating "First Use," a legal test created by FERC in 2003 that causes certain distribution-level interconnections to be processed under federal interconnection rules, as opposed to the interconnection rules of the applicable state or local authority that regulate the distribution facility. This practice has required these projects, some of them very small, to go through PJM's full interconnection process and acquire a FERC-jurisdictional Generation Interconnection Agreement.

PJM's proposed reforms would instead require distribution-level connections to participate in a simpler state/local-jurisdictional interconnection agreement process and receive a Wholesale Market Participation Agreement (WMPA) from PJM.

If accepted by FERC, the reforms would be implemented on April 28, 2026.

PJM Interconnection
http://insidelines.pjm.com

3 October 2025

28 April Blackout in Spain and Portugal: Expert Panel releases comprehensive factual report

Today, the Expert Panel, set up by ENTSO-E to investigate the 28 April 2025 blackout in continental Spain and Portugal, has published its comprehensive factual report. This unprecedented incident, which resulted in a total loss of the power supply of continental Spain and Portugal, marks the most significant power system event in Europe in over two decades, with major impacts on Spanish and Portuguese citizens and society.

The report, now available on the ENTSO-E website, presents a detailed account of the system conditions on 28 April leading up to the blackout, the sequence of events, and the restoration process. The investigation, conducted by a panel of 45 experts from transmission system operators and regulatory authorities across Europe (the Expert Panel), relied on extensive data collection from generating units, significant grid users, and transmission and distribution system operators.

The factual report serves as the first major report of the Expert Panel and has been performed in line with EU regulations. Today, work is already underway on the preparation of the final report, which is expected to be released in Q1 2026. It will include a detailed root cause analysis and recommendations on how to prevent similar events happening across the European power system in the future.

For more details and to access the full factual report, visit the ENTSO-E dedicated webpage.

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

3 October 2025

Newsom vetoes bill to codify load flexibility in California grid planning

The governor said the bill does not align with the state's existing resource adequacy framework. Clean energy advocates called it a missed opportunity.

- California Gov. Gavin Newsom on Wednesday vetoed a bill that would have required the state energy commission to evaluate new and existing load management mechanisms and authorize it to include those findings in its biennial integrated energy policy report.
- AB 44 directed the commission to adopt a set of "upfront technical requirements and load modification protocols" to provide the "option" for a load-serving entity to reduce or modify its electrical demand forecast.
- "While I support expanding electric load flexibility, this bill does not align with the California Public Utility Commission's Resource Adequacy framework," Newsom said in a brief statement explaining his reasoning. "As a result, the requirements of this bill would not improve electric grid reliability planning and could create uncertainty around energy resource planning and procurement processes."

Newsom recently signed a sweeping package of energy legislation that laid the groundwork for a regional Western electricity market and extended the state's cap and trade program, among other things. But it did not include funding to continue the state's grid reliability programs, including what clean energy advocates have called the world's largest virtual power plant. The passage of AB 44 was seen as a bright spot by those advocates, who decried Newsom's decision.

"With Assembly Bill 44 being vetoed, the state has missed a huge opportunity to advance common-sense policy that would have lowered costs, strengthened the grid, and unlocked the full potential of advanced energy," Edson Perez, California lead at Advanced Energy United, said in a statement.

Demand response and virtual power plants have grown in California with the rise of distributed energy resources and advanced tools for managing them.

A report by the Brattle Group concluded the state's taxpayer-funded virtual power plant could save ratepayers $206 million between 2025 and 2028 and reduce the need for gas peaker plants. The report was commissioned by Sunrun and Tesla Energy, both of which participate in the program.

Utility Dive
http://www.utilitydive.com

3 October 2025

European Power Prices Turn Negative as Storm Boosts Wind Output

European power prices turned negative in several markets as Storm Amy is set to drive record wind generation this weekend. Power prices for Saturday in the UK, Germany and the Netherlands all settled below zero. Wind generation in the UK and Germany are

both forecast to reach new highs, according to Bloomberg models.Amber alerts are in place for parts of Scotland and Northern Ireland with gusts in excess of 95 miles per hour expected, according to the UK Met Office. Bloomberg analysis, based on an internal model, predicts wind generation could reach as much as 24 gigawatts on Friday afternoon, with high output continuing into Saturday. The previous record set was 22.5 gigawatts last December, data from the National Energy System Operator shows.

Storms can at times bolster Europe's energy supplies by increasing renewable generation and reducing the need for gas-fired power. Traders will be closely watching output as heating season begins, since stronger wind generation reduces how much gas needs to be drawn from storage on peak-demand days.

German wind generation is expected to surge above 54 gigawatts on Saturday according to a Bloomberg model, beating a previous record of just above 53 gigawatts in December 2023. UK day-ahead power prices fell to -£0.42 per megawatt-hour, according to data from Epex Spot SE. The equivalent contract in Germany settled at -€0.29 per megawatt-hour. Negative electricity prices — which occur when abundant cheap power outstrips grid demand — have become a regular feature of European markets, often appearing at midday during the solar peak. However a full day of negative prices is relatively rare, and the UK has not recorded one since 2023.

In The UK, the extreme weather is also disrupting transport. Avanti West Coast has advised rail passengers not to travel north from England to parts of Scotland after 5 p.m. on Friday, or at all on Saturday. The Met Office warned of further disruptions to flights and road travel due to the heavy rain and strong winds. Yellow warnings have been issued on Saturday for large parts of England including London.

Windy weather is also expected across large parts of northwestern France, with yellow wind warnings in place by Meteo France for Saturday stretching as far east as Paris. Electricite de France SA said it would reduce nuclear output at some sites due to "economic reasons" as high wind generation could push down power prices. Power prices for delivery on Saturday in France did not drop below zero but settled at €4.62 per megawatt-hour.

Storm Amy, driven by low-pressure systems in the Atlantic, has been intensified by recent interactions with Hurricanes Humberto and Imelda.

Energy Connects
http://www.energyconnects.com

6 October 2025

U.S.: Gov. Newsom signs landmark legislation for independent governance of Western electricity markets

Governor Newsom's signing of Assembly Bill 825 is a landmark achievement for the future of energy collaboration and innovation across the Western United States. He, along with the California Legislature and the broad coalition of supporters, have recognized the importance of making this crucial next step toward independent governance of Western electricity markets. Now that AB 825 is signed into law, the ISO will work closely with partners across California and the rest of the region to ensure a more reliable and affordable bulk electric system for the benefit of consumers throughout the West.

CAISO
http://www.caiso.com

7 October 2025

Hydrogen and batteries power 'first-of-its-kind' California microgrid

Interest in hydrogen fuel cells has grown as data centers and other large-load customers seek alternatives to diesel generators.

A first-of-its-kind hydrogen- and battery-powered microgrid project is up and running in the remote California town of Calistoga, according to a Sept. 25 announcement by Pacific Gas and Electric Company and Energy Vault.

The Calistoga Resiliency Center provides backup power to the town of 1,600 by using hydrogen fuel cells to charge lithium-ion batteries on a site that was too small to allow for wind or solar power generation, the companies said.

Frank Wolak, president and CEO of the Fuel Cell and Hydrogen Energy Association, said in an interview that interest in hydrogen fuel cells has grown over the past year or two as data centers and other large-load customers seek alternatives to diesel generators.

Utility Dive
http://www.utilitydive.com

7 October 2025

Global renewable capacity is set to grow strongly, driven by solar PV

The amount of installed renewable power is forecast to more than double by 2030 as the sector navigates headwinds in supply chains, grid integration and financing

Renewable sources of electricity generation are continuing to grow strongly around the world, with global capacity expected to more than double by 2030, according to the IEA's latest medium-term forecast. Led by the rapid rise of solar PV, renewables' expansion is taking place in a context of supply chain strains, grid integration challenges, financial pressures and policy shifts.

Renewables 2025, the IEA's main annual report on the sector, sees global renewable power capacity increasing by 4 600 gigawatts (GW) by 2030 – roughly the equivalent of adding China, the European Union and Japan's total power generation capacity combined.

Solar PV will account for around 80% of the global increase in renewable power capacity over the next five years – driven by low costs and faster permitting timeframes – followed by wind, hydro, bioenergy and geothermal. Geothermal installations are on course to hit historic highs in key markets, including the United States, Japan, Indonesia and a host of emerging and developing economies. Rising grid integration challenges are renewing interest in pumped-storage hydropower, whose growth is expected to be almost 80% faster over the next five years compared with the previous five.

In emerging economies across Asia, the Middle East and Africa, cost competitiveness and stronger policy support are spurring faster growth of renewables, with many governments introducing new auction programmes and raising their targets. India is on course to become the second-largest renewables growth market globally, after China, and is expected to comfortably reach its ambitious target by 2030.

At the company level, confidence in renewables remains strong. Most major developers have either maintained or raised their 2030 deployment targets compared with last year, reflecting resilience and optimism in the sector. Offshore wind stands apart, however, with a weaker growth outlook – around a quarter lower than in last year's report – resulting from policy changes in key markets, supply chain bottlenecks and rising costs.

The report's outlook for global renewable capacity growth is revised downward slightly compared with last year, mainly due to policy changes in the United States and in China. The early phase-out of federal tax incentives along with other regulatory changes in the United States lowered our growth expectations for renewables in the US market by almost 50% compared with last year's forecast. China's shift from fixed tariffs to auctions is impacting project economics, resulting in a reduction in our forecast for renewables' growth in the Chinese market.

These adjustments are partly offset by buoyancy in other regions – particularly India, Europe and most emerging and developing economies – where growth prospects have been

revised upward due to ambitious new policies, expanded auction volumes, faster permitting and rising deployment of rooftop solar. Corporate purchase power agreements, utility contracts and merchant plants are also a major driver, together accounting for 30% of global renewable capacity expansion to 2030 – doubling their share compared with last year's forecast.

Solar PV is expected to dominate renewables' growth between now and 2030, remaining the lowest-cost option for new generation in most countries, while wind power, despite its near-term challenges, is still set for considerable expansion as supply bottlenecks ease and projects move forward, notably in China, Europe and India. Hydropower and other renewable technologies will continue to play important roles in supporting electricity systems and enhancing flexibility.

Global supply chains for solar PV and rare earth elements used in wind turbines remain heavily concentrated in China, underscoring ongoing risks to supply chain security. While new investment to diversify supply chains is taking place in countries around the world, concentration in China for key production segments is set to remain above 90% through 2030.

At the same time, the rapid rise of variable renewables is placing increasing pressure on electricity systems. Curtailment and negative price events are already appearing in more markets, signalling the need for urgent investment in grids, storage and flexible generation. Several countries are beginning to respond with new capacity and storage auctions, but much more will be needed to ensure that variable renewables are integrated in a cost-efficient and secure way.

The role of renewables in transport and heating is expected to rise in the coming years, but only slightly. In the transport sector, their share of energy use is forecast to increase from 4% today to 6% in 2030, driven mainly by renewable electricity for EVs in China and Europe, with biofuels adding growth in Brazil, Indonesia, India and other key markets. Renewables' share of energy used globally to provide heat for buildings and industry is set to increase from 14% to 18% over the forecast period.

IEA
http//www.iea.org

8 October 2025

NESO Winter Outlook: Complacency isn't an option

Whilst the Winter Outlook gives the best margins on the electricity system in six years, NESO Director of Resilience and Emergency Management, Dr Deborah Petterson warns of importance of maintaining vigilance.

Three years ago, when we launched the Winter Outlook, Great Britain faced one of the most difficult winters in recent memory following the illegal invasion of Ukraine. The whole sector pulled together to meet that challenge and this year; our analysis shows that we are in a more comfortable position.

This winter, we expect to see the largest electricity margins since 2019/20, meaning we have more electricity supply than demand than any winter in the last six years. Growth in battery storage and greater availability of gas power stations, along with the commissioning of the Greenlink electricity interconnector to Ireland, have all helped grow this year's margins to 6.1GW, almost a GW more than last year.

We continue to see relative stability in markets across Europe, giving us confidence that Great Britain will be able to rely on secure supplies from overseas when we need them.

Whilst margins have improved year on year since the impact of the COVID-19 pandemic and then the invasion of Ukraine in 2022, we understand the importance of

remaining vigilant. Managing the resilience of the electricity network, and balancing supply and demand second by second, is one of NESO's core duties.

NESO undertakes this duty to maintain a secure and resilient electricity system with the utmost seriousness. It is a complex task, balancing likely impacts of weather, reliability of technology and geopolitical factors. At the same time, we have been preparing the system to run with zero carbon so that it is ready for a clean power system by 2030 and delivering a sustainable future for everyone.

Our work has strengthened the resilience of the electricity system, whilst driving cost savings for everyday consumers. As we witness a once-in-a-generation increase in both electricity supply and network infrastructure, ensuring we retain one of the most reliable networks in the world is only becoming more important. Finding new innovative solutions to deliver resilience and manage the growing expansion of the energy sector and the data that comes with it, is critical to supporting Britain's wider economic goals.

In the last twelve months, for example, we've seen Britain's first ever grid-forming battery come online, an innovative way of replacing some of the functions of fossil fuel power plants as we move towards a cleaner energy system. These batteries can both store energy and provide stability to the system, supporting both decarbonisation and system security.

In the face of an increasingly complex energy system, we continue to enhance our control room's ability to send complex instructions to hundreds of assets a second through our Open Balancing Platform (OBP), enabling smaller and more flexible units to participate in greater numbers. In 2023 NESO averaged about 2,300 instructions a day from the control room but today we're averaging nearly three times that amount with over 6,700 instructions a day. We are doing the work to ensure the system can manage this increasing complexity.

As NESO we know that our work on the electricity system and our role in planning the future gas system directly impacts the everyday lives of everyone up and down the country. That's why we take our work so seriously and plan so extensively to ensure that Great Britain's energy systems continues to be one of the most reliable in the world.

Great Britain's grid meets 99.9999% of demand but there is no room for complacency. NESO has a new duty to provide independent advice to government on the security and resilience of the whole energy system. We work with industry to ensure they are ready for the coming season, we have carefully planned for disruption, recognising that the supply of electricity underpins everything we take for granted in our lives. We are working with Local Resilience Forums across Great Britain to ensure that they have the information they need and understand what to do if supply is disrupted. Then should things go wrong, we have the teams to learn the lessons for the future, as in our Review of the North Hyde outage published in July.

NESO's job is first and foremost to keep electricity flowing and prepare for future challenges, and so we make sure we are working with our industry partners, to ensure we are prepared for every eventuality. Whilst the outlook for this winter is the most positive in six years, we will continue to be vigilant and manage the electricity system in the way the public expect: with rigour, expertise and caution.

NESO
http://www.neso.energy

9 October 2025

Electricity supply interruptions in 2024 shorter than in the previous year – Germany's electricity grid one of the most reliable in a European comparison

The Bundesnetzagentur has today published figures on interruptions to the electricity supply in 2024. The non-availability of electricity averaged 11.7 minutes per final customer. In 2023 it had been 12.8 minutes.

"The electricity supply in Germany is still very stable. The energy transition is making headway without any loss of reliable electricity supply," said *Klaus Müller*, President of the Bundesnetzagentur.

Even when taking energy transition measures into account, the figures on interruptions to the electricity supply in 2024 do not reflect any negative trends in terms of long-term interruptions. The current figure is below the level of the 10-year average (interruption duration of 12.7 minutes per final customer). A comparison with neighbouring countries also shows that Germany's electricity grid remains one of Europe's most reliable.

Operators of energy supply networks report to the Bundesnetzagentur each year detailing all the supply interruptions lasting longer than three minutes that have occurred in their networks. The reports state the time, duration, extent and cause of the interruptions.

For 2024, 830 network operators reported a total of 164,645 supply interruptions at low and medium-voltage level. Thus the number of reports of interruptions has grown by around 6,300 compared with the previous year. Nevertheless, the average duration of an interruption in supply per final customer has reduced slightly and supply interruptions have been corrected faster.

The System Average Interruption Duration Index (SAIDIEnWG), calculated by the Bundesnetzagentur, shows the average duration of unplanned interruptions to supply per connected final customer and voltage level in a calendar year, not including those caused by force majeure (eg extreme events).

An anonymised list of the individual supply interruptions reported has been published in addition to the SAIDIEnWG figures for each federal state.

Bundesnetzagentur
http://www.bundesnetzagentur.de

9 October 2025

China flicks the switch on world-first thermal power station in Gobi Desert

Nearly 27,000 mirrors focus sunlight on two towers feeding a single turbine – a system that is said to be cheaper and more efficient.

China has switched on a world-first solar thermal power station in the Gobi Desert that is said to be a cheaper and more efficient use of the technology with potential to be scaled up. Built by the China Three Gorges Corporation, the plant in Guazhou county in northwestern Gansu province uses two towers feeding a single turbine system – the first time this has been done. Nearly 27,000 mirrors have been installed to focus sunlight onto the 200-metre (656 feet) towers, which are about 1km (0.62 miles) apart.

The Gobi Desert, the sixth-largest desert in the world located in north China and southern Mongolia, is extremely dry. It receives an average of two to eight inches of annual precipitation, with some areas receiving less than two inches per year. This intense dryness, as well as the abundant sunlight of more than 3,000 hours a year, make the Gobi Desert an excellent environment for large-scale solar power generation. The incredible solar-thermal power station reportedly features two 656-feet-high (200 meters) towers, each surrounded by a vast field of 27,000 mirrors known as heliostats.

The mirrors concentrate sunlight onto the towers, where the intense heat reaching up to 1,058 degrees Fahrenheit (570 degrees Celsius), melts and stores energy in a high-temperature medium. The stored heat is then utilized to generate steam that drives a turbine and allows electricity production to continue well after sunset or during cloudy weather.

Meanwhile, unlike conventional photovoltaic (PV) panels that convert sunlight directly into electricity, solar-thermal systems harness heat instead of light. This makes them one of the few renewable technologies capable of providing stable, dispatchable energy that can be generated on demand.

The dual-tower design boosts overall efficiency by about 25 percent compared to conventional single-tower systems. This works because each tower captures sunlight at different times of the day. While the east tower collects sunlight in the morning, the west tower takes over in the afternoon. In addition, the two mirror fields even overlap slightly, reducing the total number of mirrors required and cutting construction costs, as heliostats account for nearly 60 percent of the plant's total expense.

The facility is part of a broader clean-energy hub that also includes massive solar and wind farms across the region. Together, these installations are expected to supply electricity to around half a million households annually.

South China Morning Post
http://www.scmp.com

10 October 2025

Germany Milestone: SuedLink power line fully approved

The Bundesnetzagentur has today completed the planning approval procedure for the last section of the SuedLink power line. The exact route of the new underground direct-current cables in the section, which is around 76 kilometres long, has now been decided. The transmission system operator TransnetBW can now begin work on this section of the line as well. The Bundesnetzagentur is due to publish its planning approval decision on 8 November 2025.

Route

Projects 3 and 4 in the Federal Requirements Plan Act (BBPlG) run parallel to each other from the boundary between Hesse and Thuringia to a point level with Henneberg, south of the boundary between Thuringia and Bavaria. The section begins in the Werra valley near Herleshausen, immediately south of the boundary between Hesse and Thuringia. The route runs south to southeast past Marksuhl and reaches the Werra valley again at a point level with Bad Salzungen. It runs south along the east side of the valley and crosses the Werra river between Schwallungen and Wasungen. The route then runs south down to the boundary between Thuringia and Bavaria near Henneberg. The route ends at a point immediately south of the federal state boundary, where it joins section D2, which has already passed the planning approval stage.

Background

The SuedLink power line consists of two direct-current lines and is the largest direct-current project that is currently being implemented. Project 3 connects Brunsbüttel in Schleswig-Holstein with Großgartach/Leingarten in Baden-Württemberg. Project 4 runs from Wilster to Bergrheinfeld in Bavaria. The two lines will be laid as underground cables and run mostly parallel to each other. TenneT and TransnetBW are the transmission system operators responsible for planning, constructing and operating the lines. The projects each have a transmission capacity of two gigawatts and a voltage of 525 kilovolts.

The lines are due to be connected to the grid by 2028. Starting in December 2022, the Bundesnetzagentur approved 30 applications for an early start to work, allowing the initial construction work – in particular compensatory measures under nature conservation legislation, boring and clearing – to get underway.

A 5.5-kilometre-long, walk-through cable tunnel is being constructed for the SuedLink power line under the Elbe river near Glücksstadt. Between Bad Friedrichshall and Leingarten the line runs for 16 kilometres within the Südwestdeutsche Salzwerke AG mine. New shafts and routes were dug in the mine to lay the cables running towards Großgartach grid connection point.

Bundesnetzagentur
http://www.bundesnetzagentur.de

10 October 2025

Trump administration cancels largest solar project in United States

The Bureau of Land Management has officially cancelled the Esmeralda 7 solar project, a Nevada-based project that would stand among the world's largest solar power plants, large enough to power nearly 2 million homes.

The United States Bureau of Land Management (BLM) has officially axed the Esmeralda 7 solar project, a project that would have smashed records as the largest solar facility in the United States.

The 6.2 GW solar project, located in Nevada, would have added enough electric generation capacity to power nearly 2 million U.S. homes. For context, the largest solar project in the U.S. is the Mammoth solar project in Indiana, a 1.3 GW currently project being built in phases.

The project's NEPA environmental review had been stalled since Donald Trump took office. It is now officially listed on BLM's website as cancelled.

Despite campaigning on an "all the above" energy policy, the Trump administration has cracked down harshly on renewable energy development.

This July, the Department of Interior announced it will require "elevated review" for solar and wind projects on public land by Trump-appointee Secretary Doug Burgum. Projects seeking leases, rights-of-way, construction and operation plans, grants, consultations and biological opinions are now subject to approval by Burgum.

Kabir Green, director of federal affairs for nature at the Natural Resources Defense Council said the move imposes unprecedented scrutiny and bureaucratic roadblocks that could indefinity delay or delay clean energy projects on public lands.

"It is not about oversight, but about unfettered obstruction of wind and solar projects that create jobs, cut pollution, lower costs and strengthen communities. This policy protects select industry profits, not the public interest," said Green.

The Esmeralda 7 project is comprised of seven projects developed by NextEra Energy Resources, Leeward Renewable Energy, Arevia Power and Invenergy. The projects would cover about 185 square miles of land, a land area close to the size of Las Vegas.

BLM's cancellation of Esmeralda 7 moves in lockstep with President Trump's message on Truth social late August: "We will not approve wind or farmer destroying Solar."

Trump's administration has taken a series of anti-renewables actions during his second term, on top of Congress' clean energy-gutting One Big Beautiful Bill Act. Federal actions include:

- An executive order requiring that Treasury apply stricter qualifications for solar and wind projects seeking federal tax credits.
- The Environmental Protection Agency is clawing back $7 billion in Solar For All grant funding. The grants are intended to support community solar projects with guaranteed bill savings for low-income Americans.
- Solar and wind projects seeking to develop on federally owned land now face "final review" from Trump-appointed Department of Interior head Doug Burgum.
- Trump executive order directed the Department of the Interior to scrub for "preferential treatment" for wind and solar and eliminate such treatment.
- U.S. Department of Agriculture will "no longer" fund solar projects, like those made available to farms and small businesses via the $4 billion Rural Energy for America (REAP) grant program.
- President Trump implemented widespread tariffs to most goods, as well as energy component-specific tariffs and tariffs on critical materials like steel and aluminum.

Despite the many roadblocks, renewable energy is dominating new-build electric generation project queues. The Energy Information Administration (EIA) reported the U.S. is projected to have a record year for electric capacity buildout in 2025, adding 64 GW. The previous record was set in 2002, when developers added 58 GW of capacity, 57 GW of which was natural gas.

But this time, the record year for installations will be led by an emissions-free source instead. Solar is expected to account for 33.3 GW of the 64 GW added this year. This is followed by 18.3 GW of battery energy storage, 7.8 GW of wind and 4.7 GW of natural gas, said EIA.

Analysis from Lazard finds that solar and wind energy projects have a lower levelized cost of electricity (LCOE) than nearly all fossil fuel projects – even without subsidy.

PV MAGAZINE
http://www.pv-magazine-usa.com

13 October 2025

Germany launches 'world's first' vertical floating solar power plant

German-based developer of floating renewable energy platform solutions SINN Power has commissioned what is described as the world's first vertical floating photovoltaic (PV) system at the Jais gravel pit in the Starnberg district, Bavaria, marking a new milestone in renewable energy deployment on inland water surfaces.

With an installed capacity of 1.87 MW and an expected annual output of around 2 GWh, the new floating PV plant covers only 4.65% of the lake's surface area. During initial operation, the gravel pit plant cut its grid power use by nearly 60%, with expectations of reaching up to 70% once production stabilizes, SINN Power said.

The patented SKipp system developed by SINN Power introduces a vertical east–west module orientation, separated by open water corridors at least four meters wide.

According to SINN Power, this setup supports steady power generation throughout the day and enhances output during morning and evening hours when conventional PV systems generate less electricity.

A keel-like substructure, extending up to 1.6 meters below the surface, secures the modules and allows controlled movement under wind loads and fluctuating water levels. The system connects to the grid through a floating cable and a shore-based feed-in point.

The design complies with the German Federal Water Resources Act (WHG), remaining well below the 15% surface coverage limit while maintaining high power density. A second 1.7 MW phase is already planned, which would keep total coverage under 10%.

According to environmental monitoring, the installation has shown no negative impacts. Early data indicates improved water quality, while the system has also created new habitats, with breeding waterfowl and fish observed around the floating components, SINN Power said.

The inauguration ceremony was held in the presence of Bavarian Minister-President Markus Söder, who emphasized Bavaria's role in *"research and technology that enables new value chains."*

The SKipp technology is suitable for artificial water bodies deeper than 1.6 meters, such as quarry lakes and gravel pits. It targets high-consumption users and provides a grid-friendly production profile that supports regional grid stability.

Designed for scalability, the system is also ready for offshore use and meets the technical requirements for marine operation. SINN Power plans to extend its vertical floating PV concept to open water applications, advancing renewable energy generation at sea.

The event also gathered key stakeholders from the political and energy sectors, including Stefan Frey (District Administrator of Starnberg), Egon Westphal (CEO of Bayernwerk AG), Ute Eiling-Hutig (Member of the State Parliament for Starnberg), Bernhard Kling (BIV Building Materials), and project partners Gottfried Jais (Kies- und Quetschwerk Jais) and Dr. Philipp Sinn (SINN Power).

Developed under the patronage of Hubert Aiwanger, Bavarian Deputy Minister-President and Minister of State for Economic Affairs, Regional Development and Energy, the project is said to reflect the region's continued support for innovative clean energy solutions.

In 2023, SINN Power put forward a plan to build a floating solar power plant in Eching am Ammersee, south-east Germany.

Offshore Energy
http://www.offshore-energy.biz

14 October 2025

Interior denies canceling largest solar project in U.S. after axing review

A spokesperson said the agency canceled a broad environmental review grouping together seven individual projects that make up the 6.2-GW Esmeralda 7 project, but could review each individually.

The U.S. Department of the Interior has canceled its broad environmental review for the seven individual projects that make up the 6.2-GW Esmeralda 7 solar project located on federal land in Nevada and will review and permit each project individually, according to a spokesperson.

Esmeralda 7 is set to be the largest solar project in the U.S. by capacity. The project's National Environmental Policy Act status is listed as canceled on the Bureau of Land Management's website. In a Tuesday email, the spokesperson said the BLM had not canceled the project.

"During routine discussions prior to the lapse in appropriations, the proponents and BLM agreed to change their approach for the Esmeralda 7 Solar Project in Nevada," they said. "Instead of pursuing a programmatic level environmental analysis, the applicants will

now have the option to submit individual project proposals to the BLM to more effectively analyze potential impacts."

According to a draft programmatic environmental impact statement for the project from July of last year, the individual projects are: Lone Mountain Solar, Nivloc Solar, Smoky Valley Solar, Red Ridge 1 Solar, Red Ridge 2 Solar, Esmeralda Energy Center and Gold Dust Solar, which "would be geographically contiguous and encompass approximately 62,300 acres of BLM-administered lands approximately 30 miles west of Tonopah, Nevada."

Developers of the seven projects include Invenergy, Avantus, and NextEra. A spokesperson for NextEra told The Guardian, "We are in the early stage of development and remain committed to pursuing our project's comprehensive environmental analysis by working closely with the Bureau of Land Management." All of the projects have pending right-of-way applications before the Bureau of Land Management, the draft PEIS said.

As the project's previous NEPA review process has been canceled, it's unclear how long it will now take each project to secure approvals. The original draft PEIS said that the timelines for construction "would vary by project with estimates of 18 to 36 months," and that "the timing of project approvals and the availability of the construction contractors and workforce would also differ by project. It is assumed that full buildout of all projects could be completed within 5 years from the Record of Decision for the PEIS/[Resource Management Plan Amendment]."

The Environmental Defense Fund criticized Interior's decision to cancel the project's review, calling it "yet another example of how the Trump administration is taking a two-tiered approach to energy permitting: polluting, expensive fossil fuels get 'concierge, white glove service,' while cheap renewables and storage get freezes, delays and cancellations."

Assessing each project individually fits with an overall trend in the Trump administration's treatment of renewable energy projects sited on federal land. Individual offshore wind projects have received stop work orders from the administration, or seen federal approvals revoked.

Administration officials have consistently said that they believe the permitting process for renewable energy was flawed under the Biden administration, and the Esmeralda 7 Project was a key part of President Joe Biden's Western solar plan.

Utility Dive
http://www.utilitydive.com