15 September 2025

Around the Corner: The Long-Awaited Nuclear Renaissance Shows Signs of Promise, But Still has a Long Way to Go

Amid the growing push for new sources of power generation — especially from the data center sector — we have seen an extraordinary number of announcements concerning nuclear power. At this point, they are occurring almost weekly, something few would have anticipated just a few years ago.

These announcements generally fall into one of three areas: rehabilitation of closed nuclear facilities, potential development of new large-scale facilities such as the AP 1000 technologies currently deployed across the country, and development and deployment of an entirely new class of smaller reactors commonly referred to as small modular reactors (SMRs) or modular nuclear reactors (MNRs). The buzz in the space is considerable, but there still are numerous hurdles to be overcome before we can declare a win for the much anticipated "nuclear renaissance."

In recent years, numerous nuclear plants were struggling to survive, especially in competitive power markets where low-cost gas-fired and renewable plants were seriously denting their economics. Indeed, the economic outlook was so poor that five states (Connecticut, Illinois, New York, New Jersey and Ohio) threw their nuclear plants lifelines and created subsidy programs to keep 14 nuclear plants operating. Several other states, though, chose to let plants be taken out of service. The typical decommissioning process is to remove and store the fuel, dismantle the plants and decontaminate the sites. In fact, that process has been followed by dozens of sites over recent decades.

However, as forecast power demand has rapidly increased recently, several recently decommissioned sites are now being pressed back into service. These include the 837-MW Three Mile Island 1 in Pennsylvania that is slated to deliver power to Microsoft for 20 years, the 800-MW Palisades plant in Michigan and the 615-MW Duane Arnold facility in Iowa. And most recently, Holtec International, the owner of the 2,000-MW decommissioned Indian Point nuclear plant in New York, suggested the possibility of rehabilitating the facility for an estimated $10 billion.

While these efforts eventually may bring back over 4,000 MW of capacity online, there may not be many other resurrection efforts to follow, since many of the other decommissioned plants are either too far along in the process or may not prove economically viable. An addition to this category might include the uncompleted V.C. Summer plant in South Carolina, which was abandoned in 2017 after burning through $9 billion of investment capital. That facility was thought to be dead until January 2025, when utility Santee Cooper issued a request for proposals seeking "to acquire and complete, or propose alternatives, for two partially constructed generating units at the VC Summer Nuclear Station." In May, the utility said it had received responses to the RFP but offered few details.

New nuclear power supply may come from the traditional light water reactors that have been employed by the U.S. power industry for many decades. For example, the proposed gargantuan 11,000-MW Fermi Project in Texas recently submitted an application to the NRC that includes four, 1,000-MW Westinghouse AP1000 nuclear reactors. (The last such units deployed were in the Vogtle plant in Georgia back in 2023, coming in more than seven years behind schedule and $17 billion over the original budget.) However, it appears that the new smaller and modular nuclear technologies may dominate this space.

In recent years, SMR-related investments and project announcements have surged, with much of this coming from the data industry. Dozens of companies — from large and established energy players such as GE, Hitachi, Rolls Royce and Westinghouse to

numerous startups — are vying for success in this industry. They typically distinguish themselves from the existing light water reactor technologies in terms of size and technology, with many boasting fail-safe designs.

Models range in size from so-called "micro reactors" as small as 1 MW to larger units offering almost 500 MW of output. Many startups feature competing technologies that have not yet been tested commercially, and given the large number of contenders, many will fail commercially. But that hasn't seemed to slow the sector of late. In fact, in the frothy SMR waters, just since mid-August the following commitments have been heralded: Tennessee Valley Authority announced a contract with developer ENTRA1 Energy for a 6,000-MW deployment of MNR startup NuScale's 77-MW reactors, the only ones thus far to have received NRC approval for their design.

Startup X-energy hailed a collaboration with Amazon, Korea Hydro & Nuclear Power and Doosan Enerbility "to accelerate the deployment of new Xe-100 advanced nuclear reactors in the United States," with a stated goal of deploying more than 5,000 MW of new nuclear capacity across the U.S. by 2039, while mobilizing up to $50 billion in public and private investments. Data co-location giant Equinix announced three separate deals with different modular nuclear companies for nearly 775 MW of new capacity in the U.S. and Europe, with power to come from reactors ranging in size from just over 1 MW to 470 MW.

Finally, the Utah Office of Energy Development (OED), TerraPower (the Bill-Gates-backed company) and Flagship Companies signed a memorandum of understanding "to explore the potential siting of a Natrium reactor and energy storage plant in Utah." It's increasingly looking like a new generation of nuclear reactors may become part of our energy future. Much of the recent momentum is directly attributable to the data center companies that are hungry for power, while in many cases striving to maintain commitments to reduce associated carbon emissions. In addition to Equinix's more recent announcements, it also had signed a deal to buy up to 500 MW of power from SMR startup Oklo, with a $25 million pre-payment for future power output and a right of first refusal for from 100 to 500 MW of power.

Google also has been active. In May, it signed an agreement with nuclear project developer Elementi to commit early-stage development capital to support at least three projects that each would generate more than 600 MW. The company has the option to be a project off-taker once the facilities are commissioned (terms and locations were not specified).

In October 2024, Google said it would financially support deployment of seven SMRs from startup Kairos Power that eventually would generate up to 500 MW of output, with a first unit operational by 2030 and additional reactors online within five years. Kairos already has started construction of a demonstration project in Oak Ridge, Tenn. For its part, Amazon has invested more than $500 million in SMRs, and took the anchor role in a $500 million funding round supporting SMR developer X-energy. And last fall, Oracle announced it intended to develop data centers powered by SMRs. More such announcements are likely to come as the data center industry appetite for new power supplies continues to grow. Data centers are not the only industries showing interest. Among others, utility Energy Northwest and materials science company Dow both have committed to projects using X-energy's technology, with Dow already having designated a development site in Texas.

While the promotion of many energy sources fall into red or blue camps, nuclear generally has managed to remain purple. In 2024, Congress passed the strongly bipartisan Accelerating Deployment of Versatile, Advanced Nuclear for Clean Energy (ADVANCE) Act, which specifically seeks to promote advanced reactor technologies. In addition, the U.S. Department of Energy has provided significant financial support, including a $900 million effort that began during the Biden administration to accelerate the development and

deployment of SMRs. In August, DOE selected 11 advanced reactor projects for accelerated deployment, streamlined testing and fast-tracking toward commercialization.

Major challenges remain to be addressed before we can proclaim the nuclear industry as reborn. The thorny nuclear waste issue remains to be solved. So does the issue of security. It's one thing to guard the 50+ nuclear sites operating today and quite another to secure hundreds of them. There also are the siting challenges and the problem of convincing neighbors to accept these plants in their communities. Nuclear sites also will face the same interconnection challenges that have bedeviled any other generating assets connecting to the grid.

Perhaps most critically, though, these new nuclear plants will need to be cost-competitive. Manufacturers will have to build the manufacturing facilities to make all the parts and entice enough firm orders to create the necessary economies of scale. It will not be enough for companies to build these new nuclear reactors in the single digits. The winners in this race likely will need to build dozens of them to get the costs down to where they can become competitive with other sources of generation. It's one thing to do that with solar modules or batteries, where global supply chains wring out inefficiencies through production of literarily hundreds of millions of the devices. It's quite another to create such efficiencies in a new industry, in which there are many competing companies and technologies. To succeed, the infant industry will have to migrate from one-off projects to a broad-based, factory-centered production approach, enjoying a large and predictable order book. It also will need to nurture the necessary talent to manufacture, site and operate the plants in the field. We're not remotely there yet, but for fans of a nuclear renaissance, recent events offer encouraging signs.

RTO Insider
http://www.rtoinsider.com/

16 September 2025

SRE's Formosa 4 Offshore Wind Farm to Feature Siemens Gamesa 14 MW Turbines

The turbines will be provided by Siemens Gamesa's industrial nacelle factory in Taichung, Taiwan. The wind turbine foundations will be supplied by the local manufacturer Century Wind Power

Cadeler is responsible for the transportation and installation of the turbines under a contract signed with the developer in August 2025. The inter-array cables will be installed by Seaway7, with offshore work expected to begin in 2028. "With more than three gigawatts of installed capacity, Taiwan is an important offshore market for Siemens Gamesa. The Formosa 4 project reaffirms our commitment and will strengthen our local industrial nacelle production in Taichung further. We are excited to work with SRE to provide Taiwan with reliable green energy, and we thank SRE for their continued trust and cooperation following the Formosa 1 and Formosa 2 projects," said Mogens Jakobsen, Global Head of Sales of Siemens Gamesa.

Planned to be built off the coast of Miaoli County, the Formosa 4 offshore wind farm was awarded capacity in the first auction round of Phase 3 Zonal Development in late 2022. The 495 MW wind farm obtained its establishment permit in November 2024, becoming the first project among all first-round winners to achieve this milestone, according to the developer. Once completed, the project is expected to generate enough renewable energy to power around 500,000 households annually. Formosa 4 marks SRE's third offshore wind farm in Taiwan since entering the sector in 2012 and represents the company's third partnership with Siemens Gamesa.

"Over the past six years, we have delivered Formosa 1, Taiwan's first offshore wind farm, and Formosa 2, the first among Phase 2 projects to reach commercial operation. Now

we're building on that success with Formosa 4. Given the strong partnership forged with Siemens Gamesa during Formosa 1 and 2, we're pleased to have them on board again for Formosa 4, deepening the collaboration and advancing sustainability together," said Lucas Lin, Chairperson at SRE.

Offshore Wind
http://www.offshorewind.biz/

16 September 2025

Southwest Power Pool board approves accelerated pathway for large load connection

Southwest Power Pool's (SPP) board of directors has approved a process to facilitate the connection of large users of electricity to the power grid while continuing to support energy needs for the entire region.

SPP's High Impact Large Load (HILL) policy followed months of collaboration among stakeholders and SPP staff to address the challenge of connecting customers with significant demand, such as AI-driven data centers or manufacturing, while balancing essential goals of reliability and affordability. "We're striving to stay ahead of the game," said Casey Cathey, SPP vice president for engineering. "Large loads want answers now. They are motivated to invest and are looking for opportunities to connect to the grid now."

The solutions incorporate transmission service, generation and load interconnection and other pertinent reliability studies into a single framework that enables timely, informed decision making and action. SPP will establish a 90-day study-and-approval process for interconnecting large loads that will be paired with new generation (either on-site or nearby) or for interconnecting large loads with current or planned generation. Load interconnections will be accelerated through integrated design, study, registration and operations.

SPP is committed to ensuring the grid remains reliable and the system's integrity remains intact should these loads be connected. The HILL process enables early detection of system constraints, improves coordination across entities and prepares operators for real-time impacts. For developers, market efficiency and transparency are key benefits. It supports faster market entry, enhances price signals and allows these loads and supporting generation to have more confidence in expected costs and timelines.

"I'm very pleased we've adopted a policy that addresses an urgent need and opportunity in the SPP region," said board member Stuart Solomon. "I appreciate SPP's quick work to develop an innovative proposal and our members' and Regional State Committee's active participation in refining it. This is a great example of our stakeholder process at its best, and I'm confident we now have an excellent approach to meeting the needs of our members and large-load customers looking to locate in the SPP region."

SPP
http://www.spp.org/

17 September 2025

PJM Kicks Off Initiative to Balance Reliability With Large Load Growth

Lessons learned from previous events, close coordination with the local utility, and effective use of both demand response programs and a voltage reduction action greatly reduced the magnitude and duration of a load shed event in the Baltimore area on Aug. 11, PJM told stakeholders at the Sept. 11 meeting of the Operating Committee.

The outage of a substation near Baltimore that began early morning on Aug. 11 threatened to spread cascading outages as electricity demand rose in the afternoon. PJM's actions in coordination with Baltimore Gas & Electric (BGE) averted potential loss of approximately 1,200 MW (enough to power about 1 million homes). The event culminated with a 28-minute limited load shed of about 20 MW.

"In close coordination with BGE, we did everything we could to limit the risk to load and to limit the amount of load that would actually have to be shed," said Kevin Hatch, PJM Sr. Manager – Dispatch. That action, taken at 3:52 p.m., was required to avert the possibility of widespread outages, he said.

Events began on Monday at about 3:30 a.m. with reports of failing equipment amid heavy, dense fog enveloping the Brandon Shores 230 kV substation near Baltimore, Hatch said. As the morning progressed, equipment continued to trip offline within the substation, culminating with the loss of the entire Brandon Shores substation around 7:30 a.m.

Emergency Procedures Minimize System Impact

PJM operators immediately initiated system reliability studies for the projected peak of the day with the equipment out of service to understand how the substation's loss restricted power flows into Baltimore, and they quickly formed an action plan to maintain overall system reliability. That analysis showed multiple thermal overloads and that approximately 1,200 MW of electricity load would be at risk to potentially trip off the system "in a very, very critical area," Hatch said. Such transmission overloads and cascading outages would not have allowed system operators enough time to respond to protect customers and prevent further damage, he said. These reliability studies were run in parallel with analysis performed by BGE, and study results and action plans were coordinated between PJM and BGE.

To mitigate the possibility of such severe system impacts, PJM implemented a series of emergency procedures confined to the BGE transmission zone. Relief also came by starting generation and a call to combustion turbine units to return to service from being out for maintenance. At 8:45 a.m., PJM began to call for load management, or demand response, of BGE zone resources effective at 10 a.m. Demand response programs pay customers to reduce electricity use in times of system stress. Altogether, these demand response programs from both PJM and BGE reduced load by an estimated 230 MW. That day, BGE also achieved some load reductions via public appeals for all customers to reduce electricity usage voluntarily.

At 2 p.m., PJM issued a 5% Voltage Reduction Action and Curtailment of Non-Essential Building Load to further reduce demand on the system between 3 p.m. and 5:15 p.m. This yielded a further estimated 60 MW amount of load relief. At 3:52 p.m. with system studies indicating need for further load reductions to maintain grid stability, PJM issued a Load Shed Directive to temporarily reduce system load by approximately 20 MW. Equipment started to return to service at the Brandon Shores substation. By 4:20 p.m., PJM studies showed the load shed was no longer needed, and PJM ended the directive, which ultimately impacted an estimated 4,000 customers in Howard County for approximately 30 minutes, according to BGE.

Voltage Reduction Practices and Demand Response Resources Are Essential Tools

PJM's ability to direct relatively small load shed compared to the risk of significantly greater system outages was helped in part by recent refinements in coordinated system voltage reduction drills. Beginning last year, in close coordination with Transmission Owners, PJM initiated twice-yearly voltage reduction tests in both winter and summer conditions to ensure that the critical emergency procedure was ready to be implemented if needed during an emergency. Working closely with Transmission Owners, PJM conducts these drills to help inform PJM operators about the amount of relief a voltage reduction action may actually yield.

The voltage reduction drills help to ensure that system operators are ready to implement the procedure and that equipment is tested, so the procedure can be quickly called upon if needed. BGE's participation in those PJM voltage reduction tests, "were a result of previous lessons learned, making their voltage reduction very effective," Hatch said.

Hatch said the demand response and voltage reduction emergency procedures had an impact, lowering the amount of load that was shed and greatly reducing overall risk to the system.

Communication and Coordination Is Vital

Hatch noted that system awareness is vital for PJM's operations during conditions like these. As PJM engineers prepared to study how to safely maintain system operations without the critical substation on Aug. 11, they consulted closely with BGE control room operators and leadership to compare study results and analysis on system conditions and impacts. Shedding load, even at lower levels for short periods, can still mean significant impact to some customers. With that in mind, PJM maintained close contact with city, county and state officials and provided advance notice that load shed was a possibility.

After-the-fact analysis continues with reviews pending by both ReliabilityFirst, which oversees grid reliability in the region on behalf of the North American Electric Reliability Corporation (NERC), and Exelon, BGE's parent company. PJM's own teams are reviewing events to create operator training scenarios and simulations, Hatch added. After-the-fact lessons learned analysis is critical, Hatch said. For example, he said PJM actions taken Aug. 11 are informed by NERC standards and industry practices that evolved from study of the 2003 blackout. That event caused spontaneous cascading outages as far away as New York City and Toronto, affecting 50 million people. Hatch also cited lessons learned that informed NERC standards from the 2011 Southwest blackout, affecting Arizona, California and Mexico. PJM operators are trained and educated in these scenarios as part of the continual and rigorous training they undergo throughout the year.

"PJM and BGE operators did a nice job and handled the situation well. We took all of the corrective action we could to limit overall risk to the system," Hatch said. "These events do not happen often, so we want to make sure we are trained and prepared."

Insidelines PJM
http://insidelines.pjm.com

17 September 2025

China starts building ultra-high voltage power line from Xizang to Greater Bay Area

China on Tuesday began construction of a massive ultra-high voltage (UHV) power transmission line that will carry clean energy from Xizang autonomous region in Southwest China across thousands of kilometers to the Guangdong-Hong Kong-Macao Greater Bay Area in South China.

The ±800 kV direct current transmission project involves a total investment of about 53.2 billion yuan (roughly $7.5 billion). It starts in Qamdo, Xizang autonomous region, and ends in Shenzhen, Guangdong province, according to Dong Yanle, deputy general manager of the engineering construction department of China Southern Power Grid Co., Ltd. The project stretches approximately 2,681 kilometers and runs through four provincial-level regions, which include southwest China's Yunnan province and Guangxi Zhuang autonomous region in South China.

It is China's first UHV power transmission line to cross the Qinghai-Tibet Plateau, the Yunnan-Guizhou Plateau and the hilly terrain of south China. After becoming fully operational in 2029, the line, with a rated capacity of 10 GW, will deliver more than 43 billion kWh of electricity annually from the clean energy base in southeastern Xizang to the Guangdong-Hong Kong-Macao Greater Bay Area.

The line will exclusively deliver electricity generated from clean energy sources, Dong said, while adding that the green electricity provided by this line will be equivalent to the consumption of around 12 million tonnes of standard coal a year -- while cutting annual carbon dioxide emissions by 33 million tonnes. "This will make economic development

greener and cleaner," Dong noted. "The project will address world-class challenges such as large-scale clean energy transmission, the application of ultra-high-altitude UHV flexible direct current technology, and construction and operation in extremely complex environments," said Rao Hong, chief scientist of China Southern Power Grid.

Nearly 90 percent of this line will run through mountainous areas. Workers will need to tackle challenges and face risks such as permafrost, geological disasters, environmental protection needs and operations in uninhabited regions. Other challenges include research and development of new direct current power transmission technology and equipment suitable for regions at an altitude of above 4,300 meters. Over the past years, China has invested heavily in the construction of UHV power transmission lines to deliver electricity from the country's energy-rich west to its booming east -- and increase consumption of clean energy sources for green economic growth.

Xizang, one of China's key energy bases, is rich in clean energy sources -- such as hydropower, wind power and solar power. It has already built several UHV power transmission lines to send surplus power to many parts of the country. Guangdong-Hong Kong-Macao Greater Bay Area, one of China's most economically dynamic regions, is also a leader in green and high-quality economic growth. In 2024, green electricity trading in the Greater Bay Area had reached 49.1 billion kWh, an 11-fold increase from the previous year -- accounting for 39 percent of China's total.

China Daily
http://global.chinadaily.com.cn/

17 September 2025

China moves toward gigantic 35MW offshore wind turbines with new test project

China has taken another bold step in the race to build the world’s most powerful offshore wind turbines.

A new construction tender issued by Huaneng, one of the country’s largest state-owned power developers, has raised the possibility of testing machines as large as 35 megawatts (MW). The tender, published last week, calls for infrastructure that can support a future 35MW offshore wind turbine. It includes preparing a site for the massive foundation, setting up a lifting platform, and building worker facilities such as offices. The test site will be located in Yingkou, an industrial coastal city in northeast China near the border with North Korea.

Huaneng explained that the project is designed to support the testing needs of very large offshore turbines while boosting China’s competitiveness in advanced wind energy technology. The first machine to be tested at the new site will be a 26MW semi-direct drive offshore wind turbine. It will be combined with a 5MW/10MWh energy storage system. This follows China’s recent achievement when Dongfang Electric installed a 26MW turbine last month, the largest ever deployed anywhere in the world. That record broke the 21.5MW machine installed earlier this year by Germany’s Siemens Gamesa, as well as a 20MW turbine installed in 2023 by China’s Mingyang, which later faced operational setbacks. Each new turbine surpasses the previous one by a wide margin, reflecting the rapid pace of innovation and competition in the industry.

The trend highlights how Chinese companies are leading the way in scaling up turbine capacity. However, it also fuels concerns in the global wind sector. Some experts argue that the constant push for bigger turbines creates pressure on supply chains, slows the rollout of projects, and raises questions about long-term reliability.

Industry experts see Huaneng’s move as more than just a technical upgrade. For them, it is a strategic declaration that China has no intention of slowing its turbine scale-up efforts. “Huaneng’s launch of the 35MW wind turbine test platform in Yingkou sends a strong

signal: China's push toward turbine scale-up is far from over," said Chao Guo, market analyst at intelligence firm TGS. "From this perspective, the 25MW class is unlikely to be the upper limit. China is clearly preparing for even larger turbines, underscoring its ambition to secure a leading edge in the global wind power race."

These comments underline how China's strategy extends beyond the present. By preparing facilities for a possible 35MW turbine, the country is signaling readiness to leap ahead again when the next generation of machines is developed. It is important to note that building a site that can handle a 35MW turbine does not mean such a machine will appear immediately. Future-proofing equipment and facilities is a common strategy in energy research and development. China is not the only nation preparing for super-sized turbines. Last year, Chinese manufacturer Sany revealed equipment designed for testing turbines up to 35MW. Meanwhile, in the United Kingdom, a dedicated project is also underway to prepare for the testing of "super turbines" that could dominate future offshore wind farms.

Interesting Engineering
http://interestingengineering.com/

18 September 2025

Energy Department Launches Speed to Power Initiative, Accelerating Large-Scale Grid Infrastructure Projects

The U.S. Department of Energy (DOE) announced today the Speed to Power initiative, to accelerate the speed of large-scale grid infrastructure project development for both transmission and generation. The Speed to Power initiative will help ensure the United States has the power needed to win the global artificial intelligence (AI) race while continuing to meet growing demand for affordable, reliable and secure energy. DOE analysis shows that the current rate of project development is inadequate to support the country's rapidly expanding manufacturing needs and the reindustrialization of the U.S. economy. DOE is committed to collaborating with stakeholders to identify large-scale grid infrastructure projects that can bring speed to power and overcome the complex challenges facing the grid.

"In the coming years, Americans will require more energy to power their homes and businesses – and with President Trump's leadership, the Department of Energy is ensuring we can meet this growing demand while fueling AI and data center development with affordable, reliable and secure sources," said Energy Secretary Chris Wright. "With the Speed to Power initiative, we're leveraging the expertise of the private sector to harness all forms of energy that are affordable, reliable and secure to ensure the United States is able to win the AI race."

To kickstart the Speed to Power initiative, DOE is issuing a Request for Information focused on large-scale grid infrastructure projects, both transmission and generation, that can accelerate the United States speed to power. This includes input on near-term investment opportunities, project readiness, load growth expectations, and infrastructure constraints that DOE can address. The DOE is requesting stakeholder input on how to best leverage its funding programs and authorities to rapidly expand energy generation and transmission grid capacity.

President Trump's Executive Order, Declaring a National Energy Emergency, signed on his first day in office asserted that the integrity and expansion of our Nation's energy infrastructure is an immediate and pressing priority for the protection of the United States' national and economic security. In accordance with President Trump's Executive Order, Strengthening the Reliability and Security of the United States Electric Grid, DOE released the Report on Evaluating U.S. Grid Reliability and Security delivering a uniform methodology to identify at-risk regions and guide Federal reliability interventions. In this report, DOE

warned that blackouts could increase by 100 times by 2030 if the U.S. continues to shutter reliable power sources and fails to add additional firm capacity. The Speed to Power initiative supports President Trump's Executive Orders, Unleashing American Energy and Removing Barriers to American Leadership in Artificial Intelligence, to inform how Federal resources will be maximized to ensure state and local governments, utilities, grid operators, large load customers, and other stakeholders address grid infrastructure constraints and meet new demand in a timely and efficient manner.

DOE
http//www.energy.gov/

19 September 2025

Dutch Government to Provide Subsidies for Offshore Wind Farms

The Dutch government has announced that it will provide around €1 billion ($1.18 billion) in subsidies to support the development of offshore wind farms with a combined capacity of 2GW. The decision follows a temporary suspension of tenders earlier this year, as builders expressed concerns about the economic feasibility of such projects without state support. In 2023, the Netherlands revised its timeline for offshore wind expansion. The previous target of reaching 21GW by 2030 was extended to 2032, citing rising costs and supply chain constraints. Despite this adjustment, the government has continued to advance projects. In June 2023, licenses were issued for the construction of a 4GW offshore wind farm located along the western coastline. Two consortia were selected to develop these facilities, reflecting continued progress in large-scale renewable energy development.

The Ministry of Climate and Green Growth announced further changes in July 2024, revising national offshore wind capacity goals. The target of 50GW by 2040 was scaled back, and questions were raised about the feasibility of reaching 70GW by 2050. These revisions were outlined in the North Sea Wind Energy Infrastructure Plan, a framework based on recent market assessments and intended to guide long-term decisions on offshore energy infrastructure.Officials noted that while the subsidy plan reflects current market realities, the government remains committed to advancing offshore wind as a key component of its energy strategy. The funding will provide developers with financial security, ensuring the continuity of projects and helping to attract further investment. The support is also aimed at stabilizing the sector, which has faced uncertainties linked to rising costs of materials, logistics, and labor.

The Dutch government's strategy balances immediate support with long-term planning. By securing financing for the 2GW projects, it aims to safeguard progress toward broader offshore wind objectives, even as targets are being adjusted. The decision also addresses concerns about investment stability and the potential impact of delays on both domestic energy supply and European environmental commitments. Industry analysts observe that subsidies will help maintain momentum in the offshore wind sector at a time when market conditions are challenging. Developers, facing cost inflation and supply chain pressures, had warned that projects could stall without state assistance. The government's action is therefore seen as a measure to ensure continued growth in renewable energy deployment while reducing risks for private investors.

Overall, the allocation of subsidies marks a significant step in the Netherlands' approach to offshore wind development. While longer-term capacity targets have been revised, the new financial measures underscore the country's commitment to supporting renewable energy infrastructure, ensuring both project viability and contributions to broader climate and energy goals.

Power Technology
http://www.power-technology.com/

19 September 2025

US Launches Effort to Speed Power Grid Projects for AI

The U.S. administration on Thursday announced new measures to accelerate development of power plants and transmission lines, citing rising electricity demand driven by artificial intelligence, data centers, and electric vehicles. At the same time, the Department of Energy (DOE) directed several coal and natural gas plants that had planned to close to continue operating.

The DOE has begun seeking input from utilities, transmission operators, and other stakeholders on near-term investment opportunities, project readiness, expected growth in power demand, and existing constraints that federal support could address. These steps are part of a broader initiative called the Speed to Power program, designed to guide how the DOE applies funding and emergency powers to expand generation capacity and strengthen the grid.

U.S. President Donald Trump had declared an energy emergency in January, his first day back in office, pointing to increased demand for electricity. The administration argues that the pace of renewable energy adoption has affected power reliability and costs. Trump has said: “Rapid adoption of solar and wind power has made U.S. electricity unstable and expensive,” and he has moved to scale back subsidies for these sectors. However, in Texas, which has the largest share of renewables in its grid, reliability has recently improved.

The DOE has significant resources available, including billions of dollars in funding and financing through its Loan Programs Office. In July, the department cancelled a $4.9 billion loan guarantee for a transmission line that was planned to deliver wind and solar power from Kansas to urban areas in the Midwest and East.

Also on Thursday, the Federal Energy Regulatory Commission (FERC) introduced new measures intended to improve grid security. It approved and proposed rules aimed at reducing risks from supply chain vulnerabilities, cyber threats, and disruptions caused by extreme weather. These rules are intended to strengthen the resilience of the electricity system against blackouts. Industry groups opposed to renewable energy expansion argue that coal plants expected to retire will remain necessary. Tom Pyle, president of the American Energy Alliance, said he anticipates that 38 coal plants scheduled for closure through 2028 will continue operating, either under government orders or through voluntary decisions by operators.

Data from the U.S. Energy Information Administration showed that coal use has recently increased. In the first quarter of 2025, coal-fired power plants consumed about 20% more coal than in the same period of 2024. The DOE stated that ensuring sufficient supply and reliable delivery of electricity will remain a central priority as energy demand rises after two decades of relatively stable consumption.

The administration’s approach highlights a shift toward expanding traditional energy sources while managing grid modernization. By combining directives for existing plants with new funding mechanisms, the DOE aims to address short-term needs for electricity reliability while seeking long-term infrastructure improvements.

Reuters
http://www.reuters.com/

22 September 2025

PJM Completes Interconnection Reform Transition Cycle 1 Studies

PJM marked the completion of Transition Cycle 1 Interconnection Studies Friday, sending out draft agreements for 130 New Service Requests to be completed or withdrawn

by year's end. This marks another milestone in PJM clearing its transition backlog, as only Transition Cycle 2, set to be completed next year, remains.

The agreements represent 128 new generation service requests for a combined energy output of approximately 17.4 gigawatts, including 8.4 GW of capacity. The projects by output are 56% solar, 25% wind, 10% storage, 5% hybrid and 3% natural gas. The studies also include two merchant transmission projects providing approximately 2 GW of interregional transfer capability.

"This is another important step as we complete this transition phase of our reform efforts and fulfill the commitments we made to streamline the interconnection process," said Jason Connell, Vice President – Planning. These new service requests now enter the final Decision Point of the Cycle, in which they must post full security to move forward. While some projects are expected to withdraw by the Oct. 21 decision deadline, it is clear that the reformed interconnection process is filtering out nonviable projects and providing more certainty on the network upgrades needed to connect projects, Connell said.

"This is really good news for our ability to process large numbers of interconnection requests going forward," said Donnie Bielak, Director – Interconnection Planning. "The successful completion of Transition Cycle 1, Phase III was made possible through close collaboration between the interconnection and legal teams and by in-house software that has automated all or parts of the study process, the way study reports are written and drafting of agreements," he said.

In July 2023, PJM began transitioning to a new, improved generation interconnection process designed to more expeditiously process new generation projects that are the most likely to get built. Since then, PJM has studied (PDF) approximately 160 GW of generation interconnection projects. The interconnection transition queue has been reduced to about 46 GW of projects, all of which will be processed by the end of 2026 in Transition Cycle 2.

The application deadline for Cycle No. 1 of PJM's reformed interconnection process will be April 27, 2026. Going forward, the processing time for issuing Generation Interconnection Agreements will be one to two years, and PJM is exploring ways to speed the process further. Outside of Transition Cycle 1, approximately 46 GW of generation projects – enough to power 40 million homes – had signed agreements to connect to the grid as of June. Completion of Transition Cycle 1 will add up to 17.4 GW to that existing number. PJM has connected approximately 2.1 GW of new generation in 2025, composed of solar (2,033 MW), wind (55 MW) and coal (29 MW).

Insidelines PJM
http://insidelines.pjm.com

23 September 2025

Iraq's Solar Plant in Karbala to Address Electricity Crisis

Iraq is preparing to launch its first large-scale solar power plant in Karbala province as part of efforts to address the country's electricity shortages, which have caused frequent blackouts. The facility, located on roughly 400 hectares in the al-Hur desert southwest of Baghdad, is expected to generate up to 300MW of electricity when operating at full capacity.

Nasser Karim al-Sudani, head of the national team for solar energy projects in the prime minister's office, said that work is also progressing on a second solar plant with a planned capacity of 225MW in Babil province, reported Associated Press. In addition, a 1,000MW project is scheduled to begin construction in Basra province. These initiatives form part of a wider plan to expand Iraq's renewable energy capacity, reduce dependence on conventional energy sources, and minimise environmental pressures.

Deputy Minister of Electricity Adel Karim explained that solar projects under construction, approval, or negotiation collectively amount to around 12,500MW. Once

completed, and excluding projects in the Kurdistan region, they could provide up to 20% of Iraq's electricity needs. Electricity demand in Iraq has risen sharply, reaching nearly 55,000MW earlier this year as temperatures exceeded 50°C in some areas. At present, the country produces up to 28,000MW, including approximately 8,000MW generated from natural gas supplied by Iran.

However, gas imports from Iran have faced disruptions. In March, the United States ended a sanctions waiver that had previously allowed Iraq to purchase electricity directly from Iran, with renewals occurring every 120 days. In addition, Iran has struggled with its own energy shortages, which have limited its capacity to export gas. These challenges have affected Iraq's electricity supply, underscoring the need for alternative energy sources.

Power Technology
http://www.power-technology.com/

24 September 2025

'Windmill': China tests world's first megawatt-level airship to capture high winds

China has successfully completed the first flight of its home-designed floating wind turbine, the S1500, in Hami, Xinjiang.

The system passed strict tests, including full desert assembly and repeated deployments in high winds. This marks a major milestone for airborne wind power. The S1500 is a megawatt-scale commercial system that floats in the sky like a giant Zeppelin. Measuring approximately 197 feet long (60 meters), 131 feet wide (40 meters), and 131 feet tall (40 meters), it is by far the largest airborne wind-power generator ever built, according to Beijing SAWES Energy Technology Co., Ltd., one of the developers. Unlike traditional turbines, the S1500 does not need a tower or deep foundation. This reduces material use by 40 percent and cuts electricity costs by 30 percent. The entire unit can be moved within hours, making it suitable for deserts, islands, and mining sites.

The S1500 features a main airfoil and an annular wing that together form a giant duct. Inside this duct are 12 turbine-generator sets, each rated at 100 kW. These rotors capture steady high-altitude winds and convert them into electricity. The power is transmitted to the ground via a tether cable. SAWES developed the airship with support from Tsinghua University and the Aerospace Information Research Institute (AIR) under the Chinese Academy of Sciences.

Researchers mastered aerostat stability, ultra-light generators, and kilometer-scale high-voltage tethers to make large airborne wind systems feasible. Previous prototypes paved the way for the S1500. In October 2024, the helium-filled S500 blimp reached about 1,640 feet (500 meters) above Hubei Province, producing over 50 kW. Three months later, the S1000 climbed to roughly 3,281 feet (1,000 meters), doubling output to 100 kW. These incremental steps helped validate the concept of high-altitude energy harvesting.

China's home-designed megawatt-scale commercial buoyant airborne turbine, the S1500, has successfully completed its maiden flight in northwest China's Hami after passing tests including full desert assembly and continuous high-wind deployment and retrieval. High-altitude winds between 1,640 and 3,281 feet (500 and 10,000 meters) above the ground are stronger and steadier than surface winds. These winds are abundant, widely available, and carbon-free. The physics of wind power makes this resource extremely valuable. "When wind speed doubles, the energy it carries increases eightfold, triple the speed, and you have 27 times the energy," explained Gong Zeqi, a researcher from AIR. This exponential growth shows why high-altitude turbines like the S1500 can generate much more power than conventional land-based systems.

SAWES also envisions the platform for rapid disaster response. The system can be deployed quickly after earthquakes or floods to supply electricity to lights, radios, and life-

saving equipment. China has long recognized the potential of airborne wind power. An action plan issued by the National Development and Reform Commission outlines research and development priorities for large-scale high-altitude wind-power generators from 2016 to 2030.

Interesting Engineering
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29 September 2025

Energy Department Announces $625 Million Investment to Reinvigorate and Expand America's Coal Industry

The U.S. Department of Energy (DOE) today announced a $625 million investment to expand and reinvigorate America's coal industry, aiming to boost energy production and support coal communities nationwide. The funding announcements are issued in accordance with President Trump's Executive Orders, "Reinvigorating America's Beautiful Clean Coal Industry," and "Strengthening the Reliability and Security of the United States Electric Grid."

"Beautiful, clean coal will be essential to powering America's reindustrialization and winning the AI race," U.S. Secretary of Energy Chris Wright said. "These funds will help keep our nation's coal plants operating and will be vital to keeping electricity prices low and the lights on without interruption. Coal built the greatest industrial engine the world has ever known, and with President Trump's leadership, it will help do so again."

DOE has committed to providing $625 million in funding for:

- $350M for Coal Recommissioning, and Retrofit: for projects to demonstrate readiness to recommission or modernize coal power units and provide near-term electric power reliability and capacity.
- $175M for Rural Capacity and Energy Affordability Projects: for coal power projects that provide direct benefits of energy affordability, reliability, and resiliency in rural communities.
- $50M to support the Development and Implementation of Advanced Wastewater Management Systems: to demonstrate scalable, cost-effective wastewater management systems that enables coal plants to extend their service life, reduce operational costs, and enhance commercial byproduct recovery.
- $25M for Engineering and Implementation of Dual Firing Retrofits: to enable coal power plants to seamlessly switch between fuels, achieve full steam capacity, and economic flexibility to extend plant lifespans.
- $25M for Development and Testing of Natural Gas Cofiring Systems: to support investments that will maintain boiler efficiency and reliability when utilizing 100% natural gas.

Background:

To date, the Energy Department has made numerous announcements to support America's coal industry:

- On April 8th, DOE announced a series of actions the Department of Energy (DOE) is taking to unleash American coal production.
    - The order called for Secretary Wright to take action necessary to accelerate the development, deployment, and commercialization of coal technologies.
    - For the Secretary of Energy and Secretary of Interior authority to determine whether coal used in the production of steel is defined as a "critical mineral," and if so, takes steps to place it on DOE and DOI's Critical Minerals Lists.

  - The EO called to have coal designated a “mineral” by the National Energy Dominance Council, which is led by Secretary Burgum and Secretary Wright.
  - Within 60 days of the order, assess coal resources and accessibility on federal lands, and in addition, expedite coal leasing and lift barriers to coal mining on federal lands.
  - The order called to support American coal exports, promote opportunities for coal and coal technologies, and facilitate international offtake agreements for U.S. coal.
  - Within 30 days of the order, expand the use of categorical exclusions for coal under the National Environmental Policy Act.
  - Within 60 days of the order, identify where coal-fired power can be used to support AI infrastructure and data centers.
- On May 23rd, U.S. Secretary of Energy Chris Wright announced the designation of metallurgical coal as a Critical Mineral, in accordance with Executive Order 14241 “Reinvigorating America’s Beautiful Clean Coal Industry.”
- On May 23rd and August 20th, Secretary Wright issued emergency orders to minimize the risk of blackouts and address critical grid security issues in the Midwestern region of the United States. The orders directed the Midcontinent Independent System Operator, Inc. (MISO) and Consumers Energy Company to take all measures necessary to ensure that the J.H. Campbell coal-fired power plant (Campbell Plant) in West Olive, Michigan remains available to operate. As a result of the two orders, the Campbell Plant was available to generate large amounts of electricity during this summer’s heat wave and continues to remain a critical asset to maintain reliability in the Midwest. Prior to the Secretary’s orders, the Campbell Plant was scheduled to be shut down on 5/31.

DOE
http://www.energy.gov/