

WORLD POWER SYSTEMS REVIEW

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U.S. PJM Implements Reserve Price Formation Changes

PJM has implemented new reserve price formation rules as ordered by the Federal Energy Regulatory Commission effective Oct. 1. PJM is required by the North American Electric Reliability Corporation to maintain sufficient reserves to respond within 15 minutes to the loss of the largest single contingency on its system.

Reserve Pricing Enhances Operations-Markets Alignment

The new reserve price formation structure consolidated Tier 1 and Tier 2 Synchronized Reserve products and aligned reserve procurement in PJM's Day-Ahead and Real-Time markets. This parity solidifies generators' financial incentives to provide reserves.

The changes accomplish the following:

- Establish a 30-minute operating reserve product, a 10-minute primary reserves product, a 10-minute Synchronized Reserve product and a revised Operating Reserve Demand Curve in the Day-Ahead Market
- Establish a 30-minute operating reserve product, a 10-minute primary reserves product, a 10-minute Synchronized Reserves product and a revised Operating Reserve Demand Curve in the Real-Time Market
- Are expected to produce more accurate reserve calculations with less PJM operator intervention, more reliable Synchronized Reserve performance, and consistent compensation and penalties for all resources providing the same service
- Will enable PJM to model subzones with more flexibility for improved alignment between operations and market outcomes
- Utilize an identical clearing mechanism in both markets to promote market efficiency

Market Participation

Resources eligible to provide 30-minute reserves are those that are online, as well as offline, resources within PJM that are available to provide energy within 30 minutes. Nuclear, wind and solar resources are not eligible, unless approved by exception. Hydro and energy storage must submit specific reserve offers for consideration (because PJM does not have enough information to estimate these specific reserves). Otherwise, all eligible generators that have submitted offers into the Energy Market will also be considered as offering into the Reserve Market.

PJM Interconnection
<http://insidelines.pjm.com>

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U.S. PJM Files Quadrennial Review Proposal with FERC

The PJM Quadrennial Review process culminated Oct. 1 with the filing of the PJM proposal approved by the PJM Board of Managers for consideration by the Federal Energy Regulatory Commission.

The proposed solution (PDF), informed by PJM stakeholder input, seeks to maintain essential reliability with appropriate reserve procurement in the capacity market. Occurring at least every four years, the study process establishes elements of the market constructs for the Variable Resource Requirement, which is the capacity required for reliability. This includes establishing the maximum price PJM will pay for a given quantity of capacity balanced with the price signal required to incentivize generation resources for reliability.

As part of PJM's fifth Quadrennial Review, stakeholders for the first time contributed insight and feedback alongside the study by The Brattle Group, the PJM consultant retained

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for the analysis. During prior Quadrennial Reviews, stakeholders have provided feedback only upon completion of the consultant's study.

The recent Quadrennial Review study process, which started in 2021, focused on appropriate levels of procurement to support PJM's one-in-10-year loss of load (LOLE) standard. The final proposal:

- Adopts a combined cycle as the reference technology, replacing the combustion turbine;
- Employs a demand curve design that ensures sufficient resources to meet the reliability requirement while mitigating price volatility and over-procurement;
- Revises the formula for a generator's Net Cost of New Entry (CONE) to be calculated with forward-looking energy and ancillary services revenue to more appropriately reflect investors' views of future market conditions.

PJM Interconnection
<http://insidelines.pjm.com>

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U.S. Southwest Power Pool welcomes first international member

Southwest Power Pool (SPP) welcomed its newest member, Saskatchewan Power Corporation (SaskPower), effective Oct. 1, 2022. SaskPower is SPP's first international member, and their membership represents both organizations' continued efforts to increase reliability through interregional coordination.

"Greater integration with the SPP will help to ensure reliable, clean energy is available to Saskatchewan to support our own generating facilities," said Rupen Pandya, SaskPower President and CEO. "We look forward to a strong and mutually beneficial relationship with SPP in the years to come."

On Aug. 10, 2022, SaskPower announced it signed a 20-year interconnection agreement with SPP to expand transmission capacity between Saskatchewan and the United States. The announcement requires construction of a new line, which will allow for 650 megawatts of imports and exports beginning in 2027.

"SPP is very pleased to welcome SaskPower into our organization," said Barbara Sugg, SPP President and CEO. "The continued success of our organization and the integrity of the bulk power system both rely on strong interregional ties."

SPP and SaskPower have operated as adjacent entities since October 2015 when SPP's service territory expanded to the North Dakota-Saskatchewan border when a group of utilities known as the Integrated System became members of SPP and placed their facilities under the SPP Open Access Transmission Tariff. SPP and SaskPower have a Joint Operating Agreement that outlines how the organizations coordinate reliability and transmission functions.

SaskPower's participation in the SPP Regional Transmission Organization represents a commitment by both organizations to continue collaboration to strengthen electric coordination, improve the integration of intermittent resources and create economic opportunities across their borders.

Southwest Power Pool, Inc. is a regional transmission organization: a not-for-profit corporation mandated by the Federal Energy Regulatory Commission to ensure reliable supplies of power, adequate transmission infrastructure and competitive wholesale electricity prices on behalf of its members. SPP manages the electric grid across 17 central and western U.S. states and provides energy services on a contract basis to customers in both the Eastern and Western Interconnections.

Southwest Power Pool
<http://www.spp.org>

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Fingrid has updated its estimate of the adequacy of electricity in the coming winter

Fingrid has updated its estimate of the adequacy of electricity in the coming winter, as electricity consumption decreased by an average of seven per cent in September compared with the previous year. Consequently, the estimate of peak consumption in the winter has been updated. In other regards, the situation is largely unchanged.

The energy market remains in an extraordinary state because of the uncertainties around the availability of electricity due to war on European soil. People in Finland are advised to prepare for power outages caused by possible electricity shortages this coming winter.

The new estimate of the electricity consumption peak in the coming winter is 14,400 megawatts, which is 700 megawatts less than the original estimate.

Above all, the consumption peak was updated because electricity consumption decreased by approximately seven per cent in September compared with the corresponding period in 2021.

In the best case, domestic production can cover an estimated 12,900 megawatts, including the Olkiluoto 3 nuclear power plant, as well as the Meri-Pori production plant, as well as the estimated wind power output during calm weather. The Olkiluoto 3 nuclear power plant would compensate for the lack of imports from Russia.

Estimate of the power balance in Finland during the winter season 2022–2023 (updated 3.10.2022)	
On a very cold and calm winter day	
Available domestic capacity	12 900 MW*
Estimated peak consumption	14 400 MW**
- Average peak consumption in 2007–2022	14 000 MW
Domestic power balance, net	-1 500 MW
Import capacity from EU countries	3 400 MW
- from Sweden	2 400 MW
- from Estonia	1 000 MW
Import capacity from Russia (not available as of 05/2022)	0 MW

* The estimate includes the Olkiluoto 3 nuclear power plant, Meri-Pori power plant, and the estimated wind power production on a calm winter day

** Preliminary estimate, to be updated when necessary

The arrows represent the transmission capacity between Finland and its neighboring countries

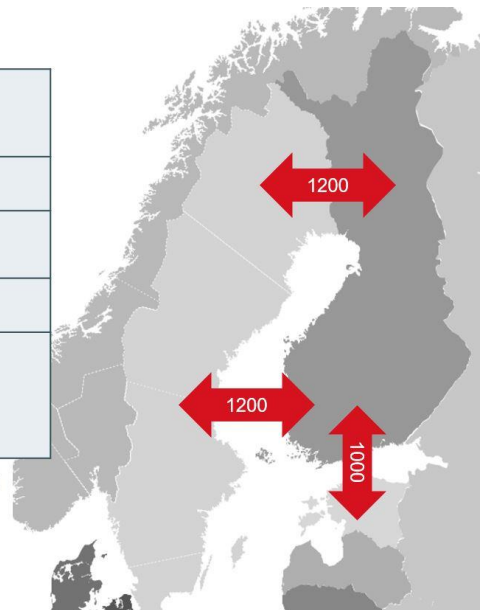


Fig: Estimate of electricity production and consumption for the winter season 2022–2023 in a situation where the electricity system and market function without problems.

The EU is also setting the target of reducing the consumption peak by five per cent.

“We have now achieved a seven-per-cent saving in electricity consumption, which is a really good start. However, winter and freezing temperatures are yet to come. In the coming winter, efforts to save electricity and schedule the consumption of electricity may be the key to avoiding electricity shortages. For example, a saving of approximately 10 per cent during times of peak consumption would be almost as much as the output of Olkiluoto 3,” says Tuomas Rauhala, Fingrid’s Senior Vice President, Power System Operation.

Fingrid will update its estimate of the adequacy of electricity for the coming winter as the situation changes.

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Go-Live of MARI: the European implementation project for the creation of the European Manual Frequency Restoration Reserves (mFRR) platform

The electricity transmission system operators (TSOs) of the Platform for the Manually Activated Reserves Initiative (MARI) are pleased to announce that the platform has been brought successfully into operation on 5 October 2022 with accession of 5 TSOs.

The launch of the MARI platform marks the beginning of a European-wide coupling of national balancing markets for frequency restoration reserves with manual activation (mFRR) by the deployment of, for example, standard products, harmonized balancing energy gate closure times, a common merit order list, a central activation optimization function, merit order activation and a harmonized pricing of balancing energy.

CEPS and the German TSOs (TenneT DE, 50Hertz, Amprion, and TransnetBW) have accessed the new platform as the first TSOs, thereby connecting the respective national markets for balancing energy to MARI in accordance with the EB Regulation. With this first accession, interchanges of balancing energy from mFRR also started. Further planned accessions are published in the MARI accession roadmap.

MARI is the European implementation project for the creation of the European mFRR platform. MARI project includes 28 TSO members and 4 TSO observers (see MARI webpage for further details). The project establishes the European platform for the exchange of balancing energy from frequency restoration reserves with manual activation or mFRR-Platform, pursuant to Article 20 of the Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing (EB Regulation).

ENTSO-E

<http://www.entsoe.eu>

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MISO energy users cannot leave system without paying their capacity fees: FERC

The U.S. Federal Energy Regulatory Commission dismissed a complaint seeking to let energy users in the Midcontinent Independent System Operator's footprint leave the system without making owed capacity payments.

The Coalition of MISO Transmission Customers, a group of industrial companies behind the complaint, failed to show that an unnamed industrial customer's inability to exit MISO's market without paying its share of capacity charges when there is a shortfall in MISO's capacity auction makes the grid operator's tariff unjust and unreasonable, FERC said in its Monday decision. "The ability to hedge against high Auction prices and the various off-ramps from the Auction is further evidence that the existing Tariff provides opportunities to avoid potentially high prices in the Auction and is not unjust and unreasonable," FERC said.

The coalition filed its complaint at FERC in May, about six weeks after capacity prices in MISO's annual planning resource auction, or PRA, jumped to \$236.66/MW-day from \$5/MW-day a year ago across its central and northern footprint, driven by a supply shortfall. Load-serving entities must pay the PRA price if they fail to line up enough capacity to cover their requirements.

The group argued that MISO's tariff was unjust and unreasonable because it contains no mechanism for load to exit the grid operator's system without charge when that would help MISO address resource adequacy issues.

At least one coalition member, with roughly 200 MW of load, was considering cutting its operations through May 2023, according to the complaint. However, a significant factor

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in the company's operational decisions is the requirement that it pay PRA charges, even if it shuts down facilities, the coalition said.

FERC rejected the group's arguments.

"MISO's capacity construct is designed to not only place capacity requirements on [load-serving entities] to promote resource adequacy in a given Planning Year, but also to produce price signals that promote long-term resource adequacy and economic efficiency by, when appropriate, creating incentives for existing resources to stay or new resources to enter the market," FERC said. "We find that the absence of a Tariff provision allowing load to exit the system without charge following the Auction is by design."

Also, letting auction participants shed a binding commitment after an auction would undermine the price signals that foster efficient planning and investment, FERC said.

If approved, the proposal would give an unfair advantage to entities that could reduce their electricity use after seeing an auction's results compared with those that couldn't, according to FERC.

In a concurrence, FERC Commissioner James Danly said it appeared MISO may not be keeping enough dispatchable power plants to ensure grid reliability.

"A market's failure to procure sufficient capacity with the needed characteristics is a flaw so fundamental that it calls into question the justness and reasonableness of the resulting rates," Danly said, noting that MISO's interconnection queue consists mainly of intermittent renewable energy resources.

This year, MISO received 956 interconnection requests representing about 171 GW of new generation, including 164 GW of renewable or storage resources, the grid operator reported Sept. 27. At 84 GW, solar projects were the largest type of generators seeking to interconnect to MISO's system this year, followed by hybrid projects at 34 GW, stand-alone storage projects at 32 GW and wind projects at 14 GW. MISO received 487 requests totaling 77 GW in last year's interconnection application window.

Utility Dive

<http://www.utilitydive.com>

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UK ESO takes cautious action ahead of winter to ensure security of electricity supply

ESO's Winter Outlook Base Case shows de-rated margins of 3.7GW or 6.3%, this is similar to recent winters. Russia's invasion of Ukraine means that overall, this is likely to be a challenging winter for energy supply throughout Europe. As a result, ESO has developed additional tools to manage risk

New tools developed for this winter include: Winter contingency contracts and the innovative Demand Flexibility Service which businesses and the public can get behind and be paid to move their electricity use out of peak hours. As part of its analysis this winter the ESO has also developed additional illustrative scenarios

Situation

Since last winter the world has fundamentally changed with the invasion of Ukraine by Russia. With this backdrop the ESO presents the Winter Outlook. Building on the Early View of Winter, this document presents a more detailed view focusing on the upcoming winter in Great Britain. This Winter Outlook and corresponding Data Workbook covers the period from 31 October 2022 to 31 March 2023. The data freeze date for this outlook was 22 September 2022.

New times require new tools

Since Russia's invasion of Ukraine and the knock-on effects in the European and global energy markets the ESO has added several mitigating tools to its operational toolbox to help manage the energy supply this winter. Those tools include:

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- Providing an early view of the Winter Outlook in midsummer, so market participants, stakeholders and others had a view of the emerging energy impacts on winter.
- Securing 3 contracts with coal generators to keep 5 coal units open and on standby this winter to generate up to approximately 2 GW of additional power (enough to supply about 600,000 homes and flats).
- Creating a new Demand Flexibility Service where energy users will be incentivized to reduce consumption/turn off power at key times to reduce overall demand across the system. It is projected that this tool could reduce demand by up to 2 GW.

Building on the early view

Building on the Early View of Winter, this electricity Winter Outlook presents a more detailed view focusing on the upcoming winter in Great Britain. This Winter Outlook covers the period from 31 October 2022 to 31 March 2023. The data freeze date for this outlook was 22 September 2022.

This Winter Outlook is developed in the context of unprecedented turmoil and volatility in energy markets in Europe and beyond and, as we stated earlier in the year, shortfalls of gas in continental Europe could have a range of knock-on impacts in Britain. Therefore, in this Winter Outlook in addition to our Base Case, the ESO has also set out a scenario to illustrate the implications should some of those potential risks to security of energy supplies materialise.

Base case

The ESO's central view remains, as set out in the Base Case, that there will be adequate margins (3.7GW / 6.3%) through the winter to ensure GB remains within the reliability standard, although the ESO expects there to be days where we will need to utilise many of the tools in our operational toolkit, including use of system notices.

Given the scale of uncertainty and risks associated with the current geopolitical situation as we head into this winter, as noted the ESO has put in place a number of risk mitigation initiatives – these include contracting to retain approximately 2GW of coal fired generation that would otherwise have closed and introducing an innovative Demand Flexibility Service to incentivise customers to reduce consumption at periods where margins are tight.

Notwithstanding the mitigation measures noted above, it is highly likely that the wholesale price of energy (both gas and electricity) will remain very high throughout the winter outlook period.

Alternate scenario

While the Base Case assumes that capacity across all providers (generation, storage, interconnection etc.) is available in line with commitments secured under the Capacity Market, the ESO have also modelled a scenario whereby the energy crisis in Europe results in electricity not being available to import into GB from continental Europe. This could be due to a combination of factors, including a shortage of gas in Europe (which in turn limits power generation in Europe) and/or generation unavailability (e.g., due to a high level of outages across another country's generation fleet).

In this hypothetical alternative scenario (no electricity imports from continental Europe), the ESO would deploy its mitigation strategies – dispatching the retained coal units and the Demand Flexibility Service. By securing approximately/up to 4GW[5] through these actions, the ESO would expect to maintain adequate margins and mitigate impacts on customers.

The Demand Flexibility Service is new and innovative, and the ESO have worked with suppliers, aggregators, industry, Ofgem and BEIS on the design to ensure it is ready for the

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winter and capable of delivering the required level of participation and response (2GW+). It will launch on 1 November, and the ESO is encouraging suppliers and aggregators to work with their customers to ensure the highest levels of engagement and participation. The ESO sees particular potential from commercial organisations who can shift their load from peak hours and have had positive feedback from British companies on this.

Without the deployment of the additional coal generation units or the new Demand Flexibility Service, the ESO would expect to see a reduction in margins. In this scenario on days when it was cold (therefore likely high demand), with low levels of wind (reduced available generation), there may be the potential to need to interrupt supply to some customers for limited periods of time in a managed and controlled manner. However, the ESO expects the mitigations outlined above to be effective.

In the unlikely event that escalation of the situation in Europe means that insufficient gas supply were to be available in Great Britain this would further erode electricity supply margins⁶ potentially leading to supply interruptions to customers for short periods. All possible mitigating strategies, including our new measures, would be deployed to minimise the disruption.

NGESO

<http://www.nationalgrideso.com>

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Atlantic Shores selects Vestas as preferred turbine supplier for its 1.5 GW project in New Jersey, USA

After a thorough and competitive process, Atlantic Shores Offshore Wind (Atlantic Shores), a 50:50 partnership between Shell New Energies and EDF Renewables, is proud to announce its selection of Vestas as the preferred supplier for its 1.5 GW offshore wind project in New Jersey, USA.

Vestas will provide its industry leading V236-15.0 MW™ offshore wind turbines, with installation expected in 2027. Once installed, the project will generate enough clean energy to power more than 700,000 U.S. homes.

This Preferred Supplier Agreement (PSA) was signed shortly after New Jersey Governor Phil Murphy issued an Executive Order increasing the state's offshore wind target by 50 percent to achieve 11 GW by 2040.

"The Murphy Administration has set bold offshore wind development and emissions reduction goals, and we're backing up those commitments to a more sustainable Garden State through focused action and concrete investments that address climate change while creating good family sustaining jobs," said Jane Cohen, Executive Director of the New Jersey Governor's Office of Climate Action and the Green Economy. "Atlantic Shores' selection of Vestas as the preferred supplier of its New Jersey offshore wind project marks another crucial step toward our state's transition to a green economy and realising our clean energy future".

"Today's announcement by Atlantic Shores Offshore Wind and Vestas is an exciting step forward for one of New Jersey's first offshore wind projects," said New Jersey Board of Public Utilities President Joseph L. Fiordaliso. "This key development milestone helps keep the State on track for achieving Governor Murphy's goal of 100% clean energy by 2050 and our nation leading goal of 11GW of offshore wind by 2040".

With this project, New Jersey, Atlantic Shores, and Vestas are together taking a leading role in meeting the state's clean energy goal, while also advancing the Biden Administration's goal to support the deployment of 30 GW of offshore wind in the United States by 2030.

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“We are proud to partner with Atlantic Shores Offshore Wind as the preferred supplier for its project and deploy our flagship V236-15MW™ turbine to help New Jersey achieve its goal of rapidly developing offshore wind and creating new clean energy jobs,” said Laura Beane, President of Vestas North America. “Scaling offshore wind in the U.S.A. depends upon consistent policy and predictable, steady volume over a long period of time, and New Jersey’s newly stated 11 GW offshore target combined with stable federal policy signals this intent”.

Given the state’s significant investment in the New Jersey Wind Port and keeping in line with the Atlantic Shores’ commitments to New Jersey as part of its selected Project 1 proposal, Vestas intends to establish a nacelle assembly facility at the New Jersey Wind Port in Salem County where the assembly and testing of the hub, cooler top, and heli-hoist modules will take place. The facility will supply Atlantic Shores’ inaugural project in its portfolio.

In addition, Vestas will deliver a comprehensive wind turbine service solution as soon as the project commences operations. These services will be executed from a state-of-the-art operations and maintenance base established by Atlantic Shores in Atlantic City, that will also provide additional local employment opportunities over the life of the project.

“Since our award in June 2021, Atlantic Shores has conducted an extensive due diligence and procurement process to find the right turbine supply partner that will enable us to deliver the best value to the state of New Jersey, including local content commitments. We are proud to have concluded that process with the selection of Vestas as our preferred supplier, and we look forward to moving forward together to successfully deliver our Project 1,” said Joris Veldhoven, CEO of Atlantic Shores Offshore Wind.

If the agreement with Atlantic Shores is converted to a firm order for Vestas, Vestas will disclose the order in a company announcement in accordance with the company’s disclosure policy.

Vestas

<http://www.vestas.com>

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World’s largest compressed air energy storage project goes online in China

The Chinese Academy of Sciences has switched on a 100 MW compressed air energy storage system in China’s Hebei province. The facility can store more than 132 million kWh of electricity per year. The Institute of Engineering Thermophysics of the Chinese Academy of Sciences has switched on a 100 MW compressed air energy storage (CAES) plant in Zhangjiakou, in China’s Hebei province.

“The project, technically developed by the Institute of Engineering Thermophysics of the Chinese Academy of Sciences. The power plant can generate more than 132 million kWh of electricity annually, providing electricity for 40,000 to 60,000 households during peak electricity consumption,” the research institute said. “CAES has the advantages of large storage capacity, low capital cost, long lifetime, safety, and environmental friendliness. It is recognized as one of the most promising technologies for large-scale energy storage.”

The facility is based on a multistage high-load compressor and an expander, as well as high-efficiency supercritical heat storage and heat exchange, said the Chinese Academy of Sciences, without providing additional technical details. It launched the demonstration project in 2018, after developing two compressed air energy storage systems with capacities of 1.5 MW and 10 MW in 2013 and 2016, respectively.

The world’s largest operational CAES system is currently a 60 MW plant built by Chinese state-owned energy group Huaneng, Tsinghua University, and China National Salt Industry Group in Changzhou, Jiangsu province. The facility features a salt cavern, situated

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1,000 meters underground and owned by China National Salt Industry Group. The system has an efficiency of more than 60% and is expected to reach a power generating capacity of 1 GW.

PV Magazine

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

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Thailand Starts Up First of Two Giant 2.7-GW Natural Gas-Fired Combined Cycle Power Plants

Mitsubishi Power has declared complete a 2,650-MW natural gas-fired power plant in Chonburi province, Thailand, delivering its four M701JAC power trains to the plant's joint owners Gulf Energy Development PCL, one of the largest independent power producers (IPPs) in Thailand, and Tokyo-based conglomerate Mitsui & Co., Ltd.

The Gulf SRC (GSRC) power plant, located about 130 km southeast of Bangkok, is the first gas-fired independent power project built by the two companies under their joint venture, Independent Power Development Co. (IPD). Gulf Energy Development holds a 70.0% equity interest in IPD, while Mitsui holds 30%. The first two 660-MW units at the GSRC plant went online in March 2021 and October 2021, respectively. The third and fourth units were completed this year despite COVID-related issues and supply chain constraints, said Mitsubishi Power, which delivered the plant under a full turnkey order.

Each of GSRC's four power trains comprises an M701JAC gas turbine, a steam turbine, a heat recovery steam generator, and a generator. "The first unit has already been in commercial operation for 1.5 years, the second unit for one year, and the third unit for six months—and all three boast high operating rates," Mitsubishi Power said. "In September 2022, the M701JAC gas turbine of the first unit achieved 8,000 actual operating hours (AOH), establishing an industry benchmark of reliability."

Construction is meanwhile underway at a second 2,650-MW M701JAC power plant, the Gulf PD (GPD) station, in Rayong province, about 176 km south of Bangkok. GSRC and GPD are a suite of independent power plants IPD was awarded in 2013. The GPD project in Rayong province is slated for completion in 2024, with Units 1 and 2 scheduled to come online in 2023. Both the giant IPD projects have 25-year power purchase agreements with the Electricity Generating Authority of Thailand (EGAT), a state utility service enterprise managed by Thailand's Ministry of Energy.

Mitsubishi Power, Mitsubishi Heavy Industries' power solutions brand, on Oct. 1, 2022, commenced operation of the fourth and final M701JAC unit at an ultra-large-scale natural gas-fired power plant in Chonburi Province, Thailand. The plant is owned by a joint venture of Gulf Energy Development PCL, one of the largest independent power producers in Thailand, and Mitsui & Co., Ltd. Courtesy: Mitsubishi Power

The two projects are part of a wave of independent power projects Thailand is building to meet growing demand for power, which is projected to surge as the country's economy grows driven by a flourishing export sector. According to the Ministry of Energy's Energy Policy and Planning Office (EPPO), electricity demand from EGAT has increased at a compound average growth rate of 2.5% over the past decade—from 148,855 GWh in 2011 to 190,468 GWh in 2021. Thailand's most recent power development plan projects the country's power consumption will reach 367,458 GWh in 2037.

Thailand's total contracted power generation capacity as of November 2021 was 50,894 MW, 31.5% generated by EGAT, and 30% by IPPs. Thailand is looking to add 56,431 MW to meet future demand and replace retiring power plants. Most of this new capacity—20,766 MW—will come from renewables, but the country envisions at least 15,096 MW from combined cycle power plants.

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While Thailand is an oil and natural gas producer, increasing gas demand from its power generation sector, industrial sector, and gas separation plants have pushed the country to ramp up the amount of LNG it imports. Gulf subsidiary Gulf LNG and an associate company HKH hold two of eight LNG shipper licenses issued by Thailand's Energy Regulatory Commission. Gulf is also developing an LNG terminal, a project that it envisions will support Thailand in becoming a regional LNG hub.

It says these businesses will become a vital part of supplying fuel to Gulf's power plants and strengthen the country's energy security in the future. In total, Gulf operates, is building, or developing a 13.6-GW gas-fired power plant fleet. About 11 GW of that fleet are independent power plants in Thailand that will generate or sell power to EGAT.

"The company invests in the development, construction and operation of gas-fired power plants to support the growing electricity demand of the country, which is necessary for industrial and economic growth. Gas-fired power plant is a baseload power plant which can generate electricity steadily and continuously, and will be a bridge to the transition to a low-carbon society," Gulf says.

The company notes it has a "No Coal" policy and is striving to increase its investment in renewable energy. It also "prioritizes that use of state-of-the-art technology to allow projects to operate at the highest efficiency," it says.

Powermag

<http://www.powermag.com>

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States press FERC for independent monitors on transmission planning, spending as Southern Co. balks

The U.S. Federal Energy Regulatory Commission should require the creation of independent transmission monitors, or ITMs, to help oversee transmission planning and spending, state and consumer advocates said Thursday during a technical conference on managing transmission costs.

The conference comes as annual utility transmission spending grew to \$40 billion in 2019, up from \$9.1 billion, in 2019 dollars, in 2000, according to a March 2021 report by the Energy Information Administration.

That spending is expected to grow as utilities and transmission companies build power lines to connect renewable energy resources to the grid. FERC needs to make sure new transmission facilities are the most cost-effective options and are built with cost discipline, FERC Commissioner Allison Clements said during the meeting. However, many transmission projects are built with scant oversight, according to panelists at the meeting.

About 63% of transmission investment in California over the last three years was on "repair and replacement" projects that are self-approved by the state's three major investor-owned utilities, said Simon Hurd, program and project supervisor for the California Public Utilities Commission's energy division. Those projects fall outside local or regional transmission planning, according to Hurd.

The combined FERC-jurisdictional transmission rate base for California's three largest transmission owners — Pacific Gas & Electric Co., Southern California Edison and San Diego Gas & Electric Co. — has soared to \$22.4 billion, including pending rate requests, from \$4.6 billion in 2008, Hurd said in testimony filed at FERC.

The review of transmission planning and spending varies by state, panelists told FERC. Some states don't review projects below certain kilovolt thresholds, while states like Indiana don't review them at all, according to panelists.

Among the Midcontinent Independent System Operator's 15 states, only the Wisconsin Public Service Commission has a transmission expert on staff, said Sarah

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Freeman, chair of the Organization of MISO States and an Indiana Utility Regulatory Commission commissioner. An ITM could help fill that oversight gap, according to Kent Chandler, Kentucky Public Service Commission chairman. “For many of these projects, it may be the only real set of eyes that’s looking at the need and the planning,” Chandler said.

Besides an “information asymmetry” between transmission owners and people trying to understand their plans, states and others don’t have the expertise to assess the information that is available, according to Greg Poulos, executive director of Consumer Advocates of the PJM States. An ITM could help provide that expertise, he said.

James McLawhorn, the North Carolina Utilities Commission’s energy division director, echoed Poulos. “We simply do not have the expertise on staff,” McLawhorn said. “We desperately need something like an [ITM].”

New England states appear to face a similar issue. “Our states ... don’t have the resources to contribute as much as they would like” to transmission planning, Robert Ethier, ISO New England, vice president for system planning, said. “We think they should have a very big role, going forward, in deciding how the transmission system gets expanded to meet their policy goals, but ... they don’t have the technical resources to engage more actively in helping us design what the future ought to look like.”

Some panelists opposed or were lukewarm to the ITM concept. FERC, states and grid operators are already “on the beat” overseeing transmission development, according to Jon Schneider, a Stinson partner representing the Large Public Power Council. An ITM may not provide additional value, he said.

Southern Co.’s transmission development is already adequately overseen by state regulators and through a regional transmission process, according to Jeff Burleson, environmental and system planning senior vice president at the Atlanta-based utility company.

Many panelists supported some form of an ITM, however. “If the current planning process is perfect, an ITM will validate that, and so if you object to it, the implication seems to be you are worried the skeletons will come out of the closet,” said Joshua Macey, University of Chicago assistant professor of law.

Further, a failure to adequately focus on transmission cost management could set back the shift away from fossil-fueled generation, according to Philip Bartlett II, Maine Public Utilities Commission chairman. “We will lose the public if we are not doing the work of making it very open, transparent and accountable, because if costs spiral upward, and they don’t have that confidence, we will be dead in our tracks in terms of trying to make this transition,” Bartlett said.

At the end of the daylong meeting, FERC Chairman Richard Glick said there appear to be regulatory gaps in transmission oversight between FERC, states and grid operators as well as informational gaps. FERC has issued proposed rules this year governing transmission planning and cost allocation and generation interconnection, Glick said, adding that more transmission proposals may be coming.

Utility Dive

<http://www.utilitydive.com>

7 October 2022

California offshore wind lease auction for up to 3 GW advances with BOEM assessment

Leasing nearly 241,000 acres for wind farms off the central coast of California wouldn’t significantly affect the environment, according to an assessment released Wednesday by the Bureau of Ocean Energy Management.

The potential leases near San Luis Obispo County could support about 3,000 MW of offshore wind, BOEM said. If BOEM conducts a lease auction in the Morro Bay wind energy

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area, before authorizing wind farm construction the agency said it will produce an environmental impact statement to assess specific effects from any proposed project. The issuance of the environmental assessment is another step forward in possible wind farm development off the West Coast, an area where floating wind turbines will be the main option for offshore wind because of the depth of the water.

The move comes weeks after the Biden administration launched a floating wind turbine initiative that includes leasing enough deep-water acreage to support 15 GW of floating offshore wind capacity by 2035.

The California Energy Commission in August approved planning goals of up to 5,000 MW by 2030 and 25,000 MW by 2045 for offshore wind development.

“The completion of our environmental review is an important step forward to advance clean energy development in a responsible manner while promoting economic vitality and well-paying union jobs in central California,” BOEM Director Amanda Lefton said in a statement. BOEM will continue to work with tribes, state and federal partners, and key stakeholders to make sure wind farm developers avoid or minimize their projects’ effects on the ocean and region, according to Lefton.

At least 23 companies are qualified to bid in any West Coast offshore auctions, including Algonquin Power Fund, Avangrid Renewables, Equinor Wind US, Orsted North America and Shell New Energies US, according to a proposed sale notice published in the Federal Register in May.

Utility Dive

<http://www.utilitydive.com>

10 October 2022

Iran aims to switch to electricity grids of Russia and SCO countries through Turkmenistan

Iran is working on a major project to connect its national energy system with the power grids of Russia and other SCO countries through Turkmenistan. This statement came from Mohammad Ali Farakhnagian, Advisor to the Iranian Minister of Energy for International Affairs, in an interview with IRNA.

According to official, all that is required to put these plans into action is the construction of a third power line from Iran to Turkmenistan.

Iran has completed the construction of a power transmission line to the Turkmen border, and as soon as Turkmenistan starts implementing the project, the transmission capacity of the line will grow by 200%, Farakhnagian said.

The increase in power transmission capacity will allow Iran to export electricity from the eastern coast of the Caspian Sea, he added. Iran is currently holding consultations with a view to connecting the national energy system to the energy grids of the SCO member states through Turkmenistan and Tajikistan, he said.

In recent years, Iran is focused on the development of domestic energy in order to solve the strategic task of turning the country into an energy hub of the region.

News Central Asia

<http://www.newscentralasia.net>

11 October 2022

Moldova directly affected by halt in Ukraine's power exports

Moldova is directly affected by Ukraine's decision to halt electricity exports on October 10, Moldova's deputy prime minister Andrei Spinu said on Tuesday.

As of Tuesday, 03:00 local time, Moldova receives all of its electricity from power utility MoldGRES, located in the region of Transnistria. For this to be possible, utility

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company Moldovagaz has allocated an additional 0.9 million cu m of gas to MoldGRES to produce the electricity needed for 24 hours, Spinu said.

"Now our priority is to provide the country with electricity for the next period at the lowest possible price in this complicated situation. Yesterday we had discussions with Ukraine, Romania, the EU to find together a good solution for the Moldovans," Spinu added.

SEENews

<http://www.seenews.com>

11 October 2022

Greece relies on 100% renewables for the first time ever

Greece's renewable power plants have produced enough electricity to supply the country's entire power demand over a straight five-hour period on Friday, October 7, new data shows.

According to statistics released by the Independent Power Transmission Operator (ADMIE), the output of Greece's renewable power fleet reached an all-time high of 3,106 MW and exceeded the system's net load capacity between 1100 CET and 1600 CET on October 7. The record data was also announced by Nikos Tsafos, the chief energy adviser to the Prime Minister of Greece.

ADMIE's president Manos Manousakis hailed the milestone in a LinkedIn post, pointing out that Greece needs to address critical issues to support the greater penetration of renewable energy. According to him, the country has to deal with projects that have been awarded grid connection permits but are still not constructed and also provide additional workforce for the connection of new capacity "in a timely manner."

Greece aims to have 25 GW of renewables in operation by 2030 under its recently updated National Energy and Climate Plan. Its previous goal was for a renewable energy fleet totalling 19 GW.

Renewables Now

<http://www.renewablesnow.com>

12 October 2022

Mapping Europe's microgrids to ensure effective regulation

University of Groningen has started mapping existing and developing microgrids across Europe. The initiative, undertaken as an offshoot of research into the regulation of microgrids from the legal and economic perspectives, is aimed to provide as complete as possible overview of microgrid implementations in an accessible format.

The central question of research is how microgrids should be regulated in the EU in a way that minimises the transaction costs and maximises the legal certainty in order to make an effective and efficient contribution to the energy transition.

As small scale decentralised systems, microgrids have a key role to play in the energy transition, supporting the integration of an increasing share of renewable energies and providing a route for consumers to become prosumers by engaging in the buying and selling of electricity.

Such transactions lead to mutual welfare gains only if their transaction costs do not outweigh their benefits. However, the transaction costs are to a large extent determined by the legal framework, which is currently lacking in the EU. As a result, the transaction costs increase due to uncertainty.

Doctoral researcher Jamie Behrendt initiated the mapping to provide empirical data towards her research. For the purpose of the mapping, she defines a microgrid as having to fulfill three criteria – that the system has functionalities for both islanding and grid connection, that it has defined boundaries and that it has a control entity that is able to

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manage the energy resources alongside the loads. The mapping to date includes 13 existing microgrids, two microgrids in construction and four potential microgrids for which limited data is available, with colour coding to distinguish them.

PEi

<http://www.powerengineeringint.com>

12 October 2022

Tyrrhenian Link: Authorisation Process Started for the West Section between Sicily and Sardinia

The Ministry of Ecological Transition has formally started the authorisation procedure for the “Tyrrhenian Link - West Branch”, the approximately 480 km-long section of the € 3.7 billion undersea power line project by Terna that will connect Sicily and Sardinia.

The launch of the authorisation process for the West section comes just a few days after the issue of the definitive decree by MiTE for the East section (the one connecting Campania and Sicily), and marks a decisive step towards the commencement of works in one of Italy’s most important infrastructure projects aimed at ensuring the development and security of Italy’s electricity system.

The infrastructure that will link Sicily and Sardinia marks an important achievement in the laying of undersea power lines: in a global first, the connection will be installed at a depth of over 2000 metres, with some sections reaching 2150 metres below sea level.

Last April, following the conclusion of the public consultation phase during which the company engaged with residents and all of the Sardinian and Sicilian administrations involved, Terna submitted the authorisation application for the construction and execution of the works to MiTE.

Potential locations have been identified for future converter substations and for the route of the underground cables which will lead from the landing point of the undersea cable to the substations themselves.

As regards Sardinia, from the Terra Mala landing point of the undersea cable, the underground cables will run mainly along existing roads for around 30 km - leaving the environment and landscape unaltered - before arriving at Selargius, where the converter substation will be built in areas near the existing electrical substation.

In Sicily, on the other hand, the undersea cables will land at Fiumetorto. From here, the underground cables will run for around 7 km along the existing road to Termini Imerese, in Contrada Caracoli, where the converter substation will be located near the existing electrical substation.

Terna will invest around €3.7 billion in the project over the coming years, involving approximately 250 companies in the work. The new infrastructure will allow for greater integration between the different market zones and more effective use of the ever increasing flow of energy from renewable sources. The Tyrrhenian Link will also play a decisive role in improving the reliability of both the grid and the electricity system overall, contributing to its security and adequacy.

The new interconnection is a state-of-the-art project that will involve the construction of two 1000 MW direct current undersea power lines, one from Campania to Sicily and the other from Sicily to Sardinia, for a total length of around 970 km, of which approximately 60 km will be overland. The infrastructure will be fully operational in 2028, but the first cable - related to the East Branch - will be up and running in late 2025.

Terna

<http://www.terna.it>