

# RTO Insider

Your Eyes and Ears on the Organized Electric Markets  
CAISO ■ ERCOT ■ ISO-NE ■ MISO ■ NYISO ■ PJM ■ SPP

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December 14, 2021

## NM Regulators Reject Avangrid-PNM Merger

By Elaine Goodman

New Mexico regulators shot down Avangrid's proposed \$8.3 billion acquisition of PNM Resources after some officials pointed to Avangrid's "demonstrated record of poor performance" in other states.

The New Mexico Public Regulation Commission (PRC) voted 5-0 on Wednesday to reject a stipulation — an agreement among parties with an interest in the proposal — thereby sinking the acquisition.

The commission's order stated that "the potential harms resulting from the proposed transaction outweigh its benefits."

The two companies had said the acquisition would bring more than \$300 million of near-term benefits to PNM customers and the state. That would have included \$94 million for customers in rate credits, program funding and forgiveness of unpaid bills.

The companies said the creation of 150 or more long-term jobs would bring \$225 million in economic development benefits. And the deal would triple the clean energy electrification plan at PNM, which is New Mexico's largest electricity provider with 530,000 customers.

### Performance Issues

But PRC Chairman Stephen Fischmann said the purported benefits could be counteracted if Avangrid's performance in New Mexico continues the company's "demonstrated record of poor performance" in states such as Maine, Connecticut and New York.

"All of those so-called benefits will be soaked up in reliability issues and higher rates — if they perform as we've seen elsewhere — quite rapidly," Fischmann said.

And Fischmann wasn't convinced that the deal was a one-time opportunity. PNM could

*Continued on page 15*

## California PUC Proposes New Net Metering Plan

*Rooftop Solar Incentives Would Encourage Home Battery Storage*

By Hudson Sangree

The California Public Utilities Commission issued a much-anticipated revision to its net metering rules for residential rooftop solar generation Monday, inflaming a controversy that has been growing for months over how much homeowners should be compensated for returning excess electricity to the grid.

The battle has pitched an unusual coalition of large utilities, ratepayer advocates, unions and environmentalists against the rooftop solar industry, trade groups and homeowners who receive generous billing credits for

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## Texas PUC Chair Lake: 'The Lights Will Stay On'

*97% of Generators Have Filed Required Weatherization Docs*

By Tom Kleckner

During a Wednesday morning press conference designed for ERCOT's and the Texas Public Utility Commission's leaders to discuss the changes made to avoid a repeat this winter of February's near-collapse and dayslong outages following a winter storm, PUC Chair Peter

Lake boldly proclaimed, "The lights will stay on."

Lake based his assertion on new weatherization rules for generation and natural gas facilities that went into effect Dec. 1; increased penalties for violations of those rules; and improved coordination between the electric and gas industries to prevent the loss of gas supplies that has been identified as the leading cause of the generation outages during the storm.

"No other power grid has made as many remarkable changes and in such an incredibly short amount of time as we have, and we will continue to improve our grid and the market,"

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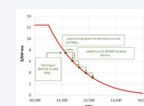
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ERCOT's transmission operators have all filed their winter readiness reports. | *Kerrville PUB*

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# CLEANPOWER 2021

## Experts Put Interregional Tx Under a Microscope at CLEANPOWER

By Jennifer Delony

Planning and developing interregional transmission is “one of the greatest challenges” to building a clean and reliable power grid, Hunter Armistead of Pattern Energy said at CLEANPOWER 2021 on Wednesday.

“The energy transition that we know is going to occur requires interregional planning,” Armistead, Pattern’s chief development officer, said during the American Clean Power conference in Salt Lake City.

In the absence of a single directive to make more connections between major U.S. regional grids, progress on that front is slow and cumbersome.

FERC has had a light touch on the issue, but stakeholders have suggested that that should change.

“We’ve heard an interest in maybe being a bit more specific with our requirements for

interregional planning,” Elizabeth Salerno, FERC’s lead for transmission and technology initiatives, said during the panel discussion.

FERC could make interregional planning a requirement rather than only requiring coordination, which she said has produced varying degrees of participation by regions.

A planning requirement from federal regulators would also mean addressing the “tricky” issue of interregional cost allocation, she said.

Additionally, coordination efforts are hampered by regional differences, Salerno said.

“They have different inputs, different scenarios and different modeling methodologies, and that makes it really hard to coordinate across footprints,” she said.

It may be possible, she added, for FERC to build more consistency across regions, thereby making cross-regional coordination easier.

While regional interconnections are needed

to transmit remote clean energy resources to demand centers, Salerno said there is also an important conversation to be had about the reliability benefits of interregional transfer capacity.

During the cold-weather event that devastated the Texas power grid in February, MISO and SPP were able to lean on PJM and bring in a lot of power, she said.

“That was able to alleviate some perhaps worse outcomes than what we faced,” she said. “Contrast that with the situation in Texas, which has limited interconnections, and how that event played out there.”

MISO’s interconnection with PJM was “fortunate,” MISO executive director Derek Bandera said.

“We were able to wheel a lot of power from the PJM region ... and we were able to help our neighbors SPP to the west,” she said.

Much of the transmission that facilitated that exchange, he added, was built to help move wind power to the East.

“We saw a huge reliability and resilience benefit from that,” he said.

Given the immense challenges that come with interregional planning, Bandera said regions need the ability to innovate.

“One of the key takeaways as we think about making [interregional transmission] happen is making sure that the regions have the flexibility to come up with innovate solutions and not necessarily get hamstrung by some set of rules,” he said.

The work that MISO and SPP have done to recognize interregional transmission as a priority is an example of strong leadership on the issue, according to Andrew French, chair of the Kansas Corporation Commission.

“I don’t think I could have seen that happening eight or 10 years ago,” he said.

The two RTOs, he added, have been under political pressure from states and regulators to find solutions to interconnect the regions.

But that kind of pressure is not a “one-size-fits-all” solution, according to French, who says there’s more room for leadership on this issue.

“That’s where FERC and other policymakers can come in,” he said. They can “be the adult in the room and add the encouragement that [interregional] initiatives need to continue.” ■



FERC has had a light touch on interregional transmission planning, but stakeholders suggest that should change, according to Elizabeth Salerno, FERC’s lead for transmission and technology initiatives. | Matthew T. Rader, CC BY-SA 4.0, via Wikimedia Commons

# CLEANPOWER 2021

## Robust Renewables Outlook Puts Supply Chain Issues in New Light

By Jennifer Delony

Steady past growth and a strong demand outlook for renewables in the U.S. are revealing the weak points in the sector's supply chain.

While the U.S. hit renewable energy deployment records in each of the last three years, that growth was contingent on an import-heavy supply chain, Raymond Long, senior vice president of external affairs for Clearway Energy said Wednesday.

And the outlook for a domestic supply of renewable energy components isn't getting better. For example, of the estimated 25 GW of solar that is slated to come online in 2022, only 5 GW worth of solar panels will come from U.S. manufacturing, Long said.

"We still have no choice but to source panels from overseas and import them to the U.S.," he said during the American Clean Power Association's CLEANPOWER 2021 conference in Salt Lake City.

Under the Biden administration's target to reach net-zero energy by 2035, Long said the solar industry needs to deploy 75-100 GW every year for the next 15 years.

"As exciting as that is for the industry ... it's really a daunting thing to think about how we are going to meet that with pressure to buy American and not to import panels," he said.

Trump-era tariffs designed to bolster U.S. manufacturing have not been effective, and the Build Back Better Act includes targeted incentives to grow domestic renewables supply. But Long said it's not possible to overturn the current supply chain paradigm with "the flip of a switch."

"You have to find the right ways to do it and give it the right amount of time," he said.

The pandemic has highlighted unforeseen glitches across global supply chains, while other solar-specific challenges also cropped up this year. In August, an anonymous group of solar manufacturers asked the U.S. Department of Commerce to investigate Chinese solar panel companies for potentially avoiding anti-dumping duties. The department has since declined to launch an investigation, but Long said the industry is still "dealing with the impacts" of the petition.

And in June, the Department of Homeland Security began detaining silica-based product imports from China-based Hoshine Silicon and

its subsidiaries over human rights concerns. Silica is used in solar panel production.

The review process for detained shipments is "hampered," Long said, and the situation needs to improve to avoid project delays next year.

"We've heard from other developers in the sector that solar panels aren't making it to projects that are under construction now," he said. "In 2022, with all the projects that are being built, if things stay the way they are, panels will not make it to those projects on time."

The department's order applies to materials, such as polysilicon, that are derived from silica-based products. China is responsible for 80% of the world's polysilicon production, said Josh Skogen, senior vice president of procurement at AES. The energy transition, he said during the conference, is really a transition from a fuel-intensive system to a minerals-intensive system.

Minerals needed for solar, wind and storage components, for example, come from a small number of countries with a concentrated production rate. U.S. reliance on more renewable technologies is introducing new trade restrictions, trade patterns and geopolitical concerns, Skogen said.

"With that concentration, if there is a trade restriction or a geopolitical concern or a pandemic, like we've experienced, the volatility and the supply of that feedstock, and the upstream effects that has on the construction of new projects, is exacerbated," he said.

### Flexibility is Key

Current supply chain challenges have been "overwhelming," Art Fletcher, executive vice president of construction for Invenergy, said during the conference.

While the company has managed those challenges, he said, they've been a "significant strain" on resources at an "all-new level."

Staying nimble is a necessity for executing projects now, Fletcher said.

"Previously, we would know [two years out] that we were using a certain wind turbine or a certain battery package or a certain solar package," he said. "Unfortunately, with the supply chain challenges we've had, there's a great uncertainty in what we might actually be able to source either domestically or internationally."

The company must plan projects differently



Invenergy, developer of the Grand Ridge Energy Center seen here, has had to change the way it builds projects to accommodate "overwhelming" supply chain challenges, said Executive Vice President of Construction Art Fletcher. | *Invenergy*

from an engineering perspective.

"We have to go back sometimes a year to what we were working on and reevaluate what that technology is and how it applies to our land, our permits and everything else," he said.

On the supplier side, turbine manufacturer Vestas has been equally challenged by global supply chain issues, and it also relied on flexibility to make it through.

Vestas' global supply chain allows the company to shift between countries under new tariffs or when geopolitical changes occur that it did not anticipate, said Noga Vilan, director of supply chain planning for Vestas Americas.

The supply chain lessons of the last two years will allow Vestas to improve itself in the next decade, she said, adding that the company's ability to do that will be tied to project volume.

At Vestas, the long-term vision to build value in the industry is to create a "whole ecosystem supply chain," Vilan said.

That means the company will execute wind turbine installations while also ensuring local roads are better and communities have more jobs, she said.

"We truly believe that creating renewable energy is not just having cleaner energy and cheaper electricity when you turn on the lights," she said. "It's creating meaningful life, and we can do much more than what we're doing today." ■

# FERC/Federal News



## Decarbonizing America's Ports Could be 1st Step for Hydrogen Adoption

*The Claim: LA and Long Beach Ports' Daily Pollution Equal to 100,000 Big Rigs*

By John Funk

The anticipated revolution in hydrogen-based fuels advocated by the Biden administration and endorsed by the U.N. Convention on Climate Change has also captured the imaginations of green visionaries eager to help the world dodge climate change by ending dependence on fossil fuels.

One such organization is the California-based Green Hydrogen Coalition, an educational nonprofit founded in 2019 with the mission to build "top-down momentum for scalable green hydrogen projects."

Janice Lin, the Berkeley-based founder and president of GHC, sees the nation's seaports as an ideal starting place for a hydrogen fuel revolution to begin "because ports are epicenters of poor air quality."

In a two-day webinar hosted Nov. 30 and Dec. 1, Lin moderated multiple panels of experts and advocates to examine that proposition while also examining strategies to leverage green hydrogen, made with electrolysis using renewable power. Nearly all of the hydrogen used today is stripped from natural gas, which also produces carbon dioxide and, because of that, is known as gray hydrogen.

Day 1 of the conference included an overview of the Biden administration's hydrogen goals and the \$9.5 billion in funding authorized to accelerate the development of clean hydrogen in the \$1 trillion Infrastructure Investment and Jobs Act that the president signed into law Nov. 15.

Viewers also heard the experience of one marine terminal company servicing the congested Port of Los Angeles: Fenix Marine Services, which moves about 20% of the port's cargo and consumes about 175,000 gallons of diesel fuel every month.

Webinar participants and viewers also got a brief analysis of the global hydrogen market from a BloombergNEF analyst who predicted green hydrogen would become a dominant fuel in most major markets by the end of the decade.

### Targets

For the federal perspective, U.S. Deputy Energy Secretary David Turk made it clear that hydrogen is a cornerstone of the administration's energy policy, whether green, gray



Port cranes line up at the Evergreen Cargo Terminal at the Port of LA. | Shutterstock

or blue — the last of which is when the carbon dioxide produced when making hydrogen from methane is captured and sequestered or used in some other industrial process.

"Hopefully everyone has now seen and internalized this administration's incredibly ambitious goals on climate: the 2030 goal of 50 to 52% ... greenhouse gas emission reductions; 2035, 100% clean electricity; and 2050, full net-zero for our economy," Turk said.

Reaching those targets will require "a range of technologies, not only for electricity but for transportation; for buildings; for industry; across everything that uses energy in our society," he said.

"One of those technologies that we're putting a lot of emphasis on, certainly from the Department of Energy perspective, is hydrogen. It's versatile; it can be created in a number of different ways. It can be used in a number of different ways, including for the harder-to-decarbonize sectors, whether that's heavy-duty freight, whether that's a variety of industrial uses. But there's some challenges on hydrogen, especially the cost of green hydrogen," he said.

The administration's ultimate goal for hydrogen is to create an industry with the ability to produce it carbon-free at \$1/kg by the end of the decade, he said.

And that fits well with GHC's goals to convince terminal operators in the ports of L.A. and Long Beach to shift away from diesel-powered trucks and other equipment as soon as possible and move to electric equipment, powered either by hydrogen fuel cells and batteries or

plugged into the local distribution grid.

Advocacy group C40 Cities has that same goal but on an international basis.

"The idea behind our ports program is that by engaging ports and shipping industry, city governments can align their climate goals and strategies, and not just share knowledge but act collectively as a coalition," said Alisa Kreynes, green ports program manager for the group's Climate Solutions & Networks division.

"We see point cities as key global players and catalysts for decarbonizing our shipping and supply chains. We also see ports and cities having a unique role in climate action because of the very nature of how ports connect cities across the world through trade and innovation," she said.

C40 in April began developing common emission standards for ports and working with both utilities and shipping companies to create "the world's first transpacific green shipping corridor," a pilot program to persuade shipping companies to deploy zero-carbon-emission vessels running on green hydrogen.

"By 2030, we want to see deep sea container ships operating on zero-carbon-emission fuels. How many ships are realistic by 2030 on a specific trade route will be determined through the study we will need to undertake to understand the fuel supply and the bunkering infrastructure requirements," Kreynes said.

C40 is also interested in developing ship-to-shore policies aimed at cutting down diesel emissions from both docked ships and those waiting offshore for a berth at a terminal.

# FERC/Federal News



"We're looking at shore power requirements to be absolute for all container vessels," she said of the policy still in development.

"So regardless of the types of fuels [used], all ships will still need to plug in. The same goes for cargo handling equipment, which will be electric or powered by green hydrogen [fuel cells]. [A] zero-carbon-emissions requirement is a must by 2030."

## Collaboration with Industry

But none of this can be done without the participation of the industry itself.

"We need terminal operators; we need cargo owners; we need harbor craft companies; and we need fuel producers. So this is the coalition that has been working to put together this really exciting pilot, which we are hoping to be able to announce very soon," Kreynes said. She added that the Port of L.A. will be leading the effort that will include overseas ports as well.

Those goals dovetail with the efforts of Pacific Environment, a California-based nonprofit that works to foster "grassroots activism" in communities around the Pacific Rim, whether in North America or Asia.

Madeline Rose, campaign climate director for Pacific Environment, described her organization as "a shipping industry watchdog," noting that it has "gained a permanent consultative status of the International Maritime Organization, which sets international shipping law."

"We're now leading a global advocacy campaign to force the transition of ships off fossil fuels," she added. "Fossil fuel shipping is just a massive global polluter. The industry accounts for 3% of global climate emissions today" and is annually adding to its emissions, she said.

But how to pressure the industry to switch to cleaner alternatives is the question.

About half of the maritime pollution comes from container ships, and Pacific Environment has determined that 15 container ship companies account for about 97% of the products sold by U.S. retailers. The major clients of container shippers include companies such as Walmart, Amazon and Costco, and they carry products made by companies such as Nike and Patagonia — all of which have "ambitious climate commitments."

"They are vulnerable to public pressure because they have a direct relationship with all of us," she said.

Rose added that Pacific Environment is also targeting smaller vessels: tugboats, ferries, dredges, excursion vessels and fishing boats

that routinely ply the waters of most ports. She said the California Air Resources Board is moving toward new regulations "to encourage a zero-emission transition for all registered commercial harbor craft in California. We're expecting that regulation to pass the Air Resources Board around January or February."

But it won't require immediate electrification, she added. "As written, it's going to allow a vast majority of the vessels to either upgrade to cleaner diesel engines or electrify."

The adoption of the new rule means that "over 1,000 vessels with hundreds of different companies in the next several years will be looking to partner with other organizations to make the transition to electrification, which includes green hydrogen fuel cells," she added.

And that includes the federal government. "The U.S. government is one of the largest owners of harbor craft in the world," Rose said. "The U.S. government owns 1,700 Harbor vessels."

Discussion with Scott Schoenfeld — general manager of Fenix Marine Services, which relies on a fleet of more than 350 large diesel-powered equipment and vehicles to move tons of good through the L.A. and Long Beach ports — revealed just how difficult it will be to make the transition from fossil to hydrogen.

"My problem is that my business, which supplies the goods our nation needs and the exports we produce, is almost completely reliant on heavy machinery that is powered by diesel fuel," he said.

"Roughly 40% of the containerized freight comes through the twin ports of L.A. and Long Beach, and containerized freight represents more than 90% of the goods you see on the store shelves.

"Fenix has made the switch to renewable diesel, purchased hybrid machines, purchased carbon credits and installed energy storage devices. But we currently still have no commercially viable option to purchase and power either battery electric or hydrogen fuel cell zero-emission port equipment. ...

"We're working on it. We're piloting a lot of different options, but it's a lot more than just being able to say 'we're going to do it' and expect it to happen. ... Our initial estimates show that if Fenix were to fully electrify our terminal, we would more than quadruple our electrical demand, from an already stretched electrical grid. ... We face multiple brownouts and blackouts on a yearly basis, and this prevents us from doing our jobs and supplying all the goods that we need."

The company has partnered with Toyota and took delivery of its first fuel cell-powered utility tractor rig (UTR) in November. The rig loads containers from ships onto heavy-duty trucks.

The Port of L.A. in June also deployed five fuel cell Class 8 trucks manufactured by Kenworth Trucks and powered by Toyota fuel cells, in a test of the technology. It expects to take delivery of another five trucks, as well as battery EVs, in the future. They use gray hydrogen.

Schoenfeld said Fenix would move quickly to fuel cell-powered UTRs and trucks if hydrogen were available at less than \$3/kg.

## Future Prices

Cheap green hydrogen looks as if it could be a reality by the end of the decade, according to BloombergNEF analyst Matthew Bravante.

In a separate discussion, Bravante said green hydrogen today is not competitive anywhere in the world because there is so little of it and because it is so expensive, at as much as \$14/kg.

But, given its endorsement and funding by multiple governments, intense ongoing research — and the expected arrival of increasingly less expensive renewable energy to power electrolyzers that are also expected to drop in price — the cost of green hydrogen will dramatically decline, he said.

"By 2030 [the median price] will out-compete ... blue hydrogen in nearly every major market. And in some major markets, you'll start to see green hydrogen out-compete gray hydrogen," he said.

"Within the next handful of decades, you'll see a total paradigm shift in the cost of hydrogen, from green carbon-free hydrogen being the most expensive to green carbon-free hydrogen being the cheapest," he predicted.

Initial demand for green hydrogen will come from refining and companies using ammonia to make fertilizers. Its use as a fuel for residential and commercial heating will likely follow as prices fall.

But even at \$1/kg, hydrogen will may still not be cheap enough to decarbonize the entire economy, he said.

"The point I want to make is that hydrogen will start to decarbonize certain sectors at \$2/kg, or \$1.50/kg, or even \$1/kg. But in order to fully decarbonize whole industries with hydrogen, you will still need some sort of carbon pricing mechanism," he said, touching an issue that most politicians today regard as "the third rail" in any energy debate. ■

## FERC/Federal News



# Princeton Study Examines 24/7 CFE Procurement

*Hour-by-hour Renewable Procurement More Effective than Annual for California and PJM C&I Customers, Study Finds*

By Hugh R. Morley

Commercial and industrial energy users in California and PJM that try to cut carbon emissions by using a 100% annual matching renewable energy strategy could reduce emissions much more by opting instead to procure carbon-free electricity (CFE) to match their hour-by-hour demand, according to a new report by Princeton University.

The study, released Nov. 19, used mathematical modeling methods to look at the impact of procuring CFE to match hourly demand. In California and PJM, 24/7 CFE would enable C&I energy users to cut emissions by considerably more than if they had used an annual matching strategy, according to the study by four researchers at the university's Andlinger Center for Energy and the Environment.

The report, which describes itself as the "first analysis of the electricity system-level impacts of 24/7 carbon-free energy procurement," addresses one of the failings of the 100% annual matching strategy that have emerged since its adoption in recent years by some high-profile corporate names seeking to eradicate carbon

emissions. The most notable was Google, which sponsored the study.

In a 100% annual matching strategy, the user buys clean energy equal to its entire annual energy use. But despite the name, the strategy mostly does not yield zero carbon emissions because the user invariably turns to fossil fuel-generated power to meet their needs in those times clean energy sources are not functioning, such as when the wind isn't blowing or the sun shining. The use of fossil-generated electricity reduces the user's clean energy consumption and increases carbon.

"So, while you might buy enough megawatt-hours of clean energy to match your total consumption, there's a mismatch between when those megawatt-hours are produced," said Jesse Jenkins, an assistant professor of mechanical and aerospace engineering and one of the four researchers that produced the study.

In a 24/7 CFE strategy, the user purchases electricity to match its energy use profile hour by hour, sourcing energy from carbon-free sources such as nuclear or thermal energy

when there is no solar or wind energy available.

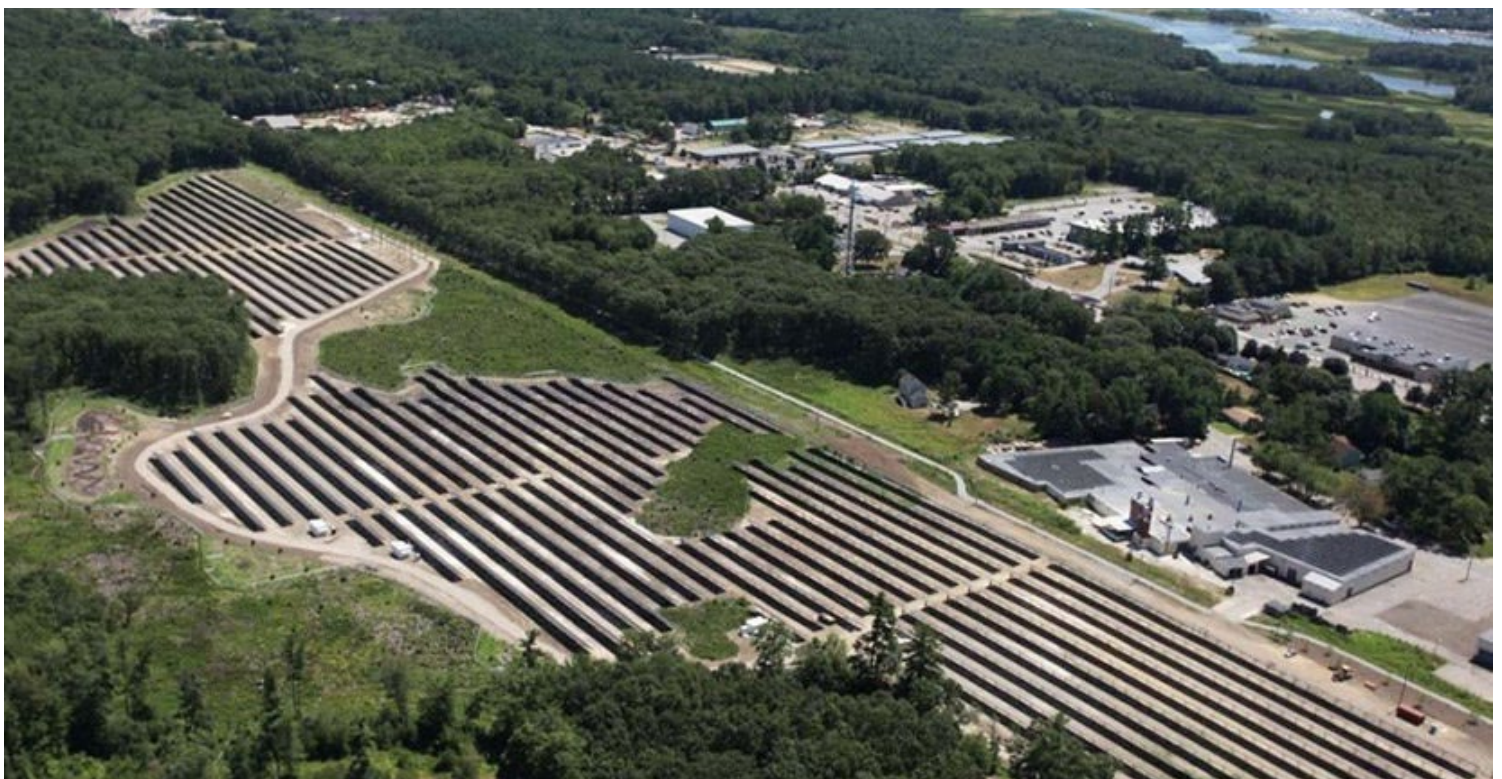
"Clean firm technologies are technologies that are available any time of the year, for as long as you need them," Jenkins said at a Nov. 19 webinar on the report. As a result, he said, they have "the potential to enable much deeper reductions in CO<sub>2</sub> emissions from electricity consumption."

### Emissions Reduction, Cost Increases

The Princeton report estimates that an annual matching strategy in California would result in CFE making up only 75% of electricity consumed; in PJM, it would only be 62%.

In contrast, a 24/7 CFE procurement strategy enables C&I users to "completely eliminate emissions," the report said. The elimination is because of a "better alignment between electricity consumption and generation, which reduces periods of reliance on emitting grid-supplied electricity," the study concludes.

However, the 24/7 strategy pushes up costs for energy users, the report adds. C&I energy users in California would pay 64% more in energy costs than with an annual strategy, the



| LandVest

# FERC/Federal News



report said, while PJM consumers would pay 139% more.

The added cost of using 24/7 CFE would shrink in the future if some of the current technologies under development, such as geothermal and hydrogen-fueled generators, become viable, according to the report. And costs would also drop if the user was willing to accept something less than zero-emission energy; for example, 98% clean energy, the report said.

## Corporate Zero-emissions Efforts

The 24/7 CFE strategy has emerged as more C&I energy users have started buying renewable energy to match their annual load. One early adopter, Google, has purchased renewable energy equal to its total consumption every year since 2017. But the company acknowledges that it is still a long way from its 2030 goal of using CFE in all locations and all hours, and the impact of the annual matching strategy was limited.

"When we surveyed our operations and our footprint, what we saw is that while we had put a lot of new renewable energy on the grid, we hadn't taken off a lot of the dirty energy that was there," Caroline Golin, global head of energy and climate policy at Google, told the Princeton webinar.

Google is among the more than 40 signatories to the *24/7 Carbon-free Energy Compact* launched in September, one of several *Energy Compacts* coordinated in part by the U.N. Others include Orsted; AES; the city of Des Moines, Iowa; the city of Ithaca, N.Y.; the government of Iceland; and the Nuclear Energy Institute. Microsoft and the U.S. government also are working on 24/7 CFE strategies, according to the Princeton report.

Under 24/7 CFE procurement, non-fossil sources of fuel are purchased within the same grid region, according to the report. The alternative energy sources cited by the report include conventional and advanced geothermal facilities, which tap into the heat deep below Earth's surface, and nuclear energy. Others cited in the study include natural gas power plants that use carbon capture and storage technology and gas plants that use zero-carbon fuels. (See *How Geothermal Can Support 24-7 Carbon-free Targets*.)

Google and other corporate buyers say that greater use of storage will also be key to providing energy in those periods when wind and solar energy can't. (See *Storage the 'Linchpin' to 24/7 Carbon-free Power, Corporate Buyers Say*.)

The Princeton study argues that a wide, speedy embrace of 24/7 CFE procurement would help advance development of storage technology and accelerate its uptake. A similar effect helped advance wind and solar technology as corporations embraced 100% annual renewable procurement, the report argues.

## Retiring Fossil Fuel Plants

The amount that emissions can be reduced through the use of 24/7 CFE depends on two factors, according to the report. One is the volume of clean energy procured, because higher volumes of procurement drive producers to generate more clean energy. The other is timing, or the amount that non-wind and solar clean energy generators adjust the periods in which they produce energy to match those periods when solar and wind production is at its lowest, the report says.

A key reason that the 24/7 CFE strategy is less effective in PJM is that California has a larger share of existing CFE (64%) than PJM, which

has just 22%, the report says. The 24/7 CFE strategy also has the effect of hastening the retirement of natural gas plants at a greater pace than would happen under the annual matching strategy as energy users turn to more sustainable methods, according to the report.

The Princeton researchers calculated that if 10% of the C&I energy users in California adopted 24/7 CFE, the shift would reduce gas generating capacity by more than 1.9 GW. That is more than four times as much as would be retired if the users adopted an annual strategy, the report says.

Likewise, the adoption of a 24/7 strategy by 10% of C&I users in PJM would retire more than 6.2 GW, 1.5 times as much as would be retired under annual matching, the report says.

Armond Cohen, executive director of advocacy group Clean Air Task Force, said the study raises an important question for corporations, because the "corporate 100% renewable goal was being interpreted as the complete solution set and a model" by some companies.

Speaking during the Princeton webinar outlining the report, Cohen said it is "important to kind of push the conversation a little farther, and align the corporate demonstration goals with the analysis suggesting that you need a full suite of technologies to address decarbonizing the grid because of the seasonal variation in wind and solar."

The higher cost of 24/7 CFE "reflect reality," he said.

"Commodity wind and solar is cheap. It gets you a certain part of the way. But we also have to recognize that full decarbonization is going to require some of these higher capex dispatchable technologies," he said. ■

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## FERC/Federal News



# Overheard at gridCONNEXt 2021

WASHINGTON — About 200 attendees of GridWise Alliance's gridCONNEXt conference Wednesday listened as John Rhodes — former New York Public Service Commission chair, now special assistant to President Biden for climate policy — hyped the administration's ambitious climate agenda, optimistic that its many goals could be achieved.

Rhodes spoke of a “zero-carbon electricity system by 2035 that's reliable; that's resilient to the weather that we know is getting more extreme; that is affordable and cost-effective for all Americans, especially low-income Americans, while creating millions of jobs.”

“That sounds like it's Goldilocks; everything's great,” Rhodes said. “The amazing thing is it's actually possible. We just need to work to get there.”

Attendees were on board, but not just because they agreed with Rhodes' rhetoric. There was a general sense of enthusiasm and optimism in the room — a dedicated event space run by *Convene* blocks from the White House — as they listened to panelists and speakers opine on a high-tech future in which everything is electrified, digitized and clean if the administration's goals are achieved.

And like WIRES' Fall Conference in late October, it was the first in-person event for many since the COVID-19 pandemic caused cancellations and transitions to online. (See *Transmission Industry Hoping for Landmark Order(s) out of FERC ANOPR*.) All attendees were required to be vaccinated and wear masks when not seated or eating. Additionally, attendees attached colored stickers to their nametag to indicate how comfortable they were with physical interaction: green meant hugs were OK; yellow for elbow bumps only; and red for social distancing. (This reporter did not see anyone hugging but chose yellow just in case.)

It was a sharp contrast to last year's online-only event, in which speakers were obviously fatigued by both the pandemic and federal inaction on energy policy. (See *Industry Eager for New Leadership on Tx, Climate*.)

This year's conference billed grid infrastructure as “the platform for decarbonization,” but for much of the conference, transmission took a backseat to everything it would enable. Attendees received a sales pitch from a Ford Motor Co. executive on its upcoming lineup of electric vehicles; an official from the Electric Power Research Institute spoke about a future in which all home appliances are grid-

connected and controlled by the utility; and Maud Texier, Google's carbon-free energy (CFE) lead, talked about how the company is aiming to procure 100% CFE at all times of the day, rather than just on an annual basis, by 2030.

The last of those presentations came the same day Biden ordered the federal government to procure half of its electricity from clean resources 24/7 by 2030. (See *Biden Calls for Federal Procurement of 100% Clean Energy by 2030*.) One of the slides in Texier's presentation proclaimed that “24/7 CFE is the New Net Zero.”

### Reality Check

Many speakers noted there was much to be done in the next decade or so to achieve Biden administration and company targets. Eric Dresselhuys, CEO of energy storage company ESS, was more blunt in his assessment. On a panel discussing approaches to decarbonization, Dresselhuys said “there's no billions of dollars of investment that gets us anywhere close to what John Rhodes threw out; to total decarbonization by 2035. Round it to 2045; it doesn't matter. The amount of work that has to get done is of a different scale.”

He said conference panelists often say, “We're trying to decarbonize the energy system, like that's a static thing. ... But we're going to electrify everything: transportation, buildings, natural gas; we're going to make everything electric. Then we've got about 100 million people around the planet who do not have access to electricity. ... And then we have 2.3 billion people who don't have access to clean cooking fuels, so we have to fix that problem. Oh, and by the way, the population is going to grow to about 9 billion people in the time frame we're talking about.

“When you add that up, that is an electricity system that is two-and-a-half times the size of the global electricity system that it is today. And we're going to do it all with no carbon. ...

“We need smart people thinking about how the arc of this development is going to happen over the course of the next 20 [to] 50 years. I kind of feel like when someone says ‘we're going to get to decarbonization by 2040, 2045, 2050’ — that triggers, because we're human beings, ‘I've got time.’ ... That's just a natural way for our brains to think. I would tell you that we are massively behind. I think in the best-case scenario we are at a fraction — 20% would be generous — in the wave of change that we need to come anywhere close to come



GridWise Alliance CEO Karen Wayland and John Rhodes, special adviser to President Biden | © RTO Insider LLC

to the slow end [2050]. ... I'm sorry folks, but 2035 is a pipe dream.”

### Shah on the Hot Seat

Jigar Shah, director of the U.S. Department of Energy Loan Program Office, sat down with Lee Krevat, CEO of Krevat Energy Innovations, for a live edition of Krevat's podcast “Climate Champions.”

Shah was co-founder and president of Generate Capital, which finances clean energy infrastructure projects. He was also a co-host of “The Energy Gang” podcast produced by Wood Mackenzie, in which he could be contrarian and offer somewhat brash opinions.

Meanwhile, in addition to his energy consultancy work, Krevat performs *improv* and, judging by how he concluded the session, free-style raps.

Together, they made for an entertaining duo as they ate hot-sauce covered biscuits, borrowing the premise of the YouTube series “Hot Ones,” in which celebrities are interviewed while eating buffalo wings that gradually increase in spiciness.

Krevat asked Shah what “transformational” technology he was most excited about. Shah talked at length about the ability of electric vehicles to provide backup power during an outage, especially as working from home continues to normalize. “People say, ‘Well is there going to be enough demand for electric vehicles?’ And I'm like, ‘Well is there enough demand for resiliency at home?’ ... I think you will see long queues of people waiting for electric cars for no other reason than to back up their house.”

“Well I hope you're right because...” Krevat began.

“Well I know I'm right!” Shah interjected. ■

— Michael Brooks

# SunZia Capacity Allocation

SunZia Transmission, L.L.C. (SunZia) has commenced an open solicitation process for capacity on the proposed SunZia Southwest Transmission Project (Project). SunZia intends to allocate approximately 1500 MW of the Project's remaining capacity through an open and transparent solicitation and capacity allocation process.

The Project consists of a single-circuit 500-kV high-voltage direct current (HVDC) line and associated substations that is expected to deliver primarily renewable energy on an approximately 550-mile route from central and southwestern New Mexico and southeastern Arizona to load-serving entities in Arizona, California, and other western markets. SunZia is offering firm transmission service from SunZia East to Pinal Central and Owl Head. SunZia expects to achieve commercial operation in 2025, with construction commencing in 2023.

Interested parties can learn more about the SunZia Southwest Transmission Project open solicitation process and how to participate by visiting [www.sunzia-os.net](http://www.sunzia-os.net). For more information about the Project visit <https://sunzia.net>.

In order to obtain transmission capacity rights on the Project, interested parties must submit a nonbinding Expression of Interest Form through the Open Solicitation website by **December 17, 2021**.



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## Southeast

# FERC Rejects SEEM Opponents' Rehearing Requests

## *Applications Filed Too Late for Commission Consideration*

By Holden Mann

Another door has been closed to opponents of the Southeast Energy Exchange Market (SEEM), after FERC on Friday ruled that their request for a rehearing on the market was submitted too late to be heard ([ER21-1111](#), *et al.*).

The opponents — an *ad hoc* alliance of environmental and clean energy organizations calling themselves the Public Interest Organizations (PIOs), and a separate group referred to as the Clean Energy Coalition (CEC) — filed their rehearing requests Nov. 12. (See [SEEM Opponents File Rehearing Requests](#).) In its Friday order, FERC declined to engage with these criticisms on the grounds that the opponents should have submitted their requests by Nov. 10.

Both groups also submitted alternative requests in the event FERC denied rehearing. The PIOs asked for their objections to SEEM to be the subject of a “paper hearing with a technical conference before briefing,” while the CEC asked the commission to provide “clarification and confirmation on the role and function of the SEEM proposal and the platform that will enable transactions.”

However, FERC rejected these requests as well. Because the PIOs’ rehearing request was untimely, the commission said the issues raised therein could not be set for a paper hearing. Regarding the CEC’s request, FERC said that “in the absence of an order” relating to SEEM, “there is nothing to be clarified.”

Because the commission was split 2-2, SEEM was automatically approved “by operation of law” Oct. 12. Hence, there was no actual order from the commission. (See [SEEM to Move Ahead, Minus FERC Approval](#).)

According to the Federal Power Act, any parties “aggrieved” by a FERC order may apply for rehearing within 30 days of its issuance. But because FERC did not issue a formal order in the proceeding, the PIOs and CEC recognized Oct. 13 — when FERC announced that the agreement had taken effect — as the date of FERC’s “order.” Under this logic, the deadline for submitting the rehearing request was Nov. 12, making their filings timely.

By contrast, SEEM’s supporters, in a Nov. 30 filing, argued that the “date of issuance” is not when the commission announces a decision, but when it issues an order — or, in this case, fails to do so. (See [SEEM Members Seek to Quash](#)



| SEEM

[Rehearing Requests](#).) Because Oct. 11 was the deadline for FERC to issue an order, members said that rehearing requests must be filed 30 days after this date, meaning that any requests filed after Nov. 10 were out of time.

FERC did not cite either filing in Friday’s order, but the commission acknowledged that it “has not previously explained ... the proper calculation of the deadline for rehearing requests following the failure of the commission to act.” Its subsequent clarification echoes the opinion of SEEM members, with FERC stating that the date of its “order” in this case was Oct. 11 and that the 30-day clock for rehearing requests “starts running on the day after the last day that the commission could have taken action,” meaning the deadline was Nov. 10.

When FERC deadlocked on the original SEEM proposal, Chair Richard Glick and Commissioner Allison Clements — both Democrats — opposed the agreement, while Republican Commissioners James Danly and Mark Christie approved of it. The commission’s filing on Friday did not mention the views of specific commissioners, though it did say that Commissioner Willie Phillips, the newest member who was confirmed by the Senate on Nov. 16,

did not participate. (See [Senate Confirms FERC Nominee Willie Phillips](#).)

### SEEM Moving Toward 2022 Launch

Because the SEEM agreement took effect in October, FERC has approved revisions to four of the participating utilities’ tariffs implementing the special transmission service used to deliver the market’s energy transactions. (See [FERC Accepts Key Tariff Revisions to SEEM](#).) Members have also submitted further changes to the commission that would implement a series of “transparency enhancements” to the market. The changes were proposed in June in response to FERC’s first deficiency letter, but the commission was not able to mandate their inclusion in the SEEM agreement because it did not issue an order. (See [SEEM Members Offer Rule Changes](#).)

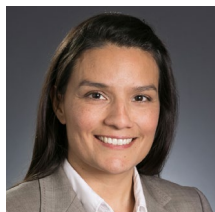
SEEM members also announced on Friday that they had chosen technology solutions company Hartigen to build and deploy the market’s technology platform. The selection of Hartigen follows a [request for proposals](#) issued in March. In a [press release](#), members said they plan to have the new market online by the third quarter of 2022. ■

# CAISO/West News



## Biden Appoints CPUC Commissioner to Head EPA Region 9

By Hudson Sangree



CPUC Commissioner Martha Guzman Aceves | CPUC

EPA said Thursday that President Biden intends to name California Public Utilities Commissioner Martha Guzman Aceves to run the region of the agency that includes California, Arizona, Nevada and Hawaii, implementing the administration's environmental agenda in the far West.

Guzman Aceves has served for five years on the CPUC. She worked previously as former Gov. Jerry Brown's deputy legislative affairs secretary and for the California Rural Legal Assistance Foundation and the United Farm Workers. Much of her focus at the commission has been on providing clean energy to underserved communities and preventing disconnections of basic utilities.

"Given Martha's extensive background in successfully delivering access to underserved communities, I am confident she is an excellent

choice to lead our Region 9 team," EPA Administrator Michael Regan said in a *statement*. "Martha is an experienced leader that values economic justice and will represent the best interests of the residents in the region."

Guzman Aceves said she was "honored to be appointed by President Biden to serve as administrator of EPA Region 9 under the leadership of Administrator Regan. And I am grateful for the opportunity to work with the resilient staff at Region 9 as we tackle the chronic and emerging environmental issues in our communities."

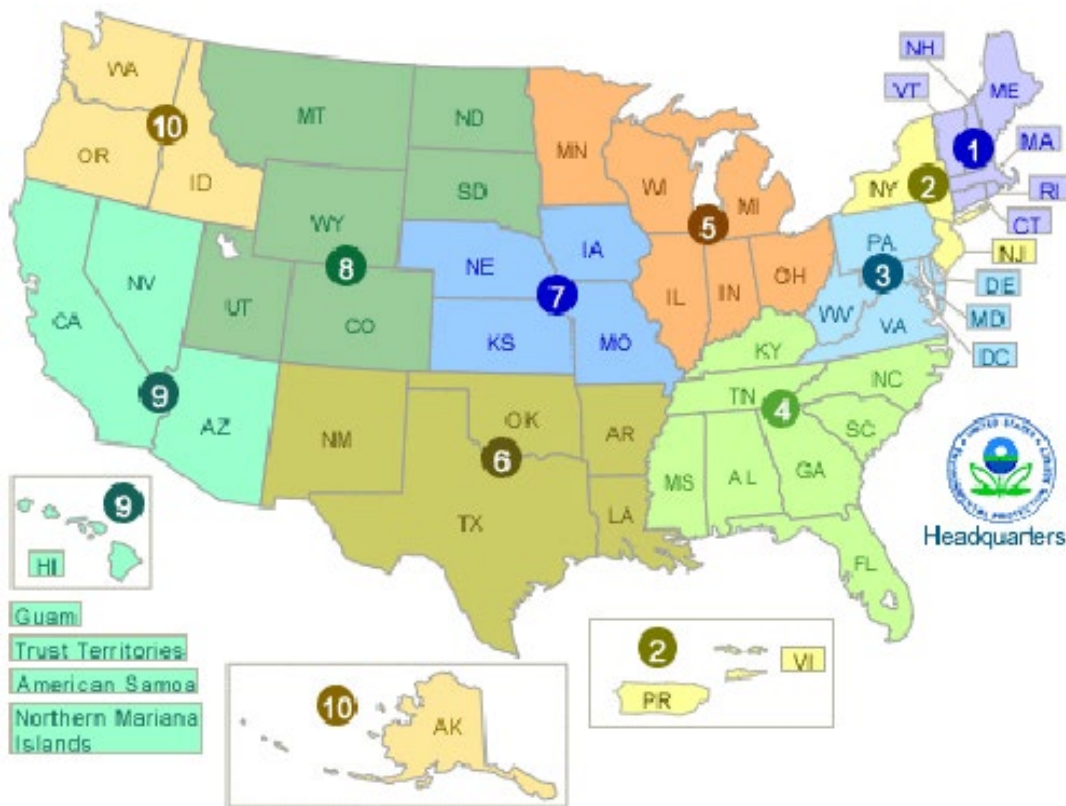
The move continues a series of transitions at the CPUC, an agency tasked with ensuring resource adequacy, preventing utilities from igniting wildfires and shepherding the state through its transition to 100% clean energy by 2045.

CPUC President Marybel Batjer announced in September that she planned to step down at the end of the year with five years left in her seven-year term. Gov. Gavin Newsom in late November named his senior energy adviser, Alice Reynolds, as the commission's next president. (See *California PUC President to Step Down*

and *Calif. Governor Names Next CPUC President*.)

In December 2020, Newsom named then-CPUC Commissioner Liane Randolph as chair of the California Air Resources Board, which oversees vehicle emissions and other types of air pollution. Randolph replaced retiring Chair Mary Nichols, whom Biden reportedly was considering to head EPA at the time. Instead, he appointed Regan, then head of North Carolina's Department of Environmental Quality. (See *EPA Nominee Regan Receives Bipartisan Support*.)

EPA on Thursday also announced the appointments of Earthea Nance and Meg McCollister as administrators of its regions 6 and 7, respectively. Nance is an environmental engineer and an associate professor of urban planning and environmental policy at Texas Southern University; Region 6 covers Arkansas, Louisiana, New Mexico, Oklahoma and Texas. McCollister is an independent consultant based in Kansas City, MO., where she serves "as an adviser and strategic thinker in areas including environmental, health and social improvement initiatives, as well as communication strategies," according to EPA. Region 7 covers Iowa, Kansas, Missouri and Nebraska. ■



## CAISO/West News

# California PUC Proposes New Net Metering Plan

## Rooftop Solar Incentives Would Encourage Home Battery Storage

*Continued from page 1*

rooftop solar.

Those who want to significantly change the current net metering framework argue it unjustly benefits richer households at the cost of common ratepayers. Those who want to keep it contend changing net metering will decimate household solar adoption in California, where incentives that started in the mid-1990s led to more than a million household solar arrays.

The CPUC has been *examining* net energy metering (NEM) since August 2020 with extensive input from stakeholders and homeowners. Its 204-page *proposed decision* published Monday would make some compromises but generally favors those seeking wholesale change by cutting compensation rates, incentivizing home battery storage and promoting solar adoption across a broader socioeconomic spectrum.

“Our review of the current net energy metering tariff, referred to as NEM 2.0, found that the tariff negatively impacts nonparticipating customers; is not cost-effective; and disproportionately harms low-income ratepayers,” CPUC Administrative

Law Judge Kelly Hymes wrote. “This decision determines that, to address the requirements of the guiding principles and the findings related to the NEM 2.0 tariff, the successor tariff should promote equity, inclusion, electrification and paired storage, and provide a glide path so that the industry can sustainably transition from the current tariff to the successor.”

The proposed decision is scheduled to be heard at the CPUC’s Jan. 27 voting meeting. The lead commissioner in the effort, Martha Guzman Aceves, will leave next week to become administrator of EPA’s Region 9, while CPUC President Marybel Batjer is retiring. Her replacement, Gov. Gavin Newsom’s energy adviser Alice Reynolds, is scheduled to replace her Dec. 30.

### Proposed Changes

The proposed changes would revise the structure of net metering, which credits rooftop solar owners for excess electricity they export to the grid. For years, homeowners have received the full retail value of the surplus electricity plus bonuses for producing more energy than they use in a 12-month period.

A new avoided-cost rate would consider the

value of behind-the-meter generation to resource adequacy and grid reliability, potentially slashing the reimbursement rate by half.

It would also impose an interconnection fee that does not currently exist, averaging about \$40/month.

“The successor tariff ensures all customers pay for their usage of the grid,” the proposed decision says. It would apply a grid charge of \$8/kW of installed solar “to capture residential adopters’ fair share of costs to maintain the grid and fund public purpose programs,” the CPUC said in a *news release*.

In addition, the decision proposes “more accurate price signals that will promote greater adoption of customer-sited storage, which will help California decrease its dependency on fossil fuels during the early evening hours, when the sun is down and energy demand is high.” It would create an equity fund with up to \$600 million to “improve low-income customer access to distributed clean energy programs with strong consumer protections,” the CPUC said. A stakeholder process would determine how the funds are spent.

A proposed four-year “glide path” for the solar industry would pay a monthly market transi-



Net metering has incentivized rooftop solar in California. | Shutterstock

## CAISO/West News

tion credit of up to \$5.25/kW for residential solar-plus-storage and solar-only systems."

Customers will lock this amount in for 10 years," the CPUC said in its news release. "During the four-year glide path, the credit will step down 25% a year for prospective customers, who will also lock in their amount for 10 years." The proposal includes a "storage evolution fund" to provide rebates for existing net-metering customers who add storage systems to their homes and switch to the new net-metering structure in the next four years. Otherwise, it would transition customers to the new compensation structure after 15 years of interconnection.

### Opponents React

Reaction from the solar industry was swift and angry.

Today the California Public Utilities Commission issued a proposal that will create the highest solar tax in the country and tarnish the state's clean energy legacy," the Solar Energy Industries Association said in a statement. "The proposal imposes fees on solar and storage customers, making solar and storage more expensive and less accessible to all Californians. The new program will rapidly reduce the bill credit solar customers get for selling electricity back to the grid, adding unpredictability and in-

stability for customers that already have solar."

SEIA said the proposed decision would deter residents from installing rooftop solar, "leaving the state's grid vulnerable to blackouts and power outages and harming California's ability to reach its clean energy goals." "Before today's decision, about 40% of all rooftop solar installations in California were going to low- or middle-income homes in California, but the new costs and fixed fees are going to take away the value proposition for virtually all Californians," it said. "This will slow the massive momentum the state was building toward a grid powered by clean energy."

Major proponents included the state's three large investor-owned utilities, ratepayer advocates such as The Utility Reform Network and environmental groups including the Natural Resources Defense Council.

Pacific Gas and Electric said the proposal "is a step in the right direction to modernize California's outdated rooftop solar program. Over time, NEM has resulted in deep inequities between customers with rooftop solar and those without, who are often lower-income customers. Sensible reform is necessary to support customer equity and help continue California's success toward a clean energy future."

Independent research firm ClearView Energy Partners said the proposed decision appeared

to strike a balance. "We are still reviewing the 204-page document but think [it] may provide a reasonable middle ground between the different proposals offered by stakeholders earlier this year," the firm said in a note to clients. "While the [proposed decision] would reduce export compensation, it would also include a 10-year transition credit for customers that deploy distributed generation such as rooftop solar within the next four years.

"That said, a proposal to impose a comparatively high monthly charge on rooftop solar customers may prove very contentious," ClearView said.

Fights over net metering have occurred in other states, with utilities pitted against the solar industry.

In July 2020, FERC rejected a challenge to net metering by a purported ratepayer group called New England Ratepayers Association, which argued that the commission had exclusive jurisdiction over sales of rooftop solar power. (See [FERC Rejects Net Metering Challenge](#).)

Hawaii, Indiana, Maine and North Carolina have struggled with net metering policies, which were introduced to promote solar when it was rarer and rates were higher. Solar has since become far more common and inexpensive. (See [Net Metering Reform Means Asking New Questions](#).) ■

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*Rooftop Solar Supporters Pressure Legislator to Eliminate Cap Northeast*  
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## CAISO/West News

# NM Regulators Reject Avangrid-PNM Merger

*Continued from page 1*

find “another suitor that’s more appropriate,” he said, or the PRC or state legislature could take action to accomplish some of the same objectives.

Avangrid said in a statement following the PRC vote that it is evaluating its next steps and hopes to “one day welcome New Mexico into the Avangrid family.”

Conservation and community groups on Wednesday lamented the loss of \$300 million in benefits to the state, calling the commission’s decision unfortunate.

Cara Lynch, attorney for the Coalition for Clean Affordable Energy, said the agreement would have provided hundreds of millions of dollars in shareholder funds for customers and the environment.

“No other legal avenue exists to extract shareholder dollars for New Mexicans to conserve energy in their homes, to New Mexicans with arrearages due to the pandemic, or to provide valuable apprenticeships,” Lynch said in a [release](#).

### Nonprofit Fights Acquisition

New Energy Economy (NEE), a Santa Fe-based nonprofit, argued in PRC filings that Avangrid and its Northeast affiliates racked up more than \$63 million in fines and violations over the last five years. NEE said reliability and performance issues at Avangrid subsidiaries in Maine, New York and Connecticut have resulted in regulatory actions.

NEE said Avangrid’s experience in renewables is primarily with wind power and that the company has little experience in solar.

In addition, NEE accused Avangrid of violating discovery rules in the PRC proceeding by giving incomplete responses and designating as confidential more information than necessary. The company said it acted in good faith in responding to discovery requests. Still, a PRC hearing examiner recommended \$10,000 in sanctions against Avangrid and PNM as a result of the discovery issues.

The order that the commission approved on Wednesday also expressed concern about Avangrid and its parent company Iberdrola “in light of the ongoing criminal investigation in Spain involving high level officers.”

Some of the concerns regarding Avangrid were aired during the PRC’s meeting on Dec. 1. (See [Bid-rigging Allegation Clouds Avangrid Bid for PNM.](#)) PNM Resources and Avangrid hosted a news conference the next day to discuss the issues.

Avangrid has “always stressed the highest levels of ethics and accountability in everything we do,” said Robert Kump, the company’s deputy CEO.

In addition, Kump noted that Iberdrola was named one of the most ethical companies in the world for the last seven years in a row.

The companies also acknowledged in filings that Avangrid subsidiary Central Maine Power (CMP) experienced service issues between 2016 and 2019, but that the issues have been addressed.

“Avangrid and CMP moved quickly to add resources, implement system changes, and promote new leaders to improve customer service,” the companies said.

Since then, “CMP has addressed these issues and has satisfied, and continues to satisfy and exceed the Maine Public Utilities Commission’s stringent customer service metrics,” they added. ■



PNM solar farm | *Public Service Company of New Mexico*

## CAISO/West News

# Implementation Underway for NWPP's Western RA Market

By Robert Mullin

The Northwest Power Pool (NWPP) last week took its first steps in implementing its Western Resource Adequacy Program (WRAP), opening the door for participants to submit resource data for a “nonbinding” phase of the capacity market, which the organization says will serve as a “beta test” for a final program design.

The data from the 26 “Stage 1” participants are needed to model “forward showings” of resource adequacy and availability for the WRAP’s winter 2022 season commencing next November. In the future, participants will be required to provide their forward showings seven months in advance of the summer (June–September) and winter (November–March) compliance periods.

NWPP developed the WRAP to help Western balancing authorities cope with potential generation shortages during critical hours as the region confronts the retirement of increasing numbers of thermal generators and its growing reliance on variable renewable resources such as wind and solar.

The WRAP is intended to increase visibility into existing RA conditions in the West, addressing concerns among industry stakehold-

ers and state regulators that load-serving entities are unknowingly relying on the same capacity resources without realizing it, threatening system reliability during periods of scarcity. The program is designed to provide participants a framework in which to access capacity resources when a participant is experiencing an extreme event.

“An extreme event could be when a participant’s load is in excess of their [forward showing] forecast or resources (generation and transmission) are experiencing unexpected outages; this portion of the program unlocks the footprint’s load and resource diversity,” NWPP explained in a “detailed design” document released last July. “The program seeks to achieve a balance between planning in a reasonably conservative manner but also to provide flexibility in order to protect customers from unreasonable costs.”

In developing the WRAP, NWPP distinguished among various forms of RA — such as flexibility, energy and capacity — and decided to initially focus on a capacity-based program “with a demonstration of [resource] deliverability.”

The WRAP will kick off next winter with a nonbinding, no-penalty phase, denoted as Stage 1 in the NWPP timeline. The absence of enforcement and penalties shields the program from FERC oversight, giving members additional time to iron out wrinkles and finalize its design.

The binding Stage 2 program will introduce a requirement that participants demonstrate to the RA program administrator that they have sufficient resources to meet required metrics for a compliance season seven months ahead of the operational timeline or face a penalty based on the cost of new gas peaking plant.

The 26 Stage 1 participants represent

more than 65,000 MW of winter peak load and nearly 67,000 MW of summer peak load within the Western Interconnection.

“This group is diving into the remaining program design questions, including a task force dedicated to a second transmission hub that would allow participants in the southwest region to more readily access program diversity; one considering specific contract terms that would be necessary to ensure an enhanced WSPP Schedule C agreement would count as qualified capacity; and others considering other outstanding issues,” NWPP said in a statement last week.

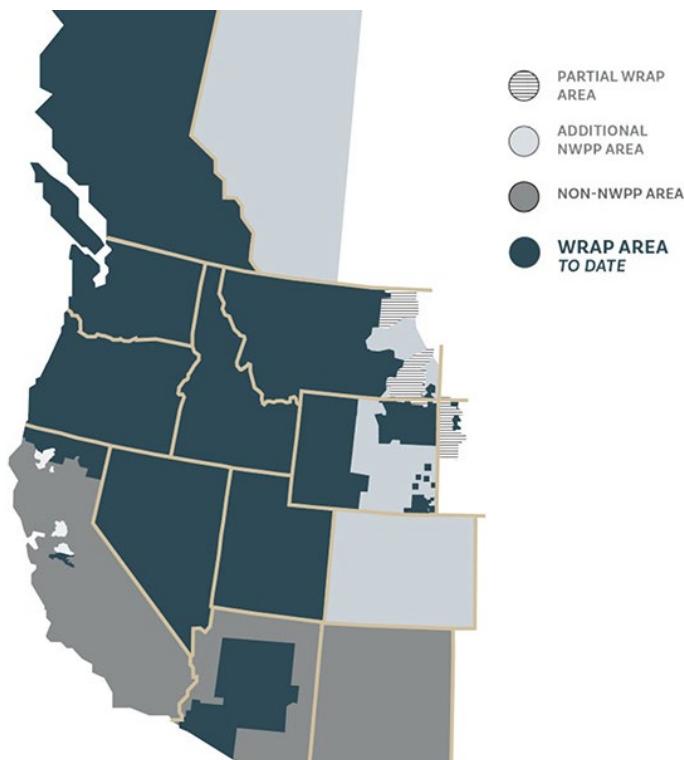
“We are very excited about the interest and commitment to the WRAP we’ve seen from former NWPP members and new participants alike. The level of excitement for the program’s forward program speaks to the determination and dedication of the participants,” NWPP CEO Frank Afranji said.

NWPP also noted last week that the move to implement the WRAP officially kicks off its working relationship with SPP, which has been retained to administer the program. (See [SPP to Operation NWPP’s Resource Adequacy Program.](#))

“SPP has begun providing program operation services, including facilitating the collection of participants’ data to perform modeling for the upcoming seasons,” NWPP said.

“As we reach this significant milestone in the WRAP’s implementation, SPP is grateful for the relationships we’ve built and the opportunity to work with such a collaborative and diverse group of entities,” SPP CEO Barbara Sugg said. “This resource adequacy program will play an important part in the reliability of the Western grid, and it’s exciting to see new participants joining the effort.”

WRAP Stage 1 participants include Arizona Public Service, Avangrid, Avista, Black Hills Energy, Basin Electric Power Cooperative, Bonneville Power Administration, Calpine, Chelan PUD, Clatskanie PUD, Douglas PUD, Eugene Water and Electric Board, Grant PUD, Idaho Power, NorthWestern Energy, NV Energy, PacifiCorp, Portland General Electric, Powerex, Puget Sound Energy, Seattle City Light, Snohomish PUD, Shell Energy, Salt River Project, Tacoma Power, Turlock Irrigation District and The Energy Authority, which is representing seven Washington and Oregon publicly owned utilities. ■



Map shows area to be covered by the NWPP's WRAP. | NWPP



## CAISO/West News

# LADWP on 'Crash Course' to Generate with Green Hydrogen

By Robert Mullin

The largest municipal utility in the U.S. is betting big on generating electricity with green hydrogen out of sheer necessity, its top official said this week.

"We are on a crash course to recreate a new power system in Los Angeles, a new generating system to feed the electrical grid that we have, and we see green hydrogen as the solution to do that, and the only way that we know to accomplish the reliability that we need," Martin Adams, general manager of the Los Angeles Department of Water and Power (LADWP), said Dec. 6.

Adams was speaking at the *Building Hydrogen Corridors in the Pacific West for a Carbon Neutral Future* conference, a two-day event hosted by the New Energy and Industrial Technology Development Organization (NEDO) of Japan and the Japan External Trade Organization (JETRO).

The virtual conference convened panelists to discuss how governments, utilities, companies and other interested stakeholders could collaborate to accelerate adoption of green hydrogen as a fuel source throughout the western U.S. and Canada. It also provided a forum for Japan-based manufacturers to showcase their own efforts to bring green hydrogen into the mainstream for utility, industrial and transportation applications.

LADWP already has a major hydrogen project in the works with the conversion of the coal-fired Intermountain Power Plant (IPP) in Delta, Utah, into an 840-MW combined cycle natural gas-fired facility capable of burning a fuel mixture consisting of 30% hydrogen when it opens in 2025, transitioning to 100% by 2045. In partnership with Mitsubishi, which will provide the turbines for the new plant, the project will also include on-site production of green hydrogen, as well as storage of the fuel in massive salt caverns adjacent to the site. (See *'Ecosystems' Needed to Drive Green Hydrogen Growth*.)

"In Delta, Utah, we have a very unique situation," Adams said. "We have plenty of land for electrolysis; we have the setup for all the systems we need; we have plenty of water supply to convert the hydrogen. And we also have an underground salt dome rock formation, which allows us a really unique opportunity to store hydrogen."

But a *study* published last March by the National Renewable Energy Laboratory showed

that LADWP will require a large amount of dispatchable generation located much closer to home as it sets out to hit the city's 100% renewable target — about 2,500 MW within the Los Angeles Basin.

The utility currently operates four gas-fired plants in the basin rated at a combined 3,400 MW of capacity. Three of the plants — Scattergood, Haynes and Harbor — sit on the coast and must be repowered or rebuilt to meet a California rule requiring power producers to phase-out plants that rely on ocean water for once-through cooling by 2029. Additionally, the Los Angeles City Council *voted* in September to require that 100% of the electricity used in the city be carbon-free by 2035, establishing a 2030 deadline for replacing the gas-fired plants.

That "confluence" of objectives dictates LADWP's move away from natural gas to burning cleaner fuels, Adams said.

"And the only solution that we know and we see at this time is to burn hydrogen, and for us that means burning green hydrogen," he said. The combined hydrogen power projects in the L.A. Basin would "dwarf" the IPP project in scope, he added.

"Those four power plants will have to have a number of power generating units that burn green hydrogen in the future in order to have a sustainable electrical grid and provide the kind of power supply that the city needs for the future and have a green supply," Adams said.

While IPP, with its massive storage capability nearby, provides the "perfect setup" for a large-scale hydrogen project, Adams said those features can't be transplanted into L.A.'s urban environment, raising questions about the kind of infrastructure needed to support hydrogen-fueled generation in the basin, and whether hydrogen must be shipped to the plants as a gas, liquid or ammonia.

"So we need to decide, what is the delivery pipeline going to look like? And where are we going to hold [the hydrogen]? ... I'm going to generate power using hydrogen; I don't want to be in the business of generating hydrogen. I like to deal with it and handle it as little as possible. Because right now, I bring in natural gas, and I just have a service connection. I handle as little as possible," Adams said.

"I did not know that in the L.A. Basin, there's 60 miles of hydrogen piping, running in the harbor area between certain vendors and oil refiner-



LADWP headquarters | LADWP

ies. How do we parlay into that? How do we get that hydrogen to become green hydrogen, instead of the gray hydrogen it is today? How do we get green hydrogen? And how do we build out that system? How do we take advantage of that infrastructure?"

### Lower-cost Solution?

Sharing the panel with Adams was Peter Sawicki, regional director of sales and marketing at Mitsubishi Power Americas. Sawicki said Mitsubishi has performed its own study modeling the requirements of a net-zero grid by using the same energy market simulation software that utilities rely on to develop their integrated resource plans. According to Sawicki, Mitsubishi "couldn't get the [net-zero] model to converge without the use of hydrogen." The alternative would require a "massive" amount of renewable generation subject to "massive" curtailment at times of oversupply.

The study concluded that a "pro-hydrogen" scenario results in a more efficient buildout of the grid, Sawicki said.

"We see what comes out to be a 20% lower system cost to reach net zero, which is kind of counterintuitive, when people think of hydrogen as being a very expensive infrastructure," he said. "That is true, but if we think about the massive overbuild that would be needed to reach [zero carbon] without the use of hydrogen as a long-duration storage medium, that system cost winds up actually being more expensive."

Adams thinks hydrogen's day has arrived, but industry and the general public still need convincing.

"I get challenged all the time. People say, 'Well, we've heard of hydrogen before; it's come around in years past.' I think we believe that we're at the tipping point, that the momentum has changed, and this time it's for real." ■

## ERCOT News



# PUC Narrows Options for ERCOT Market Redesign

By Tom Kleckner

Texas regulators have settled on a two-phase blueprint to redesign the ERCOT market after a half-dozen work sessions and have given stakeholders until noon Friday to pass judgment on the proposal.

The first phase involves revisions to the operating reserve demand curve (ORDC) and additional ancillary services products. That will set the stage for the second phase, which the commissioners said will involve a load-side reliability mechanism and a backstop reliability service.

In a *memo* issued Monday, the Public Utility Commission of Texas said it had agreed in principle to continue pursuing the Phase 1 market design changes and has committed to developing the Phase II elements. It has requested comment on Phase II only by Friday, with stakeholders limited to five pages and an executive summary (52373).

"We can show the markets, the legislatures, our state leadership, and more importantly, the citizens of Texas, that we are continuing to make long-term reforms that will solve the problems at hand," PUC Chair Peter Lake said during Thursday's open meeting.

Independent consultant Alison Silverstein, who has offered her own design *recommendations*, said the blueprint is "unnecessary and inappropriately hurried" because the long-term proposals addressing the ERCOT system's near-collapse during February's winter storm will have no effect on what happens this winter.

"The electric reliability of the world's ninth-largest economy demands thoughtful planning and careful analysis, not a rash rush to judgment with little stakeholder and no public input," Silverstein told *RTO Insider*. "The commission needs to take the time to solidify and assess the impacts of the substantive measures already under way ... upon operational reliability, resource revenue flows, wholesale and retail markets, and customer costs."

Silverstein said the memo ignores one of Texas' biggest reliability problems: that many of ERCOT's *black start units* weren't working during Winter Storm Uri.

"If Chairman Lake wants to rush something, let's rush black start reform, please," she said.

The various proposals' costs have also played little part of the PUC's discussions. The Brattle Group said last month that the load-serving

entity (LSE) obligation would cost the ERCOT market an extra \$300 million a year. (See *Texas PUC Ponders Alternatives to LSE Obligations*.)

"The LSE [obligation] ... would push Texas much closer to a costly capacity market," Stoic Energy's Doug Lewin said. "The goal has to be to achieve high reliability at the lowest cost. Is there any analysis at all to determine what the impact will be? Or the reliability impacts? I don't understand how the PUC could move forward without more analysis."

### 'Too Much of a Good Thing'

The commissioners did offer some pushback against the LSE obligation and other proposals during last Thursday's latest work session, asking for more time to digest the proposals and gather stakeholder feedback.

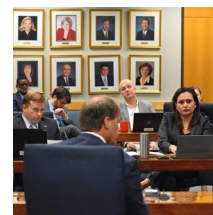
"I want to make sure whatever we are doing to significantly modify our market is actually going to drive more dispatchable generation and maintain our existing fleet," Commissioner Lori Cobos said. "I don't want any unintended consequences."

A flustered Lake responded by saying, "Lack of action has consequences, too, that can be severe."

"While analysis and due diligence is important, action is also important," he said. "Endless studies will not help Texans and solve our problems. I don't want any good ideas to be sacrificed on the altar that prices can't go up."

The commission said the load-side reliability mechanism will be developed according to a set of principles that include offering economic rewards and providing "robust" penalties or alternative compliance payments based on a resource's ability to meet established standards; building on ERCOT's existing renewable energy credit (REC) trading program framework; providing a forward price signal to encourage investment in dispatchable generation; use dynamic pricing and sizing to ensure reliability needs are met without over-purchasing reserves; and mitigating market-power concerns for generation companies that also serve retail customers.

The commissioners plan to consider adopting the LSE obligation, championed by Lake since its proposal earlier this fall in a study funded by generation heavyweights NRG Energy and Exelon. The study's authors say the LSE obligation would directly address resource adequacy concerns by introducing a formal reliability standard and a mechanism to ensure sufficient resources meet this standard. (See



Commissioners Will McAdams (left) and Lori Cobos follow the discussion during a PUC work session. | *Texas PUC*

*Study Suggests Texas LSEs Can Provide Reliability.*)

The PUC will also add elements from a Lake *strawman* and Commissioner Will McAdams' *dispatchable energy credits* (DEC) proposal. The latter recommendation would establish a dispatchable portfolio standard for certain qualifying generators to create the DEC, which

would be bought, sold or traded in the same manner as RECs.

The commissioners also said they have agreed to develop a backstop reliability service that would procure accredited new and existing dispatchable resources as an insurance policy to help prevent emergency conditions. The service's principles include non-performance penalties and clawbacks for noncompliance; deploying resources in a manner that doesn't negatively affect real-time energy prices; and allocating costs to load based on a load-ratio share basis measured on a coincident net-peak interval basis.

In the meantime, the commission wants to modify the ORDC to reward "reliable" generation assets that can be dispatched as ERCOT's reserve margin drops. The changes, to be effective Jan. 1, would set the minimum contingency level (MCL) at 3 GW and eventually decouple the systemwide offer cap and the value of lost load.

The PUC cut the high systemwide cap from \$9,000/MWh to \$5,000/MWh during last Thursday's open meeting. (See *Texas PUC Pushes 44% Reduction in ERCOT Offer Cap*.)

Other products, including a firm fuel product, fast-frequency response service, ERCOT contingency reserve service and expansion of existing non-spinning reserve service already are underway.

However, that left at least one commissioner wondering whether that was too much of a good thing.

"I feel like I'm getting whiplashed with all these new products we're creating," Commissioner Jimmy Glotfelty said during Thursday's open meeting. "I almost feel like we're creating niche markets. I hope we're not cannibalizing our own system and we're doing good for our market." ■

## ERCOT News



# Texas PUC Chair Lake: 'The Lights Will Stay On'

## 97% of Generators Have Filed Required Weatherization Docs

*Continued from page 1*

he said.

The remarks echoed those of Texas Gov. Greg Abbott, who has been *guaranteeing since November* that the ERCOT grid will remain upright this winter. Abbott, who is fighting off several challengers on his Republican side of the aisle, has pointed to the 14 GW of installed capacity the grid operator has added during 2021. All but 1 GW of that capacity are wind, solar or battery storage.

Pressed by a local reporter that a recent ERCOT report — likely November's seasonal assessment of resource adequacy (SARA) that included risk scenarios — went against his statement, Lake said the SARA "is a scenario analysis that evaluates a wide range of possibilities." (See [Twitter Blows up over ERCOT Communications](#).)

"It does not incorporate all of the extraordinary measures I've outlined today. It's a scenario analysis; ... it's not a promise of an outcome," he

said. "When we look at all of the efforts we've made, the assets we have in ERCOT now ... when we look at the realities on the ground in front of us, yes, we can say the lights are going to stay on."

Interim ERCOT CEO Brad Jones said the grid operator has received attestations of winter readiness, signed by entities' CEOs, for 97% of the more than 850 registered generation resources by a Dec. 1 deadline. Aided by two vendors, the grid operator's new Planning and Weatherization Department has begun its inspections of those facilities.

Jones said staff have visited 55 generation units so far and plan to inspect more than 300 before the year is up. Those units accounted for 85% of the lost megawatts during the winter storm.

"We've had a good experience so far," he said. "There's been a lot of cooperation at each of the generation companies. There've been no red flags."

Some companies have asked for good-cause

exceptions. ERCOT will file a report with the PUC on Friday listing those companies.

### PUC Docks 8 Generators

Following the press conference, PUC staff *said* they had filed violation reports against eight generation companies for failing to provide winter readiness reports by the Dec. 1 deadline, recommending \$7.68 million in administrative fees.

The Division of Compliance and Enforcement identified 13 separate resources owned by the companies representing 801 MW of capacity. That amounts to less than 1% of Texas' total installed capacity of 120 GW.

"Our commissioners have been abundantly clear that they expect generation entities to get ready for this winter," PUC Executive Director Thomas Gleeson said. "The [PUC] cannot tolerate the failure of these companies to even file their readiness reports."

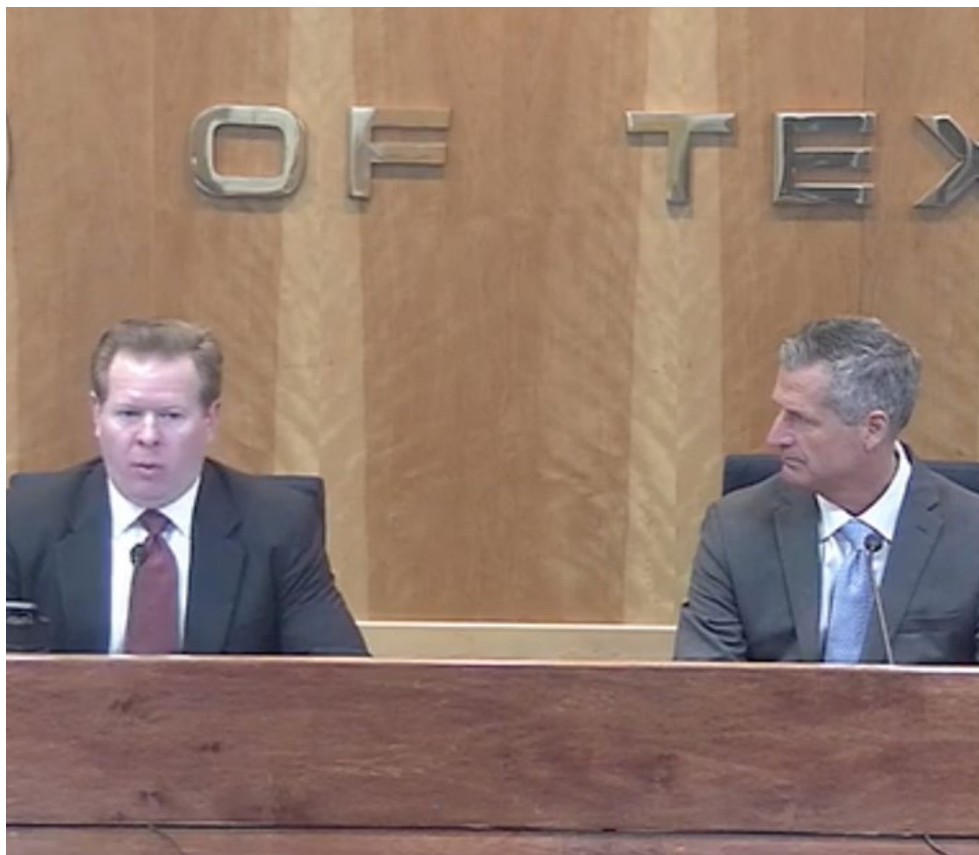
Addressing the Texas Reliability Entity's board meeting Wednesday, Commissioner Jimmy Glotfelty said, "Hopefully, this sends the signal that we are dead serious [that generators] have to winterize their facilities so that what happened in February never happens again."

Shell Oil took the biggest hit. It was *assessed* \$2.375 million for failing to file statements for four generating resources. Enforcement staff also recommended the penalty be increased \$50,000 per day for each resource and an additional \$25,000 for each day Shell remains in violation of the winter readiness rule after Wednesday.

*Bull Creek Wind* and *OCI Alamo* were each fined \$1.1 million for not filing forms for two resources, with a recommended increase of \$50,000 per resource for each day they remain in violation. The other companies and their recommended fees, which include a potential \$50,000/day increase for remaining in violation, are:

- *BT Cooke Solar*, \$550,000;
- *Cotton Plains Wind*, \$725,000;
- *Lamesa Solar*, \$550,000;
- *Midway Solar*, \$550,000; and
- *Texas Big Spring*, \$725,000.

The generators have 20 days to respond to the notices and can request a hearing. ■



PUC Chair Peter Lake (left) addresses the media as ERCOT's Brad Jones listens. | *Texas PUC*

## ERCOT News



# ERCOT Generators Near 100% Winter Readiness Compliance

## Exceptions Filed Don't Equate to Being 'Wholly Unprepared'

By Tom Kleckner

All but one ERCOT system generating resources have submitted their winter readiness reports, part of the state's new requirements, the grid operator's staff said Friday in a [filing](#) with the Public Utility Commission.

ERCOT said it had received 828 of 847, or 97.8%, of the total readiness reports that were required to be submitted by a Dec. 1 deadline. Another 18 reports were received by close of business Thursday, leaving only Rippey Solar, an 81-MW facility in North Texas, unaccounted for.

Rippey Solar is owned by BT Cooke Solar, one of eight generation companies recently fined for failing to provide winter readiness reports

by the Dec. 1 deadline. (See "PUC Docks 8 Generators," [Texas PUC Chair Lake: 'The Lights Will Stay On'](#).)

ERCOT staff noted 244 resources asserted good cause of non-compliance as of Thursday but said that after reviewing about 70% of the exception requests, "ERCOT does not believe [the assertions] should be taken as an indication that 244 generating units are wholly unprepared for the winter peak period."

Staff said the attestations include about 25 separate winterization elements, such as enclosing sensors. "Many good-cause assertions identify a failure to comply with only a small number of these elements, but otherwise suggest compliance with the rule."

Many of the good-cause assertions reviewed

by ERCOT "reasonably asserted" that some requirements do not apply to the resource while others proposed a quick timetable to reach compliance.

"For these reasons, ERCOT would caution against an inference that a significant number of generators should be considered unprepared for winter based solely on the number of good-cause assertions," staff said.

Austin Energy, which filed exception requests for all 13 of its generating resources, told [RTO Insider](#) it is making additional improvements based on its experience during February's winter storm, and it expects the majority of its measures to be completed by the end of the year.

"That work is ongoing because either a unit at the plant site is undergoing planned maintenance that precludes completion of the step until the maintenance outage concludes and/or a contractor scheduled to perform winterization work could not complete the work until after Dec. 1," a spokesperson said.

The utility noted it was able to maintain operations during February's cold snap because of its prior weatherization efforts.

"The reports and the requests for exception are having the desired effect of increasing accountability and giving regulators more visibility into weatherization efforts," the PUC said in a [statement](#).

The commission and ERCOT must both sign off on the exception requests.

The new rules are a result of legislation following the February winter storm, when about half of ERCOT's thermal generation fleet was rendered unavailable by the freezing temperatures.

Generation owners must implement winter-weather readiness recommendations from a post-event [analysis](#) of a 2011 winter weather event and fix any "known, acute issues" from last winter (51840). The generation owners' highest-ranking executives were required to file notarized attestations that the resource has met its required actions by Dec. 1. (See "Weatherization Rule Published," [PUC Workshop Takes First Stab at Market Changes](#).)

Dispatchable generators submitted 520 of 530 reports (98%) on time, while 308 of 317 (97%) intermittent resources met the Dec. 1 deadline. ■



Frozen instrumentation on a Texas power plant during February's winter storm | [Entergy](#)

## ERCOT News



# ERCOT Board of Directors Briefs

## New Leadership Begins to Assert its Influence

TAYLOR, Texas — Meeting publicly for the first time with almost a full complement, ERCOT's new Board of Directors made a point to reassure any Texans listening to the webcast that a new sheriff is in town following last February's devastating winter storm.

"This is a work in progress," Director Carlos Aguilar said. "We're doing everything we can to stay abreast of the situation and ensure the system remains stable."

Fellow Director John Swainson, who has more than 40 years of technology experience, said during a quick round of introductory statements that he hopes to leverage his IT background for the grid's benefit.

"I want to focus on how we can look 10 years into the future and even longer," he said. "How can we get past the current set of issues, but continue to provide this same abundance of reliable energy for decades to come?"

The storm resulted in the resignation of much of the previous board, most of whom Texas' political leadership faulted for living out of state. Following new state legislation, they have since been replaced by six independent directors, two short of a full slate, who all live in the Lone Star State. (See [2 More Directors Appointed to ERCOT Board](#).)

"Look at those pictures," interim CEO Brad Jones said, pointing to a screen with images of the board's four newest members. "It's great to have a nearly full board."

"I can't tell you how happy I am to see you today," Public Utility Commissioner Will McAdams said. "You have a big job in front of you. Winter is upon us, and this organization has made giant strides to ensure we're ready. This grid is resilient and hardened and will survive [another winter weather event]. The public remains safe."

Jones stressed the amount of work ERCOT staff have undertaken since the storm. The legal department has been swamped with litigation issues; a new 12-person department has been created to handle winter readiness inspections as a result of new legislation; and staff are working to improve communications within the industry and not just within ERCOT.

The workload has resulted in *above-normal turnover* for ERCOT, but fears have lessened that the light at the end of the tunnel is another



The socially distanced, new ERCOT Board of Directors meets publicly for the first time. | © RTO Insider LLC

oncoming train. Jones said staff are already closely monitoring a storm due to hit Texas near the end of December.

"We'll be ready because we're working with the PUC," he said. "Tweaks that will have significant value to the market, we're making today. We're in the same room together."

## Response to NERC-FERC Winter Storm Inquiry

Staff told the directors they *have begun or completed work* on nearly all of the recommendations applicable to ERCOT identified in NERC and FERC's joint inquiry into the storm. That doesn't include the numerous recommendations made by staff, stakeholders, regulators and legislators since February.

The federal agencies released their report in November, highlighting the failure of electric and gas utilities to adequately prepare for the storm's extremely low temperatures. The event caused more than 23 GW of manual firm load shed as generators and their supply lines froze. (See [FERC, NERC Release Final Texas Storm Report](#).)

Compiled by a team of more than 50 subject matter experts, the report listed 28 recommendations that covered the electric and gas industries and went beyond NERC reliability standards revisions to address cold weather, which were approved in August 2021.

Jones reassured board Vice Chair Bill Flores and the webcast's viewers that the problems were regional and not isolated to ERCOT. Among several recommended improvements to ERCOT's grid are improving interconnec-

tions with other grid operators beyond the current 820 MW worth of DC ties.

The report's authors "recognized the ability to move power all the way east to Texas would have been very limited," Jones said. "Our power supplies were cut because we have an agreement with the regions around us that if one of us gets into trouble, we can terminate the power supplies [we're exporting]. We recognize that was an appropriate action to take."

Betty Day, ERCOT's vice president of security and compliance, said the grid operator is finalizing its own report on the storm and will publicly post the document when it's complete.

"This is standard after any grid event," she told the board.

## ERCOT to Correct Prices

The directors signed off on staff's request to correct prices for eight operating days in September and October stemming from a modeling error for a generation transmission constraint in the day-ahead market. Resettling the error resulted in more than \$816,000 in increased charges and more than \$122,000 in reduced charges to market participants. (See ["Staff to Seek Price Correction," ERCOT Technical Advisory Committee Briefs: Nov. 29, 2021](#).)

Price corrections "are largely event-based and don't have a consistent cadence," Dave Maggio, ERCOT's director of market design and analytics, said when questioned about the frequency of price corrections. "There have been a handful or so of various events that have occurred."

The grid operator's staff must seek board

# ERCOT News



approval of price corrections when they are identified outside of a short multiday deadline to make corrections themselves.

## TAC's 2022 Membership Approved

The board unanimously confirmed the 2022 *Technical Advisory Committee*, which will continue in its present form and with its familiar members as elected by their market sectors. The board has not yet decided whether to make any changes to the committee's stakeholder membership. (See *ERCOT Technical Advisory Committee Briefs: Nov. 29, 2021.*)

PUC Chair Peter Lake welcomed the committee's membership and offered a reminder that "with this new board, this new leadership will continue to leverage the expertise of TAC while also optimizing its effectiveness."

"We look forward to working with you during this transition as you see fit," said TAC Chair Clif Lange, of South Texas Electric Cooperative.

Lange will continue in the chairman's role, and Just Energy's Eric Blakey will remain as vice chair. The committee is responsible for recommending protocol changes and endorsing other operational issues to the board and is assisted by four sub-committees.

## Board Approves \$1.28B Tx Project

The directors approved a number of staff and stakeholder recommendations during the meeting, including a \$1.28 billion transmission project in the Rio Grande Valley. The project would add 351 miles of transmission lines radiating from a new substation in the Lower Rio Grande Valley, which ERCOT and the PUC have both identified as in urgent need of more transmission capacity. (See "TAC Endorses \$1.28B Tx Project," *ERCOT Technical Advisory Committee Briefs: Nov. 29, 2021.*)

Director Aguilar asked whether the project would be eligible for funding under the federal infrastructure bill signed into law last month, saying, "Should we identify more of these that are essential and could be implemented sooner than later because of the infrastructure bill?" (See *Biden Signs \$1.2 Trillion Infrastructure Bill.*)

"Our function is to identify the needs in the system and hand that process over the transmission provider who will do that development," Jones said.

The board passed several other items, including:

- ERCOT's proposed *2022 ancillary service methodology*;
- acceptance of Schellman & Co.'s 2021 Sys-

tem and Organization Control Audit *report*;

- a litigation matter and three other items from its Thursday executive session;
- the 2022 *key performance indicators*; and
- *ratification* of several actions taken by the prior board during its remote meetings.

Directors Zin Smati and Bob Flexon abstained from the last vote.

The consent agenda, which cleared unanimously, included seven nodal protocol revision requests (NPRRs); a Nodal Operating Guide revision (NOGRR), an other binding document changes (OBDRR), a revision to the Planning Guide (PGRR) and a modification to the resource registration glossary (RRGRRs):

- *NPRR1077*: expands *NPRR1026*'s self-limiting facility concept to include sites with one or more settlement-only generator (SOG) and introduces additional revisions to fully address requirements for generators and energy storage systems (ESSs) connected at distribution voltage. The NPRR requires the SOG's qualified scheduling entity to provide telemetry of the injection or withdrawal at the point-of-interconnection (POI) for transmission-connected sites or point-of-common coupling for distribution-connected sites.
- *NPRR1091*: addresses energy-price suppression and liquidity issues created by ERCOT's early and greater procurement of ancillary service by extending the treatment of must-take energy from reliability unit commitments in pricing runs to offline non-spinning reserves, when it is manually deployed. The change also increases the amount of responsive reserves and non-spin services that an entity can self-arrange above its obligation.
- *NPRR1094*: allows a transmission operator (TOP) and transmission/distribution service providers (TDSPs) to manually shed load connected to under-frequency relays during a Level 3 energy emergency alert (EEA) if the affected TOP can meet its overall under-frequency load shed (UFLS) requirement and its load shed obligation under the Nodal Operating Guide.
- *NPRR1101*: modifies load resources' deployment grouping requirements if they're not controllable load resources providing non-spin to include generation resources providing offline non-spin.
- *NPRR1103*: establishes the processes for assessing and collecting default charges and default charge escrow deposits for the

debt-obligation order securitizing about \$800 million owed to the market by cooperatives and municipalities.

- *NPRR1104*: corrects the definition of real-time liability extrapolated (RTLE) to include market activity for entities that have no load or generation but do have real-time exposure.
- *NPRR1107*: adds new fees for ERCOT's weatherization inspections of the resource entity's capacity divided by the entity's aggregate capacity.
- *NOGRR233*: allows a TOP and a TDSP to manually shed load connected to under-frequency relays during a Level 3 EEA if the affected TOP can meet its overall UFLS requirement and load-shed obligation.
- *OBDRR035*: aligns the non-spinning reserve deployment and recall procedure with NPRR1101's revisions.
- *PGRR092*: allows an interconnecting entity (IE) proposing a SOG to designate it as part of a self-limiting facility during the generator interconnection or modification (GIM) process, consistent with NPRR107.
- *RRGRR029*: allows an IE proposing a SOG to designate it as part of a self-limiting facility during the GIM process.

The directors separately approved five non-unanimous revision requests recommended by the TAC:

- *NPRR1106*: codifies the grid operator's current practice of deploying emergency response service when physical responsive capability falls below 3 GW before declaring an EEA.
- *NPRR1109*: allows a resource entity to bring a decommissioned generating unit back to service if it notifies ERCOT within three years of its removal from the network operations model.
- *NOGRR236*: allows ERCOT to instruct TDSPs to deploy any available distribution voltage-reduction measures before declaring an EEA.
- *NOGRR237*: aligns the Nodal Operating Guide with NPRR1106's protocol changes.
- *OBDRR036*: revises the ERS procurement methodology document to mesh with NPRR1106. ■

— Tom Kleckner

## ISO-NE News

# Stakeholders Approve ISO-NE Order 2222 Compliance Plan

By Michael Kuser

ISO-NE's proposed [set](#) of market rules to implement FERC Order 2222 carried the day Wednesday as stakeholders approved its compliance filing and rejected several amendments opposed by the RTO.

The NEPOOL Markets Committee recommended that the Participants Committee approve the filing, which must be submitted by Feb. 2, and rejected six amendments proposed by Advanced Energy Economy (RM18-9).

Order 2222 is intended to allow distributed energy resource aggregations to provide all wholesale services that they are technically capable of providing, and the RTO has been working on its compliance filing for the past year. (See "AEE Offers Amendments for Order 2222 Compliance Proposal," *NEPOOL Markets Committee Briefs*: Oct. 13-14, 2021.)

AEE proposed a series of individual amendments that are not part of an overall package, including allowing sub-metered load to participate as demand response and sub-metering by third parties. A proposed amendment to incorporate a periodic review requirement was withdrawn by AEE following consultations with the RTO.

Several stakeholders abstaining on the amendment votes said they needed more time to consider the tariff changes and would look forward to having another chance to vote on at least some of them at the Jan. 6 Participants Committee meeting.

### Filing Specifics

The compliance filing passed the MC with 71.11% in favor, with 16.7% of the Generation sector in favor, with one abstention; 16.7% of the Transmission sector in favor; 14.31% of Suppliers in favor, with 2.39% opposed and five abstentions; 16.7% of Publicly Owned Entities in favor; 6.7% of Alternative Resources in favor, with 9.8% opposed and two abstentions; and 16.7% of End Users opposed, with one abstention.

The RTO said that additional tariff changes associated with the energy and ancillary services markets were designed to address stakeholder feedback. For example, one change would clarify that a DER aggregation with non-storage resources may participate using the continuous storage facility or binary storage facility model.



Sub-metering | Setra Systems

Other changes would clarify DER size requirements; include procedural details in the registration coordination process; further clarify responsibilities of the host utility (or its agent) and DER aggregators; and clarify the dispute resolution process between DER owners and aggregators.

Another change would require a DER aggregation's designated entity or demand designated entity to comply with both ISO-NE's and the host utility's procedures and requirements to the extent applicable.

The proposed effective date for the changes to the Forward Capacity Market would be during the fourth quarter of 2022 to allow the RTO to implement changes in time for the Forward Capacity Auction 18 qualification process, which starts in the spring of 2023.

Assuming that the commission accepts the compliance filing by Q4 2022, distributed capacity resources will be able to participate in FCA 18, which will be conducted in February 2024 for the capacity commitment period beginning June 1, 2027.

The proposed effective date for the E&AS markets changes would be in the fourth quarter of 2026 to allow resources to be commercial and integrated before the CCP beginning June 1, 2027.

### Amendment Details

The MC voted against AEE's proposed amendment to expand baseline calculation optionality for DR resources and aggregations by using an add-back baseline methodology under which such resources would receive no positive settlement payments for either the day-ahead or real-time energy market. The amendment received only 26.78% in support.

AEE characterized the proposed changes as

designed to further ensure a facility would be unable to receive payments if they take no action to reduce their consumption from the grid.

The MC also voted against (with only 32.98% in favor) a proposed amendment to expand baseline calculation optionality for DR resources and aggregations by allowing generation to count as load reduction.

The RTO noted in its memo on the amendments that its proposed implementation of Order 745, which stipulated that DR providers be compensated at the same rates as generators, was opposed by a coalition of DR providers and an industrial energy consumer group.

"These parties wanted to be able to measure demand response performance by directly metering behind-the-meter generation, which is what AEE's proposed revision would allow. The commission considered the evidence presented and found [ISO-NE's] approach to be the preferred one," the RTO said.

The MC also voted against proposed amendments to:

- allow sub-metered load to participate as DR (36.02% in favor);
- allow DERs associated with an aggregation to use a third-party meter reader to meet its metering and meter data service requirements (40.7% in favor);
- remove barriers for DERs that can provide ancillary services by removing the requirement to clear in the energy market if providing spinning reserves (35.9% in favor); and
- remove barriers for DERs that can provide ancillary services by allowing sub-metering for resources providing regulation (32.56% in favor). ■

## ISO-NE News

# Monitor, Merchants Challenge ISO-NE Plan to Eliminate MOPR

## Vote Planned for January

By Rich Heidorn Jr.

Merchant generators joined ISO-NE's Internal Market Monitor on Dec. 7 in warning that the RTO's proposal to eliminate the minimum offer price rule (MOPR) will suppress prices.

Other stakeholders debated whether the implementation of the RTO's plan should be delayed until it approves long-term market rule changes on capacity accreditation and reserves.

The NEPOOL Markets Committee is scheduled to vote on the RTO's proposal at its first meeting next year, Jan. 11-12. Stakeholders interested in proposing amendments should notify the committee secretary by Jan. 3 for inclusion on the agenda.

The RTO's proposal was prompted by calls by FERC Chair Richard Glick and Commissioner Allison Clements to abolish the MOPR, which they said were undermining state decarbonization efforts. (See *'Good Riddance' to Old PJM MOPR*, *Glick Says*.)

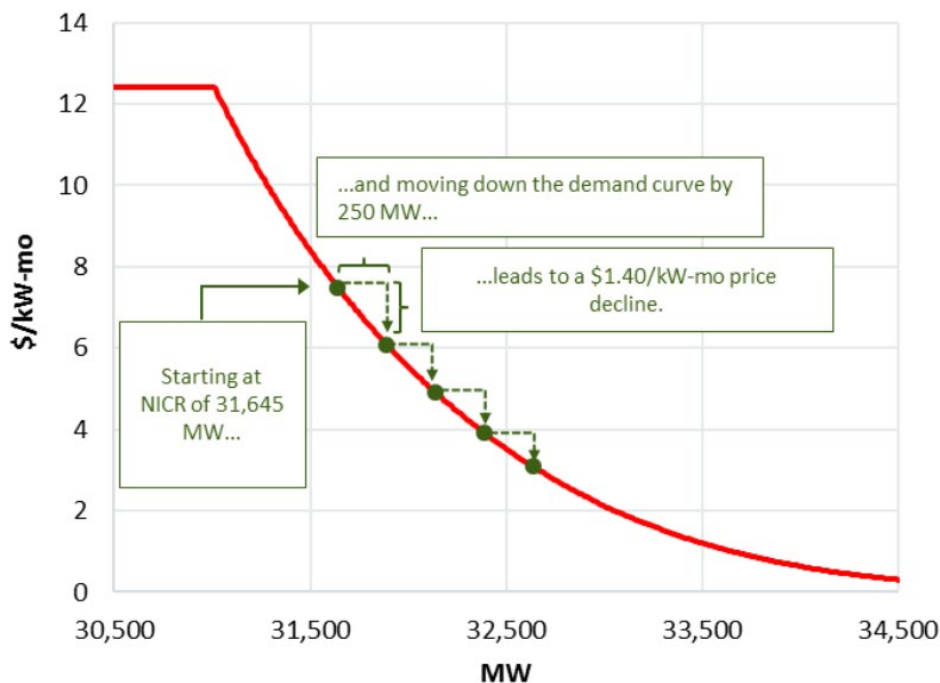
The IMM's David Naughton and Michael Redlinger outlined their concerns with the RTO's proposal at a daylong MC meeting, acknowledging that the MOPR prevents some state-sponsored renewables resources from clearing the Forward Capacity Market (FCM), undermining decarbonization efforts and causing "over-procurement."

But they said the rule has been effective at limiting the impact of below-cost offers on the capacity market. "Inadequate mitigation rules may undermine the efficiency of the FCM in performing its function and ability to produce just and reasonable rates," they said in a *presentation*.

They also acknowledged that efforts to address the tension between price formation and states' generation preferences — such as the renewable technology resource (RTR) exemption and substitution auction under the Competitive Auctions with Sponsored Policy Resources (CASPR) — "have had limited results."

But they said the RTO should be pursuing long-term market changes that could help, saying "net carbon pricing" could reduce the "missing money" for low-carbon generation while being compatible with the current broad MOPR.

Allowing sponsored resources to clear the



Allowing state-sponsored resources to clear the capacity auction without a minimum offer price rule (MOPR) "leads to essentially walking down the FCA demand curve," ISO-NE's Internal Market Monitor says. | *ISO-NE Internal Market Monitor*

auction "leads to essentially walking down the FCA [Forward Capacity Auction] demand curve," they said. "MOPR elimination will allow [subsidized] resources to offer at a lower cost than they otherwise would absent the subsidy, in many cases down to \$0."

The price suppression and volatility could result in premature retirements and lead investors to demand higher returns on investment, shorter pay-back periods or long-term contracts, they said.

ISO-NE's proposed buyer-side mitigation (BSM) rules would exempt subsidized resources, resources of 5 MW and less, energy efficiency, and projects whose sponsors self-certify they have no load obligations that could benefit.

The Monitor said the BSM rules would focus on uneconomic conduct that impacts prices for the benefit of a "net" or "leveraged" position. Project sponsors would have the option to demonstrate that there is no incentive — no net financial benefit — to exercise buyer-side market power.

"But the exercise of market power can take

many forms, and the IMM is focused on the impact on price formation from below-cost offers regardless of whether to benefit a load position," it said. "Mitigation needs to address market power in whatever form when it would impair competitive market outcomes."

The Monitor said the focus on sponsors' lack of incentive to suppress prices would allow the sponsors to decide what information to provide to the monitors.

"This limits the IMM's ability to evaluate and determine whether the declaration of no material net benefit is accurate and hence the lack of mitigation warranted," it said. Current rules, it noted, require market participants to provide "all" relevant information.

### Merchants Share IMM Concerns

Bruce Anderson, of the New England Power Generators Association (NEPGA), said his group shares the Monitor's concerns.

"The conditions under which the FCA would need to clear to produce just and reasonable rates ... appear to create significantly increased risks to either reliability, market efficiency



# ISO-NE News

(reliability-must-run agreements) or perhaps to both,” NEPGA *said*. “Alternatively, those risks do not materially increase, but the market produces unjust and unreasonable rates.”

NEPGA said the RTO should not eliminate the MOPR until it implements long-term rule changes such as effective load-carrying capability (ELCC) and wholesale market designs that compensate resources for reliability services the RTO doesn’t pay for now. “These necessary market reforms would provide some measure of balance in a proposal that at present fails to balance consumer and investor interests,” Anderson said.

Anderson questioned why the RTO is pushing the MOPR elimination given that FERC has not issued an order requiring such action. “The proposal attempts to satisfy a mandate and deadline that does not exist,” he said.

Andrew Weinstein of *Vistra* took a similar position. *Vistra* *proposed* a transition, which Weinstein said “buys time for long-term durable solutions to better align with complete MOPR elimination.”

Long-term solutions such as ELCC or a reserves product “cannot be achieved in the timeline set forth by ISO-NE,” he said. ISO-NE’s proposal, he said, could create “market risks that will remain unresolved until long-term designs can be approved.”

*Vistra* called for a two-year transition period for FCAs 17 and 18, with the MOPR eliminated for FCA 19.

The rule would remain in place with an RTR

exemption of 300 MW for FCA 17 and 400 MW for FCA 18. Between 229 and 292 MW of sponsored resources cleared in FCAs 13 to 15. There would be no weighted average cost of capital adder while the MOPR is intact, and the net cost of new entry (CONE) would also remain unchanged until FCA 19.

Weinstein noted that the RTO has embraced several out-of-market designs to address reliability issues over the past decade, yet it has conducted no study of how removing MOPR would impact the ability to serve load.

“Given the reliability risks and legal and policy risks of immediate and complete MOPR elimination, regional consensus on a long-term durable solution is strongly preferable,” he said.

## Enviros: No Need for Transition

The Natural Resources Defense Council and Conservation Law Foundation, however, said no transition is warranted. Because the region is currently oversupplied, they said, it has sufficient time to address the long-term market changes.

“We know where the region is headed, and new entry from state clean energy resources is known well in advance,” NRDC’s Bruce Ho said in a *presentation*. He said the failure of the CASPR initiative to integrate state clean energy resources “has already led to unnecessary delays and consumer costs.

“Delaying MOPR elimination could result in [an] FCM that fails to incorporate clean energy through the end of this decade,” he added.

While the groups said they support ISO-NE’s approach to removing the MOPR, they questioned the RTO’s proposal to adjust CONE financial inputs, noting that the normal CONE/net CONE cycle allows consideration of multiple market and rule changes.

“Tariff, policy and market changes happen every year, and we have never adjusted CONE between cycles to address them,” Ho said. “What makes this change so different?”

## LS Power Responds to ISO-NE Criticism

LS Power used its time to *defend* its proposed Scarcity Event Reduction Framework (SERF), which it said would provide “incremental incentives” for investing in flexibility and reliability in time for FCA 17.

The construct would credit or charge resources for their energy and reserves supplied when real-time reserve prices are positive.

The proposal is based on the current Pay-for-Performance (PFP) design but would increase the instances in which performance is assessed. While PFP design assesses performance only when there is a capacity scarcity condition (CSC) — triggered by a shortage of a minimum real-time reserve requirement — SERF would apply the new credits and charges whenever there is a positive real-time price for reserves but no CSC.

LS Power’s Mark Spencer said changes are needed to restore the balance between buyers and sellers because “there is no tangible risk of a scarcity event, and the adverse selection problem raised in the 2014 PFP filing has yet to

Capacity Commitment Period (CCP)	Peak Load HE/Date	Peak Load (MW)	Reserve Requirement (MW)	Total Energy + Reserves Requirement (MW)	Quantity of Capacity Procured in FCA (MW)	Capacity Resources that did not participate in the Peak Load Hour	
						Quantity in Excess of FCA Cleared Capacity (MW)	Percentage of FCA Cleared Capacity (%)
2017-2018	HE17 6/13/2017	23,508	3,034	26,542	33,712	7,170	21%
2018-2019	HE17 8/29/2018	25,559	2,262	27,821	34,695	6,874	20%
2019-2020	HE17 7/30/2019	23,929	2,668	26,598	35,567	8,969	25%
2020-2021	HE18 7/27/2020	24,727	2,551	27,278	35,835	8,557	24%
2021-2022	HE18 6/29/2021	25,269	2,849	28,117	34,828	6,711	19%

LS Power wants ISO-NE to go beyond eliminating the minimum offer price rule (MOPR) and embrace broader proposals to incentivize generator performance. In the last five years, 7 to 9 GW of capacity resources that obtained a capacity supply obligation — more than 20% of the total on average — did not participate in the peak load hour, it said. | *LS Power*

# ISO-NE News

be addressed.”

He noted there has been only one event — lasting about 2.5 hours — in the last four summers, although the RTO predicted a handful of hours in every year. In the last five years, 7 to 9 GW of capacity resources that obtained a capacity supply obligation in the FCA — more than 20% of the total on average — did not participate in the peak load hour.

Eliminating the MOPR will “further reduce the already miniscule probability of scarcity events,” he said.

Spencer said the proposal was an effort to address “a market in distress that requires immediate attention.” Market design efforts the RTO has in its work plan such as ELCC and day-ahead co-optimization “will not materially improve this situation,” he said.

In a Dec. 3 memo, ISO-NE *said* it opposed the proposal because it would incentivize resource owners to offer in the real-time energy market at prices below their marginal cost and ignore

dispatch instructions.

Spencer said the RTO’s concern that some resources would offer below their cost when it anticipates a SERF event to avoid penalties is not realistic because it would require “perfect foresight” to make the strategy profitable. A resource would have to predict a SERF event at least 30 minutes in advance.

LS Power said SERF events would usually be less than one hour and may be spread over two delivery hours, while real-time reoffers are binding for an entire delivery hour. “Frequently part of the hour would be unprofitable, offsetting the profit-making potential in the rest of the hour.”

SERF events would occur infrequently — only 13 days, or 7.6% of the summer peak days — during the last two years.

“The ISO’s analysis ... ignores the cost of those days when the generator submits a below-cost offer but a SERF event doesn’t occur,” Spencer said.

## MC Vice Chair, Committee Secretaries

Also Dec. 7, the committee re-elected Sigma Consultants’ William Fowler as vice chair. No other members expressed an interest in the position, the RTO said.

Earlier last week, ISO-NE announced committee secretaries for 2022:

- Dennis Cakert, who recently joined the RTO as a lead analyst in the NEPOOL Relations team, will serve as secretary to the MC. He previously was the senior manager of regulatory affairs and state policy with the National Hydropower Association (NHA).
- Marc Lyons, who has served as the Reliability Committee secretary for 12 years, will become secretary for the Transmission Committee.
- Nicholas Gangi, who recently joined the RTO as a lead analyst in the NEPOOL Relations team after working as an engineer with Eversource Energy, will be secretary of the Reliability Committee. ■

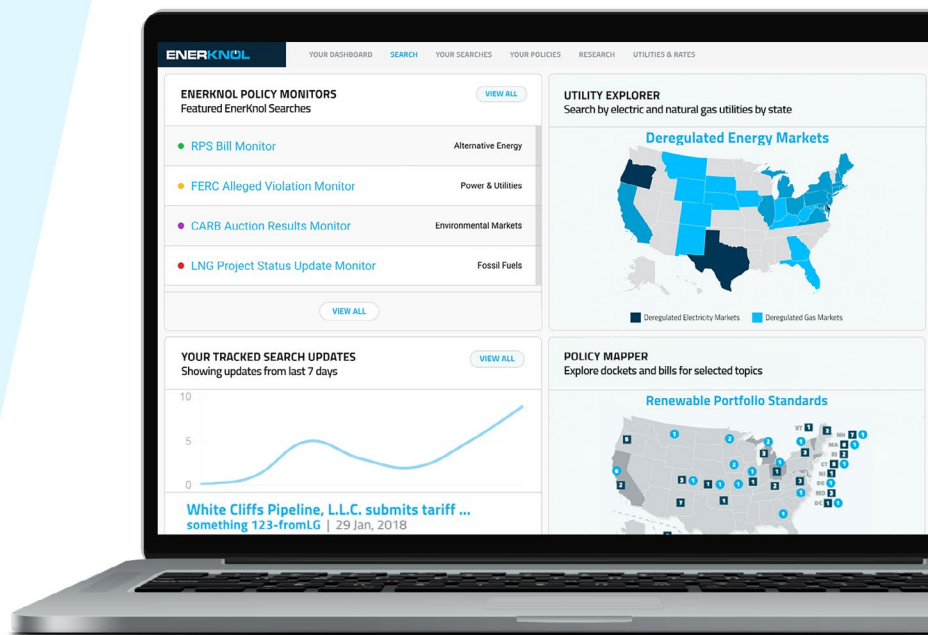
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# ISO-NE News



## NE Stakeholders Propose Retirement, Financial Assurance Changes

By Michael Kuser

The NEPOOL Markets Committee will vote in January on two separate proposals to streamline unit retirements to facilitate orderly exit and improve market dynamics with entry of state-supported resources.

Sigma Consultants' William Fowler told the committee Thursday that they were splitting their proposals into standalone votes, with a separate Participants Committee vote Jan. 6 on removing ISO-NE's minimum offer price rule (MOPR). (See related story, *Monitor, Merchants Challenge ISO-NE Plan to Eliminate MOPR.*)

The MC at its Jan. 10-12 meeting will vote on retirement bid flexibility immediately after the MOPR vote. The intent is to file the bid flexibility rules as contingent on FERC elimination of the test price for Competitive Auctions with Sponsored Policy Resources in either the MOPR elimination or transition package, Fowler said.

If the test price stays, then the RTO could defer filing and implementation of bid flexibility but still make new retirement flexibility rules effective for Forward Capacity Auction 17.

The new rules will be filed prior to the March bid submission deadline and hopefully ap-

proved well before the June dates for various elections.

"We could provide special rules for FCA 17 retirement bids ... to cover possible FERC action after bids are due," Fowler said in his *presentation*.

The MC at the same meeting would vote on changes to the return-from-retirement rules, intended to create a meaningful mothball option.

Of the four original proposals, Sigma deferred one on removing retirement track obligation and another on relaxing Internal Market Monitor review in certain situations.

The outstanding issues on returning a unit to service include a need to add clarity around the waiting period, which the proposal would address by requiring a resource to sit out the commitment period for which it requested retirement, plus two consecutive years after that before participating in another FCA.

There also is a perceived need to add clarity around early Annual Reconfiguration Auctions and bilateral participation, with the intent being that a resource, once qualified for an FCA following the waiting period, would be free to bid its capacity into earlier commitment periods under the same rules as for new resources.

### Financial Assurance

Competitive Power Ventures will be seeking votes early next year on its *proposal* to improve noncommercial financial assurance, focusing on the financial assurance forfeiture component, including review of tariff revisions.

The process to date has included three Budget and Finance Subcommittee meetings, and Thursday was the third MC meeting to discuss the topic, so the firm will be seeking votes at the next subcommittee meeting Jan. 26 and at the succeeding MC in February, said CPV's Joel Gordon.

If it is agreed that the timeline for FERC action could be at the new capacity qualification deadline June 18, 2022, the schedule could be extended, Gordon said.

Existing financial assurance requirements are insufficient to deter noncommercial capacity from participating in subsequent capacity auctions for highly unlikely projects, CPV argues. The current design attempts to balance keeping financial barriers against the need to ensure delivery of physical capacity through the use of a physical milestone tracking process.

However, the design makes no distinction between a project meeting all its milestone commitments, a delayed project and a totally failed project, Gordon said. And there are no performance-based consequences.

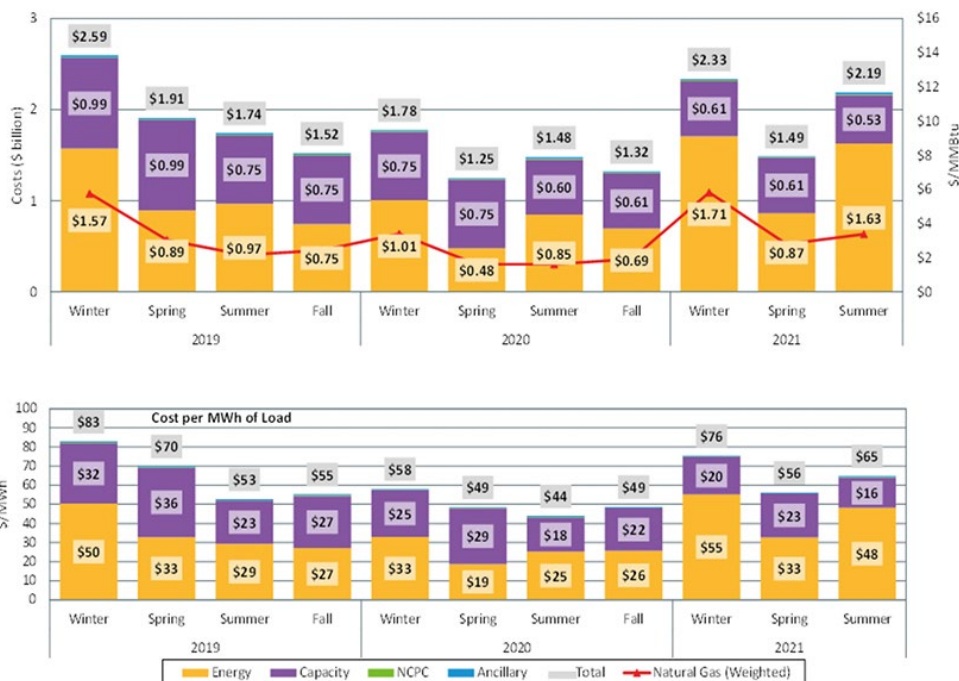
The proposal is to add an increment of "base FA" prior to the third subsequent FCA for resources not achieving substantial site construction and require additional "milestone FA" for projects that fail to achieve pre-construction commitments.

The milestone FA would be due prior to subsequent FCAs, consistent with their preapproved milestone schedules, and only for projects that fail to meet their milestones pre-construction. In addition, all milestone FA would be released upon catchup to active construction.

The proposal would also increase "delay FA" as projects are delayed beyond their original commercial operation date. This new delay FA would be forfeited after a six-month grace period based upon achievement of interconnection COD.

### Monitor Reports Summer Energy Costs up 48%

A large increase in natural gas prices and slightly higher loads pushed wholesale energy



ISO-NE's wholesale electricity cost climbed 48% from the prior summer, driven by higher natural gas prices. | ISO-NE

# ISO-NE News

<b>Original Bid</b>	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00
<b>Less 25%</b>	\$ 6.00	\$ 6.00	\$ 6.00	\$ 6.00	\$ 6.00	\$ 6.00	\$ 6.00	\$ 6.00	\$ 6.00
<b>IMM Initial Number</b>	\$ 5.00	\$ 6.00	\$ 7.00	\$ 7.50	\$ 8.00	\$ 8.50	\$ 9.00	\$ 10.00	
<b>IMM Revised (*)</b>	\$ 5.00	\$ 6.00	\$ 7.00	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	
<b>Auction high offer</b>	\$ 5.00	\$ 6.00	\$ 7.00	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	
<b>Auction low</b>	\$ 5.00	\$ 6.00	\$ 6.00	\$ 6.00	\$ 6.00	\$ 6.00	\$ 6.00	\$ 6.00	

These IMM numbers are revealed at QDN (June)

These IMM numbers are not revealed to the Resource

(\*) IMM adopts proponents bid if IMM number is >= 90% of proponent's original bid

Examples of how bid modification would work | Sigma

costs in New England higher by 48% last summer compared to the same period a year ago, according to the ISO-NE Internal Market Monitor's quarterly markets performance report.

Wholesale market costs totaled \$2.19 billion, a 48% increase on summer 2020 costs of \$1.48 billion, according to the [report](#) presented by Donal O'Sullivan, supervisor of surveillance and analysis.

The year-over-year increase was large because summer 2020 saw historically low natural gas prices as a result of warmer weather and reduced consumption during the pandemic-driven economic shutdown.

Average day-ahead and real-time hub LMPs were \$41.29/MWh and \$40.22/MWh, 84%

and 79% higher, respectively, than in summer 2020. The average natural gas price was \$3.39/MMBtu, up 109% on the summer 2020 price of \$1.62/MMBtu.

The average hourly load of 15,298 MW was up by 0.3% (320 MW), driven by increased humidity and less behind-the-meter solar generation. Capacity market costs were down by 12%, totaling nearly \$530 million, down by \$73 million.

Summer 2021 was the first quarter of the FCA 12 commitment period, with clearing prices of \$4.63/kW-month for rest-of-system, compared to an FCA 11 price of \$5.30/kW-month.

Gross real-time reserve payments totaled \$9 million, up 105% from \$4.4 million in Summer 2020.

Ten-minute non-spinning reserve and 30-minute operating reserve payments increased by \$1.9 million and \$432,000, respectively. Non-zero 10-minute spinning reserve pricing occurred in 386 hours in summer 2021, down from 506 hours; however, the average non-zero spinning reserve price increased to \$14.27/MWh. Total regulation payments were \$7.6 million, up 19%.

The higher average real-time hub LMPs led to a \$1 million increase in regulation capacity payments.

Net commitment period compensation (NCPC) costs totaled \$10 million, up 44% (\$3.1 million) on the prior summer, but similar to summer 2020, NCPC costs represented less than 1% of the total energy costs. ■

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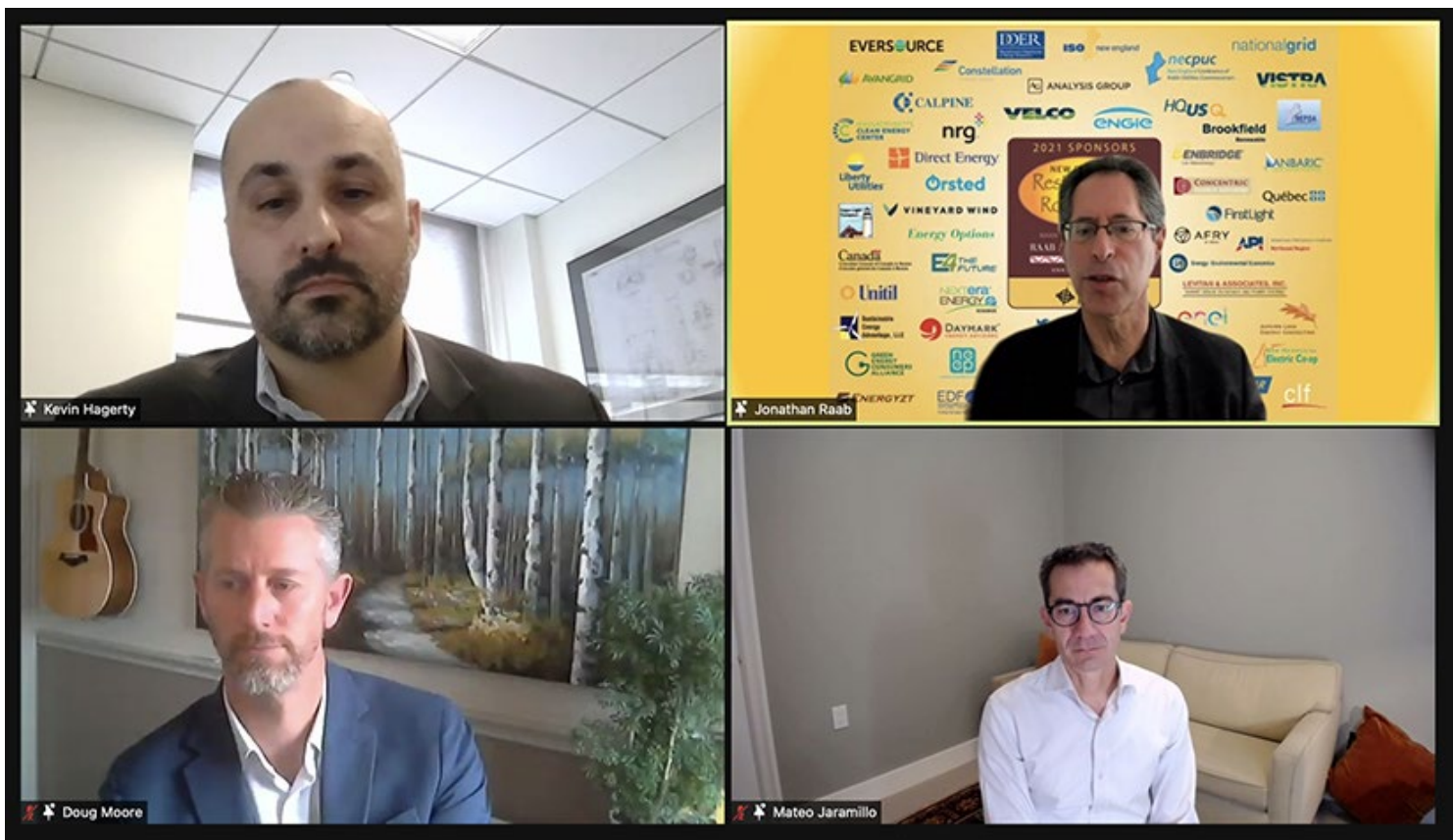
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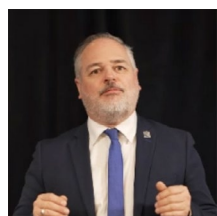
## Roundtable Looks at Storage, Hydrogen to Decarbonize Northeast



Clockwise from top left: Kevin Hagerty, Vicinity Energy; Jonathan Raab of Raab Associates; Mateo Jaramillo, Form Energy; and Doug Moore, Toyota. | Raab Associates

By John Funk and Michael Kuser

The New England Electricity Restructuring Roundtable on Friday discussed storage and hydrogen as possible pathways to fully decarbonize the Northeast, including using both technologies in electric power production, transportation and buildings.



Jonatan Julien, Québec Minister of Energy & Natural Resources | Raab Associates

The keynote speakers presented views from neighboring New York and Canada, with Jonatan Julien, Québec Minister of Energy and Natural Resources, appearing in a pre-taped video to share the province's new strategies to produce green hydrogen with hydropower and to

develop batteries from indigenous lithium, aluminum and hydro resources.

### Regional Approach

"Québec has the potential to be a world leader

in renewable energy production and a team leader in decarbonizing the Northeast," Julien said. "We share the same ambitions for a greener and a more sustainable energy future because we know that climate change knows no borders."

As proof of the province's role, Julien referred to New York in November having finalized a contract with Hydro-Quebec Energy Services for the Champlain Hudson Power Express to carry Canadian hydropower all the way to New York City. (See *Two Transmission Projects Selected to Bring Low-carbon Power to NYC.*)

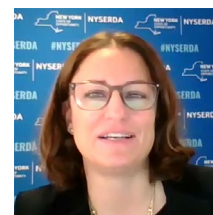
Dominique Deschenes, Québec Deputy Minister of Energy and Natural Resources, appeared live and clarified that the province will not be manufacturing batteries but wants to invest in a complementary sector for the manufacture of specialty electric vehicles such as emergency vehicles or fire trucks, and to develop the province's role in a battery recycling logistics chain.

On the role of green hydrogen in her province, Deschenes said, "Hydrogen is for us to use where we cannot use direct electricity."

The Quebecois see green hydrogen being used for heating buildings, but especially for transportation and industry because of sectors like mining that cannot easily use electricity, she said.

"Hydrogen also goes with bioenergy [and] for 2030 we have a target of 37.5% GHG emissions reduction and we think that almost 15% of this reduction will be done with bioenergy and green hydrogen," Deschenes said.

New York is ahead of schedule on its solar and energy storage targets and is also participating in several national and global groups focused on hydrogen, said joint keynote speaker Doreen Harris, CEO of the New York State Energy Research and Development Authority (NYSERDA).



NYSERDA CEO Doreen Harris | Raab Associates

For example, New York is collaborating with the National Renewable Energy Laboratory on

# ISO-NE News

a hydrogen strategy study to compile baseline information and data that will help to determine the role green hydrogen could play in the state's decarbonization plans, Harris said.

In July, NYSERDA made \$12.5 million in funding available for developing long-duration energy storage solutions that are six-plus hours in duration.

The state also is working with the Center for Hydrogen Safety, a global community of more than 75 government, industry and national lab participants promoting and learning about hydrogen safety and best practices across industrial and consumer applications, she said.

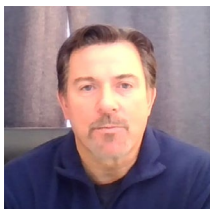
"We have also joined the *HyBlend* collaborative research partnership, which is comprised of six national labs and 15 university and industry partners co-led by NREL and Stony Brook University," Harris said. "This national partnership will generate a database that allows New York to access the use of existing infrastructure and to develop general principles of operation of blended hydrogen and natural gas delivery systems."

NYSERDA is looking to leverage the state's regional clean energy hubs with funding focused on carbon capture and clean hydrogen, which is part of the Infrastructure Investment and Jobs Act, she said.

"This federal context is a very critical one for us as a state," Harris said. "We see great alignment in the broader policies, but also a huge opportunity to capture those federal investments as we make New York the hub ... for this burgeoning industry."

In addition, the state target of 9 GW of off-shore wind by 2035 is "only the beginning," and will likely double, with plenty of opportunity at low load times to use that relatively low-cost power to produce green hydrogen, Harris said.

## Strategy and Policy



Paul Hibbard, Analysis Group | Raab Associates

Decarbonizing the Northeast can be thought of as a battle between how fast planners can bring on renewable generation and how that can offset GHG from fossil fuel resources, said Paul Hibbard, principal of

Analysis Group.

The concern is that no matter how many thousands of gigawatts are generated from wind and solar there will be times when those technologies are unable to generate enough power to meet demand. And as electrification of the economy grows, for example with electric vehicles, those shortfalls could become big problems.

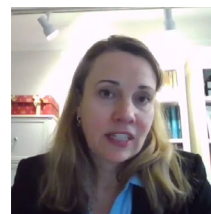
And that's why current hydrogen R&D projects are "incredibly important," said Hibbard. The energy density and phase flexibility of hydrogen make it easily transportable and potentially able to take advantage of existing pipeline and fuel storage infrastructure, he said.

Utilities and wind developers could "overbuild" wind and solar projects and produce hydrogen, which could then be stored and used as a "ramping resource," whether burned in a

combustion turbine or used in fuel cells to help stabilize the grid, Hibbard said.

The major question is whether green hydrogen will be cheap enough to be economic, Hibbard said.

Notwithstanding that question, National Grid, which delivers gas and electricity to 20 million customers across the Northeast, intends to distribute renewable (bio) natural gas and green hydrogen as part of a master plan to get to net zero carbon emissions.



Judith Judson, National Grid | Raab Associates

"In some ways our gas network is the largest storage system we have, and through clean, net-zero fuel we see that as a way to provide value to our customers," said Judith Judson, head of U.S. strategy at National

Grid.

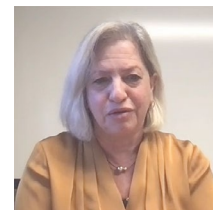
Hydrogen will interconnect large scale renewables with a modernized grid, she said.

"The magnitude of growth in clean electric generation needed to get to net zero across New England and New York will require hydropower, 25 gigawatts of onshore wind, 40 gigawatts of offshore wind and over 50 gigawatts of solar," Judson said.

Energy storage, whether batteries or stored hydrogen, will be the "glue" that holds the system together, she said.

"We're excited about storage as a transmission asset. It [provides]the opportunity to increase both the capacity of our existing infrastructure and improve the resiliency of the network by acting as a backup to the network," Judson said.

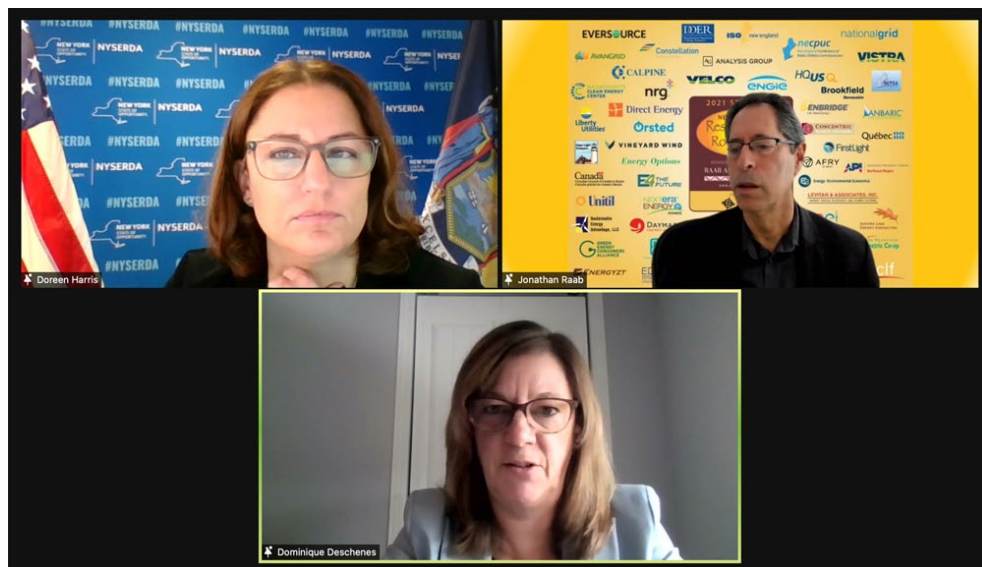
Hydrogen may face competitive hurdles as a grid storage system, said Audrey Zibelman, vice president of X Development and its Moonshot Factory focusing on the grid of the future.



Audrey Zibelman, X | Raab Associates

Zibelman stepped down as chair of the New York Public Service Commission in 2017 to serve as CEO of grid operator Australian Energy Market Operator, before returning early this year to the Google venture, X.

As for hydrogen as a method of long-term



Clockwise from top left: NYSERDA CEO Doreen Harris; Jonathan Raab of Raab Associates; and Dominique Deschenes, Québec Deputy Minister of Energy and Natural Resources | Raab Associates

# ISO-NE News

storage, the Australian grid operator decided pumped hydro was more cost effective than hydrogen storage, at least initially because of the cost of green hydrogen, she said.

Green hydrogen's role in long-duration storage depends on reducing the cost, including the cost of electrolysis equipment used to make hydrogen from water.

"If we are talking about a 1-in-10-year event, where we need long duration storage, for days as opposed to just hours it's going to become a very difficult market," Zibelman said.

The answer might be something in the form of a storage reserve, like an oil reserve, but how would someone invest in something that might only be used once in four or five years, she said.

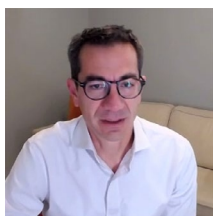
"We have probably not exhausted the DER side in terms of resources to make the grid itself much more efficient," she said.

Probably the easiest market for hydrogen would be where gray hydrogen is now used, in heavy industry and refineries, Zibelman said.

## Case Study Storage

The final panel featured storage and green hydrogen case studies in the power, transportation and building sectors.

Form Energy, based in Somerville, Mass., has about 200 people in the Bay Area of California as well as near Pittsburgh developing a multi day "iron-air" energy storage system that reversibly rusts iron to store energy.



Mateo Jaramillo, Form Energy | Raab Associates

Iron is cheap and abundant, two features that enable the company to project it will hit very aggressive cost targets, said Form Energy CEO Mateo Jaramillo.

"We are delivering our first material commercial project in a few years, so by the end of 2023 we will turn on our first pilot project, a roughly 1-MW, 150-MWh battery storage, hundreds of hours of duration for a transmission distribution co-op in Minnesota called Great River Energy," Jaramillo said.

Form Energy developed a sophisticated suite of analytics that allow it to run complex cooperation problems. The company is today running integrated resource plans alongside the utilities that it's talking to, so that when those utilities examine their future system needs and asset mix, "we're able to inject the different types of technologies that may show

up and compare them in a financial model," Jaramillo said.

Mike Hill at *FERC* asked about the market barriers to deploying long-duration storage.

"The simplest response is that we need price reliability," Jaramillo said.

## Case Study Transit

Toyota's various hydrogen fuel cell initiatives are geared toward everything from light- to heavy-duty vehicles, buses, boats and stationary generators, and particularly to eventually power heavy-duty trucks, said Douglas Moore, the automaker's U.S. general manager for portfolio business management.

Meanwhile, the world's largest carmaker is making progress on relieving consumer range anxiety with fuel cell technology.

"Just a couple of months ago we had a hyper-miler run our second generation Mirai in Southern California, and he achieved a Guinness record of longest distance traveled by a fuel cell vehicle. So he was able to go 845 miles on a single fill-up," Moore said.

Toyota started fuel cell infrastructure development in California and has partnered with a number of station providers, including Air Liquide to supply fuel and Shell for distribution. There are 49 stations open and more than 120 under development, mainly in the Bay Area, Los Angeles and San Diego, and in the Lake Tahoe area, he said.

Toyota is working to expand fuel cell markets across the country, with areas of promise being Colorado, Texas, the Pacific Northwest and the Northeast.



Jonathan Raab, Raab Associates | Raab Associates

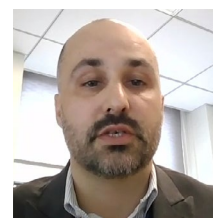
Moore said that California has obviously been a favorable state from a policy perspective, and developing fuel cell refueling infrastructure has its own challenges. "By sprinkling it around you're creating a lot of little hotspots that could potentially have failure without backup,"

he said.

Toyota concentrated in California on solving the whole equation, from supply to distribution to station provider — driven by supportive public policy. In the Northeast, "culturally I think there's a huge alignment as well ... a strong desire to have green hydrogen and carbon neutralization here," Moore said.

## Case Study Power

Vicinity Energy plans to decarbonize its district energy system, which serves more than 65 million square feet of buildings and facilities in Boston and Cambridge, through a combination of renewable fuels, hydrogen, large scale heat pumps and storage.



Kevin Hagerty, Vicinity Energy | Raab Associates

District energy is a force multiplier, a way to get inside a building and alter that building's carbon profile without having to make significant changes or any changes in the building at all, said Kevin Hagerty, chief technology officer of

Vicinity Energy.

The company owns about 26 miles of steam piping underneath Boston and Cambridge, and three central facilities situated on the backbone power grid, all serving the equivalent of 55 Prudential Towers.

"If we make a change on just one of our facilities, if we make a small fuel change or small changes to our producing that steam, it alters the carbon profile of all the buildings connected to the district energy system," Hagerty said.

The company is achieving electrification by installing electric boilers, industrial heat pumps, and thermal batteries, and hopes to take "a big bite out of the Boston and Cambridge carbon emissions" and decarbonize upwards of 800,000 metric tons per year by 2035, Hagerty said.

Industrial heat pumps will leverage heat from the adjacent Charles River, and thermal batteries will help the company improve district energy's existing good alignment with peak generation from the offshore wind that's soon coming onto the New England grid, he said. Offshore wind, like heating, peaks in the winter, and its daily production peak from 8 p.m. to 4 a.m. would offer Vicinity low-cost power for its load peak, which is precisely opposite the OSW production peak hours. ■

## MISO News

# MISO Members Weigh Potentially Rough Winter

By Amanda Durish Cook

ORLANDO, Fla. — MISO members last week offered a few tips on how the footprint can weather a tough winter, a day after the RTO elevated the risk level.

The grid operator warned that it's in for a bumpier season, considering fresh concerns around coal and natural gas fuel assurance and security. (See related story, [MISO Sounds Alarm on Potential Winter Fuel Scarcity](#).)



Todd Hillman, MISO | © RTO Insider LLC

"For this winter in particular, we know [awareness around] fuel assurance has been heightened," MISO Chief Customer Officer Todd Hillman said, noting a doubling of natural gas prices since last year and concerns around coal stockpiles

and deliveries.

The U.S. Energy Information Administration recently reported that coal production has sunk to a level not seen since 1978.

Speaking at an Advisory Committee meeting Wednesday as part of MISO Board Week, Hillman said the RTO's planning futures point to an increased reliance on natural gas going forward.

"In MISO's view, the number of recent outages is unacceptable," Hillman said, calling up gas generation performance during mid-February's arctic blast. (See [MISO Underscores Need for RA Action in Winter Storm Review](#).) "This winter, are we better prepared, or more just bracing for impact?"

MISO's current generation fleet contains about 80 GW worth of natural gas capacity, 80% of that without firm fuel service. During the February winter storm, the gas fleet experienced a more than 30% forced outage rate.

"Every time we see a weather event that we think is unsurpassed, Mother Nature says, 'Here, hold my beer,'" MISO President Clair Moeller quipped.

Madison Gas and Electric's Megan Wisersky said it's not cost effective for most gas generation operators to secure firm transport.

Stakeholders pointed out that NERC's new cold weather standards aren't set to come into effect until April 2023.

"We have a potential reliability situation in front of us that can't wait," Cleco Cajun's Tia Elliott said.

MISO Director Todd Raba asked what the RTO could immediately do to assuage conditions this winter. "There might not be an answer; that's OK," he said after a beat of silence.

"Other than meditation and prayer," Hillman jokingly added, prompting stakeholders for suggestions.

Coalition of Midwest Power Producers representative Travis Stewart said MISO could reach out to generators with long lead times to make commitments days in advance.



Travis Stewart, COMPP | © RTO Insider LLC

"We might end up with some uplift, but that's the cost of reliability. It's a tough situation, and I think MISO's markets do an excellent job," Stewart said.

Clean Grid Alliance's Beth Soholt said regulators should issue more conservation pleas through television and radio. "It may help us through a shortage or critical time. ... I think it just heightens that we're both going to need the demand side and the supply side," she said.

"I think we spend so much time taking care of customers that we don't realize that they have a responsibility to the system. And I think that's a positive," Indiana Utility Regulatory Commissioner Sarah Freeman agreed.

But Wisersky said "constant public appeals" might diminish MISO members' credibility. She also said critical loads like hospitals should obtain on-site backup generation, given the new reality of intermittent generation coupled with knockout weather events.

"If we're honest with our customers, we can't 100% guarantee that we're going to be there all the time," Wisersky said.

Exelon's John Orr said MISO could address the public about its largely behind-the-scenes work.

"The public gets very little information. ... MISO can provide some of this understanding," he said, noting that the



CGA's Beth Soholt and Exelon's John Orr | © RTO Insider LLC



Construction of Consumer Energy's Saginaw Trail pipeline project in Michigan | Consumers Energy

RTO can explain its role and decision-making process and actions taken like rolling black-outs.

Freeman also said the impending introduction of MISO's seasonal capacity auction and availability-based capacity accreditation will deliver some hard truths on the readiness of MISO's fleet.

"Like it or not, it will send a signal to generators on how they're going to be compensated," she said.

Stakeholders also said MISO should look to generation other than natural gas.

Soholt said that though gas plants are necessary to reliability, she questioned how much natural gas generation the U.S. should build on its way to decarbonization. She said the MISO footprint could use electric storage and more transmission projects to move power around during winter storms.

"How much is in our carbon checkbook to keep building natural gas?" Soholt said. "Natural gas is part of the puzzle, but it's not the whole answer."

Consumers Energy's Kevin Van Oirschot pointed out that several of MISO's market-based solutions meant to aid reliability are waiting on the new market platform, which will be better able to handle energy storage, distributed energy participation and more demand-side management. ■



## MISO News

# MISO Sounds Alarm on Potential Winter Fuel Scarcity

By Amanda Durish Cook

ORLANDO, Fla. — MISO is raising the alarm over scarce fuel and increased forced outages should a severe arctic blast descend on the footprint.

Speaking Dec. 7 before the Markets Committee of the MISO Board of Directors, Renuka Chatterjee, executive director of system operations, said the grid operator expects anywhere from 36 to 50 GW in generation outages under an extreme winter scenario. MISO expects a 101-GW system peak this January and 108 GW in available capacity to meet the demand. (See [MISO Warns of January Emergency Procedures](#).)

“Risk has increased beyond frozen coal piles this winter,” Chatterjee said, noting that coal suppliers have downsized their inventory. She also said gas storage is at relatively low levels nationwide.

Staff said up to 20 GW in natural gas generation is at risk because of non-firm transport arrangements, and another 11 GW of coal generation could become unavailable because generation owners haven’t fully contracted their winter supply. Natural gas prices in MISO have essentially doubled since late 2020, while coal costs have risen about 15%.

Chatterjee also said available wind generation could swing from 4 GW to 15 GW this winter.

“In light of the fuel risks this winter, MISO is asking members to help provide more visibility into their situation,” Chatterjee said.

The RTO has asked members with coal or gas availability concerns to reach out to both the grid operator and its Independent Market Monitor. It is also asking affected members to complete a weekly coal or fuel oil generator survey so staff can “assess and manage risk.”

“I urge continued vigilance on this. The reports on fuel security are concerning,” MISO Director Nancy Lane said.

MISO Executive Director of Market Operations Shawn McFarlane said in November that “arctic weather of some length” would carry system reliability risks.

Staff has concluded they will be forced to rely on non-firm imports from its neighbors to avoid load shed should punishing winter weather materialize.

“If PJM has a bad day the same day we’re having a bad day, the country will have a bad day,” MISO President Clair Moeller explained to board members. He said that under the normal nature of cold fronts, staff can rely on PJM imports because both systems don’t experience weather hardships simultaneously.

The Monitor’s David Patton said as MISO moves into wintertime, coal generation serves as an important backstop when gas pipelines fail. He said coal supply chain risks are concerning. He also predicted the RTO won’t see \$2/MMBtu natural gas prices for quite some time.

“I was happy to see MISO identified this as a new risk because that is certainly a risk,” Patton said.

But Patton again lambasted “near-zero” per megawatt-day capacity prices in the 2021-22 planning year. (See [MISO Capacity Auction Values South Capacity at a Penny](#).)

“If reliability is in fact an imperative, this market is not helping us,” he told board members.

Chatterjee said it’s becoming increasingly difficult to operate the system with intermittent resources growing share of the fuel mix while the system is beleaguered with extreme weather events.

MISO set a new all-time wind output record of 22 GW on Nov. 12. That accounted for 29% of the RTO’s demand.

Patton also said MISO’s congestion costs in 2021 are approaching \$2 billion, an unprecedented amount. Chatterjee said that can be chalked up to February’s winter storm and this year’s higher natural gas prices. ■



MISO IMM David Patton addresses the Markets Committee of the MISO Board of Directors. | © RTO Insider LLC

# MISO News

## MISO Raises ORDC's Lowest Level to \$1,100/MWh



Ameren's coal- and gas-fired Meramec Power Plant | Missouri State Representative Jim Murphy

FERC on Dec. 6 approved MISO's request to raise its four-step operating reserve demand curve's (ORDC) lowest level from \$200/MWh to \$1,100/MWh, agreeing with the RTO that the final step is probably priced too low to entice generating resources (ER21-2797).

MISO's ORDC is based on a \$3,500/MWh value of lost load (VoLL) and begins at \$3,300/MWh. It drops to \$2,100/MWh for much of the curve when the RTO clears 8% of its requirement level. At 89%, the level falls to \$1,100/MWh, remaining there until 96% or more of the requirement is cleared and the curve flattens at \$200/MWh.

The fourth step will be raised to equal \$1,100/MWh, better reflecting the cost of emergency actions necessary to meet reserve shortages.

In its filing, the RTO said the \$200/MWh step undervalued reserve shortages and led to "inefficiently low prices that did not send signals to resources that may be expected to respond in future shortage conditions."

FERC agreed that the \$200/MWh price might not send appropriate signals to resources "and could lead to procurement of reserves below system need."

MISO staffers have said the \$200/MWh value was set before the grid operator had estab-

lished emergency pricing. They have long said the starting point should be raised to reflect the value of energy in scarcity conditions.

The change should help raise the grid operator's emergency prices, which MISO's Independent Market Monitor has long criticized as too low. The IMM has called for an operating reserve demand curve that eradicates the step-based pricing in favor of gently sloped descent from a much higher starting point of about \$10,000/MWh.

MISO has said it doesn't plan to address raising its VoLL value until 2023 or later. ■

— Amanda Durish Cook

**New wind peak!**  
December 12, 2021  
21,971 MW

MISO reached a new wind peak of 21,971 MW on December 12, surpassing the previous peak set Nov. 12 by 244 MW. | MISO

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## MISO News

# MISO Board of Directors Briefs

### MISO Pulls off 1st Face-to-face Meetings Since Start of Pandemic

ORLANDO, Fla. — MISO Board Week meeting marked the RTO's first plunge into in-person gatherings in nearly two years.

"Isn't it great to be back in person?" CEO John Bear said in opening the Board of Directors' meeting Thursday, held at Loews' Sapphire Falls Resort, near Universal Orlando. "I was excited to put my tie on this morning."

Organization of MISO States President Julie Fedorchak thanked MISO for "forging ahead" with an in-person meeting. She said the RTO showed it can be done in a "safe and pragmatic way."

"There's nothing quite like face-to-face communication," Fedorchak said.

Board Week drew about 90 stakeholder attendees. MISO also offered a virtual attendance option.

MISO is charting a return to in-person meetings at its offices in Carmel, Ind.; Eagan, Minn.; and Little Rock, Ark., in late January.

The grid operator plans to reduce meetings of its major stakeholder committees from monthly to eight times per year and rotate which meet in-person, to limit virus exposure. Some stakeholders have misgivings that MISO can accomplish all its market and reliability aims and related FERC filings with just eight meetings per year, four of them in a virtual format. (See [MISO Modifies Stakeholder Meeting Schedule](#).)

Robert Kuzman, MISO's head of stakeholder relations, called the plan "a good start to get back in person as safely as we can."

"This is a partnership. We intend to be as efficient as we can while still working through out

goals," Kuzman told the Advisory Committee on Wednesday.

Members asked if MISO would enact vaccination requirements for stakeholders wanting to enter a conference room.

Chief Customer Officer Todd Hillman said MISO is still navigating which requirements in-person meeting attendees must follow.

"Given the 15-state footprint, we're trying to do right by all," Hillman said.

Hillman said last week's event will serve as the "litmus test" for MISO's on-site meetings. So far, he said, MISO envisions socially distanced attendees, with tables spread apart.

### MISO: New Market Platform Running by 2025

MISO said it remains on track for a late 2024 completion for its market platform replacement.

The RTO this year launched its new, one-stop system modeling tool and new market user interface, the nonpublic site market participants use to submit energy bids and offers. It believes it can complete the conversion by late 2024.

MISO is using Siemens smart grid technology to support its new model manager. It plans to cut over to a new method of member data submittal by March and retire its old method of data collection thereafter.

Chief Digital Officer Todd Ramey said MISO will retire both its legacy modeling system and old market user interface in 2022.

Next year, the RTO will work to debut an energy storage participation model on its vintage market platform. It previously said it couldn't both roll out energy storage offers and focus

on the platform replacement. Now it must introduce the storage participation model on both its old and new market platforms. (See [MISO: No Choice but to Double Up on 841 Compliance](#).)

Late next year, MISO anticipates that it will receive its new day-ahead market clearing engine from General Electric.

This year marked the fourth full year of the ongoing swap of the grid operator's old and rigid platform for a new modular one that can host more complex market offerings.

### Board Approves Budget Shaped in part by COVID-19

MISO's Board of Directors has greenlit a \$376.1 million total budget for 2022.

The budget includes a \$282.3 million base operating expenses, \$37 million in project investments and \$56.8 million in other operating expenses.

The 2022 budget is 1% lower than last year's. MISO executives said pandemic impacts continue to influence budgeting. The RTO originally estimated that it would be largely free of pandemic irregularities in summer 2021.

Like other companies, MISO is contending with cybersecurity issues, supply chain issues, inflation and a tight labor market. CFO Melissa Brown said in fall that MISO was waiting on about \$4 million in physical goods, including laptops, tables and new wallboards for the control room, that had yet to be delivered.

Brown also expects that MISO's higher-than-expected employee vacancy rate will persist into 2022.

She said compared to pre-pandemic levels, MISO is earning a much lower interest rate on its cash, money it usually uses to offset some expenses.

Increasingly severe weather events are also upping spending. Executives said they spent about \$2 million over 2021 to answer state- and federal-level questions about MISO's decision-making and operations during extreme weather events.

Year to date, MISO is \$5 million underbudget from its \$226 million base operating allotment.

MISO Director Barbara Krumsiek thanked the RTO's financial team for balancing a budget despite an "extraordinary number of variables." ■



MISO Board Chair Phyllis Currie and CEO John Bear | © RTO Insider LLC

— Amanda Durish Cook

## MISO News

# MISO Wraps Annual Transmission Package

## RTO Stays Course on Long-range, Interregional Planning

By Amanda Durish Cook

ORLANDO, Fla. — MISO said it's making headway on three transmission planning initiatives, including its 2021 Transmission Expansion Plan (MTEP), long-range transmission portfolio and a joint study with SPP intended to build transmission that can bring more generation online.

On Thursday, the Board of Directors green-lighted 335 new projects worth \$3 billion, about a 20% reduction from 2020's transmission package. (See [MISO Tx Expansion Plans Proceeds to Board Vote.](#))

Aubrey Johnson, MISO's executive director of system planning, has said the decrease is largely driven by Central planning region transmission owners submitting fewer projects this year. He said projects are scattered evenly across the footprint except for the West region, which continues to experience fewer projects.

"There's not really any sexy in this [MTEP] ... but this is foundational work that needs to be done," director Mark Johnson said during the board's meeting.

MISO says that \$28.2 billion worth of transmission facilities have gone into service since the first MTEP cycle in 2003. Another \$12 billion in projects will be in service by 2024.

Johnson said the billions in upcoming projects illustrate how long it takes to get transmission built. He also said projects from as far back as the 2008 and 2010 MTEPs have yet to be energized.

"Our team is going back to understand better what is going on with these projects," Johnson told the board's System Planning Committee (SPC) on Dec. 7. He said most projects have been delayed because of budget or design changes.

This year, some members asked that MISO include transmission's ability to withstand climate change or support clean energy goals in future MTEP planning.

The Environmental Sector asked staff to create "a more inclusive and holistic" transmission planning process that will support the fuel mix transition from fossil plants to renewable resources.

WPPI Energy asked for transfer analyses to

SPP and the Tennessee Valley Authority and requested the RTO consider better connections between southern Illinois and southern Indiana.

Johnson has said MISO already considers extreme weather events in planning and it will dial up those efforts.

"We're trying to expand that further to drive operational insights," he told the board's SPC in September.

WPPI Energy's Steve Leovy said then that MISO can "reasonably expect" repeats of polar vortices that carry load-shed risk. He said he was worried the grid operator's planning wasn't doing enough to prevent a repeat of reliability breakdowns during cold snaps.

### Midwest Bent for Long-range Projects

MISO Vice President of System Planning Jennifer Curran said staff is still putting together business cases and reliability and engineering analyses for the dozen or so Midwestern projects that could be recommended in the first cycle of long-range transmission projects.

Curran said the RTO is focused on the footprint's Midwestern portion first because that region is undergoing a much more aggressive clean energy transition than MISO South.

"The needs are much more imminent. In some cases, they are here today," Curran told the SPC on Dec. 7. "We operate and plan as one RTO while addressing the need for speed in the North and Central regions."

She said the regions remain fairly independent of one another partially because of the transmission constraint between the two. Curran acknowledged that MISO could recommend a long-range project to expand its North-South transmission interface, unifying the RTO and widening its benefits spread.

"It's a little bit chicken and egg," she said.



Nancy Lange, MISO director | © RTO Insider LLC

Director Nancy Lange asked how MISO can be sure that project benefits will be contained to the subregion bearing its costs.

"It's taken me a while to wrap my head around that," Lange said.

Curran said while there

may be some transmission benefits enjoyed by MISO South from the Midwest, they're inconsequential.

MISO President Clair Moeller said the North-South subregional limit's energy flow has less transfer capability than the connection between Minnesota and Wisconsin.

"It's a severe constraint," he said.

Clean Grid Alliance's Beth Soholt urged the grid operator to propose projects in a timely manner, noting that utilities and state commissioners are relying on new transmission to make new resource decisions and meet decarbonization goals.

"We were looking forward to seeing [the first] tranche in December," she said.

MISO originally planned to recommend long-range projects this month as part of MTEP 21. Now, it says it will present a list of projects for approval to the board in June. Though six months tardy, those projects will still be considered under MTEP 21's banner.

### Joint Interconnection Solutions at \$2B

SPP and MISO are finalizing a nearly \$2 billion portfolio of 345-kV interregional projects that could resolve most constraints along their seam.

The proposals are the result of the grid operators' joint targeted interconnection queue study, designed to ease their crowded interconnection queues.

MISO still must discern how the projects would interact with any proposed projects under its long-range transmission plan.

MISO executives predicted disagreements over a cost allocation that could assign bills for both generation and load. SPP's Antoine Lucas said costs could be recovered from new generators as they exit either of the RTOs' interconnection queues. (See [MISO, SPP: Economics Secondary in Joint IC Planning.](#))

The seams neighbors plan to hold cost-allocation talks on the projects next year. The RTOs have said they would bring projects to their respective boards for approval once they decide on cost allocation.

"I recognize we still have a lot of work to do ... but this will hopefully benefit those along the MISO-SPP seam," Johnson said. ■

# NOW HIRING

## VICE PRESIDENT OF TRANSMISSION PLANNING AND DEVELOPMENT

American Municipal Power, Inc. (AMP) is seeking applicants for the position of vice president of transmission planning and development. This position oversees staff to align transmission planning and development with AMP Transmission, LLC (AMPT) goals and objectives; oversees and directs the transmission planning and project development for AMPT projects; develops, reviews, revises and approves policies and procedures for the transmission staff in consultation with transmission engineering, construction and operations functions; directs, reviews and oversees the preparation and administration of the overall budget for AMPT; oversees and directs development of AMPT preliminary and actual formula rate filings, rate filings and AMPT regulatory issues; and more.

Successful applicant must have a four-year accredited degree in engineering, preferably electrical engineering; 20 years of management experience within multi-departmental organizational structure, five of which must have been in transmission field; strong knowledge and experience with the public power business model; and knowledge of planning, engineering and transmission operations, maintenance procedures and practices, applicable rules and regulations.

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## PJM News



# Pa. Leaders Celebrate 25th Anniversary of Deregulation Law

By Michael Yoder

It's been a quarter-century since Pennsylvania took the step to fundamentally change its energy market to give customers the ability to choose their own electric supplier, encouraging them to shop around and compare prices.

Former Gov. Tom Ridge signed the *Electricity Generation Customer Choice and Competition Act* of 1996 into law on Dec. 3 of that year, and business and energy leaders of today gathered virtually on Dec. 7 to talk about the impacts of the legislation that resulted in Pennsylvania customers paying electricity rates lower than the national average after being one of the most expensive states in the country for electric generation.

Data from the Pennsylvania Public Utility Commission *shows* that more than 1.5 million residential and 300,000 non-residential customers have taken advantage of the program, being provided more than 85 million MWh of electricity.



Former FERC Commissioner Nora Mead Brownell | PG&E

Nora Mead Brownell, former FERC commissioner and a founding partner of ESPY Energy Solutions, sat on the Pennsylvania Public Utility Commission when the law went into effect. She called the debate in the legislature at the time

"intense," with many outside pressures influencing its development.

Brownell said while she's excited to see what happens in the future with the competitive market program, its benefits have already created lasting impacts on the state, ranging from declining carbon emissions caused by retiring uncompetitive coal-fired generators to increased capacity and efficiencies for nuclear plants, "bringing value to customers."

One of the "amazing" parts of the development of the competitive market, Brownell said, was the number of customers who chose to source their generation from green energy even though it was more expensive, something that wasn't anticipated. Brownell said that choice sent a market signal, leading to investment in renewable energy like large wind farms in the western part of the state.

"Markets send signals, and individuals have options to express their preference," Brownell said.

### Business Impressions

Kevin Sunday, director of government affairs for the Pennsylvania Chamber of Business and Industry, said the state "took a major step forward" in 1996 in the restructuring of its electricity markets. Sunday said the legislation "turned into a national example" of how to take risks off ratepayers and place them on the private sector where they could compete on prices and foster more efficiencies.

Over the last 25 years, Sunday said, Pennsylvania not only became the largest power producer in PJM, but it is now the largest net exporter of power of any state in the country. He said the energy exports to PJM are a "boon for reliability," driving investments to areas of need.

"This landmark law has provided a foundation for energy policy long into the future," Sunday said. "By empowering businesses and individuals with the choice to select the energy that makes the most sense for them, and rewarding innovation, the economy and the environment both win."

Rod Williamson, executive director of the Industrial Energy Consumers of Pennsylvania (IECPA), said there were three key benefits to the legislation for large industrial customers.

The first was more competitive pricing, Williamson said, pointing to data from the Energy Information Administration that showed Pennsylvania had the ninth highest industrial electricity rates in the U.S. in 1995, a year before the law. In 2020, Pennsylvania ranked 30th in industrial electricity rates, coming in below the national average.

A second benefit was greater pricing flexibility and structuring the electricity supply. Williamson said companies are now able to lock in prices for years in advance, allowing for greater budget certainties and the ability to adjust operations to utilize lower market prices in off-peak times.

The third benefit was greater flexibility in the type of generation and the ability to seek lower carbon forms of generation. Williamson said some industrial customers are demanding more renewable energy sources, and the competitive electricity market allows them to control the type of renewable generation they're purchasing.

"It's for these key reasons that IECPA supports competitive energy markets and regulatory structures that facilitate a consumer's use of these markets," Williamson said.

David Taylor, CEO of the Pennsylvania Manufacturers' Association, said energy is one of the most important inputs for manufacturing, which makes up \$93 billion of Pennsylvania's economy. Taylor said enormous amounts of energy are consumed in the manufacturing process, and it's a major "advantage" for the state to have "affordable, reliable, market-priced electricity."

Taylor said the health of the manufacturing sector leads to the health of Pennsylvania's economy.

"Competitive markets are foundational to Pennsylvania's future economic success, and there is no going back," Taylor said. "This is a benefit all consumers enjoy, but especially large energy-consuming manufacturing employers that employ the most people, add the most value and have the strongest multiplier effect on economic growth."

### Past and Future

When asked about the biggest challenge that had to be overcome in getting the competitive market law enacted in 1996, Brownell said "misinformation" and a desire by generating companies to remain the "monopoly provider" of electricity. She said competing goals led to a "brutal battle" with "enormous" amounts of political pressure.

Brownell said she didn't blame generating companies who wanted to retain their positions, but as a policymaker, her job was to "deliver value for the customers, large and small." She said the resulting jobs created as well as the resilience and reliability of the electricity supply from the competitive markets have all been "critically important" to the state.

As for the future of the competitive market, Brownell said there continues to be a challenge of educating the public on the benefits of the markets. She said the lower prices are the most visible benefit, but the resulting innovations have created a more resilient electric system.

Brownell said one action that can be taken is continued review and evaluation of the program to foster improvements.

"There's no change that can't be improved by continuing to evaluate outcomes, so it's not a once and done deal," Brownell said. "Markets evolve, so we need to continue to evolve to find better ways to help customers make different choices and expand the opportunity for them to manage their own energy use." ■

## PJM News



# Con Ed Submits Proposal for NJ Offshore Transmission

## Subsidiary Announces Bid in BPU-PJM Solicitation

By Hugh R. Morley

A subsidiary of New York-based utility Consolidated Edison has submitted a proposal for a 2.4-GW transmission “backbone” to the New Jersey Board of Public Utilities (BPU) to bring offshore wind-generated electricity to the PJM grid.

The *proposal* submitted by Con Edison Transmission would create Clean Link New Jersey, a high-voltage network of multiple undersea transmission cables.

“The offshore mesh-style network is flexible and modular to allow various offshore wind projects to plug in as they become ready to generate,” the company said in a Dec. 6 statement outlining the project. A description of the proposal posted on the PJM website states that an undersea “power corridor” through which cables will run “provides the opportunity to better manage costs and improve grid stability, while significantly reducing permitting and environmental impacts.”

Con Ed submitted the proposal under the competitive solicitation by the BPU and PJM for new transmission and grid upgrades to handle the 7,500 MW of offshore wind energy that the state expects to bring online by 2035. (See *New Jersey Seeks OSW Transmission Ideas.*)

The organizations issued the solicitation under FERC Order 1000’s state agreement approach, under which the BPU requested that PJM integrate the state’s offshore wind goals into the RTO’s Regional Transmission Expansion Plan process. About 80 documents are posted on the PJM webpage that lists *proposals* submitted under the solicitation. (See *PJM, NJ Staff Brief Stakeholders on State Agreement Approach.*)

Proposals were accepted until September, and PJM officials are now reviewing them. The BPU expects to begin evaluating them early next year and will decide which ones fit their needs in the third or fourth quarter.

### First NJ Venture

New Jersey has so far approved three offshore wind projects in two phases totaling 3,758 MW, about half the state’s target. Danish developer Ørsted’s Ocean Wind, an 1,100-MW project, won the first solicitation in 2019, and in June the state awarded the developer a second project, its 1,148-MW Ocean Wind II, in the second solicitation. The BPU also

backed Atlantic Shores, a 1,510-MW project developed by a joint venture between EDF Renewables North America and Shell New Energies US.

Con Edison Transmission’s project is the subsidiary’s first venture into New Jersey, although another subsidiary of Con Ed, Orange and Rockland Utilities, serves customers in Northern New Jersey, company spokeswoman Anne Marie Corbalis said. The release said Con Edison Transmission is “developing a portfolio of transmission projects delivering renewable energy to customers.”

The Clean Link New Jersey proposal includes plans for a 27-mile fiber optic undersea cable and 23 miles of onshore cable, and the project will be capable of handling energy from multiple projects, according to the proposal. The project consists of eight transmission components, including substations onshore and offshore, transmission lines and a 500-foot-wide right of way, which will together cost \$2.75 billion, according to the proposal.

Public Service Enterprise Group announced in October that it has submitted several projects to the BPU/PJM solicitation in partnership with Ørsted, collectively known as Coastal

Wind Link. The company declined to provide details of its submissions. Proposals listed on the PJM website under PSEG’s name only include one to conduct a series of upgrades to the Central Jersey grid system.

The list of projects on the site submitted under Coastal Wind Link includes a 92-mile offshore transmission line that will come ashore at the Raritan River and then run 6 miles onshore, mainly on public rights of way, to a converter station in Sewaren, in Middlesex County, at a cost of \$848 million. Another proposal would create a converter platform in the South Hudson offshore area planned for the two Ørsted developments that will receive AC power from the wind farms, convert it to HVDC and move it to the shore, with a cost of the various components of \$1 billion.

Coastal Wind Link’s proposals would “provide a reliable, resilient and cost-effective infrastructure to the state,” the company said in a statement. The proposals “encompass individual and networked solutions and would ensure that New Jersey has a clear path to connect to the offshore wind energy coming online during the next decade while minimizing environmental impacts along New Jersey’s coastline,” the statement said. ■



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## PJM News



# PJM MRC/MC Preview

Below is a summary of the issues scheduled to be brought to a vote at the PJM Markets and Reliability Committee and Members Committee meetings on Wednesday. Each item is listed by agenda number, description and projected time of discussion, followed by a summary of the issue and links to prior coverage in *RTO Insider*.

*RTO Insider* will be covering the discussions and votes. See next Tuesday's newsletter for a full report.

## Markets and Reliability Committee

### Consent Agenda (9:05-9:10)

B. Stakeholders will be asked to *endorse* proposed revisions to *Manual 6: Financial Transmission Rights*, conforming to the joint PJM-stakeholder proposal addressing auction revenue rights (ARRs) and financial transmission rights endorsed at the October MRC. The changes were initiated after the GreenHat Energy default in 2018, including a six-month review by an independent consultant and work done at the ARR/FTR Market Task Force. (See *Stakeholders Endorse PJM ARR/FTR Market Changes*.)

C. Members will be asked to *endorse* proposed revisions to *Manual 10: Pre-Scheduling Operations* resulting from a periodic review. The revisions were endorsed at the November Operating Committee meeting. (See "Manual Changes Endorsed," *PJM Operating Committee Briefs: Nov. 4, 2021*.)

D. The committee will be asked to *endorse* proposed *Manual 14B* revisions resulting from a biennial review. The revisions include the addition of a new section that features details around the incorporation of end-of-life (EOL) needs in the Regional Transmission Expansion Plan, which were part of the tariff attachment M-3 discussions. (See "Manual Endorsements,"

*PJM PC/TEAC Briefs: Nov. 2, 2021*.)

E. Stakeholders will be asked to *endorse* proposed revisions to *Manual 14D: Generator Operational Requirements* resulting from a periodic review. The updates featured the addition of several new sections, including one describing eDART modeling requirements. (See "Manual Changes Endorsed," *PJM Operating Committee Briefs: Nov. 4, 2021*.)

F. Members will be asked to *endorse* proposed revisions to *attachment DD* of the tariff endorsed by the Governing Document Enhancement and Clarification Subcommittee. The revision includes removing section 6.2(c) of the attachment because FERC affirmed PJM's position that this section of the tariff is no longer applicable and encouraged the RTO to remove this provision as part of its next tariff clean-up filing.

### Endorsements (9:10-10:10)

1. Undefined Regulation Mileage Ratio Calculation (9:10-9:30)

The committee will be asked to approve the proposed *issue charge* to create a new senior task force to re-evaluate the current regulation market design. The issue charge was first presented at the November MRC meeting. (See "Undefined Regulation Mileage Ratio Calculation," *PJM MRC/MC Briefs: Nov. 17, 2021*.)

If the MRC approves the issue charge creating the task force, another vote will be taken on the short-term proposals from PJM and the Independent Market Monitor addressing the undefined regulation mileage ratio calculation. Both proposals failed a vote at the October MRC. (See "Regulation Mileage Ratio Fails," *PJM MRC/MC Briefs: Oct. 20, 2021*.)

2. Solar-Battery Hybrid Resources (9:30-9:50)

Stakeholders will be asked to *endorse* the proposed solution and corresponding *tariff* and

Operating Agreement revisions to address market participation by solar-battery hybrid resources. PJM conducted a pre-filing meeting with FERC staff in September, and the commission made suggestions to reconfigure the language to increase its chances for approval. (See "Solar-battery Hybrid Resources," *PJM MRC/MC Briefs: Nov. 17, 2021*.)

3. Synchronous Reserve Deployment Stakeholder Initiative (9:50-10:10)

The committee will be asked to *endorse* the proposed solution and corresponding *tariff* and OA revisions addressing synchronous reserve deployment during a spin event. The proposal was developed from discussions in the Synchronized Reserve Deployment Task Force (SRDTF). (See "Synchronous Reserve Deployment Stakeholder Initiative," *PJM MRC/MC Briefs: Nov. 17, 2021*.)

## Members Committee

### Endorsements (1:30-1:45)

1. Elections (1:30-1:45)

Stakeholders will vote on the *proposed* sector representatives for the 2021/22 Finance Committee and the 2022 sector whips. The new Finance Committee members include: Susan Bruce, PJM Industrial Customer Coalition (End-use Customer); Jeff Whitehead, Eastern Generation (Generation Owner); Bruce Bleiweis, DC Energy (Other Supplier); and Alex Stern, PSEG Services (Transmission Owner).

The 2022 sector whips include: Adrien Ford, Old Dominion Electric Cooperative (Electric Distributor); Greg Poulos, Consumer Advocates of the PJM States (End-use Customer); Michael Borgatti, Gabel Associates (Generation Owner); Brian Kauffman, Enel N.A. (Other Supplier); and Sharon Midgley, Exelon (Transmission Owner). ■

— Michael Yoder

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## SPP News

# SPP Board Reviews 2021 Performance Metrics

## Stakeholders Plan to Resume In-person Meetings in January

By Tom Kleckner

SPP's Board of Directors gathered virtually Dec. 6 to review performance metrics and stakeholder feedback for 2021 in what they hope will be their last remote meeting after almost two years of virtual gatherings.

"Clearly, everyone's ready for in-person meetings," CEO Barbara Sugg said.

She said not every board member filled out their surveys this year, a contrast to the normal 100% response rate. Including the Members Committee (MC), which advises the board, the rate was down from 81% to 75%.

"[Board Chair] Larry [Altenbaumer] and I will have to figure out a way to get people excited about filling this out next year," she said.

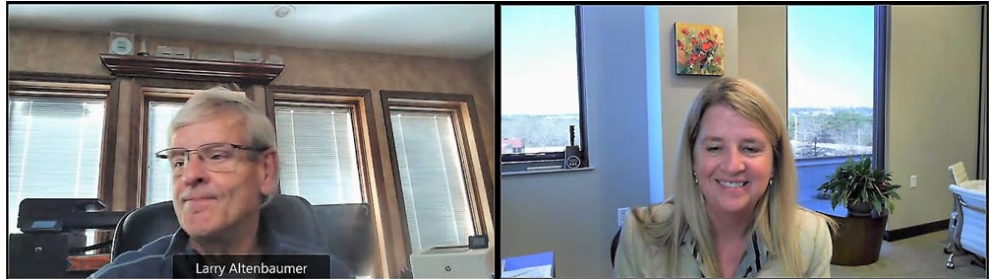
The average board and members' scores increased in 13 of 19 categories, dropping in only five. The average rate for meeting effectiveness fell from 4.50 to 4.43 (on a five-point scale) from 2020.

COO Lanny Nickell said SPP's annual organizational effectiveness survey of its 21 stakeholder groups saw its lowest scores for member preparation and engagement during meetings. Members rated the groups' overall effectiveness at 4.40 on a five-point scale, down slightly from 4.42 in 2020.

The response rate to the RTO's annual stakeholder satisfaction survey was up slightly from 2020 to 13.8%, but still down from the high-water mark of 21.2% set in 2017. The survey was distributed to 1,672 organizational group members, market participants and other individuals who interacted with SPP during



SPP plans to welcome back stakeholders to its Little Rock, Ark., headquarters in January. | WER Architects-Planners



Board Chair Larry Altenbaumer and CEO Barbara Sugg adjourn the SPP board's final meeting of the year. | SPP

the previous 12 months through meetings, training, customer relations interactions or other exchanges.

Respondents indicated a slightly lower overall satisfaction with SPP's service in 2021, with scores falling from 3.87 in 2020 to 3.61, similar to ratings in 2018 and 2019. The average scores evaluating staff's performance in three specific areas also declined by an average of 6.3% year-over-year, falling in line with 2018 and 2019.

David Osburn, Oklahoma Municipal Power Authority's general manager, suggested stakeholders might be experiencing fatigue from the number of high-level initiatives SPP has taken on during the last two years.

"The last two years have been incredibly fatiguing, and not just because we're dealing with this remote world," Sugg said. "We've just had some really big things that have taken so much time. I hope that doesn't lead to us providing less quality service ... we have to start delivering on all those things we've decided to take on."

"I think the organization, the staff, board and stakeholders did just a fantastic job navigating through these past two years," Altenbaumer said. "I know we're all anxious to get into 2022, when the world will start moving in something that feels more normal."

SPP plans to resume its in-person meetings in January after two years of COVID-19 pandemic restrictions. The board, MC and Regional State Committee will meet Jan. 24-25 in Little Rock, Ark., while the Markets and Operations Policy Committee and Strategic Planning Committee (SPC) will meet Jan. 10-12 in Oklahoma City.

### New Groups, Stakeholder Reps OK'd

The board also unanimously approved two

new stakeholder groups, chairpersons for several working groups and advisory groups, and two representatives for empty seats on the SPC, all brought forward by the Corporate Governance Committee.

The Emergency Communications User Forum's creation was one of several recommendations made by SPP's comprehensive report on February's winter storm. The group will be responsible for providing feedback to identify, improve and prioritize SPP stakeholders' energy emergency communications needs.

SPP staff proposed forming the Future Grid Strategy Advisory Group to "proactively address, drive and shape" some of the grid's anticipated changes and to prepare for other changes.

Named as stakeholder group chairs were:

- Allen Klassen, Eversource, Operating Reliability Working Group;
- Robert Pick, Nebraska Public Power District, Regional Tariff Working Group;
- Thomas Maldonado, Xcel Energy, Reliability Compliance Advisory Group;
- Jim Jacoby, American Electric Power, Seams Advisory Group;
- Phil Clark, Arkansas Electric Cooperative Corporation, Security Advisory Group;
- Natasha Henderson, Golden Spread Electric Cooperative, Supply Adequacy Working Group; and
- Derek Brown, Eversource, Transmission Working Group.

Usha Turner, Oklahoma Gas & Electric, and Steve Sanders, Western Area Power Administration, will join the SPC. Turner's term ends in December 2023 and Sanders' in December 2024. ■

## Company Briefs

### Kentucky Bourbon Makers Make Net-zero Pledges

Three of Kentucky's largest bourbon makers recently made pledges to reach net-zero carbon emissions in the coming decades.

Brown Forman, maker of Woodford Reserve and Jack Daniels, pledged to halve emissions by 2030 and achieve net-zero emissions by 2045. Beam Suntory, maker of Jim Beam, plans to halve emissions by 2030 and achieve net-zero by 2040. Diageo, maker of Bulleit Bourbon, aims to be net-zero in their primary operations by 2030 and across the board by 2050.

These companies are also planning for and instituting sustainable practices to protect the natural resources necessary to make their products.

More: [WFPL](#)

### SEC Probes Tesla over Whistleblower Claims on Solar Panel Defects



The U.S. Securities and Exchange Commission last week disclosed that it has opened an investigation into Tesla over a whistleblower complaint that the company failed to properly notify

its shareholders and the public of fire risks associated with solar panel system defects.

The SEC revealed the probe in response to a FOIA request by Steven Henkes, a former Tesla field quality manager, who filed a whistleblower complaint on the solar systems in 2019 and asked the agency for information about the report. Henkes was fired in August 2020 and sued the company, claiming the dismissal was in retaliation for raising safety concerns.

In the complaint, Henkes said Tesla and SolarCity, which it acquired in 2016, did not disclose its "liability and exposure to property damage, risk of injury of users, fire, etc to shareholders" prior and after the acquisition.

More: [Reuters](#)

### Toyota to Open Car Battery Plant in NC



Toyota last week announced it will open a \$1.29 billion battery plant in North Carolina after the state approved an incentive package worth \$438.7 million for the company, one of the largest manufacturing investments in the state's history.

The plant, known as Toyota Battery Manu-

facturing, will manufacture hybrid and electric vehicle batteries and will produce 1.2 million battery packs per year. The company said it will launch production in 2025 and expand operations by 2031.

More: [The News & Observer](#)

### Union Pacific Targets Net-zero Emissions by 2050

Union Pacific last week said it aims to reach net-zero greenhouse gas emissions by 2050 and is more than halfway toward its goal of reducing emissions 26% by 2030 compared to 2018 levels.

The railroad has reduced emissions by 20% between 2018 and 2020 thanks to a combination of more efficient operations, the use of longer trains with fewer locomotives, and the reduction in traffic related to the COVID-19 pandemic. To reduce emissions the additional 11.5% to reach its goal, UP plans to boost the use of biofuels and renewable diesel and invest in battery-electric yard locomotives. It also will continue to modernize older locomotives and more extensively deploy fuel-saving technology.

UP did not say precisely how it would achieve net-zero emissions but said the 2030 goal must be met first.

More: [Trains](#)

## Federal Briefs

### FERC Extends Waiver for In-person Meetings

FERC last week extended its blanket waiver for in-person meetings until March 31, 2022.

The commission said it does not foresee extending the waiver past March but will monitor the situation as the deadline approaches.

FERC first issued the order in April 2020 in relation to the COVID-19 pandemic.

More: [FERC](#)

### Trade Agency Urges Biden to Extend Trump's Solar Tariff

The U.S. International Trade Commission last week recommend President Biden order a four-year extension of the tariff on

imported solar components, with annual declines of 0.25% starting in February.

Biden is expected to make a final decision before the tariff expires in February and is under no obligation to follow the ITC's recommendation.

The recommendation comes weeks after determining that solar imports remain a threat to U.S. manufacturers.

More: [Bloomberg](#)

### US LNG Export Capacity Will be World's Largest by 2023

The U.S. will lead the world in LNG export capacity by the end of 2022, said a new report from the Department of Energy.

The U.S. is expected to surpass Australia and Qatar when new units come online next year in Cameron Parish, La.



National LNG peak production in November was estimated at 11.6 billion cubic feet per day, the Energy Department said. By the end of 2022, that is expected to grow to 13.9 billion cubic feet per day. Capacity will further increase to an estimated 16.3 billion cubic feet per day in 2024 when construction of Golden Pass LNG begins operating.

More: [Houston Chronicle](#)

# State Briefs

## REGIONAL

### Tornadoes Leave Trail of Devastation Across Six States

At least six states — Arkansas, Illinois, Kentucky, Missouri, Mississippi and Tennessee — were hit last week by tornadoes that caused outages, destruction and death, the National Weather Service said.

Thousands of power outages across the region complicated rescue efforts. About 77,000 customers in Kentucky and 53,000 customers in Tennessee were without power as of Saturday evening, said PowerOutage.us. On Monday morning, about 26,000 customers in Kentucky were still without power, while the number of customers without power in Tennessee had fallen below 10,000.

In Michigan, about 318,000 households were without power on Saturday. In Ohio, 111,000 households were in the dark, and 26,000 in Indiana. In New York, the New York State Electric and Gas said about 19,300 households mostly in and near Buffalo were affected by power outages late Saturday afternoon.

More: [The New York Times](#)

## ARIZONA

### Supreme Court to Decide Corporation Commission 'Dark Money' Issue

The state Supreme Court last week agreed to decide whether a majority of the Corporation Commission can block one of its members from seeking access to corporate records to see if a company is funneling "dark money" into the campaigns of regulators.

In a brief order, the court agreed to review a Court of Appeals ruling that denied Bob Burns, who was a member of the commission, the independent right to look at the books of Arizona Public Service and Pinnacle West Capital, its parent company.

Burns issued a subpoena in 2016 in a bid to determine if APS or its parent was the source of the \$3.2 million spent in 2014 by "dark money" groups to help elect Tom Forese and Doug Little to the commission board. The company later admitted it had put \$10.7 million into that campaign.

More: [Arizona Capitol Times](#)

## CALIFORNIA

### CARB Signs Off on Phaseout of New Gas-powered Mowers, Leaf Blowers



The Air Resources Board last week voted to ban the sale of new gas-powered leaf blowers and lawn mowers starting in 2024, and portable generators by 2028.

The decision is based, in part, on the belief that battery technology will improve and zero-emission gear will become more widely available before the requirements kick in, although there will be an annual review to determine whether regulation needs to be altered or delayed.

More: [Los Angeles Times](#)

### Clean Power Alliance to Move to 100% Renewable Energy

The Los Angeles County Board of Supervisors last week voted to shift from 50% to 100% renewable energy for county facilities and Clean Power Alliance customers in unincorporated areas over the next two to three years.

The new default will be 100% renewable energy, but residential and business customers will be able to opt out and request cheaper, less-green energy. The shift is expected to result in a price increase of roughly \$5 per month per customer.

Supervisor Sheila Kuehl said it could cut emissions by 6% and called it "the single most impactful action that this county can take to reduce our greenhouse gas emissions."

More: [CNS](#)

### Santa Clara to Require All-electric Heating, Appliances in New Buildings

The Santa Clara County Board of Supervisors last week passed an ordinance that will require new buildings in unincorporated parts of the county to install all-electric

appliances and heating systems, as well as include infrastructure for charging electric vehicles.

According to the ordinance, all new construction will be required to use electricity and not natural gas for water heating, space heating, cooking, clothes drying, indoor and outdoor fireplaces, and decorative appliances.

The ordinance will take effect as early as Feb. 14.

More: [County of Santa Clara](#)

### South Lake Tahoe Adopts Energy Plan

The South Lake Tahoe City Council last week unanimously adopted a resolution to become the first city in the country to adopt a community-wide goal of achieving 100% renewable electricity 24 hours a day, seven days a week by 2030.

The council adopted a resolution supporting the goal and providing direction to become only the third city in the country to join the United Nations 24/7 Carbon-Free Energy Compact. With the adoption of the resolution and by joining the UN's 24/7 CFE, the city commits to exploring a suite of local, renewable energy options.

More: [Tahoe Daily Tribune](#)

## MISSISSIPPI

### PSC Approves Rate Hike for Mississippi Power

The Public Service Commission last week approved a 96-cent rate hike for Mississippi Power to replenish its reserve intended to pay for storm damage to its infrastructure.

The increase will generate revenue of \$8.25 million annually and will be used to replenish the property damage reserve until it reaches a target balance of \$75 million.

The commission also approved a request by Entergy to modernize its transmission infrastructure in Franklin County. The company will spend \$13.8 million to expand a substation and other upgrades in the area.

More: [The Greenwood Commonwealth](#)

## NEBRASKA

### PSC Names New Executive Director

The Public Service Commission last week unanimously voted to name retired Army

National Guard Col. Thomas Golden its new executive director.

Golden, who retired from the National Guard in August, began his military career in the Army in 1989. He joined the Guard in 1993 and was assigned as its director of operations when he retired in August.

More: *Lincoln Journal Star*

## NEW YORK

### NYISO Sets Multiple New Records for Wind Production



NYISO broke its hourly wind production record twice between

Dec. 2 and Dec. 6 due to extremely blustery weather.

The first new record of 1,803 MW was set during the 10 p.m. hour on Dec. 2 but was surpassed by a 1,808 MW output during

the 10 p.m. hour on Dec. 6. The previous record of 1,748 MW was set during the 9 a.m. hour on Jan. 11, 2020.

The peak of 1,808 MW provided 11% of all energy consumed in New York.

More: *NYISO*

## WASHINGTON

### Shoreline Nixes Natural Gas in New Buildings

The Shoreline City Council last week unanimously approved a new energy code that prohibits most uses of fossil fuels in new commercial buildings and larger residential buildings.

However, the building of some homes with fossil-fuel hookups can continue in Shoreline past next year, as the state building code prohibits cities from imposing energy-use restrictions on single-family homes and other residences of less than four stories.

The measure will take effect in July 2022.

More: *KUOW*

## WEST VIRGINIA

### Hancock Commissioners Support Solar Project

Hancock County Commissioners last week voted 3-0 to send a letter to the Public Service Commission in support of a 50-MW utility-scale solar project.

Mon Power and its sister company, Potomac Edison, say the application supports a 2020 bill that authorizes utilities to own and operate up to 200 MW of renewable generation facilities to help meet the state's electricity needs.

The site being considered in Hancock County is a 51-acre parcel owned by Mon Power near its substation in the Sun Valley/Pleasants area.

More: *The Review*

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