RTO Insider

Your Eyes and Ears on the Organized Electric Markets

CAISO ■ ERCOT ■ ISO-NE ■ MISO ■ NYISO ■ PJM ■ SPP

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Gatekeeper or Facilitator? FERC Panels Debate EDCs' DER Role

By Rory D. Sweeney and Rich Heidorn Jr.

FERC's Technical Conference on DER continued Wednesday with four panels of speakers. | *© RTO Insider*

WASHINGTON — Panelists at day 2 of FERC's technical conference on distributed energy resources debated whether electric distribution companies (EDCs) should serve as gatekeepers or facilitators for resources seeking to participate in energy markets.

EDCs and their allies said they should have control over DERs on their systems, while DER supporters called for strict criteria on utilities' ability to block DERs.

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MISO Clears at $10/MW-day in 2018/19 Capacity Auction

By Amanda Durish Cook

MISO's sixth annual Planning Resource Auction cleared at $10/MW-day in all but one zone, a nearly seven-fold jump over last year's single clearing price of $1.50/MW-day.

The RTO reported clearing 135 GW of capacity on Thursday, with nine of its 10 local resource zones clearing at $10/MW-day. The lone outlier was Zone 1 — covering parts of Wisconsin, Minnesota and the Dakotas — which cleared at $1/MW-day. MISO's Independent Market Monitor has reviewed and certified the results.

"This year's auction results reflect an adequate availability of resources for the planning window and the grid's capability to effectively and efficiently transfer resources among local resource zones," MISO Executive Director of Market Operations Shawn McFarlane said in a press release.

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BNEF Future of Energy Summit

Also in this issue:

NJ Lawmakers Pass Nuke Subsidies, Boosted RPS

By Peter Key

New Jersey lawmakers on Thursday passed a pair of bills that could significantly shape the state's generation portfolio over the next decade.

One bill would provide two Public Service Enterprise Group nuclear power plants with subsidies costing ratepayers about $300 million per year. The other would require the state's power sellers to get half their electricity from renewable sources by 2030.

By a 29-7 vote, the state Senate passed S2313, which would create a zero-emission certificate (ZEC) subsidy for nuclear plant operators that can show the New Jersey

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IN THIS WEEK'S ISSUE

BNEF Future of Energy Summit

Lovins: We're Only Scratching the Surface on Energy Efficiency

By Rich Heidorn Jr.

NEW YORK — Amory Lovins knows the conventional wisdom on energy efficiency. And he doesn't buy it.

Economic theory says you stop investing in EE when the heat savings from insulation, for example, no longer outweighs the costs. But "integrative design" — optimizing buildings, vehicles and factories as whole systems rather than individual parts — changes the equation, he says.

Lovins, the visionary founder of the Rocky Mountain Institute, ascribes to Dwight Eisenhower's advice: "If a problem cannot be solved, enlarge it." Expanding the boundaries of the problem uncovers new options and synergies, he says.

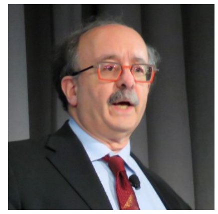
Thus, he told the Bloomberg New Energy Finance's Future of Energy Summit last week that electric intensity — which he said dropped a record 4.4% in 2017 — could fall even more dramatically in the future.

"If you keep investing well beyond that supposed cost-effectiveness limit, suddenly your marginal cost goes back down because now your house loses so little heat that it no longer needs a furnace, ducts, fans, pipes, pumps, wires, controls [and] fuel-supply arrangements," Lovins said.

Lovins displayed a photo of him with his latest harvest of bananas, grown in his 35-year-old passive solar home near Aspen, Colo. "Integrative design saved 99% of its heating energy and $1,100 of construction cost because the super insulation, super windows and so on cost less than the heating system they displaced," he said. "Now over 160,000 European buildings do this."

Fat, Short and Straight

Lovins cited the 2011 retrofits to the Empire State Building. Replacing 6,000 leaky windows with ones that pass light but block heat, plus improved lighting and office equipment, cut the skyscraper's energy costs by 38% and the peak cooling load by a third. "Then renovating smaller chillers instead of adding bigger ones saved over $17 million in capital cost, paying for most of those savings and cutting the payback to three years — the same payback as saving a sixth as much energy with standard disintegrative design."



Amory Lovins | *© RTO Insider*

Three years later, Lovins said, the retrofit of an office building in Denver reduced energy costs by 70%, "making this half-century old federal office more efficient than what was then the best new U.S. office, which in turn is less than half as efficient as [RMI's] own net positive, no mechanicals office. And now there's a German building using three-fifths less energy than ours."

The results were not from new technology, he said, but from design improvements. Making pipes and ducts "fat, short and straight rather than skinny, long and crooked as in normal practice," he said, eliminates at least 80% of the friction and energy consumption. "If that were done worldwide, it could save about half the world's coal-fired electricity. The payback is typically less than a year in retrofit and zero in new build. But this is hardly noticed because it's not a technology, it's a design method."

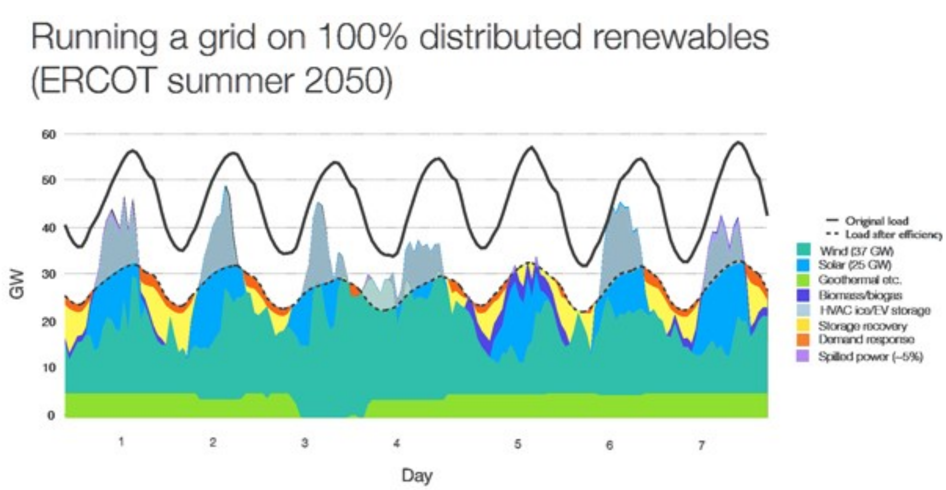
He also cited the engineers on the Tesla Model S, who realized batteries work better if prewarmed. "Many other components also needed heat added or removed at various times, so rather than separately heating or cooling each, they were all choreographed so that in each stage of driving, thermally linked coolant loops shuttle heat around from where it's not wanted to where it is. That means longer [battery] range, lower weight, lower cost. And not needing the radiator for first 50 km — which is longer than most trips — keeps it shuttered until needed, further improving aerodynamics."

An All-Renewables ERCOT

Lovins said ERCOT could address its steep late-afternoon ramp rate — the so-called "dead armadillo curve" — by moving to 100% distributed renewables, with 86% wind and solar PV, and the remaining 14% supplied by dispatchable renewables, including burning animal manure in existing gas turbines.

"Then match the load by putting the surplus electricity into two kinds of distributed storage worth buying anyway, namely ice storage air conditioning and smart charging of [electric vehicles]. And then recovering that energy when needed and filling the last gaps with unobtrusively flexible demand yields 100% renewable energy every hour of the year," he said. "Five percent annual spill, very low prices using no bulk storage but eight cheaper kinds of grid flexibility resources.

"Efficiency is not a dwindling, rising-cost resource like copper," he concluded. "Energy efficiency resources are ubiquitous and infinitely expandable assemblages of ideas depleting nothing but stupidity — a very abundant resource. So, to all you smart designers, I give you this charge: Blessed be your negawatts. Go forth and be fruitful and subtract."



| *Rocky Mountain Institute*

BNEF Future of Energy Summit

Overheard

NEW YORK — Hundreds of investors, utility executives and others gathered last week for Bloomberg New Energy Finance's Future of Energy Summit, where electric vehicles, energy storage and renewables dominated discussions. Here's some highlights.

Hundreds of investors, utility executives and others gathered last week for Bloomberg New Energy Finance's Future of Energy Summit, where electric vehicles, energy storage and renewables dominated discussions. | © *RTO Insider*

Murray Weeps over a Future Without Coal

Robert Murray has been trying for more than a year to persuade President Trump and Energy Secretary Rick Perry to provide subsidies for the utilities that buy Murray Energy's coal. (See *Photos Show Murray's Role in Perry Coal NOPR*.)

Last week, he took his message — that the grid cannot be resilient without coal generation — to a skeptical audience at the BNEF conference.

"I'm probably the only coal guy in the room. I'm also an American," he said, pausing to gather his composure after tearing up. "The recent polar vortex shows our grid is not as reliable as grid operators would like you to believe."

Murray criticized FERC for rejecting Perry's proposal to subsidize coal and nuclear plants with onsite fuel and said Perry should approve FirstEnergy's request for an emergency declaration to protect coal plants. (See *Perry Hints DOE Won't Grant FES 'Emergency' Request*.)

The declaration "has to be [made] or we're going to have a disaster. ... Will we have to have a system collapse before recognizing that something has to be done about the security, resiliency and reliability of the power grid?" he asked. "Barely one-half of [remaining coal] plants generate enough revenue to cover their expenses. There has to be a capacity payment there."

Robert Murray | © *RTO Insider*

Lynn Doan, head of power and renewables for Bloomberg News, asked Murray about reports by NERC and others that some coal plants were unable to run during recent cold spells because of frozen coal piles. "Did not happen ma'am," he insisted.

"The poorest 25 million families in this country are putting out 31% of their income for energy — gasoline, oil and electricity," he continued. "We have an energy poverty problem in this country. We don't have a global warming problem.

"All of you are building your businesses around climate change. The best thing that could happen is overturning the [EPA's CO_2] endangerment finding — that artificial thing that has put political correctness ahead of getting the lowest-cost electricity for the people on fixed income, for that single mom, for that manufacturer."

Power Markets Under Stress

Although most of the conference focused on advances in renewable technologies, there was some discussion of the impact of those resources on organized power markets.

"We know that clean, zero-marginal cost energy does fundamentally change the way the power markets work," said Albert Cheung, BNEF's head of global analysis. He cited BNEF modeling on the impact of adding 5 GW of solar in Texas. "It creates $300 million going toward solar. But you also destroy about $2 billion worth of revenue for other generators, whether it's gas or coal or wind or nuclear. In California we already see this happening," he said, with even solar "cannibalizing itself already."

"Be wary of capacity mechanisms which bake in solutions of the past," he added.

Former FERC Commissioner Nora Mead Brownell said she is confident organized competitive power markets will survive state and federal interventions to protect favored generation resources.

"I think it's easy to sit in a vertically integrated market where you have elected regulators who pretty much approve what [utilities] wish and say this life is perfect. What we've seen in organized markets is a decrease in price, an increase in innovation and an increase in reliability and investment."

FERC, she said, is acting properly in considering market redesigns to respond to decreased prices resulting from renewables and cheap shale gas. "They're doing it in a methodical way based on a fact pattern, unlike kind of throwing subsidies at old solutions. They want to keep the market open for this continuing innovation that you will only see if you let the market drive decisions. You don't see big huge mistakes in organized markets with big huge ratepayer-funded R&D projects. You don't see that at all. There's financial discipline, there's transparency and there is encouragement of new solutions. It's not happen-

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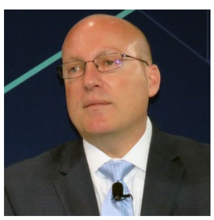
BNEF Future of Energy Summit

Solar Industry Looks for Bright Spots on Tariffs

By Rich Heidorn Jr.

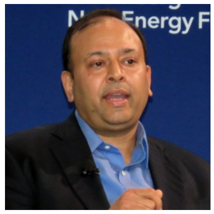
NEW YORK — Solar industry officials last week expressed confidence that the sector will continue to grow despite the Trump administration's tariffs on imported solar cells and modules. But they told Bloomberg New Energy Finance's Future of Energy Summit that the levies have hurt in the short term.

"They were more of a punch to the gut than a complete decapitation, which is what we feared," said **Abigail Hopper**, CEO of the Solar Energy Industries Association. "And so, while they will certainly have a dampening effect on the industry — and I think we'll see that for years — I feel fairly confident that it will continue to grow."



"It certainly slowed things down. We were seeing a slowing of project flow," said **Scott Wiater**, CEO of Standard Solar, which provides financing and management of utility-scale solar projects. "But recently we've seen it start to pick up tremendously. I think a lot of developers have been sitting on projects, waiting for the tariff decision and tax [legislation] to settle down. [There was also] some seasonality thrown in there. And now we're really starting to see it ramp back up.

"I do think in some states where it's a difficult environment [to operate] it may have iced the markets. But in states that are solar-friendly, I think we're going to hit the ground running."



Vikram Aggarwal, CEO of EnergySage, which provides a portal for homeowners researching pre-screened rooftop PV installers, agreed that the impact has varied by geography.

Aggarwal said a survey of his company's installers indicated two-thirds planned to absorb all or most of the cost increases, with one-third saying they would pass most of the increases to consumers.

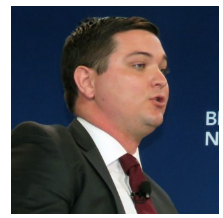
"It actually seems like it's playing out that way. … We're seeing prices roughly 1% down on a national basis compared to last year. In certain markets like California, the prices are actually down quite a bit. In markets that are less developed, less mature, prices are trending up. It's a tale of two cities."

Aggarwal said consumers have not been scared away by the tariffs. "The consumer interest is actually very strong this quarter. We're running about 150 to 200% above year-over-year."

Wiater said he has no fear of higher prices squelching consumer interest. "I think we may have an oversupply situation coming very quickly and prices could come down below what … analysts are expecting very quickly."

Hopper said the tariff debate brought it new conservative allies in D.C., with the American Legislative Exchange Council (ALEC), the Heritage Foundation and R Street Group joining SEIA in opposing the levies.

Portrayals of the solar industry as split over the tariff debate were inaccurate, she said. "It really was two companies [who filed the complaint that prompted the tariffs] against 1,000 others." She said about 20 solar companies have reported the loss of jobs or investments. "It is serious and harmful," she said. (See *Tariff to Pinch US Solar Growth; Factory Surge Unlikely*.)



The solar industry lost 10,000 jobs (3.8%) last year, dropping to 250,271, according to the Solar Foundation's National Solar Jobs Census. It was the first year-over-year drop in employment, said **Hugh Bromley**, head of U.S. solar for BNEF, who moderated the discussion.

Even so, 29 states added solar jobs. The prospects of job growth has helped open doors for the industry, Hopper said.

"In terms of electricity generation, solar creates more jobs than all fossil fuels combined, which is an incredible statistic that now more people in Washington know," she said. "One of the great outcomes [of the tariff case] was we did so much education among all these brand new policymakers in Washington. And when we talk about the amount of jobs, and the jobs in relation to other industries and other fuel sources, that was always a point on which I felt like we're getting traction. Because we're now talking about jobs in lots and lots of red states."

Overheard

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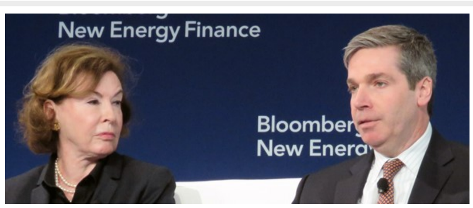
ing fast enough … but I think it's moving forward now. So, we need to step back and make economic decisions and not political decisions."

Storage vs. Gas?

David Nason, CEO of GE Financial Services, was asked whether he sees storage as a threat to investments in gas-fired generation.



Nora Mead Brownell and David Nason | *© RTO Insider*

"I don't know if storage is a complete competitor to gas yet," he said. "It's just one of the variables that we [consider in projecting] a long-term return for these investments. The difficulty with investing in gas without a structured market or without [power purchase agreements] is that these are 30-year, very capital-intensive investments. So, if I can't get some level of confidence that I'm going to get an adequate return on my cost of capital, I'm just never going to put the money to work there."

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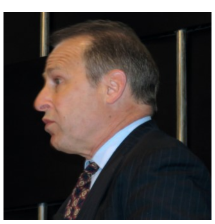
Seeking Deeper Penetration for Electric Vehicles

Reza Shaybani, co-founder and interim CEO of The EV Network, said the EV industry must not be paralyzed by concerns over which charging technologies and business models will survive. "This is going to evolve. This is going to change. What we see today is not necessarily going to be the future business model," he said. "But it has to start from somewhere."

Shaybani's company, which is developing the charging infrastructure in the U.K., conducted a survey of EV buyers in the country and found that 90% were "middle-age men, well educated, very affluent and living in the Southeast and they have at least two or three other cars in their household. That's … not going to take this revolution forward."

The revolution will need cheaper vehicles and many more charging stations so that the drive from London to Manchester takes only three hours. "That should not take 18 hours if you are going to stop every 150 miles to charge," he said.



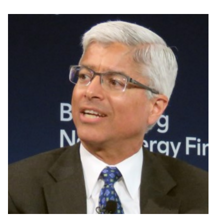
Bryan Urban, executive vice president of Leclanche North America, said there is already a compelling business case for EVs and fast-charging infrastructure for mass transit and fleet vehicles. His company is conducting a pilot project in India for its plan to separate city buses from the batteries to make the capital expenditure model similar to that for diesel vehicles.

The company's plan — which he dubbed, "taking the sun and putting it on the run" — replaces buses' depleted batteries for charged ones three or four times daily, a swap which he says takes about three minutes each.

Mary Nichols, chair of the California Air Resources Board, said EVs need more marketing. "Even in California, where we pride ourselves that half of all EVs have been sold in the U.S., we … have done polls that show most people who are in the market for a new car aren't even aware that there might be an electric car that could serve their needs," she said. "So, we have a long way to go to really penetrate the thinking of customers."

Nichols talked of Nissan's hope to lease the batteries for its Leaf when it launched the first widely available all-electric car in Los Angeles. The plan was to include a mileage guarantee on the batteries, like the miles-per-gallon ratings for gasoline vehicles. "The only way they could do that at a level price was if they could negotiate with the electric utilities a product that would cut across state lines and local lines," she said. "And after a period of time, they gave up on that idea. There was no practical way to do it."

"And that's in a relatively vertically integrated market, as most of the Western U.S. is," added **Colin McKerracher**, the head of BNEF's advanced transportation coverage. "It's … even harder if you were to be in an unbundled market."



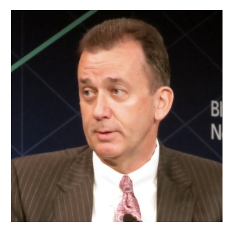
Utilities are "unfortunately a very fragmented industry in the United States," acknowledged **Pedro Pizzaro**, CEO of Edison International. "I think as an industry, we realize that and we're trying to come to terms with that to help solve that issue. … We get your point, that from an automaker perspective or from a charger manufacturer perspective, they're looking for as cohesive a national market as possible."

LNG: No Glut Worries

Speakers at a panel on U.S. LNG exports expressed little concern over a potential glut in supply.

Meg Gentle, CEO of LNG exporter Tellurian, said she expects strong demand from China, which is converting coal furnaces to gas and adding natural gas-powered autos. Gas only represents 6% of total primary energy in the country, she said. Boosting that share to 10% would represent a nearly 70% increase in Chinese demand for the fuel.

She predicted Henry Hub benchmark prices will stay at $3/MMBtu or less for the foreseeable future, noting that it can now be produced for less than $1.

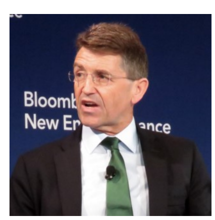


Greg Vesey, CEO of LNG Limited, which provides liquefaction for LNG export terminals, said he expects demand for gas to continue despite the growth of energy storage.

"Obviously the trend toward renewables and the need for storage with those is something to keep watching. … But in all cases, natural gas is going to provide that backup," he said. "It's been called the bridge fuel. I think we're going to see that for a long time."

> **"… natural gas is going to provide that backup. It's been called the bridge fuel. I think we're going to see that for a long time."**
>
> **Greg Vesey, LNG Limited**

Peak Oil Demand by 2035?



Even if EVs supplant internal combustion vehicles, BP Chief Financial Officer **Brian Gilvary** said, oil will remain a "baseload" fuel.

"When I first joined the industry 32 years

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BNEF Future of Energy Summit

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ago, people talked about peak oil supply. We now talk about peak oil demand," he said. BP projects that peak to hit between 2035 and 2040.

"But we don't think of it as a peak; we think of it as a plateau," he added. Even under a scenario in which all internal combustion engines are banned by 2040, "we can see oil demand plateauing at round about 100 million barrels, which is what it is today."

Rob Threlked (left) and Conor McKenna | © *RTO Insider*

Corporate Purchasing of Renewables

Rob Threlkeld, global manager for renewable energy General Motors, said he's been encouraged by the increasing number of utilities offering "green" tariffs to corporate buyers who want to purchase renewables. "I want price stability. I want to be able to understand what my costs are today and tomorrow. That allows me to be able to then [make] long-term commitments."

"For a while, there was this huge tension between the renewable energy market and the regulated utilities. There was a significant pushback for years and years," said Conor McKenna, managing director at investment bank CohnReznick Capital. "It was like when you were going into the regulated markets, you just had to put your mouthpiece in because it would be a battle. Now it feels like a lot of the guys that are coming to us [to deploy renewables] are regulated utilities [asking], 'How can we incorporate a greater allocation of these resources into our portfolio?'"

— Rich Heidorn Jr.

CAISO NEWS

CPUC to Vote on $98M PG&E Settlement

New Disclosures to Spur Additional Proceeding

By Jason Fordney

The California Public Utilities Commission will vote later this month on a $98 million settlement agreement regarding its own improper communications with Pacific Gas and Electric related to the fatal 2010 San Bruno gas pipeline explosion and other matters.

The commission will vote April 26 on the proposed decision of Administrative Law Judge Robert Mason regarding *ex parte* communications with PG&E after the company's San Bruno pipeline exploded and killed eight people, as well as seven other proceedings.

The five current commissioners were not involved with the improper communications several years ago. The parties listed on the settlement include PG&E, the city of San Bruno, The Utility Reform Network (TURN), city of San Carlos, and the CPUC's Office of Ratepayer Advocates and Safety and Enforcement Division.

But the agreement does not close the San Bruno *ex parte* matter, instead kicking off a new proceeding to explore additional archived emails that PG&E provided to the CPUC in September 2017 that rocked the yearslong settlement process. (See *Probe Reveals More CPUC-PG&E Contacts on Pipeline Blast*.)

"This proceeding shall remain open to consider whether PG&E's newly disclosed email communications violate the commission's *ex parte* rules and should result in the imposition of additional fines," the settlement says.

PG&E said the new batch of emails it submitted to the CPUC last September in the *ex parte* proceeding were "a recent development" from an unrelated government agency inquiry. The utility said that while the emails dating from 2013 and 2014 were new, "their general nature is not new."

The "unrelated government agency inquiry" that PG&E referred to appears to be a concurrent investigation into former CPUC Commissioner Susan P. Kennedy that directed her to provide the California Fair Political Practices Commission with communications from 2012 to 2017. The investigation sought communications between the PUC and Kennedy and others at her company, Caliber Strategies, that mention PG&E and legal, legislative or regulatory actions regarding the San Bruno explosion, as well as other matters.

That CFPPC investigation led to a $32,000 fine against Kennedy in February for unreported lobbying for ride-sharing company Lyft and San Gabriel Valley Water Co., an investor-owned public water utility, but the CFPPC decision did not mention any communications with PG&E. (See *Former CPUC Member Fined for Lobbying Violations*.)

Kennedy was chief of staff for former Gov. Arnold Schwarzenegger, deputy chief of staff and cabinet secretary for former Gov. Gray Davis and previously communications director for U.S. Sen. Dianne Feinstein. She is also founder of Advanced Microgrid Solutions (AMS), a prominent California energy storage company whose investors include Schwarzenegger.

TURN was successful in pressuring the CPUC to consider the emails submitted by PG&E in September separately from the agreement to be voted on this month, rather than lumping them together with the previous violations. But TURN spokeswoman Mindy Spatt told *RTO Insider* last week that the provisions could still be changed in

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CAISO NEWS

Most of West Signs up for CAISO RC Services

By Jason Fordney

FOLSOM, Calif. — At its first public meeting with potential customers of its reliability coordinator (RC) services Thursday, CAISO divulged that most of the load in the West has signed letters of intent for the new program.

Phil Pettingill | *© RTO Insider*

In response to a question, CAISO Regional Integration Director Phil Pettingill said he could not say publicly who has signed letters of intent and nondisclosure agreements to receive RC services.

"What I feel like I can say is, most of the load that is in the Western Interconnection has signed those agreements with us," Pettingill said. "We are really talking to almost everybody."

He added that the letters of intent are not binding and can be withdrawn. The notifications that have been sent to Peak Reliability from customers planning to depart its RC program are also nonbinding.

NERC's reliability standards require balancing authorities and transmission operators to procure RC services, which include outage coordination, real-time situation awareness, and system restoration coordination and training.

CAISO on April 5 issued its initial proposal for RC services, which it hopes to have running by May 2019. The ISO and Peak are also developing competing proposals for new energy markets that could develop into a full RTO. (See *Multiple Entities, Markets Now Beckon in West*.)

CAISO is now developing prices for its supplemental, non-core RC services, such as hosting advanced applications and addressing certain critical infrastructure protection services, Pettingill said in a presentation.

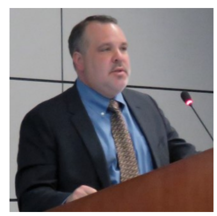
The ISO says its RC services will be much cheaper than Peak's, but Peak countered that the comparison is not straightforward because Peak has more RC experience and offers certain customer services such as the WECC Interchange Tool, the Enhanced Curtailment Calculator and the Peak Synchrophasor Project. (See *CAISO RC Plan Undercuts Peak Rates* and *Peak/PJM Enter Western Market 'Commitment Phase'*.)

In developing the RC services, the ISO will issue straw proposals and gather feedback to revise the initiatives. The final proposal will be subject to approval by the Board of Governors and FERC.

CAISO hopes for the commission's approval in October.

The goal is for potential RC customers to export their network models by August and begin data integration and system verification in January 2019. RC service agreements would be executed in November with much of the integration and testing occurring next year, Pettingill said.

CAISO will use its "activity-based costing system," which has been used for all rate design initiatives since 2011, to determine the costs of RC services.



Ryan Seghesio | *© RTO Insider*

About 6% of CAISO's annual costs would be allocated to RC services in the revenue requirement for 2019 and 2020 rates, CAISO CFO and Treasurer Ryan Seghesio said Thursday.

"The ISO is committed to a really level, stable revenue requirement," Seghesio said. CAISO's revenue requirement of $190 million to $200 million has been stable for about 11 years. There is a FERC-approved $202 million cap on the revenue requirement, he said, to prevent surprises for market participants.

CPUC to Vote on $98M PG&E Settlement

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PG&E's favor before April 26. Still, she said the settlement "looks pretty good from our perspective."

The CPUC said the settlement agreement "has, to a great extent, put an end to years of disputes … that has spanned at least nine separate proceedings following the San Bruno tragedy."

Settlement Mentions Ferron, Florio, Peevey

The new settlement document describes some of the *ex parte* communications at issue, including an email from PG&E consultant Jerry Hallisey to then-PG&E Vice President Brian Cherry in September 2011. The email described a meeting with then-CPUC Commissioner Mark Ferron to discuss support for a gas pipeline project and cost-splitting between shareholders and ratepayers. Ferron served on the CPUC from 2011 to 2014 and is now a member of the CAISO Board of Governors.

Also listed is a November 2011 email from Hallisey to Cherry and others that described meetings with former CPUC Commissioner Mike Florio, now a private consultant, regarding cost recovery and pipelines.

It also lists an email from Kennedy to Cherry that summarized a meeting with former CPUC Chair Michael Peevey and Kennedy regarding "an independent forensics analysis."

A Jan. 1, 2013, email from Cherry to PG&E Senior Vice President Thomas Bottorff described Cherry's meeting with Peevey regarding gas settlement mediation and return on equity changes, among other exchanges.

In a separate matter, Peevey's unreported *ex parte* communications with Southern California Edison during negotiations of the San Onofre nuclear plant closure led to a reworking of the $4.7 billion deal. (See *CPUC Orders Renegotiation of San Onofre Settlement*.) Peevey resigned from the CPUC at the end of 2014.

CAISO News

FERC Rejects CAISO CPM Proposal

By Jason Fordney

FERC last week rejected a major CAISO proposal to expand its backstop procurement process to prevent the early retirement of generation needed to maintain near-term reliability, saying the grid operator needs to "propose a more comprehensive package of reforms."

In its April 12 order (ER18-641), FERC sided with parties that had protested CAISO's Capacity Procurement Mechanism Risk-of-Retirement (CPM ROR) program, including the California Public Utilities Commission, six California cities, the state's three investor-owned utilities and the ISO's Department of Market Monitoring.

"We find that CAISO has not adequately demonstrated that its proposal addresses the front-running concerns raised by protesters and that the proposal will avoid potentially deleterious effects on the competitiveness of capacity procurement under CPUC's resource adequacy program," FERC said.

CAISO spokesman Steven Greenlee said Friday that the ISO is reviewing the order "and will be considering our next steps as part of the ongoing stakeholder process." In recent meetings, ISO officials have been telling market participants they expected FERC to approve the rule changes.

But stakeholders had been critical of the program throughout the development process. (See *CAISO Participants Question Retirement Program*.) The ISO also has another package of related changes under development that is also raising thorny issues over reliability and compensation of resources. (See *CAISO, Stakeholders Debate RMR Revisions*.)

CAISO has two major backstop procurement programs, CPM and its mandatory reliability-must-run program that is also raising stakeholder objections for providing out-of-market payments to keep gas-fired generators online. The ISO is considering merging the two programs.

The rejected CPM ROR program would have expanded the existing CPM process to include procurement of at-risk capacity needed for the next resource adequacy compliance year. The process would have included two request windows for generators to seek a CPM designation, one in April and other in November of each year. FERC said that in practice, CAISO currently makes the designation in mid-December at the earliest for the following year, which generation owners complained occurs too late in the year for their planning decisions.

But the CPUC argued that the spring application window would allow resources to "front-run" its resource adequacy process and could lead to other gaming by resources because CPM revenues might exceed market revenues. IOUs raised concerns that a more holistic approach is needed and that CAISO did not consider the interplay with RMR, which is a mandatory contract unlike the voluntary CPM.

The CPUC has also battled with CAISO over RMR designations for gas units, and in February it hastily crafted and passed an order mandating that CAISO-approved RMRs be replaced with energy storage by 2019. (See *CPUC Targets CAISO's Calpine RMRs*.)

Stakeholders also complained that the CPM proposal's cost-based compensation provides for full cost recovery while also allowing resources to retain revenues earned in the ISO's market. The Monitor had argued the units should not receive compensation beyond their cost of service, and that the changes could affect the bilateral resource adequacy market.

CAISO had contended that "front-running" of the RA process would not occur, but FERC said "the potential for the spring request window to distort prices or otherwise interfere with the bilateral resource adequacy process have merit and are significant enough to render CAISO's proposal unjust and unreasonable."

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CAISO NEWS

ETRACOM Pays $1.9M Fine for CAISO Manipulation

By Jason Fordney

Delaware-based trading company ETRACOM agreed to pay $1.9 million to settle allegations that it manipulated CAISO markets in a scheme that netted the company $315,000 in profits.

But the company also issued a statement dismissing the allegations by FERC's Office of Enforcement as "absurd theories."

An April 10 FERC order approving a consent agreement (IN16-2) with ETRACOM shows the company and principal trader Michael Rosenberg — also a respondent but not listed as paying the fine — neither admitted nor denied the accusations. ETRACOM agreed to pay the fine for submitting virtual supply transactions intended to reduce the day-ahead LMP and increase congestion at the New Melones intertie in 2011.

FERC in 2016 sought a $2.4 million civil penalty from the company and a $100,000 penalty from Rosenberg in addition to disgorging profits. (See *FERC Seeks $2.5M Fine in CAISO Market Manipulation*.) ETRACOM said that FERC had "dropped its long-standing position that an individual trader in this case be assessed a civil penalty."

The commission said the agreement "is a fair and equitable resolution of the matters concerned and is in the public interest, as it reflects the nature and seriousness of the conduct and recognizes the specific considerations" stated in the agreement, which is not subject to appeal.

The decision specifies disgorgement by ETRACOM of $315,000 plus interest of $84,000 to be paid to CAISO for distribution to market participants impacted by the company's trading.

In the order, the commission noted it had filed a lawsuit in U.S. District Court for the Eastern District of California to request an order affirming the penalties. In its statement, ETRACOM said it had opposed the lawsuit and been victorious in winning full discovery rights under a *de novo* standard of review, entering mediation with FERC to produce the settlement.

ETRACOM said it "opposed Enforcement's brazen misinterpretation and manipulation of the record; absurd theories which rest on reverse engineering of conclusions to produce a 'fraud by hindsight;' reliance on circumstantial inferences unhinged from the facts; ignoring of significant exculpatory evidence; and inappropriate 'sandbagging' in reply to ETRACOM filings."

It added that "regardless of the outcome of our case, ETRACOM remains optimistic on the role of FERC in regulating and enforcing energy markets and on long-term reform of the enforcement process." The company agreed to develop and implement a compliance program based on FERC's November 2016 "Staff White Paper on Effective Energy Trading Compliance Practices."

FERC Enforcement alleged that in May 2011, ETRACOM submitted and cleared uneconomic virtual supply transactions intended to artificially lower the day-ahead LMP and create import congestion at New Melones. ETRACOM's virtual supply offers resulted in a $42,481 loss, while FERC staff estimate the company earned $315,000 in profits on its congestion revenue rights positions. Staff estimated the alleged scheme resulted in the market overpaying all New Melones CRR source holders, including ETRACOM, $1.5 million. The overpayment was funded by New Melones CRR sink holders and revenue inadequacy.

The company has long contended that the losses were because of market flaws and that it had rationally attempted to profit from a record hydro event in May 2011 that caused congestion at the New Melones intertie node. But FERC argued that market flaws were irrelevant to the case. (See *FERC: Market Flaws Irrelevant to Case*.)

ETRACOM pointed to an investigation that "dragged on for over five years and which saw a kaleidoscope of lead attorneys and their bosses with the diffusion of individual responsibility becoming the norm at Enforcement." The company's legal and subject matter team was also extensive, including Robert Fleishman of Morrison & Foerster, Matthew Connolly of Nutter McClennen & Fish and former FERC Chairman William Massey, now of Covington & Burling.

The agreement represents one of a series of high-profile challenges by market participants to FERC Enforcement against alleged market manipulation, including a case against Powhatan Energy Fund that resulted in the agency having to conduct a *de novo* review. (See *FERC Loses Again on 'De Novo' Review*.) Last November, FERC agreed to heavily reduce a fine against Barclays Banks for market manipulation in Western markets years ago. (See *FERC Settlement Cuts Barclays Market Manipulation Fine*.)

FERC Rejects CAISO CPM Proposal

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FERC also said that CAISO's development of the current package of RMR/CPM changes indicate a need to more closely align the two programs. The commission said there is a "need to evaluate the fundamental reliability and market factors associated with resource adequacy as a whole."

The commission said CAISO should revisit the issues of RMR/CPM compensation, evaluate whether both need to be retained and examine how the CPM designations could affect procurement. CAISO will make quarterly filings beginning June 1 to give updates on the stakeholder process and any changes that occur as it progresses. FERC said it would not move or act on the filings.

Calpine's Yuba City plant | © *RTO Insider*

ERCOT NEWS

Texas Regulators Seek More Details on SPS Wind Project

By Tom Kleckner

Texas regulators last week pressed Southwestern Public Service for more details to justify its plan to build 1.23 GW of wind generation even though it doesn't need the capacity.

The company and parties to a settlement over the project agreed to file additional written comments to its application for construction (Docket No. 46936).

The Texas Public Utility Commission's staff has issued a conditional approval of the wind farms' construction, but the commissioners expressed reservations.

"Where I am now, you're not going to like the answer," PUC Chair DeAnn Walker told the parties to the agreement during an April 13 open meeting. "The more information you can provide me, the more likely it is you can satisfy the concerns I have."

Walker raised a number of issues with the parties, the central one being "upon what legal basis" the PUC can grant an application for new generation "when the applicant admits that there is currently sufficient generating capacity on its system to serve its customers?"

SPS announced last year that it intended to build a pair of wind farms in Texas and New Mexico and secure a long-term contract for energy from another facility as part of parent Xcel Energy's multistate investment in wind. Xcel said the projects are expected to save the region's customers about $2.8 billion over a 30-year period.

The company said in March it had reached an agreement with commission staff, the International Brotherhood of Electrical Workers and Lea County Electric Cooperative. SPS said nine other parties in the docket do not oppose the company's request. The State Office of Administrative Hearings has admitted the settlement testimony into the record and remanded the case back to the PUC without holding a hearing.

Commissioner Arthur D'Andrea echoed Walker's comments, saying he had "strong discomfort" with the deal.

"The fact it's a settlement makes it more difficult to see what's going on," D'Andrea said. "My understanding is that the usual role of the commission is to approve something that looks like a taxing authority. The utility, in return, builds generation. This looks like billions of dollars in taxing authority and in return, the citizens get a wind deal and production tax credits."

SPS President David Hudson responded that the generation would save ratepayers money through avoided fuel costs from other generation and the production tax credits (PTCs). He said the project qualified for 100% of the PTCs by purchasing wind turbines in 2016.

"PTCs at 100% value are pretty substantial," Hudson said, noting the rate would be more than 3 cents/kWh after revenue requirement tax calculations. "That's it automatic flow back to customers as a benefit, plus the avoided fuel costs. So, it's true, [customers] will be paying the capital cost for the investment and recovery in base rates, but they'll be getting substantial benefits through … zero-fuel energy and credit for the [PTCs]."

"I appreciate you are being creative," D'Andrea said. "I'm not trying to say, 'Spend a half billion on coal plants and improve the scrubbers.' I wouldn't want to throw bad money after bad money. I'm a little worried this goes too far. You basically say you don't need this generation and that this is purely a financial play. That seems to be a strange thing for us to be approving."

Attorney Rex VanMiddlesworth, representing Texas Industrial Energy Consumers, agreed with D'Andrea that SPS' application is "unusual" but said that if there's an "honest broker" in the proceeding, it's his consumers group.

"Our jaundiced view of the utility is they make money, whether a plant is economical or not," VanMiddlesworth said. "We want to look at whether this is good for the ratepayers. There's a lot of risk. What if it goes over budget or doesn't perform well? We ultimately concluded that this plant was very likely going to save Texas ratepayers hundreds of millions of dollars over its life."

D'Andrea said he could support the project based on its economics, but that he needed more than a handful of spreadsheets before rendering a decision.

The parties promised to supply the commissioners with additional information in a week. The PUC next meets in open session April 27.

SPS has proposed building a 478-MW wind farm in West Texas and a 522-MW facility in New Mexico, though only the Texas project is part of the proceeding. The company also plans a 30-year power purchase agreement for an additional 230 MW of wind generation from Bonita Wind Energy, a NextEra Energy Resources subsidiary.

PUC Approves Transfer of Bankrupt ExGen's Assets

The commission also approved the transfer of nearly 3.5 GW of gas-fired power plants

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ERCOT News

Board of Directors Briefs

Small Public Power Group's Appeal Again Meets Defeat

ERCOT's Board of Directors last week rejected an appeal by small public power distributors seeking a proposed change to the ISO's Nodal Operating Guide regarding the definition of transmission owners.

The revision request (NOGRR149) exempts municipal distribution service providers without transmission or generation facilities from having to procure designated transmission owner (DTO) services from a third-party provider if their annual peak load is less than 25 MW. ERCOT's Technical Advisory Committee in February unanimously rebuffed an appeal of an early subcommittee's rejection of the NOGGR after it had been tabled for more than a year. (See "Members Reject Appeal from Small Municipalities," *ERCOT Technical Advisory Committee Briefs: Feb. 22, 2018*.)

The proposal was developed in 2015 to settle the noncompliant status of six municipally owned utilities with loads of 9 to 21 MW as the Texas Public Utility Commission's staff began to look into the issue. However, the NOGGR has never received a positive vote as it moved through the stakeholder process, being rejected three times and tabled nine times.

"Typically, by the time TAC considers a proposal, it has enough consensus to move the initiative forward," said the Office of Public Utility Counsel's Diana Coleman, advocating the TAC's position during the April 10 board meeting. "All 30 TAC members were there, and it didn't receive one positive vote."


Craven Crowell

Pointing to the unanimous vote against the NOGRR at the TAC, board Chair Craven Crowell said, "This particular appeal doesn't have any legs under it."

ERCOT CEO Bill Magness told the board that accepting the appeal would be granting an "overly broad" exemption to as many as 53 eligible systems, which represent about 600 MW of the grid's load.

"If we get into a load shed situation in the ERCOT system, we're going to ask for the load shed that we need to solve a reliability problem," Magness said. "It's going to be distributed out to the participants in the markets to make it happen. We're going to solve the reliability problem. … Being a part of the [ERCOT] system has its benefits and obligations, and one of those obligations is to participate in load shed."

Tom Anson, legal counsel to the municipalities under the Small Public Power Group (SPPG), said his members have not been able to reach an agreement with transmission service providers to be their DTOs. He said the SPPG members faces "hundreds of thousands of dollars" to self-designate as DTOs.


Tom Anson

"I know ERCOT is reluctant to grant exemptions, but it's the cleanest thing to do," Anson said. "It would conform the ERCOT rules to the reality that these small systems just don't have enough load or other resources to justify the expenditure of the kinds of money to build the substations or other parts of interconnections — all of which, if done, would not increase ERCOT reliability. They would be spending lots of money, but getting no reliability benefits."

Anson said he was offering a clean solution to the problem, because SPPG members and the larger transmission providers wouldn't have to continue looking for market solutions.

"Despite lots of hard work, and some progress, we still don't have permanent solutions in place for all of them. That's because there is no instant infrastructure, and ERCOT doesn't control action of third parties. It's a clean solution because if we want to pursue other rule revisions, time and effort would be avoided."

The board denied the appeal by a 12-1 vote, with two members abstaining. Carolyn Shellman, who represents the municipal market segment and serves as

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Texas Regulators Seek More Details on SPS Wind Project

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from bankrupt merchant generator ExGen Texas Power to its creditors: Fidelity Management & Research, Fortress Credit Advisors, GSO/Blackstone Debt Funds Management, Guggenheim Partners Investment Management, Oppenheimer Funds, PineBridge Investments and Avenue Capital Management.

Walker and D'Andrea agreed with staff's recommendation to approve the transfer, which staff noted would give ExGen and the creditors and affiliates a combined 7.6 GW of capacity, 8.2% of the generation capacity in ERCOT or capable of delivery into the grid (Docket No. 47836).

"As the total combined capacity is below the 20% threshold, necessarily, the capacity owned and controlled by each applicant individually is also below the 20% threshold," staff wrote.

ExGen, an Exelon subsidiary, filed for Chapter 11 bankruptcy in November, blaming low wholesale prices due to cheap gas and increasing wind production.

The five plants are: Wolf Hollow I, Colorado Bend I, Mountain Creek, LaPort and Handley.

Non-IOUs to be Added to Rate Review Schedule

The commissioners adopted a new rate review schedule for investor-owned utilities and asked staff to include non-IOUs in the same rule (Docket No. 47545).

The rule revision implements the provisions of Texas SB 735.

Staff's proposal sets a schedule for 10 IOUs, beginning with Texas-New Mexico Power in August and ending with Oncor in October 2021.

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CPS Energy's general counsel, was the lone member to vote in favor of the appeal.

Noting the importance of compliance with operating guides and the rule of law, Shellman struggled to balance that with carving out exemptions for "very small groups of entities … that are doing everything necessary to comply if they can."

"The small power group has some unusual circumstances that may warrant looking at them differently," she said. "I'm not in favor of a 25-MW exemption … but we do have a solution that works in the market and recognizes the importance of rules. I hate to reject the appeal and send it to the commission that is obligated to enforce the rules we have. I'd hate for them to be in a position to impose penalties that could be devastating on very small systems."

The SPPG has 35 days to appeal the board's action, or it can start an appeal process within the TAC by providing different alternatives or language to resolve the issue.

"These small systems are caught between a rock and a hard place," Anson said. "We're open to all creative ideas, and we welcome anyone's thoughts."

"TAC is willing and looks forward to working with the SPPG," Coleman said. "It has indicated some of its alternatives would require additional revision requests. We look forward to getting those resolved."

Tight Summer Conditions Subject of Conversation

Magness said the ISO sees "tight conditions" this summer, not surprising given the surge of coal-fired plant retirements last year that halved ERCOT's planning reserve margin to 9.3%, 4 percentage points below its 13.75% target. (See *ERCOT: Tight Summer Margins No Cause for Alarm*.)

"We see sufficient generation [this summer], based on normal conditions," Magness said. "We could be tested in abnormal situations, based on the tightness of the system."

Staff have said they have numerous tools at their disposal to help meet what is expected to be a record summer demand of almost 73 GW, including ancillary services, demand response and generators capable of switching between neighboring grids. ERCOT is also working to remove reliability unit commitment (RUC) capacity from its operating reserve demand curve (ORDC), a move that is expected to result in more accurate scarcity pricing (see below).


DeAnn Walker

Texas PUC Chair DeAnn Walker thanked Magness and staff for moving quickly to revise the ORDC, but she added a word of caution.

"I want to raise awareness that when we have changes like this, sometimes we see changes in market behavior," she said. "I'm relying on ERCOT, and in particular Beth [Garza, the ERCOT Independent Market Monitor's director], to be keeping their eyes on market behavior like this, to be sure it stays in line with our expectations."


Beth Garza

Garza, for her part, declined to project what will happen this summer. "We would like to share comparisons and contrasts for the last few years, and let you make your own determinations," she said during her regular update to the board.

She highlighted recent developments in DC tie activity between ERCOT and its neighbors SPP and Mexico. She noted exports across the ties to Mexico have grown in recent years, while imports from SPP have fallen. The five ties have 1.2 GW of capacity but contribute only 389 MW to ERCOT's capacity in nonemergency situations.

"That could be good news for the summer," Garza said.

She said lower prices — and the narrowing price spread between ERCOT and SPP — have contributed to decreased imports to the Texas grid.

ERCOT has received more good news in recent weeks, with three previously mothballed generators notifying that they are returning to operational status:

- Talen Energy's gas-fired Barney Davis 1, effective May 7. Talen had said last year it would retire the unit, which has a summer seasonal rating of 300 MW.
- The City of Garland's Gibbons Creek facility, effective May 17. The 454-MW coal-fired unit was approved for seasonal status last year by the ISO.
- Garland's Spencer Units 4 and 5, effective June 1. The two gas units have a total of 118 MW of capacity.

The plants will add almost 900 MW to the ISO's summer capacity.

ERCOT Projecting $7.2M Favorable Variance in Net Revenues

Magness told the board that ERCOT is

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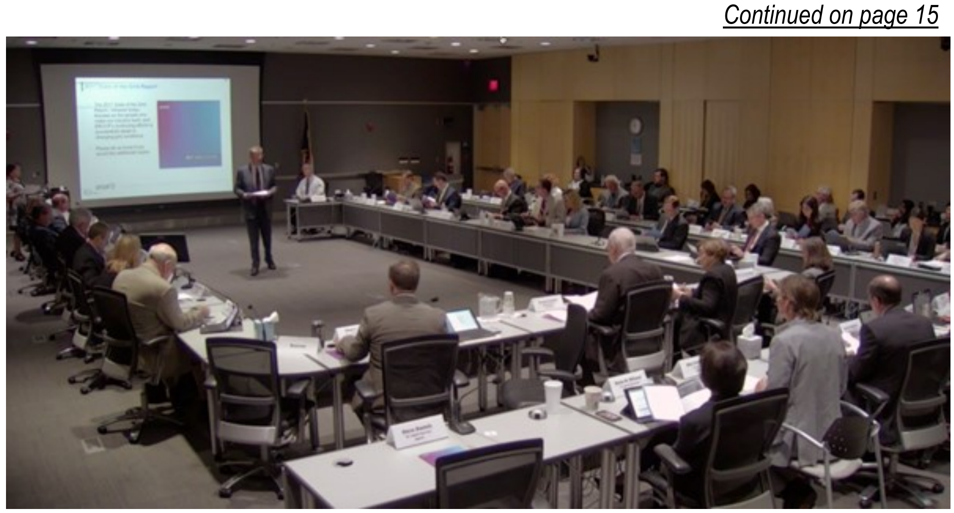

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projecting a $7.2 million favorable variance in year-end net revenues, driven by winter weather that pushed up load. Net revenues are $4.3 million over budget through February, thanks to the higher administration fees and a $2.1 million favorable variance in expenditures due to timing differences.

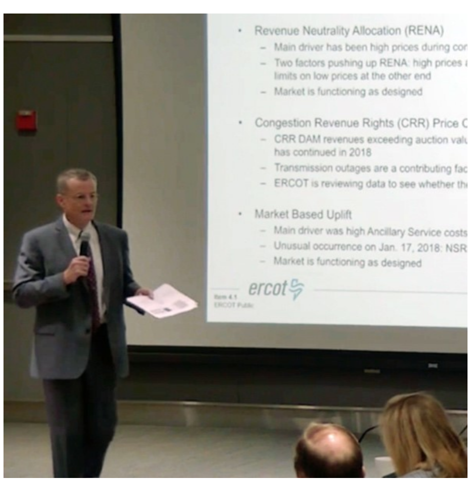
ERCOT also saw above-normal revenue neutrality (RENA) uplift charges and market uplift charges in January, Magness said, stressing that the market is functioning as designed.

RENA charges were $16.57 million, up from $7.18 million in December and $10.46 million in January 2017. Magness said congestion in the real-time market was the main driver, with high prices at one end of the constraint and limits on low prices at the other end pushing up RENA.

Market-based uplift to load in January saw charges totaling $71.78 million, compared to a $9.19 million charge in December and a $33.71 million charge in January 2017. High ancillary service costs for non-spin on Jan. 17 contributed to the increase.

Magness also noted two projects continue to track poorly and will be re-planned within months.

The congestion revenue rights system upgrade has been hampered by significant vendor defects. Magness said the vendor has committed to improving its deliverables, and a new go-live date will be set once the defects are resolved.



ERCOT CEO Bill Magness delivers the operations report.

Integrating the IT change and configuration management system with the content management system will require more time than originally planned, and the scope was expanded to ensure controls maintain data accuracy. A re-plan is expected to be completed in May.

Consent Agenda Removes RUC Capacity from ORDC

The board unanimously passed its consent agenda, which included an other binding document revision request (OBDRR) that removes RUC capacity from the grid operator's ORDC.

The change meets the PUC's directive to remove RUC capacity from the ORDC as part of its project assessing the Texas market's price formation rules (No. 47199). (See "Commission Directs ERCOT to Revise ORDC," *Marquez to Depart Texas PUC*.) Magness said the OBDRR is expected to be implanted by June.

The ORDC creates a real-time price adder to reflect the value of available reserves and is meant to incentivize resources to produce more energy and reserves. PUC staff recommended removing both RUC and reliability-must-run capacity from the ORDC, saying it would ensure that scarcity pricing is accurate and reflective of market dynamics.

ERCOT staff said it would take two or three months and $30,000 to $40,000 to make the software changes, an increase from the $15,000 to $25,000 initial estimate. The affected systems include Market Management Systems, data and information products, and analytic data.

The consent agenda included six nodal protocol revision requests (NPRRs), a change to the retail market guide (RMGRR), two changes to the Resource Registration Glossary (RRGRRs) and two system change requests (SCRs):

- NPRR854: Allows non-opt-in entity (NOIE) transmission and distribution service providers to submit meter data for NOIE points of delivery, rather than incurring the expense of installing, testing and maintaining an ERCOT-polled settlement meter, resulting in decreased expenses for both the NOIE and ERCOT.
- NPRR858: Requires ERCOT to publish all current operating plan (COP) data submitted by generators after confidentiality has expired, a change from the limited subset currently available. The change provides transparency into all intra-hour updates to COP data, as generators can update them at any time and change aggregate information available to the market.
- NPRR860: Clarifies certain day-ahead market practices and cleans up protocol language to better match the current implementation, including clarifying 1) the language for offering in three-part supply and ancillary service offers for offline non-spinning reserve in the same hour for day-ahead consideration; 2) the self-commitment treatment of resources with only an ancillary service offer submitted for the day-ahead; and 3) ancillary service offer resubmission rules. Also removes the reference to CRRs being co-optimized in the day-ahead.
- NPRR864: Modifies the RUC engine to scale down commitment costs of fast-start resources with less than one-hour starts. Following the change, the RUC engine will recommend slow-start resource commitments only if re-dispatching online resources and market-based self-commitments of fast-start resources will not resolve the reliability issue. With the change in the generation portfolio, market-based commitment decisions could be made much closer to real-time than in the past, allowing more self-commitments to materialize in real time than is reflected in COPs many hours earlier.
- NPRR865: Requires ERCOT to publish shift factors for hubs, load zones and DC ties for the real-time market, mimicking the day-ahead market's current practice and providing more information on the inputs used to calculate pricing aggregations.
- NPRR868: Modifies the hub bus and load zone definitions and price calculations to account for the current usage of power flow buses — as opposed to

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electrical buses — in the day-ahead market and congestion revenue rights auction systems. The rewritten formulas will clarify the scenario when buses are de-energized in contingency analyses and align the protocols with ERCOT systems. (A power flow bus — a collection of points on the system that are electrically connected and have zero impedance between them — is identified dynamically based on the status of transmission equipment. Electrical buses — physical transmission elements that use breakers and switches to connect loads, lines, transformers, generators and related infrastructure — are defined statically.)

- RMGRR0150: Clarifies the content and format of the competitive retailer safety net spreadsheet within the market guide and removes Section 9, Appendix A1: Competitive Retailer Safety Net Request, which eliminates conflicts between the appendix and language found in Sections 7.4 (Safety Nets) and 7.10 (Emergency Operating Procedures for Extended Unplanned System Outages).
- RRGRR015: Clarifies glossary definitions and detailed descriptions of data fields to help market participants successfully submit their resource asset registration forms (RARFs). The change does not add or delete any data requirements, does not require a revision of the existing RARF form and does not require resubmission of previously submitted data already accepted by ERCOT.
- RRGRR016: Provides amplifying direction to RARF users for completion of certain solar data and narrows the data in order to provide solar forecasters with more precise data.
- SCR793: Gives transmission service providers access to the same ERCOT-generated status telemetry as the ISO's operators in monitoring line outages with calculated subsynchronous resonance condition monitoring points.
- SCR795: Updates the resource limit calculator's formula for calculating dispatched generation by including the addition of a predicted five-minute wind ramp (PWRR). The PWRR will be calculated from the intra-hour wind forecast and a configurable factor to capture the forecasted five-minute wind ramp, relieving regulation service's burden to cover the five-minute gain or loss of generation from variations in wind, and instead dispatch this energy economically.

— Tom Kleckner

ISO-NE News

Court Questions FERC Change on ISO-NE Renewable Exemption

By Michael Brooks

A three-judge panel of the D.C. Circuit Court of Appeals on Friday questioned whether FERC had changed its position without adequate explanation in its approval of ISO-NE's renewable technology resource (RTR) exemption from its minimum offer price rule (17-1110).

New England generating companies — including NextEra Energy Resources, NRG Power Marketing and PSEG Energy Resources & Trade — sued the commission last year over the exemption, which allows 200 MW of renewables annually (up to a 600-MW maximum) to clear ISO-NE's capacity market without regard to the MOPR. The companies charged that FERC reversed its position from previous orders finding that out-of-market entry into the market can suppress prices and that it never justified the 200-MW cap.

The companies previously sued over the issue in 2015, but the court allowed the case to be remanded back to FERC at the commission's request. FERC affirmed its approval in April 2016 (ER14-1639-004) and denied the generators' request for rehearing in February 2017 (ER14-1639-005). (See *Bay Blasts MOPR on Way Out the Door*.)

"The narrowly tailored renewables exemption, in combination with ISO-NE's sloped demand curves, balances our responsibility to promote economically efficient prices, while accommodating states' ability to pursue legitimate policy objectives," FERC said in its order on remand.

As FERC attorney Carol Banta attempted to explain Friday how the RTO's implementation of a systemwide sloped demand curve — approved along with the RTR exemption — has lessened the price effects of the exemption, Judge David B. Sentelle interrupted her, saying he wanted to focus on "the more mundane aspects of administrative law." He asked that she defend the charge that FERC had unreasonably changed its position.

He cited FERC saying "the orders cited by [the plaintiffs] and the first two orders in this proceeding demonstrate that the commission's view on the question of a broad (i.e., not resource-by-resource) exemption for renewable resources has evolved."

"That's a lot like saying it 'changed,'" Sentelle said. "Now we certainly have a lot of precedent that says that an agency can change, but we say that in order to avoid being arbitrary and capricious they have to explain why they changed." He asked Banta to show where FERC explained its reasoning.

Banta cited a passage in the commission's last order denying rehearing, in which it said, "Moreover, not only has the commission's view of the relationship between state-sponsored renewable resources and the capacity market evolved over time, but in the five years since the commission accepted the minimum offer price rule to mitigate buyer-side market power, New England states have continued to intensify their renewable resource development. The commission does not regulate in a vacuum. We recognize that, as ISO-NE stated in its original filing, it is seeking to balance its need to retain and attract capacity with its obligation to meet customers' needs in an economically efficient manner."

The commission is "balancing its responsibility to promote economically efficient prices," Banta said. If the increased entry of state-sponsored renewable resources is not accounted for, "the price signal is actually false if it's signaling the need for new entry [and] ignoring the new entry that's there."

"Wouldn't any prudent company take that into account before making a multimillion-dollar investment in a new generating facility?" Judge A. Raymond Randolph asked. "They wouldn't take into account just the so-called 'false signal.' They would take into

Continued on page 18

ISO-NE News

Court Questions FERC Change on ISO-NE Renewable Exemption

Continued from page 17

account the fact that there are all these renewables out there."

"This is about making sure the capacity market is a just and reasonable mechanism," Banta responded, "and that includes, is it sending accurate price signals? Is it incentivizing new entry that the system needs? And is it ensuring fair prices for consumers? And these all go into the mix."

CASPR Rehearing Requests

NextEra and NRG cited the RTR exemption case as a reason why FERC's reasoning was flawed in its approval of ISO-NE's Competitive Auctions with Sponsored Policy Resources capacity market construct (ER18-619). (See *Split FERC Approves ISO-NE CASPR Plan*.)

As part of CASPR, the RTO plans to phase out the exemption by allowing accrued exempt megawatts to be used through Forward Capacity Auction 15. The companies cited Commissioner Richard Glick's dissent on the order, in which he said FERC's pursuit of "investor confidence" would cause over-procurement of capacity.

"While we agree with Commissioner Glick that respecting settled market expectations are important, the RTR exemption is *not* based on settled law, as the matter is pending before the D.C. Circuit," the companies said in their request for rehearing last week. "Prior to the RTR remand order, the justness and reasonableness of the FCA had continuously been based on the principle that 'over the long run, the average price for capacity should reflect [cost of new entry], in order to attract new entry needed for reliability.' In the RTR remand order, without any explanation, the commission for the first time stated that 'the renewable exemption fulfills the commission's statutory mandate by protecting consumers from paying for redundant capacity.'"

The Eastern New England Consumer-Owned Systems also requested rehearing, criticizing the commission's accepted definition of sponsored-policy resources, which limits participation in the second auction under CASPR to renewable resources procured by distribution utilities as part of state mandates.

FERC's "adoption of the discriminatory 'sponsored-policy resource' definition results in the exclusion of conventional generating resources developed by New England's consumer-owned utilities from the eligibility to participate in the Substitution Auction without identifying any rational basis for its conclusion that public power conventional resources are not 'similarly situated' to state-mandated renewables purchases by investor-owned distribution utilities," the municipal utilities said.

Several clean energy advocate groups, including the Natural Resources Defense Council and Sierra Club, reiterated their complaint that the RTO had not justified eliminating the RTR exemption.

"CASPR replaces a proven mechanism for reconciling state policies with competitive capacity markets with a totally unproven construct that offers little likelihood of integrating renewable resources," the groups said.

Like NextEra and NRG, consumer advocacy group Public Citizen cited Glick, agreeing with his criticism of the commission's focus on investor confidence in its justification.

"The commission never bothers to define 'investor confidence' for the purposes of this order," wrote Tyson Slocum, the group's energy program director. "There are many owners of power plants that talk incessantly about the dangers of the 'erosion of investor confidence' if power prices aren't high enough to provide the generous financial returns the owners promised to shareholders. Because hey, we all feel a lot more confident when we get paid more money."

NECA Environmental Conference

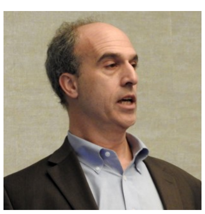
Overheard

WESTBOROUGH, Mass. — The Trump administration's push to roll back environmental protections has prompted state leaders to recommit to achieving clean energy goals and inspired a surge in grassroots support for measures to tackle climate change, New England environmental and energy experts said last week.

The administration's "radical agenda on environmental rules has galvanized public opposition," as well as "created huge morale problems" within EPA, said **Melissa Hoffer**, chief of the Environmental and Energy Bureau for the Massachusetts attorney general's office.

Hoffer made her remarks at the Northeast Energy and Commerce Association's Environmental Conference on Thursday.

Even the Republican-led Congress did not go along with President Trump's vision to slash EPA's budget, instead increasing the agency's funding this year by $760 million, said Normandeau Associates' **Bob Varney**, a former EPA regional administrator for New England.



Following the U.S. decision last June to pull out of the Paris Agreement, environmentalists feared a "spiraling ripple effect" discouraging other nations from honoring the pledge to reduce emissions 20 to 26% below 2001 levels, "but that hasn't happened," said **Ken Kimmell**, president of the Union of Concerned Scientists.

The governors of several large states, including California and New York, joined together to commit to honoring the Paris Agreement, supported by mayors and corporate CEOs, which perhaps explains why other nations did not react too negatively to the U.S. pullout, Kimmell said.

Race to the Bottom

Varney noted what EPA calls "'getting back to basics,' with a focus on the agency's core mission, restoring power to the states through cooperative federalism, and improving permitting and clean-up processes while adhering to the rule of law, according to the administrator in his comments."

| © RTO Insider

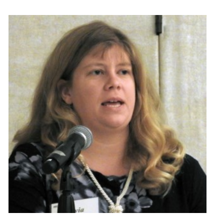
But Hoffer said EPA Administrator Scott Pruitt's "notion of cooperative federalism is somewhat flexible and it invites a deregulatory race to the bottom. This is exactly what the primary federal environmental statutes were designed to avoid."

Kimmell joked that after the 2016 election, "we changed our name to the Union of Freaking Out Scientists, known as UFO."

He listed the agency's big three regulatory rollbacks: the "evisceration" of the Clean Power Plan, the elimination of rules requiring oil and gas operators to trap methane and, "perhaps most distressing of all," the reduction of Obama-era fuel economy standards.

Hoffer said the administration's "cavalier approach to the rollbacks that took place during the first 15 months is really not serving them well in the courts. They actually don't have a good command of administrative law, and they don't have a good command of federal environmental statutes, so that has caused some difficulty for them."

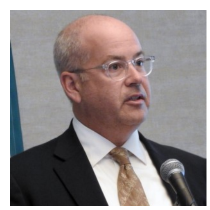
She said, however, that the administration may be learning from its mistakes, as they've recruited some new experts. "I would expect that we'll see their game upped tremendously over the course of the next couple of months," Hoffer said.



Olivia Campbell Andersen, executive director of Renewable Energy Vermont, said state leadership has proven more significant for the growth of renewable energy than federal policy.

"If it weren't for state provisions like net metering, if it weren't for state renewable portfolio standards, we would not have seen the growth that we have had to this point," she said.

Climate Change is Here



"Climate change is already happening and we're already seeing the impacts, including hotter days," said **Richard McGuinness**, deputy director for waterfront planning at the Boston Planning and Development Agency.

The agency commissioned the Climate Ready Boston initiative focused on climate change, the first citywide plan for Boston in 60 years, he said.

"Heat island effect, extreme precipitation events and sea-level rise are the greatest risks to our coastal communities," McGuinness said. "We are planning for a 36-inch sea-level rise and rounding it up to 40 inches to account for subsidence ... we're not planning on retreating."

The worst-case scenario for coastal flooding in Boston would affect 85,000 people and damage 12,000 buildings worth about $85 billion, he said.

Grover Fugate, executive director of the Rhode Island Coastal Resources Management Council, said, "The brunt of climate change effects will fall on local communi-

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NECA Environmental Conference

Overheard

Continued from page 19

ties, the ones with the least resources to deal with them."

He complained that the Federal Emergency Management Agency makes planning assumptions that do not match Rhode Island conditions, resulting in post-storm dune profiles larger than the state's dunes are before any storm. Fugate said his agency bases its sea-level estimates for the year 2100 on data from a 2017 report by the National Oceanic and Atmospheric Administration, which describes sea-level rise scenarios for the U.S.

For the Newport tide gauge, the figure is "essentially 9.6 feet by 2100 or essentially 10 feet," Fugate said. "We also throw on a high-tide event, extreme high tide, which we see six to eight times a year, that will raise the tidal elevation 1.5 to 2 feet above normal tide, so we now have incorporated a 12-foot layer in our mapping system."

The sleeper issue is groundwater rise compounded by sea-level rise, causing septic systems to fail and damaging local roads, he said.

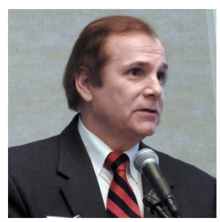
"If you build today ... potentially, within the 30-year mortgage period, that house will be below base-flood elevation."

Educating the Public

Thomas Murray, vice president for customers and communities at Vermont Gas Systems, said he learned that a large project can be incredibly more complex than a small one, and that it's important to avoid "utility arrogance" and respect the views of project opponents.

"People see stopping our project [the 41-mile Addison Natural Gas Project] as a symbolic way to stop climate change," Murray said.

"In fact, what may happen, the unintended consequence, is that they continue to burn dirtier fossil fuel, they continue to burn oil," Murray said. "Vermont has the smallest natural gas footprint in the country, next to Hawaii, and we have the largest percentage of people that are burning heating oil."



James Grasso, CEO of public relations firm Grasso Associates, noted that Brookline, Mass., residents voted 61% in favor of legalizing recreational marijuana, but they refused to have it sold in the town.

Emily Norton, chapter director of the Massachusetts Sierra Club, and a member of the Newton, Mass., City Council, said the council voted against solar parking canopies at the public library because the panels were too ugly.

"When people do get involved, they jump right into it, and they don't understand how state or federal or local laws and regulations work," said **Heidi Ricci**, assistant director of advocacy at Mass Audubon. "Most people don't know where their water comes from when they turn on their tap. I think there's a basic public education problem here as well as a civic engagement problem.

"People latch on to the one project that they're concerned about that they oppose ... but who's looking at the big picture?" she said. "I've talked with the big gas pipeline opponents about, so, like what are we going to do? Will you work with us on getting some of these offshore wind projects going? It's really hard to get people engaged in larger-picture planning."

— Michael Kuser

MISO NEWS

SPP Seeks FERC Meeting in MISO Tx Dispute

MISO Chair Denies Comments on SPP Tx Agreement

By Rich Heidorn Jr. and Tom Kleckner

MISO Chairman Michael Curran last week denied an *RTO Insider* story quoting him as saying that the RTO should "burn down" the 3,000-MW limit on flows between its North and South regions if necessary to prevent load shedding.

The comment — and one attributed by *Megawatt Daily* to MISO Independent Market Monitor David Patton — led to a series of tense communications between MISO and SPP and a request for FERC to intervene over how MISO managed a maximum generation alert in MISO South on Jan. 17.

RTO Insider's April 2 story reported on an exchange between Curran and Patton at MISO's Board Week in New Orleans over the RTO's actions to replace idled generation in its South region during the record cold on Jan. 17.

At a Markets Committee meeting March 27, Patton said if the RTO had not made emergency power purchases for South, regional supply would have dipped below load for several hours, referring to the possibility of the "lights going out in MISO South."

RTO Insider reported that Curran "rebuked Patton's use of such dramatic language, while also responding that MISO should 'burn down' SPP's transmission on the contract path before it allows MISO South to shed load." (See *MISO Markets Committee Talks Winter, Spring — and Beyond*.)

MISO agreed to the 3,000-MW Regional Dispatch Transfer (RDT) limit in a 2016 settlement agreement with SPP, the Tennessee Valley Authority and Southern Co.

Denial

Kari Bennett, MISO executive director of stakeholder affairs and communications, asked *RTO Insider* for a retraction of the quote on April 6, saying Curran denies using the words "burn down." She also denied Curran said that MISO would violate the SPP agreement to ensure sufficient power to meet South's load, as *RTO Insider* reported.

Rather, she said, Curran was indicating the RTO would invoke a clause in the agreement allowing it to exceed the 3,000-MW North-South limit. The settlement, which was approved by FERC in May 2017, set a 2,500-MW South-North limit. (See *FERC Greenlights MISO Cost Allocation for SPP Settlement*.)

MISO's load hit 106.1 GW on Jan. 17, its peak for the winter, with South setting a record winter peak of 32.1 GW. The RTO called a maximum generation event in South after outages there hit 17 GW.

The RTO compensated for South's shortfall with generation from Midwest, exceeding the 3,000-MW limit for about an hour (see chart). MISO dropped below the limit after making emergency purchases of 1,100 MW — mostly from Southern Co. — south of the North-South constraint. It was the first such emergency purchase from Southern, Patton said.

Some stakeholders who attended the meeting said privately they considered Curran's comments surprising and inflammatory, though they could not recall use of the phrase "burn down."

RTO Insider requested to review a recording of the meeting to address the dispute over Curran's words. However, MISO said although the meeting was webcast, it was not recorded.

'Run Over'

Patton said that neither he nor his staff who listened to the meeting recalled Curran using the term "burn down." Based on notes made by his staff, Patton indicated Curran said "if we have to run over RDT, we will to prevent turning lights off in the South." Patton said he interpreted Curran's "run over the RDT" statement as meaning to schedule more transfers than 3,000 MW, which is allowed on a temporary basis.

Patton said the agreement allows MISO to exceed the limit for 30 minutes after a contingency and to request a longer waiver from the other parties to the agreement.

Patton said he agreed with Curran that avoiding load shedding in South must take precedence over exceeding the RDT, adding that "the idea that you would shed load [rather than exceed the limit is] just such an absurd outcome."

SPP Letter

SPP declined to comment. But in an April 4 letter, SPP CEO Nick Brown complained about Curran's comments, as reported by

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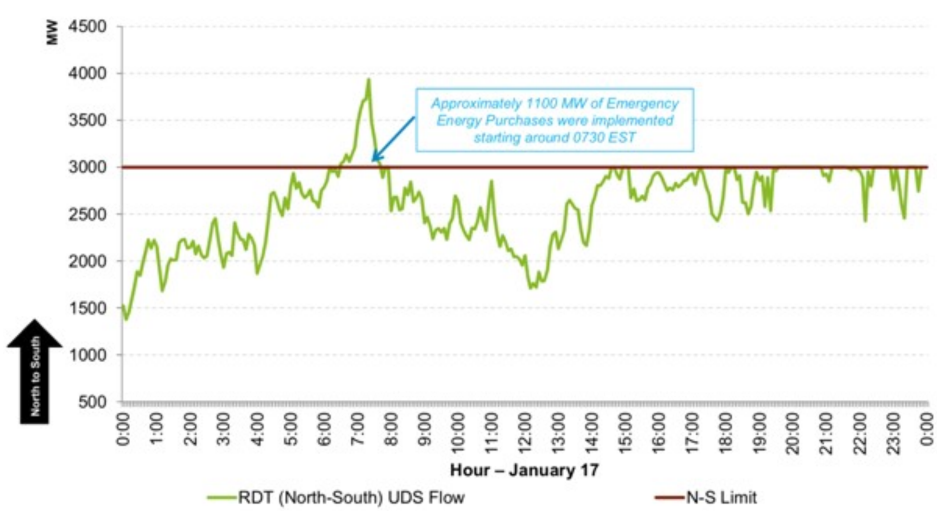


MISO exceeded the 3,000-MW limit on North-South transfers for more than an hour on Jan. 17 before emergency purchases from the South allowed it to reduce transmission to below the limit. | *MISO*

MISO News

RASC Briefs

Peak Outage Forecasting Delayed

Stakeholders learned Wednesday that MISO will delay for another year a plan to account for previously un-forecasted planned outages at times of peak demand after getting mixed feedback from market participants.

Ryan Westphal | © RTO Insider

Speaking at an April 11 Resource Adequacy Subcommittee meeting, MISO Resource Adequacy Coordinator Ryan Westphal said the RTO will wait until the 2020/21 planning year to implement a new, unspecified calculation that accounts for planned outages during peak demand, which could increase the RTO's planning reserve margin requirement.

MISO had proposed to factor the effects of planned and maintenance outages on peak in its loss-of-load expectation (LOLE) study by the 2019/20 planning year. (See MISO RASC Zeroes in on Priorities.)

Westphal said some stakeholders asked the RTO investigate further before making any changes to the LOLE study. Others urged it to define "safe" periods during the summer months to take planned outages.

Director of Resource Adequacy Coordination Laura Rauch said MISO would delay accounting for planned outages on peak until it develops solutions based on a more comprehensive conversation about the RTO's shifting resource availability. (See MISO Looks to Address Changing Resource Availability.)

Some stakeholders expressed frustration that MISO first presented the issue as requiring expeditious treatment, then moved it into a discussion about resource availability and needs, only to again this month single it out to proceed separately. (See MISO to Fold Outage Forecasting into Larger Resource Effort.)

Reprieve for Out-year Import and Export Limit Estimates

MISO is taking a cue from stakeholders and switching gears on a previous proposal to discontinue its practice of forecasting long-term capacity import and export limits, instead proposing to modify the process that produces the forecast.

MISO's Matt Sutton said the RTO expects by early 2019 to revise its process for predicting capacity transmission limits for its 10 local resource zones. It had proposed in February to altogether scrap out-year import and export limits, saying results were too unreliable and volatile, but stakeholders countered that the limits provided useful information. (See "Scrapping Out-Year Import and Export Limit Estimates?" *MISO Resource Adequacy Subcommittee Briefs: Feb. 7, 2018*.)

While MISO still plans to compile the long-term limit estimates, it will use more zone-specific information, including data from past Planning Resource Auctions and the Organization of MISO States-MISO annual resource adequacy survey.

Sutton said MISO would not commit to annual restudies for capacity zones that don't experience notable changes.

"If a zone could potentially bind, a study isn't necessary every year unless a significant supply or transmission change occurs," he said. "The number of studies is being reduced significantly. … We'll have fewer zones to review."

The selective study process will allow MISO to focus on zones that could bind on their import and export limits or carry capacity surpluses beyond their export capability, Sutton said.

The more thorough process to estimate out-year limits should spark discussions around new transmission and generation projects and the impact of external system changes on capacity zones, he said, not just the usual conversations about transfer limits, constraints and redispatch options.

MISO will pass its recommendations for improvements to its stakeholder-led Loss of Load Expectation Working Group, which will produce a new prediction methodology for stakeholder review as early as September, Sutton said. He asked stakeholders to submit written comments on MISO's plan by April 27.

Different Method for Economic Uncertainties in LOLE Study?

MISO is exploring how to improve its modeling of economic load uncertainties in the LOLE study.

For the 2018/19 planning year, MISO relied on a GDP growth comparison to account for the uncertainties, which increased the annual planning reserve margin by 0.2 percentage points year-over-year.

In June, MISO will have a 17.1% planning reserve margin, which represents the extra generation the RTO should have on hand to meet a probability of shedding load no more than one day in 10 years. MISO maintained a 15.8% planning reserve margin in the 2017/18 planning year.

MISO staff have attributed the increase to an upswing in generation outages and a change in the dispatch model for demand resources, but it was partially offset by reduction in anticipated load growth. The RTO last year also added the new modeling step to capture economic load uncertainty that increases risks associated with high peak loads, which also boosted the reserve margin. (See MISO Planning Reserve Margin Climbs to 17% for 2018/19.)

"We're reviewing our methodology and investigating other approaches for the 2020/21 planning year model," MISO Resource Adequacy Senior Engineer William Buchanan said.

In future years, MISO may model economic uncertainty using a calculation based on comparisons between forecasted and actual demand in past years, Buchanan said.

— Amanda Durish Cook

MISO News

Market Subcommittee Briefs

Short-term Capacity Product is a Go, MISO Concludes

MISO last week said it has concluded that a short-term capacity reserve product would be cost-effective and beneficial to reliability.

An evaluation paper released last month said the product would "strengthen MISO's vision for reliable and economically efficient markets."

MISO Market Design Advisor Bill Peters told an April 12 Market Subcommittee meeting that the RTO plans to design a market product that can provide capacity within 30 minutes on the recommendation of the Independent Market Monitor, who last year said a local reserve product could provide voltage support, local reliability and subregional capacity. (See *MISO Board Hears State of the Market Recommendations*.)

Last year the RTO incurred about $35 million in revenue sufficiency guarantee payments to cover load pocket needs and regional dispatch transfers over its contract path on SPP transmission from MISO Midwest to MISO South. The annual amount was "much more in some previous years," MISO said.

The RTO currently makes "inefficient, out-of-market commitments to address operational needs" in both load pockets and regional areas, Peters said.

Staff have said that a short-term capacity reserve would be especially helpful in South, which has less than 500 MW of offline capacity available within 30 minutes. West of the Atchafalaya Basin (WOTAB) has 100 MW of 30-minute reserves, while Amite South has none. (See *MISO Researching 30-Minute Reserves, Multiday Commitments*.)

Peters said MISO envisions the short-term capacity reserves as an ancillary service to be deployed in late 2019. The RTO will now move into a conceptual design phase.

Minnesota Public Utilities Commission staff member Hwikwon Ham asked how MISO arrived at the requirement that the reserve product must be delivered within 30 minutes rather than another length of time.

"Some of the needs, particularly the [Regional Dispatch Transfer] constraint, are 30 minutes," Peters replied.

Northern Indiana Public Service Co.'s Bill SeDoris asked if the cost of maintaining a reserve product would be shared footprint-wide.

Peters said MISO is considering employing a "nesting" approach for the product in which load needs are determined by specific demands on load pockets.

"I'm just concerned that the entire footprint could be responsible for what are very localized problems," SeDoris said.

Peters said MISO must still iron out numerous details of a new reserve product, including determining how the service would interact with other existing ancillary services, creating scarcity pricing and demand curves for the new reserves, and identifying how commitment would be justified in settlements.

MISO Manages Chilly February

MISO reported a 76-GW average load during February, down from the average 83 GW in January as winter wound down across the footprint.

Average prices likewise decreased month over month from $41.75/MWh to $25.05/MWh in the day-ahead market and $39.68/MWh to $25.36/MWh in the real-time. Systemwide energy prices in February were "kept flat" with the help of natural gas prices below $3/MMBtu. Average Henry Hub gas prices were $2.64/MMBtu.

Load peaked for the month at 94.6 GW on Feb. 8, 7.5 GW above the previous February's peak load of 87.1 GW. MISO said average monthly temperatures were lower than the prior two years but higher than in February 2015.

— Amanda Durish Cook

FERC OKs MISO Queue Deadline Change

FERC last week approved MISO's proposal to shorten the window of time it allows generation owners to alter estimated capacity volumes for projects in the interconnection queue.

The commission's decision clears MISO to require interconnection customers to finalize their requested network resource interconnection service (NRIS) megawatt values during "Decision Point II" — roughly 200 days into the queue (ER18-835). The revision became effective April 11.

FERC said requiring a final figure earlier in the process should help MISO achieve its goal of reducing unscheduled queue restudies in order to cut down on the number of months projects spend in the queue.

"MISO's current proposal is a modification to further streamline its interconnection process and to prevent unscheduled, *ad hoc* restudies late in the interconnection process. We agree with MISO that unscheduled restudies will be less likely under the timeline established by MISO's proposal," FERC said.

The RTO's previous process allowed interconnection customers to revise their requested level of NRIS up until after the final system impact study of the definitive planning phase of the queue.

MidAmerican Energy protested the change, saying that MISO and neighboring balancing authorities often do not complete affected-system studies on each other's territories in time for Decision Point II, making an informed decision on NRIS levels impossible. But FERC ruled MidAmerican's argument was underdeveloped and that "the benefits of reducing the potential for restudies and keeping the queue process on schedule outweigh MidAmerican's concerns about potentially having less information at the earlier decision point."

FERC held a technical conference earlier this month to gather ideas on how RTOs can better align their affected-system studies. (See *Renewable Gens Face Off with RTOs at Seams Tech Conference*.)

— Amanda Durish Cook

MISO News

MISO Clears at $10/MW-day in 2018/19 Capacity Auction

Continued from page 1

MISO said this year's price increase was driven by "an increase in the planning reserve margin requirement, a decrease in supply and changes in market participant offer behavior." Come June, the RTO will have a 17.1% planning reserve margin, based on limiting the likelihood of shedding load to no more than one day in 10 years.

MISO Manager of Resource Adequacy John Harmon on Friday said zero-price offers declined compared to last year's auction.

"It does seem that participants had a greater appetite for risk," Harmon said.

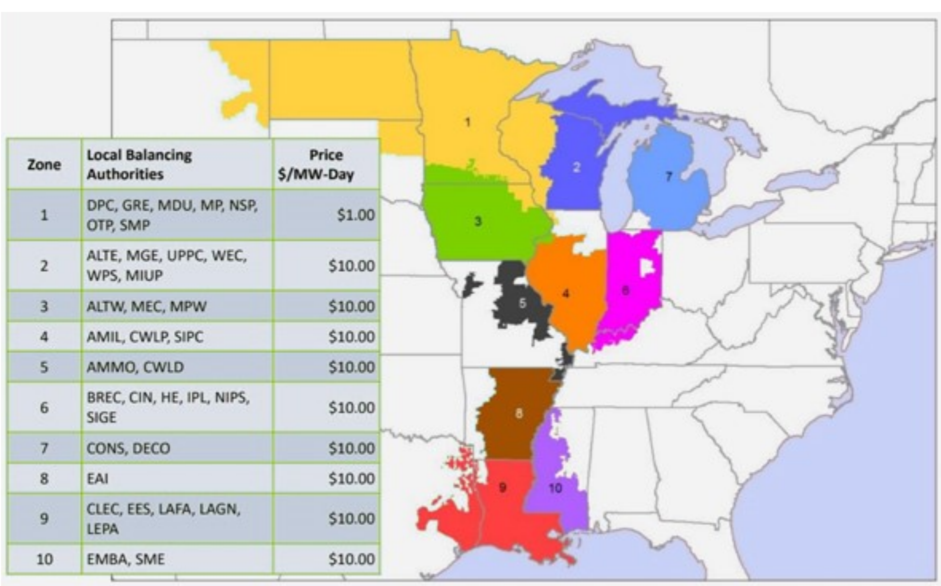
MISO maintained a 15.8% planning reserve margin for the 2017/18 planning year, when all zones cleared at $1.50/MW-day. Last spring, CEO John Bear said that the 2017/18 price resulted from high supply and low demand. (See *All Zones at $1.50/MW-day in 5th MISO Capacity Auction*.)

The last two auctions were a departure from three years ago, when almost all of MISO Midwest cleared at $72/MW-day for 2016/17, and four years ago, when Illinois' Zone 4 cleared at $150/MW-day for 2015/16.

The RTO also said auction results were in line with the results of last year's Organization of MISO States-MISO resource adequacy survey, which predicted sufficient capacity to meet near-term planning requirements through 2022. (See *Capacity Survey Shows MISO in the Black*.) McFarlane said the results demonstrate the "grid's capability to transport those megawatts across the zones."

MISO said this year's auction continued the increase in non-traditional resources. About 1,600 MW of additional demand response, energy efficiency and behind-the-meter generation cleared, bringing the total to 11,000 MW, 8% of all resources. McFarlane said the increasing use of load-modifying resources to meet capacity needs underscores the need for MISO to continue its discussions on resource availability and need. (See *MISO Looks to Address Changing Resource Availability*.) The RTO said it will "continue to focus on the importance of long-term resource adequacy as the industry and generating fleet continues to evolve. MISO will also continue to support state processes around resource adequacy planning."

During a Market Subcommittee meeting Thursday ahead of the auction results, Independent Market Monitor David Patton said he expected low auction capacity prices to continue "indefinitely." In late February, FERC rejected the Monitor's latest request to order MISO to apply a sloped demand curve, which he said would result in more efficient pricing. The commission said the RTO's vertical curve was just and reasonable, noting that 90% of load is served by vertically integrated utilities. FERC also said pricing takes a backseat to the auction's main objective to maintain reliability. (See *FERC Vacates, Upholds MISO Resource Adequacy Rules*.)



Zone	Local Balancing Authorities	Price $/MW-Day
1	DPC, GRE, MDU, MP, NSP, OTP, SMP	$1.00
2	ALTE, MGE, UPPC, WEC, WPS, MIUP	$10.00
3	ALTW, MEC, MPW	$10.00
4	AMIL, CWLP, SIPC	$10.00
5	AMMO, CWLD	$10.00
6	BREC, CIN, HE, IPL, NIPS, SIGE	$10.00
7	CONS, DECO	$10.00
8	EAI	$10.00
9	CLEC, EES, LAFA, LAGN, LEPA	$10.00
10	EMBA, SME	$10.00

2018/19 Planning Resource Auction results | *MISO*

Zone 1

Harmon said 142 GW was offered in this year's auction, 4 GW above the reserve margin requirement even when factoring in capacity stranded by transmission constraints, which would've accounted for another 2 GW in excess capacity.

"Zone 1 did bind on its capacity export limit this year. This binding did occur on the same transmission facility as last year," Harmon said during an April 13 conference call with stakeholders.

WPPI Energy's Steve Leovy expressed concerns over improper binding and price separation in Zone 1. In stakeholder meetings, Leovy has repeatedly called attention to MISO's capacity export limit, which does not distinguish imports sourced outside the RTO from those sourced inside, making available transmission capacity appear scarcer than it really is, according to Leovy.

"I wouldn't expect that line to bind. I would expect that line to have a lot of slack," Leovy said. He said MISO must change the calculation behind its capacity import limits.

MISO staff on the conference call promised more information on capacity export limits and the RTO's simultaneous feasibility test at the May 9 Resource Adequacy Subcommittee meeting.

Consumers Energy's Jeff Beattie said it would be helpful for MISO develop a presentation showing how transmission capacity might increase around Zone 1 when the RTO's multi-value transmission projects come online.

Midwest Energy Policy Series

New Midwest Infrastructure Must Respect Trends, Experts Say

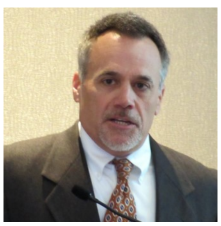
By Amanda Durish Cook

The Missouri Energy Initiative had the first event in their Midwest Energy Policy Series on April 10, focusing on infrastructure. | *© RTO Insider*

KANSAS CITY, Mo. — While Midwestern grid planners aren't certain about the future of energy infrastructure, they do agree that planning must yield to a convergence of trends, including low-cost renewables, energy storage, escalating cyberattacks, flat demand and legacy generation verging on the antique.

Those trends will dictate the direction of new buildouts, according to industry experts speaking last week on a infrastructure panel as part of the Midwest Energy Policy Series hosted by the Missouri Energy Initiative.

Trends



Missouri Public Service Commission Chairman **Daniel Hall** said new infrastructure placement must take into account a blend of national trends, including declining wind and solar costs, the natural gas fracking boom, aging power plants and transmission lines, and declining demand for electricity due to household energy efficiency and the country's downsized manufacturing sector.

"Most distribution lines were constructed in the 1950s and 1960s, and they were expected to last 50 years," Hall said.

Many utilities are planning utility-scale renewable projects, he said, pointing out that Ameren has requested a certificate of convenience and necessity for a 700-MW wind farm by 2020.

"If completed, that would account for almost 10% of Ameren's power generation," Hall said.

While renewables could fill in for aging baseload generation, RTO planners questioned whether the demand-light Midwest needs an abundance of new generation development. Other panelists agreed that years of 3% annual load growth are a thing of the past.

SPP Manager of Transmission Services Charles Cates said SPP's queue holds 70 GW of generation, which, if built, would exceed the RTO's current peak loads.

David Van Beek, MISO external affairs manager, said his RTO is still experiencing a "drastic generation shift" toward renewables even with the uncertainty surrounding the Clean Power Plan. He noted that solar projects account for one-third of MISO's record-setting 90-GW-plus generation interconnection queue.

The Promise of Storage

Even with the addition of all that proposed generation, panelists said storage projects could facilitate local consumption of the output, precluding the need for the new transmission lines planned for in the past.

Jay Lohrbach, manager of generation projects for City Utilities of Springfield, Mo., said a joint 1-MW battery storage project between his utility and NorthStar Battery at the Cox substation will likely defer the need to build transmission infrastructure in that area.

Lohrbach said that by the end of 2019, the utility will be supplying the city with 40% renewable power.

"This is Springfield, Mo., not California," Lohrbach reminded the audience. "That's amazing."

Lohrbach said utilities are in the unenviable position of balancing when to retire uneconomic and slow baseload coal and nuclear units with a duty to provide capacity. "The bar has been placed pretty high in how efficient we have to be," he said. "It's a tough situation economically for utilities."

He said NorthStar's batteries can be designed exclusively to manage small spikes of demand, catering to a country with otherwise flatlining loads.

"Battery storage can scale down to the size of your house pretty readily," Lohrbach said. He added that storage batteries have no fixed costs, only upfront construction costs and fairly well-defined variable costs.

"It's pretty easy to decide when to discharge the battery," Lohrbach said. "And if I don't deploy it, it can just sit there and not cost me anything. It's a completely different economic model than anything we've seen before, and we need to wrap our heads around it."

Lohrbach said RTO transmission planners aren't yet planning for the full impact of storage developments.

In response to an audience member's question about the prospect of planning transmission explicitly to accommodate energy storage in the wake of FERC's Order 841, Van Beek said the order was too new to shape transmission planning. Both this year

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Midwest Energy Policy Series

New Midwest Infrastructure Must Respect Trends, Experts Say

Continued from page 25

and last, MISO incorporated a fourth future scenario into its transmission planning process as distributed and emerging technologies become more widely used. (See *MISO to Recycle Tx Planning Scenarios for 2019*.)

Chris Neaville, asset development director of St. Louis-based mining company Doe Run, said large industrial consumers also want storage projects.

"We think the future for us is really developing our own microgrid," Neaville said.

Doe Run envisions a microgrid that could shave its peak loads through 21 to 50 MW of behind-the-meter, onsite solar power and up to 16 MW of battery storage, which could also serve as back-up generation for its mines' critical systems.

"We could become interruptible load," Neaville added.

He said electricity is Doe Run's single biggest operating cost at about $23 million annually, and that 1960s-era transmission lines deliver power to its remotely situated mines.

Neaville said he's worried that Ameren is currently being granted about 5% rate increases about every 18 months, with each hike subtracting about $2 million to $3 million from the company's bottom line.

"Our concern for the future is that if it continues at that rate, it's not sustainable," Neaville said. "There's a break point where we have to do something differently. We can't keep increasing these rates."

Doe Run would prefer not to build its own generation, Neaville said, so the company hopes to partner with a utility on a microgrid project.

Grain Belt Express

Discussion veered to Clean Line Energy Partners' embattled, high-voltage Grain Belt Express transmission project, whose fate is now in the hands of the Missouri Supreme Court. The stalled $2.3 billion, 780-mile line was designed to transmit Kansas wind generation to the western border of Indiana after crossing Missouri and Illinois.

Hall said that although the Missouri PSC found the project worthy, its hands were tied in denying the application because the Caldwell County Commission refused consent for the transmission line to cross public roads.

He said the commission was bound to follow the Western District Court of Appeals' decision that the certificate could not be lawfully granted without county approval.

"That is essentially a road map for county commissioners to focus on their voters. … It doesn't make sense from my perspective that you've got county commissioners that can decide the fate of interstate transmission lines," Hall said.

Clean Line's situation highlights the need to either change state law or have the federal government supersede state jurisdiction, he said.

"Hopefully, the [Missouri] Supreme Court will get it right."

Hall also hopes the court's opinion "would not say that the PSC erred" in denying the certificate, as the commission was legally bound to issuing a denial.

MISO-SPP Interregional Projects

Van Beek and Cates discussed whether their RTOs would approve a first-ever interregional project along their seam, especially near Kansas and Missouri. Both agreed their two-year joint modeling process can sometimes delay project approval.

"It's a really tedious process," Van Beek said.

"The time frame of modeling is quite extensive," said Cates, adding that while the RTOs' can usually agree about what areas need a transmission project, they can get stuck on how to divide costs. MISO and SPP staff have recently suggested abandoning their joint model in favor of more closely aligned regional models. (See *MISO, SPP Look to Ease Interregional Project Criteria*.) The two RTOs plan to wait a year before embarking on another joint study in hopes of improving their process to gain approval for an interregional transmission project.

ITC Holdings' Chris Winland said his company wants to be on the "cutting edge" of planning transmission infrastructure for future wind developments in Kansas and Oklahoma. He said those areas are home to the "best wind in the country" and predicted more development.

Cybersecurity

Whatever infrastructure is built, it needs to withstand increasingly sophisticated cyberattacks, said Ameren Chief Information Officer **Mary Heger**.

Ameren uses a combination of systems monitoring, virus scanning, network segmentation, quarantine programs for suspect email and "whitelisting" — which authorizes which applications are allowed to run, thereby excluding all other programs, she said.

"The program we put in place is designed to protect us against a broad scope of actors."

Heger said Ameren also has an in-house training program called Cybersafe, where the utility will test employees by sending simulated phishing emails — the kind of which that set in motion the 2015 cybersecurity attack on Ukraine's grid.

"People really are one of the weakest links," Heger said.

"As long as people click on links … that will be a very popular way to get a foot in the door," said Galen Rasche, Electric Power Research Institute senior program manager.

Rasche said a more mobile utility workforce, dynamic supply and demand balancing, increasing automation of operations, customer self-generation and home energy management programs all create more opportunities for cyberattacks.

He said an integrated — or "multiparty" — grid, in which generation and storage assets are not necessarily owned and operated by utilities but are aggregated by a third party, presents a more complex security challenge. He predicted that some aggregation vendors will go out of business within five years and asked what will happen to their data after they fold.

"Cybersecurity now can't be the sole responsibility of the utility," he said. "We need to make sure we're having this conversation with everyone in the room."

NYISO News

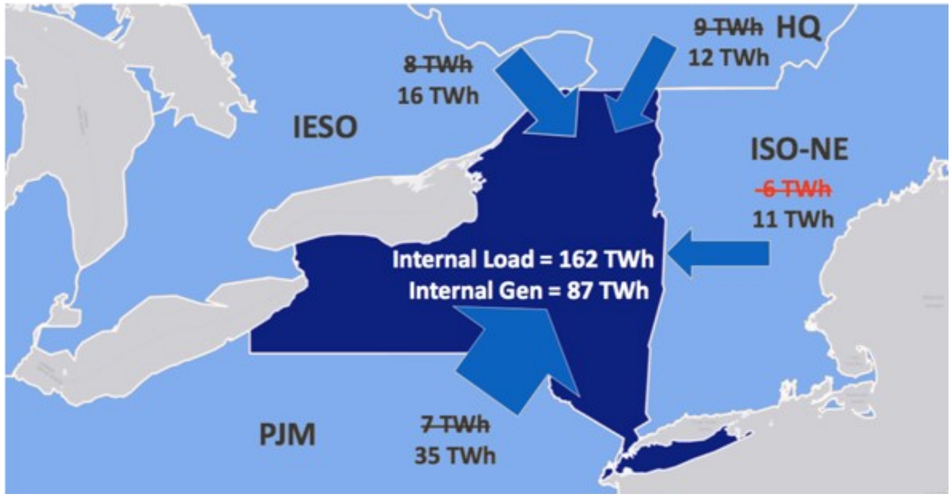
NY Carbon Task Force Discusses Seams, 'Leakage'

By Michael Kuser

The New York task force charged with determining how to price carbon emissions into NYISO's markets last week tackled the complex issue of avoiding the pitfall of "carbon leakage."

The term refers to when carbon market participants evade caps and prices by shifting electricity production to bordering areas outside the market.

The Integrating Public Policy Task Force (IPPTF) on April 9 heard two presentations on seams and leakage, part of issue "Track 2" in its five-track effort. The task force is jointly run by NYISO and the state's Department of Public Service.



Effects of carbon pricing without border adjustment | *Brattle Group*

"It's not an option at all to put a sizeable carbon charge on New York production and not do anything at the borders; that's just not an option," Brattle Group's Sam Newell said during a presentation on applying carbon charge border adjustments to the ISO's external transactions. "The reason you can't is it creates a very unlevel playing field and would shift production to out of state in a very big way."

Status Quo or Green Power

Newell presented two carbon pricing options to avoid market distortions. The "status quo" model would not consider carbon content in energy trades, while the second "green power" option would evaluate marginal emissions rates from out-of-state imports.

The status quo option could shift generation serving up to half New York's load to out of state and also increase emissions regionally while only reducing them in state, Newell said.

"We're talking about something that could be on the order of $50/ton, could be $20/MWh," Newell said. "Imagine putting a $20 penalty on internal generation and not external. Again, you've really unleveled the playing field."

The second option would factor into the prices for imported electricity the estimated difference in the carbon content of emissions based on the region (PJM versus Quebec, for example), "and it does think about carbon content in terms of exports and what are you displacing on the other side," Newell said.

In response to questions from several stakeholders, Newell said the carbon charge on imports would not be unit-specific, noting that neighboring regions do not identify their exports by generating unit.

He contrasted New York's situation with the Energy Imbalance Market (EIM) administered by CAISO.

"That's an integrated market, and if you just said these units in California have to buy allowances and the others don't, you'd have the same leakage problem," Newell said. "They had to build into the [EIM] some sort of border treatment. ... Unlike New York when it's thinking about its neighbors, the EIM actually is dispatching the region on a unit-specific basis."

Other stakeholders asked about charging imports from neighboring regions based on their average — rather than marginal — emissions rates.

"In economics, for price signals, marginal is what matters, not average," Newell said. "This is a whole topic in ratemaking. If you charge based on average, you'll have unintended consequences and inefficiencies."

Marginal emissions rates differ from region to region, he said, but the types of marginal units may be more uniform across neighbors than assumed. For example, "energy limited resources" in Hydro-Quebec and Ontario (often limited to shorter run times because of local environmental restrictions) are more likely to produce and export at the margins of the market.

"If you get it right, you incentivize cost-effective abatement everywhere," Newell said, noting that approach is consistent with New York's objective to reduce global emissions.

Specifying Emissions and Costs

Julia Frayer and Gabriel Roumy of London Economics International (LEI) presented a study commissioned by Hydro-Quebec Energy Services (Hydro-Quebec's U.S. subsidiary) on potential methodologies to address leakage of emissions to and from neighboring areas.

Like the Brattle report, LEI stated that improper implementation of a carbon charge mechanism could derail decarbonization objectives and distort underlying market signals.

LEI believes that a more granular approach to assessing carbon emissions rates for imports, based on resource- or area-specific emission rates, is superior in terms of economic efficiency, market impacts and reduction incentives.

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NYISO NEWS

Business Issues Committee Briefs

Energy Prices Decrease as Winter Fades

RENSSELAER, N.Y. — NYISO power prices averaged $29.91/MWh in March, down from $33.83 in February, and $34.97 the same month a year ago, Nicole Bouchez, ISO principal economist, told the Business Issues Committee (BIC) on Wednesday.

The ISO's year-to-date monthly energy prices averaged $60.06/MWh in February, up 59% from a year earlier. March's average sendout was 413 GWh/day, down from 426 in February and 419 a year earlier.

New York natural gas prices for the month averaged $2.85/MMBtu at the Transco Z6 hub, down from $3.14 in February and off 18.2% from a year ago.

Distillate prices were mixed compared to the previous month but gained 19.3% year over year. Jet Kerosene Gulf Coast averaged $13.76/MMBtu, up from $13.72 in February. Ultra Low Sulfur No. 2 Diesel NY Harbor averaged $13.78, down from $13.86 the previous month.

The ISO's local reliability share was 19 cents/MWh, higher than 14 cents the previous month, while the statewide share of -51 cents/MWh was up from -64 cents. Total uplift costs were higher than in February.

Broader Regional Markets

Reviewing the Broader Regional Markets report, Bouchez highlighted two sections updated since the previous BIC meeting.

Item No. 23 covers a PJM proposal to develop *pro forma* pseudo-tie agreements that would apply to New York Control Area (NYCA) generators that sell all or a portion of their capacity to PJM. The agreements would provide commitment and dispatch instructions to those generators to meet PJM's — rather than NYISO's — needs.

NYISO has expressed concerns that the removal of an in-state generator from the ISO's commitment and dispatch process limits its ability to manage the generator to ensure NYCA reliability. The removal also introduces compliance issues regarding New York State Reliability Council rules and decreases the efficiency of the ISO's least-cost solution in its day-ahead and real-time markets.

The ISO is working with PJM to find solutions acceptable to both grid operators.

Item No. 27 concerns how NYISO determines locality exchange factors, which became an issue in 2015 when the ISO's Market Monitor, Potomac Economics, raised concerns about the treatment of capacity exports from import-constrained localities.

The ISO in February 2017 deployed FERC-approved capacity market changes and asked General Electric to identify possible ways to refine the current methodology using a probabilistic approach. That effort proved unsatisfactory to stakeholders, and the ISO has engaged GE to work further on a formula-based methodology for determining locality exchange factors.

Public Website Redesign

Dave O'Brien, a NYISO project manager, provided an update on the project to redesign the ISO's public website.

O'Brien said the new design will debut in the fourth quarter with a more intuitive layout and navigation, better mobile device interoperability and an improved search function.

Stakeholders also expressed hopes that the website would better meet their needs. Howard Fromer of PSEG Power New York noted an example of spending minutes locating a document, being asked to sign in for access, then being redirected back to the homepage and to restart his search from scratch.

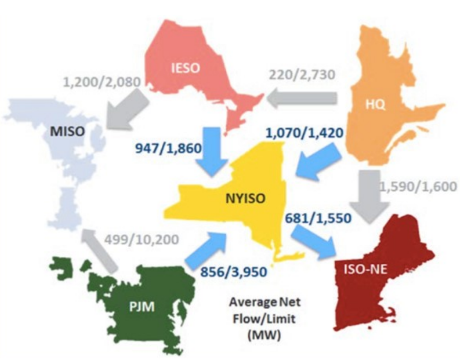
— Michael Kuser

NY Carbon Task Force Discusses Seams, 'Leakage'

Continued from page 27

"It's all a matter of consistency, and it's important when you look on the regional scale [that] you really need to look at unit-specific emission rates and what are these resources contributing to the overall Northeast markets," Roumy said. "And the contribution is the lack of emissions that they are doing."

Howard Fromer of PSEG Power New York said, "We want to know what the cost and price impacts are going to be to end-use consumers. If they're a lot, then we're probably not going to be very supportive. If they're modest ... then the next question we're going to ask is: What are we getting for that extra cost? Are we getting significant carbon reductions, or are we just reshuffling the deck and making it look good?"



| The Brattle Group

Warren Myers, DPS chief of regulatory economics, summed up the two political approaches represented in both the Brattle and LEI studies.

"One is keeping, as best as you can, interactions with other control areas on the same playing field that it's currently on," Myers said. "The other one is — do you want to take New York's policy, or what the value of carbon is, and apply it beyond New York's borders to address its consumption."

In wrapping up the meeting, IPPTF co-chair Nicole Bouchez, NYISO principal economist, noted that the group would move a discussion on carbon charge implementation from May 7 to its next meeting, held Monday, in response to stakeholder concerns.

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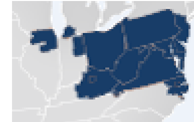


PJM Board Seeks Reserve Pricing Changes for Winter

By Rory D. Sweeney

Winter is coming — or at least it will be coming again — and the PJM Board of Managers wants at least some energy price formation restructuring by then.

In a letter to stakeholders released on Thursday, the board acknowledged the heavy lift that implementing staff's original price formation white paper might entail, but it said there is consensus between PJM staff and the Independent Market Monitor on changes to improve reserve pricing. The letter directs staff to identify changes that can be implemented for next winter and "respectfully requests stakeholders to deliberate timely" so that the revisions can be completed by the third quarter, in time for FERC approval for winter 2018/19. (See "Additional Reserves Needed?" *PJM MRC/MC Briefs: March 22, 2018*.)

"We have been informed that PJM staff and the IMM agree that PJM should implement a 30-minute reserve product in real time to comport with the current day-ahead scheduling reserve product, address issues with the current implementation of the synchronized reserve market, implement a more dynamic establishment of reserve requirements so as to better capture operator actions taken to maintain reliability, and enhance the operating reserve demand curves used to price reserves during reserve shortage conditions," the board wrote.

"Given the level of agreement between the IMM and PJM staff, the board believes that this more targeted issue may present an excellent opportunity for the stakeholder community to come together and demonstrate that the PJM stakeholder process can deliver thoughtful and timely consensus action."

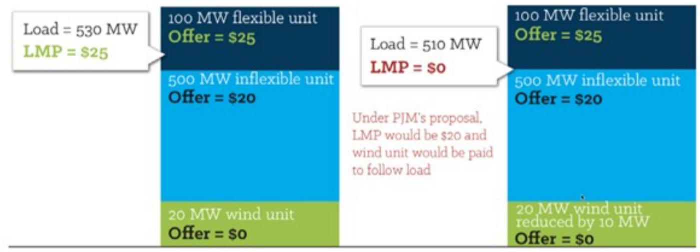
Dual Issues

The board reiterated its position that energy and reserve market pricing issues must be examined because "there are times when operators commit resources to ensure reliability but these commitments are not reflected through market clearing prices such that those prices can be suppressed and result in undesirable outcomes."

The energy market issue has been the focus of the Energy Price Formation Senior Task Force, which is considering the revisions proposed in PJM's white paper as part of a wider stakeholder analysis. (See "PJM Pushes Price Formation Plan," *FERC, RTOs: Grid Performed Better in Jan. Cold Snap vs. 2014*.)

"The board is well aware of questions stakeholders have raised regarding this proposal. The board has listened to stakeholders and appreciates that changes to the LMP calculation require careful consideration," the board wrote.

It also notes that FERC is already considering PJM's proposal to apply integer relaxation to fast-start resources as part of its fast-start pricing docket (EL18-34). (See *FERC Drops Fast-Start NOPR; Orders PJM, SPP, NYISO Changes*.)



The graphic explains the issue PJM hopes to resolve with its energy price-formation restructuring. | *PJM*

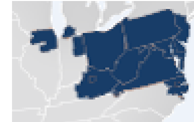
In recent PJM stakeholder meetings, the reserve market issues have become the central focus.

"We are hopeful that on an issue such as this one where there appears to be ample, empirical evidence that a market design change is needed, where there is significant alignment between PJM staff and the IMM concerning the need for change, and where there is clear direction as to the nature of the improvement required, such timely consensus can be achieved," the board wrote.

It asked that the remaining issues be resolved by the first quarter of 2019 so they can be approved and implemented by the summer of 2019.

"Such timely action, if it can be achieved, will reinforce confidence in the ability of the stakeholder process to deliver timely consensus solutions," the board wrote.

PJM News



FES Bankruptcy Creating Additional Uncertainty

By Rory D. Sweeney

FirstEnergy Solutions' bankruptcy is creating repercussions that extend beyond the question of whether the merchant generator will survive.

While speculation had been swirling for months that FES, FirstEnergy's generation arm, would soon go under, the company's March 31 bankruptcy filing was overshadowed by its announcement that it was shuttering nearly 4,000 MW of nuclear generation and requesting an emergency order from the Department of Energy to keep its ailing fleet running. (See *FES Seeks Bankruptcy, DOE Emergency Order*.)

As part of its bankruptcy filing, FES requested the authority to end its long-held "sponsorship" of the Ohio Valley Energy Corp. (OVEC) and block FERC from making any ruling on the issue. FES requires FERC approval to void its inter-company power agreement (ICPA) with OVEC.

Kyger Creek plant

OVEC responded by petitioning the U.S District Court for the Northern District of Ohio to withdraw the request, contending that FERC has exclusive authority over wholesale power agreements that can't be addressed by a bankruptcy court. The court denied that argument and found that FERC and the bankruptcy court have "concurrent jurisdiction" over the companies' ICPA.

"Thus, FES must seek approval from both FERC and the Bankruptcy Court to reject the ICPA. FERC will apply the [Federal Power Act's] public interest standard to determine if the rejection comports with federal law," the court said.

OVEC, headquartered in Piketon, Ohio, is still awaiting FERC's decision on a complaint (EL18-135) it filed on March 26 in anticipation of FES' filing.

Under the current ICPA, which runs through June 30, 2040, OVEC provides power from its two coal-fired generating plants — the 1.1-GW Kyger Creek in Cheshire, Ohio, and 1.3-GW Clifty Creek in Madison, Ind. — to its eight corporate "sponsors" that include FES. The units are already pseudo-tied into PJM, and the sponsors can sell their portions of the output into the RTO's markets.

OVEC has been granted permission to join PJM as of June 1 but will have no load after a DOE contract ends sometime before 2023. The company was created in 1952 to service a uranium enrichment plant near Piketon that ceased operations in 2001. The department ended the 2,000-MW contract in 2003; it maintains a load that can be 45 MW at its maximum but is generally less than 30 MW.

While the sponsors are not required to sell their output, they are required to pay their portion of OVEC's costs. There is no requirement for the other sponsors to make up for any shortfalls from companies that don't pay. FES has a 4.85% stake, equating to about $30.1 million annually, according to OVEC's federal court complaint (5:18-mc-00034-DAP).

PUCO Concerns

Separately, the Public Utilities Commission of Ohio has opened an investigation (18-569-EL-UNC) into FES' retail sales and its future marketing plans in light of revelations that the company is still offering consumer contracts for up to three years. PUCO gave the company until May 4 to file a detailed explanation about whether it plans and is able to continue its retail sales business.

The order came a day after FES confirmed during its initial bankruptcy hearing on April 3 that it has contracts with more than 900,000 retail customers and plans to sell them to other suppliers. A day earlier, FES had filed a notice with PUCO in its relicensing case (00-1742-EL-CRS) that the bankruptcy wouldn't affect its retail operations. The company must seek relicensing every two years to be a retail energy supplier.

Former InterGen CEO Recommended for PJM Board

PJM's Board of Managers announced in a letter to members last week that the Nominating Committee is recommending former InterGen CEO Neil H. Smith to replace Chairman Howard Schneider, who will retire from the board at the RTO's Annual Meeting next month.

The committee also recommended re-electing current board members Neel Foster and Sarah Rogers. The Members Committee will vote on the candidates at the Annual Meeting.

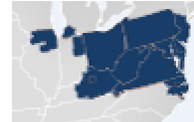
Smith was selected following a national search, assisted by the Heidrick & Struggles search firm, that included candidates suggested by current board members. He retired from InterGen in 2016 after 25 years with the company, working his way up from development director.

Neil H. Smith

InterGen operates 11 power plants with a generation capacity of 7,686 MW, three compression facilities and a 40-mile gas pipeline. The facilities are located in the U.K., Netherlands, Mexico and Australia. The company is jointly owned by the Ontario Teachers' Pension Plan and China Huaneng Group/Guangdong Yudean Group.

Smith also served as a non-executive director and board member of The Wood Group, a worldwide service provider for the oil-and-gas and power generation industries. He was on the board for nine years, between 2004 and 2013, according to his LinkedIn profile.

— Rory D. Sweeney



PJM NEWS

NEI CEO: FirstEnergy Emergency Request a 'Bridging Strategy'

By Michael Brooks

Nuclear Energy Institute CEO Maria Korsnick on Thursday expressed support for FirstEnergy Solutions' request that the Department of Energy declare an emergency in PJM to prevent the shutdown of the company's three nuclear plants.

But she called the request — along with state zero-emission credit (ZEC) programs — a "bridging strategy" for the industry: temporary measures to keep the plants afloat until RTOs/ISOs and FERC reform wholesale market price formation.

"Ultimately, the fix that's needed is that recognition [of nuclear's emissions-free output] in the marketplace. That recognition has been a bit slow in coming, which is why you're seeing the level of activity that you're seeing at the state level," Korsnick said. "The long-term answer is going to be one that's market-driven."

Korsnick was responding to a question submitted through a Facebook Live webcast of NEI's Annual Briefing for the Financial Community. After giving a speech on the state of nuclear industry, she answered questions, which were also submitted by email, relayed to her by NEI spokeswoman Monica Trauzzi.

In both her speech and answers to questions — some submitted by NEI staff, Korsnick was nonspecific about the issue of price formation. She instead consistently came back to the value of nuclear as a contributor to states' carbon-reduction goals and a "resilient" source of electricity. She praised ZEC as an example of good state policy and noted that Maryland and Washington are considering carbon taxes.

Monica Trauzzi (left) and Maria Korsnick

"The pursuit of clean energy can threaten our nuclear plants if we don't do it thoughtfully. If the goal is to reduce emissions, then all zero-emission technologies must be part of the solution. We must recognize what we already have in place and build on that. Replacing zero-emitting technology with other zero-emitting technology won't help."

She also applauded Congress' extension of nuclear production tax credits to allow the construction of Georgia Power's Plant Vogtle Units 3 and 4 to be completed.

But Korsnick warned that generation owners plan to prematurely close 12 reactors and that "if nothing is done to save these plants, the impacts will be devastating."

"If all of these 12 plants close, we will lose over 120 million MWh [per year] of carbon-free generation," she said. "That's equal to half of all the megawatt-hours of wind electricity generated last year in the United States.

"We can stick with a myopic focus on short-term prices. Or we can strive to preserve a resilient, robust electricity system, jobs, tax revenues, clean air and healthy communities."

To counter the grim warnings, Korsnick highlighted positive developments in the industry. She pointed to NuScale's small modular reactor design, which she said is "progressing well" through the Nuclear Regulatory Commission, and to the Trump administration's support for Saudi Arabia's plans for as many as 16 nuclear reactors.

"The export market is growing, and our success there will strengthen the U.S. supply chain and its support of the existing U.S. fleet," she said.

NJ Lawmakers Pass Nuke Subsidies, Boosted RPS

Continued from page 1

Board of Public Utilities their plants need financial support to remain operating. The bill passed the General Assembly on a vote of 60-10.

The bill now goes to Gov. Philip Murphy, who will have 45 days to decide whether to sign the bill, veto it or allow it to become law without his signature. He could also conditionally veto the bill and send it back to the Legislature with proposed changes.

ClearView Energy Partners gave Murphy a 65% chance of signing the bill but said he may conditionally veto it, in which case the Legislature could agree to his proposed changes with a simple majority vote. If he vetoes it, the Legislature would need a two-thirds majority vote for the bill to become law.

If Murphy does sign the bill, ClearView says it expects opponents will file a lawsuit in the U.S. District Court for New Jersey challenging the ZEC program on grounds similar to those of lawsuits challenging similar programs in New York and Illinois. ClearView also said it thinks New Jersey lawmakers structured their state's ZEC program with such lawsuits in mind.

The nuclear subsidy bill drew a mixed reaction. The Natural Resources Defense Council has said it will not oppose the bill, while Jeff Tittel, director of the New Jersey Sierra Club, said it would have "a chilling effect on spending more for renewable energy, because to build out renewable will cost much more."

The Electric Power Supply Association and New Jersey Petroleum Council also panned the nuclear bill, while PSEG spokesman Michael Jennings called it "a sensible solution that protects the viability of nuclear energy and its benefits for New Jersey, while at the same time ensuring consumers are protected, as well."

The other bill (A3723) would require electric power suppliers to procure 35% of their power from renewable resources by 2025 and 50% by 2030.

PJM News

MRC Preview

Below is a summary of the issues scheduled to be brought to a vote at the Markets and Reliability Committee on Thursday. 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*. The scheduled Members Committee meeting has been canceled.

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

2. PJM Manuals (9:10-9:40)

Members will be asked to endorse the following proposed manual changes:

A. Manual 14A: New Services Request Process. The revisions clarify language to match existing procedures and add language to describe in detail system impact study and interconnection feasibility study analyses. In January, a FERC administrative law judge issued an initial decision finding that PJM's process is unjust and unreasonable because of a lack of transparency (EL15-79). On Feb. 20, PJM filed a brief on exceptions challenging the ruling. (See *FERC Judge Faults PJM, TOs on Transmission Upgrade Process*.)

B. Manual 14B: Regional Transmission Planning Process. The revisions are the result of a periodic review that identified several administrative changes, including a revision to the generator deliverability procedure and adding the Ohio Valley Electric Corp. to the Western region study area definition.

C. Manual 28: Operating Agreement Accounting. The revisions address changes to comply with FERC Order 825 implementing five-minute settlements. Also makes a technical correction for the revenue data used to calculate settlements for generation resources. (See "Order 825 Implementation Moves Forward," *PJM Market Implementation Committee Briefs*.)

D. Manual 11: Energy & Ancillary Services Market Operations. Removes offer cap revisions for price-based offers that were approved at the October 2017 MRC to comply with FERC Order 831. PJM discovered the revisions restrict market-based offers to $1,000/MWh, contradicting language in the Operating Agreement. The manual is being revised to say that market-based incremental energy offers may not exceed $1,000/MWh unless the cost-based incremental energy offer is more than that amount. In that case, the market-based incremental energy offer is capped at the lesser of the cost-based incremental energy offer or $2,000/MWh.

3. PJM External Capacity Filing (9:40-9:55)

Members will be asked to endorse proposed revisions to Manual 12: Balancing Operations to incorporate rules approved by FERC in November regarding reviews required for approval of pseudo-tied generators. (See "External Capacity," *PJM PC/TEAC Briefs: March 8, 2018*.)

4. Balancing Ratio Issue Charge (9:55-10:10)

Members will be asked to endorse proposed revisions to the deliverables in the balancing ratio issue charge that the Market Implementation Committee is currently addressing. The revisions highlight the potential for changes to, and the underlying logic for, the market seller offer cap. (See "Stopgap Balancing Ratio OK'd Despite Questions," *PJM MRC/MC Briefs 10-26-17*.)

5. Operating Committee Charter Update (10:10-10:20)

Members will be asked to approve proposed revisions to the Operating Committee charter to replace the term "spinning reserve" with "synchronized reserves." The revisions will match the language of other PJM manuals.

— Rory D. Sweeney

SPP NEWS

SPP Group Balks at Mountain West Concessions

By Tom Kleckner

OG&E's Greg McAuley states his company's position. | © RTO Insider

KANSAS CITY, Mo. — A small group of SPP members have asked the Board of Directors to reconsider its decision to move forward with the Mountain West Transmission Group's integration until "there is more consensus within the SPP membership as to how to proceed."

In a letter filed for inclusion in the background materials for the board's April 24 quarterly meeting, the group called for reopening negotiations with Mountain West to create a path "towards a single RTO with a single set of rules for all participants."

It reflects growing stakeholder concerns over the board's March 13 approval of policy recommendations intended to govern the terms of Mountain West's membership in SPP. The board approved 18 policy statements and directed staff and stakeholders to begin revising SPP's Tariff, bylaws, membership agreement and other governing documents. (See *SPP Begins Work of Integrating Mountain West*.)

The letter, dated April 6, was signed by load-serving entities Kansas City Power & Light, Municipal Energy Agency of Nebraska, Nebraska Public Power District, Oklahoma Gas & Electric and Western Farmers Electric Cooperative.

No Prior Notice

It charges that SPP's full membership did not see the policy recommendations — such as new Mountain West-only stakeholder systems to manage regional cost allocation and zonal rate design — prior to board approval.

Based on the analyses presented so far, it is impossible for the board and stakeholders "to evaluate the potential impacts associated with the East-West bifurcation of SPP's governance structure," the companies said.

"The process has afforded neither the ability of the existing members to be well-informed nor the opportunity for the policy recommendations to be supported by the collective membership," the five utilities wrote. "We want to see one set of rules applied to all entities — East and West — unless there is a physical or legal limitation (e.g., federal exemption) that must be honored. Any expansion of SPP to include new transmission-owning members must be designed so that both SPP's existing members (and thus their customers) and the new entrant receive benefits. And if existing SPP customers are assigned additional costs, there should be corresponding benefits."

MOPC Discussion

Separately, OG&E's Greg McAuley brought the issue to the fore as SPP's Markets and Operations Policy Committee meeting ended Wednesday. He asked that the minutes note as "we participate in the working groups [on Mountain West's integration], it should not be reflected as overall acceptance of the proposal."

"We're still opposed to the Mountain West integration as proposed," McAuley said. "Some of the revision requests are very complicated. They're very difficult and complex, and they need to be reviewed appropriately. We don't want our participation in that work to be viewed as demonstrating approval of the overall proposal or, conversely, intentionally slowing the process of getting the revision requests approved."

Saying he did not want to leave McAuley "hanging out there by himself," American Electric Power's Richard Ross said his company also has "significant reservations about the structure of the proposal."

"We don't feel like it's as good as it could have been done or should have been done. It brings risk to the existing membership," he said. "But we will work through the stakeholder process. When given lemons, we'll try make as good a batch of lemonade for the RTO as possible."

One of AEP's concerns is the cost of potential upgrades to the four DC ties connecting SPP and the Mountain West entities. The upgrades have been proposed as an approximate 70-30 split on a load-ratio share between East and West. SPP and Mountain West say that incorporating the ties into the RTO's market will lead to lower production costs and savings from sharing operating reserves.

Yet to be determined is what happens should any Mountain West entities leave the expanded RTO after the DC ties are upgraded.

"I don't want be in a situation where new members join and then they turn around and leave, and I have to continue paying for their DC-tie cost under the exiting provisions of the bylaws," Ross said.

SPP: Not Surprised

SPP said the pushback was not unexpected, noting that its stakeholder process is built around collaboration, consensus-building,

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SPP NEWS

Vote to Make Variable Resources Dispatchable Falls Short at MOPC

By Tom Kleckner

KANSAS CITY, Mo. — SPP's Markets and Operations Policy Committee last week failed to endorse a revision request that would have required non-dispatchable variable energy resources (NDVERs) to register as dispatchable variable energy resources (DVERs) within a multiyear transition period.

The Market Working Group's (MWG) recommended revision request (RR272) will likely be appealed to the Board of Directors for its April 24 meeting.

A roll-call vote resulted in 62.3% of members favoring the measure, short of the necessary two-thirds majority. Transmission-owning members Western Farmers Electric Cooperative and Westar Energy, last in alphabetical order, cast the final two votes opposing the change to seal its fate, at least temporarily.

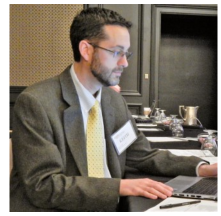
"I'm not saying I'm going to submit one, but I have a feeling there will be [an appeal]," said American Electric Power's Richard Ross, who chairs the MWG.

NDVERs converting to DVERs would need to ensure they have the proper communication systems in place and the technical capabilities to reduce their output.

Ross said the Tariff change will increase market efficiency through the reduction of manual out-of-merit energy orders to mitigate constraints. The addition of dispatchable resources will only increase reliability, he said.

"Any time you're taking actions out of market, you are creating inefficiencies," said SPP's David Kelley.

The Market Monitoring Unit expressed strong support for the Tariff change, saying it would help reverse the recent growth of negative real-time pricing. The Monitor's recent quarterly report noted the frequency of intervals experiencing negative prices increased from 2.6% in 2015 to 7% through November 2017. (See *SPP Market Monitor: Negative Prices May Require Rule Changes*.)



Keith Collins | © *RTO Insider*

"Negative pricing is a significant issue in our market," MMU Executive Director Keith Collins reminded members. "Something that increases flexibility is at a premium, which we will highlight in our next report. Having non-dispatchable resources becoming dispatchable is an important piece of that recommendation."

Collins said an SPP operations study revealed that "the more flexibility you have, you end up increasing [energy market] pricing" by reducing the magnitude of

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SPP Group Balks at Mountain West Concessions

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candor and open dialogue.

"In short, concerns expressed by our members to our board is a natural part of our established process, and we welcome dialogue with them," the RTO said in a statement. "Now that we're transitioning to a more public, inclusive phase of the integration process, we fully expect and welcome questions from our members regarding implementation of the board-approved policies."

Xcel Energy spokesman Mark Stutz, speaking for the Mountain West entities, pointed out the SPP board's March approval was of policy terms agreed to by the group's utilities.

"The Mountain West members are now engaged in the public stakeholder process to develop the implementing language in the SPP Tariff and related contracts. Although final decisions have not been made, we plan to continue work in the established SPP public stakeholder process to complete these efforts," Stutz said.

$500 Million not Sufficient

There was little other public support for McAuley and Ross at the MOPC meeting, but away from the microphones, stakeholders said the $500 million in total net benefits promised by SPP to existing members over the first 10 years of Mountain West's membership is not sufficient.

They also expressed concerns about the time needed to vet Tariff and governance revisions and the exit provisions for Mountain West entities. SPP has said it hopes to bring a package of revision requests to the board in July for its approval.

Sunflower Electric Power Cooperative's Tom Hestermann asked SPP COO Carl Monroe what was the sense of urgency driving the stakeholder process. Hestermann noted that the Regional Tariff Working Group has scheduled 17 meetings (five of which are multiday affairs) before the July 31 board meeting to manage the 12 revision requests before it.

"It's always an issue of how do you ensure there's due diligence," Monroe said. "When setting a schedule, how do you ensure the parties have adequate time and the urgency to get something done and also have the ability to push back when key issues arise that need to be resolved. That's the goal that's been set."

The Market Working Group faces a similar work load. It has scheduled seven meetings before the board meeting to handle the 20 Tariff changes it currently faces.

Monroe also told stakeholders that SPP and Mountain West are still negotiating a transition service agreement, but that staff have "every intention" of providing "all the protections that have been requested" should Mountain West walk away from the deal.

He said SPP has exhausted the funds allocated by the Finance Committee for integration work, which has led to a temporary halt in the effort.

"We're not doing anything for integration until they sign the agreement," Monroe said. "We're pushing to get it done."

SPP projects it will take about two years to fully integrate the Mountain West entities as members, but it plans to begin reliability coordination services in late 2019.

SPP NEWS

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Wind, Solar Get $0/MWh VOM Cost in Transmission Planning

SPP's Markets and Operations Policy Committee met on April 10 and 11. | © RTO Insider

KANSAS CITY, Mo. — SPP's Markets and Operations Policy Committee endorsed a rule change to address member concerns that the Integrated Transmission Planning (ITP) Manual doesn't appropriately capture purchase power agreement pricing in the adjusted production cost-benefit metric.

RR276 removes the PPA pricing from the variable operations and maintenance (VOM) methodology language in the ITP Manual and replaces it with a VOM cost of $0/MWh for all wind and solar units. The Economic Studies Working Group (ESWG) had proposed a VOM cost of $8/MWh but revised the number following stakeholder discussion.

The ESWG said RR276 better captures the "benefits of incremental transmission investment when reducing economic curtailment or congestion costs associated with transmission customer purchases from renewable generation resources under 'take or pay' power purchase agreements."

The MMU said the zero VOM cost is a "much closer reflection" to the actual number based on its review of all mitigated offers resources have applied for in the SPP market.

"We were sort of surprised to see a number that high," Collins said referencing the $8/MWh proposal. "It does not in any away affect the bottom prices we have on file. Zero is more reflective of the true number."

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Vote to Make Variable Resources Dispatchable Falls Short at MOPC

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negative prices.

"All resources will benefit from that change, which will allow the integration of more and more variable resources in the system," he said.

But Westar said the change would hurt SPP's "market reputation."

"NDVERs were a condition of several [market participants] agreeing to transition from [the Energy Imbalance Service to the Integrated Marketplace]," the company said in written comments. "If we go back on our word, will other [market participants] lose confidence in the stability of SPP tariff grandfathering and agreements made to prospective balancing authorities, asset owners and market participants considering the benefits of [joining] SPP as a stable settlement and market platform?"

Members accepted a friendly amendment to the revision, extending the registration deadline to January 2021.

The revision request exempts about 2,000 MW of resources without direct interconnection agreements with SPP or registered as qualifying facilities under the Public Utility Regulatory Policies Act. That drew concerns from members over whether Mountain West Transmission Group entities would be able to acquire similar exceptions.

"If the current language excludes those, it does appear to leave questions about those who joined SPP with a previous interconnection agreement, but not one with SPP," said The Wind Coalition's Steve Gaw. "Will they have to comply with this [requirement], or does the language exempt them, including the generators in the Mountain West region?"

"That's exactly right," said Oklahoma Gas & Electric's David Kays. "When you're being prospective about anyone coming in afterwards … I think it creates a hole in the Tariff, and I'm not sure that's something we should be doing intentionally."

Ross said there is no specific provision to carve out the Mountain West entities. "They'll have to be prepared to comply with these requirements when they're integrated into the SPP system," he said. The MWG fashioned the change so that "anyone who wants an exception can make a [Federal Power Act Section] 200-whatever filing from that [requirement] at FERC," he added.

Kelley pointed out that ISO-NE and CAISO have gone through similar conversions. He said the revision would help a grid that has "grown exponentially in size" with new wind resources and continues to hit new wind-penetration peaks.

"I go back to the overall problems we're trying to address, which is overall market efficiency and reliability," Kelley said. "When you hit those [constrained] situations, it's imperative that the operators and markets have the tools to make the most efficient decisions on a systematic basis, rather than take out-of-market actions."

The vote followed one of several vigorous discussions that livened up what staff and members had expected to be a perfunctory MOPC meeting.

"If you're not careful, you'll have an MWG meeting break out," Ross joked.

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The Nebraska Public Power District's Tim Owens, the ESWG's vice chair, said the revision request is necessary as the 2019 planning cycle begins. He said it is an interim solution to objections over proxy PPA pricing, and the group will continue to work with staff on improving the economic studies process.

"We are trying to address this one particular input," Owens said. "We fully understand that this is not the end-all assumption. Setting it to zero or eight won't in and of itself address all of these other issues. We're just focusing on what we're going to do for the 2019 ITP assessment."

"I see the benefits of a zero VOM, but my major concern is fixing the process," said Southwestern Public Service's Bill Grant.

The measure cleared the two-thirds approval threshold at 68.3% in a roll-call vote. Transmission-using members (TUs) voted 36-7 in favor of the revision, overcoming a 9-8 split by transmission owners.

Members Hash out Charter Revisions by Working Groups

Members revised and endorsed a Transmission Working Group (TWG) charter revision to increase its membership, proposing that the group include all TOs and an equal number of TUs.

The TWG had proposed increasing its membership from 24 members to 26, with no more than 14 TOs or TUs at any one time. Several members expressed concerns about the group handling compliance issues without representation of all 17 TOs.

"It's very important that the votes presented to MOPC are reflective of the full membership, and that MOPC has that guidance when they vote," Grant said. "You don't want the unintended consequences because of what that one person could come up with."

Sunflower Electric Power Cooperative's Al Tamimi pointed out his company is one of the TOs currently excluded from the TWG. "If I don't get a seat, I don't want this group handling compliance matters," he said.

Other members pushed back against the membership expansion.

"If we're going to do this for the TWG, what other groups now can be expanding their membership?" asked Oklahoma Gas & Electric's Greg McAuley. "With the Mountain West coming with another potential 10 TOs, this group is going to be enormous. I don't know what you're going to get done."

TWG Chair Travis Hyde, of OG&E, said the group's proposal was a compromise as it tried to seat all 17 of the TOs listed under SPP's bylaws. He said the TWG has tried to maintain a balance between TOs and TUs but has realized its attempt was becoming unwieldy.

"If we did, we'd get to [34]," Hyde said. "That's too big for a technical group like we are."

SPP COO Carl Monroe said the RTO's bylaws require all stakeholder groups to be balanced, "unless your charters are accepted with some other requirement." He said the organization uses TOs and TUs as "shortcuts," in the absence of member-type definitions in the bylaws, but recommended the groups change their governing documents if they disagree with the shortcuts.

"You can change the charter, but all these changes have to go through the Corporate Governance Committee," he said. "If we had half this many people in a room trying to make the decision, we wouldn't have the issues we do as the MOPC together."

Kansas City Power & Light's Denise Buffington, a member of the CGC, clarified Monroe's comments. "The bylaws don't explicitly say stakeholder groups should be balanced. That's just the way it's always been interpreted," she said.

The MOPC also endorsed a change to the charter of the Regional Tariff Working Group that gives all TOs representation, with an "up to" equal number of TUs. The RTWG said it has a longstanding policy that all TOs be represented, as their facilities are under SPP's functional control "for the provision of transmission service, planning, interconnections and recovery of revenue requirements."

Members did strike a provision that would have limited members with affiliated relationships to a single vote on the RTWG.

"I am opposed to putting affiliate restrictions in any charter. They're not in any other charter," Buffington said. "What I fear is you put the restriction in one charter, then everyone is going to come here and ask for similar language."

Monroe suggested it would be worth the governance committee's time to discuss affiliate restrictions and the number of working group members.

"It's not the number of people, it's the chair getting organized and ensuring people express their opinions," he said.

The MOPC also approved modifications to the Model Development Working Group's (MDWG) charter. The stakeholder group said the changes reflect current practices and adds references to assignments from the TWG, MOPC and Board of Directors and the development of models for reliability standard TPL-007-1 (Transmission System Planned Performance During Geomagnetic Disturbances).

The MDWG reports to the TWG and is responsible for the coordination, development and maintenance of SPP's transmission system planning models.

OG&E Raises Concerns over Third-party Tx Line Upgrade

Members voted to table a sponsored upgrade of an OG&E transmission line in northern Oklahoma, accepting the utility's request to give it more time to work out legal issues.

The work would be sponsored by EDF Renewable Energy, which wants to upgrade terminal equipment and rebuild an 11-mile, 138-kV line near Ponca City and its 154-MW Rock Falls wind farm, which became operational in December. EDF has said it will seek cost recovery through SPP's Attachment Z2 revenue crediting or incremental long-term congestion rights.

EDF presented the project to the TWG under SPP's new transmission planning process. The TWG approved the project in March after determining there wasn't a reliability impact. SPP Vice President of Engineering Lanny Nickell told members he was unsure whether the upgrade has ever been studied as an economic project in previous RTO planning studies.

OG&E pushed back against the project, saying it has engaged outside legal counsel

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to understand the consequences of having a third party pay to rebuild a line. McAuley noted his company is already recovering costs on the line through an annual transmission revenue requirement, but it is unclear what will happen to its depreciation or how to expense additional maintenance costs following the rebuild.

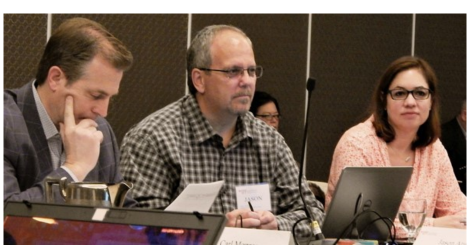
"At first blush, someone comes in and says they want to rebuild a line, you say, 'Fine. What's the big deal?' That's probably what the TWG said," McAuley said. "We have an existing line with an ATRR that's recovering revenue. What happens to that? This has opened up a broader set of legal questions we don't have answers to yet."

EDF did not have a representative in the room to participate in the lengthy discussion, but the company's transmission strategy director, Omar Martino, was eventually patched in to answer questions. He said EDF understood the region is facing congestion issues, but that no one had committed to the upgrade.

"To the extent we can alleviate congestion and protect ourselves from congestion pricing, the upgrade would provide sufficient relief for the wind farm," Martino said. EDF hopes to see the upgrade in place by June 2019.

"Bottom line, we have a whole lot of questions and not many answers," McAuley said, suggesting a revision request be drafted if SPP's Tariff doesn't supply enough guidance. "I think it is precedent setting, and we might want to take a little bit longer look at it."

SPP determined that while the vote was to determine MOPC's endorsement, RTO staff still have the responsibility to bring the proposal to the Board of Directors for its approval. In the meantime, OG&E's counsel will meet with SPP's legal staff to resolve its questions.



SPP's Lanny Nickell, NTEC's Jason Atwood and KCP&L's Denise Buffington lead the April MOPC meeting. | © *RTO Insider*

Six members voted against tabling the proposal and two abstained.

Members did endorse a second sponsored upgrade, the addition by City Utilities of Springfield of a second 161/69-kV transformer at its James River Power Station. The upgrade has a June in-service date.

Members Approve 3-stage Process for GI Requests

Members easily approved a task force's white paper that overhauls SPP's process for handling generator interconnection requests. BP Wind Energy North America abstained from the vote.

The Generator Interconnection Improvement Task Force's (GIITF) paper outlines a three-stage process comprising a thermal and voltage analysis, dynamic stability and short-circuit analysis, and a facilities study.

An increasing security deposit is required before each step, beginning at $2,000/MW and escalating to 10% and 20% of allocated upgrade costs, respectively. A decision period follows each stage, allowing transmission customers to determine whether to proceed to the next step following receipt of study reports.

The GIITF's work replaces the current convoluted process, which involves feasibility, interconnection and system impact, and facilities studies, bidirectional work flows, and mandatory and optional steps.

Tamimi, the task force's chair, said the simplified process will be easier for SPP to administer and for customers to understand and navigate. He said most upgrades will be identified in the first stage, allowing customers to make informed decisions before committing to a lengthy and expensive stability analysis.

Tying financial security to upgrade cost allocation will encourage customers to weigh the risks of proceeding at an earlier stage, reducing the number of requests that are withdrawn late in the process, Tamimi said.

The task force was created early last year to address SPP's overloaded interconnection queue and requirements that could emerge from a rulemaking FERC opened in December 2016 to consider changes to its *pro forma* large generator interconnection procedures (RM17-8). (See *FERC Proposes Changes to Interconnection Rules*.)

The commission has not approved any changes in the rulemaking. Earlier this month, however, FERC staff conducted a two-day technical conference to examine how SPP, PJM and MISO coordinate interconnection studies on projects near their seams, after the commission said their practices may not be just and reasonable. (See *Developers, Tx Providers Seek Direction on 'Affected Systems'*.)

The MOPC in 2017 granted the task force a one-year extension to develop a replacement for SPP's current interconnection process.

Ciesiel Delivers Final SPP RE Report

Members gave Regional Entity President Ron Ciesiel a round of applause following what may have been his last update to the MOPC.

SPP's RE has been dissolved and is in the process of transitioning its data and responsibilities to the Midwest Reliability Organization and SERC Reliability, where its 122 registered entities have been reassigned. (See *NERC Board Approves Dissolving SPP Regional Entity*.)

Ciesiel said he hopes to complete the work by July. He said 10 of the 17 remaining RE employees have found jobs within the RTO or elsewhere, noting cybersecurity personnel are "in great demand." Two others have decided to retire.

McAuley complimented Ciesiel and his staff on their work, saying, "While we didn't always agree with the audits, they were done well."

Tx Planning Improvement Task Force Delivers Final Work

The Transmission Planning Improvement Task Force wrapped up three years of work by winning the MOPC's unanimous endorsement of its 20-Year Assessment Manual, which now goes to the board for its final approval.

The assessment is intended to develop an

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extra high voltage (300 kV and above) transmission road map for the SPP region, with candidate projects helping inform shorter-term planning assessments. According to the manual, "The assessment will result in the identification of projects that economically deliver energy within the SPP region while addressing a reasonable range of future industry uncertainty."

The manual lays out roles and responsibilities within the 20-year assessment, study process and data inputs. The manual has been approved by the task force, the TWG and the Economic Studies Working Group.

Unanimous Consent Agenda Includes 9 RRs

Members unanimously approved the consent agenda, which included the re-baselining of a Nebraska Public Power District 69- and 161-kV project, from $37.8 million to $27.5 million; removing OG&E remedial action schemes at the Centennial and Crossroads wind farms; and nine revision requests:

- GIITF RR267: Eliminates the "standalone scenario," which considers each interconnection request by itself, from the definitive interconnection system impact study process. This will free SPP resources to focus on the binding cluster study results, permitting results to be available earlier than they currently are. Staff will provide the standalone equivalent study models through existing confidentiality provisions to customers seeking to conduct a stand-alone scenario of their own.
- MWG RR252: Assigns an out-of-merit energy (OOME) cap and/or floor, allowing staff to economically dispatch the resource down or up within the ranges.
- MWG RR259: Modifies the market settlement posting and dispute timelines being implemented with the new settlement system, reducing the number of resettlement postings and manual processes resulting from revisions to meter and bilateral settlement schedules.
- MWG RR273: Automates several the market settlement system's charge types that are not yet part of revenue neutrality uplift processing, resulting in rounding/residual amounts that must be manually processed and distributed through miscellaneous charges. The new system is scheduled to go live in May 2019.
- MWG RR280: Clarifies the settlement system's reserve sharing group (RSG) processing by modifying the RtImpExp5minQty field with an attribute indicating whether the import/export quantity was because of an RSG event.
- ORWG RR268: Clarifies or removes outdated language from the operating criteria, improving SPP's ability to perform reliability coordinator, balancing authority, transmission service provider and reserve sharing group functions.
- ORWG RR269: Clarifies language and removes antiquated and redundant language in SPP's operating criteria and describes the existence of multiple standalone documents.
- ORWG RR270: Converts the operating criteria Appendix OP-2 to a standalone document, clarifies language and adds formatting improvements.
- PCWG RR255: Revises business practice 7060 by adding triggers to stop the annual escalation of undefined baseline costs when a designated TO provides 1) SPP a letter of commercial operation, 2) notification that an upgrade is in-service, and 3) notification that an upgrade is complete.

— Tom Kleckner

SPP NEWS

SPP Questioned on Secrecy over Tariff Team

By Tom Kleckner

KANSAS CITY, Mo. — SPP officials were questioned at last week's Markets and Operations Policy Committee meeting as to why the Holistic Integrated Tariff Team was created and approved behind closed doors in March.

The Board of Directors approved the team's creation during the same executive session at Dallas/Fort Worth International Airport where it approved a set of policy recommendations to guide the Mountain West Transmission Group's pending membership into SPP. (See *SPP Begins Work of Integrating Mountain West*.) Some stakeholders have taken to calling the team the "HITT squad."

"Some of us didn't hear the discussion about how the board thinks about this, or how it went about populating it and how the different entities were selected on it," said The Wind Coalition's Steve Gaw.

Steve Gaw | © RTO Insider

SPP Legal Counsel Paul Suskie, who is serving as the HITT's staff secretary, said the team's formation was presented to the board as a recommendation from staff, with the addition of "a couple of other people who could help out."

"Honestly, it was a matter of getting it moving sooner rather than later," Suskie said.

The team, comprising directors, regulators, staff and stakeholders, is charged with developing a set of high-level recommendations addressing the challenges facing SPP's footprint. It is expected to complete its work with a written report by April 2019. (See *SPP Team to Take 'Holistic' Look at Processes*.)

"My point is, this did not need to be done in closed session," Gaw said. "Stakeholders could have given some input to the board. This is a huge strategic undertaking."

He said much of the HITT's work will be dedicated to issues affecting renewable energy and noted that only one of the 16 team members is "related to those particular interests."

"We would like to have had some degree of feedback to the board in open session," Gaw said.

"All due respect, Steve, do you really believe we would have started down this road without stakeholder input?" responded SPP Director Julian Brix. "Someone had to make this decision. The board signed on to this because it said it would like a reasonable way to get answers to strategy questions we've had for some time. It will be an open process down the road. You've got to have a starting point, and this was it."

SPP Vice President of Engineering Lanny Nickell reminded Gaw and the MOPC that the Strategic Planning Committee discussed creating such a group during a lengthy discussion in January. (See "Energy-only Resources Report Leads to Discussion, not Results," *SPP Strategic Planning Committee Briefs*.)

"That's really where we got started in identifying those interested in participating," Nickell said.

SPP has proposed that most HITT meetings be held face to face, with stakeholders not on the team "encourage[d]" to participate by dialing in, unless they are presenting to the team in person. Those not on the team are also encouraged to ask questions and suggest future topics for the team to evaluate.

Staff has scheduled nine meetings for the HITT through Dec. 5. Two of those will follow the April and July board meetings, giving non-team members a chance to attend.

SPP Seeks FERC Meeting in MISO Tx Dispute

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RTO Insider, and Patton's comments as reported by *Megawatt Daily*.

The letter, which was obtained by *RTO Insider*, quoted Patton as saying, "SPP has been saying [MISO] created reliability problems on their [SPP] system. We don't believe this is true."

"I take these comments very seriously as they are totally false as SPP did face a significant reliability event and took actions necessary to preserve the integrity of our system and the Bulk Electric System as a whole," wrote Brown, who said he was pleased that MISO President Clair Moeller had assured SPP that the RTO didn't agree with Patton's comments.

But Brown said he found Curran's quote, as reported by *RTO Insider*, "very troubling."

"I view this incident as a grave matter related to protecting the integrity and reliability of the Bulk Electric System," Brown continued. "Rather than debating this incident in the press, I believe it best for the parties involved to elevate our discussions to FERC and NERC so [that] everyone can better understand what occurred on that day and why. Therefore, I have asked Paul Suskie, SPP general counsel and executive vice president for regulatory affairs, to contact FERC to request their scheduling of a meeting in Washington, D.C., to take place expeditiously."

SPP spokesman Derek Wingfield said in a statement: "We disagree with the assessment of MISO's Market Monitor, as reported in *RTO Insider* and *Megawatt Daily*, regarding the severity of MISO's actions as they relate to the reliability of SPP's system during the Jan. 17 event. To ensure the continued reliability of all our systems, we have asked for a meeting with principals from MISO and the joint parties to clarify the parameters by which we coordinate operations, as defined in our settlement agreement."

MISO's Bennett said, "MISO system operators were in constant contact with real-time operators from all of our neighboring systems regarding system conditions on Jan. 17, including the transfer limits per the settlement agreement as well as our request for emergency purchases per MISO's emergency protocols.

"The settlement agreement between MISO, the Southern Companies, SPP and TVA establishes a Regional Transfer Directional Transfer Limit (RDTL) of 3,000 MW (north to south) and allows for temporary changes (increases or decreases) to the RDTL to avoid a system emergency, so long as the change does not create a system emergency for SPP, the Southern Companies or TVA."

FERC DER Technical Conference

RTOs, Regulators Set Course for DER Market Participation

By Michael Kuser and Jason Fordney

Grid operators and regulators last week hashed out the complexities of integrating distributed energy resources during the first session of a two-day FERC technical conference on boosting the role of energy storage in wholesale electricity markets.

FERC ordered the conference in February after issuing Order 841, which requires each RTO/ISO to develop a "participation model" allowing storage resources to provide any energy, capacity and ancillary services of which they are capable and be eligible to set clearing prices as both buyers and sellers. (See *FERC Rules to Boost Storage Role in Markets*.)

A morning panel brought together RTO/ISO representatives who discussed the operational intricacies of integrating DER into wholesale markets, focusing on approaches to aggregating the market participation of the small-scale resources to make them manageable for grid operators.

"DER aggregation requires a level of cooperation you don't see to this point, not even in demand response, because of the impact DER can have on the system," said John Goodin, CAISO manager of infrastructure and regulatory policy. "It's important if you're going to establish DER aggregation that you impose both size and boundary constraints; that's something that the ISO has done."

CAISO set a 20-MW size limit on aggregations participating in its market, although individual resources can range from 0.5 to 1 MW. Any resource exceeding 20 MW becomes a participating generator subject to a different set of requirements, Goodin noted.

Nodal vs. Zonal

Pointing to the dual nature of DER as both transmission and distribution resources, Jeff Bladen, MISO executive director for market services, said it's important to distinguish between the challenges of taking load off the system and putting supply onto the system.

"As we think about aggregation groups, it needs to be more than how do we do security-constrained aggregations for the transmission system, but how are we going to manage potential restraints at the distribution level," Bladen said.

"Let's remember we are a nodal system," cautioned Joe Bowring, president of Monitoring Analytics, PJM's Independent Market Monitor. He encouraged industry stakeholders to think about developing a sustainable model for significant expansion of DER.

"It's critical to think about how [aggregation] works in a nodal system,"

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Gatekeeper or Facilitator? FERC Panels Debate EDCs' DER Role

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The first day of the conference focused on how RTOs and state regulators can craft policies that encourage DER to participate in wholesale markets while minimizing the burden on grid operators. (See *RTOs, Regulators Set Course for DER Market Participation*.)

Conflicts of Interest?

Audrey Lee, vice president of energy services for residential solar and storage provider Sunrun, said EDCs should only be allowed to block DERs through a showing that they would endanger system reliability.

"I think we need some specific examples [of problems] before creating any rules on this," she said, adding that utilities seeking to install their own resources could have conflicts of interest. She noted that CAISO's Tariff gives EDCs a deadline for reviewing DER applications and reserves the final decision for the ISO.

Maria Robinson, director of wholesale markets for Advanced Energy Economy, said distribution companies "should be facilitators, not a gatekeeper … preventing the ability of [DER] aggregators to enter."

The penultimate panel of the day included (left to right): David Crews, EKPC; Mark Esguerra, PG&E; Daniel Hall, OMS; Peter Langbein, PJM; Audrey Lee, Sunrun; David Owens, formerly EEI; Maria Robinson, AEE; and Jeff Taft, PNNL. | © *RTO Insider*

She suggested EDCs identify zones that can absorb DERs without reliability problems. If they are to review DER applications, EDCs should be given deadlines requiring them to act quickly, and rejected applicants should have the right to appeal to the RTO/ISO or FERC, she said.

"The vast majority of issues should be worked out with the interconnection agreement" between the resources and transmission operator, she said, adding that reviews should be done only once for each

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Bowring said. "It's not possible to predict congestion; it's not possible to predefine constraints that exist or don't exist in a zone." Any configuration larger than a node is "way too big for aggregation," he said.

Michael DeSocio, NYISO senior manager for market design, said that while New York does allow zonal aggregations, none is participating in the market today.

"So as much as we hear it's important, we don't see much of that actually occurring in New York," DeSocio said. "As we thought about making sure the values were there for DER and making sure the price signals incentivize DER to locate in the right places, it occurred to us that nodal made the most sense."

Henry Yoshimura, ISO-NE director of demand resource strategy, noted resources coming into the New England system are primarily solar and energy efficiency and the RTO's settlement-only construct allows any resource up to 5 MW to participate in the wholesale market. "Because there's no size limitation, there's no real need for aggregation," he said.

Goodin said CAISO sees significant benefits to aggregation.

"We don't have a single node," Goodin said. "You can have an aggregation across the [sub-load aggregation point], across multiple nodes, and why is it advantageous? One, it allows for the providers to actually go out and solicit and pull together, aggregate, meaningful-sized customers, meaningful from the ISO's perspective ... the key thing is that aggregations allow for the right sized resource."

Andrew Levitt, PJM senior market strategist, said, "We think there are benefits to aggregation in ensuring open-market access to resources of all sizes, including resources smaller than our 100-kW minimum highest threshold."

National Solutions?

Commissioner Cheryl LaFleur asked why there should be different processes among the different regions.

"Shouldn't we try to solve the coordination process once and then sort of spread that, as opposed to developing six ways to do it?" LaFleur asked. "Maybe we should standardize more. Can we skip a step and figure it out?"

"I don't know that the rules are the issue," DeSocio said. "I think really what the main difference that we've observed in New York is what is the posture of each of the different distribution utilities; what is their ability to actually see into their own grids."

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interconnection.

Pete Langbein, manager of demand response operations for PJM, also said interconnection studies should consider DERs once, as opposed to "iteratively." The studies "may evolve over time" to provide the information needed to evaluate DERs' impact, he acknowledged.

Interconnection Agreements not Enough

But David K. Owens, retired executive vice president of the Edison Electric Institute, said EDCs need to know DERs' attributes to understand which ones could cause system disturbances. "Just having a list of aggregators is not sufficient," he said. "[Distribution] utilities have to know when DERs are deployed. ... Interconnection agreements alone will not do it."

Jeff Taft, chief architect for Pacific Northwest National Laboratory, said DERs become potentially more disruptive as their density increases and that the effects are more significant on distribution lines. "The closer you get the edge of the distribution system, the more you see the volatility caused by DERs," he said.

Taft said that although distribution lines are generally designed as radials rather than the "mesh" network of transmission, they are "dynamic" because EDCs reconfigure their systems daily. "A resource that may be running through substation A, a few minutes later may be running through substation B."

State 'Opt-out'

David Crews, senior vice president of power supply for East Kentucky Power Cooperative, said EDCs must have authority to protect their systems to avoid imbalances on distribution feeders. He disagreed with projections that DERs will be evenly distributed, saying they are more likely to be clustered in wealthier areas where residents can afford solar panels and storage. "It can cause problems; I'm not saying it will."

Crews also said state regulators should have the ability to "opt out" from allowing retail customers to participate in wholesale markets. EKPC joined PJM in 2013 based on an agreement with Kentucky regulators that state residents would not be able to participate in the RTO's markets, he noted.

Crews said there is little use of solar and storage among EKPC's 16 distribution utilities, which use five different makes of meters. "For us to go through the administrative cost of developing a tariff is burdensome to our members" at current penetration levels, he said. "If our members have enough [resources] out there that they want it, we'll do it."

Cross Purposes

Mark Esguerra, director of integrated grid planning for Pacific Gas and Electric, warned of conflicts between DERs transacting with RTOs/ISOs and ones providing services to distribution companies. "You could have a situation that none of the parties — the ISO and the distribution utility — get the response they're looking for."

Esguerra said the 10-day EDC review deadline suggested by some "could be a challenge without more sophisticated modeling tools."

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Goodin added, "If we are going to enable DER to really flourish, you have to address some of the things that are outside the walls of the ISO and the authority of an ISO through FERC."

He enumerated three priorities: access to capacity markets and capacity payments; reducing interconnection barriers and cost; and creating more clarity around allowing DER to tap multiple value streams and simultaneously provide grid services to the both ISO and distribution domains.

"In my opinion, those are the much more weighty issues — resource questions, interconnection, multiuse — than sort of the day-to-day functionality of managing these DER and settling these DER resources in the wholesale market," he said.

Yoshimura said the primary issue is a lack of "consensus in the industry as to how distributed energy resources ought to be operated, if at all. And the struggle that any ISO would have is, whereas we model transmission constraints, I don't think any of us model distribution constraints."

MISO's Bladen said, "We like to think of ourselves as a service provider, to the states in many respects, that our job is to take the fleet that regulators are designing and implementing through their integrated resource plans and to optimize that, to get the most value you possibly can out of that fleet across a broad region."

"We don't know yet what best practices are going to look like, don't know what the dominant DER technologies will be, and that what you have in front of you are a number of companies interested in identifying best practices," Bladen said.

Bowring said: "We should have the same rules. The fact there's all this complexity doesn't mean we shouldn't have the same set of rules. They will evolve, but we to need start in the same place where everyone is facing the same issues."

Head Banging

During the afternoon panel, regulators from California, Ohio, Pennsylvania and D.C., as well as others, carried on the discussion of DER aggregation, including issues around reliability and markets. The conversation illustrated the newness of the technology and the many challenges of coordinating state regulations, markets and the requirements for utilities.

FERC commissioners noted the difficulties for states developing separate policies and approaches that will need to be integrated into wholesale and retail markets. The panel covered how federal and state regulators — and others — can better

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Missouri Public Service Commission Chairman Daniel Hall, vice president of the Organization of MISO States, said state regulators should set criteria for DER registration and that EDCs must have authority to approve DERs on their systems. "All distribution systems are unique and the people who know them best are the people on the ground, which is the utility and the utility's regulator."

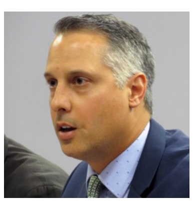
Hall said clear criteria on when EDCs can reject DERs will keep EDCs honest. "That gets us beyond the gatekeeper/facilitator" debate, he said.

There was general agreement that RTOs/ISOs, EDCs and aggregators will need to develop new communication protocols to manage higher levels of DERs. Hall urged FERC to allow regional differences by allowing each RTO and its stakeholders to develop their own rules, subject to commission approval.

Visibility

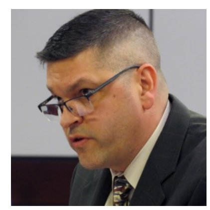
Gerald Gray, the Electric Power Research Institute's (EPRI) program manager for information and communication technology, said that although some utilities do not have supervisory control and data acquisition (SCADA) at all substations, the expansion of advanced metering infrastructure means "there is a lot of granular data providing visibility" on distribution systems.


Gerald Gray | *© RTO Insider*


Matthew Glasser | *© RTO Insider*

But Matthew Glasser, a director at Consolidated Edison, said his company and other New York utilities do not have the visibility they need to manage DERs. "Communication with DERs now is low-tech. It's phone and emails."

Joseph Ciabattoni, PJM's manager of markets coordination, said the RTO typically communicates — via phone — with transmission operators, which do the same with their DERs.


Joseph Ciabattoni | *© RTO Insider*

Brandon Middaugh, senior program manager for distributed energy for Microsoft, said ISOs and RTOs have "very limited visibility into distribution."


Brandon Middaugh | *© RTO Insider*

Visibility also was the subject for the first panelists of the morning — five of eight of whom were from grid operators or utilities. As Portland General Electric Vice President of Transmission and Distribution Larry Bekkedahl put it, system operators "can't manage what you don't measure."

Bekkedahl said the information would allow utilities to avoid overbuilding capacity to the "worst-case scenario," as is done today, and instead "put in as much capacity as necessary."

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coordinate on the issue.

"This is a case where all the technology might be ahead of the regulators," LaFleur said.

FERC Chairman Kevin McIntrye put it simply, telling the state regulators, "We want to avoid messing anything up." He asked about the negative impacts of individual and aggregated DER on states and said the discussion should help build a robust evidentiary record.

California Public Utilities Commission President Michael Picker recommended a "DER roadmap" similar to one developed by his agency, which looks at grid architecture, DER planning, and developing appropriate rates and tariffs. California is a leading state in DER integration, including efforts by the CPUC and CAISO.

"There are a lot of challenges here," Picker said, adding that the CPUC's effort has uncovered issues around safety for workers and emergency responders who have to deal with DER equipment. The effort has also identified operational issues around DER integration, including congestion in the distribution system, and is mapping the distribution system similar to how RTOs map transmission systems.

"We have a grid system that was never designed for a lot of two-way flow," Picker said. The CPUC effort is "acknowledging that these are trends that are going to happen," he said. He noted that other states will be able to learn from and "leapfrog" California's efforts.

"I would recommend you let us bang our heads against those brick walls," he told FERC, pointing to CAISO's Energy Storage and Distributed Energy Resources program, now in its third phase. (See CAISO Storage, DER Plans Progressing.)

Different States, Different Rules

The regulators noted their states have different policies with different cost impacts that will need to be integrated into markets. They also hold differing views on allowing DER to participate in wholesale and retail markets.

Public Utilities Commission of Ohio Chairman Asim Haque discussed an issue raised by several regulators: that DER should not be compensated twice — in retail and wholesale markets — for providing the same services.

But Haque added that DER owners and operators should be left to decide how they choose to be compensated for behind-the-meter DER, such as staying on a net metering tariff or participating in the wholesale market through aggregation if that is more profitable.

"Their goal is to maximize the value of that resource," he said. "That is acceptable to us as well."

Ben D'Antonio, counsel for the New England States Committee on Electricity, said distribution utilities in New England are going to drive many of the outcomes as DER resources are added, but "the operational impacts are not known at this time."

"We are actively working on it, but some of ours states have some pretty ambitious goals and others do not," D'Antonio said. He said it's unclear how quickly DER will grow in New England, but he thinks the integration effort will need to be consistent with the integration and interconnection requirements of the distribution utilities, who have a "critical gatekeeping role." Utility decisions will be driven by the tariffs, requirements and incentives that federal and state regulators put in place, he said.

"We support the idea of DER being able to take part in both wholesale and retail markets," said Tammy Mitchell, deputy director of the New York Department of Public Service. But she thinks much work remains to develop the rules and protocols, including the double-payment issue, which could increase ratepayer costs.

D.C. Public Service Commissioner Willie Phillips said he thinks the city can benefit from DER, but "it's really a resource-by-resource analysis." The city has seen no negative impact from its load control programs, for example, he said.

"Here in the district, people are dying to get at this," but the compensation issue must be solved first, Phillips said.

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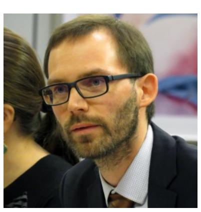
Jens Boemer, the principal technical leader of EPRI's Transmission Operations and Planning Group, said he learned from experiences in his native Germany that any data that can be collected "relatively easily" should be done "as early as possible" because it becomes more expensive to do it later. He also said it's important to stop combining DER performance with load because it masks the additional services it provides.



Jens Boemer | © RTO Insider

Unpredictability

Clyde Loutan, a principal on renewable energy integration for CAISO, said DERs contribute to the unpredictability of load. "We have system operators trying to control a grid with unpredictable demand and variable supply, so we're always in reactive mode," he said.

Clyde Loutan | © RTO Insider

Larry Bekkedahl | © RTO Insider

Donnie Bielak, PJM's manager of reliability engineering, called that "a scary thought," because the RTO watches CAISO as a barometer of what's to come on DER issues. "We need an absolutely accurate load forecast to operate the system and operate it economically," he said.

Ganesh Velummylum, a senior manager of

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system analysis at NERC, placed the responsibility with transmission owners. He said they should ensure they have the necessary data before they agree to interconnect the resources.

"It starts with the TO," he said. "Once we have the data, we can do studies. ... We have to start with collecting the data through the interconnection process."

'52-Hz Problem'

Lack of data can create wider issues, as Boemer illustrated through what he called the "52-Hz problem" in Germany. Many DERs were programmed to trip off at frequency thresholds that are very close to normal frequency, which meant that small and normal frequency variations could cause widespread loss of DERs on the system.

It's an issue PJM is currently looking at by increasing resources' "ride-through" requirements. (See "Implementing DER Ride Through," PJM Operating Committee Briefs: March 6, 2018.)

None of Germany's transmission operators had modeled that problem in its studies, Boemer said. But the industry was able to identify the risk through published research and knowledge of system operations and operating standards. A catastrophic trip never occurred, but the German government set up a retrofit program to reprogram the trip settings for more than 400,000 distributed photovoltaic resources, he said.

Benefits

Panelists also said DERs have the potential to benefit systems by addressing reliability issues and perform important grid services. In fact, the variability is useful, Bekkedahl said.

"What used to be very stable generation is moving on us," he said. "Now that we've got variable generation going on, it's really nice to have variable load."

"The technology is there" to set up support for power, frequency ride-through and voltage support on the system, Velummylum said.

Ganesh Velummylum | © RTO Insider

"They all interact," he said. "I think it's important that we look at the collective support DER can provide."

DERs can also provide non-wires solutions, Bekkedahl said, noting their role in the cancellation of the Bonneville Power Administration's I-5 Corridor Reinforcement Project. The 80-mile, $1.2 billion, 500-kV line would have helped Oregon utilities manage summer peaks when they were receiving no generation support from south of Portland.

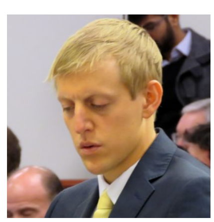
"If Oregon was hot, California was hotter," Bekkedahl said.

But subsequent DER development in California has changed the situation and eliminated the need for the transmission project. "Can we find non-wires solutions? I think absolutely," he said.

Unlocking such solutions will require encouraging DERs to participate in wholesale markets so they are committed and required to provide information, Bielak said. "The only way you can determine if you can rely on them is with enough data," he said.

Long-term Projections

FERC staff also asked panelists to discuss how to develop long-term projections, and many panelists looked to state policies because they drive development. Marcus Hawkins, the



Marcus Hawkins | © RTO Insider

director of member services and advocacy for the Organization of MISO States, noted that a MISO study ended up relying on publicly available data because a voluntary survey of DER owners performed by a consultant received low participation.

"I think it starts with having a good understanding of the status quo" of what's on the system today, Boemer said. He outlined "hosting capacity" studies that analyze distribution systems to identify potential thermal issues that could limit DER deployment on feeder lines.

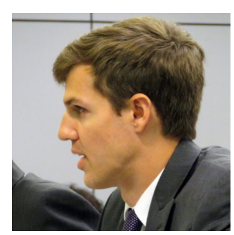
The analysis creates a heat map "that can indicate how much DER may be able to interconnect to certain areas on the distribution grid," Boemer said.

DERs in Planning

The morning's second panel focused on including DERs in system planning. Velummylum, who remained for the second panel, had a quick response. He held up two reliability guideline studies NERC has published that discuss DERs. "Folks, it's out there," he said.

Ning Kang | © RTO Insider

Ning Kang, a staff scientist at Argonne National Laboratory, said the lab is working on improving its models through analysis it performed by studying smart inverter functions and focusing on how applicable standards impact performance.



Brant Werts | © RTO Insider

Brant Werts, Duke Energy's lead engineer for DER technical standards, said his company only considers the impact of losing DERs in specific areas. During the recent solar eclipse, he said the company lost a significant amount of DER but also knew it was coming and prepared for it. "We don't believe that we would lose all of our DER at one time," he said.

Justice Department Joins Challenge to Minn. ROFR Law

By Rich Heidorn Jr.

Residents review possible paths of Wilmarth-Huntley transmission line at June 2017 open house. | *Xcel Energy*

In a potential boost for competitive transmission developers, the U.S. Justice Department said Friday that a Minnesota law granting in-state transmission owners a right of first refusal (ROFR) on grid additions is unconstitutional.

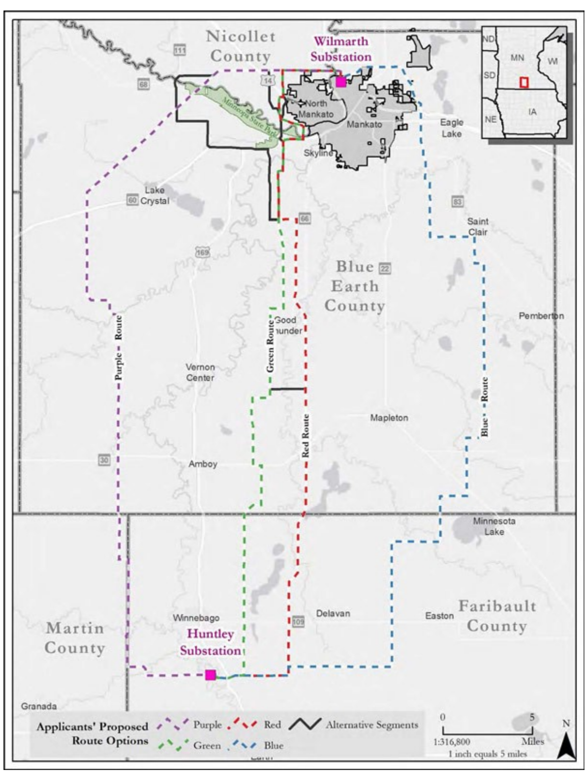
The department filed a "Statement of Interest" with the U.S. District Court of Minnesota, supporting a challenge filed in September by LSP Transmission Holdings over a ROFR law approved by Minnesota lawmakers in 2012 (17-cv-04490).

The law gives incumbent TOs a ROFR to build new high-voltage transmission lines that connect to their facilities, effectively preventing new entrants without a physical presence in Minnesota from competing.

"The United States believes that a state law which grants local electricity monopolists the right to obtain new monopolies in transmission projects in interstate commerce, and thereby block entry by potentially out-of-state competitors, unconstitutionally regulates interstate commerce in violation of the dormant Commerce Clause," Justice Department lawyers wrote.

The Commerce Clause of the Constitution gives Congress the power to regulate interstate commerce. The idea of the "dormant" clause is that it prohibits states from doing the same.

Minnesota approved the law following FERC's issuance of Order 1000, which required RTOs and ISOs to remove federal ROFRs from their tariffs. FERC said the order was not "intended to limit, pre-empt or otherwise affect state or local laws or regulations with respect to construction of transmission facilities."



Huntley-Wilmarth project map | © *RTO Insider*

But Justice Department lawyers said that while FERC did not void state ROFRs, "none of FERC's orders granted states any new authority to create rights of first refusal, or suggested that state rights of first refusal are consistent with the dormant Commerce Clause."

The state law "fails both the antidiscrimination test and the undue burden test because it raises entry barriers, segments the interstate market in developing transmission lines, favors in-state incumbents and causes substantial anticompetitive effects in interstate commerce," the department continued.

Xcel Energy's Northern States Power and ITC Midwestern Holdings, which were awarded rights by MISO to build the 40-mile Huntley-Wilmarth 345-kV line because of the state ROFR, have joined the state in asking for dismissal of the suit. The companies had no immediate comment on the Justice Department filing.

The project, estimated at $108 million, will connect Xcel's existing Wilmarth substation north of Mankato, Minn., and a proposed Huntley substation south of Winnebago, Minn., that will be owned by ITC.

Although the new line is a market efficiency project — a category eligible for competition — MISO declined to open it to competition because of the Minnesota law, a decision backed by FERC.

Northern States Power argued for dismissal of the suit, saying Minnesota's ROFR "was recognized by the regional planning entity and approved over LSP Transmission's objection by FERC."

The Justice Department disagreed. "All FERC found was that 'it is appropriate for MISO to recognize state or local laws or regulations as a threshold matter in the regional transmission planning process,'" the department said.

"In doing so, FERC simply recognized that requiring FERC-regulated entities to ignore state rights of first refusal would waste time and resources, as the entities' decision-making process ultimately could be overruled by the state's right of first refusal," the Justice Department said.

Sharon Segner, vice president of LS Power Development, who testified against the ROFR bill in a legislative hearing, said her company's challenge is the first against such state rules. LS Power also has identified ROFRs in North Dakota, South Dakota and Indiana.

Company Briefs

Mountain Valley Pipeline Announces Extension Project

Mountain Valley Pipeline on April 11 announced the MVP Southgate project, a proposed 70-mile-long natural gas pipeline that would run from main pipeline in Pittsylvania County, Va., south to new delivery points in Rockingham and Alamance counties, N.C.

The company said it has a firm capacity commitment from SCANA's PSNC Energy subsidiary for MVP Southgate and is commencing a binding open season for the pipeline to get other commitments for it.

EQT Midstream Partners will operate MVP Southgate, which Mountain Valley said it is shooting to have in service in the fourth quarter of 2020.

More: *Oil & Gas Journal*

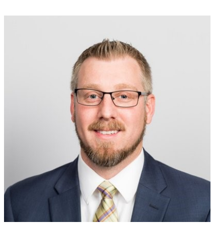
Wyo. PSC Approves 3 PacifiCorp Wind Farms, Tx Line

PacifiCorp said April 13 that the Wyoming Public Service Commission has approved a settlement agreement covering the new wind and transmission projects that are part of its Energy Vision 2020 initiative. The PSC also approved the certificates of public convenience and necessity for the projects, the company said.

The approvals clear the way for PacifiCorp to build three wind farms with 1,150 MW of capacity, which represents a 60% expansion of its wind fleet, as well as a 140-mile transmission line to connect more wind energy to its system. As part of the settlement, the company agreed to not build a previously announced 161-MW wind project in Uinta County. It also agreed to additional customer protections in the event of cost overruns.

More: *PacifiCorp*

AMP Promotes Price to Chief Technology Officer


Price

American Municipal Power said April 11 that it has promoted Jared Price to vice president of information technology and chief technology officer.

Price joined AMP in 2011 as IT director and since has taken on roles with increasing responsibility. In his new position, he is responsible for oversight of AMP's supervisory control and data acquisition (SCADA) and plant systems, assisting with the company's Advanced Metering Program and helping to refine its overall IT strategy.

Price continues to report to AMP Chief Information Officer Branndon Kelley.

More: *American Municipal Power*

Lawsuits Challenge New Orleans' Approval of Entergy Gas Plant

Opponents of Entergy New Orleans' $210 million natural gas plant said they filed lawsuits this week challenging the New Orleans City Council's Feb. 21 approval.

One lawsuit, filed by Loyola University law professor Bill Quigley, alleges that the council broke open meeting laws when it refused to allow protesters into the meeting room. The second, filed by several environmental groups, accuses the council's team of regulatory advisers of advocating for Entergy and that the company failed "to fully analyze whether a combination of less costly transmission upgrades, battery storage, renewable resources and energy efficiency could meet the city's electric utility needs."

Plaintiffs in the second lawsuit include the Alliance for Affordable Energy, Deep South Center for Environmental Justice, Earthjustice, Sierra Club and 350 New Orleans.

More: *The Times-Picayune*

Sempra Announces New Promotions Ahead of CEO's Retirement


Householder

Sempra Energy said April 10 that Joseph A. Householder will become chief operating officer as well as president on May 1. Householder is corporate group president of infrastructure businesses.

The company previously announced that Debra Reed will step down as president and CEO on May 1 and Executive Vice President and CFO Jeffrey Martin will replace her in the latter role.

Sempra also said Dennis Arriola has been appointed chief strategy officer and executive vice president of external affairs and South America. He was executive vice president of corporate strategy and external affairs; the move gives him oversight of the company's South American operations. It also said it has appointed Trevor Mihalik executive vice president and CFO and named Peter Wall vice president, controller and chief accounting officer, both effective May 1.

More: *Sempra Energy*

'Vessel Activity' that Damaged ATC Cables May Have Dented Pipeline

The "vessel activity" that damaged American Transmission Co.'s submarine transmission cables in the Straits of Mackinac also may have put three small dents in Enbridge's Line 5 oil and natural gas liquids pipelines in the straits, which connect lakes Michigan and Huron.

An Enbridge spokesman said April 11 that the dents were discovered in reviews undertaken by the company following news of the damage to ATC's cables, which lie a few hundred yards west of the westernmost of Enbridge's twin pipelines.

Enbridge informed Michigan officials of the dents April 10. The company called them "very small" and said they posed "no threat to the pipeline," Gov. Rick Snyder's office said in a statement April 11.

More: *Detroit Free Press*

Helicopter Working on FirstEnergy Tx Project Crashes, Killing 2

A helicopter working on a FirstEnergy transmission project crashed in Keating Township, Pa., April 8, killing two contractors and injuring the pilot.

The helicopter had been working on the Pierce Brook-Lewis Run Transmission Project, a 15-mile, 230-kV power line between substations in Bradford and Keating townships. The contractors were working for J.W. Didado Electric of Akron, Ohio. The pilot was flying a helicopter belonging to High Line Helicopters of Virginia.

The Federal Aviation Administration and National Transportation Safety Board are investigating the crash.

More: *Olean Times Herald*

Federal Briefs

Groups: FERC Should Identify Fined Entity

FERC should publicly identify the unidentified entity and a separate contractor that triggered a $2.7 million fine for serious violation of cybersecurity standards, two public interest groups said in an April 15 filing (NP18-7).

D.C.-based Public Citizen and California-based The Utility Reform Network filed the request with FERC, saying that the state commission in question might not be aware of the violation and penalty. The filing said that media reports indicate that Pacific Gas and Electric is the unidentified registered entity, including a trade journal interview with a hacker that had identified "very similar" violations by the company. PG&E did not immediately respond to a request for comment.

"Keeping the identity of the [entity] nonpublic from state utility regulators and from customer intervenors participating in state utility commission proceedings could allow the [entity] to seek retail rate recovery for such costs," the filing says.

NERC on Feb. 28 issued the notice of penalty for violating two critical infrastructure protection standards. The entity in question reached the financial settlement over an online data exposure of about 30,000 "asset records" associated with "critical cyber assets." NERC said a third-party contractor improperly copied certain data from the unidentified entity's computer network to the contractor's network and the entity had not put proper protections in place.

NRC Says Vermont Yankee Decom Funding Inadequate

The Nuclear Regulatory Commission said in a letter released April 12 that the plans by NorthStar Holding Co. and Entergy Nuclear for funding the decommission and clean-up of the closed Vermont Yankee nuclear power plant don't appear to provide enough money for the tasks.

The commission said it needed additional information from both companies to fully analyze the financial underpinnings of their deal, under which Entergy would transfer Vermont Yankee's license and decommissioning trust fund to NorthStar. The fund currently has about $570 million in it. Entergy has been making withdrawals from it to pay for preliminary decommissioning work since it closed the plant in December 2014.

Also on April 12, Vermont Gov. Phil Scott issued a statement in support of the deal between NorthStar and Entergy prior to the Vermont Public Utility Commission's final hearing on it. The people who testified at the hearing overwhelmingly supported the deal.

More: *Rutland Herald*; *VTDigger*

Pruitt Pushed for Luxury Hotels, Airlines with Frequent Flier Miles

EPA Administrator Scott Pruitt insisted on staying in luxury hotels that were costlier than allowed by the government and pushed to fly on an airline not on the government's approved list so he could get more frequent flier miles, according to former EPA Deputy Chief of Staff Kevin Chmielewski.

The allegations are detailed in an April 12 letter signed by two senators and three representatives — all Democrats — whose staff members met with Chmielewski, who said he was removed from his post for questioning Pruitt's spending.

In a separate letter on April 12, Democratic lawmakers demanded information about two previously unknown EPA email addresses used by Pruitt, asking if they were a way to withhold public information from records requests.

More: *The New York Times*

Senate Confirms Coal Lobbyist as EPA Deputy

The Senate voted 53-45 on April 12 to confirm Andrew Wheeler, a coal lobbyist whose clients included Murray Energy, as deputy administrator of EPA.


Wheeler

Wheeler has worked for the lobbying firm Faegre Baker Daniels for the past nine years. Prior to that, he served as an adviser to Sen. James Inhofe (R-Okla.). He also spent four years as a career employee at EPA under Presidents George H.W. Bush and Bill Clinton. President Trump nominated Wheeler last fall.

More: *The Washington Post*

California Sues EPA over Repeal of 'Once in, Always in'

California Attorney General Xavier Becerra said April 10 that he and the state Air Resources Board have filed a lawsuit in the D.C. Circuit Court of Appeals seeking to invalidate EPA's repeal of the "Once in, Always in" policy.

Under the policy, once a facility, such as a power plant or a factory, was determined to be a "major source" of air pollution under the Clean Air Act, it was always treated as one, even if it reduced its emissions to the point that it would have been labeled an "area source" of pollution had they been that low when its status was initially determined.

Becerra said the repeal contravenes the intent of Congress expressed in the Clean Air Act and constitutes an arbitrary and capricious reversal of EPA's position.

More: *California Office of the Attorney General*

EPA Fires Staffer Responsible for Report Contradicting Pruitt Claims

EPA on April 10 fired the career staffer who approved an internal report undermining Administrator Scott Pruitt's claims that he needed expensive security protection, including 24-hour bodyguards, according to two former EPA employees familiar with the situation.

The firing of Mario Caraballo, the deputy associate administrator of EPA's Office of Homeland Security, came on the same day Sen. Tom Carper (D-Del.), the ranking member on the Environment and Public Works Committee, and another committee member, Sheldon Whitehouse (D-R.I.), wrote to the committee's chairman, John Barrasso (R-Wyo.), asking for oversight hearings and quoting the report.

EPA's ethics office on April 9 forwarded a request to investigate various allegations against Pruitt to its inspector general. The request was sent by the Office of Government Ethics on April 6.

More: *Politico*

State Briefs

ILLINOIS

AG Sues Alternative Retail Power Supplier, Alleging Overcharging

Attorney General Lisa Madigan on April 9 filed a lawsuit against Major Energy Electric Services, alleging the alternative retail electric supplier has overcharged customers by $2.4 million since 2012.

The lawsuit seeks to revoke Major Energy's authorization to operate as an alternative retail electric supplier in the state and rescind all its contracts with consumers. It also seeks restitution for customers and civil penalties of up to $50,000 for each deceptive act, with an additional $50,000 for each act committed with intent to defraud.

More: *Chicago Tribune*

LOUISIANA

Huval to Retire as LUS Director at End of Fiscal Year


Huval

Terry Huval said April 10 he plans to retire as Lafayette Utilities System director on Oct. 31, the end of its fiscal year.

Huval, 62, has been director of LUS since 1994 when he was named to the post by late Mayor Kenny Bowen, prior to city-parish consolidation.

More: *The Daily Advertiser*

MARYLAND

OPC Says XOOM Customers May Be Eligible for Refunds

The Office of People's Counsel said April 13 that certain residential gas and electric customers of XOOM Energy are entitled to refunds from the company.

People's Counsel Paula Carmody said the Public Service Commission agreed with her office that XOOM violated PSC consumer protection regulations when it charged some of its customers variable, not fixed, rates during the polar vortex of 2013-2014. Eligible customers have until April 29 to file for a refund. The OPC sent out notices of refund eligibility to XOOM customers on March 27 and has a fact sheet about the refunds on its website.

More: *Office of People's Counsel*

MICHIGAN

Five Mayors Question DTE's Proposed Natural Gas Plant

Mayors from five cities submitted comments to the Public Service Commission questioning DTE Energy's proposal to build a billion-dollar natural gas-fired power plant in St. Clair County.

"Clean energy is essential for Michigan's future," said Mayor Mark Meadows of East Lansing. "It provides thousands of jobs, saves families money on their electricity bills and improves the health of our state. That is why we are urging the commission to prioritize energy efficiency and renewable energy over fossil fuels."

The commission is scheduled to decide whether to approve DTE Energy's plan to build the power plant by the end of April.

More: *WLIX*

NEW JERSEY

Legislature Passes Bill Allowing BPU to Reconsider Wind Farm

Both houses of the Legislature on April 12 passed a bill allowing the Board of Public Utilities to reconsider a 24-MW wind farm 3 miles off the coast of Atlantic City that was rejected under former Gov. Chris Christie.

The law gives the BPU 90 days to consider an application for the project by Fishermen's Energy, which the company's secretary said it would file next month.

Fisherman's Energy has agreed to sell the project to Electricite de France's renewable energy unit.

More: *Bloomberg*

NEW MEXICO

Groups Want PRC to Investigate San Juan Coal Plant Fire

New Energy Economy and eight other advocacy groups on April 12 asked the Public Regulation Commission to investigate the cause of a March blaze at the coal-fired San Juan Generating Station northwest of Farmington.

Mariel Nanasi, the executive director of New Energy Economy, said the groups want to prevent Public Service Company of New Mexico from making substantial improvements to the generating unit involved in the fire in the name of repairs.

The plant is slated to close in 2022.

More: *Santa Fe New Mexican*

NEW YORK

State to Award up to $15M to Grid Modernization Projects

Gov. Andrew Cuomo said Wednesday that the state will make up to $15 million available for grid modernization projects under an initiative administered by the New York State Energy Research and Development Authority.

Projects must help develop innovative cybersecurity and data analytics or advanced planning, operations and forecasting tools, and advance the state's goal of having half its electricity come from renewable resources by 2030. NYSERDA is accepting concept papers for projects through July 18.

More: *Gov. Andrew Cuomo*

NORTH CAROLINA

Duke Agrees to Pay $156,000, Speed Leak Containment Efforts


Rogers Energy Complex

The Environmental Management Commission on April 12 approved a consent order under which Duke Energy agreed to pay a $156,000 fine and speed up work to

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contain leaks at coal ash ponds at three of its power plants in the state.

State environmental officials say contamination was found seeping into groundwater from 21 locations at unlined coal ash basins at the Allen Steam Station, the Marshall Steam Station and the Rogers Energy Complex.

The Department of Environmental Quality first issued notices about the contamination in March 2016.

More: WFAE

RHODE ISLAND

Invenergy Releases Tax Money in Proposed Power Plant Dispute

Clear River Energy Center concept art

Invenergy released from escrow $500,000 it owed Burrillville under a 2016 tax agreement after the town acknowledged on April 8 that statements it has made about a power plant the company wants to build there have been misconstrued.

The company withheld the payment in January after accusing the town of disseminating misleading information about the Clear River Energy Center, which will primarily burn natural gas but also can burn oil.

The disputed statements were in letters that Burrillville and the Conservation Law Foundation submitted to the state Energy Facility Siting Board last December.

More: Providence Journal

VIRGINIA

Northam Vetoes Bill Restricting Carbon Market Involvement

Gov. Ralph Northam on April 9 vetoed a bill that would have prohibited the governor and state agencies from establishing a carbon dioxide cap-and-trade program or making the state a member of a program such as the Regional Greenhouse Gas Initiative without the approval of a majority of both houses of the General Assembly.

Narrow majorities of the House and Senate had passed the bill in February.

The state "must have all the tools available to combat climate change and protect its residents," Northam said in his veto statement.

More: Augusta Free Press

WASHINGTON

UTC Says Utilities Must Allow Smart Meter Opt-out

The Utilities and Transportation Commission said in a policy statement issued April 10 that the state's electric and natural gas utilities will need to allow their residential customers to opt out of getting smart meters.

The commission said its preference would be for utilities to allow customers who opt out of getting smart meters to retain their current meters, rather than immediately switching them from analog to digital non-communicative meters. It also said it would prefer that companies minimize opt-out charges so customers who don't want to get smart meters aren't disincentivized from that.

The UTC said that as smart meter implementation progresses in the state, it will develop requirements for protecting consumer information and necessary rule changes for company operations in upcoming workshops and rulemakings.

More: Utilities and Transportation Commission

WISCONSIN

Groups Want We Energies to Set Aside Savings from Plant Closing

The Citizens Utility Board, the Wisconsin Industrial Energy Group and the Wisconsin Paper Council on April 8 filed a joint petition asking the Public Service Commission to require We Energies to set aside its savings from shutting the Pleasant Prairie Power Plant so it can pass them on to its customers when the PSC sets its 2020 rates.

Pleasant Prairie Power Plant

PSC spokesman Matthew Spencer said the commission has 60 days to decide whether to deny the organizations' request or open a docket on the petition.

CUB Executive Director Thomas Content said that if the PSC grants the request, We Energies will have to put aside the $47 million to $48 million it will save in operating costs from the closure of the coal-fired plant, which it shut down the first week of April.

More: Kenosha News; The Associated Press

State Reps Ask PSC to Explore Alternatives to Transmission Line

State Reps. Travis Tranel and Todd Novak on April 8 sent a letter asking the Public Service Commission to "explore all possible viable alternatives" to a transmission line that would cross their districts and confirm it's needed before giving the go-ahead for it.

A joint venture between American Transmission Co., ITC Holdings and Dairyland Power is proposing to build the 345-kV Cardinal-Hickory Creek transmission line, which would be 102 to 120 miles long and cost about $500 million to build.

The transmission line is part of MISO's multi-value project portfolio, which comprises 17 transmission lines. The RTO estimates the portfolio would bring $12 billion to $52.6 billion in net benefits over the next 20 to 40 years and enable 52.8 million MWh of wind energy to meet renewable energy mandates and goals through 2031.

More: LaCrosse Tribune