RTO Insider

Your Eyes and Ears on the Organized Electric Markets

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FERC OKs Pipelines, Delegation Order Before Losing Quorum

By William Opalka

Preparing for the loss of its quorum, FERC last week issued an order delegating additional authority to staff and approved two massive natural gas pipelines that could have languished for months after former Chairman Norman Bay's resignation.

The commission granted a certificate of public convenience and necessity (CPCN) on Thursday for the 510-mile Rover Pipeline, which would transport 3.25 million dekatherms/day from eastern Ohio to southern Michigan (CP15-93). On Friday, the commission approved a CPCN for Transcontinental Gas Pipe Line Co.'s Atlantic Sunrise pipeline, which would transport 1.7 million dekatherms/day from Pennsylvania to South Carolina (CP15-138).

The approval of Rover prevented a yearlong delay in construction. Tree-clearing on the project is prohibited between March 31 and Oct. 1 in Michigan, Ohio and Pennsylvania, and between Nov. 15 and March 31 in West

Continued on page 29

Bay Opines on Natural Gas Development, MOPR on Exit

Urges Review of Marcellus, Utica Shale Development

By Rich Heidorn Jr.

WASHINGTON — Environmental activists opposing fracking and pipeline expansions regularly disrupted FERC meetings during Norman Bay's two-and-a-half-year tenure as a FERC commissioner and chairman. On at least one occasion, activists took their protests to the street outside Bay's D.C. house.

The activists contended FERC was shirking its responsibility by failing to consider whether the commission's approvals of interstate natural gas pipelines were resulting in increased emissions. FERC has long insisted that such concerns are beyond its authority, as it doesn't regulate the production of natural gas — a responsibility held by the states and the Interior Department.

But as it turned out, Bay had some misgivings about the commission's legalistic reading.

Bay

In a five-page statement accompanying the commission's ruling approving a 99-mile pipeline through Pennsylvania and New York on his last day in office, Bay gave his perspective on the impact of the shale gas revolution, lauding it for helping reduce electricity prices and carbon emissions but expressing concern about methane emissions and the potential for pipeline overcapacity (CP15-115).

Although it is not required to do so by the National Environmental Policy Act, Bay called on the commission to "analyze the environmental effects of increased regional gas production from the Marcellus and Utica" shale regions.

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Bay Blasts MOPR on Way out the Door (p.9)

Interdependence Key to Cyber Efforts, Congress Told

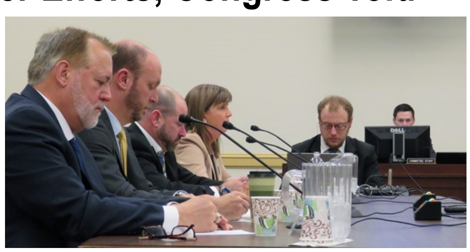
Rare Bipartisan Spirit Marks House Energy Hearing

By Rich Heidorn Jr.

WASHINGTON — It was Congress on its best behavior, for a change.

The House Subcommittee on Energy met Wednesday for the latest in its hearings on cybersecurity in the electric industry. It was a sober, reasoned discussion, in a bipartisan spirit almost unimaginable amid the anger roiling Capitol Hill over President Trump's candidates for the Supreme Court, EPA and other cabinet offices.

"Downstairs we're fighting like cats and dogs, but in this subcommittee, on this issue, we're hugging each other," said Rep. Joe Barton (R-Texas).



Testifying before the House Energy Subcommittee last week were (from left to right): NERC CEO Gerry Cauley; Edison Electric Institute's Scott Aaronson, appearing for the Electricity Subsector Coordinating Council; Chris Beck, Electric Infrastructure Security Council; and SPP's Barbara Sugg, on behalf of the ISO/RTO Council. | *© RTO Insider*

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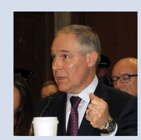
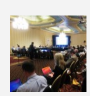
GOP Overcomes Democrat Boycott of EPA Pick



Republicans suspended committee rules to approve Oklahoma Attorney General Scott Pruitt as EPA administrator, sending him on to the full Senate after Democrats boycotted the vote. (p.34)

Also in this issue:



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CAISO ERCOT ISO-NE MISO NYISO PJM SPP

Editorial

Editor-in-Chief / Co-Publisher
Rich Heidorn Jr. 202-577-9221

Contributing Editors
Ted Caddell 434-882-5589
Julie Gromer 215-869-6969

Production Editor
Michael Brooks 301-922-7687

MISO Correspondent
Amanda Durish Cook 810-288-1847

SPP/ERCOT Correspondent
Tom Kleckner 501-590-4077

CAISO/West Correspondent
Robert Mullin 503-715-6901

ISO-NE/NYISO Correspondent
William Opalka 860-657-9889

PJM Correspondent
Rory D. Sweeney 717-679-1638

Subscriptions and Advertising

Chief Operating Officer / Co-Publisher
Merry Eisner 240-401-7399

Account Executive
Marge Gold 240-750-9423

Marketing Assistant
Ben Gardner

RTO Insider LLC
10837 Deborah Drive
Potomac, MD 20854
(301) 983-0375

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Interdependence Key to Cyber Efforts, Congress Told

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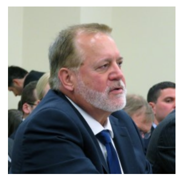
The subcommittee's nearly two-and-a-half-hour session wasn't a complete cease-fire zone. Rep. Frank Pallone (D-N.J.) railed over Trump's decision to add controversial political strategist Stephen Bannon to the National Security Council's Principals Committee while "apparently" excluding the secretary of energy. This, Pallone said, despite Congress' approval of legislation two years ago to make the secretary the lead federal official responsible for electric grid security.

"Essentially, President Trump has chosen his top political security adviser over the nation's top energy security adviser — and that's a recipe for disaster," Pallone fumed.



Cauley

But that was the exception, as a panel including NERC CEO Gerry Cauley brought the panel up to speed with discussions of the 2015 attack on utilities in Ukraine, the discovery of malware on a Vermont utility's laptop and the cybersecurity talent pool.

"The reliability of the bulk power system has improved over the last 10 years," Cauley said, citing data on the number and severity of outages. "We're always learning from every single event: small, medium and large."

Cauley's other panelists — SPP Vice President for Information Technology and Chief Security Officer Barbara Sugg; Scott Aaronson, the Edison Electric Institute's executive director for security and business continuity; and Chris Beck, chief scientist and vice president for policy for the Electric Infrastructure Security Council — generally agreed. In response to a question from Barton, all graded Cauley's leadership an "A."

But Rep. David McKinley (R-W.Va.) was unconvinced.

"We've been told that 'Everything is going to be fine. Everything's under control,'" McKinley said, recounting hearings he has attended over his six years in office. He quoted UCLA basketball legend John Wooden's admonition against confusing effort with accomplishments.

McKinley also repeated testimony two years ago by Thomas M. Siebel, founder of Siebel Systems, who said he and a team of 10 engineers from the University of California Berkeley could shut down the grid between Boston and New York within four days. "Now that was after all the testimony about all the safeguards we had in place. So is Mr. Siebel wrong?" he asked.

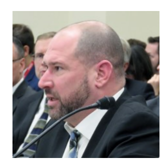
Aaronson

"I don't think any of us today are saying it's 100% under control," responded Aaronson, speaking on behalf of the Electricity Subsector Coordinating Council. "While an attack that has an impact is always within the realm of the possible, the resiliency and redundancy that has grown up, and the ability to respond … makes me a lot more comfortable in our ability to deal with these sorts of [threats]."

Interdependence

A recurring theme in the panel's comments was interdependence. They cited generators' need for cooling water, the use of trains and trucks to transport spare transformers, and grid operators' reliance on the telecommunications and financial services industries.

"I don't ever expect there's going to be an attack that's just on the grid," said Cauley, who added that the electric industry must increase its coordination with other sectors.



Beck

Beck agreed. "Simultaneous attacks on the oil and natural gas subsector, on water systems, communications, government, emergency response or other infrastructures could both create new categories of severe disruption and seriously complicate power restoration operations," he said in his opening statement.

"In the aftermath of a natural disaster, response activities typically commence once the immediate danger has passed. In a cyberattack scenario, it is possible, or even likely, that the attacker could launch subsequent attacks to disrupt response and recovery efforts and/or cause further damage."

Information technology and operational technology "professionals, however, are typically a limited resource. In a large enough attack, availability of such exper-

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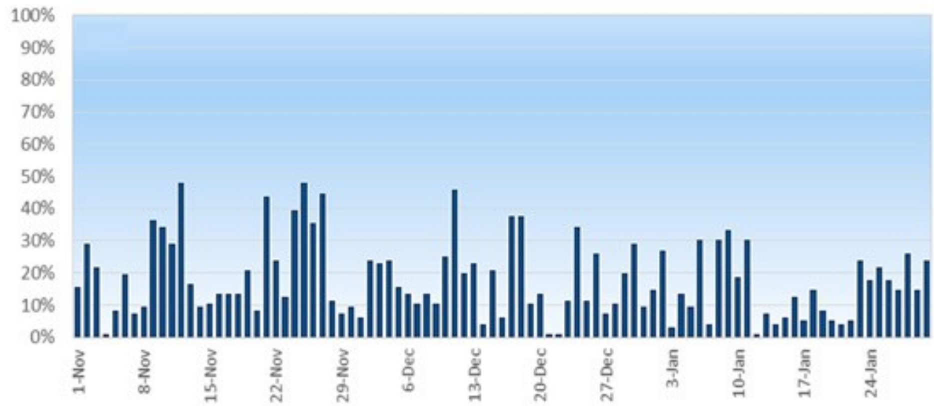
CAISO NEWS

CAISO: Don't Lean on EIM for Capacity

By Robert Mullin



Graph shows the frequency of flexible ramping sufficiency test failures for APS during the fourth quarter. Failure of the test ahead of an operating hour puts an EIM participant at risk of being isolated from the market during the interval, requiring it to draw on only its own resources to meet ramping needs. | *CAISO*

Participants in the Western Energy Imbalance Market (EIM) should not rely on it to reduce their capacity requirements, a CAISO official cautioned last week.

Mark Rothleder, CAISO's vice president for market quality and renewable integration, made the comment when probed on the issue during a Feb. 1 meeting of the EIM's governing body.

Rothleder shared his views in response to a question by Dan Williams, CAISO markets analyst with Portland General Electric, which is slated to join the EIM in October. "We often hear about the interplay between planning capacity — to be able to stand alone as an EIM entity or as a balancing authority — versus what happens in real time in the optimization benefits that we get," Williams said.

Williams wanted to learn more about how the EIM influences how existing participants view their long-term flexible resource needs as a model "for how the rest of us are starting to look at that as well." "Flexible" resources are those equipped to respond to variability on the grid stemming from the uneven output of renewable generation.

Rothleder said the question comes up during the ISO's own resource adequacy process at the California Public Utilities Commission: How does a utility value flexible capacity at the interties to the balancing authority area (BAA) and, more generally, from the EIM?

EIM's Design

The answer lies in understanding how the EIM was designed and what it is intended to do, Rothleder said.

First: It's a voluntary market.

Second: The market is built on the idea that each participant maintains responsibility for its own BAA, unlike in a full RTO.

"You put those two things together and I think you get to the point where the balancing area, in order to maintain their reliability, can't rely on EIM to avoid capacity upgrades that they may need to meet their [integrated resource plan], resource adequacy or flexible capacity needs," Rothleder said.

Any participant that leans too heavily on the EIM for reliability needs puts itself at risk because the market is oriented toward short-term resource sufficiency. The market penalizes those participants that come into an hour short of resources.

"If you fail those [short-term sufficiency] tests, you basically are isolated and you stand alone, and at that point you have to rely on your own flexibility and capacity," Rothleder said. "You are not able to rely on the rest of the Energy Imbalance Market."

The EIM is designed to ensure that participants come into the market with adequate resources while benefiting from the economic efficiencies of intra-hour dispatch. "But you don't necessarily get the benefit of avoiding long-term capacity," Rothleder said.

EIM vs. ISO

That's the difference between the EIM and full participation in the ISO. "Under full participation, those types of issues — long-term capacity, long-term resource adequacy — become subsumed under the umbrella of the footprint of the integrated balancing area," Rothleder said. "Then you can deal with those things."

Rothleder pointed out that studies quantifying the benefits of the EIM have addressed only short-term efficiency, not long-term capacity.

EIM governing body member Doug Howe pressed Rothleder on the issue. "You said the benefits of EIM don't include the value of avoided capacity costs, but that's not to say that there isn't avoided capacity costs in the EIM," Howe said. "Am I correct?"

Rothleder responded that getting credit for EIM-based capacity would come down to a "judgment call" between the participant and its state utility commission. And he also pointed to the risks of taking that approach.

"Do you now avoid getting flexible capacity in the area and setting up your own sufficiency?" Rothleder said. "Because if you do that, you run the increased risk of coming in short. And if you're short, you've got to be able to manage those variabilities on your own."

Governing body member Carl Linvill pointed out that EIM members have touted the market's contribution to improving their own knowledge of their systems and ability to optimize processes. "It seems to me that speaks to some flexibility benefit associated with onboarding" with the EIM, Linvill said.

The improvements associated with transitioning from manual to the EIM's automated dispatch would still be considered short-term benefits, Rothleder said.

Linvill asked whether EIM members could

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CAISO NEWS

CAISO Gets Breathing Room on EIM Intertie Bidding from FERC

By Robert Mullin

FERC last week said it will give CAISO more time to address its concerns over intertie bidding at the borders of the Western Energy Imbalance Market (EIM).

The commission last June rejected the ISO's proposal to prohibit EIM participants from implementing economic bidding at the market's external interties until the ISO could develop "appropriate rules and procedures" to manage the transactions. (See *FERC Order Prods CAISO to Allow EIM Intertie Bidding*.)

While last year's decision acknowledged that CAISO had "identified issues that warrant further evaluation," the commission said the ISO had not "sufficiently described" those issues. "As an initial matter, we find it inappropriate for CAISO to include in its Tariff an indefinite placeholder," the commission wrote, referring to the ISO's failure to propose a timeline for resolving the issue.

No 'Plug and Play'

But the commission's Jan. 31 order was sympathetic to the position of the ISO and other EIM participants, who have maintained that there is no "easy plug-and-play format" for intertie bidding that each EIM participant could adapt to manage transactions at the borders of their balancing authority areas. Although the commission urged ISO officials to continue efforts to increase competition within the EIM, the order failed to impose a timeline for adopting new rules (ER16-1518).

"We'll have to sit down with our legal counsel and decide how we're going to respond to the order. … It looks like FERC was generally in agreement with how we proposed to proceed with these issues, which I think are reflective in our [2017 policy initiatives] roadmap as well," Greg Cook, the ISO's director of market and infrastructure policy, said during a Feb. 2 meeting of the EIM governing body.

The Public Generating Pool, which represents 10 hydro-rich municipal utilities in Oregon and Washington, has suggested that CAISO amend its EIM rules to allow nonmembers to bid at the market's borders for an "appropriate" administrative fee that falls short of the full membership cost. | *Leaburg Dam photo courtesy of Eugene Water Electric Board*

The order comes three months after CAISO, EIM participants and Western power sector participants opposed to the prohibition hashed out their views at a technical conference convened by FERC. (See *Foes Narrow Differences at FERC Summit on EIM Bidding*.)

At the conference, Mark Rothleder, the ISO's vice president of market quality and renewable integration, summed up the perspective of existing EIM participants: "We must be careful not to impose requirements that degrade the fundamental design elements of the Energy Imbalance Market that could ultimately unravel the benefits the Western market is experiencing."

Commissioners appeared to be largely swayed by the ISO's reservations about moving too quickly toward producing a solution.

"We recognize that implementation of bidding at the EIM external interties may pose challenges for CAISO and the EIM entities," the commission said. "We encourage CAISO and the EIM entities to eliminate barriers to greater EIM participation and to provide opportunities for increased competition within the EIM."

Scheduling Bilateral Transactions

The commission also recognized the grievances of the Western Power Trading Forum and others who say they've been experiencing challenges in scheduling bilateral transactions into the EIM area since the roll out of the market. They are seeking another form of participation not available in current CAISO and EIM member tariffs.

The Public Generating Pool, which represents 10 municipal utilities in Oregon and Washington, suggested CAISO create rules allowing its hydro-rich members — which control little transmission and have modest budgets — to have access to the market through resource aggregation and a system of "appropriate" administrative costs.

While the order directs FERC staff to monitor CAISO's efforts on the issue and requires the ISO to provide updates, it largely leaves the ball in ISO's court by not setting a specific deadline for the grid operator to develop a solution.

"We understand that these issues may not

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CAISO: Don't Lean on EIM for Capacity

Continued from page 3

reduce their reserve margins after participating in the market over a period of time.

Reserve margins are generally tied to peak load, which doesn't change with the EIM, Rothleder said.

"Can they factor in other things? Potentially," he added. "But I think that becomes a real judgement call to rely on the EIM, so I can't speak to that."

CAISO CEO Steve Berberich said the issue pointed to the limitations of the EIM.

"This is one of the benefits of a fully integrated market: You get capacity benefits," Berberich said. "You don't get capacity benefits in the Energy Imbalance Market — and I'll just leave it at that."

CAISO NEWS

APS to Maintain Market Rate Authority in Tucson Electric BAA

By Robert Mullin

Arizona Public Service can continue to charge market-based rates in Tucson Electric Power's balancing authority area (BAA), FERC has ruled.

The commission said Jan. 30 that APS had overcome its concerns about the company's ability to exercise market power in the neighboring BAA, closing the book on a Section 206 proceeding investigating the issue (ER10-2437-003).

The commission granted APS market-based rate authority (MBRA) despite finding "unpersuasive" the utility's argument that it lacks the sufficient generation and transmission rights within the Tucson Electric area to exercise market power.

Commissioners also declined to rely on APS's delivered price test (DPT) submission because the analysis did not cover all 10 required season and load periods.

"Because the indicative screens are only intended to screen out sellers that raise no horizontal market power concerns, we find that sellers opting to submit a DPT to rebut the presumption of market power must comprehensively analyze 10 season/load periods even if the indicative screen failure(s) only occurred in a single season," the commission said.

Considered a more rigorous analysis than FERC's "indicative" screens for determining market power, the DPT considers native load commitments to capture a detailed picture of an electricity supplier's "available economic capacity" — energy available for offer in the open market — over multiple seasons and load conditions.

But other factors worked in the utility's favor.

A key piece: Evidence included a supplemental indicative screen analysis showing that APS passed the pivotal supplier and wholesale market share tests for 2015 and 2016 — an improvement over the 2014 analysis that prompted FERC to institute the Section 206 proceeding.

APS said that closure of Unit 2 at its Cholla coal-fired plant contributed to the reduction of its market power in Tucson Electric Power's service territory. | *Arizona Public Service*

The updated report showed APS's summer period wholesale market share in the Tucson Electric BAA dropping from 22.4% in 2014 to 15.8% in 2015 — followed by another decline to 13.3% last year. The utility's market share was well below 20% during other seasons and periods, the commission found.

APS cited as reasons for the reduction in market share Tucson Electric's purchase of a portion of the Gila River natural gas-fired plant, the retirement of Unit 2 at APS's Cholla coal-fired plant and the expiration of certain APS option contracts.

"Based on APS's other alternative evidence, we find, on balance, after weighing all other relevant factors, that APS has rebutted the presumption of market power in the Tucson Electric balancing authority area," the commission said.

The favorable ruling comes nearly six months after FERC rejected APS's effort to gain MBRA in the Western Energy Imbalance Market (ER10-2437). In that order, the commission rejected the argument that CAISO's mitigation measures would suffice to keep APS's market power in check and noted that the utility did not even attempt to file indicative screens or a DPT to rebut the presumption that it exercised power within its own portion of the EIM.

The Jan. 30 decision also follows a November 2016 order in which the commission said that it would commence a Section 206 proceeding to determine whether Tucson Electric should retain MBRA within its own service territory (See *Tucson Electric Could See Loss of Market Rate Authority in its BAA*.)

That review was triggered after the utility filed a "change in status" notice demonstrating that it passed market share screens for neighboring BAAs but failed the same test for its own area (ER10-2564, *et al.*).

CAISO Gets Breathing Room on EIM Intertie Bidding from FERC

Continued from page 4

have simple solutions, and that CAISO has many stakeholder initiatives that it must prioritize in order to make the best use of its and its stakeholders' limited resources," the commission said.

Still, the commission was favorably impressed that the ISO included in its 2017 Draft Final Policy Initiatives Roadmap initiatives designed to address some of the concerns raise by those seeking broader access to the EIM.

Key among them: a proposal to better align EIM base schedules with bilateral schedules at the seams of the market.

"That was a clear issue that came out of the FERC technical conference — where being able to provide some kind of mechanism for those bilateral schedules to manage the congestion risk going into or through EIM areas was a very important issue for a lot of market participants," Cook said.

The commission said "we appreciate CAISO's efforts thus far to address these issues" and encouraged the ISO to work with EIM participants to find way to reduce barriers to market participation.

"We believe CAISO and its stakeholders are in the best position to work through these issues at this time," the commission said.

CAISO NEWS

EIM Benefits up 8% in Q4 with APS, Puget Sound Additions

By Robert Mullin

The Western Energy Imbalance Market (EIM) saw total financial benefits grow 8% during the fourth quarter of 2016 with the addition of Arizona Public Service and Puget Sound Energy as participants, according to a report released by market operator CAISO.

The EIM generated gross benefits of $28.3 million during the quarter, up $2.1 million from the third quarter. The increase came despite typically lower electricity demand in the EIM area during the fall months, the ISO said.

The market has yielded $142.6 million in benefits for its members since being launched in November 2014, the ISO estimates.

EIM operations also helped to displace more than 10,000 metric tons of greenhouse gas emissions during the fourth quarter by enabling the dispatch of 23,390 MWh of surplus renewable energy output from California that would have otherwise been curtailed.

"That avoided curtailment is effectively being used to meet energy needs across the Energy Imbalance Market, and it basically is displacing emitting resources potentially elsewhere in the footprint," Mark Rothleder, CAISO vice president of market quality and renewable integration, said during a Feb. 1 meeting of the EIM's governing body.

Rothleder also said that the ISO predicts avoided curtailments to rise sharply with increased renewable energy production during late winter and spring this year. That seasonal pattern will be compounded by increased hydroelectric output stemming from an unusually high water year. The uptick in generation will coincide with low seasonal loads for California and the rest of West.

10-Year Peak for Hydro

Casey Cadle, a real-time operations shift manager for the ISO, said that California faces the heaviest hydro conditions in 10 years. "We're also going to be having more solar than we've ever had in our system, so it'll be an interesting time of year for us," Cadle said.

CAISO's report showed a more even distribution of EIM gross benefits among members compared with the third quarter, when Portland-based PacifiCorp reaped more than half the total among the three participants, which at the time included just NV Energy and the ISO. (See *PacifiCorp Increases Share of EIM Benefit in Q3*.) APS and PSE began transacting in the market Oct. 1, 2016. (See *Arizona Public Service, Puget Sound Energy Begin Trading in the EIM*.)

The fourth quarter saw PacifiCorp realize almost $9 million in benefits, compared with $8.7 million for CAISO, $5.9 million for APS, $3.1 million for NV Energy and $1.6 million for PSE.

The benefits represent either cost savings — for example, the reduced need for reserves and greenhouse gas credits — or increased profits from merchant operations. The market's ability to reduce curtailments also enables participants to collect renewable energy credits that would not otherwise be issued.

The benefits calculation nets out inter-balancing authority area (BAA) transfers that were scheduled ahead of the EIM's 15- and five-minute market runs to avoid attributing contracted flows to the market.

Arizona 'Freeway'

The report also showed that a significant amount of energy flowed from the PacifiCorp-East BAA into APS, and then again from APS into CAISO, suggesting that the Arizona utility's transmission network is fulfilling its potential of becoming a major transit point between the interior West and California based on its ample transfer capability. (See *Smooth EIM Transition for Arizona Public Service, Puget Sound Energy*.)

"We can transfer a lot back and forth with PacifiCorp, NV Energy and the California ISO," Justin Thompson, APS director of resource operations and trading, said last year after the company began operating in the market. "We're kind of the freeway of the EIM system there."

Rothleder noted that the prevailing transfers during the fourth quarter came out of PacifiCorp-East, with additional supply being picked up on parallel paths crossing Nevada and Arizona for delivery into California. Some flows continue north into the PacifiCorp-West BAA in Oregon.

The middle of the day often brings a reversal, as CAISO exports its excess supplies to inland areas.

"So there's times where California is pushing and transferring back out to Arizona, to Nevada and on to [PacifiCorp-East], and that's exactly how the Energy Imbalance Market is supposed to work," Rothleder said.

CAISO says that transfers across BAAs are a significant contributor to EIM benefits because they provide participants access to lower-cost supplies, even when factoring in GHG compliance costs for energy imported into the ISO.

"The transfers are reflective of the economics and the system conditions at the time, and you'll see this change and adapt as you change into different seasons," Rothleder said.

Region	October	November	December	Total
APS	2.81	1.68	1.49	5.98
ISO	1.62	3.10	3.95	8.67
NV Energy	1.00	1.47	0.60	3.07
PacifiCorp	3.24	1.89	3.86	8.99
PSE	0.25	0.66	0.65	1.56
Total	8.92	8.80	10.55	28.27

Fourth-quarter 2016 EIM benefits | *CAISO*

CAISO NEWS

FERC OKs CAISO Frequency Response Contract Terms

By Robert Mullin

A dam owned by the Bonneville Power Administration. FERC's clarification on CAISO's transferred frequency response contract terms clears the way for the ISO's agreements with BPA and Seattle City Light. | © RTO Insider

FERC last week clarified that it would allow CAISO contracts for transferred frequency response service to include a provision recognizing that counterparties could fulfill the agreements based on an annual measure of performance rather than a case-by-case accounting of responses to frequency disturbance events.

In the same order, the commission rejected a rehearing request by the Western Power Trading Forum (WPTF) and NRG Energy that challenged the fairness of the process by which the contracts were procured (ER16-1483).

FERC last month approved ISO frequency response contracts with the Bonneville Power Authority and Seattle City Light, both of which were contingent on the outcome of the commission's clarification. (See *FERC Accepts CAISO Contracts for Imported Frequency Response*.)

CAISO filed a request for clarification after the commission last September approved the ISO's Tariff authority to procure transferred frequency response from another balancing authority area (BAA). The ISO sought the authority in an effort to comply with NERC reliability standard BAL-003-1.1, which requires all grid operators to carry enough capability to respond to a disturbance.

In that order, the commission stated that the CAISO contracts must result in a counterparty actually providing the ISO with frequency response service and not simply be "an arrangement for counterparties to transfer a regulatory obligation by means of bookkeeping entries."

The ISO sought more clarity from the commission on that point, contending that contract counterparties could interpret the decision as requiring them to have a net actual interchange measure in response to every single frequency disturbance event.

"Such a requirement would make it virtually impossible for the CAISO to contract for transferred frequency response quantities because balancing authorities cannot assure such a measure in response to every disturbance event," the ISO said in its request.

CAISO contended that the transferred frequency response performance of a counterparty BAA should not be tied to each disturbance because compliance with the NERC standard itself is not based on performance in connection with a single event.

Powerex, which also sought clarification on the order, backed the ISO, holding that a BAA is able to meet the BAL-003-1.1 obligation through a median measurement of performance across all identified disturbance events during a compliance year.

The commission agreed with those arguments, acknowledging that "NERC determined that the degree of variability in observed frequency response performance values limits the usefulness of imposing a single event-based compliance measure" on BAAs.

"In directing CAISO to revise its tariff to state that it 'cannot claim on a compliance form that it has received, or that the counterparty has transferred, more frequency response performance than the counterparty has produced,' the commission did not intend to require BAs to achieve a specific net actual interchange measure for each disturbance event to support transferred frequency response contracts," the commission said.

The commission rejected the contention by WPTF and NRG that it acted "arbitrarily and capriciously" in determining that the product category of transferred frequency response — the notion of which was introduced by the BAL-003-1.1 standard — consists of both compliance reporting rights and the physical delivery of primary frequency response service.

Under the contracts, the commission noted, CAISO would be acquiring both the reporting rights and the frequency response service, which would act as an "insurance policy" for the ISO in meeting its obligation.

"Contrary to NRG and WPTF's characterization of the Sept. 16 order as stating that 'generators are incapable of bidding to provide a physical product to the CAISO,' the Sept. 16 order determined that generators and BAs are differently situated due to the unique nature of BAs' BAL-003-1.1 compliance obligations," the commission said.

The commission said that NRG and WPTF's argument that BAAs might be circumventing competition provisions set out in FERC Order 888 by bundling service from their generators into transferred frequency response was beyond the scope of the proceeding.

FERC also declined to entertain a WPTF proposal to increase the size of the frequency response market by allowing generators to compete, saying that the issue before the commission was to determine whether the proposed CAISO contracts are just and reasonable "and not whether the proposal is more or less reasonable than other proposed alternatives."

CAISO late last year launched a stakeholder initiative to develop a market mechanism for acquiring primary frequency response service. (See *CAISO Seeks Primary Frequency Response Market*.)

ISO-NE NEWS

Court Rules for Northern Pass on Right-of-Way Access

By William Opalka

The New Hampshire Supreme Court ruled last week that state transportation officials — not landowners — can determine if the Northern Pass transmission line can be buried in a highway right of way.

The Society for the Preservation of New Hampshire Forests sued in late 2015, maintaining that Eversource Energy needed its permission to bury the line through its property, even though previous owners granted a right of way to the state Department of Transportation for a roadway that is now the four-lane Route 3.

The court ruled that jurisdiction rests with the department. It also said there is no material difference in the permission granted in 1931 between a surface highway and a developer's attempt to build an underground transmission line today.

The unanimous ruling agreed with a lower court that ruled against the group. (See Court Dismisses Complaint vs. Northern Pass.)

Eversource Energy

"We conclude that use of the Route 3 right of way for the installation of an underground high voltage direct current electrical transmission line, with associated facilities, falls squarely within the scope of the public highway easement as a matter of law, and that such use is within the exclusive jurisdiction of the DOT to regulate," the court wrote.

Jack Savage, a spokesman for the Forest Society, was surprised by the ruling when contacted by *RTO Insider* last Tuesday, as he was awaiting a schedule for oral arguments. Atop the ruling was a notation from the court that "oral argument is unnecessary."

The organization owns a parcel of land along Route 3 in northern New Hampshire known as the Washburn Family Forest, and it granted easements to the DOT.

"As we've previously noted, the Forest Society has frequently demanded Northern Pass be buried, yet in this case, had filed this lawsuit to prevent its burial," Northern Pass said in a blog post.

The Forest Society said the ruling merely delays resolution of eminent domain questions that will eventually return to the Supreme Court.

"The Supreme Court's decision regarding the Forest Society's lawsuit against Northern Pass is unfortunate in that it puts off until later a private property rights issue of extraordinary importance to New Hampshire landowners. In short, the court punted," it said in a statement.

Northern Pass is a proposed 192-mile transmission line that would import 1,090 MW of Canadian hydropower from Quebec to be fed into the New England power grid. Sixty miles of the route is proposed to be underground.

Eversource says additional burial would make the project uneconomic. Opponents want the entire route underground.

The project is before the state's Site Evaluation Committee, with its ruling due in September.

ISO-NE NEWS

Bay Blasts MOPR on Way out the Door

By William Opalka

FERC on Friday again rebuffed generators' request to apply ISO-NE's minimum offer price rule (MOPR) to 200 MW of renewable generation that were granted an exemption in 2014 (ER14-1639-005).

Although the order mainly rehashed old arguments, it offered Commissioner Norman Bay one last chance to blast the MOPR, which he did in a six-and-a-half-page concurrence.

The commission rejected a request by NextEra Energy Resources, Public Service Enterprise Group and NRG Energy that it rehear its April 2016 order upholding the exemption. The 2016 remand order came after the companies challenged the exemption in the D.C. Circuit Court of Appeals. (See *FERC Affirms ISO-NE's MOPR Exemption for Renewables*.)

The commission reiterated expert testimony and economic theory that it said indicated the renewables exemption was necessary to protect consumers from paying for excess capacity and did not suppress capacity prices. It said the results of Forward Capacity Auctions 9 and 10 in 2015 and 2016 — as well as the qualifying filing for FCA 11 on Feb. 6 — "substantiate the reasonableness of the commission's original determination."

Cutline | *Source*

Bay, whose last day at FERC was Friday, used the order to offer a parting shot at MOPR.

"Despite the best intentions of the commission, in my view, the MOPR has turned out to be unsound in principle and unworkable in practice," Bay wrote. "No other market in the United States is subject to the same construct in which a federal agency reviews state action and imposes an administrative price floor on supply offers from certain resources that have received state support. This places the commission in direct and recurring conflict with the states, ignores the pervasiveness of state and federal policies that support resources in one fashion or another, and represents a significant intervention in the market that raises costs to consumers."

Bay appended a similar statement to another order on Friday that endorsed a MOPR exemption for demand response resources in NYISO capacity auctions. (See related story, *'Special Case' DR Exempted from MOPR in NYISO*, p.15.)

"Despite the best intentions of the commission, in my view, the MOPR has turned out to be unsound in principle and unworkable in practice. No other market in the United States is subject to the same construct ..."

Norman Bay

MISO NEWS

MISO Begins 3-Year Tx Overlay Study

By Amanda Durish Cook

MISO's three-year effort to identify long-term transmission needs started last week with the RTO gathering stakeholders to explain the data that will inform the study.

The regional transmission overlay study will identify new transmission needed to accommodate MISO's shifting resource mix.

"MISO has been experiencing a significant resource change for quite some time now. … We're just starting to get our hands around the magnitude of the needs," Lynn Hecker, MISO manager of expansion planning, said at a special Jan. 31 workshop of the Economic Planning Users Group, the first of four scheduled to take place in 2017. "At the end of the day, the goal is to have the most cost-effective and efficient solution for our footprint to benefit our consumers."

Hecker said MISO is very early into its study and has not made any conclusions about which or how many projects will be recommended. She said 2017 will be used to identify system needs, and project candidates would not be revealed until 2018 or 2019.

Three Futures

MISO will develop long-term transmission roadmaps for each of three 15-year futures from its 2017 Transmission Expansion Plan: an "existing fleet" future with limited changes and no modeled carbon cap; a "policy regulations" future in which federal rules drive a 25% reduction in carbon emissions; and an "accelerated alternative technologies" future in which innovations in renewables foster a 35% carbon emissions reduction.

It will also consider other factors, such as the top 30 congested flowgates, forecasted differences in LMPs, production cost savings, and constrained energy sources and sinks to identify new transmission corridors. (See "Long-Term Overlay Study Scoped; MISO Asks for More Responses," *MISO Planning Advisory Committee Briefs*.)

Stakeholders asked if MISO planned to use MTEP 17 futures for all three years of the study. Hecker said there would be an annual refresh of futures and weights to inform the study. "That's where we are going to be able to capture any potential changes," she said.

Hecker said it is likely that MTEP 17 futures will be used, even with the Trump administration's plan to abandon the Paris Agreement on climate change and EPA's Clean Power Plan. "We don't expect to see very drastic changes in 2017 versus 2018 futures," she said.

It's still undecided if MTEP 17 futures will be reweighted with less emphasis on a policy regulations future. The issue is expected to be discussed at the February Planning Advisory Committee meeting. (See *MISO Stakeholders Seek Review of MTEP Futures Under Trump*.)

MISO Director of Regional and Economic Studies John Lawhorn said that by 2031, the RTO expects gas prices to hover around $7.50/MMBtu, with:

- Between 5 GW of renewable additions under an "existing fleet" future to 52 GW in an "accelerated alternative technologies" future;
- Coal generation retirements of 8 GW to 24 GW under the same scenarios;
- An increase in solar capacity from 180 MW in 2016 to 4,938 MW by 2021; and
- An increase in wind capacity from 16,319 MW in 2016 to 23,554 MW in 2021.

Move from Inventory-Based Generation

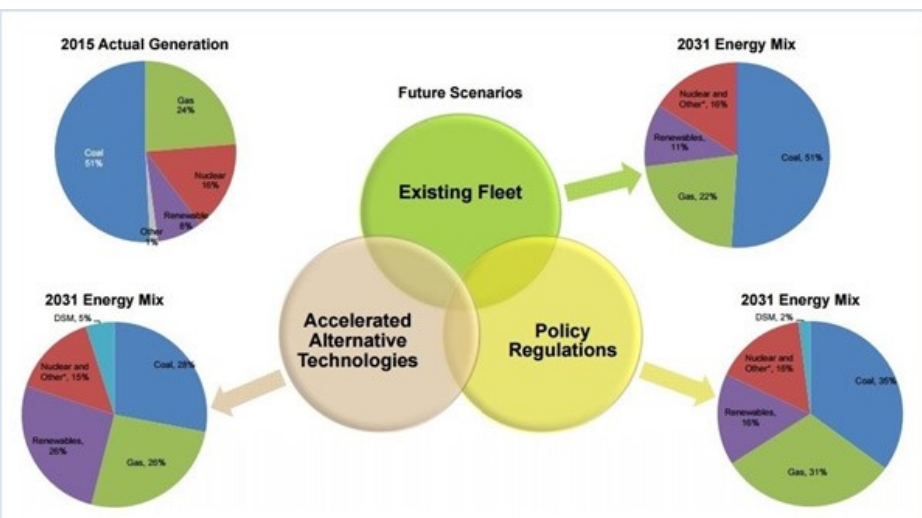
"We're going from inventory-based sources of energy [like coal piles and natural gas storage] to non-inventory. We want to make sure we meet system needs both on a reliability and economic basis," Lawhorn said. "Our generation interconnection queue is full of intermittents and continues to grow."

Consultant Roberto Paliza of Indianapolis expressed concern that MISO might overlook some transmission solutions if it only relies on the megawatt limit in MISO and SPP's contract path in modeling, which is in place until 2021. MISO staff pointed out the transmission overlay study is one of three MISO studies currently in progress that could identify a project to expand the transfer capability between MISO North and South. (See "Studies Could Assist in Relieving North-South Constraint," *MISO Planning Advisory Committee Briefs*.)

MISO Policy Studies Engineer Matt Ellis said the economic benefit of load diversity — taking advantage of different areas peaking at different times — could be expanded beyond the RTO's borders to include capacity exchanges with neighboring systems.

"If you can connect pockets of renewables across regions, you can make those resources look not so intermittent anymore," Ellis said.

Ellis said he was only introducing the idea



MISO

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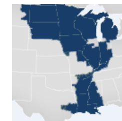

FERC Rejects MISO's 3-Year Forward Auction Proposal

By Amanda Durish Cook

It's back to the drawing board for MISO, as FERC on Thursday rejected its proposed three-year forward capacity auction in its retail-choice areas, saying it would create too much price volatility and uncertainty.

The commission dismissed MISO's 1,700-page proposal with an unusually short eight-page order — an apparent sign of its haste to rule before it loses a quorum with the resignation of Commissioner Norman Bay effective Feb. 3 (ER17-284).

The commission sided with MISO's Independent Market Monitor, who opposed bifurcating the RTO's capacity market by holding a forward capacity auction for competitive load three years prior to the current Planning Resource Auction.

A market-wide clearing process that operates within a single set of transmission capability constraints and supply offers is more efficient than a bifurcated capacity market, leading to better price formation, FERC said.

The commission also pointed out that a single market-wide auction is the current practice in all commission-jurisdictional capacity markets. MISO was attempting to single out its competitive retail areas, which account for less than 10% of total MISO load, FERC noted.

Volatility Concerns

The commission also said the three-year gap between forward auction and PRA could lead to "unpredictable and variable supply participation," which could drive up price volatility in both auctions.

"Given the limited amount of demand that will be represented in the forward auction, relatively small changes in supply participation from noncompetitive retail areas on a year-to-year basis could result in substantial unnecessary year-to-year differences in forward auction clearing prices, even with a downward sloping demand curve that should reduce price volatility," FERC said.

The introduction of a downward-sloping demand curve in the forward auction while preserving a vertical demand curve in the PRA also creates an inconsistent amount of capacity clearing in the forward auction and could intensify volatility in the PRA, FERC said.

It also said that MISO had not given enough thought to how transmission capability across zones and the MISO North-South contract path would be divided between the two auctions or how those allocations would impact clearing prices.

The commission noted that in MISO's past prompt auctions, transmission capability constraints have caused significant price separation between zones. An insufficient amount of transmission capability in the PRA could prevent load-serving entities from procuring lower-cost capacity. A transmission shortage in the forward auction could cause price separation "that does not truly reflect the physical limitations of the system or the locational need for capacity," FERC said.

"We appreciate the efforts of MISO and its stakeholders to address the important objective of resource adequacy and recognize that the [Competitive Retail Solution] proposal represents a significant undertaking. However … we find that MISO has not adequately supported" it, FERC said.

"I think the FERC order is consistent with the concerns we raised, so we're not unhappy with that, except that FERC didn't provide any guidance."

David Patton, Market Monitor

MISO Ponders Response

Richard Doying, MISO executive vice president of operations and corporate services, said that even though the order was a short read, staff continue to examine

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MISO Begins 3-Year Tx Overlay Study

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and that MISO would conduct discussions on how a load diversity analysis could work into the transmission overlay. He said while MISO could expand peak load obligations exchanges into the Eastern Interconnection, the RTO could also exchange capacity with the Western Interconnection if DC line upgrades are made. MISO estimated that load diversity could save it $4 billion per year.

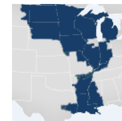
Sam Gomberg, an energy analyst in the Midwest office of the Union of Concerned Scientists, asked if MISO sufficiently explored its own load diversity before looking outside the footprint. Ellis said the benefits of load diversity within MISO were already being realized with a reduced planning reserve margin.

An afternoon portion of the workshop, at which MISO and stakeholders discussed thermal constraint locations covered by Critical Energy Infrastructure Information (CEII) rules, was not open to the public. Stakeholders representing MISO's North, Central/East, South and West regions split by region to discuss potential transmission needs. Bill Booth of the Mississippi Public Service Commission said his commission did not have access to CEII but still wanted in on the conversation.

Hecker said most study results would be made public, but detailed transmission maps with current bus and transmission line locations will not be posted publicly.

Lawhorn stressed the three-year study will be peppered with stakeholder opportunities to weigh in.

MISO NEWS



FERC Orders MISO to Change Storage Rules Following IPL Complaint

By Amanda Durish Cook

FERC ruled last week that MISO's Tariff unreasonably limits energy storage, directing the RTO to craft more inclusive Tariff language within 60 days.

The commission concluded Feb. 1 that MISO's Tariff "unnecessarily restricts competition by preventing electric storage resources from providing all the services that they are technically capable of providing" (EL17-8).

While MISO includes stored energy resources in its regulation market, it does not allow them to participate in the capacity, energy, ramp capability and contingency reserve markets.

The order came in response to Indianapolis Power and Light's Oct. 21 complaint that the 20-MW battery at its Harding Street Station was capable of performing as a load-modifying resource but that the MISO Tariff prevented its participation. The battery can deliver 5 MW for four continuous hours, according to IPL.

MISO has until the beginning of April to make Tariff revisions that "accommodate the participation of all electric storage resources, regardless of the technology, in all MISO markets that they are technically capable of participating in, taking into account their unique physical and operational characteristics," FERC said.

The RTO had asked for IPL's complaint to be dismissed, saying it was working with stakeholders on new storage definitions. It also cited FERC's Nov. 15 rulemaking that would require RTOs to remove barriers to entry (RM16-23, AD16-20). (See *MISO Asks FERC to Dismiss IPL Storage Complaint*.)

Storage NOPR

FERC said that while the commission's final rule resulting from the Notice of Proposed Rulemaking could address IPL's concerns, the company had nevertheless met its burden under Section 206 of the Federal Power Act to demonstrate that the existing Tariff is unjust. The commission also said the final rule from its storage NOPR could take precedence over MISO's compliance filing.

"In the event that MISO's Tariff revisions conflict with the required tariff revisions in any final rule resulting from the storage NOPR, MISO may be required to adjust its Tariff to align with the commission's determinations in that final rule," FERC explained.

The commission did not find merit in two

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it. He said the RTO will approach its stakeholders for suggestions in the coming days.

"There are lots of smart people reading it and looking it over and over," Doying told the Markets Committee of the Board of Directors during a Feb. 3 conference call. Doying also said MISO is not ruling out a request for rehearing.

Deputy General Counsel Eric Stephens said lack of a commission quorum moves MISO into "unchartered territory" with contested matters, which will be put on hold.

MISO's proposal, filed Nov. 1, drew more than 40 comments and protests at the end of 2016 from critics, including the Monitor, which included in its protest a proposal for a two-stage prompt auction. (See *MISO Forward Auction Filing Draws Protests*.)

In a departure from normal practice, the commission did not provide a detailed description of — or response to — the protests.

"I think the FERC order is consistent with the concerns we raised, so we're not unhappy with that, except that FERC didn't provide any guidance," Monitor David Patton said.

Patton said the commission's lack of guidance in the order "creates uncertainty" and expressed disappointment that his two-stage prompt auction proposal was not addressed.

MISO spokesman Jay Hermacinski said the RTO's effort to determine its next steps "will be complicated by the lack of detail" in the order concerning the reasons the proposal was rejected and the lack of guidance on how MISO can correct it.

"MISO appreciates the time and effort states and other stakeholders have already contributed to resource adequacy efforts in the MISO region," he said in a statement Friday. "We will continue to work closely with them while seeking opportunities to gain guidance from the commission."

Acting Chairman Cheryl LaFleur pledged to issue as many orders as possible before losing Bay, who announced his resignation after President Trump replaced him with LaFleur on Jan 26.

His resignation will leave the commission with only LaFleur and Commissioner Colette Honorable, one short of the three-person quorum required to act on major orders and rulemakings. The commission can continue to issue routine decisions under authority delegated to office directors. (See *Backlog, Delays Feared as FERC Loses Quorum*.)

MISO NEWS

FERC Refuses Interconnection Extension for Big Rivers' Coal Plant

By Amanda Durish Cook

FERC last week rejected Big Rivers Electric's request for a waiver to keep MISO interconnection rights for one of its coal plants through late 2017.

Big Rivers was seeking to keep its Coleman Station in Kentucky interconnected to MISO's grid for an additional year after the RTO ended a three-year system support resource agreement for the 433-MW coal plant in September. After that, the company said it would file another interconnection termination waiver request in August 2017 while it decides whether to restart the plant with environmental upgrades or convert it to natural gas. Big Rivers also said it was waiting on a MISO compliance filing regarding the retention and transfer of interconnection rights of a retiring SSR. (See *FERC OKs Change to MISO SSR Process*.)

FERC denied the request on the grounds that projects in MISO's interconnection queue could be impacted by the waiver and Big Rivers' stated intent to file a waiver extension would mean the requested waiver would not be limited in scope.

Coleman Station | *Big Rivers*

"Because MISO indicates that at least one project in its interconnection queue could be affected by granting this waiver request, we cannot conclude that granting Big Rivers' request would have no undesirable consequences," FERC said in its Feb. 3 order (EL17-15).

The commission said Big Rivers' indecision on whether to restart Coleman "directly contradicts" its claim that it has taken "significant steps" to restore the plant to commercial operation soon. FERC also pointed out that an interconnection rights transfer would not apply to Coleman because it exhausted the maximum 36 months of suspension/SSR designation that MISO allows in a five-year period and could no longer sit idle and stay connected.

Big Rivers had argued that terminating Coleman's interconnection service would harm regional reliability and increase costs for its members. The cooperative said it spent $6.5 million in 2014 to idle Coleman and spends $2.8 million every year to preserve the plant. FERC said Big Rivers' expenses are merely to maintain the coal station's "existing state" and not enough to return it to commercial operation, as the plant would violate EPA's Mercury Air Toxics Standards and need environmental improvements.

Finally, FERC brushed aside Big Rivers' arguments that terminating interconnection service would run counter to language in MISO's generation interconnection agreement. FERC pointed out that Big Rivers never had a generator interconnection agreement with MISO.

FERC Orders MISO to Change Storage Rules Following IPL Complaint

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other grievances contained in IPL's complaint. The company argued that MISO should have a compensation mechanism for automatic frequency control; the company also claimed that MISO's dispatch protocols are tailored to flywheel storage only. (See *IPL Asks FERC to Force Update to MISO Storage Rules*.)

Although FERC said it was aware of the Eastern Interconnection's declining primary frequency response, it agreed with MISO that it is currently sufficient to meet reliability under NERC's BAL-003-1 standard.

"We agree with Indianapolis Power that primary frequency response is a critical requirement for interconnected grid operations, and that the Eastern Interconnection has experienced a decline of primary frequency response as compared to historic values," the commission said. It also said MISO was not discriminating against battery storage, as all other providers of primary frequency response are likewise uncompensated. IPL's storage facility has been providing MISO with primary frequency response since May.

IPL claimed that MISO's current storage resource offer parameters would significantly shorten its battery's life because it would result in a "dispatch of its battery at half-capacity continuously for one hour and then send a negative signal for the following hour to charge."

But the commission said IPL failed to prove that MISO's dispatch instructions would harm the battery, saying it "failed to cite to any Tariff provisions or business practice manuals that support this claim."

FERC said MISO has previously informed IPL that while the Tariff requires a regulation resource "to be available for 60 minutes to provide regulation service, the actual market clearing and deployment will not cause the resource to be charged for one hour and then be discharged for one hour."

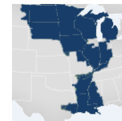
IPL Responds

Lin Franks, IPL's senior strategist for RTO, FERC and compliance initiatives, said that while the commission's order did not grant the company's request to be paid for "essential" primary frequency response, the commission has already made frequency response service a condition of interconnection with the grid in last year's RM16-6 rulemaking. Franks said she expected additional industry discussion on the topic as resource mixes shift further and battery benefits become more "universally understood."

"Our hope is to bring awareness of both the benefits of lithium ion battery storage and [its] regulatory challenges," she said.

Franks said IPL will continue to promote the benefits of battery storage. "Technological advances in this field happen rapidly [and] understanding benefits and the regulatory changes needed to realize all these benefits can take years," she added.

MISO NEWS



FERC OKs Settlement, Opens Docket in Dispute over Minn.-Wisc. Tx. Project

By Amanda Durish Cook

A three-year dispute over cost and revenue sharing for a CapX2020 transmission project moved one step closer to resolution after FERC last week approved a settlement between the city of Rochester, Minn., and the Southern Minnesota Municipal Power Agency.

The dispute concerns the Hampton-Rochester-La Crosse 161-kV and 345-kV transmission line between Minnesota and Wisconsin, which is intended to meet swelling demand in the Twin Cities, Rochester and La Crosse, Wisc., areas. Rochester's Public Utilities Board (RPU) is a 9% owner in the project, which is part of the CapX2020 joint initiative by 11 Minnesota utilities.

The settlement approves revisions to MISO's Tariff incorporating RPU's existing facilities in Pricing Zone 20 (the SMMPA pricing zone); converting the RPU transmission rate formula to a forward-looking formula rate template with an annual true-up; and adding RPU to Pricing Zone 16 (the Northern States Power pricing zone) (ER15-277-004).

Still remaining is a dispute between Rochester and Xcel Energy, which is challenging RPU's proposed recovery of its transmission revenue requirement for the project from Pricing Zone 16. The settlement does not resolve whether any of those costs should be allocated to Zone 20 if it is determined that the costs do not belong in Zone 16.

In a related order, FERC rejected Xcel's requested stay on RPU's rate recovery until the line was in service, saying a stay would amount to a "collateral attack" on the commission's refund effective date (ER15-277-001). FERC agreed with MISO that Rochester's facilitates were already figured into the Zone 16 revenue requirement when Xcel filed the motion for a stay. As the host transmission owner of six other TOs in Zone 16, Xcel subsidiary North States Power receives and distributes revenues allocated to Zone 16.

"To grant the stay now would require recalculating the Zone 16 transmission rate and providing refunds," FERC said. "We are also not persuaded that a stay would leave all parties indifferent, as it would cause a delay in [Rochester's] recovery of costs. … Granting the stay — especially if it lasted until the resolution of the ongoing dispute, as Xcel suggests — could endanger RPU's ability to recover its transmission revenue requirement for the 2016 year."

The commission also declined to place Rochester's share of Zone 16 transmission revenues in an escrow account until a settlement is reached, as Xcel requested.

Xcel charged that MISO's collection of Rochester's estimated annual transmission revenue requirement associated with the line in Zone 16 from Jan. 1, 2016, was not justified because MISO did not begin dispersing transmission revenues to Northern States Power until October, when the line was placed into service. Rochester argued that as a MISO TO, it has the right to recover revenue requirements for transmission facilities under the RTO's control.

In response to Xcel's request, FERC also clarified that RPU will be subject to refunds if the commission upholds a reduction in the return on equity for it and other MISO TOs. In October, FERC ordered the TOs' 12.38% base ROE cut to 10.32%. Rehearing requests in the case are pending (EL14-12). (See *FERC Cuts MISO Transmission Owners' ROE to 10.32%*.)

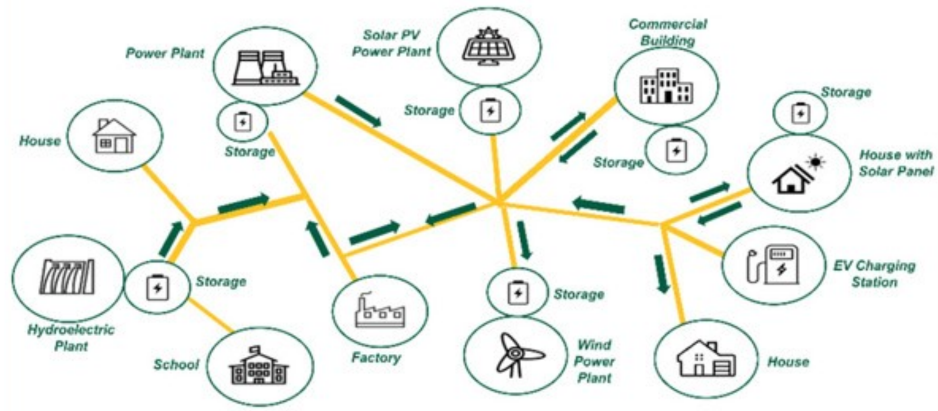
The commission also opened a new docket (EL17-44) to examine the Zone 16 joint pricing zone revenue allocation agreement, ordering Xcel and other interested parties to file initial briefs within 30 days after the publication in the *Federal Register*. FERC also sought briefing on whether MISO's joint pricing zone agreement can circumvent recovery of commission-accepted transmission rates. Tariff revisions could be necessary, FERC said, as Xcel argued it could not distribute those revenues to Rochester without violating the terms of its joint pricing zone agreement.

NYISO NEWS

NYISO 'Roadmap' Sees Dispatchable DER by 2021

By William Opalka

New York envisions a future when distribute energy resources can participate in wholesale energy and capacity markets as seamlessly as any conventional generator.



"Tomorrow's Power Grid" | *NYISO Distributed Energy Roadmap*

To help get there, NYISO on Thursday released the final version of its DER Roadmap, which seeks to create flexible pathways for distributed energy to participate in markets as the industry moves away from a model based on central power stations. A fall workshop laid out a broad outline of how these resources could optimize the grid. (See *NYISO DER Workshop Ponders the Grid of the Future*.)

The document released last week provides more specific guidance and includes timelines and interim steps that could lead to implementing dispatchable DER rules in 2021.

"The NYISO's market enhancements will permit dispatchable DER with various capabilities to participate in the wholesale markets. Integrating DER in this manner will require enhancements to wholesale market design, system planning and grid operations to better align resource investments and performance with system needs and conditions," the report states.

DER can consist of demand management, power generation, energy storage or different combinations of all three aggregated into a single entity.

"The NYISO's vison for dispatchable DER also aligns well with Reforming the Energy Vision in that it offers the potential to engage or animate certain consumers in ways that optimize grid utilization while helping these consumers better manage their own energy needs and costs," Mike DeSocio, senior manager of market design, said at a media briefing Thursday.

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'Special Case' DR Exempted from MOPR in NYISO

By William Opalka

FERC on Friday granted New York officials' request to exempt new "special case resources" (SCR) from buyer-side market power mitigation rules in NYISO (EL16-92).

The commission, however, denied a request to exempt SCRs currently subject to mitigation. An SCR is a demand-side resource that participates as a supplier in NYISO's capacity market.

The order addresses an issue left unresolved by the commission in a previous order that addressed market power concerns in the capacity market. (See *FERC Upholds Most of New York City Market Power Order*.)

NYISO's rules apply the minimum offer price rule (MOPR) to new capacity resources in the New York City or G-J Locality ICAP markets.

The Advanced Energy Management Alliance, the Natural Resources Defense Council and several New York state agencies, including the Public Service Commission, filed a complaint last June seeking the exemption. They said subjecting SCRs to NYISO's buyer-side market power mitigation rules presents an "unreasonable barrier" for demand response providers that increases consumer costs and interferes with state policy objectives under the Reforming the Energy Vision initiative.

NYISO agreed with the complainants, saying mitigation was unwarranted because SCRs do not have the ability to suppress capacity prices.

FERC also agreed, rejecting arguments from the Independent Power Producers of New York and the Electric Power Supply Association that SCRs could have the same influence on installed capacity prices as other resources.

The commission said the argument is "based on the incorrect assumption that SCRs — which are generally individual or small aggregated sets of 'resources' — have the same ability to suppress ICAP market prices as a single, large market participant."

Commissioner Norman Bay added a six-and-a-half-page concurring statement that questioned the overall efficacy of the MOPR. "I concur with this result but would go further in reconsidering the MOPR's rationale and applicability in the wholesale electricity markets," Bay wrote.

He appended a similar statement to another order on Friday that approved a MOPR exemption for renewable energy in ISO-NE. (See related story, *Bay Blasts MOPR on Way out the Door*, p.9.)

The commission also ruled as moot a request for rehearing and its dismissal of a related NYISO compliance filing (EL07-39-007).

NYISO NEWS

FERC OKs NYISO DR Cost Allocation

By William Opalka

FERC last week granted partial rehearing of a 2013 order that rejected a NYISO cost allocation method for some uplift costs under Order 745 (ER11-4338-001).

The commission partially reversed itself and said that a cost allocation method it previously rejected appropriately assigns those costs to transmission customers, including the New York Power Authority, which it had previously determined was exempt.

Order 745 amended regulations for compensation of demand response resources participating in wholesale markets. To pass the required net benefits test, FERC ordered RTOs to develop a mechanism to approximate the price level at which dispatching demand response resources will be cost-effective.

"In the May 16, 2013, order, the commission rejected NYISO's original August 19, 2011, proposal to allocate demand response costs as Schedule 1 uplift costs that are then allocated to transmission customers on the basis of load ratio shares, because NYISO had failed to demonstrate how its proposal appropriately allocates costs to those that benefit from demand reductions," FERC wrote. "We grant rehearing of the cost allocation issue and find that NYISO has demonstrated that its original proposal to allocate the costs of demand response as Schedule 1 uplift costs that are then allocated to transmission customers on the basis of load ratio shares appropriately allocates costs to those that benefit from demand reductions."

NYISO had argued that FERC applied an unnecessarily narrow interpretation of the order's cost allocation requirements by exempting bilateral contracts from the DR day-ahead program. It also argued FERC was imposing different requirements in New York than it did in other RTOs.

NYPA's Robert Moses Niagara Generating Station

FERC's ruling means the cost allocation will apply to the NYPA, which sells power to retail customers in bilateral contracts, including businesses that participate in the state's economic development programs. That load is mostly served by the authority's hydropower system, but it also participates in the NYISO wholesale market.

The commission granted the ISO's request for a flexible effective date and ordered a compliance filing within 60 days.

In other issues addressed by the order, FERC:

- Dismissed a rehearing request by DR supporters claiming discrimination against behind-the-meter resources. The commissions said it was beyond the scope of the proceeding and moot as NYISO has resolved the issue.
- Found the ISO had justified its exclusion of off-peak hours from the calculation of the net benefits threshold by "demonstrating the different thresholds for applying the net benefits test using all hours and using only peak hours (HB13 through HB19) for the reference months" in its original compliance filing.
- Said the ISO has supported selection of the highest point on its representative supply curve at which supply becomes inelastic as the threshold point for the net benefits test. "We find persuasive NYISO's description that the lower of the possible points of unitary elasticity is an artifact of the mathematical smoothing function rather than a point on the supply curve with economic significance."
- Ruled NYISO's existing cap for the in-day adjustment and its proposed measurement and verification methodology comply with the requirements of Order 745.

Agreed with the ISO that the hourly calculation of load ratio shares for cost allocation should be performed instead of the current daily calculation.

NYISO 'Roadmap' Sees Dispatchable DER by 2021

Continued from page 15

Other goals of the roadmap include the integration of DER into the energy, ancillary and capacity markets. "More fully integrating dispatchable DER will provide a means for DER to take advantage of real-time scheduling," the report said. "It is important for the NYISO's real-time systems to access and dispatch these resources in response to price signals reflective of grid conditions and needs."

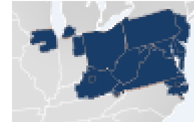
Improved load forecasts are seen as essential, as supply of distributed resources must be balanced with demand.

The roadmap also seeks ways to align compensation with system performance. The ISO said it intends to develop compensation aligning the flexibility and measured performance of DER with system needs, treating DER comparably with other resources.

Many of the DERs will be connected to the distribution network, unlike traditional generators, which are connected to the bulk transmission grid. The report said to ensure bulk power system reliability, an accurate representation of DER impacts at their interface to the grid is essential.

NYISO said the Roadmap is a starting point for discussions with stakeholders to develop market rules and operational protocols. It is also working with utilities to develop a series of demonstration projects that will require coordination or integration of DERs into the bulk power system.

PJM NEWS



FERC OKs PJM Exemption of sub-200-kV Facilities from Competition

FERC on Thursday accepted PJM's proposal to exempt transmission facilities that operate below 200 kV from its competitive proposal process (ER16-1335).

In April, PJM proposed the exemption, which designates the incumbent transmission owner to address such projects. The RTO then clarified in a compliance filing requested by FERC that all costs for such projects would be allocated to the single TO zone in which the transmission facility is located. (See "PJM Plans to Exclude Certain Upgrades in Order 1000 Upgrade Process," *PJM Planning Committee & TEAC Briefs*.)

LSP Transmission Holding protested that PJM's plan "removes competitive opportunities," but FERC rejected the argument. The commission noted that PJM will identify transmission solutions for reliability violations on exempted facilities and include a transmission planning process that complies with Order 890.

Voltage	Quantity	Percent of Total	Greenfield	Greenfield Cost allocated to >1 Zone	Greenfield Cost Allocated to >1 Zone*
765 kV	25	1.0%	1	1	4%
500 kV	155	5.9%	16	16	10%
345 kV	145	5.6%	26	10	7%
230 kV	742	28.6%	52	15	2%
< 200 kV	1,523	58.8%	104	13	< 1%

* Based on total number of approved projects in the voltage category.

PJM greenfield transmission projects by voltage | *PJM*

"We deny [LSP's] contention that the compliance filing unjustifiably removes competitive opportunities for transmission solutions to address reliability violations," the order read. "The commission determined PJM's proposal balanced the potential advantages of identifying, through the competitive proposal window process, the more efficient or cost-effective transmission solution to these particular transmission needs with the time and resources that PJM must expend to evaluate proposals submitted to address such transmission needs.

"The commission recognized that while there may be advantages to identifying solutions to some transmission needs arising from reliability violations on transmission facilities operating below 200 kV through a competitive proposal window process, PJM's data demonstrated that the number of such cases (less than 1%) is *de minimis* as compared to the total number of reliability violations on transmission facilities operating below 200 kV."

— Rory D. Sweeney

FERC Seeks More Details on PJM Fuel-Cost Policy Proposal

By Rory D. Sweeney

FERC on Friday accepted PJM's compliance filing on its fuel-cost policies for generating units but required the RTO to make another compliance filing to address a number of additional details (ER16-372-002).

The commission sided with PJM on several issues that have generated discussion at stakeholder meetings, including the relationship between the RTO and its Independent Market Monitor. (See *PJM Attempting to Usurp Market Mitigation Role, Monitor Says*.)

"We agree with PJM that the proposed changes related to the fuel-cost policy are not designed to change the fundamental roles between the IMM and PJM, but rather to codify the role of the IMM in advising and providing input to PJM in its determination of whether to approve a fuel-cost policy submitted by a market seller," the order read. "Accordingly, we reiterate our finding in the order that PJM has the final approval authority on fuel-cost policy."

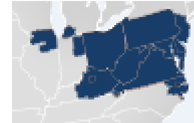
FERC declined PJM's proposal that any differences between the RTO and its Monitor should be referred to the commission's Office of Enforcement. That is the duty of administrative law judges, the order said.

The commission said the compliance filing, due in 30 days, should include:

- PJM's resource-dispatch formula and the process for determining the lowest-cost offer;
- A broader description of which resources will be subject to mitigation;
- The standard of review and an explanation of how a market seller would be found to be noncompliant with it;
- specifics on when the penalty for a noncompliant fuel-cost policy would be terminated by PJM, including a timeline with specific milestones;
- A 90-day grace period before a new resource must submit its fuel-cost policy; and
- A definition for when the penalty for noncompliance ends, along with a rebuttal period.

"We note that the penalty can still apply during the rebuttal time period, but if found to not be in violation of its fuel-cost policy, a market seller must be issued refunds as of the date of its rebuttal," the order explains. "During this rebuttal period, if a market seller does not have a PJM-approved fuel-cost policy on file, it will still be required to submit a \$0/MWh offer, but in the event that it is mitigated to its cost-based offer during this time period and its costs to operate, as per a PJM dispatch, are not covered by its market revenues, PJM should make the market seller whole by providing it with an uplift payment."

PJM NEWS



GDF SUEZ to Pay $82M in PJM Market Manipulation Settlement

By Rory D. Sweeney

GDF SUEZ Energy Marketing will pay almost $82 million to settle market manipulation charges for offering generation below cost to capture make-whole payments in PJM.

FERC on Wednesday approved a consent agreement between the company and the commission's Office of Enforcement that requires GDF to disgorge $40.8 million to PJM and pay a civil penalty of $41 million to the U.S. Treasury. GDF did not admit or deny the allegations (IN17-2).

Enforcement charged GDF with violating the commission's Anti-Manipulation Rule for an improper bidding strategy designed to increase its receipt of lost opportunity cost credits (LOCs).

According to the settlement, the Houston-based power marketer offered below-cost bids on some of its 12 natural gas-fired units to clear PJM's day-ahead market and profit off the LOCs when the units weren't dispatched in real time. GDF used a probabilistic, risk/reward approach to compare when units were unlikely to be dispatched against the risk of running the units at a loss, the settlement said.

GDF's strategy was implemented between May 2011 and September 2013, when Enforcement questioned the practice. The scheme involved 12 simple cycle combustion turbines totaling 1,800 MW at four

Troy Energy plant, formerly owned by GDF

plants. Based on dispatch history, the company initially expected low energy margins from the units, which did not run often, and that their primary revenue source would be capacity payments.

GDF's parent company rebranded as ENGIE in 2015, and in 2016 Dynegy purchased its U.S. fossil fuel generation assets. (See *Dynegy Files Mitigation Plan for Purchase of ENGIE Plants*.)

GDF's practice took advantage of PJM's LOC rules, in which CTs that clear day-ahead auctions but aren't dispatched are paid the difference of the real-time LMP and the higher of the unit's price-based or cost-based energy offers. Because the formula didn't subtract start-up and no-load costs, a generator with a day-ahead award could earn a greater margin when it received LOCs and was not dispatched by PJM in the real-time market than it would earn if it was dispatched.

GDF furthered its strategy by discounting its cost-based offers to the level of its price-based offers to ensure the units cleared the day-ahead auctions. The strategy also ensured that the LOCs it received would continue to be based on the discounted offer and would be higher than if based on the units' estimated costs.

When the company expected that a unit would be dispatched in the real-time market, it typically offered the unit at or above cost and did not discount its day-ahead energy offer. It also typically offered uncommitted units that were not eligible for LOCs in the real-time market without discounting.

"As [GDF] gained experience in implementing the strategy, it became more aggressive in discounting offers for the CT units to get [day-ahead] awards in order to obtain LOCs, at times offering them with discounts as deep as -$25/MWh," the settlement said.

The company has instituted additional compliance policies to prevent manipulative behavior in the future and will continue to conduct compliance training, the settlement said.

The company also submitted to monitoring and filing an annual compliance report. Enforcement can require a second annual report at its discretion. The compliance report must identify any known violations of commission regulations that happened during the reporting period and detail all compliance actions taken.

PJM's payment is to be used at the RTO's discretion — with Enforcement's approval — to benefit its members.

FERC Calls Hearing on Transource ROE Request for AP South

By Rory D. Sweeney

FERC approved a formula rate requested by Transource Energy for its AP South Congestion Improvement Project, but suspended its implementation pending a hearing on whether the company's proposed return on equity is reasonable (ER17-419).

PJM last year approved a $340.6 million proposal by Transource and Dominion High Voltage to address the congestion issue along the border of southwestern Pennsylvania and northwestern Maryland, despite criticism from other stakeholders. Transource's part will include two 230-kV double-circuit lines about 42 miles in total: one between the Ringgold substation and a new Rice substation, and another between the Conastone substation and a new Furnace Run substation. (See *FERC OKs Transource Pact on AP South Congestion Project*.)

Transource, a joint venture of American Electric Power and Great Plains Energy, had requested a 10.4% base ROE, but protesters — including Old Dominion Electric Cooperative and American Municipal Power — argued that Transource incorrectly calculated the median of comparable rate proposals on which it based its request. The commission questioned the proposal as well and ordered an evidentiary hearing. The rate formula, including the approved ROE, will be effective Feb. 1.

The commission also rejected Transource's proposed 50-basis-point "risks and challenges" adder, saying Transource "has not demonstrated that the project faces risks and challenges either not already accounted for in the applicant's base ROE or addressed

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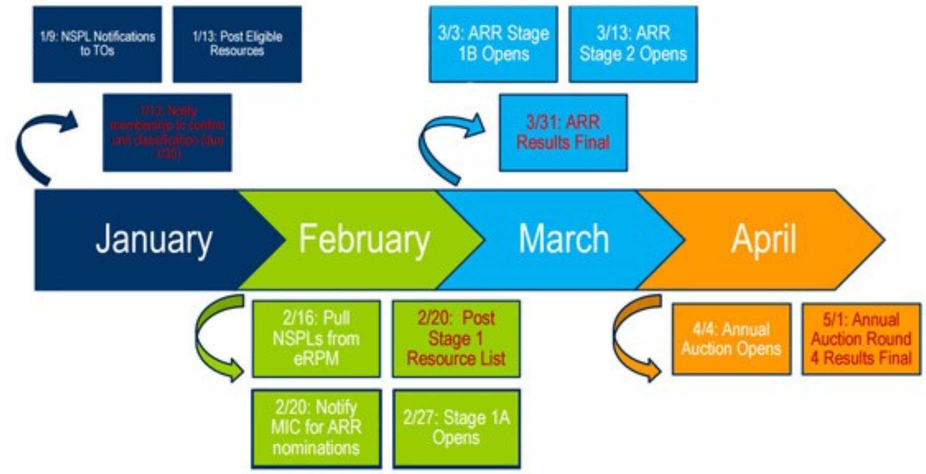
PJM NEWS

FERC Accepts PJM's FTR Plan, Rejects Rehearing Requests

By Rory D. Sweeney



ARR/FTR timeline | *PJM*

FERC last week rejected rehearing requests over revisions to PJM's financial transmission rights market, ruling in time for the RTO to implement the changes in its 2017 auction revenue rights allocation (EL16-6).

The commission's Jan. 31 order upheld its Sept. 15 ruling that modeling assumptions PJM adopted to address FTR revenue inadequacy had resulted in unwarranted cost shifts between ARR holders and FTR holders. FERC also accepted PJM's compliance filing in response to the commission's requirement that it develop a method for allocating ARRs that doesn't consider extinct generators. (See *FERC Finds PJM ARR/FTR Market Design Flawed; Rejects Proposed Fix*.)

Under the new rules, PJM will assign balancing congestion to real-time load and exports and regularly update its ARR allocations to reflect generator retirements. (See "Generators Displeased with FTR Adjustments," *PJM Market Implementation Committee Briefs*.)

A variety of stakeholders, including the Independent Market Monitor, New Jersey and Delaware regulators, load-serving entities and the PJM Industrial Customer Coalition, had asked the commission to revisit the Sept. 15 order.

The requests focused on four points: netting the values of both positive and negative FTRs into a single portfolio for the FTR holder; allocation of balancing congestion; ARR Stage 1A overallocation; and PJM's proposed 1.5% zonal load-forecast growth-rate adder to prevent infeasible ARRs.

On all four, FERC maintained its previous stance.

The commission rejected arguments that FTRs are meant to benefit only load. "FTRs were designed to serve as the financial equivalent of firm transmission service and play a key role in ensuring open access to firm transmission service by providing a congestion hedging function," the commission said. "The purpose of FTRs to serve as a congestion hedge has been well established. … On the issue of cost causation, the commission found that while balancing congestion is currently allocated to FTR holders, FTR holders do not cause and cannot predict the level of balancing congestion."

While the commission accepted PJM's compliance filing, it rejected the RTO's proposal to allocate any FTR overfunding surplus to ARR holders. FERC gave PJM 30 days to submit a compliance filing removing it.

"There was no finding in the Sept. 15 order that the current design with respect to surplus allocation is unjust and unreasonable, and there is no evidence that the changes required in the Sept. 15 order result in the current allocation of surplus funds as being unjust and unreasonable. Therefore, we find this aspect of PJM's proposal as out of scope, without prejudice, and refer consideration of such changes to PJM's stakeholder process," the order said.

FERC accepted PJM's requested effective dates, making replacement of historical source points for ARR allocations effective Feb. 1 and the Tariff provisions addressing PJM's balancing congestion charge allocation effective June 1.

FERC Calls Hearing on Transource ROE Request for AP South

Continued from page 18

through risk-reducing incentives."

The commission granted other requests, including a 50-point adder for RTO participation, 100% recovery if the project is abandoned, inclusion of the project under construction into the rate base and a hypothetical 60% equity/40% debt capital structure until the project is in service or secures permanent financing.

ODEC and AMP had protested the hypothetical structure, but Transource argued it was helpful for securing investors during a critical period for the project. Transource noted that it will likely have to negotiate for access to about 300 properties.

AP South is the first competitively awarded transmission project in Maryland and Pennsylvania, as well as the first competitive market efficiency project in PJM. The RTO expects it to produce approximately $620 million in congestion savings over 15 years. It's expected to be in service by June 1, 2020.

SPP NEWS

FERC Sides with Wind Generators, Rejects SPP Reactive Power Filing

By Rich Heidorn Jr.

In a victory for wind energy advocates, FERC last week rejected SPP's proposed method for measuring generators' reactive power, saying it said would result in excessive and unnecessary costs (ER17-107).

The commission rejected the RTO's October compliance filing in response to Order 827, which revised the *pro forma* large and small generator interconnection agreements to add reactive power requirements for all newly interconnecting nonsynchronous generators.

Although the order required grid operators to ensure compliance by measuring reactive power at the "high-side" of the generator substation, SPP sought an "independent entity variation" allowing it to conduct measurements at the point of interconnection.

SPP said the variation was justified because its transmission system is dispersed over a wide geographic area and that many interconnection customers use longer generator lead lines to the point of interconnection to reach optimal parts of the transmission system.

The RTO said that measurements at the generator substation will not reflect "the charging or impedance" on the generator lead lines between that substation and the interconnection, creating a risk of excessive high and low voltages on the transmission system. SPP said that reliability standards would require the installation of reactive power compensation devices, at additional cost to transmission customers.

The proposal brought protests from several renewable generators and the American Wind Energy Association, which said the commission had considered the potential for long generator lead lines in their deliberations on Order 827. They also said SPP was not unique in having high-voltage nonsynchronous generator lead lines of 20 miles or longer.

The commission agreed, noting that Order 827 found that "requiring fully dynamic reactive power capability at the point of interconnection may result in significantly increased costs for nonsynchronous generators."

Although setting reactive power requirements at the point of interconnection "would provide the greatest amount of reactive power to the transmission system," the commission said, "the costs associated with providing that level of reactive power do not justify the added benefit to the transmission system."

"In Order No. 827, the commission carefully considered the appropriate point at which to measure reactive power and ultimately found that 'measuring the reactive power requirements at the high-side of the generator substation reasonably balances the need for reactive power for the transmission system with the costs to nonsynchronous generators of providing reactive power.'"

FERC also said SPP was not unique in its geography and had failed to provide information to support its reliability concerns. "Like SPP, other ISOs/RTOs have nonsynchronous generation interconnecting with the generator terminals located a significant distance from their point of interconnection. Similarly, SPP faces the same growing penetration of nonsynchronous generators as other ISOs/RTOs that in part resulted in the commission issuing Order No. 827," the commission said.

It ordered the RTO to submit an additional compliance filing within 30 days.

SPP NEWS

Board of Directors/Members Committee Briefs

Board Sends $144M Tx Project Back for Re-evaluation

DALLAS — The SPP Board of Directors and Members Committee last week approved 13 of 14 transmission projects in the Integrated Transmission Planning 10-Year Assessment but directed staff to further evaluate the largest project in the portfolio.

RTO members and the board asked staff to further study and update a proposed 90-mile, 345-kV line in Southwestern Public Service's service territory in the Texas Panhandle and bring back another recommendation to the April board meeting. SPS argued against the need for the project during January's Markets and Operations Policy Committee meeting, saying it was "the wrong time" for the line. (See SPP MOPC Endorses 14 Tx Projects over Objections.)

SPS President David Hudson and the company's director of strategic planning, Bill Grant, reiterated comments made a day earlier at the Regional State Committee meeting.

"Overall, our view is this could be a good project," Hudson said. "It could taste great, but we don't think it's ready to come out of the oven. We think it needs more study."

The line — which would run southwest of Amarillo to an SPS power plant that is currently being evaluated for continued operation — does little to relieve congestion in the area, Grant said. He also noted that several SPS customers are becoming more responsible for their resource needs.

"It just moves [the congestion] a little further south. It does move the north LMPs down, but it doesn't merge the north LMPs and the south LMPs," he said. "If anybody believes we're building this line and all of a sudden the congestion goes away, that's a misconception.

"I think that whole area needs to be looked at. I would like to see that better vetted before we go down this road."

SPP staff said the proposed line would resolve local congestion dating back to 2001, estimated at an annual average cost of $21 million the last two years. At a projected $144 million for engineering and construction costs, accounting for 71.6% of the portfolio's $201 million cost, the project has a benefit-to-cost ratio of 1.4 to 1.7.

"We just don't believe some of these assumptions are warranted. We'd like to talk about it some more," Hudson said, pointing to a likely delay of the Clean Power Plan and the replacement of a Tolk Generating Station coal unit with a gas-fired combined cycle plant. "We're just not comfortable about a project that started coming back in the fourth quarter last year."

Staff's supplemental analysis late last year helped identify the project as an economic need. The addition of future generation in the latest planning models indicated more congestion than in previous versions, SPP Engineering Vice President Lanny Nickell said.

"We've matured in terms of the metrics we actually use to calculate these studies," Nickell said.

SPP Engineering VP Lanny Nickell details the 2017 ITP10 portfolio to the board and members. | © *RTO Insider*

American Electric Power's Richard Ross advocated making the best use of that analysis.

"If we don't get ahead of this with the economic analysis staff has done, we could be waiting for the shoe to drop," Ross said. "When an entity requires another unit, we're going to get behind the curve."

Ross was concerned that SPP could face a reliability issue if it couldn't get the line built in time to meet a future need. "Let's make use of the best available information," he said.

SPP Board Chair Jim Eckelberger agreed. Channeling his inner salty dog, the retired Navy admiral said, "We need to go back and make damn sure we're going in the right direction before we start spending a hell of a lot of money."

Director Bruce Scherr urged those "who have voiced reasonable doubts and sensitivities" to "come to the table and provide solutions and ideas that improve the understanding of the project and its benefits and costs."

Members voted overwhelmingly for further study, with only ICT Holdings abstaining.

The ITP10 also recommended a 345/161-kV transformer and 161-kV line upgrade in southwestern Missouri, near Springfield. The line connects to an Associated Electric Cooperative Inc. substation in Morgan and could qualify as a seams project pending negotiations with AECI. (See "SPP-AECI Joint Study Recommends Two Projects," *SPP Seams Steering Committee Briefs*.)

Stakeholders Try to Grasp Wind Energy's Implications

The board and members devoted time to discussing the phenomenal growth of wind energy in the footprint and how best to integrate the variable resources.

Rew

SPP Operations Vice President Bruce Rew told stakeholders that another 3,100 MW of wind capacity began operating in the last quarter, bringing total installed and operational wind capacity to 15,500 MW. Another 630 MW of wind resources were registered as 2017 began, although they're not yet operational.

Real-time wind output during the fourth quarter ranged from a record 12,336 MW to a minimum of 384 MW, Rew said. Output averaged 6,041 MW, up nearly 40% from the third quarter.

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Board of Directors/Members Committee Briefs

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Wind energy's variability is exacerbated by the diverse nature of SPP's 14-state footprint, which ranges from Louisiana to the Canadian border. On Jan. 12, the footprint saw a 98-degree spread in temperatures — from 20 below in Bismarck, N.D., to 78 in Shreveport, La. The simultaneous temperature spread that day was 78 degrees.

Brown said SPP has experienced the loss of more than 10,000 MW in a single 24-hour period, underscoring the importance of "top-notch" forecasting tools.

"That's the equivalent of 10 nuclear units," he said. "That type of variance certainly got my attention. [Wind energy] is a wonderful resource, but it certainly keeps us on our toes."

Ross agreed. He said that while forecasting is important, so is reliability, and he stressed the need for market participants to be able to effectively hedge when pursuing transmission service.

"The reliability issue is the paramount issue," Ross said. "We need to be mindful of the impact on the existing base of the region and what our actions are doing to the existing customers."

Ross, who chairs the Market Working Group, said he will coordinate the group's work with the Transmission Working Group. The MWG will look at reliability unit commitments, negative lift prices and whether the market is sending appropriate price signals.

"It's not clear what the solutions are, but it's clear what the problems are," said Golden Spread Electric Cooperative's Mike Wise, who chairs the Strategic Planning Committee. "Substantial amounts of generation remain online with minimum loads."

Given the difficulty of clearing coal plants in the day-ahead market, the RTO must determine how to get those plants offline if they're not needed for long periods, Wise said.

"We're pushing huge amounts of energy onto [a] market we have no load for," he said.

SPP CEO Nick Brown suggested asking staff to develop a list of all the issues being discussed in order to assign responsibility, an idea seconded by Eckelberger.

"My concern is making sure we have the right people looking at the right issues," Eckelberger said. "Let's make sure we're being as comprehensive in our thinking and getting the right answers."

Rew also said that SPP added 10 market participants during the fourth quarter and now has 187 entities registered for its Integrated Marketplace, 121 of which are classified as financial-only. He said the market systems continue to be readily available, with the real-time balancing market successfully solving 99.97% of all intervals and the day-ahead market delaying postings just twice in 12 months.

SPP 'Working Diligently' With Mountain West

Brown said that Mountain West Transmission Group is "working diligently" with his staff as the two organizations explore potential RTO membership. Mountain West announced last month that is was entering discussions with SPP. (See Mountain West to Explore Joining SPP.)

COO Carl Monroe will continue to serve as the RTO's lead in negotiations with Mountain West and Nickell has been designated as staff lead in the integration efforts, which could take up to two years, Brown said.

"In the past, we've learned the value of the officer responsible for integration to be intimately involved in the negotiations over the final details," he said.

Brown said Mountain West's potential membership is "front and center on my plate," along with seams projects, integrating wind energy, cybersecurity and cost shifts within SPP's transmission zones. (See Strategic Planning Committee to Continue Work on Tx Cost Shifts.)

"Our charge as staff is to bring very specific proposals to the SPC for [its] consideration," Brown said. "I can assure you we will wrestle this to the ground very quickly."

He said he had assigned Paul Suskie, SPP's executive vice president of regulatory policy and general counsel, to lead the zonal cost shift effort.

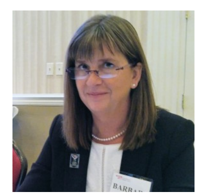
Oversight Committee Provides Update on MMU Search, Audit Compliance

A search firm is conducting a nationwide hunt for the new executive director of the SPP Market Monitoring Unit, according to Oversight Committee Chairman Joshua W. Martin III, who hopes to narrow the selection by the committee's next scheduled meeting. Current Director Alan McQueen has indicated that he wants to retire this year.

Martin, an SPP director, said the MMU is filing quarterly compliance reports as a result of last year's FERC audit, the latest of which was submitted last week. (See FERC Calls for Changes to Protect SPP Market Monitoring Unit Independence.)

"We're satisfied, based on the results of that report, that the MMU is operating correctly," Martin said.

SPP has not yet followed through on FERC's suggestion that the MMU be physically separated from the RTO's office space inside the corporate headquarters, but the operation is "occurring." Other items from the report have been implemented, such as new time-keeping standards and practices ensuring new employees are aware of the unit's independence, he said.



Sugg

Barbara Sugg, the RTO's chief security officer, said that the amount of malicious cyber activity continues to grow and that email phishing attacks are "more prevalent and real than any other security threat."

"The numbers are just staggering. Your numbers are staggering," she told members. "It's crazy, the amount of traffic that tries to come in. It's not targeted at SPP, but we're just bombarded with the amount of information that comes up to the firewall."

Sugg said SPP received 12 million emails in just one month and that only 7% were deemed legitimate. Eight million were deemed malicious.

SPP sends out emails as bait to see if anyone

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SPP NEWS

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will click where they shouldn't and then uses them as a learning experience, she said. Sugg regularly briefs the OC on cybersecurity issues and also represented all RTOs in testimony to Congress last week. (See related story, *Interdependence Key to Cybersecurity Efforts, Congress Told*, p.1.)

Eckelberger said that while SPP has done well with audits and inspections, "the black eye we still carry with us" is a SERC Reliability Corp. cyber audit in 2013 that has yet to be closed.

"It's still ugly, but [during] the last year — as a result of learning what's going on here — we've quintupled the amount of people in the organization dedicated to cybersecurity," Eckelberger said. "And we're still less than other organizations."

SPP RE Works to Improve Misoperations Numbers

Dave Christiano, chair of the SPP Regional Entity trustees, delivered mostly good news in a report. He said the six reported system events last quarter were at the lowest level of severity, improved audit processes have resulted in decreased audit times and team sizes, and 90% of violations were self-identified, denoting strong compliance cultures.

"That's a good thing," he said of the self-identified violations. "It's good for you, it's good for us."

Director Harry Skilton noted misoperations were a "new green line" for FERC and inquired about how SPP ranked compared with other grid operators.

"We're not one of the better performers," Christiano said.

The most recent quarterly misoperations report shows an 88.7% success rate for relay operational performance. SPP's sparsely populated footprint — approximately 18 million people in all or parts of 14 states — and long transmission lines play a part in the results, Christiano and Brown both noted.

"The problem is more the backup relays than the primary relays," Christiano said. "When the primary relays operate, the backups don't. They don't get any credit for operating correctly, which might be part of the reason."

"It's hard for me to believe our relaying practices aren't any more robust than anyone else's," Brown said, "but that could be."

Board Remands 1 Revision Request, Approves 6 More

The board remanded BPWG-RR 155 back to the Regional Allocation Review Task Force, asking the group to decide whether the change needs to become a business practice and come back for another vote. The revision request, which failed to pass the MOPC in January, documents the potential Regional Cost Allocation Review remedies and clarifies the process to be used when implementing a remedy.

The board approved RTWG-RR 187, with only Westar Energy voting against it, replacing the old capacity margin terminology with a 12% planning reserve margin requirement. The change incorporates previously approved policies that identify who is responsible for resource adequacy, the resource adequacy requirement, and how and when the requirement can be and should be met. (See "Stakeholders Endorse 12% Planning Reserve Margin, Policies," *SPP Markets and Operations Policy Committee Briefs*.)

The board's consent agenda, which passed unanimously, included five revision requests, a change to the Transmission Process Improvement Task Force's white paper, the 2016 SPP Transmission Expansion Plan and several other minor revisions.

- ORWG-RR 134: Clarifies previously ambiguous operating criteria language for the initial submission and subsequent updates of unit de-rate information in SPP's control room software system.
- MWG-RR 191: Clarifies that there should not be a requirement to reprice the day-ahead and/or real-time markets for every data input/software error.
- ORWG-RR 195: Simplifies the process of SPP's data-specification document required by NERC Reliability Standards IRO-010-2 and TOP-003-3 and makes basic formatting changes to the operating criteria document.
- RTWG-RR 197: Completes the MMU's annual review of frequently constrained areas by updating the list of constraints and resources.
- MWG-RR 198: Uses a variable demand curve that moves SPP toward a more robust valuation of regulation and operating reserve and more accurately addresses and values operating and energy shortages during scarcity events.

— Tom Kleckner

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SPP NEWS

FERC OKs SPP 'Multi-Configuration' Rule

By Rich Heidorn Jr.

FERC last week approved SPP's new rules for how it commits and pays "multi-configuration" combined cycle plants, an innovation that will also result in changes to settlement procedures for all generators (ER17-358).

Previously, the Tariff did not permit generators to offer multiple operating configurations. Combined cycle plants could register individual plant components as separate resources, register the plant as a single resource representing all the plant's components, or register as a pseudo combined cycle resource (one combustion turbine and a portion of a steam turbine).

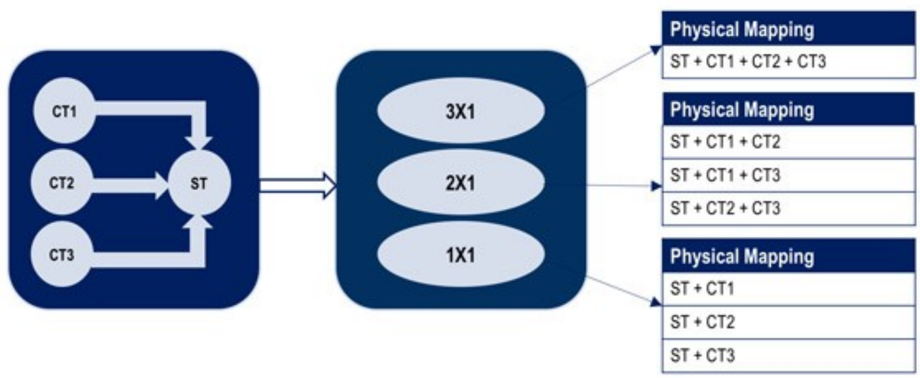
Under the new rules, SPP will be able to model up to three of a multi-configuration resource's (MCR) operating configurations, providing additional flexibility for SPP's commitment and dispatch of such plants.

The Tariff revisions also will affect SPP's settlement practices for all resources, making changes to how the RTO determines make-whole payments, out-of-merit energy amounts and reliability unit commitment (RUC) make-whole payments. The RTO said the new rules "do not substantially modify eligibility for make-whole payments for non-MCRs, but instead more accurately reflect cost causation principles in the calculation of make-whole payments."

In approving SPP's proposal, the commission said the changes "will more accurately model the operating characteristics" of flexible combined cycle plants. "In addition, we find that SPP's proposal to modify its market settlement procedures for both MCRs and non-MCRs will more accurately reflect commitment optimization and cost causation principles in cost recovery and thus benefit market efficiency."

The commission ordered SPP to make a compliance filing clarifying how it will "ensure MCR configurations, when mitigated, reflect the lowest cost unit capable of participating in the configuration." The commission said revisions proposed by SPP "should also inhibit physical withholding by requiring one valid configuration to represent the maximum capacity of the combined cycle resource."

The changes are effective March 1, when software allowing the modeling of the MCRs goes live. Participants completed testing of the software in January.



Configuration-based modeling for multi-configuration combined cycle plant | *SPP*

RSC Leaves Safe-Harbor Thresholds Unchanged

By Tom Kleckner

DALLAS — SPP's Regional State Committee last week accepted a working group's proposal to leave unchanged the criteria used to exempt load-serving entities from transmission project costs in service requests.

The Cost Allocation Working Group recommended that no modifications be made to the thresholds used to determine what project costs should be borne by LSEs making long-term transmission service requests (TSRs). The RSC, composed of 10 regulators from across SPP's 14-state footprint, accepted the proposal but then directed the CAWG to conduct annual reviews of the aggregate study safe-harbor criteria.

SPP's aggregate transmission service study process combines all long-term point-to-point and designated network resource requests received during a specified time period into a single study.

The RTO splits the costs of transmission projects between the entire SPP footprint and LSEs purchasing transmission service for designated resources — those used to meet the LSE's capacity margin requirement.

The safe harbor exempts LSEs from upgrade costs for a TSR when the aggregate studies' waiver criteria are met:

- Wind generation may not exceed 20% of designated resources.
- TSRs must have a minimum five-year term.
- Designated resources may not exceed 125% of forecasted load.

Utilities can also apply for an increase in the safe-harbor limit of $180,000/MW.

The CAWG approved the five-year and 125% thresholds unanimously, but it cleared the 20% wind limit by a 6-3 vote. Representatives from the Arkansas, Missouri and New Mexico commissions opposed the motion, while Iowa's representative abstained.

Adam McKinnie, chief utility economist for the Missouri Public Service Commission and the CAWG's chair, said he wanted to address wind energy's operational issues in other ways than by determining who pays for which transmission projects.

"We felt something should be done, but I didn't see this particular criteria as being the right tool for the job," McKinnie said.

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SPP NEWS

SPP Adds 10th Director to its Board

By Tom Kleckner

DALLAS – SPP members elected 40-year industry veteran Mark Crisson to the RTO's Board of Directors last week, expanding the board to 10 members.

After nearly 30 years with Tacoma Public Utilities in Washington state, Crisson served as CEO of the American Public Power Association (APPA) from 2007 to 2014 in D.C. He was interim general manager of Kentucky's Paducah Power System and deputy general manager with the Navajo Tribal Utility Authority before retiring in 2016.

New SPP Director Mark Crisson (center) chats with fellow director Bruce Scherr and Golden Spread Electric Cooperative's Mike Wise. | © *RTO Insider*

Crisson told *RTO Insider* he was attracted to SPP's stakeholder-driven culture, which he said is similar to APPA's emphasis on its members.

"At APPA, we would hold up SPP's core principle of stakeholder focus as an example of how other organizations should run things," Crisson said. "The belief is having customers and members driving the decisions and developing solutions. It takes time, but it's better doing it that way than dealing with problems later."

He said he was excited by the opportunity to stay involved in the electric industry, while also enjoying his retirement.

"I bring a lot of management experience and customer experience," he said. "I'll try to be cognizant as a board member to offer support and guidance, but not set specific direction. I hope I can provide meaningful, high-quality technical advice."

A graduate of the U.S. Naval Academy, Crisson served in the Pacific nuclear submarine fleet from 1970 to 1975. He joined Tacoma Public Utilities after completing his service and earned a master's in business administration from Pacific Lutheran University in 1981.

Golden Spread Electric Cooperative's Mike Wise, himself a graduate of the U.S. Air Force Academy, said teasingly, "It's nice to have another academy grad in leadership, though it's not necessarily the right one."

SPP CEO Nick Brown said Crisson "brings a distinct and rare set of skills and experiences to our group of directors, and we look forward to benefiting from his insights as we ramp up our engagement in national energy policy discussion."

Crisson helped lead Tacoma through the 2000/01 Western Energy Crisis before becoming chair of APPA's board in 2003 after 10 years as a director. He centered his work on climate change legislation, federal environmental regulations, analysis of ISO/RTO wholesale power markets, grid reliability and cybersecurity. He was recognized with APPA's first annual Mark Crisson Leadership and Managerial Excellence Award when he left the organization in 2015.

Board Expansion

FERC in August 2015 approved SPP's request to expand its board to up to 10

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RSC Leaves Safe-Harbor Thresholds Unchanged

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"Our state utilities had a lot of input to me on this," said the Nebraska Power Review Board's John Krajewski. "While I'm sympathetic and I understand the desire to eliminate this threshold, there are a lot of concerns with regard to the operations of thermal units and [SPP's ability] to send proper signals to thermal units."

Krajewski said the safe-harbor limits don't prevent LSEs from adding wind above the 20% threshold. "If you exceed the threshold, then you would simply have to pay for any necessary transmission improvements," he said.

McKinnie said the CAWG would next review and discuss the safe-harbor limit.

12% Planning Reserve Margin OK'd

The RSC also unanimously endorsed the Supply Adequacy Working Group's recommendation to replace SPP's capacity margin terminology with a 12% planning reserve margin requirement.

The revision request (RTWG-RR 187) was approved by the Markets and Operations Policy Committee in January. It incorporates previously approved policies that identify who is responsible for resource adequacy, the resource adequacy requirement and how and when the requirement should be met. (See "Stakeholders Endorse 12% Planning Reserve Margin, Policies," *SPP Markets and Operations Policy Committee Briefs*.)

Personnel Moves

The committee also made several personnel moves. RSC Chair Steve Stoll, a commissioner with the Missouri PSC, announced Commissioner Kim O'Guinn (Arkansas Public Service Commission) and Board Member Dennis Grennan (Nebraska PRB) have been added to the Regional Allocation Review Task Force to fill their states' seats.

Committee members unanimously agreed to establish a nominating committee for future RSC elections and to work out the details during their annual retreat in July.

SPP NEWS

Z2 Task Force Looks for Best of Proposals

By Tom Kleckner

DALLAS — SPP's Z2 Task Force does not appear close to a solution for replacing its bedeviling crediting system for transmission upgrades.

After SPP staff and stakeholders presented alternative proposals Wednesday to improve the process in which members are assigned financial credits and obligations for sponsored upgrades, the only consensus was that more time is needed. Eight years of applying the credits incorrectly has complicated the task of trying to properly compensate project sponsors and claw back money from members that owe debts for the upgrades.

"I don't think there's a single proposal that addresses everything in the way we want to," said Kansas City Power and Light's Denise Buffington, the task force's chair. "I think we're going to have to cherry-pick what's important. Concepts are important, and knowing what concepts would be nonstarters for you would be helpful.

"We don't have the option of doing nothing," she said, reminding the task force of its charge from the Board of Directors.

Sunflower Electric Power's Davis Rooney suggested developing a matrix of the proposals' elements to gain a better understanding of which pieces will be kept and which will be discarded.

"Are we retaining or not retaining the safe-harbor limit? The wind rule … the highway/byway" transmission-cost allocation rule? he asked. "Some of those questions seem pretty common across the proposals."

"This has to be a package for us," countered The Wind Coalition's Steve Gaw. "Seeping little elements out, agreeing to take this out and that out … that will create a challenge. The idea that you have a set funding stream on capacity upgrades and you will get reimbursed over time … that might have some attractiveness to it."

Some stakeholders expressed a preference for using transmission congestion rights (TCRs) or incremental long-term TCRs, while others suggested following a staff proposal to create a new schedule under the SPP Tariff. Staff is already digging through FERC orders to see how the RTO might justify Tariff changes, and it is soliciting input from MISO and PJM on how they allocate the cost of upgrades.

Meena Thomas, a senior market economist with the Public Utility Commission of Texas, said the state regulators' Cost Allocation Working Group would be unlikely to accept any increase in base-plan funding as part of any rule change.

"Based on discussions at the CAWG, they have a concern," Thomas said.

Staff Proposes New Schedule

Staff proposed replacing the Tariff's Attachment Z2 with a separate Schedule 13. SPP's Charles Locke said the new schedule's charges would fund all upgrade sponsors' credit payments and would apply to all network and point-to-point customers.

"A separate schedule might be cleaner and less complex in both administration and Tariff structure," Locke said.

He said the charge could either be a region-wide charge or a combination of regionwide and zonal charges. The rate would be revised periodically, he said, possibly

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SPP Adds 10th Director to its Board

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people, with a minimum of seven. The RTO said the expansion was to increase the "flexibility" of director succession planning, "with due consideration given to director tenure, knowledge sharing and risk management."

Two of the three new positions were filled with last January's election of Bruce Scherr and Graham Edwards. (See SPP Adds Ex-MISO CEO, NERC Trustee to Board.)

The Russell Reynolds Associates search firm also identified Crisson as a candidate during the initial search. He was interviewed again in November by the Corporate Governance Committee, which represents each of the membership sectors.

As he did last January, Westar Energy's Kelly Harrison urged the membership and SPP to continue to improve the board's diversity. Long-time director Phyllis Bernard is the only woman on the SPP board, while she and Joshua W. Martin III are the only two members of a minority.

"I know it's a challenge, because those folks might be in high demand," Harrison said.

SPP NEWS

Z2 Task Force Looks for Best of Proposals

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through an annual formula update.

Under the Schedule 13 proposal, Locke said, the entire facility cost would not be "simply" rolled into rates, instead being limited by the extent to which the facility is used for transmission service. He said the proposal would address legacy Z2 balances and eliminate directly assigned upgrade costs in the future.

Barraged by questions about his proposal, Locke injected some levity into the discussion. "Just to clear things up, I'm going to throw some calculations on the board," he said to laughter.

The staff proposal had its supporters. "I'd like to see where Schedule 13 goes," said the Kansas Power Pool's Larry Holloway. "[I'd like to know] how material are the dollars that fly around and some idea of how big it is."

AEP: Eliminate Invoicing

American Electric Power's Richard Ross proposed an approach he said was "fair, reasonable and efficient." He focused on sponsored network upgrades, saying the current approach has been to view the projects as "new construction," but that they should be viewed as economic projects.

Ross suggested continuing to calculate revenue credits for long-term service and regionally funding the costs while eliminating the short-term revenue credit calculations and grossing up other credits by 2%. He said existing sponsorships should be handled the same way.

"The process would eliminate the invoicing and stop the proliferation of new project sponsors and their associated accounting," Ross said.

Dennis Reed, a recent Westar Energy retiree and now a consultant with his Midwest Regulatory Consulting firm, had his own ideas. He proposed eliminating short-term TSR credits to reduce the number of new upgrade sponsors but leaving the rest of the TSR-upgrade process the same.

Reed suggested creating a 20-year payback schedule for only those generation interconnection (GI) upgrades that create available transfer capability (ATC) and giving ILTCRs for sponsored upgrades, which must still meet the current need test.

"The basic goal is to minimize the work staff has to do," said Reed, alluding to the processing of short-term service requests, which account for about 2% of all Z2 work.

Reed said his proposal would reduce the number of future upgrade sponsors and give GI customers a guaranteed payment schedule for all upgrades that provide added ATC. It would also lower costs to transmission customers because most upgrades that do not increase ATC — generally for switches and enhanced control systems — are not eligible for payments, he said.

"A builder of a sponsored upgrade will know the possible value of any upgrade it builds," Reed said.

FERC NEWS

Bay Calls for Review of Marcellus, Utica Shale Development

Continued from page 1

"Despite the growing importance of Marcellus and Utica gas production — it was 22.5 Bcfd in 2016 and is projected to surpass 44 Bcfd by 2050 — the commission has never conducted a comprehensive study of the environmental consequences of increased production from that region," Bay noted. He said FERC should consider "the downstream impacts of the use of natural gas and … a life-cycle greenhouse gas emissions study."

"As important as infrastructure development is," he said, "it must also occur through processes that continue to promote public participation, transparency and confidence."

Environmental protesters outside Bay's house | *Beyond Extreme Energy*

Bay also said the commission should consider its reliance on signed agreements with shippers to determine the need for pipelines.

While these "precedent agreements" are useful indicators of need, Bay said the commission should also consider whether capacity is needed to ensure deliverability to power generators, reliability benefits and concerns "that anticipated markets may fail to materialize."

He noted that LNG import terminals built during the early 2000s became stranded as shale gas largely eliminated the need for imports. "Overbuilding may subject ratepayers to increased costs of shipping gas on legacy systems. If a new pipeline takes customers from a legacy system, the remaining captive customers on the system may pay higher rates," he said.

Bay — who resigned effective Feb. 3 after President Trump replaced him with Commissioner Cheryl LaFleur as acting chair — also had a parting shot at the minimum offer price rule in capacity markets. (See related story, *Bay Blasts MOPR on Way Out the Door*, p.9.)

LaFleur Reinstates Morenoff as General Counsel; Wellner Named Chief of Staff

By Rich Heidorn Jr.

WASHINGTON — Acting FERC Chairman Cheryl LaFleur on Thursday named David Morenoff as general counsel, replacing Max Minzner, a longtime associate of former Chairman Norman Bay.

Morenoff

Wellner

The move restored Morenoff to the position he held during LaFleur's previous stint as chair.

LaFleur also named Steven Wellner, her legal adviser since April 2014, as acting chief of staff. Jamie Simler, who had been Bay's chief of staff, returned to her previous position as director of the Office of Energy Market Regulation in January.

LaFleur also named Terry Turpin as director of the Office of Energy Projects (OEP), effective Feb. 18, following the previously announced retirement of OEP Director Ann Miles. John Wood will succeed Turpin as the number two official in the office, but with an acting title.

The announcements were the latest dominoes to fall as a result of President Trump's appointment of LaFleur as acting chair Jan. 26. The move prompted Bay to announce his resignation effective Feb. 3, a departure that will leave the commission short of the three members needed for a quorum. (See *Backlog, Delays Feared as FERC Loses Quorum*.)

Like Bay, Minzner decided to leave the commission rather than accept a demotion. LaFleur's announcement said that Minzner had "decided to leave the agency to pursue other opportunities."

Minzner met Bay while working as a law clerk at the U.S. Attorney's Office in New Mexico about 20 years ago. Minzner was named general counsel in September 2015 after serving as Bay's adviser and special counsel in 2009-10 when the latter headed FERC's Office of Enforcement. (See *Bay Replaces FERC General Counsel*.)

Morenoff served as acting general counsel for nearly two years before LaFleur gave him the full title in August 2014. A graduate of Harvard Law School, he joined FERC from Troutman Sanders in 2006, after serving as a legislative aide to U.S. Sen. Jack Reed (D-R.I.). In addition to his work in the general counsel's office, he also served as senior legal and policy adviser to former Chairman Jon Wellinghoff.

Wellner, a Georgetown University law graduate, joined FERC in 2012 from Dickstein Shapiro.

FERC NEWS

FERC OKs Pipelines, Delegation Order Before Losing Quorum

Continued from page 1

Virginia, to protect the endangered Northern Long-eared bat, according to its environmental impact statement.

The commission also approved two smaller pipeline projects late last week:

- A 99-mile pipeline proposed by National Fuel Gas Supply and Empire Pipeline to connect McKean County in north-central Pennsylvania to an existing main line in Erie County, N.Y. The project includes an interconnection to the TransCanada system at the Canadian border west of Buffalo. Empire will be able to transport 350,000 dekatherms/day into Ontario (CP15-115).
- A 12.9-mile pipeline loop in Wayne and Pike counties in eastern Pennsylvania to serve Tennessee Gas Pipeline's mainline that runs into New England (CP16-4).

The orders issued by FERC last week, Bay noted, added "more than several billion cubic feet of new gas pipeline capacity." In all, the commission issued more than 60 orders last week, including issuances on capacity market rules in MISO, NYISO and ISO-NE, financial transmission rights in PJM, the Energy Imbalance Market run by CAISO and SPP's measurement of reactive power.

In at least two of the orders, Bay issued statements recommending changes in FERC policies, including one criticizing the minimum offer price rule in capacity markets. (See related stories, *Bay Blasts MOPR on Way Out the Door*, p.9, and *Bay Calls for Review of Marcellus, Utica Shale Development*, p.1.)

Loss of Quorum Sparks Fears

Bay resigned effective Feb. 3 after President Trump named Commissioner Cheryl LaFleur as acting chairman.

There were already two vacancies on the commission, so Bay's departure left FERC with only LaFleur and Commissioner Colette Honorable — one member short of the quorum needed to resolve contested cases, including challenges to infrastructure projects. (See *Backlog, Delays Feared as FERC Loses Quorum* and *LaFleur Reinstates Morenoff as FERC General Counsel*.)

A coalition of 14 energy trade associations representing the oil and gas industry, utilities, hydropower and nuclear interests wrote to Trump on Thursday urging him to fill the vacancies. "The absence of a quorum will leave the agency unable to tackle much of its important work promoting energy infrastructure for the benefit of U.S. energy consumers," the letter said.

On Wednesday, U.S. Sens. Ed Markey and Elizabeth Warren, both Democrats from Massachusetts, expressed concern that rehearing requests for the recently approved Atlantic Bridge project would go unheeded. (See *Atlantic Bridge Project Approved by FERC*.) "We request that FERC immediately rescind the order authorizing the Atlantic Bridge pipeline project until such time as the agency has a newly constituted quorum in place that will allow it to hear an appeal of this project," they wrote.

New Delegation Order

The commission on Friday delegated additional authority to staff to keep some cases moving (AD17-10).

Under the order, effective Feb. 4, Office of Energy Market Regulation (OEMR) Director Jamie Simler or her designee can:

- Accept and suspend rate filings, and make them effective subject to refund and further order of the commission, or set them for hearing and settlement judge procedures. For initial rates or rate decreases submitted under Section 205 of the Federal Power Act, for which suspension and refund protection are unavailable, FERC staff has authority under FPA Section 206 to institute proceedings to protect customers' interests.
- Take "appropriate action" on uncontested filings seeking waivers of the terms and conditions of tariffs, rate schedules and service agreements (including waivers related to capacity release and capacity market rules) under the FPA, the Natural Gas Act and the Interstate Commerce Act.
- Accept settlements not contested by any party or participant, including commission trial staff.

FERC staff also can extend the time for action on matters when permitted by statute. "By issuing the order today, the commission intends that to ensure that FERC staff has authority to prevent such filings from taking effect by operation of law during the no-quorum period," the commission said in a statement.

The commission also said it would be guided by the 2012 Anti-Deficiency Act, which allows work to continue during a lapse in appropriations on activities the suspension of which would "imminently threaten the safety of human life or the protection of property."

That ensures commission staff will continue inspecting and responding to incidents at LNG facilities and jurisdictional hydropower projects, FERC said.

All pre-existing delegations of authority to staff will remain in effect, FERC said. The temporary order will remain in effect until after the confirmation of a third member restores the quorum.

Because FERC commissioners are subject to Senate confirmation, that may not happen for months. Trump, focused in his first few weeks on filling out his cabinet and his Supreme Court pick, has not named any FERC candidates.

CMS Touts Generation Reliability, Palisades PPA Replacement

By Amanda Durish Cook

CMS Energy reported that 2016 was its best year for generation reliability ever, as it retired more than half of its coal-fired facilities and announced plans to terminate a nuclear plant power purchase agreement.

The Michigan-based company last year retired seven of its 12 coal-fired generation units, representing about 1,000 MW.

"Delivering operational success like this while at the same time transitioning our fleet so significantly requires a disciplined team," CEO Patti Poppe said during a Feb. 2 earnings call.

The company boosted earnings for the year to $551 million ($1.98/share) from $523 million ($1.89/share) in 2015, although fourth-quarter earnings dropped to $77 million ($0.28/share) from $106 million ($0.38/share) a year earlier.

CMS plans to spend $18 billion over the next 10 years in capital expenses: $8 billion on gas infrastructure and maintenance; $4 billion on maintaining and building generation, including renewables; and $6 billion to upgrade its electric distribution. The company said it could spend an additional $3 billion on improving gas infrastructure, grid modernization, additional renewables and replacement of PPAs. Rate increases to pay for the capital improvements will be limited to 2%, CFO Tom Webb said.

Poppe said CMS will improve its financial position by terminating the Palisades nuclear plant PPA in favor of employing more energy efficiency, demand response, renewable power and coal-to-gas switching. (See *Entergy, Consumers Announce Closure of Palisades Nuke*.) According to CMS, the plan will save customers $172 million annually.

Poppe said the substitute capacity plan for the Palisades PPA is "solid" and replaces a "single, big-bet capital project for many smaller options" with less risk. She said CMS could make more PPA replacements in the future by building new plants.

"We've long said that an inflexible, above-market PPA is not a cost-effective option for our customers and provides no long-term value for our investors. At the same time, we want to assure that we have sufficient resources to serve the load in Michigan," Poppe said.

WEC Earnings Call Highlights Natural Gas Efforts

By Amanda Durish Cook

While year-over-year net income climbed about $300 million thanks to its Integrys acquisition, WEC Energy Group's fourth-quarter earnings call focused largely on the company's natural gas initiatives.

WEC reported net income of $194.4 million ($0.61/share) for the fourth quarter of 2016 compared to $179.3 million ($0.57/share) in fourth quarter 2015. Net income for the year was $939 million ($2.96/share) compared with $638.5 million ($2.34/share) for 2015, CEO Allen Leverett said during a Feb. 1 conference call. (See *WEC Energy Shows $183M Profit After Integrys Deal*.)

Leverett would not say whether the company plans to file a rate case with the Wisconsin Public Service Commission this year, saying only that its 2017 strategy is to keep rates flat while managing costs.

WEC projects 2017 earnings per share of $3.06 to $3.12, assuming normal weather. The company plans to continue its focus on natural gas distribution systems and infrastructure improvements.

The company signed an agreement Jan. 30 to acquire Michigan-based Blue Water Gas Holdings for $230 million. Blue Water, which owns an underground natural gas storage facility in Michigan, could provide up to one-third of the storage needs of WEC's three gas distribution companies in Wisconsin through long-term service agreements as a subsidiary.

Leverett said WEC would file with the Wisconsin PSC for approval of service agreements for the storage. Leverett said the company chose the service agreements structure so the commission would not have to approve an out-of-state acquisition and WEC's state-regulated companies would not be directly involved in an interstate natural gas business.

"I believe this investment will bring very meaningful customer benefits," Leverett said, adding that there "certainly is room" for WEC's own storage projects in the future.

UMERC Seeks OK for 2 Generators

New subsidiary Upper Michigan Energy Resources Corp. (UMERC) filed with the Michigan Public Service Commission on Jan. 30 to build two natural gas generating stations in Michigan's Upper Peninsula. (See *Michigan Upper Peninsula Getting its Own Utility*.)

UMERC plans to pay about $275 million to build 180 MW of natural gas generation in two Upper Peninsula counties. If approved by the Michigan commission and MISO, construction will begin late this year or early in 2018.

"We are targeting commercial operation in 2019. At that time or soon after, we expect to be in a position to retire our coal-fired Presque Isle power plant. This should give significant savings in operations and maintenance expenses as well as reduce carbon emissions," Leverett said.

WEC's five-year capital spending plan has increased from $9.2 billion to $9.7 billion with the spending on natural gas storage and Upper Michigan's new gas generation. Leverett said the revised plan does not include $1.7 billion of capital investments in subsidiary American Transmission Co.

On Jan. 30, ATC's development company and Arizona Electric Power Cooperative entered a joint operating agreement to create ATC Southwest. The new transmission company will develop transmission projects in Arizona, California and other parts of the Southwest. "The largest opportunities outside of the footprint are in the West," Leverett said.

ATC's return on equity is still in flux, Leverett reminded shareholders. In September, FERC approved a 10.32% base ROE for MISO transmission owners. (See *FERC Cuts MISO Transmission Owners' ROE to 10.32%*.) ATC qualifies for a 50-basis-point adder and is currently recognizing a 10.82% ROE. However, in another pending docket, the same FERC administrative law judge who first lowered the return said MISO TOs' ROE should be lowered further to 9.7% (EL15-45). With adder points, the decision could bring ATC's ROE to 10.2%. Leverett said he expects an order by the end of June even with former FERC Chairman Norman Bay's resignation and the current lack of a commission quorum.

Xcel Beats Consensus Despite Revenue Shortfall

By Tom Kleckner

Xcel Energy released fourth-quarter and year-end earnings results Thursday, beating investors' expectations for earnings per share by a penny but missing their fourth-quarter revenue forecasts by hundreds of millions of dollars.

Minneapolis-based Xcel said it earned $227.5 million ($0.45/share) during the fourth quarter, up from $209 million ($0.41/share) for the same period last year. Zacks Investment Research's consensus estimate was 44 cents/share.

At the same time, the company reported fourth-quarter revenue of $2.8 billion, up from $2.65 billion a year ago, but short of the expected $3.5 billion. Xcel laid the blame on warmer-than-expected weather.

CEO Ben Fowke called 2016 an "excellent year" in a press release Thursday. During a later conference call with analysts, he said, "I don't think the quarter is indicative of where we think trends will go. We are seeing good customer growth in Colorado and Minnesota and other jurisdictions."

Fowke said the company plans to invest $3.5 billion in its "steel-for-fuel" strategy, taking advantage of ample wind resources in Colorado and the Dakotas. Xcel completed its first project, the 200-MW Courtney Wind Farm, as a general contractor in North Dakota last year. Regulatory approval in hand, its 600-MW Rush Creek project in Colorado is expected to go into service in 2018.

Xcel is also adding 1,500 MW of wind in Minnesota through power purchase agreements and another 750 MW through "self-build" proposals, in which as owners, the company will benefit from 100% of the production tax credit and "maximize the fuel savings" for customers. Fowke said the company has received 95 proposals from 17 bidders for almost 10,000 MW wind generation and will soon file for regulatory approval.

The company is embroiled in a regulatory and legislative tug-of-war in Minnesota over plans to retire two 680-MW coal units by 2026 at its Sherco plant northwest of Minneapolis. The Minnesota Public Utilities Commission in January opened a docket over Xcel's plans to build a 780-MW combined cycle natural gas unit as a replacement, but a state legislator has since filed a bill that would give the company authority to construct, own and operate the unit without obtaining PUC approval.

"The bill was driven by legislators who are concerned about the loss of jobs and tax revenue and wanted to expedite the decision process," Fowke said. "It's important to note we have provided extensive justification for the plant, and the commission will still need to approve cost recovery."

Fowke said any capital investment for the project, expected to cost more than $1 billion, "will likely" happen after 2021.

The company raised its dividend by 6.3% to $1.36/share, the 13th straight year it has increased it. Fowke also noted Xcel met or exceeded its earnings guidance for the 12th straight year. Its stock price closed up 83 cents at the end of the week, to $41.45.

Xcel reaffirmed its 2017 earnings guidance of $2.25 to $2.35/share.

COMPANY BRIEFS

Cube Hydro Closes Deal to Purchase 4 Hydro Plants

Cube Hydro Partners has closed a deal to buy four hydroelectric plants on the Yadkin River from Alcoa.

With the deal, the Bethesda, Md.-based company will operate systems on 10 rivers in New York, Pennsylvania, Virginia, West Virginia and now North Carolina, with a total capacity of 373 MW.

In September, FERC renewed Alcoa's license to operate the Yadkin River hydro project for 38 years.

More: *Charlotte Business Journal*

SolAero Undergoes $10M Expansion Spurred by Satellites

SolAero Technologies has announced a $10 million expansion, which includes building a new facility at its Albuquerque, N.M., headquarters, that it attributes to the growing market for satellite constellations.

The company, which provides solar cells, solar panels and composite structural products, was selected last year to provide solar panels for Airbus OneWeb Satellites.

In 2014, SolAero bought EMCORE, a technology hardware and equipment company, for $150 million. In May 2016, it bought Vanguard Space Technologies for an undisclosed price.

More: *Albuquerque Business First*

Consol Energy Wants to Sell Remaining Coal Operations

Consol Energy, which sold five West Virginia coal mines to Murray Energy for $3.5 billion in 2013, is looking to sell its remaining coal operations.

"We think there may be a market opportunity to achieve a sale of the coal business on favorable terms or, alternatively, to effect a spin-off as our leverage ratio comes down to a level that allows each business to stand on its own," Consol CFO David Khani said in the company's earnings statement last week.

More: *The Intelligencer*

FERC OKs Dynegy Market Mitigation Plan

Elwood plant

FERC on Thursday approved mitigation measures proposed by Dynegy to overcome market power concerns in PJM and ISO-NE over its $3.3 billion acquisition of ENGIE's 9-GW power generation unit. (See *Dynegy Files Mitigation Plan for Purchase of ENGIE Plants*.)

Dynegy plans to sell capacity equal to or

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COMPANY BRIEFS

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greater than the 224 MW it already owns in the Southeastern New England capacity zone, where it will acquire 1,273 MW from ENGIE. The company also promised that it will not retire any of its capacity before the divestiture is complete. FERC agreed with Dynegy that the sale of its interest in the Elwood power plant in Illinois — completed after the ENGIE transaction was announced — eliminated the need for further mitigation in PJM's Commonwealth Edison locational deliverability area.

The commission found no competitive concerns over Dynegy's acquisition of ENGIE's assets in NYISO, MISO and CAISO.

More: EC16-93-001

Regulators Approve $45M Dominion Solar Plant in Va.

State regulators have approved Dominion Virginia Power's application to build and operate a 20-MW solar plant featuring 260,000 ground-mounted, fixed-tilt photovoltaic solar panels.

The $46 million plant, which will be in Fauquier County, Va., will be funded with a combination of state and corporate investment.

The plant's electricity will be sold to the Virginia government through a negotiated power purchase agreement for 25 years, according to a press release from the Virginia State Corporation Commission.

More: *Fauquier Times*

AEP Set to Install Advanced Meters in Ohio

State regulators voted last week to approve a proposal by American Electric Power to install advanced smart meters for about 894,000 customers across most of its Ohio service territory at an expected cost of $295 million.

The meters, which allow for two-way communication with AEP, will provide remote meter-reading, data sharing and instant notification when an outage occurs.

Customers will be able access online up to 13 months of data related to their energy usage.

More: *Columbus Business First*; *The Columbus Dispatch*

Mississippi Power Again Delays Placing Kemper in Service

Mississippi Power has added another delay to a series of missed deadlines at its Kemper County Energy Facility, pushing its start date for commercial operations to Feb. 28 and the plant's total price tag to almost $7.1 billion.

The plant, which is running on natural gas, was originally supposed to have been fully operational on syngas by May 2014.

In a filing with the U.S. Securities and Exchange Commission on Jan. 31, the utility said it produced electricity from syngas in both of the plant's combustion turbines on Jan. 29. However, the plant must undergo a one-week outage for repairs and modifications.

More: *The Meridian Star*

KCP&L to Appeal $10M Award to Worker with Asthma

Kansas City Power and Light has vowed to appeal a state judge's award of $10 million to a mechanic who said he developed asthma while working at the coal-fired Montrose Station plant in Clinton, Mo.

The worker alleged his asthma was caused by gases seeping from a system in which molten sulfur was pumped from a storage tank to burner houses.

Circuit Judge William Hass ruled KCP&L demonstrated "complete indifference and conscious disregard for safety of its employees."

More: *The Associated Press*

AEPCO, ATC Join Forces To Develop Tx Projects

Arizona Electric Power Cooperative and ATC Development have partnered to create a transmission company, ATC Southwest, that will develop projects in Arizona and the southwestern U.S.

"Arizona and the Southwest are growing, and we're already seeing increased demand for power that can only be met if we're willing to step up and develop the transmission projects that will meet that demand over the next two decades and beyond," AEPCO CEO Patrick Ledger said.

More: *ATC Southwest*

UMERC Seeks to Build 2 Natural Gas Plants for $277M

Upper Michigan Energy Resources Corp. filed a certificate of necessity application last week with Michigan regulators to build two natural gas generating stations that would produce 183 MW of power.

The project, which UMERC would fund for an estimated $277 million, would allow the coal-fueled Presque Isle Power Plant in Marquette to retire no later than 2020. The new plant would be built in the state's Upper Peninsula.

UMERC expects to begin construction in late 2017 or early 2018, with operations anticipated to start in 2019.

More: *WBUP*

NextEra Proposes Wisconsin's Largest Solar Project

NextEra Energy Resources last week announced a proposal for Wisconsin's largest solar project, which would generate 100 MW of power and be built adjacent to the Point Beach nuclear plant in Two Rivers.

The Point Beach Solar Energy Center would open in 2021 and would be the same size as the largest solar generation project in the Midwest, which was built by Xcel Energy in conjunction with solar companies and consists of 440,000 solar panels.

WPPI Energy plans to purchase electricity

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COMPANY BRIEFS

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generated by the project for 20 years.

More: *Milwaukee Journal Sentinel*

DPL's Proposed Settlement Would Close 2 Coal-Powered Plants

Dayton Power and Light has agreed to a six-year settlement in its electric security plan proposal that would close two coal-powered plants on the Ohio River and increase customers' monthly bills.

The proposed settlement calls for DPL to close its Stuart and Killen coal plants in Adams County, Ohio, in mid-2018 and to integrate renewable generation. It also includes a five-year distribution infrastructure rider to implement a smart grid and advanced metering, according to DPL. During the sixth year, both distribution riders will expire and no longer be collected.

Ratepayers using 1,000 kWh will see their monthly bill go up $2.39.

More: *Dayton Daily News*

FERC OKs Another NIPSCO Settlement with Ind. Wind Farms

Northern Indiana Public Service Co. will pay almost $3.9 million to settle a transmission upgrade dispute with two E.ON Climate and Renewables wind farms.

NIPSCO will make the refunds to E.ON's Settlers Trail and Pioneer Trail wind farms over upgrades on 69-kV and 138-kV lines under a settlement approved by FERC Feb. 1. The wind farms filed a complaint in 2014 claiming NIPSCO wrongly applied a multiplier provision to increase network upgrade costs.

Last April, FERC approved a settlement in which NIPSCO agreed to pay $950,00 to settle a similar dispute with the Meadow Lake and Fowler Ridge wind farms. (See *NIPSCO Settlement with Indiana Wind Farms Wins OK*.)

More: *EL14-66*

Mich. Regulators Approve $184M Rate Hike for DTE Energy

Michigan regulators last week approved a $184 million rate hike for DTE Energy, effective Feb. 7. The hike amounts to a 4% increase for customers.

DTE had sought $344 million to improve aging infrastructure and equipment.

In advance of the rate hike hearing, DTE implemented a $245 million pricing plan, and its customers consequentially will receive a refund retroactive to August 2016, plus interest.

More: *The Detroit News*

Study: Storage Increases Energy Consumption, Emissions

Researchers from the Cockrell School of Engineering at The University of Texas at Austin have estimated that adding energy storage to a household with solar panels in Texas increases its annual energy consumption by about 324 to 591 kWh.

In a paper published on Jan. 30 in *Nature Energy*, authors Michael Webber and Robert Fares used data from about 100 Texas homes that had rooftop solar and an on-site storage system.

The reason for the increase, they said, is because storage consumes energy every time it charges and discharges. This also indirectly increases emissions, as homes must make up the lost energy from the Texas grid, powered by mostly fossil fuel-fired generation.

More: *The University of Texas at Austin*

FERC Denies Stay on Pipeline for CPV Plant

FERC last week denied a stay on construction of a natural gas pipeline to serve Competitive Power Ventures' 650-MW Valley Energy Center combined cycle plant in the Lower Hudson Valley.

Four individuals had sought the stay on Millennium Pipeline's 7.8-mile lateral from its main pipeline, citing opposition to eminent domain proceedings and endangered species concerns. The complainants also cited an ongoing federal corruption investigation that resulted in the indictment of a former CPV official. (See *Competitive Power Ventures Lobbyist, Former Cuomo Aides Named in Bribery Indictment*.)

FERC said eminent domain was a matter for state and federal courts and that the environmental concerns are to be addressed by a permit under review by the U.S. Army Corps of Engineers. The commission said the criminal investigation was outside of its jurisdiction. FERC issued a certificate of convenience and public necessity for the line Nov. 9. The stay request was filed along with a request for rehearing, which the commission has not acted upon.

More: *CP16-17*

GOP Overcomes Democrat Boycott on EPA Pick

By Ted Caddell

Republicans on Thursday suspended committee rules to approve Oklahoma Attorney General Scott Pruitt as EPA administrator, sending him on to the full Senate.

The Senate Environment and Public Works Committee voted 11-0 for Pruitt after suspending rules requiring the presence of at least two Democrats to hold votes. The Finance Committee took a similar step Wednesday to overcome a boycott that had blocked the confirmations of President Trump's Treasury secretary and Health and Human Services secretary nominees.

Republicans on the environment committee acted after Democrats boycotted a meeting Wednesday, in response to Chairman Sen. John Barrasso's (R-Wyo.) rejection of their request for a delay so Pruitt could answer more questions.

"Committee Democrats and I sent many questions and document requests to Mr. Pruitt over a month ago. We believe these inquiries, and our questions for the record, elicit information from the nominee that he possesses and that he should be able to provide to the committee," the ranking Democrat, Sen. Thomas Carper (D-Del.), wrote in a letter to Barrasso. "Failure on his part to do so is not only an affront; it also denies Democratic committee members, and all members of the Senate, information necessary to judge his fitness to assume the important role of leading the EPA."

In the Democrats' absence Wednesday, the Republicans spent nearly an hour rebuking their colleagues.

1,200 Questions

"Let's be clear. Attorney General Pruitt has answered … 1,200 questions. He answered over 1,000 more questions than the EPA administrator nominees for the incoming Obama, Bush and Clinton administrations," Barrasso said. "The minority may not like all of Attorney General Pruitt's answers, but he has given them answers."

"If a student doesn't show up, they flunk the class. If an employee doesn't show up, they get fired," said Sen. Shelley Moore Capito (R-W.Va.). "Failing to show up does not serve our constituents."

Sen. Joni Ernst (R-Iowa) said the move by Democrats has gone past vetting. "There comes a point where vetting has been turned into obstruction," she said. "I would ask my colleagues on the other side: What is the true purpose of their witch hunt?"

Pruitt | © *RTO Insider*

Sen. Jerry Moran (R-Kan.) was more blunt, calling the boycott "governing by tantrum."

During Pruitt's six-hour confirmation hearing before the committee Jan. 18, Democrats cited Pruitt's campaign contributions from the oil and gas industry and his 14 lawsuits against EPA as attorney general. They included challenges to the Cross State Air Pollution rule (CSAPR), the Mercury and Air Toxics Standards, regional haze rule and emission regulations on new power plants. Pruitt did say he did not agree with President Trump's claim that climate change is a hoax, but he has led the legal fight by states against EPA's Clean Power Plan. (See *Dems Unmoved by EPA Pick's Charm Offensive*.)

'Deeply Concerned'

Carper's letter to Barrasso on Jan. 30 said he and his Democratic colleagues were "deeply concerned" about the answers Pruitt gave in response to the senators' written questions.

Carper cited Pruitt's refusal to provide communications he had with representatives of agricultural companies regarding water quality litigation between Arkansas and Oklahoma. Pruitt said the records could be obtained under the Oklahoma Open Records Act.

"Mr. Pruitt provided this answer 19 times in response to questions several Democrats posed on a variety of matters. We are deeply concerned that senators are being directed by a nominee to obtain information on his record outside of the confirmation process — especially given that the Oklahoma Office of the Attorney General has a two-year backlog on such record requests," Carper wrote.

Carper said Pruitt also was unable to name a single EPA regulation that he supports, responding "I have not conducted a comprehensive review of existing EPA regulations."

"Based on the lack of substance with respect to many of his answers," Carper said, "it is unclear whether Mr. Pruitt supports any clean air or clean water federal regulations."

Democrats were particularly upset that Pruitt refused during the confirmation hearing to commit to recusing himself from agency matters dealing with pending litigation he initiated, or in which he participated, as Oklahoma attorney general. Pruitt said he would consult with EPA's ethics counsel on a case-by-case basis.

Sen. Jeff Merkley (D-Ore.), one of the senators who boycotted the meeting, issued a statement explaining why. "Until Scott Pruitt answers these important questions, until he clarifies his positions and tells us how he is going to resolve the many conflicts of interest his nomination poses, it would be irresponsible for the committee to vote on his nomination," Merkley said.

Because only Supreme Court nominees are subject to a filibuster on the Senate floor, Democrats won't be able to block Pruitt's nomination without Republican defections.

On Jan. 31, the Senate Energy and Natural Resources Committee approved Rep. Ryan Zinke (R-Mont.) as secretary of the Interior Department and former Texas Gov. Rick Perry as energy secretary. Zinke's nomination was approved 16-6 with four Democrats joining all Republicans in support. Perry was approved 17-6. The two nominations move to the full Senate, where they are expected to be approved.

"The minority may not like all of Attorney General Pruitt's answers, but he has given them answers."

Rep. John Barrasso (R-Wyo.)

FEDERAL BRIEFS

Congress Votes to Repeal Obama Admin Rules

Congress last week used the Congressional Review Act against three rules implemented by the Obama administration.

The House of Representatives voted 228-194 to repeal the Interior Department's Stream Protection Rule and 235-187 to repeal a Securities and Exchange Commission rule requiring certain energy companies to file more detailed financial information. The Senate later voted 54-45 and 52-47, respectively. The House also voted 221-191 on Friday to undo the Bureau of Land Management's methane venting and flaring rule.

The act, passed in 1996, allows Congress to repeal by simple majority vote in both houses, and the president's signature, any regulation issued by a federal agency within the past 60 legislative days, making any rule issued since about the middle of June subject to possible repeal.

More: *The Hill*; *The Hill*; *The Hill*

Testimony in TVA Pollution Trial Comes to a Close

Attorneys for the Tennessee Valley Authority wrapped up their defense Thursday in a four-day trial in which environmental groups accused the utility's Gallatin plant of illegally polluting the Cumberland River with coal ash.

A decision in the case, in which the Tennessee Clean Water Network and the Tennessee Scenic Rivers Association claim the plant is violating the Clean Water Act and permits, may not come for months.

TVA's defense in Nashville federal court ended with testimony that it could cost about $2 billion to excavate and remove the coal ash stored at Gallatin, compared with $230 million to keep it on site and cap it.

More: *The Associated Press*

NRC Won't Shut Down Pilgrim Nuclear Plant

The Nuclear Regulatory Commission has refused to shut down the Pilgrim Nuclear Power Station following the inadvertent release to the public of an internal email outlining myriad problems found during an inspection.

The commission has classified the plant, which went online in 1972, in Column Four, meaning it is one step away from being shut down.

"One of the purposes of this inspection was to dive deep into this station and see if that basis for closing was there," said Dan Dorman, the regional administrator for NRC. "And what I'm hearing right now from this team is they didn't find it."

More: *The New York Times*

Freshman Lawmaker Seeks to Abolish EPA

Freshman Congressman Matt Gaetz (R-Fla.) has drafted a bill to "completely abolish" EPA by the end of 2018.

"Our small businesses cannot afford to cover the costs associated with compliance, too often leading to closed doors and unemployed Americans," Gaetz wrote in an email sent to lawmakers last week who might co-sponsor the legislation. "It is time to take back our legislative power from the EPA and abolish it permanently."


Gaetz

Gaetz maintains that states and local communities are best positioned to regulate environmental assets within their jurisdictions.

More: *The Huffington Post*

FERC to Hold Workshop on 2-Year Hydro Pilot Process

FERC will hold a workshop on March 30 to discuss the effectiveness of the two-year pilot process as required by the Hydropower Regulatory Efficiency Act of 2013.

The law (H.R. 267) amended the Public Utility Regulatory Policies Act of 1978 to exempt dams up to 10 MW from FERC licensing requirements. It also amended the Federal Power Act to relax regulations on conduit hydropower facilities — manmade water conveyances used for agricultural, municipal or industrial consumption — of up to 40 MW. (See *PJM Small Hydro Potential: 1.5 GW*.)

The workshop will focus on a requirement that the commission consider the feasibility of a two-year licensing process for hydropower developments at nonpowered dams and closed-loop pump storage projects. The workshop will run from noon to 5 p.m. Written comments will be accepted until April 14.

More: *FERC*

STATE BRIEFS

REGIONAL

MISO Expands Performance Criteria to Load-Modifying Resources

MISO won FERC approval last week to extend measurement and verification criteria to load-modifying resources (demand resources and behind-the-meter generation).

The commission approved changes to MISO Tariff Attachment TT that incorporate criteria based on the North American Energy Standards Board's Measurement and Verification Standards. The revisions also clarify rules regarding weather-sensitive adjustments, direct load control baselines and customer baselines.

FERC accepted MISO's reasoning that load-modifying resources should be subject to the requirements because they are obligated to respond to emergency events. The commission said the revisions do not introduce any new requirements and improve the transparency of MISO's Tariff. FERC also said its decision affects some Tariff language that is subject to the outcome of MISO's Order 719 compliance filing, which clarifies the services of demand response providers (ER12-1265-007).

More: *ER17-486*

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ARIZONA

Tobin Calls for 'Emergency Summit' to Save Navajo Plant

A state regulator has called for an "emergency summit" to try to save the coal-fired Navajo Generating Station for the sake of people who rely upon the plant for jobs and who use water pumped with its power.

Corporation Commissioner Andy Tobin called for the summit after the Salt River Project shared financial data with his office indicating that natural gas is more economical to burn than coal, even if the present regulatory climate should change. He said that SRP officials have indicated they are considering shutting down the plant.

SRP spokesman Scott Harelson said no decision has been made regarding the plant's closure.

More: The Arizona Republic

CALIFORNIA

FERC Approves Merrill Lynch Western Energy Crisis Settlement

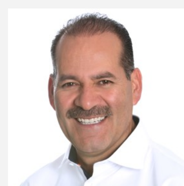
FERC last week approved a $9.6 million agreement settling the state's claims against Merrill Lynch over excessive profits the company reaped during the Western Energy Crisis of 2000/01.

While Merrill Lynch was never a direct participant in the CAISO or California Power Exchange (CalPX) markets subject to price manipulation, the company made bilateral sales to the Department of Water Resources, the agency charged with purchasing power to ensure the state's electricity needs were met as a result of the crisis, which pushed Pacific Gas and Electric into bankruptcy and Southern California Edison to the brink of insolvency.

The settlement resolves all claims between the two parties "relating to reporting errors or transactions in the Western energy markets during the settlement period for refunds, disgorgement of profits, or other remedies in specified proceedings," the commission said. The agreement includes a "hold harmless" provision releasing CAISO and CalPX officials, employees and consultants from liability for any actions outside of "gross negligence" associated with implementing the settlement. The provision specifically protects those representatives from recourse for any shortfall of funds in the CalPX settlement clearing account or a resulting change to credit risk resulting from implementation.

More: EL00-95-298

CEC Signs Clean Energy Agreement with Mexican State



Sandoval

The Energy Commission last week signed an agreement with the Mexican state of Aguascalientes to limit the increase in global average temperature to below 2 degrees Celsius.

The agreement came during a visit by Aguascalientes Gov. Martín Orozco Sandoval to the state, during which he addressed legislators and signed his state to the Under2 MOU, which is a global pact of subnational jurisdictions spearheaded by California and the German state of Baden-Württemberg.

The commission and Aguascalientes will cooperate on areas including energy efficiency, renewable energy development and grid integration, low and zero-emission vehicles, and clean energy technology.

More: California Energy Commission

SCE, Tesla Unveil Huge Energy Storage Facility

Southern California Edison and Tesla Motors last week unveiled one of the world's largest energy storage facilities, containing nearly 400 Tesla PowerPack units with 20 MW of capacity. The project was built in response to regulations requiring utilities to secure energy storage to fill the void left by the troubled Aliso Canyon storage facility.

The new facility, located at the utility's Mira Loma substation in Ontario, was built after the state issued a moratorium on injecting gas into Aliso Canyon following a four-month methane leak that began in October 2015. Other storage facilities of similar size are being built by San Diego Gas & Electric with AES Energy Storage and by Greensmith Energy Partners with AltaGas. The projects are adding a total of 77.5 MW to the state's electricity grid.

Also last week, State Sen. Henry Stern called for expediting 120 MW of new clean-energy storage projects, which would cover investor-owned and city-run territories, in the next year. Specific projects and sites were not identified.

More: Los Angeles Times; Southern California Edison; The Signal

Fire Shuts Down Delta Energy Center

An explosion and fire last week destroyed the Delta Energy Center's steam turbine generator and caused the center to shut down, with no indication yet as to when it will be back online.

Calpine, which owns the 880-MW, natural gas-fired combined cycle plant, said the fire was isolated to the generator and that the rest of the plant and the neighboring communities were not directly impacted. Calpine is still assessing the incident and did not provide information on its cause.

The fire did not impact grid reliability, CAISO said.

More: East Bay Times

CONNECTICUT

Officials Call for Probe into Deceptive Electricity Suppliers

The state's consumer counsel and several Democratic lawmakers are asking state

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regulators to investigate whether electricity suppliers are targeting vulnerable customers with high-pressure, deceptive practices.

Last year, consumers who chose a third-party retail supplier paid a total of $59 million more than they would have under the standard service rates, Consumer Counsel Elin Swanson Katz said. Katz, who offered examples of complaints received by her office, said companies have targeted the elderly, the disabled, immigrants who don't speak English and low-income residents.

Bryan Lee, a spokesman for the Retail Energy Supply Association, said there is no need for an investigation because the state's Public Utility Regulatory Authority has the authority to respond to any problems it identifies.

More: Hartford Courant

IOWA

Utilities Board Pushing for Public Records Exemptions

Huser

The Utilities Board wants to communicate more thoroughly with utilities and federal regulatory agencies about cybersecurity and cyberattacks and will be seeking public records exemptions from the Legislature to do so.

Because information about cybersecurity at utility companies presently is not shielded from the public, board members and staff have limited access to information, IUB Chairwoman Geri Huser told the House Commerce Committee last week

Huser also said she is in the process of obtaining federal security clearances so she can discuss cybersecurity with federal agencies, as well as utilities under the board's jurisdiction.

More: The Gazette

KANSAS

Great Plains, Westar Argue Benefits of $12B Deal to Regulators

Great Plains Energy and Westar Energy opened two weeks of hearings before the Corporation Commission last week by asserting their proposed $12.2 billion merger would create nearly $2 billion in efficiencies over the next decade that would benefit ratepayers.

Under the deal, Great Plains would acquire Westar and its $3.6 billion in debt, creating a single utility with 1.5 million customers from the central part of the state to central Missouri.

Critics of the deal argue Great Plains is paying up to $4.9 billion more than the book value of Westar's assets and that regulators could be forced to boost rates to keep the company financially stable. They also say the company's financial state would be fragile and its electric services would suffer.

More: The Associated Press

MAINE

Regulators Approve Net Metering Rollback

State regulators last week approved new solar rules that rolled back the state's net metering policy while allowing existing customers and those signing up before 2018 to be grandfathered in at current rates for 15 years. Customers entering the program after 2018 will receive reduced credits.

Gov. Paul LePage said the new rules continue to shift the financial burden of solar onto ratepayers and businesses while giving a break to customers who choose solar and have the resources to install it.

Solar advocates are expected to seek relief from the Legislature, as Democratic Rep. Seth Berry is proposing a bill that provides for net metering, rolls back barriers to community solar projects and re-establishes a solar rebate program.

More: Bangor Daily News

MARYLAND

Legislature Overrides Veto of Renewable Energy Bill

The Senate and House of Delegates voted last week to override Gov. Larry Hogan's veto of a bill that would increase the state's use of renewable energy.

The measure, which now will become law, requires the state to obtain 25% of its

energy from renewable sources by 2020, an increase over the previous requirement of 20% by 2022.

The annual compliance costs for energy companies would average $28 million to $111 million from 2017 through 2025, according to estimates by legislative analysts.

More: The Washington Post

MASSACHUSETTS

Baker Administration Crafts 3,200-MW Solar Incentive Program

Gov. Charlie Baker's administration has crafted a new program to provide financial incentives for up to 3,200 MW in solar energy facility development.

The Solar Massachusetts Renewable Target Program replaces a previous program that restricted incentives to 1,600 MW and reached its limit nearly a year ago.

The program encourages solar development on industrial sites or polluted properties and discourage them in open spaces. It is expected to cost ratepayers $200 million to $240 million a year.

More: The Boston Globe

MISSOURI

St. Louis Adopts Energy Monitoring for Commercial Buildings

The St. Louis Board of Aldermen unanimously approved a bill last week that establishes an energy monitoring requirement for certain commercial properties, primarily downtown.

In November, St. Louis became one of 20 cities in the U.S. to be selected for the City

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Energy Project, which provides funding and technical support for tracking energy usage in large buildings with the goal of achieving $1.5 billion in annual energy savings nationwide by 2030. The project is a joint venture of the Natural Resources Defense Council and the Institute for Market Transformation.

The bill's sponsor, Jack Coatar, said municipal buildings in St. Louis would have to report energy usage in the program's first year, with privately owned buildings joining the program in its second year.

More: St. Louis Post-Dispatch

NEBRASKA

Construction Expected to Start in March on $11M Solar Project

Construction is expected to begin in March on the state's largest solar energy array, a 5.8-MW project in Kearney.

The $11 million project will be built by SoCore Energy on 53 acres at a tech park, which will also house a $4 million executive briefing center for software development and testing company Xpanxion. SoCore will sell the electricity to Nebraska Public Power District, and the city of Kearney will pay NPPD the difference between the utility's standard base rate and the solar energy, which is slightly higher. A portion of the energy will be set aside for high-tech firms recruited to the tech park.

"The Facebooks of the world like renewable energy," Kearney Mayor Stan Clouse said.

More: The Grand Island Independent

NEW MEXICO

Facebook's Data Center Will Run on 100% Solar

Facebook's forthcoming data center in Los Lunas will be powered 100% by solar energy from three solar farms, each with a 10-MW generating capacity.

PNM Resources, the parent firm of Public Service Company of New Mexico, will invest $45 million in the trio of solar plants under a contract with Facebook in which the company will supply all of the data center's power with renewable energy. The solar arrays will provide electricity for the first phase of Facebook's project, which broke ground last October.

State regulators approved the agreement last year under a new green energy tariff that allows PNM to negotiate special rates with large-scale consumers who want to use renewable energy to power their facilities.

More: Albuquerque Journal

NORTH DAKOTA

Lawmaker Proposes Wind Tax to Level Playing Field for Coal

Streyle

A state lawmaker is proposing a tax on wind plants of $1.50/MWh of electricity generated and a tax equal to 10% of a wind facility's production tax credit to help level the playing field for the state's coal mines.

"It's unlikely it's going to pass," Rep. Roscoe Streyle (R) said of House Bill 1372. "But the point of it is to show how ridiculous our energy policy is and how it affects us here when wind is given top priority."

According to the Lignite Energy Council, 27.7 million tons of lignite coal were produced in the state in 2016, down slightly from the five-year average of 28.1 million tons. The 2016 total ties 2013 production, although it's down about 1 million tons from 2014 and 2015.

More: Minot Daily News

OHIO

Survey: Voters Don't Want to Return to Utility Monopolies

A telephone survey of 800 state voters paid for by the Alliance for Energy Choice in January found that after 16 years of competition, opposition to the state returning to traditional utility monopolies is strong.

The poll, conducted by Fallon Research and Communications, also found voters oppose raising monthly rates to build new power plants; paying extra to support older plants; and creating special subsidies for one fuel source.

"The results of the poll clearly demonstrate that talk about a need for reregulation or changes to Ohio's energy landscape is pointed in the wrong direction," said Todd A. Snitchler, spokesman for the Alliance for Energy Choice.

More: The Plain Dealer

OREGON

Report: State Expected to Miss 2020 Carbon Emissions Goal by 20%

The state will miss its legislatively mandated goal for carbon dioxide emissions in 2020 by 20%, according to a new report by the state's Global Warming Commission.

The commission's projections show that in 2020 the state will emit 61 million metric tons of carbon dioxide equivalents, compared with its goal of 51 million established in legislation passed in 2007. The goal for 2035 is 32 million and for 2050 it is 14 million metric tons.

Angus Duncan, chair of the commission, said the clearest takeaway from the study is that the legislature must address transportation if it wants to do something about carbon.

More: The Oregonian

VIRGINIA

Bill Requiring Review of Coal Ash Options Clears Senate Committee

A bill that would prohibit the Department of Environmental Quality from issuing a permit to close coal ash sites until it has reviewed other options, such as recycling the coal ash or moving it to a safer landfill, passed the state Senate's Agriculture, Conservation and Natural Resources Committee last week.

Dominion Virginia Power, which has considered capping its Chesapeake Energy Center site on the Elizabeth River, said SB1398 calls into question current regulations and will add red tape that delays closure plans.

Democratic Sen. Scott Surovell, who sponsored the bill, described coal ash closure as a massive, statewide problem and said the bill allows the safest possible resolution.

More: The Virginian-Pilot

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STATE BRIEFS

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Gubernatorial Candidates Attack Dominion's Political Influence

Candidates in the state's gubernatorial race are piling up on Dominion Resources, claiming the company, the biggest corporate donor in state politics, should have its political influence curbed.

"Somebody has to drag these vampires into the sunlight," said GOP candidate Denver Riggleman, who has pledged to support longshot legislation prohibiting regulated monopolies from making campaign contributions. Republican candidate Corey Stewart and Democratic candidate Tom Perriello are also making Dominion's influence a campaign issue.

It is unclear whether this line of attack will resonate with voters, as Dominion spends millions of dollars each year on positive advertising and charitable giving, in addition to allocating sizeable financial resources to political campaigns and lobbying.

More: *The Associated Press*

Bill to End Dominion's Campaign Contributions Withdrawn

A bill that would prohibit Dominion from making political campaign contributions was withdrawn by its sponsor, Democratic Sen. Chap Petersen, because the filing deadline has passed and he did not have the unanimous consent of the Senate necessary to introduce it. Petersen plans to reintroduce the bill next year, his political director said.

Petersen filed SB 1593 on Jan. 25 because he objected to state lawmakers taking money from public utilities that are regulated by the General Assembly and other state agencies.

Since the late 1990s, Dominion has given about $14.4 million to state political campaigns, according to the nonpartisan Virginia Public Access Project. Since 2015, it has given more than $1.3 million.

More: *Capital News Service*

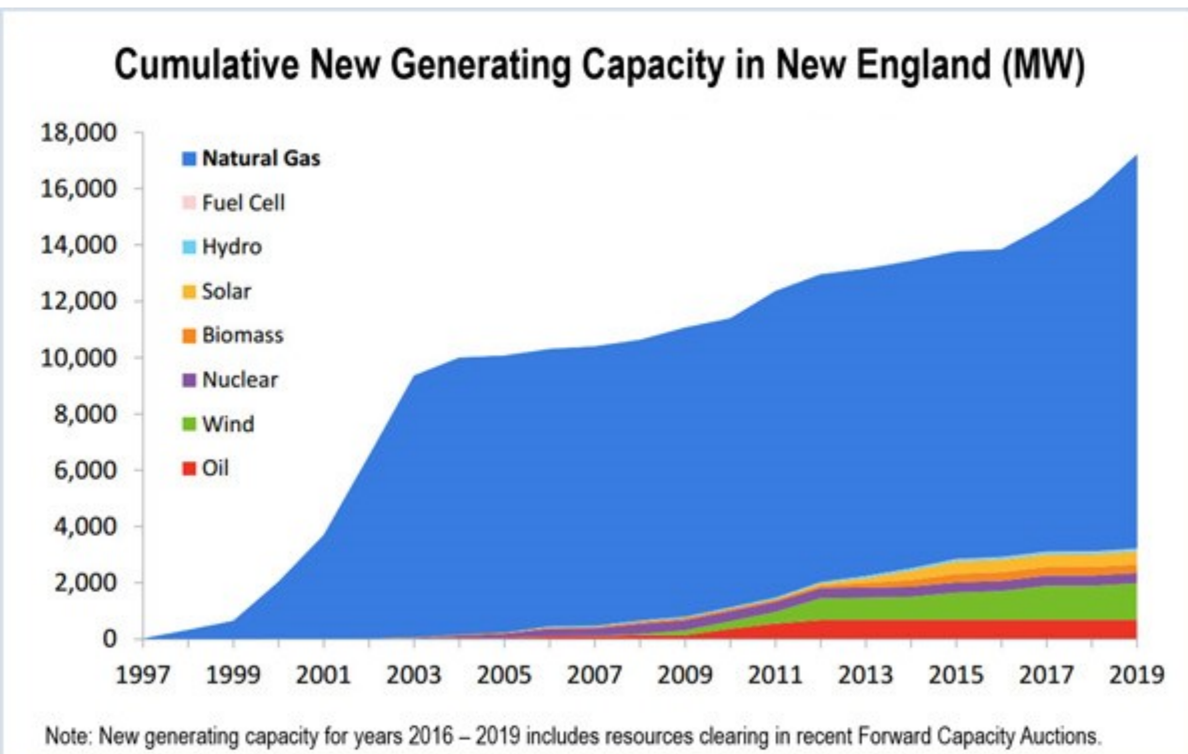
Senate to Take Up Bill on Burying Power Lines

The Senate is poised to take up legislation that would declare that moving underground any investor-owned utility's overhead distribution lines "is in the public interest." The bill follows a ruling by state regulators about 18 months ago that halted Dominion Virginia Power's plan to bury 526 miles of lines and recoup about $700 million from customers over 40 years.

SB 1473, sponsored by Democratic Sen. Richard L. Saslaw, would apply to lines that have a 10-year average of nine or more "unplanned outage events-per mile." The bill also provides a rebuttable presumption regarding the benefits of such projects that the State Corporation Commission is to rely upon in deciding whether to allow utilities to charge ratepayers for the costs of burying the lines.

Dominion said it has about 4,000 miles of lines, out of a total of 20,000, that meet the bill's criteria.

More: *Richmond Times-Dispatch*



In his annual "State of the Grid" media briefing last week, ISO-NE CEO Gordon van Welie said the RTO's forward capacity market has attracted robust investment in new power plants but that New England states' emissions reductions goals could present challenges to competitive markets. "As the New England states step up efforts to meet their clean-energy requirements and goals, they are considering the use of long-term contracts or other incentives to attract more clean-energy resources," which could have unintended consequences, he said. "Resources with guaranteed revenue streams could artificially suppress prices in the marketplace. That could deter new resource investments and hinder retention of existing resources, ultimately undermining resource adequacy." | *ISO-NE*

Interdependence Key to Cyber Efforts, Congress Told

Among those in the audience were former Rep. Mike Ross, SPP's senior vice president for government affairs and public relations, and Kurt Bilas, executive director of government relations for MISO. | © RTO Insider

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tise will likely be too limited to address the need. In addition, especially given the problem of sustained or follow-on cyberattack, CEOs may be reluctant to flow critical personnel to assist others when they might be the next target. To bolster the intra-electric sector mutual support, external support is also necessary."

The speakers also cited concerns over the supply chain for equipment used on the grid and "Internet of Things" consumer devices that could be vulnerable to hackers.

Sugg

"I think we should put more emphasis on the manufacturers and really hold them accountable for developing things that are easy to maintain security with — not things that you just plug in and forget about," said Sugg, representing the ISO/RTO Council. She said that certification of equipment could help.

"We used to buy a relay for the system and it would just be a couple of contacts and a core of copper wire," said Cauley. "Now you have a box and it has 10,000 lines of code," making them vulnerable to being reprogrammed by hackers. "So I think we have to think about long-term partnerships with suppliers, vendors and manufacturers in terms of building better security into systems."

FAST Act

In response to lawmakers' questions, the panelists said they welcomed the Fixing America's Surface Transportation (FAST) Act of 2015, which amended the Federal Power Act to designate the Energy Department as the lead federal agency for energy sector cybersecurity. It also gives the secretary of energy authority to take emergency actions to protect the grid.

Cauley said the law corrected the lack of clarity on how the federal government would respond in a grid security emergency and increased protection of sensitive information. To comply with the law, FERC in November approved a rule updating its processes for the handling of Critical Energy Infrastructure Information (CEII). (See *FERC OKs Information Security, FOIA Rules*.)

Aaronson said the law "further solidifies the relationship" between industry and the federal government.

Pros and Cons of Distributed Generation

In response to a question from Rep. Jerry McNerney (D-Calif.), Cauley said he was "deeply concerned" about distributed generation, saying that while it can provide resiliency to the grid, its equipment is more vulnerable to hacking. In October, major websites were hit with a distributed denial-of-service attack that used thousands of Internet-connected devices such as cameras, baby monitors and home routers.

"The challenge is that all the devices are communicating with something else, and in some cases they're much closer to the Internet than the bulk power grid," he said. "So it's going to create a much greater surface to attack and create multipliers in the attack. When you have common devices that are out there, instead of there being three breakers of a certain model, there's 1.5 million devices that are exactly the same and could be simultaneously hacked."

Three Incidents

The panelists also commented on several other recent incidents, including the April 2016 power outage in D.C., the December 2015 attack on utilities in Ukraine and the discovery of malware on a utility's laptop in Vermont.

The power outage that darkened the White House and much of D.C. on April 7 was caused by the failure of a 230-kV lightning arrester at a substation 40 miles south of the capital. (See *Failed Lightning Arrester Caused April Outage*.)

Aaronson recalled that in the first hour after the lights went out, the cause was unclear. He said Pepco Holdings Inc. officials got on the National Incident Communications Conference Line with the Department of Homeland Security and White House officials, allowing the White House press secretary to announce that it was not the result of terrorism.

He said a real cyber incident would result in "immediate high-level coordination between the ESCC and industry CEOs along with senior government and NERC officials and the team from the Electricity Information Sharing & Analysis Center, which manages the Cybersecurity Risk Information Sharing Program.

When a Vermont utility found malware associated with Russian hackers on a laptop in December, Aaronson said, 30 top utility CEOs were on an emergency conference call within four hours. "That is exactly the way it's supposed to happen," he said.

Ukraine

Cauley expressed confidence that the utilities under NERC's authority would not have fallen victim to the attack that knocked out power to 225,000 customers in Ukraine for several hours in December 2015.

The hack had been set in motion in the prior spring, when attackers entered three Ukrainian electric distribution companies through infected Microsoft Office files. After gaining entry, the hackers spent six months conducting reconnaissance and testing before taking control of the systems in late December. (See *How a 'Phantom Mouse' and Weaponized Excel Files Brought Down Ukraine's Grid*.)

Cauley acknowledged that the spear phishing technique used to get into the utilities in Ukraine is "the greatest vulnerability we have." But he said the attack would

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"We need to ... break down both silos and tunnels so that there's a common operating picture and mission."

Chris Beck, EISC

Interdependence Key to Cyber Efforts, Congress Told

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not have been successful here.

"We would not allow that software to go unchecked and for the perpetrators to get elevated credentials so they could actually operate the system. Those are extreme violations of all our rules," he said.

Workforce

Rep. Bobby Rush (D-Ill.) asked whether the industry was having trouble attracting talent to its mission, citing an estimate by the Institute of Electrical and Electronics Engineers of 1 million unfilled cybersecurity engineering jobs worldwide.

"It's a challenge. There are a lot of needs and not a lot of people to fill it," Aaronson acknowledged. "This is something that's going to require a long-term, concerted effort, starting with STEM [science, technology, engineering and math] education and moving up to attracting the workforce to this particular critical infrastructure industry."

Sugg said the industry is addressing the problem by partnering with universities to develop relevant curriculum. "Universities are producing some really skilled graduates that challenge our way of thinking about security in a very healthy way," she said.

Beck said another challenge is breaking down communication barriers resulting from "stove pipes and tunnels." Stove pipes — or silos — can inhibit communication between government agencies and infrastructure sectors. Tunnels refer to the levels of decision-making.

"So CEOs understand each other and they have a certain view of the situation. The engineers that work on cybersecurity have a different understanding," he said. "We need to … break down both silos and tunnels so that there's a common operating picture and mission."

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