



CPP, FERC's Bay, Honorable Among Losers in Trump Win

By Ted Caddell and Rich Heidorn Jr.

WASHINGTON — The U.S. has elected a president who has said he will tear up the Paris Agreement, block the Obama administration's Clean Power Plan, "save the coal industry" and loosen the regulatory reins on the energy industry.

Like the entire country, the electric industry is still trying to get its head around how President-elect Donald Trump will convert his rhetoric into policy.

Trump offered little detail on the energy policies he would pursue beyond vowing to revoke EPA's climate rule and supporting Republican calls to ease restrictions on oil and gas exploration and fuel pipelines.

There were some obvious winners and



President-elect Trump gives his victory speech.

losers as a result of the Republicans' capture of the White House and their continued control of the House and Senate, however.

In addition to the Clean Power Plan, other

losers are likely FERC Chairman Norman Bay, Commissioner Colette Honorable and the Department of Energy.

One other likelihood, based on the defiant responses from environmental groups Wednesday: protests and litigation over Trump attempts to roll back environmental rules.

Edison Electric Institute President Tom Kuhn issued an anodyne statement Wednesday that nonetheless betrayed the industry's uncertainty about what a Trump administration means to utilities. The trade group said it is looking forward to working with the new administration to "navigate the many challenges and opportunities facing our industry."

"We want to ensure that we are communi-

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FERC Panelists Debate Storage Uses, Compensation

By Rory D. Sweeney, Amanda Durish Cook and Robert Mullin

WASHINGTON — FERC's technical conference on energy storage Wednesday featured debates over the breadth of its potential uses and discussions on ways to avoid over-compensating resources performing multiple functions simultaneously.

More than 20 witnesses spoke during the daylong conference, including representatives of PJM, CAISO, NYISO and several utilities, storage operators and technology companies (AD16-25).

Storage, all agreed, is unique in its ability to perform both load- and supply-type functions and to provide services to distribution and transmission operators as well as end-use customers.

"It's incumbent upon us to ... not treat storage like other things because it simply isn't. It's the one thing that's not like any other thing," said Commissioner Colette Honorable at the opening of the conference.

While the commissioners didn't run the conference, they found it important enough to attend part of the morning session. "We all know that storage is a group of

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More on FERC's Technical Conference on Energy Storage

- RTOs See Storage as 'Niche' Player in Transmission (p.16)
- Storage Won't End RMR Generators, FERC Panelists Say (p.17)

Texas Renewable Industry Unfazed by Trump Environmental Policies

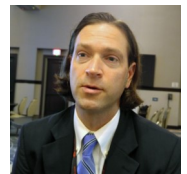
By Tom Kleckner

GEORGETOWN, Texas — Preston Schultz, director of development for Chicago-based Hecate Energy, says his firm is named after the three-faced Greek goddess of the crossroads. "She's also the goddess of black magic," he said, "but we don't talk about that so much."

It's an apt enough description for where the renewables industry finds itself following last week's election of climate skeptic Donald Trump as president of the United States: at the crossroads, and possibly needing a little magic to build

upon its recent progress.

Trump, who has promised to scrap the Clean Power Plan and withdraw the U.S. from the Paris



Schultz

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Renewables Win Some, Lose Some in State Election Results

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Clean Power Plan, FERC's Bay, Honorable Among Losers in Trump Win

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cating with the incoming administration, policymakers and key stakeholders about the investments our members are making and the projects they are undertaking to benefit their customers and our energy future.”

Reshuffle at FERC

Bay, a Democrat, will presumably lose the FERC chairmanship, and Commissioner Colette Honorable, whose term expires next June, will likely be replaced by a Republican.

Although the commission has not traditionally been marked by partisan divisions, the president gets to appoint members of his party to three of the five seats and pick the chairmanship. Since Republicans Philip Moeller and Tony Clark left, the five-member panel has been all Democrats: Honorable, Bay (whose term expires in June 2018) and Cheryl LaFleur (June 2019).

Because Republicans maintained their control of the Senate, Sen. Lisa Murkowski (Alaska) will remain chair of the Energy and Natural Resources Committee, the gatekeeper for FERC nominees.

A subdued Bay, who made an appearance at FERC's technical conference on energy storage Wednesday, declined to comment when asked by *RTO Insider* for his thoughts on his future.

Paris Agreement, Clean Power Plan

Neither the U.S. participation in the Paris Agreement nor the CPP were approved by Congress, so President Obama's target of reducing U.S. greenhouse emissions by up to 30% by 2025 is clearly in peril.

Trump — who has called climate change a hoax created “by the Chinese in order to make U.S. manufacturing noncompetitive” — has promised to “cancel” the agreement, which aims to limit global warming to 1.5 degrees Celsius above preindustrial levels and went into effect Nov. 4. Trump also

promised to stop U.S. payments to the U.N.'s Green Climate Fund.

According to an analysis by Climate Central, an organization of scientists and journalists whose mission is to communicate the effects of climate change, Trump would have three ways of withdrawing the U.S. from the Paris Agreement. The first is to invoke an article to withdraw from the agreement a year after it takes effect by declaring the abandonment of a 1992 treaty — the United Nations Framework Convention on Climate Change, on which it is partly built.

Another section of the agreement allows a signatory to withdraw three years after it is signed, with an additional one-year waiting period after that.

Or, in what many see is the most likely scenario, he could just abandon any of the voluntary rules and incentives to reduce emissions.

Most in the industry and regulatory bodies overseeing it believe the goals set by the agreement would not be obtainable without slashing greenhouse gas emissions from electric utilities' use of coal.

Trump will appoint a new EPA administrator. He also could order the Justice Department to stop defending the Clean Power Plan in court should the D.C. Circuit Court of Appeals overturn it — preventing the possibility of the order being reversed by the Supreme Court (for which Trump will nominate a replacement for the late Justice Antonin Scalia). (See Analysis: No Knock Out Blow for Clean Power Plan Foes in Court Arguments.)

If the rule is upheld by the D.C. Circuit, Trump's EPA would need to establish another rule revoking the CPP.

“It's virtually certain that the Clean Power Plan will be revoked. The question is how,” Jeff Holmstead, a partner at the law firm Bracewell and a former assistant administrator at the EPA, speaking at a post-election conference call.

“I'm quite confident that they do intend to

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Corrections

- In last week's issue, the photos of Mike Voltz and David Mooney in the “Overheard” section on page 12 were mistakenly switched.
- In “MISO Prepped for Better Combined Cycle Modeling” of the MISO Market Subcommittee Briefs on page 8, it was reported that MISO would begin using a configuration-based modeling of combined cycle generators. Yonghong Chen, MISO principal advisor of market development and analysis, said that configuration-based modeling of combined cycle generators is still in the prototype stage. According to Chen, the November reduction of the day-ahead market clearing window from four hours to three is being executed through current aggregate-based modeling.



FERC OKs Local Market Power Measures for CAISO

By Robert Mullin

FERC has approved CAISO’s plan to fine-tune its procedure for preventing generators from exercising market power during local transmission constraints.

The provision allows the ISO to increase the frequency of its intra-hour “mitigation runs” designed to determine whether transmission congestion is temporarily providing certain generators with market power.

“We find that CAISO’s proposal will improve the accuracy and effectiveness of CAISO’s local market power mitigation process by addressing situations where CAISO currently under-mitigates in the real-time dispatch process,” the commission said in its Nov. 8 order (ER16-1983).

Under current practice, CAISO evaluates congestion patterns for “uncompetitive” transmission paths in an “advisory” and financially non-binding market run about 50 minutes before real-time procurement and dispatch.

“If load only can be served by dispatching resources owned by a small sub-set of ‘pivotal suppliers,’ then the CAISO assumes there is local market power and automatically imposes market power mitigation measures on resources that would benefit from the noncompetitive congestion,” the ISO explained in its June filing with FERC.

Those measures consist of applying the higher of a generator’s default energy bid or the ISO’s administratively determined

competitive price, unless the market-based bid is lower than either number. Default bids can be based on a resource’s variable costs, a negotiated rate or a weighted average of LMPs set at the unit over the previous 90 days. Resources can rank their default bid preference from among the three options, subject to the ISO’s approval.

The ISO currently conducts a mitigation run for each 15-minute real-time unit commitment interval within an operating hour. Any mitigation triggered for that 15-minute interval applies to each of the five-minute dispatch intervals contained within — and also continues for the rest of the hour.

CAISO said its current measures assume that the conditions existing in the non-binding mitigation run will persist during the financially binding market run occurring 37 minutes ahead of the market interval. But changing conditions put the ISO at risk of either underestimating or overestimating the congestion.

“True congestion discrepancies frequently are caused by changes to inputs to the market optimization, as well as new information becoming available, in the time between conducting the mitigation and binding market runs,” the ISO said.

The solution approved by FERC attempts to prevent “under-mitigation,” which would expose load to excessive costs.

Under the new measure, the ISO will implement an additional mitigation run for each five-minute dispatch interval within a 15-minute real-time unit commitment

interval.

The new run will be integrated into financially binding operations and allow the grid operator to factor in congestion not foreseen during the initial mitigation run. If necessary, it will be able to mitigate generator bids closer to the time of delivery.

“If any bid mitigation occurs, a second scheduling run is performed with these mitigated bids,” the ISO said. “A final pricing run is then performed to determine financially binding prices for the 15-minute interval.”

Once a bid has been mitigated for a five-minute increment, the mitigation remains in place for the balance of the 15-minute interval.

Any bid mitigation applied to a unit during the initial non-binding real-time unit commitment (RTUC) run will remain in place for the hourly interval regardless of whether a subsequent real-time dispatch (RTD) run shows a decrease in congestion within that hour.

“A unit that was mitigated for the RTUC but unmitigated for the RTD could be put in the untenable position of having to buy back its [15-minute market] schedule at a loss,” the ISO said.

“We agree with CAISO that improving the granularity of the mitigation process and improving the information that goes into the market runs will result in a more accurate representation of real-time system

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Figure 1. Market power mitigation process before enhancements (15-minute market)

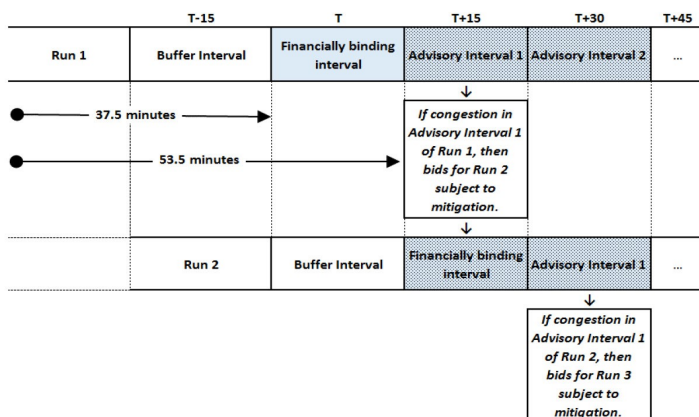
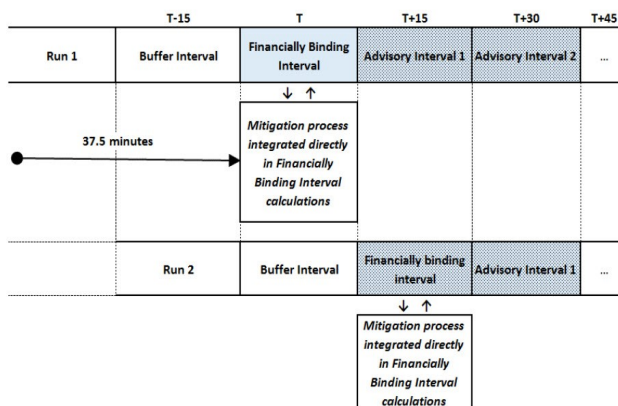


Figure 2. Market power mitigation process after enhancements (15-minute market)



The diagrams illustrate how CAISO will revise its local market power bid mitigation procedure with an additional “mitigation run” incorporated into the financially binding market run for procuring real-time energy. | CAISO



Tucson Electric Could See Loss of Market Rate Authority in its BAA

By Robert Mullin

Tucson Electric Power could become the latest Western utility to lose its authorization to sell electricity at market-based rates within its own balancing authority area (BAA).

FERC last week said it will commence a Section 206 proceeding to determine whether the Arizona utility's market-based rate authority (MBRA) remains "just and reasonable" within its service territory in the southwestern corner of the state.

The commission's review was triggered when the utility failed a key market test designed to demonstrate whether an electricity seller wields too much market power within a specific geographical area ([ER10-2564, et al.](#)).

Tucson Electric, along with its parent company UNS Energy, are now faced with making the case for why the commission should not revoke its MBRA. Absent that, the utility could provide a proposal to mitigate its market power. It could also adopt FERC's cost-based rates — or propose other acceptable cost-based rates.

The order comes less than a month after Tucson Electric filed a "change in status" notice indicating that the utility passed FERC's "pivotal supplier" and "wholesale market share" screens for so-called "first-tier," or neighboring, balancing areas but failed the market share screen covering its own territory.

While the commission acknowledged the delivered price test (DPT) analysis submitted by Tucson Electric to rebut the presumption of market power stemming from the failed screen, it also said the utility should not expect it to postpone instituting the proceeding — which establishes a refund date for utility customers — while it

examines supplemental information.

The DPT factors in 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. The analysis must also consider the load commitments for, and available supply from, other generators in the region.

"In addition to the previously filed delivered price test, sellers may present alternative evidence such as historical sales and transmission data to rebut the presumption that they have the ability to exercise horizontal market power in the Tucson Electric balancing authority area," the commission wrote.

If Tucson Electric does lose its MBRA within its balancing area, it won't be the first major Western utility to see FERC restrict its selling power in some way this year.

In a sweeping June order impacting NV Energy and PacifiCorp, the commission revoked MBRA for Berkshire Hathaway Energy subsidiaries in four neighboring BAAs in the West. (See [Berkshire Market-Based Rates Restricted in 4 Western BAAs.](#))

Closer to home, an August FERC ruling conditioned Arizona Public Service's EIM membership on a requirement that each of the utility's generating units offer into the market at or below default energy bids ([ER10-2437](#)). The commission rejected the argument that CAISO's own mitigation measures would be sufficient to keep the utility in check. FERC noted that APS did not even attempt to file indicative screens or a DPT to rebut the presumption that it exercised market power within its own portion of the EIM.



Tucson Electric Power primarily serves the city of Tucson, but its balancing authority area occupies the southwestern corner of Arizona. | Tucson Electric Power

Tucson Electric is also exploring the possibility of joining the EIM. The utility plans to release a study outlining the potential benefits of market membership later this month.

Arizona is coming off a contentious political campaign in which APS spent more than \$4 million to elect three of the utility's favored candidates to the Corporation Commission. All five members of the commission are now Republicans, including incumbent Bob Burns, who earned APS's financial support despite the fact that the utility is suing to prevent him from subpoenaing records of the company's political contributions.

"I think [the high spending] just puts a bad taste in the public's mouth," Burns told public radio station KJZZ, noting that he could do nothing to prevent the spending in support of his election because of federal election laws.

In an additional twist, Burns benefited from campaign spending by a coalition of solar companies that also heavily backed Democratic candidates Bill Mundell and Tom Chabin. The coalition, which includes Solar City, was attempting to counter what it considers to be a regulatory bias that favors APS in disputes with supporters of rooftop solar.

FERC OKs Local Market Power Measures for CAISO

[Continued from page 3](#)

conditions that should enhance the overall measure of competitiveness of the market," the commission said in approving the new procedure.

The commission denied a request by Pacific Gas and Electric that CAISO file a "reversion plan" in case the procedure results in "unforeseen" performance issues, or failed market runs require the ISO to rely on a fallback measure.

"Unlike the limited circumstances in which the commission has previously required or accepted the submittal of reversion plans, such as the launch of a new market where there was a risk of a significant operations failure, we find that such a risk has not been presented here," the commission said.

The ISO's local market power mitigation procedure goes into effect Jan. 30, 2017.



Texas PUC Sets Hearing Schedule for NextEra-Oncor Merger

By Tom Kleckner

The Public Utility Commission of Texas last week scheduled hearing dates on NextEra Energy's proposed acquisition of Oncor.

The commission set a prehearing conference for Friday at the commission's offices in Austin. The parties will discuss the docket's (No. 46238) procedural schedule, pending motions and any other matters "that may assist" in the proceedings.

The order also set Feb. 21-24 as potential hearing dates before the commission. That would keep the merger on course to receive PUC approval by the end of the second quarter.

The commissioners could have assigned the case to the State Office of Administrative Hearings (SOAH), but they chose to keep it within their jurisdiction instead. However, a SOAH administrative law judge will be responsible for conducting discovery in the case.

"I would have preferred SOAH, because I don't think it's that complex," Commissioner Ken Anderson said. "Maybe we just start holding our holidays in Oncor's headquarters in Dallas."

NextEra announced in late July it had reached an agreement to acquire an 80% interest in Oncor; on Oct. 31 it announced it would acquire the remaining 20%.

The commission punted most of the other meaty issues on its agenda to its next open

meeting on Dec. 1.

Distributed Generation

The PUC debated jurisdictional issues related to distributed generation interconnection agreements, before agreeing to resume the rulemaking's discussion in December (No. 45078).

Citing a "gut instinct," Chair Donna Nelson said she was reluctant to rule against staff's opinion that interconnection agreements do not give the PUC jurisdiction over customer complaints.

"When I read the comments," Anderson said, "a lot of the [market] participants who staff believe we would not have jurisdiction over have said they don't mind the jurisdiction."

"That's what I struggle with," Nelson responded. "I met with some companies, including solar companies, who said 'we think the interconnection agreement, where we've agreed to be subject to your jurisdiction, gives you jurisdiction,' but staff doesn't agree with that."

Nelson said she was concerned solar customers would come to the commission seeking redress from potential "bad actors" but that it would be unable to take up the matter.

"To that end, if we did adopt this with staff's language, we've got a bunch of stuff out there that says we don't have jurisdiction, and we're asking the Legislature to poten-

tially give us jurisdiction," Commissioner Brandy Marty Marquez said. "Waiting until the next meeting to make a final decision is a prudent idea, but it kind of sounds like this might be something we need to pull down until we get through the legislative session." The Texas Legislature's next session begins Jan. 10.

Ratemaking, Tx Rates

The commission also decided to take more time to review a report on alternative ratemaking mechanisms that's due to the Legislature in January (No. 46046), giving the commissioners an opportunity to agree on any recommendations.

"I got a call from a legislator who asked what recommendations were going to be made," Anderson said. "I said, 'I'm not sure I have any. We did the report you asked for.'"

"I'd like to see if there's a recommendation we can make regarding appropriate reforms," Nelson said.

The PUC also took no action on Lone Star Transmission's proposal to cut its transmission costs by \$6 million, providing the company files its settlement agreement by the end of the year. The settlement will negate the need for a rate case (No. 45636).

The commission approved a rehearing over the City of Garland's request to amend a certificate of convenience and necessity for a 345-kV line in East Texas, allowing it to "tackle the merits" after the holidays, Anderson said.



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Capacity Requirement Shows Flat Demand, Greater Solar Penetration

By William Opalka

The installed capacity requirement ISO-NE filed with FERC last week shows a continuing trend of slightly declining load growth and a greater reliance on behind-the-meter solar power (ER17-320).

New England's ICR for the upcoming 11th Forward Capacity Auction (delivery year 2020/21) is 34,075 MW. That represents a capacity need of 35,034 MW minus 959 MW of Hydro-Quebec Interconnection Capability Credits.

In FCA 10 earlier this year, ICR resources of 35,126 MW were required.

"There was a small drop in ICR, due primarily to a lower load forecast, and that was due to the growing impact of behind-the-meter PV and energy efficiency measures," ISO-NE spokeswoman Marcia Blomberg said.

ISO-NE said the requirement was reduced by 720 MW (ER17-321). In FCA 10, ISO-NE successfully defended at FERC its inclusion of 390 MW of behind-the-meter solar that was not based on historical loads. (See [FERC Accepts ISO-NE's Solar Count over Protests](#).)



ISO-NE said it used coincident hourly load and PV production data from 2012-2015 and information from utilities to compile its requirement.

The RTO said it qualified 150 new capacity resources, totaling 5,958 MW for FCA 11. The identities of the new resources are confidential.

ISO-NE has three capacity zones for the auction, which will be held Feb. 6: the import-constrained Southeast New England zone (SENE), including Rhode Island and southeastern and northeastern Massachusetts; export-constrained Northern New England (NNE), which includes Vermont, New Hampshire and Maine; and Rest of Pool, which includes central and western

Massachusetts and Connecticut.

The RTO's filing said five renewable energy projects in northern Maine, a landfill gas facility, a wind farm and three hydropower projects, totaling more than 22 MW, were disqualified because of insufficient transmission capacity. The Orrington interface in eastern Maine, critical to unlocking wind energy potential from the northeastern areas of the state, is the

subject of a study now underway by ISO-NE planners. (See [ISO-NE Planning Advisory Committee Briefs](#).)

Following a contentious multiyear stakeholder process that FERC essentially ended over the summer, FCA 11 will be the first time ISO-NE uses sloped demand curves for its constrained zones. (See [FERC Accepts ISO-NE Sloped Zonal Demand Curves](#).)

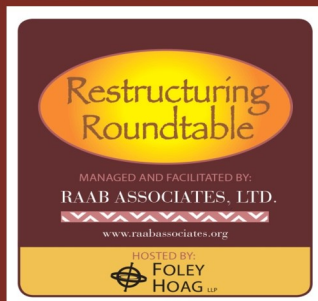
ISO-NE received two retirement delist bids, totaling 27.3 MW, from resources in northeastern Massachusetts and Maine. They were confidentially identified to RTO officials in July.

Protests challenging the ICR are due Nov. 23. The RTO wants FERC to accept the filing by Jan. 7.

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MISO Readies Updated Pseudo-Tie Rules

By Amanda Durish Cook

MISO will ask FERC to approve new rules on how it manages pseudo-ties next year, officials said during a Nov. 8 special conference call of the Reliability Subcommittee.

The proposed rules would establish a pseudo-tie Business Practices Manual, an implementation process and a written agreement for MISO-based generators that intend to sell their capacity or electricity outside the region.

The agreement serves as a contract between MISO and pseudo-tie owners and ensures “appropriate metering is in place” before pseudo-ties are granted, the RTO said. MISO Corporate Counsel Michael Blackwell said the agreement would be filed as a *pro forma* attachment to the RTO’s Tariff. Executed pseudo-tie agreements would be filed with FERC through MISO’s electronic quarterly reports.

The process will require market participants to maintain long-term firm transmission service requests from source to sink for the life of the pseudo-tie. New transmission service requests would be subjected to system impact studies. Currently, units pseudo-tied into MISO require transmission service from the external transmission

owner, and units pseudo-tied out require transmission service from MISO.

The BPM will include a step-by-step guide to implementing a pseudo-tie, which involves pre-assessment and transmission service evaluation before conditional approval and registration. (See “Pseudo-Ties to Require System Impact Studies; Would be Barred from Sink Switching,” MISO Planning Subcommittee Briefs.)

MISO would require a one-year notification for generators wishing to pseudo-tie. Kyle Abell, of MISO’s modeling and engineering division, said neighboring RTOs — such as PJM, with its three-year forward market — may require more notification time for generators looking to be controlled and dispatched by a neighboring balancing authority.

The process also includes a new requirement that all parties — generators and RTOs — agree on a plan for congestion management prior to approval of new pseudo-ties. That could require the creation of new flowgates and modeling improvements.

Senior Director of Regional Operations David Zwergel said modeling needs to be sufficient to accurately calculate transmission flows and avoid overwhelming the system.

Abell said MISO hopes to file the new process early in the first quarter of 2017, implementing it before the next batch of pseudo-tied generators withdraw their capacity from MISO in June.

“It’s our goal to strike the right balance between brevity and clarity,” Abell said.

Current pseudo-ties with long-term transmission service can continue to use the granted requests. Abell said existing transmission service requests will be honored under the same rules, but some existing requests not used for pseudo-ties could be subject to restudies to ensure they meet new criteria.

“We’ll take a look at it to see how it was studied. ... If we find it meets the [new] criteria, you’re good to go,” MISO’s Paul Muncy said. Rollover rights on transmission service requests will continue to be honored, Muncy added.

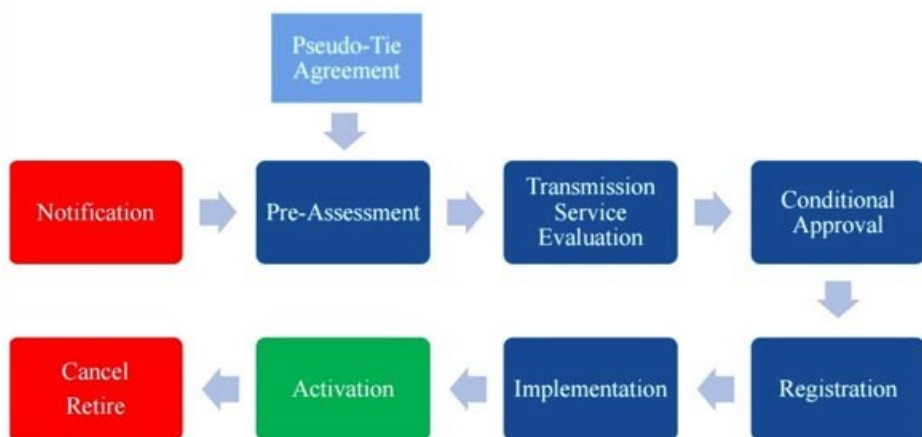
“It’s not MISO’s goal to retroactively revise pseudo-ties. We’re focused on new pseudo-ties moving forward,” Abell said.

Proposed pseudo-ties can be rejected and existing pseudo-ties can be rescinded if a market-to-market flowgate is not within 2% of MISO and the neighboring market’s generator-to-load distribution factor. Such determinations will rely on the past 24 months of flowgate data.

Pseudo-ties to non-market areas, such as the Tennessee Valley Authority, will be modeled as network-and-native load under NERC’s transmission loading relief curtailment standards and be subject to manual dispatch. Abell said the provisions apply to new pseudo-tie requests and not to pseudo-ties already in place.

Ameren’s Ray McCausland asked how the sub-regional power balance constraint would factor into the granting of MISO’s pseudo-tie requests. MISO staff said they would investigate that aspect.

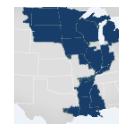
Abell asked for stakeholder comment by Nov. 22. MISO will hold another conference on the pseudo-tie rules and consider possible revisions during a special Dec. 12 meeting of the Reliability Subcommittee.



Pseudo-tie implementation process | MISO

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MISO 2017/18 Planning Reserve Margin at Nearly 16%

By Amanda Durish Cook

MISO will have a 15.8% planning reserve margin for the 2017/18 planning year, up slightly from last year, according to the RTO's loss-of-load-expectation [study](#).

Jordan Cole, of MISO's resource adequacy coordination group, told a Nov. 9 conference call of the Reliability Subcommittee that the reserve margin increased by 0.6% over last year's 15.2%. MISO's unforced capacity reserve margin is 7.8%, representing a 0.2% increase. In MISO, unforced capacity represents installed capacity minus forced outage rates. MISO's systemwide installed capacity is at about 151 GW, while unforced capacity is at about 140 GW. The analysis predicts peak demand to hit 128 GW in early August 2017.

Cole said an increase in MISO's forced outage rate and a forecasted reduction in load are driving the reserve margin increases. He added that local requirements have remained "mostly stable" from the 2016/17 planning year. MISO's zonal installed capacity ranges from 23,642 MW in Michigan's Zone 7 to 7,090 MW in Mississippi's Zone 10.

Cole said MISO will return in the spring with results comparing the planning reserve margin to the planning reserve margin requirement, a value that's calculated by factoring MISO systemwide load into the reserve margin; the requirement is yet to be announced.

Winter Seasonal Assessment All Clear

In the meantime, the MISO footprint should

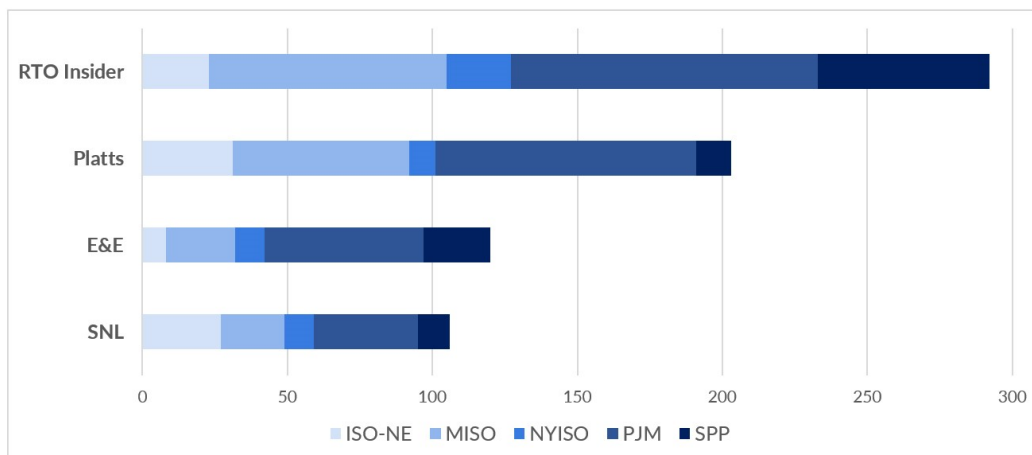
navigate the remainder of 2016 without major challenges, according to the RTO's [coordinated seasonal assessment](#), which did not identify any outstanding issues for the upcoming winter. Katherine Hulet, of MISO's resource adequacy planning group, said the RTO does not predict any major constraints or thermal or voltage issues during the winter season. The assessment included studies of four MISO interfaces and six transfers. (See "Winter is Coming and Coordinated Seasonal Assessment is Scoped," [MISO Reliability Subcommittee Briefs](#).)

MISO predicts a 104-GW peak load this winter and expects to easily meet it with 142.9 GW of available supply. The RTO easily handled a mild [October](#) with a monthly peak at 90.4 GW on Oct. 17, said Steve Swan, senior manager of dispatch and balance.

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Monitor Finds Markets Competitive, Adds Suggestions on Capacity, DR

By Rory D. Sweeney

PJM's capacity and regulation market results were "generally competitive" in the first nine months of 2016 but remain vulnerable to stress, according to the Independent Market Monitor's third-quarter [State of the Market Report](#).

The report by Monitoring Analytics added five new or modified recommendations on uplift, the capacity market and demand response.

The load-weighted average real-time LMP was \$29.32/MWh in the first nine months of 2016, lower than for any corresponding period since 2000, reflecting both lower fuel prices and lower demand. It was 25% lower than the first nine months last year.

If all things, including fuel and emissions costs, had remained constant in 2016 from 2015, the load-weighted LMP would have been \$31.67/MWh, still below the 2015 mark of \$38.94/MWh. PJM's average real-time load in the first nine months of 2016 decreased by 1.4% from the first nine months of 2015, to 90,599 MW.

The structures for all but the aggregate energy, day-ahead schedule reserve and financial transmission rights markets were uncompetitive, the report said. The PJM region and all locational deliverability areas in almost every market have failed the three pivotal supplier market power test for almost every auction since at least 2007.

Market design received a "mixed" evaluation. Although the Reliability Pricing Model

design and Capacity Performance modifications have "many positive features," the report said, several features "still threaten competitive outcomes." Among them: the definition of DR, which allows "inferior" products to substitute for capacity; the definition of unit offer parameters; and the inclusion of imports as substitutes for internal capacity resources.

Replacement Capacity

The Monitor also raised concerns over replacement capacity, recommending against allowing retroactive replacement capacity transactions.

Market performance and participant behavior during high-demand hours raised several concerns, the report said, including potential economic withholding.

"In particular, there are issues related to aggregate market power, or the ability to increase markups substantially in tight market conditions, to the uncertainties about the pricing and availability of natural gas, and to the lack of adequate incentives for unit owners to take all necessary actions to acquire fuel and generate power rather than take an outage," it explained.

In addition to its suggestion on replacement capacity, the Monitor added four other new or amended recommendations.

First, it recommended that PJM initiate a stakeholder process if it plans to modify its price-setting logic — a software change the RTO made in 2014 to reduce uplift by selecting as marginal any unit committed by

PJM to provide reactive services, black start or transmission constraint relief if that unit would otherwise run with an incremental offer greater than the LMP.

The recommendation was one of several that the Monitor said could have reduced the uplift rate paid by decrement bids in the Eastern Region by 93% — to \$0.032/MWh instead of \$0.446/MWh — in the first nine months of 2016.

Capacity Release

The Monitor also recommended that capacity released by PJM in incremental auctions should be offered at the Base Residual Auction clearing price or not have the offer price revealed at all to avoid suppressing the IA price. (See "Proposal Chosen for Capacity Release," [PJM Markets and Reliability and Members Committees Briefs](#).)

Energy efficiency resources shouldn't be included on the supply side of the capacity market, the Monitor concluded. "PJM's load forecasts now account for future EE, but did not when EE was first added to the capacity market. If EE is not included on the supply side, there is no reason to have an add back mechanism," the Monitor said. "If EE remains on the supply side, the implementation of the EE add-back mechanism should be modified to ensure that market clearing prices are not affected."

Finally, the Monitor also recommended not removing any defined subzones and maintaining a public record of all created and removed subzones.

Category	Jan-Sep 2015		Jan-Sep 2016		Percent Change Totals
	\$/MWh	% of Total	\$/MWh	% of Total	
Load Weighted Energy	\$38.94	66.40%	\$29.32	58.70%	-24.70%
Capacity	\$10.33	17.60%	\$11.04	22.10%	6.90%
Transmission Service Charges	\$6.80	11.60%	\$7.59	15.20%	11.60%
Energy Uplift (Operating Reserves)	\$0.45	0.80%	\$0.17	0.30%	-61.70%
Regulation	\$0.25	0.40%	\$0.11	0.20%	-55.00%
Day Ahead Scheduling Reserve (DASR)	\$0.12	0.20%	\$0.10	0.20%	-22.90%
Synchronized Reserves	\$0.12	0.20%	\$0.05	0.10%	-57.10%
Total Price	\$58.68	100.00%	\$49.95	100.00%	-14.90%

Note: The totals in this table include after the fact billing adjustments and may not match total presented in past reports.

Total price per MWh by category | [Monitoring Analytics](#)



MRC/MC Preview

Below is a summary of the issues scheduled to be brought to a vote at the [Markets and Reliability](#) and [Members](#) committees Thursday. Each item is listed by agenda number, description and projected time of discussion, followed by a summary of the issue and links to prior coverage in *RTO Insider*.

NOTE: The meetings this week will NOT be in Wilmington, Del., as is customary. They will be held at PJM's [Conference and Training Center](#) in Valley Forge, Pa. *RTO Insider* will be there covering the discussions and votes. See next Tuesday's newsletter for a full report.

Markets and Reliability Committee

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

Members will be asked to endorse the following manual changes:

A. Manual 3: [Transmission Operations](#). Revisions, the result of a periodic review, include updating voltage control at nuclear stations, certain special protection scheme references and the BC/PEPCO operating procedure.

B. Manual 14A: [Generation & Transmission Interconnection Process](#). Revisions resulting from special Planning Committee sessions, set new service request cost allocation and study methods. To ensure manual language allows cost allocation to occur for all projects, the word "interconnection" is replaced with "new service" in section B.2 of Attachment B.

C. Manual 14B: [PJM Region Transmission Planning Process](#). Revisions will update the Capacity Import Limit calculation procedure. Starting with the 2020/21 delivery year, the CIL will no longer be applied as part of the Reliability Pricing Model. As part of new long term firm transmission service study procedures approved earlier this year, the CIL will be considered during interconnection studies associated with new transmission service requests.

D. Manual 15: [Cost Development Guidelines](#). Revisions will implement updates to fuel-cost policy procedures, part of PJM's compliance filing on hourly offers, which is awaiting FERC action (ER16-372-002). Major changes include an annual review of the policies, reasons for updating a policy outside of the annual review and a process for submitting undefined costs. (See "Fuel-Cost Policy Revisions Approved," [PJM Market Implementation Committee Briefs](#).)

E. Manual 18B: [Energy Efficiency Measurement & Verification](#). Revisions, the result of a periodic review, include updates to incorporate the implementation of Capacity Performance.

F. Manual 21: [Rules and Procedures for Determination of Generating Capability](#). Revisions, the result of a periodic review, include clarifications

to testing rules and terms.

G. Manual 28: [Operating Agreement Accounting](#). Revisions made to align with recent Manual 1 revisions clarify metering language and define a "fully metered EDC" as one that "reports hourly net energy flows from all metered tie lines to PJM via Power Meter and revenue meter data for the hourly net energy delivered by all generators within that EDC's territory via Power Meter, for the purposes of energy market accounting." The changes were developed in response to a stakeholder request.

3. Day Ahead Scheduling Reserve Requirement (10:10-10:25)

Members will be asked to endorse the 2017 day-ahead schedule reserve [requirement](#). (See "Day-Ahead Scheduling Reserve Eligibility to be Studied," [PJM Market Implementation Committee Briefs](#).)

4. Manual 35 Retirement (10:25-10:35)

Members will be asked to endorse the retirement of Manual 35 and receive an update on its proposed replacement, the new [Glossary](#) section of PJM's website. (See "PJM to Retire Manual 35," [PJM Planning Committee Briefs](#).)

5. Underperformance Risk Management Sr. Task Force (URMSTF) (10:35-10:50)

Members will be asked to endorse a [package](#) of revisions and updates to address underperformance risks. (See [No End in Sight for PJM Capacity Market Changes](#).)

6. Base Capacity Extension (10:50-11:05)

Members will be asked to endorse a proposed one-year [extension](#) of Base Capacity made by Jeff Whitehead of Direct Energy. (See [No End in Sight for PJM Capacity Market Changes](#).)

7. Excess Capacity Release Problem Statement/Issue Charge (11:05-11:20)

Members will be asked to approve a [problem statement](#) and [issue charge](#) presented by Jeff Whitehead of Direct Energy regarding PJM's sell back of excess capacity in the incremental auctions. (See [No End in Sight for PJM Capacity Market Changes](#).)

8. Combined Cycle Modeling Problem Statement (11:20-11:35)

Members will be asked to approve a [problem statement](#) presented by Bob O'Connell, of PPGI Fund A/B Development, regarding combined cycle unit modeling that was developed in the

Combined Cycle User Group.

9. Winter-Season Resource Adequacy and Capacity Requirements Problem Statement/Issue Charge (11:35-11:50)

Members will be asked to approve a [problem statement and issue charge](#) presented by James Wilson on behalf of the Maryland Office of the Peoples' Counsel regarding requirements for resource adequacy and capacity needs in the winter. (See [No End in Sight for PJM Capacity Market Changes](#).)

10. Pumped-Storage Hydropower Tariff/OA Revisions (11:50-12:00)

Members will be asked to endorse Tariff and Operating Agreement [revisions](#) recommended by the Governing Document Enhancement & Clarification Subcommittee regarding the day-ahead scheduling of pumped-storage hydropower.

11. Revisions to Manual 18 Regarding Replacement of Capacity Obligations (12:00-12:15)

Members will be asked to endorse [revisions](#) presented by Barry Trayers of Citigroup Energy (and an accompanying [friendly amendment](#) from PJM) proposed for Manual 18: Capacity Market regarding the immediate replacement of capacity obligations.

Members Committee

Consent Agenda (2:20-2:25)

Members will be asked to endorse:

B. 2016 Installed Reserve Margin study [results](#). (See "IRM Study Approved but Criticized for Lack of Winter Analysis," [PJM Markets and Reliability and Members Committees Briefs](#).)

C. Proposed clarifying [updates](#) to the credit policy in Tariff Attachment Q. (See "Credit Policy Changes Approved," [PJM Markets and Reliability and Members Committees Briefs](#).)

1. Elections (2:25-2:40)

Members will be asked to [elect](#) new representatives for the Finance Committee, sector whips and the vice chair of the Members Committee for 2016-17.

2. Fuel Cost Policy and Hourly Offers (2:40-3:00)

Members will be asked to endorse [revisions](#) to Manual 15: Cost Development Guidelines. See MRC item 2.D. above.

— Rory D. Sweeney



FERC OKs SPP's New Out-of-Merit Definition

By Tom Kleckner

FERC has accepted SPP's Tariff revisions to clarify and consolidate the RTO's out-of-merit energy (OOME) processes, scotching objections by several wind energy companies.

The order is effective as of Aug. 10, 2016 ([ER16-1912](#)). In a Nov. 9 compliance [filing](#), SPP revised the new OOME definition to clarify the term's scope, saying it would allow the RTO to issue an out-of-merit instruction to address either an emergency condition or a reliability issue that had not yet risen to an emergency condition.

In June, the RTO filed proposed revisions to clarify OOME dispatch instructions to dispatchable variable energy resources (DVERs) and non-dispatchable variable energy resources (NDVERs). It also said it was improving the Tariff terminology related to operational dispatch instructions by consolidating terms with "no necessary functional distinction," saying the revisions

would mitigate overlap and potentially confusing or conflicting requirements with the NERC communication reliability standards' use of "operating instruction."

The commission accepted SPP's proposed revisions, noting the Tariff "uses a variety of terms to describe out-of-merit and manual dispatch instructions and, at times, erroneously refers to out-of-merit and manual dispatch instructions in the commitment context." It said the proposed Tariff revisions "should reduce possible ambiguity within the Tariff and potential conflicts with NERC terminology."

SPP's filing was opposed by EDF Renewable Energy, E.ON Climate & Renewables North America and Invenergy, known collectively as the Wind Generation Group.

The Wind Generation Group said the revisions were not needed to avoid confusion or comply with NERC COM-002-4. It also said the proposal would change the OOME term's scope. The group argued that SPP's proposal will result in "confusion, financial harm and opportunities for

increased litigation," as well as "a loss of information that will negatively affect wind developers."

The group also said that in SPP's Integrated Marketplace, variable wind energy resources are bifurcated into DVERs and NDVERs, noting that the RTO issues automated dispatch instructions through its security-constrained economic dispatch (SCED) for DVERs and issues OOME instructions as needed. The group said "NDVERs are incapable of responding to automated dispatch directives and are thus only subject to manual dispatch instructions." Manual instructions are issued "only when there is a reliability need that remains after automated SCED dispatch occurs," it added.

FERC disagreed, saying its review of SPP's current Tariff "confirms that SPP has used the term out-of-merit energy in the emergency and reliability contexts; thus, the Tariff already allows for out-of-merit energy instructions arising from manual or automated means." It said the proposed Tariff revisions are not intended to change SPP's existing practice for OOME instructions, and noted SPP said the processes "will continue to include both manual and automated SCED components."

The commission dismissed the wind group's concerns that its members will lose the ability to distinguish between the reasons for manual curtailments (economic, reliability or emergency in nature). It said SPP has confirmed it issues OOME instructions "to respond to reliability issues only."

FERC said if SPP develops communication protocols outside of the Tariff that wind developers find problematic, the wind generators can raise those issues in the RTO's stakeholder process. The commission found the wind group's concerns regarding the differences between NDVERs and DVERs to be outside the proceeding's scope.



Iowa wind turbines after harvest | Theodore Scott

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COMPANY BRIEFS

Moody's: Negative Outlook for Utilities Relying on Coal, Nuclear

MOODY'S
INVESTORS SERVICE

Low natural gas prices make the competitive electricity industry's future look bleak in the near term, according to Moody's Investors Service's yearly outlook report.

Moody's identified Illinois Power Generating and FirstEnergy Solutions as utilities with negative credit ratings because of gas displacement of coal-fired and nuclear generation, leaving the utilities exposed.

The credit agency also anticipates anemic demand because of slow economic growth, advances in energy efficiency and growth in distributed generation. It noted that both PJM and ERCOT have cut their load growth forecasts.

More: [Moody's Investors Service](#)

PSEG Solar Source Purchases 16.8-MW Facility from Ecoplexus

PSEG
Solar Source LLC

PSEG Solar Source purchased a 16.8-MW solar energy facility in Martin County, N.C., from Ecoplexus — marking the second project the two companies have collaborated on.

Ecoplexus will operate the facility, which will use about 50,000 mono-crystalline Trina solar panels with power electronics inverters. The facility has a power purchase agreement with Virginia Electric and Power.

The two companies also worked together on the PSEG Meadows Solar Center, also in Martin County, which went online in June.

More: [Product Design and Development](#)

NIPSCO Looking to Do \$399M Coal Ash Containment Projects

NIPSCO

Northern Indiana Public Service Co. wants to take on \$399 million in environmental protection projects aimed at containing coal ash.

The utility has submitted its request to Indiana regulators to undertake the work, which is needed to comply with new federal mandates designed to prevent groundwater and other pollution from coal ash. The utility wants to bill customers for 80% of the cost.

Much of the work would be done at the Schahfer Generating Station, where NIPSCO has transported coal ash from

other power plants for more than a decade, spokesman Nick Meyer said.

More: [The Times of Northwest Indiana](#)

DTE Energy's Fermi 2 Shut Down for Maintenance Again



DTE Energy's Fermi 2 nuclear power plant was shut down last week for repair of a main unit transformer — marking the second time in 2016 that the Newport, Mich., plant was closed for maintenance.

Last week's closure was not related to the plant's change in the sodium pentaborate concentration in October when DTE officials had to notify the Nuclear Regulatory Commission, spokesman Stephen Tait said.

The company has not said when the reactor will return to full capacity.

More: [The Monroe News](#)

AEP Names Satterwhite President, COO of Kentucky Power

American Electric Power has named Matthew J. Satterwhite president and chief operating officer of Kentucky Power, effective Dec. 9. He replaces Gregory G. Pauley, who is retiring after 42 years of service at AEP.



Satterwhite, who previously served as senior counsel since 2008, will be responsible for distribution operations serving 169,000 customers in eastern Kentucky, as well as the operating unit's safety, customer service, marketing, communications, community affairs, governmental affairs and regulatory functions.

More: [American Electric Power](#)

University Groups Challenge Duke's Natural Gas Plant

A 21-MW natural gas plant that Duke Energy has proposed for Duke University's campus has sparked opposition by students, faculty and other environmentalists.

The company and the university are trumpeting the \$55 million combined heat-and-power project as a means to reduce carbon emissions while providing steam power for the school.

Claire Wang, student organization officer for the two-year-old Duke Climate Coalition, said faculty at the university's Nicholas School of the Environment calculated that emissions would only be reduced by 2 to 4% — not the 24% claimed by the university.

More: [Charlotte Business Journal](#)

Rocky Mountain Power Seeks Rate Hike for Solar Customers

ROCKY MOUNTAIN
POWER

Rocky Mountain Power has filed a proposal with the Utah Public Service Commission that would raise a typical net-metering customer's electric bill from \$55/month to \$74.

Ratepayers who do not have solar panels currently subsidize net-metering customers by \$400 annually — and the new rate schedule seeks to have net-metering customers pay their fair share, said Gary Hooegeveen, senior vice president of Rocky Mountain.

Solar advocates fear a rate increase will impede development of rooftop solar in Utah.

More: [The Salt Lake Tribune](#)

Tony Clark Joins Telecom, Energy Law Firm as Senior Advisor

Former FERC Commissioner Tony Clark has agreed to join law firm Wilkinson Barker Knauer as a senior advisor on Jan. 3.

Clark, who served on the commission for four years before leaving at the end of September, will split his time between the firm's D.C. and Denver offices. The firm specializes in telecommunications, media and energy law.

Clark's "expertise, along with his sharp intellect and warm collegiality, makes him a perfect fit for our firm," said Bryan Trammont, WBK managing partner.

FEDERAL BRIEFS

Coal, Natural Gas Production Falling; Wind Capacity Rising

Coal and natural gas production are falling, while national wind capacity is rising, according to the Department of Energy.

The department predicts a 17% decrease in coal production by the end of 2016, followed by a 3% increase in 2017. Natural gas production will decline in 2016 for the first time since 2005, but is expected to rise slightly in 2017.

National wind capacity, which was 72 GW in 2015, is expected to rise by 8 GW in 2016 and 9 GW in 2017.

More: [Fuel Fix](#)

Spiker Named as Senior Advisor at Bureau of Reclamation

The Bureau of Reclamation has named Max Spiker as senior advisor for hydropower and electric reliability officer.



His duties will include coordinating implementation of corporate partnership efforts involving the bureau's power functions and serving as liaison on intergovernmental initiatives associated with hydropower delivery. He also will oversee compliance with FERC reliability standards.

Spiker has been with the bureau for 28 years, most recently as power resources manager since 2013.

More: [Bureau of Reclamation](#)

Large Solar Facility Planned For California Naval Air Station

The Department of the Navy and Recurrent Energy expect to begin construction in 2017 on a 167-MW facility at Naval Air Station Lemoore in Kings County, Calif.

The project, which is expected to be completed by 2019, will be situated on 930 acres of land — making it the largest solar facility on Defense Department land.

The Navy is seeking to develop 1 GW of renewable energy by 2020.

More: [The Business Journal](#)

Leasing Program to Boost Solar, Wind Energy Development



The Interior Department announced a final rule last week creating a leasing program on public land to boost development of solar and wind energy.

The program, which could be scrapped when President-elect Donald Trump takes office, encourages development in areas where it would have fewer effects on the environment, while generating millions of dollars.

President Obama has sought to create renewable energy projects that generate 20,000 MW of power on public land by 2020.

More: [The Associated Press](#)

TVA Achieves Highest Earnings in 83 Years During Power Sales Drop



The Tennessee Valley Authority saw its net income rise 11% to more than \$1.2 billion for fiscal year 2016 — the highest level in the utility's 83-year history.

The rise came while power sales decreased by 3.4% because of relatively stagnant demand and a slight drop in rates.

TVA also cut its operating and maintenance expenses in the past year by about \$800 million and used the money generated by the savings for debt reduction, TVA Chief Financial Officer John Thomas said.

More: [Times Free Press](#)

Atlantic Sunrise Completion Delayed to Mid-2018

The completion date for the Atlantic Sunrise expansion project has been delayed to 2018 while the project awaits a final environmental impact statement, which FERC is expected to issue on Dec. 30.

William Partners expects part of the natural gas pipeline to be in service during the second half of 2017.

By mid-2017, Williams hopes to have all regulatory approvals to begin construction of the pipeline between the northeastern part of Pennsylvania and the state's border in Lancaster County.

More: [PennLive](#)

STATE BRIEFS

CALIFORNIA

Lucerne Valley Residents Oppose SoCalEd Renewable Energy Project



Southern California Edison is attempting to soothe the concerns of

Lucerne Valley residents who are seeing red over a project to move renewable energy generated from northern states to the Western region, which requires construction of new capacitors near their homes and a proposed scenic highway.

The Eldorado-Lugo-Mohave Upgrade Project, which will increase power flow through existing transmission lines, includes installation of 250 miles of optical ground wire, resulting in the need to raise lines by 5 to 15 feet in 13 locations and to install several capacitors.

Construction is expected to begin in late 2017, with the project expected to be operational and in service by 2020.

More: [The Leader](#)

LA: SoCalGas Should not Resume Aliso Canyon Operations

Los Angeles County supervisors voted unanimously to press state regulators to deny Southern California Gas' request to resume injecting natural gas into wells at the Aliso Canyon storage facility, arguing that regulators cannot presently "in good faith" determine whether the facility is safe.

Aliso Canyon was the site of a four-month leak that emitted 109,000 metric tons of

Continued on page 14

STATE BRIEFS

Continued from page 13

methane and displaced thousands of residents.

The utility has since reconstructed the wells to be used for injection or withdrawal with new tubing and steel pipe and added upgrades including around-the-clock pressure monitoring of all wells and an infrared fence-line methane detection system.

More: [Los Angeles Daily News](#)

Community Choice Energy Expected in Berkeley

The Berkeley city council is expected this week to approve the city's participation in a community choice energy program anticipated for Alameda County cities in fall 2017.

East Bay Community Energy will allow member cities to pool resources to purchase cleaner energy at lower prices. Delivery would continue through the Pacific Gas and Electric system, and PG&E would maintain infrastructure and handle billing and customer service.

Neighboring Albany's council passed a similar ordinance last week.

More: [East Bay Times](#)

MAINE

Portland Requires Large Businesses to Report Energy Use

Roughly 225 commercial buildings, 40 municipal buildings and 19 apartment complexes must report their energy usage to Portland officials under a utility benchmarking program passed by the City Council.

The program, the first of its kind in the state, seeks to collect baseline data to gauge trends in energy use and to measure the effectiveness of efficiency upgrades.

Affected property owners will have at least two and a half years before having to comply under an amendment offered by City Councilor Jon Hinck, who chairs the Energy and Sustainability Committee.

More: [Portland Press Herald](#)

MICHIGAN

BWL Paid \$25K Ransom To End Cyberattack



In a move its general manager called "distasteful and disgusting, but sadly necessary," the Lansing Board of Water & Light paid a \$25,000 ransom last spring to end a cyberattack on its internal communications systems.

The April 25 attack shut down BWL's accounting and email systems and forced the utility to shut down phone lines, including a customer service line. Electric and water distribution were not affected.

The cost of responding to the breach, including the ransom and technology upgrades, was \$2.4 million, BWL General Manager Dick Peffley said. All but \$500,000 of the costs are covered by insurance, he said.

More: [Lansing State Journal](#)

NORTH CAROLINA

Duke Energy Seeks to Cap Coal Ash at 6 Plants



Duke Energy filed plans last week with state regulators to leave two-thirds of its coal ash in basins drained of water and covered with protective caps, instead of excavating it at six plants.

The plants where Duke plans to cap ash in place are the Allen plant on Lake Wylie, Marshall on Lake Norman, Belews Creek in Stokes County, Mayo and Roxboro in Person County, and Rogers in Rutherford County.

Duke previously was ordered or agreed to excavate ash at seven of its power plants in the state. In October, it reached a court settlement to do so at an eighth plant.

More: [The Charlotte Observer](#)

OHIO

NOPEC Reaches Electricity Deal After FirstEnergy Ends Contract



The Northeast Ohio Public Energy Council has reached a three-year deal for a new electricity provider after FirstEnergy Solutions

abruptly canceled its deal serving 500,000 customers three years before it was supposed to expire.

Effective in January, NextEra Energy Services — which provided electricity to NOPEC before the FirstEnergy deal — will be NOPEC's new supplier.

Under the new agreement, customers will receive initial pricing from January through the summer high-demand period, followed by options for a variable rate. Customers automatically will be included under the new contract unless they opt out.

More: [The Akron Beacon Journal](#)

Youngstown Voters Reject Fracking Ban for 6th Time



Youngstown voters rejected for the sixth time a Community Bill of Rights that would ban fracking in the city.

The measure was defeated 55% to 45%. Last year's rejection of the proposal was the closest yet, by 2.5 percentage points.

Jackie Stewart, Energy in Depth's Ohio state director, called the vote "a huge blow to activist groups."

More: [The Vindicator](#)

Regulators Approve Switching AEP Plant from Coal to Natural Gas



State regulators approved a plan for American Electric Power to transition its Cardinal Plant in Brilliant from coal to natural gas by 2030.

AEP officials said they don't know what the plan's impact will be on customer rates. However, regulators said that for the first two years, bills should not increase by more

Continued on page 15

STATE BRIEFS

Continued from page 14

than 5%.

Under the agreement, AEP also will develop over the next four years at least 900 MW of wind and solar energy projects in the state.

More: [The Intelligencer](#)

OKLAHOMA

Regulators Shutting down Oil Wells Following Earthquake

State regulators are shutting down more disposable oil wells and restricting the volume of others in response to the magnitude 5.0 earthquake that struck last week.

The Corporation Commission's Oil and Gas Division ordered seven wells within 6 miles of the epicenter to be shut down by Monday.

By Nov. 21, 16 wells within 10 miles of the epicenter must reduce volume by 25% of their last 30-day average, and 31 wells within 15 miles will be limited in volume to their last 30-day average.

More: [The Associated Press](#)

PENNSYLVANIA

PECO Withdraws Plans for \$35M Microgrid Project

PECO Energy withdrew plans to build a \$35 million self-sustaining microgrid in Delaware County after drawing strong opposition from customer advocates.

The proposed microgrid included 10.5 MW of natural gas and solar-power generators and 200 kW of battery storage. During a widespread outage, it could operate independently of the regional power grid.

Customer advocates questioned whether it was proper for the utility to re-enter the power-generation business it had been forced to spin off under the 1996 Electricity Generation Customer Choice and Competition Act. They also questioned whether all PECO customers would benefit from the project as the utility proposed rate surcharges to all customers to cover its cost.

More: [The Philadelphia Inquirer](#)

SOUTH DAKOTA

Green Energy Candidate Loses PUC Election

Oglala Sioux green energy entrepreneur

Henry Red Cloud, a Democrat, was defeated by Republican incumbent Chris Nelson for a seat on the state's Public Utilities Commission.

Nelson said he would try to keep utility rates as low as possible. Red Cloud, a first-time candidate, ran on a green energy platform.

More: [The Associated Press](#)

WISCONSIN

Regulators Reduce Return On Equity for MG&E

State utility regulators voted last week to reduce the return on equity that Madison Gas and Electric can earn from its present 10.2% to 9.8% in 2017.

The new profit level is the lowest since the 1970s, according to Public Service Commission data, and could signal that rates of return for other utilities may be scrutinized to drop again.

The reduction is the result of persistently low interest rates and declining return rates for utilities around the country, PSC Chairwoman Ellen Nowak said during the commission's meeting.

More: [Milwaukee Journal Sentinel](#)

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RTOs See Storage as 'Niche' Player in Transmission

By Amanda Durish Cook

WASHINGTON — The opening panel of FERC's technical conference on energy storage last week featured a discussion on whether storage can be a versatile transmission asset or will be limited to "niche applications."

Exelon Senior Vice President of Wholesale Markets and Transmission Policy **Mike Kormos** said storage can change the way transmission planners develop solutions for thermal and voltage overloads because batteries can respond instantaneously to the loss of a transmission line that would cause a reliability violation.

"We operate everything in what we call pre-contingency. We start moving generation, we start spending money before the actual contingency happens because we need a certain amount of time to make sure it happens," said Kormos, a long-time PJM executive who joined Exelon earlier this year. "The battery can basically respond immediately, and that's a very unique transmission opportunity that exists for batteries that a lot of other potential infrastructure investments don't bring us."



Kiran Kumaraswamy, market development director at AES Energy Storage, agreed, saying batteries can provide "targeted transmission relief" in a matter of months, not years, and can delay expensive transmission upgrades.

Ed Tatum, American Municipal Power's vice president of transmission, said that FERC [Order 890](#) admitted that storage cannot provide the same level of reliability and availability as transmission. He said the industry would have to set minimum levels of charge requirements if storage is used. However, Tatum added, the industry "could clearly use more imagination in transmission planning."

'Niche Applications' Only

PJM's Senior Director of System Planning **Paul McGlynn** was skeptical, saying using storage post-contingency to respond to



AEP's Raja Sundararajan (left) and AMP's Ed Tatum | © RTO Insider

reliability problems seemed like a "remedial action scheme."

He said storage devices have only have "niche applications" as a transmission asset. Beyond voltage and thermal issues, there are only "a couple of other categories," including resolving short-circuit issues and stability remediation, that PJM would consider a transmission asset.

PJM currently has more than 300 MW of storage, including batteries and flywheels, all of which are compensated through the RTO's ancillary services markets.

"The circumstances where an electric storage resource could be considered as a transmission asset would be rare and highly location-specific," the RTO said in its [written](#) testimony. "The commission ... should not let the technology drive the compensation model but instead allow these resources to realize their potential through the market by offering services that they are capable of providing."

It said storage could be a cost-effective "last resort" in highly constrained areas of PJM's system where construction of new generation or transmission may not be possible, adding the resource should be permitted to participate in competitive solicitations under Order 1000.

"If they are both more effective and cost-efficient than a traditional transmission solution (and where the proposal does not carry with it significant technology risk), they could serve as the appropriate solution for inclusion in the [Regional Transmission Expansion Plan] to either defer or displace a competing transmission solution," PJM said.

But "given the current maturity of battery technology," PJM said storage is "far more likely" to be limited in the near-term to low-voltage solutions that would be submitted by transmission owners and thus not open to competition.

CAISO also expressed skepticism that storage will have a big role in transmission, saying that although it has studied storage projects as potential reliability solutions in

its transmission planning, its "experience reflects that electric storage has more effectively fit within the framework of market resources providing local capacity rather than as transmission assets."

PJM also raised some operational concerns, saying a battery installed as a non-transmission alternative to address an N-1 reliability violation would need time to recharge between injections, particularly in the winter when there are two peak loads daily. "The applicability of storage to contingencies involving networked portions of the grid should not be ruled out, but could involve much greater complexities related to operational and availability requirements," it said.

Who's in Control?

AMP's Tatum said if a battery is going to serve a transmission function, it should be under the control of the transmission provider. "If we're going to have something out there that is a low-cost, more effective solution than actually throwing traditional wires in the air, we need to think about it and treat it in the same way," he said.

Kormos said resource owners might hand over "state-of-the-charge" management — determining when a battery recharges and injects — to RTOs. "If its primary purpose is to avoid a transmission problem, whatever criteria that violation is, I think we should handle it like any other transmission asset at that point in that it is turned over to the ISO/RTO," he said.

But CAISO said in its [written](#) comments that it "prefers that operation of these resources occur through the CAISO's energy and ancillary services market processes rather than the CAISO controlling the operation of a resource outside of its market processes."

"This approach ensures that system resources or resources within a transmission-constrained area operate together to meet grid reliability needs and enables the resource to participate most broadly in providing value to the market," the ISO said.

Compensation and Cost Allocation

One of the questions raised by FERC staff in calling the conference was how storage should be compensated and its costs allocated.

Raja Sundararajan, vice president of regulatory services at American Electric Power, said storage that provides transmis-



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Storage Won't End RMR Generators, FERC Panelists Say

By Rory D. Sweeney

WASHINGTON — Despite its virtues, energy storage won't eliminate the need to pay unprofitable generators to continue operating for grid support, speakers said in the second panel of FERC's technical conference on storage Wednesday.

In its notice of the conference ([AD16-25](#)), FERC noted that storage resources are modular and easily transportable — meaning they could provide local voltage support in situations that would otherwise result in contracts with generators as reliability-must-run (RMR) or system support resources. Building transmission to alleviate such problems following a plant retirement often takes years.

But grid operators questioned whether storage will be a cheaper option.

"It's going to be very difficult for any new resource to compete with [a generating plant] that's already essentially heavily depreciated," said Neil Millar, CAISO's

executive director of infrastructure development. "I just think we need to be realistic about expectations."

Eric Hsia, PJM's manager of performance compliance, was also skeptical. "I totally agree that markets for storage are good things and what we should be focused on, but we know these RMRs are going to continue to get done and they're not going to go away necessarily," he said.

Representatives of CAISO, PJM and NYISO said they all recover RMR contract costs in the zones that will eventually pay for the necessary transmission upgrade and not as part of region-wide transmission rates.

Lead Time

Witnesses also questioned whether storage could be implemented quickly enough to replace RMRs.

Capacity Performance units in PJM are

required to give three years' notice in advance of retirements, but non-CP units only need to give 90 days.

That might not be enough time to get storage in place, said Bill Capp, president of Grid Storage Consulting.

Millar said nine months is the fastest deployment he's seen and that included several implementation teams working in parallel. "If we're talking a smaller battery storage project, like sub-transmission, the ability to interconnect that project more quickly is higher," he said, but for larger installs, "months is very tight."

He said CAISO is identifying areas where future retirements will likely create reliability issues and is developing plans to address the potential.

Michael DeSocio, senior manager of market design for NYISO, said running a competitive



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RTOs See Storage as 'Niche' Player in Transmission

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sion services could be compensated for their ancillary services through a separate commercial contract to ensure transmission ratepayers are not paying for them.

Tatum warned that compensating storage with more than one revenue stream could result in "trying to serve two masters."

"It's kind of hard to ... have one foot in the competitive world and one in the regulated world," he said.

Tom Kaslow, director of market design and policy for [FirstLight Power Resources](#), said his company "finds it difficult to separate the transmission support functions into what might be classically called transmission equipment functions."



Although storage can perform a wholesale transmission function, "this single aspect of service does not warrant compensation as a transmission asset," Kaslow said in his written [testimony](#). "All electric storage resources should participate on a level playing field in the wholesale competitive

market."

Kaslow questioned why a storage resource would be solely dedicated to transmission use when additional efficiencies could be provided. "We want [compensation] done in a way that makes sure there isn't disruption to the other market revenues that other storage resources are going to rely on," he added.

FirstLight owns 1,400 MW of generation in Connecticut and Massachusetts, 1,200 MW of which are pumped storage.

"Currently, our facilities can provide performance well beyond what [competitive wholesale] markets define as a minimum level of performance. We can come online, the whole station, within 10 minutes; we can provide single-unit response and much shorter time frames," he said. He suggested an entirely new "very fast reserve" product compensation rate, similar to a payment category in use in the U.K.

However, he said using a regulated payment for compensation could have the unintended consequence of causing barriers to further investment "if you are not part of whatever RTO planning exercise identifies your storage resource."

PJM suggested allowing storage resources

to have any market revenues deducted from the costs of the resource included in transmission rates. "In this way, the resource would not simply lie unused in those hours when it otherwise could provide energy or ancillary services. Transmission ratepayers could then receive the value of those market revenues as an offset to the entity's revenue requirement," PJM said.

To prevent transmission owners from becoming market participants and potentially violating corporate separation rules and FERC's Standards of Conduct, PJM said storage assets could be housed in a separate company, which would have a contract for reliability-based services with the transmission owner.

Test Cases

PJM said the commission will need to provide guidance on issues such as defining undue discrimination and designing compensation models that avoid distorting markets. "In order for the commission to address these issues in an informed way, the industry may need to present specific situations that planning authorities and ultimately the commission can use as 'test cases' to help further develop future policy," the RTO said.

Storage Won't End RMR Generators, FERC Panelists Say

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process for such situations “extends the timeframe ... because it’s going to take us longer to go through all the projects to figure out reliability and sufficiency and what we can deal with.”

“Not a bad idea,” DeSocio added. “Just it will add time to the process.”

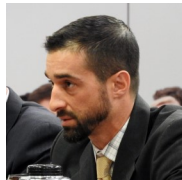
Little Experience

Grid operator representatives acknowledged they haven’t had much experience with such projects. Millar was the only one who provide an example, saying about 110 MW of storage will be used to respond to the closure of the Aliso Canyon natural gas storage facility. “That was probably the most expedited procurement of storage we’ve seen,” he said.

The California Public Utilities Commission ordered the procurement in August, and projects are required to be completed by Dec. 31.

Part of the issue, developers said, is that the grid operators aren’t prepared to handle the flexibility of storage, so developers haven’t made the effort to propose projects.

“I think generally speaking, most of your ISOs/RTOs right now have an open-



mindedness toward storage as a non-transmission alternative,” said **John Fernandes** of Renewable Energy Systems Americas. “Not everyone

might be far enough along to do the complex modeling that’s needed to optimize the system. ... I think there’s possibly a little bit of a disconnect between ‘sure, we’ll go in to take a look’ and ‘yes, we will actually deploy this.’ Until the developer community has some level of certainty that there is at least some likelihood that non-transmission alternatives will be selected, it’s hard for us to justify spending the time, the resources, the effort to really put together viable projects.”

Getting the Green Light

Storage isn’t likely to get special consideration from operators. “Looking at all the variables, if energy storage meets that cost, the lowest methodology, that’s fine if we go with energy storage. But if some other technology can meet the same solution at a lower cost, then we would favor that,” said Charlie Bayless, of the North Carolina Electric Membership Corp., who represented the National Rural Electric Cooperative Association.

“A competitive process is of interest if we



NCEMC’s Charlie Bayless (left) and ESA’s Jason Burwen | © RTO Insider

can, one, agree on a manner in which it is able to happen expeditiously, but also two, we should be looking at this as a manner that is in fact adding value by reducing the costs of this particular solution to the system,” said Jason Burwen of the Energy Storage Association.

“We’re looking to compete at cost with all the other resources being considered,” Fernandes said. “[We’re] not looking to shoulder ratepayers with a neat little experiment here. We’re justifying this in front of regulators everywhere.”

However, storage needs to be able to serve multiple functions to make it economical, he said. The single RMR revenue stream is insufficient. “I might also want to participate in the real-time market at certain times,” he said.

FERC Panelists Debate Storage Uses, Compensation

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technologies that is evolving and has abilities to contribute to the provision of electric service to customers that I’m not sure we can fully understand,” Commissioner Cheryl LaFleur said.

“I think it’s very important that FERC continue to work on removing barriers to entry” for energy resources, Chairman Norman Bay said.

‘Old Duality’

Lorenzo Kristov, principal of market and infrastructure policy at CAISO, said the versatility of storage depends the “old duality” of resources and load because loads can become resources by installing devices behind the meter that enable “storage-like behavior.”

“Storage-like resources on the grid, we

think, really have the potential to really multiply in their volume and variations and scope,” Kristov said. “There are lots of opportunities for multiple-use applications,” he said.

Heidi Nielsen, an attorney in FERC’s Office

of the General Counsel, started the discussion with a reference to FERC’s 2010 rule-making on storage, which designated Western Grid Group’s storage batteries as transmission facilities, reflecting their function of providing thermal overload protection ([EL10-19](#)).

The commission barred Western Grid from making sales into wholesale organized markets to address cross-subsidization concerns — fears that markets could be distorted if some participants can recover cost-based rates, allowing them to potentially underbid those that have no cost-based assets.

The commission also expressed concerns that RTO independence could be compromised if the grid operator is responsible for the profitability of the electric storage project’s charging and discharging, “rather than simply carrying out a market participant’s



CAISO’s Lorenzo Kristov (left) and S&C’s Troy Miller | © RTO Insider

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instructions.”

The grid operators said storage is not an option for providing black start service.

“We have had experiences where we had to look at how much volt current the battery can produce when you’re starting up systems because the rest of the transmission system is counting on adequate volt current to be able to tell the difference between running load versus if there has been a fault on the system,” said Neil Millar, CAISO’s executive director of infrastructure development. “Without enough volt current, the protection challenges really climb.”

Having a dispatchable negative load, on the other hand, is “very helpful to a grid operator,” said Michael DeSocio, senior manager of market design for NYISO. Pumped storage in particular is “a tool that grid operators love to have,” he said.

Kiran Kumaraswamy, market development director at AES Energy Storage, said that when storage is deployed to respond to overloads, it tends to be “severely underutilized.”

“We do think there are definitely opportunities for us to pursue both [ancillary and transmission service] in a manner that doesn’t invade market operations,” he said.

Clarifying Concepts

Sarah Van Cleve, energy policy advisor at Tesla Motors, asked panel participants to consider what the industry means by the term “multiple-use.”



She defined it as a device that can provide services across at least two of the four “traditional buckets” of services, which she described as transmission, distribution, wholesale market and customer-located services — such as backup power or energy price arbitrage.

“There is really a spectrum of what’s meant by dual-use or multiple-use” with respect to energy storage devices, said Jeff Nelson, director of FERC rates and market integration at Southern California Edison, which has already signed contracts for about 500 MW of storage. Nelson said storage can simultaneously serve such functions as voltage support, reactive power and capacity. At the same time, on the retail side, a storage resource can provide end-users the



PG&E’s Aparna Narang (left) and SoCalEd’s Jeff Nelson | © RTO Insider

ability to shave peak demand, helping to reduce retail demand charges and shift consumption patterns under time-of-use rates.

And storage can further furnish reliability services at the distribution grid level — by reducing voltage constraints, preventing voltage overheating and improving voltage quality.

“So, done properly, they can provide all these services, to a certain degree, at once,” Nelson said.

Old School, New Technology Storage

Aparna Narang, director of short-term electric supply at Pacific Gas and Electric, provided examples of how two very different storage resources fulfill multiple, simultaneous functions.

The first is old-school technology: PG&E’s 1,200-MW Helms pumped storage facility east of Fresno, Calif., which bids energy and ancillary services into CAISO’s wholesale market and is capable of simultaneously providing regulation and spinning reserve services.

The facility is also equipped to absorb volt-ampere reactive (VAR) power while generating electricity, which makes the pump side of the plant available for emergency out-of-market dispatch for voltage support.

PG&E’s more modern example is a 4-MW battery located in Yerba Buena that mostly provides frequency regulation services but can also function concurrently as spinning reserve.

It also has an additional use: The seven-hour battery offers one of the utility’s large customers the ability to “island” — or temporarily separate from the grid — in the case of

grid instability.

Narang acknowledged that managing storage for multiple uses can be complicated. “The level of complication really varies based on numerous dimensions associated with each of the storage devices, including the duration of the resource and the services it provides, whether there are multiple users, whether it’s on the transmission or distribution system [and] whether it’s predictable,” she said.



“The simultaneous nature is really just a physics question,” said **Ted Ko**, director of policy at battery system designer Stem. But there’s a fundamental limitation to

any battery system that restricts the type of electricity market services that can be provided simultaneously.

“You can’t do one service that causes you to discharge and one service that causes you to charge [simultaneously]. That doesn’t make any sense,” Ko said.

Michael Kintner-Meyer, a researcher with the Pacific Northwest National Laboratory, said the “pitfall” of simultaneity is “that we’re just adding up too many services at the same time,” creating the risk of over-compensating for a resource’s contribution to the energy market when that resource is technically incapable of delivering if called upon.”

“We still have to obey the laws of physics there and not go over the rate of capacity in terms of power, as well as in terms of electric energy,” Kintner-Meyer said.

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Texas Renewable Industry Unfazed by Trump Environmental Policies

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Agreement, has shown little affection for renewables but promised to “save” the coal industry and reduce restrictions on natural gas production.

“Obviously, there is some uncertainty,” Schultz said Friday, before participating in a panel discussion during the Texas Renewable Energy Industries Alliance’s GridNEXT conference. “It’s probably more the climate goals ... whether they’re under threat or whether they’re actively implemented at this point. ... [The U.S.] probably just won’t participate very much” in the Paris Agreement.

Others at GridNEXT also shrugged over the incoming administration’s effects on the renewable industry. Only a couple of speakers briefly mentioned the subject, and hallway discussions were animated less by concern over politics than excitement over emerging renewable and battery storage technologies.

State RPS, Federal Tax Credits Remain

One reason there was little alarm is that states — through renewable portfolio standards and policies favoring rooftop and utility-scale solar — are continuing to create demand. (See related story, *Michigan Senate Increases RPS; Keeps 10% Retail Choice*



RTO Insider

Cap, p.25.)

Another is that Congress last year approved legislation extending wind tax credits through 2019 and solar credits through 2021. (See *Solar to Shine Under ITC Extension*.) The bill also eliminated the longstanding ban on the export of crude oil.

The solar industry has added more jobs than oil and gas in each of the last two years, while the Bureau of Labor Statistics [says](#) that the fastest-growing occupation through 2024 will be wind turbine technician.

Pointing to the industry’s economic development, Hala Ballouz, president of Electric Power Engineers, expressed doubt the tax

credits would be revoked, a sentiment others at the conference shared.

“That would not be a wise battle. It would be a hard thing to reverse,” she said. “Energy choice, job creation ... those are things Americans like.”

“I think it would be quite an effort to reverse the extension that was in place,” Schultz agreed. “Many in Congress who were involved in that approval are still there. Ultimately, the extension was tied to the export of oil, so it was kind of a *quid pro quo*. There was dealmaking, so there may not be strong support ... going back on a deal that

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Primary Obligation

The panelists generally agreed that while storage may be able to perform multiple functions, it should be managed with an eye to fulfilling its primary obligation. “If you’re going to do other things, you need to have enough capacity for your priority,” said Troy Miller, director of grid solutions at S&C Electric, a Chicago-based company that provides energy management and grid-scale storage to transmission and distribution network operators.

PG&E’s Narang pointed out that the key function of the Yerba Buena battery is to provide islanding services for the utility’s customer. For that reason, the system always maintains a 50% state of charge, with

the balance of the capacity offered into the CAISO market. “And when you island, you take [the battery] out of the market,” Narang said.

Who is in Control?

For SoCalEd’s Nelson, grid safety and reliability should be foremost.

Nelson offered a hypothetical example of a distribution-located resource that at times provides ancillary services to an ISO. In that situation, the distribution service operator (DSO) puts the storage resource through an interconnection process designed to allow safe operation, Nelson said. But as the resource begins to provide multiple services, the DSO — in an attempt to maintain reliability — might impose restrictions that prevent the resource from participating in the wholesale market.

The control of the storage should depend on

whether the device is interconnected into the transmission or distribution network, Nelson said. “The direct connector needs to have the ultimate say on what’s safe or not safe to operate.”

Nonperformance Penalties

CAISO’s Kristov said that ensuring a storage device acts as promised will require specifying its obligations and setting penalties for not performing.

Kristov said the industry might need to define nonperformance penalties and incentives in ways that “capture” the priorities for a particular storage device, which could change over time. And penalties should be commensurate with the overall effect on the grid.

“How serious is the impact of nonperformance and how strong are the incentives we need to have?” Kristov asked.

Texas Renewable Industry Unfazed by Trump Environmental Policies

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was struck.”

But few expect the subsidies to be extended beyond 2021.

“With the election, we’re not going to get the government support we’ve been used to, so we’ll have to be cost competitive,” Texas Energy Aggregation’s T.J. Ermoian said.

During his campaign, Trump railed against the Obama administration’s “war on coal,” overlooking market dynamics that have made gas-fueled power plants much more attractive than coal-fed units. He derided “fast-tracked” wind projects that “kill more than a million birds a year” and said “the problem with solar is it’s very expensive.”

Falling Prices

A [study](#) last year by the Lawrence Berkeley National Laboratory, however, found that prices for installed PV solar fell more than 50% between 2009 and 2014 – and are still dropping.

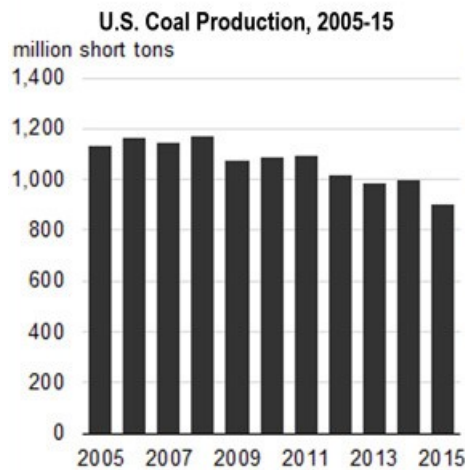
“The developments we’ve been hearing today – that storage [costs are] coming down and how people and solar and storage can work together – all those things will proceed,” said Cyrus Reed, conservation director for the Sierra Club’s Lone Star chapter.

“I don’t see a huge change in markets for renewables, whoever the president is,” Reed said. “The market forces in place are such that I don’t see renewable energy impacted in a big way under the new administration. I think it will continue to develop. The big deals that Congress and the president made on the [tax credit] extensions ... are likely to continue, so that gives some certainty to the industry.”

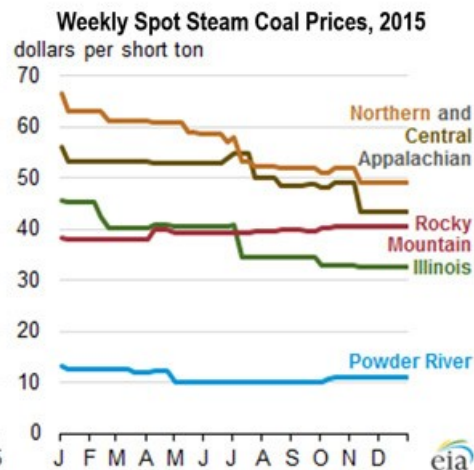
“This industry will stand on its own,” agreed Schultz, “and I think it will do that over the runway they’ve mapped out with the current incentives. I think you still need that support to keep driving this industry.”

Energy market forces include natural gas prices in the \$2-3/MMBtu range, thanks to the fracking revolution. It is those prices that have primarily driven down the use of coal, and few expected those costs to change, given Trump’s emphasis on fossil fuels.

“With the election results, gas could remain low for a really long time,” said Hans Royal, associate vice president of strategic



Coal production, prices down



renewables for Renewable Choice. “That poses a challenge to renewable buyers.”

“Every time he talked about energy, it was usually in relation to the coal industry,” said Chris Foster, manager of resource planning for the city of Georgetown. “We’ve told people for years the only way to bring back a lot of the coal in our area is to essentially figure out how to raise the prices on natural gas. Those [coal and gas industries] are two lobbies in Congress that are usually together, so we found it highly unlikely one would pivot [against] the other. ... So under [Trump’s] administration, we also don’t expect [many] changes.”

Foster is one of the driving forces behind Georgetown’s drive to provide its more than 54,000 residents with [100% renewable power](#) by 2017. The 50-50 mix of wind and solar will be supplied by EDF Renewable Energy and SunEdison, respectively, through a combination of long-term, low-cost power contracts.

Red States Go Green

“This area is red for political reasons, but the reality is, renewable energy in Texas is getting so cheap every day,” Foster said. “Let’s say Capitol Hill went and said, ‘You know what, all those subsidies are done.’ It wouldn’t change the growth pattern of the wind industry here, because [it’s] economically competitive now. It would only delay some of the solar stuff by a couple of years, because of the timing of the pipeline the projects are in.

“The reality is, Texas has such a great wind profile and such a great solar profile that economically speaking, [renewables] are going to compete, with or without those subsidies.”

Indeed, a Brattle Group [study](#) in May predicted that natural gas and renewables could provide 85% of ERCOT’s demand by 2035, with coal’s contribution reduced to 6%. Schultz said he is seeing similar receptiveness to renewable projects in the equally red Southeast, where much of his work is. He said a Tea Party group in Georgia has been pushing renewables from the perspective of energy choice and avoiding regulated monopolies, and that Southern Co. subsidiary George Power recently issued an integrated resource plan that calls for “a big chunk of renewables.”

“This latest one had 1,000 MW of renewables over the next two or three years. They’ll have 700-plus solar megawatts in the ground by mid-next year,” Schultz said. “It’s a bipartisan issue ... as compared to climate change. You talk to the landowners, they get it. They’re benefiting from this.”

Wind development has taken off in the Great Plains, where the wind is plentiful and the states – Kansas, Nebraska, Oklahoma and the Dakotas – are as red as they can be. When Trump made a campaign stop last November in Iowa, another hotbed of wind energy, he was asked about his stance on wind subsidies.

“I’m fine with it,” the candidate told his questioner. “Wind is a problem because it’s very expensive to build the towers. Very, very expensive. Wind will need subsidies. It’s going to have subsidies.”

Of course, that was then. Now, Reed said, environmental and renewable advocates will continue to make their case.

“We will continue to work on these issues, and we will continue to talk to people of all political stripes about the benefits of renewable energy.”

Overheard at the TREIA GridNEXT Conference

GEORGETOWN, Texas — Almost 150 national and regional renewable energy industry representatives gathered here for the Texas Renewable Energy Industries Alliance's GridNEXT conference. ERCOT CEO Bill Magness and NYISO CEO Brad Jones both delivered presentations, and panel discussions focused on distributed generation, storage technologies, renewable power and the various challenges facing the ERCOT grid.

Future Prices in the Texas Market

Magness opened the conference with a SWOT analysis of ERCOT. In listing the strengths, weaknesses, opportunities and threats facing the ISO, Magness' focus became apparent: the ability to keep track of distributed energy resources (DERs) and their integration.

He noted ERCOT has about 900 MW of distributed generation connected in its retail-choice areas and "roughly" another 200 MW in the market's noncompetitive areas.

"That's not a huge penetration at this point. These resources don't raise a long-term reliability issue and we're not waving a red flag, but we expect to see more," Magness said. "We need to come up with a process to map those DERs. It's the distribution service provider's job to model the system, but we

DERs "don't raise a long-term reliability issue and we're not waving a red flag, but we expect to see more."

Bill Magness, ERCOT

want to map those things into things we're responsible for."

Magness said ERCOT will soon be issuing a white paper on DERs and asked for stakeholders' help with improving the resources' visibility. "We want to work with you on that. We've got to get an answer, because it's holding up the usefulness of the ERCOT system."

He likened the ISO to an Austin-area moving company. "Their motto is, 'If we can get it loose, we can move it,'" Magness said. "If we can see it, we can integrate it."

NYISO CEO Explains 50-by-30

Magness' counterpart at NYISO, the Texas-native Jones, delivered the conference's keynote address. Jones detailed the ISO's plan to meet New York's "50-by-30" goal: 50% renewable energy use by 2030. To meet that goal, NYISO would have to add either 25,000 MW of solar, 15,000 MW of wind or 4,000 MW of hydro by 2030; it currently has 1,700 MW of wind and 3,000 MW of hydro.

"It's a significant overall goal, but this is the goal, economy-wide," Jones said. "It includes transportation, it includes home heating, it includes all those elements. Electric generation would have to decrease production by 60% to account for increases in transportation."

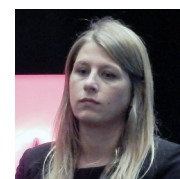
He said New York's recent actions to protect the region's aging nuclear plants will help the transition to a lower-carbon fuel mix. "The state has been very firm: We need to maintain nuclear generation," Jones said.

The state "had a real concern it would lose these real low-carbon facilities, and that it would make it almost impossible to achieve

this 50-by-30 goal. [The nuclear facilities] did it by making a side arrangement with the government. Utilities will charge the customers for it to provide enough financial support to keep them in N.Y. If we're going to be a low-carbon [grid operator], we have to make sure we're paying for the attributes we want, whether that's fast-ramping capacity or baseload gen or low carbon or renewable facilities."

Renewable Energy Credits: All About the Money?

Addressing the issue of corporate procurement of renewable energy, **Jessica Adkins**, a partner with the Bracewell law firm, said there are differences among major corporations seeking renewable energy credits (RECs). "If your goal is to say you're buying green energy, that's easy for people to do," she said.



"If all your goal is to claim you're buying renewables, you can offset usage with RECs. Where Amazon is going is additionality. They want to do more than go green. They want to tell their customers they're putting renewables on the grid."



"In our business and outside our business, I'm seeing a further diversification of companies doing these kind of deals," said Adkins' fellow panelist, **Hans Royal**,

associate vice president of strategic renewables for Renewable Choice. "They don't really have an environmental goal, but they see the fixed price of energy. Education is the No. 1 hurdle to why we're not seeing a faster adoption. It's coming ... industry organizations are actively sharing information and trying to create a community in the purchase-power space. Getting information out to those companies is key."

Texas Energy Aggregation's **T.J. Ermoian** said the issue is the color of money, no matter where customers are. "If they see the government investing in [renewables], they'll be more comfortable," he said.



"Being in Texas, we're energy-rich. I tell people I'm in the middle [of the state] between George Bush's ranch and Ted Nugent. We're in the reddest of red states," Ermoian said. "I start talking about climate change in Texas, and the eyes start to glaze



ERCOT CEO Bill Magness (left) and NYISO CEO Brad Jones (right) share a laugh with Hala Ballouz of Electric Power Engineers. | © RTO Insider

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Overheard at the TREIA GridNEXT Conference

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over. Money is the greenest thing people understand. If we can give them a compelling economic vision and quantify what they've been paying and say, 'Here's what you could be paying.' ... Well, most people are pretty good at math."

Energy Storage a Positive 'Disruptive Technology'



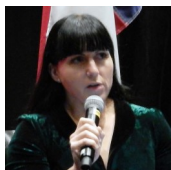
Referring to energy storage as a "disruptive technology," Narrow Gate Energy President **Darrell Hayslip** was one of several panelists who predicted a brighter

future for the technology.

"We're all trying to figure out where will storage go. Where will it play?" he said. "We've done a lot to prove out this technology. The trick now is how are we going to apply it in the system. These are disruptive technologies that require some changes.

"It's something new we've never had before. Cars wouldn't do any good without highways, cell phones without infrastructure. We've got to see infrastructure catch up. The builders don't make that investment unless they see benefits come out."

Fractal Business Analytics CEO **Judy McElroy** said she is finding "compelling reasons" for solar and storage in ERCOT. She predicted one of the largest municipal utilities in Texas — thought to be San Antonio's CPS Energy, with nine solar farms already generating 230 MW of energy — would be issuing a request for proposals within a week for energy storage solutions.



"We're seeing in ERCOT the evolution a utility goes through. They'll do solar first, then storage," McElroy said. "You have to take into account that from a utility's perspective, things take a lot of time. It's

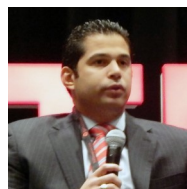
sometimes more complex than it needs to be."



"A lot of people are looking at RFPs in the future," said **Bradley Feuge**, head of project management for German solar manufacturer KACO new energy.

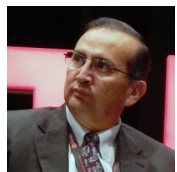
"Once this big RFP comes out ... this municipality kind of sets the pace in the state. They're seen as a leader nationally, and once they take the leap, you'll see more people stepping out there as well."

"Once you add solar to storage, then you essentially have a microgrid that can sustain an hour or so of outages," said **Hugo Mena**, Electric Power



Engineers' vice president of business development. "EPE has seen this coming for a couple of years because the integration of storage, whether to a solar plant or a wind farm or storage as a transmission asset, is positive for the grid. The question now is, when it is going to be economically feasible for developers or utilities to implement this technology in their systems. We've seen at the municipal level that it's become economically feasible, but some [investor-owned utilities] are also installing storage for microgrid purposes."

Transmission Planning: More Complicated than Rocket Science



Bill Bojorquez, Hunt Power's vice president for transmission planning, said during a panel focused on Texas transmission that continued solar and wind

development in the state will not be able to take advantage of initiatives like ERCOT's Competitive Renewable Energy Zone (CREZ). The \$7 billion project facilitated the construction of 3,600 miles of transmission lines, connecting West Texas wind farms

with the state's huge metropolitan load centers.

"We have a lot of solar development coming into West Texas, but this area has a weak transmission grid," Bojorquez said. "Without CREZ, wind and solar are going to have to follow the same process of any other generation. You're going to have to commit before we can plan for you."



"Twenty-five years ago, transmission couldn't get funding in a company. It was all about generation and keeping things patched together so we didn't get into trouble at the commission," said **Calvin Crowder**, president of GridLiance's South Central Region. "The returns in Texas are attractive considering what else you've seen. There's been a lot of transmission invest in the investor-owned utilities, the municipal power utilities and the municipal power agencies, as well as the co-ops."



Ken Donohoo, Oncor's director of system planning, distribution and transmission. "We as planners have to think about a lot more changes and complexity. Communications and control is key."

As an example, Donohoo said Oncor has more than 9,300 rooftop solar installations on its system. "We know where every one of those is on our system," he said.

"Transmission planning isn't rocket science," Crowder said. "I talked to a planner once and they said, 'That's right. It's a lot more complicated than putting a rocket in the air.'"

Distributed Generation and Microgrids: Evolving Business Models

Thomas McAndrew, whose Enchanted Rock company provides on-site, natural gas-fueled backup power, said his business provides what is essentially a microgrid control system.

"Our primary job is reliability," said McAndrew, Enchanted Rock's managing director. "We're creating a portfolio of quick-response natural gas assets. We think that's incredibly important in our current environment, especially in ERCOT. We're going to

"Apple, Google and others are registering to self-supply and become wholesale participants. I think you will see more of that, and it can be a boon to grid operators."

Brandon Middaugh, Microsoft

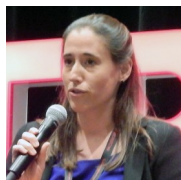
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Overheard at the TREIA GridNEXT Conference

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have periods of time in the shoulder months where we can displace almost all thermal generation. You may have wind at 90% of the supply stack, but we think it's important to have quick-start assets. We're there to buffer when we have sudden changes in either wind or solar generation."

Brandon Middaugh, a senior program manager with Microsoft, described what she saw as "an interesting trend" in the high-tech industry.



"You have these large, concentrated customer loads," she said. "When that's one of your main operating costs, it really drives an organization to build up capacity to interact more directly with the markets, to be more about this collaboration and understand how [electric] markets work today, how they're evolving and how that affects customers like Microsoft.

"There's more of a need on our part to interact directly with the whole market," Middaugh said. "That actually serves the grid operators and the utilities well. Apple, Google and others are registering to self-supply and become wholesale participants. I think you will see more of that, and it can be a boon to grid operators."

Distributed PV Modules Taking off in San Antonio, Elsewhere



San Antonio's burgeoning solar market was also a topic of conversation during a panel on distributed PV pricing. **Rick Luna**, CPS Energy's senior manager of

product development, said under the city's rebate program, customers are paid to host rooftop solar systems.

CPS Energy's board recently extended the seven-year-old program, though it is gradually reducing the rebate's amount. Luna said 500 systems will be eventually installed, noting the \$30 million program was expected to sell out next year. However, he said, there are downsides to the explosion of interest.

"That \$30 million will be spent by January," he said. "We've seen new market players from other markets coming to San Antonio and aggressively marketing to customers. We welcome them, but it's not always a fair

game. Customers don't always know what solar should cost ... they sign these contracts with \$20,000, \$30,000 commitments. We've updated our rules to try and educate our customers and give them some information to arm them and help them make a more informed decision."

"There's been some significant PV module pricing decreases this year," said **Eric Cotney**, vice president of sales and marketing for Dallas-based Axiom Solar. He attributed the 30% in cost reductions to better technology and lighter modules.



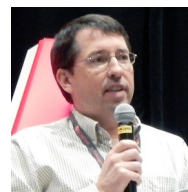
"PV modules are continuing to creep up in the power ratings. What used to be a 25-W power module is now a 275-W power module," Cotney said. "You add labor efficiencies into that because [technicians] are now able to work with smaller modules. And then racking companies are making their systems more minimalist with fewer bolts, making them lighter and faster to put together. As more of our crews are up on roofs and encountering different installation challenges, we're getting better at what we do."

Solar Marketers Debate Texas Market's Future

Another panel debated whether there's still room for growth in the Texas market, with ERCOT showing 2,000 MW of solar generation with signed interconnection agreements and the ISO's long-term studies showing another 20,000 MW in potential additions.

"In states like Texas, where the overall weighted power prices are low, it's a race to deliver solar at prices that compete with traditional generation," said **Preston Schultz**, director of development for Chicago-based Hecate Energy. "Everything is definitely bigger in Texas. You've got

landowners who control large chunks of land, you've got an educated landowner base. In [the Southeast] we're having to educate landowners most of the time what the technology is. They just haven't seen it. We come to Texas, they know renewables, they know wind, they know solar on the utility scale. That just makes our job easier."

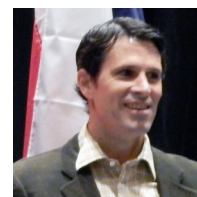


David Dixon, of renewable energy company Native, said his company sees the same growth opportunities in the Texas market. He pointed to the Public Utility

Commission of Texas' Power to Choose [website](#), where some retail electric providers are offering to [buy](#) customers' excess renewable energy.

"We expect to see double-digit growth, especially in the residential market. We're still seeing prices come down," Dixon said. "What we're not seeing is solutions for home storage aligning with the homeowner's expectations. We're in the early adopter's stage, but I do think in the future, we'll be installing storage solutions."

"The commercial markets have grown due to projects in North Texas, thanks to Oncor rebates," said **Mark Begert**, executive vice president and director for Meridian Solar. "Even 1- to 2-MW projects represent a pretty meaningful lift to the overall commercial market in Texas. The lower prevailing electricity rates are a challenge. Rooftop solar return requirements for solar customers are significantly higher than you see in the residential market. Commercial customers want their [internal rates of return] in the mid to high teens. They want payback in five years. The residential customer is more comfortable with eight to 10 years. That's a significant return threshold solar has to overcome."



— Tom Kleckner

"Everything is definitely bigger in Texas. You've got landowners who control large chunks of land, you've got an educated landowner base. ... We come to Texas, they know renewables, they know wind, they know solar on the utility scale. That just makes our job easier."

Preston Schultz, Hecate Energy

Renewables Win Some, Lose Some in State Election Results

By William Opalka and Rich Heidorn Jr.

Donald Trump's election wasn't the only race to have major implications for electricity policy. Renewable energy advocates claimed a victory in Florida while losing in Vermont and Washington state.

Nevada voters, meanwhile, took a step toward retail choice. And Trump's promise to scrap EPA's Clean Power Plan threatens to undercut Exelon's lobbying to raise electric rates in Illinois to subsidize its struggling nuclear plants.

Vermont

Wind power was dealt major blows in Vermont in statewide and local elections.

Incumbent Lt. Gov. Phil Scott, a Republican, who ran on an anti-wind power campaign, won the governor's office with 54% of the vote.



Renewable Energy Vermont

Although Scott said he supports the regional clean energy goals advocated by the rest of New England, his website pointedly left out wind energy and emphasized solar, hydro and natural gas. Scott advocated a moratorium on wind turbines and endorsed more local control over siting in a series of questions posed by VTDigger.org. He campaigned to "protect ridgelines" from wind power development and said the focus on economic development should lie elsewhere.

"During the campaign, Governor-elect Phil Scott expressed support for Vermont's 90% total renewable energy goal. It may not be possible to achieve the state's clean energy and climate goals without wind power, [which] offers affordable and price-stable renewable energy," Olivia Campbell Andersen, executive director of Renewable Energy Vermont, said Friday. "With new wind projects being developed in our neighboring states of Maine and New York, it would be a loss to Vermont's economy, climate and renewable energy progress to entirely forgo future consideration of clean wind power in our state."

In local elections, nonbinding referenda in two towns in the southern part of the state rejected a 24-turbine project proposed by Avangrid Renewables.

"We are disappointed by the unfortunate outcome," Avangrid spokesman Paul Copleman told *RTO Insider*. "We are confident that the project would be a valuable and significant benefit to the local communities of Grafton and Windham, while also making an impact towards energy independence and climate change. However, as we have indicated, we plan to cease development unless the communities reconsider their decision."

In Grafton, the wind project was voted down 235 to 158. In Windham, the vote was 181 to 101.

New Hampshire

Democratic Gov. Maggie Hassan defeated incumbent Republican Sen. Kelly Ayotte by about 750 votes out of more than 700,000 cast in a Senate campaign in which the Northern Pass transmission project was one of the issues.

Ayotte had advocated burial of the entire 192-mile route, which project developer Eversource Energy said would make the project unfeasible. Hassan's campaign sought to increase the undergrounding of the line beyond the current 60-mile plan, but she did not indicate how much.

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Michigan Senate Increases RPS; Keeps 10% Retail Choice Cap

By Amanda Durish Cook

The Michigan Senate last week approved legislation that would increase the renewable portfolio standard while maintaining the 10% cap on retail choice and increasing requirements on alternative suppliers.

Senate Bill [438](#) requires utilities to meet progressive benchmarks of 12.5% renewable energy in 2019 and 15% by 2021, up from the current 10%. The language also includes a non-mandated goal of 35% renewable power and energy efficiency by 2025. Earlier versions of the legislation did not include renewable mandates, but Senate Democrats pushed for the measure.

Senate Bill [437](#) leaves Michigan's 10% retail choice cap unchanged while requiring alternative suppliers to pay a capacity charge to utilities if they don't produce their own power or have contracts with other producers. The state's two major utilities, DTE Energy and Consumers Energy, say they plan on expanding their capacity, but

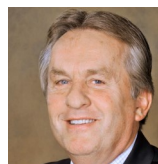
only enough to serve their existing customers.

After more than two-thirds support in the Senate, the package now heads to Michigan's House of Representatives.

"All Michigan ratepayers were thrown under the bus today by Senate leadership, forcing a vote on a bill that will increase costs on all ratepayers," Wayne Kuipers, executive director of Energy Choice Now, a coalition of businesses, trade associations and others seeking to increase competition, said in a statement.

The legislation also requires Consumers and DTE to file integrated resource plans as they retire coal facilities and look to make new generation investments. Consumers and DTE have said that they support the legislation.

Republican Sen. Patrick Colbeck voted against SB437 after his amendment to expand competition failed. "In this case,



Nofs

after all the work that was put into this legislation, there is simply still not enough here to protect ratepayers," he said. "The bills that we have voted on today not only keep the utility monopolies that are already in place but strengthen their grip on the ratepayers of this state."

Michigan's energy policy has not undergone major change since the 10% RPS standard was enacted in 2008. The Nov. 10 votes came after more than two years of work.

"This legislation is not about what's best for a few companies, organizations, or individuals — it's about what's best for the entire state of Michigan," said Republican Sen. Mike Nofs, chair of the Senate Energy and Technology Committee.

Gov. Rick Snyder (R) issued a statement after the passage, praising the bills. He said energy policy is a "major priority" this term and said he hoped to complete work on the policy before year-end. "These policies have the potential to save Michiganders billions of dollars and make our state's energy future much brighter," Snyder tweeted.

Renewables Win Some, Lose Some in State Election Results

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"I think it played a role, but in the general scheme of things the fundamental issues surrounding the presidential race took precedence over specific issues, whether those were gun control, abortion rights, Northern Pass or others," said Jack Savage, spokesman for the Society for the Protection of New Hampshire Forests, which has taken the project to court. "Hassan won the Senate seat by a narrow margin because [Hillary] Clinton took New Hampshire by an equally narrow margin."

Northern Pass is undergoing review until next year by the state's Site Evaluation Committee. In addition, a U.S. Department of Energy presidential permit, required because the line would cross international boundaries, is pending.

Florida

In Florida, voters rejected a proposal backed by Florida Power & Light and Duke Energy that critics said would have hamstrung solar's growth.

Amendment 1 received 51% of the vote, below the 60% required. It would have added language to the Florida constitution that critics said could raise fees on solar users and inhibit competition with utility solar.

Current state law already allows homeowners



SolarCity installers | SolarCity

to own or lease solar panels. By inserting Amendment 1 into the constitution, it would be harder for legislators to change it. But it also would have added new fees on rooftop solar owners, saying that "consumers who do not choose to install solar are not required to subsidize the costs of backup power and electric grid access to those who do."

The bill also would have inhibited third-party solar panel leasing.

The campaign may have been turned by the disclosure by the *Miami Herald* last month of a leaked audio recording in which one prominent supporter of Amendment 1 is heard saying it was "political jiu-jitsu" — a seemingly pro-solar measure that in fact would "negate" solar advocates' work.

The *Orlando Sentinel* reported that FPL, Duke Energy and Gulf Power, a Southern Co. subsidiary, spent \$25.5 million to promote the amendment.

The utilities, which also contributed at least

\$9 million to legislative campaigns and Gov. Rick Scott this cycle, may seek relief from current net metering rules from the legislature or state regulators.

Washington

Washington state voters rejected Initiative 732, which would have created the first state carbon tax in the U.S. The measure won only 42% support after a dispute between two environmental groups over its impact on poor communities.

The measure would have charged a tax that would begin at \$15/ton beginning in July 2017, rising to \$25/ton a year later and 3.5% plus inflation annually until it reached \$100/ton. The tax would have allowed a cut in the state sales tax from 6.5% to 5.5%. The top five contributors to the opposition campaign reportedly included Puget Sound Energy.

Nevada

Nevada voters approved an initiative to break up NV Energy's monopoly and create retail choice. The Energy Choice Initiative was primarily backed by large companies that have been blocked by high exit fees from seeking cheaper options, data center company Switch and the Las Vegas Sands casino company among them. The initiative must be approved again in 2018 to amend the state constitution.

Clean Power Plan, FERC's Bay, Honorable Among Losers in Trump Win

Continued from page 2

make good on that promise. The question is how they will do it — and will they do it in a way that will withstand legal scrutiny," he said. "Any action to revoke the plan will also be litigated, just like the plan itself."

Congress attempted to kill the CPP last year through the Congressional Review Act, which allows Congress to disapprove regulations that have an economic impact of more than \$100 million. Those disapprovals, however, must be signed by the president or his veto overridden by a two-thirds majority. President Obama vetoed Congress' CRA rejection of the EPA rule last December.

The GOP will retain control of the Senate by 51-48, with a December runoff election in Louisiana. Republicans will control the House by 239-193, with three races (two in California and one in Louisiana) still unde-

ecided as of presstime.

Environmental Groups Vow Resistance

The reaction from environmental organizations was a mix of shock and defiance.

350.org came out of the blocks with a message calling Trump's election "a disaster."

"But it cannot be the end of the international climate process. We're not giving up the fight and neither should the international community," the group said in a statement attributed to Executive Director May Boeve. "In the United States, the climate movement will put everything on the line to protect the progress we've made and continue to push for bold action. Our work becomes much harder now, but it's not impossible, and we refuse to give up hope."

The Environmental Defense Fund's political arm, EDF Action, said in a statement

Wednesday that Trump's positions are "in complete contradiction to the realities of climate science. Mr. Trump should listen to the scientific experts on climate change and recognize that a clean energy transition is already underway. America's economic future depends on embracing this trend," EDF said.

The Sierra Club called it "a deeply disappointing day for the United States, and the world."

"For people all over the country, the pain, anger and fear at the prospect of a Trump presidency are very real," Executive Director Michael Brune said in a statement that was nearly a call to man the barricades.

"What we know is that it would be extraordinarily difficult for Trump to remove the U.S. from the Paris Agreement," Brune said. "His position is already causing internation-

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Clean Power Plan, FERC's Bay, Honorable Among Losers in Trump Win

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al blowback abroad, and in very pointed ways that are in some respects unprecedented. If Trump does try to undermine climate action, he will run headlong into an organized mass of people who will fight him in the courts, in the states, in the marketplace and in the streets."

Earthjustice, a nonprofit environmental law organization, said Trump "might be the most anti-environment president in history" and suggested that Trump's EPA may face court fights from environmentalists akin to those the Obama administration had to fend off from industry and coal states.

"He has publicly stated that he does not believe in the overwhelming amount of evidence supporting climate change and his record on all matters involving justice, equity and human rights is troubling," Earthjustice President Trip Van Noppen said in a [statement](#). "Therefore, Earthjustice will be working overtime in the courts to hold President-elect Trump and his administration accountable under our nation's laws, which protect Americans' right to a clean and healthy environment."

Wind

Trump has called wind turbines expensive eyesores and decried their impact on bird populations.

Nevertheless, the American Wind Energy Association proclaimed itself "ready to work with President-elect Donald Trump and his administration to assure that wind power continues to be a vibrant part of the U.S. economy."

"An unstoppable shift to a cleaner energy economy is underway, and the fundamentals of wind energy in America are strong," AWEA said in a [statement](#), in which it noted that the wind industry has 88,000 jobs, "a quarter of them made-in-the-USA manufacturing jobs."

"In his victory speech early this morning, the President-elect said, 'We're going to rebuild

our infrastructure, which will become, by the way, second to none. And we will put millions of our people to work as we rebuild it.' Wind power is some of the best infrastructure America has ever built and we are on track to doubling it from today's levels by 2020."

Coal

In his campaign visits to coal country, Trump promised to put miners back to work. Regardless of what happens to the CPP, however, it's hard to imagine any utility board of directors authorizing construction of a new coal-fired plant when existing plants are having trouble competing with natural gas.

"Forget the Clean Power Plan. You cannot build a coal plant that meets existing regulation today that can compete with \$5 gas," Charles Patton, president of Charleston-based Appalachian Power, told a state energy conference earlier this year, as reported by American Public Media's [Marketplace](#). "It just cannot happen."

The Labor Department reported coal mining jobs have declined from about 84,600 in March 2009, after Obama took office, to 56,700 in March. At least six publicly traded U.S. coal companies have entered Chapter 11 [bankruptcy](#) proceedings since 2015.

Goldman Sachs issued a report in February [saying](#) that declining demand for thermal coal is "irreversible."

It followed a report last year that concluded "The industry does not require new investment given the ability of existing assets to satisfy flat demand, so prices will remain under pressure as the deflationary cycle continues."

The investment bank's conclusion contradicts the International Energy Agency, which [predicted](#) last year that coal consumption would rise by about 2.1% annually through 2019.

"This is a great day for America," Murray Energy CEO Robert Murray said in a [statement](#). "I have personally spent time with Mr. Trump, and I know that he will surround himself with the very best people to fix the

many problems facing our country. Indeed, Mr. Trump will finally implement a national energy policy whereby all energy sources will compete on a level playing field."

One of those people could be Myron Ebell, a climate skeptic and executive at the Competitive Enterprise Institute. Trump has vowed to take away EPA's regulatory powers and make it an advisory council. Ebell has been running the EPA working group for the Trump transition team and is seen as a contender for the EPA administrator post.

Trump has also said he wants to open federal lands to oil and natural gas drilling and coal mining. Forrest Lucas, cofounder of Lucas Oil, has been mentioned as a candidate for secretary of the Interior Department.

Nuclear Power

Despite Trump's opposition to the CPP — which could provide support for the carbon-free generation of nuclear power — the Nuclear Energy Institute said his election is good news for the industry.

"Despite a tepid economy, the Department of Energy forecasts a 23% growth in electricity demand by 2040, the equivalent of more than 200 large power plants," said Maria Korsnick, NEI's incoming CEO.

"Couple this with Mr. Trump's all-in approach to energy and it's apparent that the low-carbon, reliable electricity that nuclear energy facilities provide must continue to be a key part of the nation's energy portfolio."

"Throughout the presidential campaign, nuclear energy was a bipartisan issue and one of the few areas of general agreement between the candidates. Additionally, public polling shows that the importance of nuclear energy to this nation's energy mix is one thing voters could agree on, irrespective of their candidate preference."

Department of Energy

Trump's appointee to head the Department of Energy is sure to be less enamored than the Obama administration in investments in renewables and energy efficiency.

"Off the bat, it's likely to be a fairly antagonistic transition given the overall dynamics in the election and given his stances on energy," Teryn Norris, a former special adviser to the department, [told](#) Greentech Media. "Trump has repeatedly expressed disdain for renewables, and seems likely to gut those programs in" the Office of Energy Efficiency and Renewable Energy.



FERC under Trump: Donald Trump will get to fill two Republican vacancies on FERC and replace Democrat Colette Honorable when her term expires in June 2017. Chairman Norman Bay, a Democrat, will have to hand the gavel to one of the three Republican commissioners.



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