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

ISSN 2377-8016 : Volume 2017/Issue 8 February 21, 2017

Local Officials Appeal to FERC for Relief as Oroville Water Levels Recede

By Robert Mullin


Water rushes over Oroville Dam | *California Department of Water Resources*

Water levels behind the FERC-regulated Oroville Dam have continued to decline in recent days, falling to nearly 50 feet below the height of a severely damaged emergency spillway, according to the California Department of Water Resources (CDWR), the dam's operator.

On Feb. 12, local officials ordered the evacuation of about 188,000 residents after the erosion of a hillside beneath the dam's emergency spillway threatened to flood areas near the Northern California town of Oroville, located about 75 miles north of Sacramento. CDWR was required to use that spillway for the first time since the dam's completion nearly 50

Continued on page 14

Pruitt Begins Hostile Takeover at EPA

By Rich Heidorn Jr.


About 300 people, including dozens of EPA employees, held a lunch hour rally across the street from the agency's Chicago regional headquarters in opposition to Pruitt's appointment. | *Sierra Club*

WASHINGTON — EPA Administrator Scott Pruitt will address agency workers today in a bid to convince them he is not their enemy, despite having repeatedly sued the agency as Oklahoma attorney general.

Pruitt was sworn in by Supreme Court Justice Samuel Alito on Friday after the

Continued on page 36

Bay: Told Trump Team I'd Leave FERC if Demoted

By Michael Brooks and Rich Heidorn Jr.


Bay

WASHINGTON — Former FERC Chairman Norman Bay says he told the Trump transition team he would likely leave the commission if he was replaced as chairman.

Bay's Feb. 3 resignation, which came after President Trump appointed Cheryl LaFleur as acting chairman, left FERC with only two commissioners, one short of the quorum needed to rule on contested cases. (See *FERC OKs Pipelines, Delegation Order Before Losing Quorum*.)

Speaking at the Energy Storage Association's annual policy forum at the National Press Club on Wednesday, Bay said he was following FERC tradition that the chair leaves after he is replaced.

"The tradition at FERC, with one exception" — LaFleur — "is for a former chairman to leave," Bay said. LaFleur remained on the commission after Bay replaced her as chairman in 2015.

Also without a quorum following the departures of their chairs are the Securities and Exchange Commission and the Federal Trade Commission.

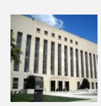
But Sen. Dean Heller (R-Nev.), who also appeared at the storage forum, said he was disappointed at Bay's departure, saying it

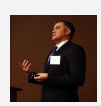
Continued on page 13

NARUC Winter Meetings 2017

Other Conferences Last Week

Also in this issue:





10837 Deborah Drive ▣ Potomac, MD 20854 ▣ (301) 983-0375 ▣ info@rtoinsider.com
▣ www.rtoinsider.com ▣

RTO Insider

CAISO ERCOT ISO-NE MISO NYISO PJM SPP

Editorial

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

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

Production Editor
Michael Brooks 301-922-7687

MISO Correspondent
Amanda Durish Cook 810-288-1847

SPP/ERCOT Correspondent
Tom Kleckner 501-590-4077

CAISO/West Correspondent
Robert Mullin 503-715-6901

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

PJM Correspondent
Rory D. Sweeney 717-679-1638

Subscriptions and Advertising

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

Account Executive
Marge Gold 240-750-9423

Marketing Assistant
Ben Gardner

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

Subscription Rates:

Payment Frequency	PDF-Only	PDF & Web
Annually:	$1,350.00	$1,650.00
Quarterly:	380.00	475.00
Monthly:	150.00	175.00

See details and Subscriber Agreement at rtoinsider.com.

In this Week's Issue

NARUC Winter Meetings 2017

40 Years on, States Still Struggling to Implement PURPA, NARUC Told

By Rory D. Sweeney

From left right: Greenfield, Peskoe and Kowalczyk | © *RTO Insider*

WASHINGTON — While FERC has given states a wide berth for determining the avoided-cost rate for qualified facilities under the Public Utility Regulatory Policies Act, other regulatory inconsistencies and utility "recalcitrance" have hindered the law's implementation, a panel of experts told regulators this week at the National Association of Regulatory Utility Commissioners' winter meeting.

PURPA was established in 1978 to diversify the country's energy supply, increase efficiency, reduce dependence on fossil fuels and develop a market for independent power producers. It requires electric utilities to purchase the output of cogeneration and small power-production "qualifying facilities" (QFs) at the cost a utility would incur for supplying the power itself or by obtaining supplies from another source. The law leaves it to each state's utility commission to formulate those "avoided costs."

No Second-Guessing

"We have been very explicit about this: We are reluctant to second-guess a state's determination on avoided costs," said Lawrence Greenfield, a senior attorney at FERC.

The Energy Policy Act of 2005 amended PURPA to allow termination of the must-buy requirements if FERC finds that the QF has nondiscriminatory access to make market sales. The commission has ruled that includes QFs of more than 20 MW that participate in RTO markets. (See *FERC: Entergy not Required to Buy from Large QFs*.)

Greenfield noted that the most recent litigation over PURPA has been in non-RTO regions.

"I'm not sure what that says exactly about RTO markets, whether they are more efficient or less efficient, more pro-QF or less pro-QF, but it is an interesting observation that the litigation seems to be concentrated in non-RTO markets," he said.

He later added that retail choice and resource diversification might draw consumers to other generators "and that might indirectly impact QFs, but we certainly haven't seen it in the cases we have had."

Irene Kowalczyk, director of global energy at paper and cardboard manufacturer WestRock, said it's "probably harder" to get PURPA-based contracts in open-access states because the utilities don't own the generation and aren't issuing major requests for proposals.

'Black Box' Avoided-Cost Formulas

"In regulated markets, PURPA is somewhat working," Kowalczyk said, though she added that states' avoided-cost formulas are often a "black box," with inconsistent methodologies and no overall framework.

"Notwithstanding the complaint about FERC's 1-mile rule, today's complaints about PURPA are nothing new and echo complaints made 30 years ago, when PURPA was initially implemented," said Ari Peskoe, a senior fellow in electricity law at the Harvard Law School.

The "1-mile rule" requires developers to maintain a 1-mile buffer between projects to qualify them as separate QFs. The commission implemented the provision to prevent developers from "disaggregating" large generation projects into smaller units to qualify under PURPA.

Peskoe argued that much of the blame for slow implementation should be focused on utilities.

"When a utility today claims that it has an abundance of QF energy, I suggest it's worth investigating how the utilities actions may have contributed to that situation," he said, noting that many utilities continue to overestimate demand growth in their integrated resource plans. "To what extent utilities' inaccurate load forecasts, failure to account for those mistakes and lack of foresight about the development of renewable energy technologies contribute to their perceived abundance of QF energy, should the utility be held accountable for these mistakes? How can regulators do so while protecting ratepayers? These are obviously not easy questions to answer, but I suggest they are worth asking."

Combined Heat and Power

Kowalczyk

Kowalczyk, who also represented the Industrial Energy Consumers of America, said the rules need to be revised, clarified and standardized across all states so that utilities regard QFs in the proper context.

"The RTO rules treat industrial CHP [combined heat and power] and waste-heat recovery QFs as if they're merchant power plants that sell power as their primary business," she said. "To achieve the lowest cost possible for the ratepayers, states should encourage utilities to develop technology-specific avoided cost rates for each resource type. ... The minimum term for QF contract should include 10 to 12 years of capacity payments for QFs of all sizes in fully regulated non-RTO areas and in RTO markets for smaller QFs."

Continued on page 4

NARUC Winter Meetings 2017

Panelists Weigh Prospects for Nuclear Waste Solution Post-Obama

By Rich Heidorn Jr.

WASHINGTON — Little more than a month after taking office in 2009, President Barack Obama ordered the Nuclear Regulatory Commission to stop work on a permit for licensing the nuclear waste depository at Yucca Mountain in Nevada. Obama acted at the behest of then-Sen. Harry Reid (D-Nev.).

The license application for the site, almost 140 miles northwest of Las Vegas, was the product of 30 years of work and $15 billion in spending, and the cancellation outraged nuclear operators and state regulators.

With Reid retired and a new president in office, two major political obstacles to Yucca are gone. But that doesn't mean it will be quick or easy to solve the problem that has left the waste stored at almost 100 nuclear sites around the country.


Zach

"The last eight years has … just been a major setback for our nuclear waste policy," Andy Zach, a staffer on the House Energy and Commerce Committee, told the National Association of Regulatory Utility Commissioners.

"It is going to take us a long time to dig out from where we are. That goes across the board: setting up an organization; reconstituting the key support contractors who did the work on the license application. … There has been an atrophy of talent, physical assets and a knowledge base that is going to have to be rebuilt."


McKenna

Michael McKenna, president of lobbying firm MWR Strategies, said the government has to be "nimble" enough to move toward Yucca and also develop an interim storage facility until the site is approved and ready to accept shipments.

But Jack Spencer, vice president of the Heritage Foundation's Institute for Economic Freedom and Opportunity, said he believes an interim site is a mistake. "I think it releases all the pressure to complete Yucca Mountain," he said.

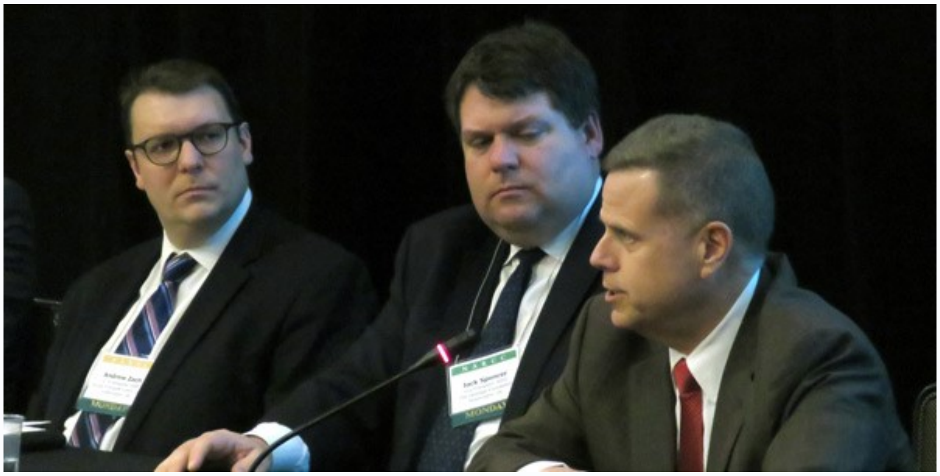
Spencer said he believes Nevada's opposition to the site can be overcome.

"I think that Nevada probably is largely against nuclear waste at Yucca Mountain in the context of it's been [forced on it].

"I am nothing if not a believer in a free market, and I think most things have a price on them. And I think by … empowering [Nevada] to have some regulatory control — to say, 'This is what it's going to cost you' — I think that we will probably negotiate something that will lead to a solution there."

Spencer also said the 1982 Nuclear Waste Policy Act, which directed the Department of Energy to build a repository for used nuclear fuel and other high-level radioactive waste, should be rewritten.

"I think ultimately what we need in order to have the system work is to have the waste producers responsible for waste management," he said. "My theory is [utilities] can do it cheaper than the government."


Left to right: Zach, Spencer and McKenna | © *RTO Insider*

40 Years on, States Still Struggling to Implement PURPA, NARUC Told

Continued from page 3

Kowalczyk added that it's hard for CHP units to perform as capacity resources because their output is entirely dependent upon the steam requirements of plant's primary manufacturing process. The rule's inconsistencies have reduced enthusiasm for such projects. "I don't think any new CHP-type facilities have been installed in those RTO markets … because they can't get the financing. The RTO markets aren't sufficient to provide sufficient compensation that is certain to enable those QFs to be built. So what we've seen since the passage of the Energy Policy Act of 2005 is a significant reduction in the amount of CHP and waste-heat recovery-type facilities being built."

Payments to QFs in PJM are often based on energy and capacity clearing prices, she said, though Peskoe noted that courts have ruled that the avoided-cost rate can't be based on spot-market prices.

Greenfield said FERC prefers that utilities and QFs negotiate mutually agreeable terms, but that it's also interested in seeing QFs sign long-term agreements. He added that FERC doesn't have any specific revisions to the law that it would like to see made to the law.

"We at FERC are largely agnostic about changing PURPA," he said. "Our view is: Whatever Congress tells us to do, that's what the hell we're gonna do."

In a separate NARUC session, acting FERC Chairman Cheryl LaFleur had the same message. Changes that people have asked FERC to make to PURPA rules "are really legislative changes," she said.

NARUC Winter Meetings 2017

House Energy Chair Lays out Agenda in NARUC Address

By Rory D. Sweeney

WASHINGTON — U.S. Rep. Greg Walden (R-Ore.) said the agenda of the House Energy and Commerce Committee that he chairs will hew close to traditional party positions, emphasizing the importance of letting states and market forces guide development rather than policies and regulations.


Walden | *NARUC*

Walden made the comments while addressing the National Association of Regulatory Utility Commissioners at its annual winter meeting. He requested the opportunity to roll out the agenda to the conference, according to NARUC President and Pennsylvania Public Utility Commissioner Robert Powelson. "With a unified government, we actually have a rare opportunity to enact reforms that build on energy abundance, modernize our energy infrastructure and promote domestic manufacturing and job growth," Walden said. "You can be certain that we will ensure our efforts focus on the issues that matter most to consumers." (See *Interdependence Key to Cyber Efforts, Congress Told*.)

The country has been held back by a "Washington-centric, regulatory and environmental agenda," he said, that was "picking winners and losers, putting reliability at risk and driving up costs."

The committee will review the interaction between federal and state government on resource planning, such as the Public Utility Regulatory Policies Act, and address "recent efforts by the EPA to erode states' authority through the Clean Power Plan."

He called on the new administration to install new commissioners at FERC quickly and indicated the nuclear industry would be a major focus of the committee.

"The Yucca Mountain project must remain central to our nuclear waste-management system," he said, adding that plans could include authorizing an interim storage facility, along with moving forward on fuel reprocessing. (See related story, *Panelists Weigh Prospects for Nuclear Waste Solution Post-Obama*, p.4.)

Georgia Public Service Commissioner Tim Echols asked Walden's view on how reprocessing might make the national energy policy more sustainable.

"It's something, obviously, that other countries do pretty effectively, and I see no reason why we can't take a look at that seriously in this country," Walden said. "It's about time."

He noted that while the Yucca Mountain project was canceled by the Obama administration, the total future liabilities and payments paid by the U.S. Treasury for nuclear-waste storage doubled to nearly $30 billion over the last eight years. The federal government can no longer collect a nuclear waste fee from ratepayers, he said, but the fund already has $36 billion and collects $1 billion in interest annually.

He also addressed cybersecurity, saying it will require partnerships across industries and input from the state level to implement in a "thoughtful way." (See related story, *States Unsure of Cybersecurity Best Practices; Santorum Seeks 'Warriors'*, p.7.)

No Longer 'Fringe,' Storage Earning its Keep, NARUC Panel Says

By Rory D. Sweeney

WASHINGTON — Energy storage is providing tangible benefits to the grid, and rules need to be implemented to ensure it finds its proper place, a panel of experts told regulators last week at the National Association of Regulatory Utility Commissioners' winter meetings.

Storage "all felt very on the fringe. And now, especially with the FERC [Notice of Proposed Rulemaking] that was just issued, it's more in the mainstream," said Public Utilities Commission of Ohio Chairman Asim Haque, who moderated the panel.

"I think almost everyone believes we'll have more storage in the future than we do now, and I don't think we know in the long run how it will develop. … I think if it develops to the extent that we think it might be developing, it will just be its own thing," acting FERC Chairman Cheryl LaFleur said. "You'll say electricity is: generation, transmission, distribution and storage, rather than fitting it into the others."

'Capacity Value'


Collison

With its ability to act quickly, storage is providing significant "capacity value," ICF International's Ken Collison said. Capacity value is the capability to provide firm energy in the hour of need: A combined cycle unit with a forced outage rate of 5% has a 95% capacity value, meaning it is available on a firm basis 95% of the time. ICF's research found that a 100-MW storage system with one hour of stored energy can provide 46 MW of firm capacity (46% capacity value), while one with four hours of storage can provide 99 MW of firm capacity.

Storage is unique because it can be both a load when needed and a generation resource when needed, Collison said.


Bartlett

That reaction speed translates to value for customers. Ned Bartlett, Massachusetts' undersecretary of energy and environmental affairs, said the hours with the top 1% of demand account for 8% of ratepayers' costs, and the top 10% account for 40%. That represents "remarkable peak opportunities" for storage, he said.

However, storage's flexibility also creates some regulatory issues, LaFleur said. Previous precedent has limited installations to either cost-based transmission rates or market-based services. FERC believes that is too limiting, she said, and issued a policy statement in January to clarify that the commission is open to opportunities for units to serve both roles but with protec-

Continued on page 6

NARUC Winter Meetings 2017

LaFleur Plans Technical Conference on State Generator Supports

By Rich Heidorn Jr.

LaFleur and Powelson | © *RTO Insider*

WASHINGTON — Acting FERC Chairman Cheryl LaFleur said last week that the commission will schedule a staff-led technical conference on how wholesale power markets can accommodate state policymakers' initiatives to support generation.

Speaking to the winter meeting of the National Association of Regulatory Utility Commissioners, LaFleur noted that the commission has pending complaints challenging the zero-emission credit programs created by Illinois and New York to prevent their nuclear plants from retiring. The cases cannot be resolved until the commission regains the quorum it lost with the Feb. 3 resignation of former Chairman Norman Bay.

"We have several cases pending that raise those issues. While we can't issue orders in those cases, one thing that [Commissioner] Colette [Honorable] and I have talked about that we can do is to organize a staff-led technical conference to bring people in before us, build a record and hear from the states, from the environmental community, from others — from the generators and the ISOs — to try and discuss some of those issues. So that's something we are going to do."

LaFleur noted that ISO-NE and PJM made changes to their capacity markets "to try to make sure that they were properly rewarding the resources you could always count on to be there when most needed," a reference to the Pay-for-Performance program in ISO-NE and Capacity Performance in PJM.

"What the markets do not currently do is compensate nuclear resources for their carbon-free attributes. The markets weren't designed to do that and that's something the state programs are seeking to do," she said.

"I think we only have three choices here: One is for the stakeholders and the ISOs in part to somehow have a design solution that retains the benefits of the competitive markets for customers but in a way that adapts to some of these state issues. That's door one.

"Door two is we can litigate it out. I loved winning the [Order 745] case in the Supreme Court, but litigation is never my first choice for how to resolve things.

"And door three is some kind of gradual reregulation. … If the states want to reregulate, that's fine, but I'm concerned that we'll have unplanned reregulation as the markets just get cannibalized and we lose some of the reliability benefits for customers.

"So door one — making a decision to work this out and adapt the markets — is by far the best solution, and we'll need the help of all the smart people in this room to do that."

NARUC President and Pennsylvania Public Utility Commissioner Robert Powelson said he welcomed the conference and also praised PJM CEO Andy Ott for "step[ping] up on this issue."

PJM is expected to issue a white paper in March on the subject.

No Longer 'Fringe,' Storage Earning its Keep, NARUC Panel Says

Continued from page 5

tions to ensure they aren't paid twice for the same service. (See Storage Can Earn Cost- and Market-Based Rates, FERC Says.)

LaFleur's Dissent

"I dissented on that order. I was concerned with some of the broader language in the policy statement about the potential impacts on wholesale markets of having other payments streams," she said. "I thought it came awfully close to implicating some of the questions we have pending before us now with respect to state policy initiatives and how they're valued in the wholesale markets, which I know we'll be looking at." (See related story, *LaFleur Plans Tech Conference on State Generator Supports*, above.)

Among the flurry of orders the commission issued before former Chairman Norman Bay resigned Feb. 3, FERC also ruled on a complaint by Indianapolis Power and Light, finding that MISO's Tariff unreasonably limits the services energy storage can provide. It ordered the RTO to craft more inclusive Tariff language within 60 days. (See *MISO Ordered to Change Storage Rules Following IPL Complaint*.)

Collison noted that one of the biggest advantages of storage is it presents less permitting and siting issues. "You can site it at the place of need," he said.

And sometimes, it's even mobile. "The number of people who come up to you and describe the different things they're doing with car batteries, including charging at work, bringing it home and powering the house from it. Really exciting; really confusing at times," Bartlett said.

Massachusetts' "ambitious" goal is to have 300,000 electric vehicles on the road by 2025, he said.

NARUC Winter Meetings 2017

States Unsure of Cybersecurity Best Practices; Santorum Calls for 'Warriors'

By Rich Heidorn Jr.

WASHINGTON — A recent survey of state cybersecurity practices provided some surprising results, New Jersey Board of Public Utilities President Richard Mroz told the National Association of Regulatory Utility Commissioners' winter meeting last week.

"We found most of the states actually do have a fusion center of some sort, so states are taking that seriously," Mroz said, referring to locations at which state agencies share intelligence on security threats. "On the other hand we hear … from our colleagues that they don't know what the best [cybersecurity] practices are — what's working elsewhere."

Mroz is chairman of NARUC's Critical Infrastructure Committee, which sent the survey last year to the 34 states that are members of the committee; 19 had responded as of January. The committee is now seeking responses from the remaining states, including those not on the panel. The results will be included in what NARUC intends as a "living" catalog of information about state regulators' efforts on critical infrastructure resilience. The survey is also referenced in the latest edition of NARUC's cybersecurity primer, which was released Jan. 31.

'Retasking' the National Guard

Also speaking on the NARUC General Session panel last Tuesday was former Sen. Rick Santorum (R-Pa.), who expressed concern over the shortage of cybersecurity personnel and their lack of preparation for "war."

"These are people who went to school for computer service or a whole variety of other things and they're the people who are our quote 'war fighters.' They're not trained as war fighters … and yet they're in the middle of a battle," said Santorum, an unsuccessful presidential candidate in 2012 and 2016.

"So they don't take the approach of 'How do we comprehensively deal with this problem?' … We seem to be saying just 'How do we defend ourselves?' instead of 'How do we really put a strategy together to attack the enemy to make sure they aren't attacking us?'

From left to right: Mroz, Santorum, Monken and NARUC President Robert Powelson. | © *RTO Insider*

"I'm not too sure we want corporations out there attacking those who might attack them, but I think we have to start thinking about innovative ways in which to deter people from coming at us," he added.

In conversations with former colleagues on Capitol Hill, Santorum said, he has proposed "retasking" the National Guard for a cyberdefense role. "We need these people to be out across America to be almost like a Minute Man type of operation to be able to respond to some of these threats we have."

'Lanes of Effort'

Jonathon Monken, PJM's senior director of system resiliency and strategic coordination, a West Point graduate and former director of the Illinois State Police, responded that officials need to "de-conflict … the lanes of effort" by clearly defining roles and responsibilities to determine "who's best suited to do what."

Monken said the electric industry also needs to improve the security of its tools.

"Recognizing the fact that our systems are interconnected. Our [information technology] configurations are very, very similar. They're not identical. It's not if you breach one that you get access to everybody. But it's not like there's that many different [energy management system] providers out there. It's just a handful of system types and the architectures are very similar."

Separately, acting FERC Chairman Cheryl LaFleur talked about the importance of collaboration between government and industry and of not relying on just meeting NERC's standards on critical infrastructure protection.

"While mandatory standards are important, the cyber challenges are evolving so quickly, you can't really regulate your way out of it. You can't do a standard fast enough for some new piece of malware or ransomware that comes along," she said. "The non-mandatory piece is becoming more and more important."

NARUC Winter Meetings 2017

Overheard

WASHINGTON — A record 1,600 people attended the National Association of Regulatory Utility Commissioners' winter meetings last week, where speculation about the Trump administration's energy policies was Topic A. Here's some of what we heard.

Infrastructure Bill Must Wait its Turn, House Transportation Chief Says

Rep. **Bill Shuster** (R-Pa.), chairman of the House Transportation and Infrastructure Committee, told NARUC's General Session last Tuesday that he's excited by the Trump administration's call for expanded infrastructure spending but that a proposal won't come until after Congress replaces the Affordable Care Act and develops a plan for overhauling corporate taxes.

"You're not going to see the infrastructure package in the next month or two," Shuster said.

"The order of things will be replacing Obamacare. … Tax reform will go next, and within that we have to figure out how to pay for infrastructure. It's not all going to be federal dollars.

"One of our goals on the Republican side is to lower tax rates for corporations so they can keep more of their own money. So when it comes to pipelines and electric grid and broadband, let those corporations keep more of their money and then let's get the regulatory barriers out of their way so that they can go build."

Increasing the debt, he added, "is not an option in this Congress."

Shuster said public-private partnerships can contribute but that the concept is "not the silver bullet … that some folks claim it is," feasible only in instances in which private businesses can earn a return on their investments.

Uncertainty over Clean Power Plan Remains

Although the D.C. Circuit Court of Appeals is expected to rule soon on legal challenges to EPA's Clean Power Plan, the ruling won't be the last word, meaning RTOs and state policymakers will be facing uncertainty for the foreseeable future.

"If its upheld, then I think we'll be looking to the new administration to make any proposals for change that they make and put them through the regulatory process," acting FERC Chairman **Cheryl LaFleur** said. "It seems they're going to make a change, but I am not privy to what it is."

Arkansas Public Service Commissioner Ted Thomas noted that under the plan, the tougher emission targets — and increased costs — would hit in the second half of the next decade.

"The election didn't change all that much about carbon risk," he said. "If you're saying, 'OK, new administration, I don't have to worry about carbon anymore,' you might be making a mistake.

"Of course the elections are decided on issues non-energy related. We're kind of like the flea that rides on the dog. The dog goes in the mud; we go in the mud with it. And if the next three years are like the last three weeks, we might be wishing we had the Clean Power Plan. There is real risk of federal policy that we deal with. We do that all the time. We're state policymakers and federal policy takers."

Crane Presses Case for Nukes, Calls for Unifying Environmental and Energy Policies

Exelon CEO **Chris Crane** agreed with NARUC President Robert Powelson, who said he had never seen a "more dynamic phase" in the electric industry.

"It's a huge, huge issue to know where public policy is going to drive us," Crane said during a panel discussion with leaders from the water, natural gas and telecommunications industries moderated by Powelson. "One of the more reliable baseload generating assets in the country, the nuclear assets, [face] significant challenges with current market design."

Last year, officials in Illinois and New York approved controversial rescue plans for Exelon's nuclear plants in their states. The zero-emission credit programs, which are being challenged in court and before FERC, recognized nuclear's carbon-free production and the plants' jobs and tax payments. (See *IPPs File Challenge to Illinois Nuclear Subsidies*.)

"This country for too long has separated an environmental policy from an energy policy, and [conflict between federal and state policies] has made it very difficult for markets to be formed efficiently and made it very difficult for predictability of investments going forward," he said. "The leadership at the federal level [should] either come up with a common policy or get out of the way. Have the states be allowed to work with the RTOs and design the markets of state desires. The states we serve want affordable, reliable [energy], but they also want clean power. And how … you build a market signal around that to adequately compensate all the generators in the stack is very important." (See related story, *LaFleur Plans Tech Conference on State Generator Supports*, p.6.)

He remained focused on the nuclear fleet, calling them "solid baseload units" and noted that they do not experience the issues that caused outages for 22% of PJM's generation capacity during 2014's extreme cold snap known as the polar vortex. Exelon's nuclear units last year had a 95% capacity factor, he said.

"Renewables are an important part of the stack and they should continue to be part of the stack, but we need to look at defining outcomes. If the outcome is a higher-reliability, diverse fuel stack, then how do you create a market design that compensates for that?" he said. "It's whatever the outcome is versus pitting technologies against technologies."

He pointed to NO_x, SO_x and mercury emissions standards as successful governmental regulation. "It said, 'here, fix your stack and clean up the air.' The market took care of the rest. Some plants didn't make it, some plants were built, some plants were modified," he said. "Hopefully, with some clarity coming from this administration, some clarity coming from FERC, the states and the RTOs can do what they need to design a reliable, affordable and — where they want it — a clean stack."

— Rich Heidorn Jr. and Rory D. Sweeney

NARUC Winter Meetings 2017

Role of Experimentation, Market Research Increases for Utilities

By Rich Heidorn Jr.

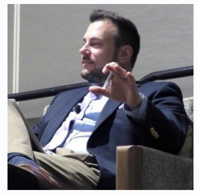
WASHINGTON — Electric vehicles and distributed energy resources are increasing the need for utilities to experiment and conduct market research, speakers at an Institute for Electric Innovation forum said last week.

"What differentiates us from every other competitive service is we have an … obligation to serve 100% of the customers. We don't have the ability to define our niche market and confine our advertising to that market," said Karen Lefkowitz, vice president of smart grid and technology for Pepco Holdings Inc. "Serving 100% of the customers used to be easy because everybody had the same stuff. … Now things have gotten really complicated, because now we actually have to understand our customers."

Regional Preferences

When Pepco rolled out smart meters at its utilities in D.C., Maryland and Delaware, Lefkowitz said, the company tested avatars for a video series explaining how customers could use the data collected by the devices. To the company's surprise, different regions preferred different avatars, Lefkowitz said.

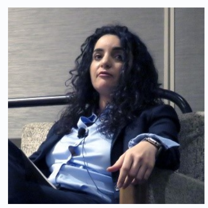
"It tells us that customers' opinions and their attitudes can be vastly different in a relatively short geographic difference. They're influenced by incentives their states are offering; they're influenced by the culture of the community that they live in. They're influenced by the rate that the local utility is charging. So when we look to the future and see all the choices that customers have … we need to understand what drives the customer. We need to understand what appeals to them, and we need to understand why they're looking elsewhere for their services."



Forese

"I think you always want to be experimenting," agreed Arizona Corporation Commission Chairman Tom Forese. "Focus groups and polling data … could be very helpful in understanding the needs of the customers. Nothing really can compensate for just raw experimentation because pollsters are always shocked and surprised: 'We didn't see that coming.'"

Exceeding Storage Mandates



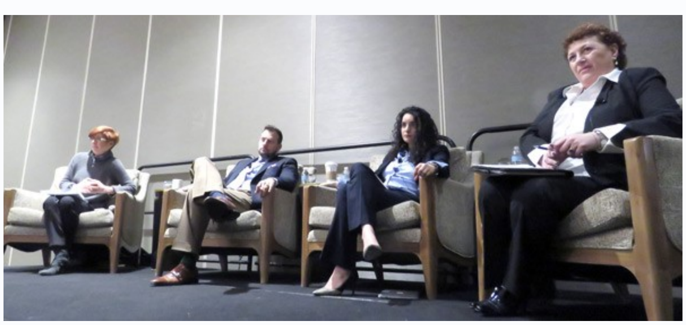
Yamout

Manal Yamout, vice president of policy and markets for Advanced Microgrid Solutions, recalled when the California Public Utilities Commission ordered Southern California Edison to obtain 50 MW of 15-minute storage in response to the shutdown of the San Onofre nuclear plant. The company ended up procuring 250 MW of storage with a four-hour output.

"Why would they do that? They didn't have to," Yamout said. "The answer is that, unexpectedly, distributed storage resources had the ability to give Edison something it didn't quite know it wanted until it had to think about it."

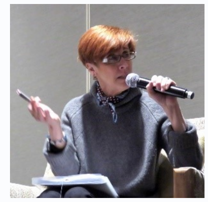
Although it was the storage target that caused the procurement, it was the multiple functions storage could fill that led the company to exceed the target, she said.

"I think we're in a place in the elect power industry that's … like the beginning of the Internet, where serious policy and regulatory change has to occur to let things explode," said moderator and IEI Executive Director Lisa Wood, quoting from a book by AOL founder Steve Case.



From left to right: Wood, Forese, Yamout and Lefkowitz. | © *RTO Insider*

"Our regulators are in a tough place. The world is changing very fast," said Lefkowitz. "For the very first time, they're now adjudicating between who should have the ability to put assets on the electric system that historically has been the domain of the utility."



Wood

Forese said he believes the utility must retain a central role. "If the utility is not directing traffic for new technologies, then I think we'll get the opposite of what we're trying to accomplish," he said.

EVs' Impact

Lefkowitz predicted electric vehicles will "change the world" but said it won't happen quickly because it takes about 15 years for the entire vehicle fleet to be replaced with newer models. (See columnist Steve Huntoon's alternate view, *Electric Cars – Three Ugly Facts*.)

Time will be essential in ensuring Pepco is "ahead of the curve," Lefkowitz said: Charging an EV requires the equivalent of half of a house load.

"If we don't size our distribution transformers appropriately and everybody comes home to the neighborhood and charges their car at the same time, we're going to at minimum blow the fuses on all those distribution transformers — we'll be spending a lot of time driving around to replace fuses. And at worst, we're going to be spending trillions of dollars across the nation upgrading transformers."

Lefkowitz said EVs will change Pepco's peak load in the D.C. area from 4-5 p.m. to perhaps 7-8 p.m.

"So our planning has to be a lot more expansive and future-looking and rely a lot less on 100% history that no longer is necessarily a good predictor."

She predicted an expansion of Pepco's incentives to encourage off-peak charging, saying a pilot program in Maryland proved very popular.

"We've been talking about [time-of-use] tariffs and the right pricing for three decades," Wood said. "But EVs may be the thing that actually brings that to life."

Overheard at the 3rd Annual Energy Storage Policy Forum

WASHINGTON — Nearly 200 energy policy and market experts gathered at the National Press Club on Wednesday for the Energy Storage Association's 3rd annual Energy Storage Policy Forum. Here's some of what we heard.

Storage in the States

Several state regulators spoke at the conference, after having just gone through what Washington Utilities and Transportation Commissioner **Phil Jones** called "NARUC hell," referring to the winter meetings of the National Association of Regulatory Utility Commissioners.

The regulators spoke about how they view their role in setting policies on energy storage and how they communicate with elected officials about the technical aspects of energy markets and technology.

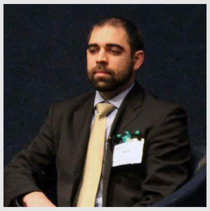
The Washington UTC has been working on a policy statement on modeling energy storage through the integrated resource planning process. Jones said the statement, which he noted is short of a rulemaking, will be released in about two weeks.

The commission has "been a little bit reluctant to do too much in storage, and certainly not a mandate, without legislative blessing, if you will." But while the commission defers to the State Legislature and Gov. Jay Inslee to make energy policy, Jones said that he emphasizes to them the state's need to stay ahead of the curve — specifically California's duck curve. "Unless Washington state acts, California's duck curve … is going to overrun us," he said, referring to the state's drop in net load during the day because of rooftop solar and its sudden increase after the sun sets.

The increase in intermittent resources in other states in the Western Interconnection puts pressure on Washington's grid. "Storage is certainly a solution to this," Jones said.

The Arizona Corporation Commission — one of about 10 state regulatory bodies elected rather than appointed — is less deferential, said Commissioner **Doug Little**. "We are the energy policymaking body in Arizona," he said. "We certainly solicit feedback from the governor's office and the legislature, but they … rely on us to take a policy leadership role."

Like Jones, Little said his commission also spends a lot of time educating Arizona legislators about the effects of California's energy dynamics on the state. The economic benefits CAISO's Energy Imbalance Market provides ratepayers "gets their attention pretty quickly," he said.



Will Lauwers, emerging technology director for the Massachusetts Department of Energy Resources, said that the department must "take the ratepayer benefit as our primary cause and consideration" in its development of policy. He said the department also understands that, as part of ISO-NE, the state's policies will affect other states in the RTO.

Lauwers said Gov. Charlie Baker has been extremely supportive of storage, highlighting the administration's $10 million Energy Storage Initiative and recent clean energy legislation that authorized the department to set a storage resource procurement goal.

That legislation made Massachusetts the third state in the country to allow its regulators to set such a goal. The first was California, where regulators in 2013 set a target of 1.325 GW by 2020. (Oregon was the second.)

California Public Utilities Commissioner **Carla Peterman** said the commission originally came up with a number less than 1 GW, but she said a gigawatt "just sounded better."

She recalled she said, "'Let's put out a number and see if it sticks.' And eventually it did. So sometimes, you know, that's how the sausage is made," prompting laughter from the audience. "You use the best analytics that you can, but ultimately you put something out and then if no one laughs … then you know you might as well move forward."

Peterman was asked how fast other states should move on storage.

"Very quickly," she replied. "I can't emphasize enough that there are so many different things you can do. Just requiring the utilities to do some evaluation is a big step."

Bay Makes an Appearance

Bay and Burwen | © *RTO Insider*

Many at the conference expressed their enthusiasm for the Notice of Proposed Rulemaking that FERC issued in November requiring RTOs to allow storage resources above 100 kW to participate in their energy, capacity and ancillary services markets. (See *FERC Rule Would Boost Energy Storage, DER*.)

On hand to fete the staffers in attendance who worked on the NOPR was former Chairman Norman Bay, who asked them to stand and be recognized before a discussion with Jason Burwen, policy and advocacy director of the ESA.

"Storage clearly has unique characteristics," Bay said. "It's not like traditional resources in the markets. Traditional resources fell into one category or another. … Storage can play in" generation, load, transmission and distribution. "So it seems to me that the market rules have got to recognize those unique characteristics."

RTOs: We Support Storage

Representatives from four grid operators in the Eastern Interconnection said their markets offer ways for energy storage resources to participate, even as FERC in its NOPR said that some existing rules are unfair to storage.

"The notion that energy storage should be able to participate in all markets is one that PJM supports," said Andrew Levitt, PJM senior market strategist. "That is, from my perspective, a basic mission of PJM: opening all markets to resources that are technically capable of serving those markets."

"In MISO's case, we had some anachronistic things in our Tariff that we're going to be getting rid of and, in fact, had been planning to for some time," said Jeff Bladen, MISO executive director of market services. But even before FERC's recent order in response to a complaint by Indianapolis Power and Light, "we had many paths for storage to

Continued on page 11

Choices on CO_2, Technology, Competition Will Shape Grid, Panel Says

By Wayne Barber

WASHINGTON — Choices made by customers on issues ranging from carbon dioxide to technology could rank alongside decisions made by policymakers in shaping the future of the grid, RTO officials said last week.

McCoy

This was a recurring theme during a Feb. 16 briefing by WIRES, the House Grid Innovation Caucus, the National Electrical Manufacturers Association (NEMA) and the Environmental and Energy Study Institute (EESI). "Unlike ever before, the electric customers are actively participating in the industry," said Adriann McCoy, a vice president of Smart Wires, which makes advanced power flow control technology. The growing clout of end users is reflected in rooftop solar, plug-in electric vehicles and consumers' purchasing of renewable power from alternative suppliers, she said.

"Anytime consumers start playing more actively in a market," it brings about innovation, McCoy said.

Coal plant retirements, such as the recently announced plans to close the Navajo power plant in Arizona, will require that electricity be moved from other sources, McCoy said. The utility owners of the Navajo plant said Feb. 13 that they don't plan to operate the facility beyond December 2019.

Speakers said people's choice about where their power is coming from is driving the transmission system. This includes decisions favoring renewable energy and less-carbon-emitting sources.

"The planning is only slightly less complicated than the engineering" these days, said former FERC Chairman Jim Hoecker, counsel to WIRES. "It's a challenging time, it's a transformative time, for the electricity business."

At the same time, a robust transmission system will save consumers billions every year in avoided power disruptions, Hoecker said. "That's not pocket change," he added.

Moeller

MISO Executive Vice President Clair Moeller said it is resilience and the need to move power from new low-carbon resources that is driving new transmission. "There is essentially no load growth in the nation," he said. "My job at MISO is mostly about planning," Moeller said. Sometimes "you get cheaper electricity from your next-door neighbor," rather than from the generating unit in your own area, Moeller said.

Congress in 1992 said it wanted to see more electric competition, said Craig Glazer, PJM vice president for federal government policy. But even since the Energy Policy Act of 1992, lawmakers still engage in picking winners and losers, Glazer said.

The wind production tax credits and state bailouts of struggling nuclear plants can make things complicated, Glazer said. But Glazer cautioned against too much market tinkering, noting that the goal of competition was to shift risk from ratepayers to shareholders.

Ross

Innovation happens quickly, but "Congress doesn't move very fast," said former U.S. Rep. Mike Ross, senior vice president for government affairs at SPP. Congress needs to ensure its laws "don't get in the way" of innovation, Ross said.

Many panelists said while the concept of regional planning is popular in the abstract, it often runs into roadblocks in the real world. For example, states are all over the board on issues like renewable mandates, Moeller said.

"States have not wanted to relinquish their regulatory authority over utility operations. This is a tremendous burden to interstate commerce," Hoecker said.

"We want to make sure this [electric transmission issue] is front and center … that people know how important this is," said Rep. Jerry McNerney (D-Calif.), who co-chairs the House Grid Innovation Caucus along with Rep. Bob Latta (R-Ohio).

Overheard at the 3rd Annual Energy Storage Policy Forum

Continued from page 10

participate in the markets."

FERC, however, concluded that MISO prevents storage from fully participating, ordering it to revise its Tariff. In the event that MISO's compliance filing conflicts with a final ruling on storage participation, the RTO would have to make further revisions, the commission said. (See *MISO Ordered to Change Storage Rules Following IPL Complaint*.)

Burwen pushed back, pointing out FERC's NOPR was premised on the fact that there are barriers to participation for storage. He asked what RTOs need to change in order to recognize storage resources' unique attributes.

From left to right: Levitt, Bladen, Christopher Parent, ISO-NE director of market development; and DeSocio. | *© RTO Insider*

"What we really need from you folks is help," said Michael DeSocio, NYISO senior manager of market design. "We need your help to figure out what are these parameters that are missing, that are necessary."

— Michael Brooks

New Jersey Went All in on Solar, but was it a Good Bet?

By Rory D. Sweeney

From left to right: Hendry, Gabel and Brand. | *© RTO Insider*

NEW BRUNSWICK, N.J. — A panel of experts discussing New Jersey's energy future agreed Wednesday that the Garden State has made great strides on installing renewable generation resources but differed on whether the progress is sustainable.

"We're at where we thought we'd be in 2028 [on the state's renewable portfolio standard], but at a substantial cost," said Stefanie Brand, the director of New Jersey's Division of Rate Counsel.

A study commissioned by the rate counsel found that the state's current solar RPS will cost ratepayers $5.2 billion through 2028 (net present value). A bill proposed last year would ramp up the state's RPS faster, adding another $276 million (NPV) in costs, the advocate told legislators last year.

Steven Gabel of Gabel Associates, an industry consulting firm, pointed to the "saw-tooth" nature of the clearing prices from recent PJM Base Residual Auctions to argue that the RTO's price signals "aren't doing the job" to incentivize generation development. The grid operator's implementation of Capacity Performance was a "titanic event" to increase reliability, Gabel said, yet clearing prices in the auctions since then have provided ambiguous signals.

Aggregating winter and summer resources won't solve the issues, either, he said, because the payments go to the resource that gets used instead of being distributed to both.

The discussion was hosted by Rutgers University's Center for Energy, Economic & Environmental Policy, part of the Edward J. Bloustein School of Planning and Public Policy.

Andrew Hendry, the president of the New Jersey Utilities Association, prognosticated on the state's potential return to the Regional Greenhouse Gas Initiative following the 2017 gubernatorial election. Republican Gov. Chris Christie pulled the state from RGGI in 2011.

"I think it's very likely that if a Democrat wins, we're going to be back in RGGI," he said.

Gabel said state Sen. Bob Smith, a Democrat who chairs the Environment and Energy Committee, has a "big appetite" and "pent-up demand" for energy reform in the state.

He said state policy has not changed much from the state's 1980s-era energy plan. "For 32 years, we've been talking about it," he said. "We have to turn this around. … For me, the needle points more toward 'let the market sort this out.'"

Brand was skeptical of a market-driven focus, saying that's why the state's solar renewable energy credits (SRECs) are being sold for $250 when they're much cheaper in other states. Solar developers are receiving "windfall profits" because "we're over-incenting," she said.

New Jersey has the second highest subsidies for rooftop solar, behind California, she said. By comparison, North Carolina and Arizona are growing solar capacity but with subsidies that are "more in line" with other states.

"The fact is I don't think we need $250 SRECs," she said. "I don't buy it. ... We get less solar, not more."

Gabel said that's what the market will bear. "We moved away from an administrative structure for SRECs to a market."

Brand cautioned that it won't be long before ratepayers can't afford to purchase electricity. "Our prices are high and they're very volatile," she said. "Not all good things deserve a subsidy."

She included nuclear in that, noting that PJM's analysis on Artificial Island's three reactors found that Delaware stands to receive the most benefit from planned transmission upgrades for the nuclear complex. "Much of the electricity that comes out of these plants doesn't go to New Jersey," she said. "Before we subsidize these plants, we have to figure out if we're subsidizing Delaware."

The Garden State remains heavily dependent upon its nuclear fleet, receiving 56% of its power from such sources, she acknowledged. "I don't think we'll see any offshore wind in the immediate short term," she added.

Hendry said that data analytics will be an important part of the state's energy future, but Brand argued that advanced meters aren't helping consumers. "The primary benefit you get in advanced meters is lost jobs" because companies need to employ less people as meter readers, she said.

"We cannot afford to give everybody net metering" because it reduces the number of customers who pay for social-benefit charges, like low-income subsidies, she said. "We have to make sure everybody has access to heat, electricity. … Everybody has to pay their own way."

She also questioned the FERC-approved rate adder utilities get for joining PJM: "At this point, it's a free 50 basis points."

> **"Our prices are high and they're very volatile. Not all good things deserve a subsidy."**
>
> **Stefanie Brand, New Jersey Division of Rate Counsel**

Bay: Told Trump Team I'd Leave FERC if Demoted

Continued from page 1

was "effectively paralyzing the commission."

For her part, LaFleur told an audience last week that Bay's departure was "somewhat to our surprise and certainly to our disappointment."

Although Trump is expected to name a Republican as chairman when he fills the three vacancies, LaFleur said she intends to serve her complete term through June 2019.

"My whole FERC tour of duty has been a little non-standard," LaFleur said Feb. 14 during remarks at the National Association of Regulatory Utility Commissioners' winter meetings. "I've been a commissioner, then acting chairman, then chairman, then commissioner again. But the last three weeks have been the strangest set of plot twists yet."

One of the plot twists: LaFleur learned of her appointment on Jan. 25 via a message from the White House dated Jan. 23. It was reportedly delivered two days late because it originally was sent to FERC's old address, which the agency vacated for its current headquarters more than a decade ago.

She said her focus remains unchanged: reliability and grid security; transmission; and "building a clean and diverse energy mix." Her priority as acting chair, she said, is to "keep the important work of the 1,300 people who work for the agency moving forward in a time of uncertainty and transition."

Bay told the storage forum he promised Commissioner Colette Honorable he would be presidential "in the classic sense of the word" and not say what the commission should or should not do.

Nevertheless, he offered some advice for future commissioners. "It's going to be very important for a future commission to retain a very important tradition at FERC, which is a tradition of bipartisanship, if not nonpartisanship, in the way that the commission addresses energy issues."

He highlighted the high rate of unanimity in the commission's orders. "Even when we were only down to one Republican commissioner, there were only two matters where the three Dems were on one side and the Republican commissioner was on the other," he said. "I hardly need to say this in a ballroom in Washington, D.C., but there seems to be more partisanship than ever, and I think that when partisanship hits an independent agency … it is not a good thing for the American people."

Asked by Burwen what he was going to do next, Bay said his "real ambition is to become a travel bum for a while." True to his words, he left the Press Club wearing a backpack.

CAISO NEWS

High Hydro, Increased Solar Point to Spring Curtailments for CAISO

By Robert Mullin

CAISO will likely be forced to curtail a massive amount of renewable energy this spring when increased solar output is expected to coincide with unusually "bountiful" conditions for hydroelectric production, the ISO's top manager said.

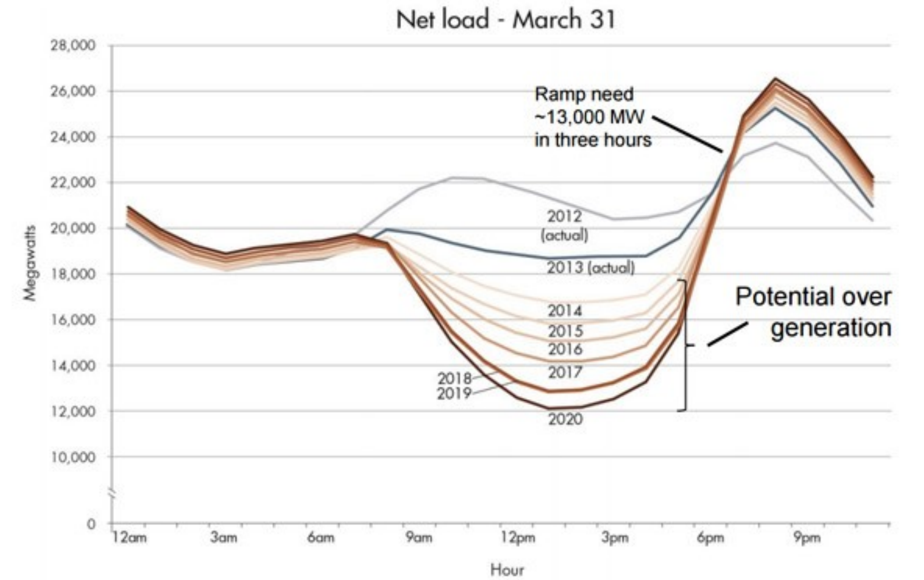
"The last several years, the hydro system has been de-rated fairly significantly — [by] up to 4,000" MW, CEO Steve Berberich said during a Feb. 16 meeting of the ISO's Board of Governors. "We're going to see that flip and we're going to have that 4,000 MW this year, plus we've added another couple thousand megawatts of solar."

Last spring, CAISO confronted a number of instances when over-generation reached 2,500 MW, Berberich noted. In those cases, the ISO could "lay off" about 1,000 MW of the excess on the Energy Imbalance Market, while the rest was handled with decremental bids — otherwise known as economic curtailments.

Curtailments are expected to soar this year as the increase in solar capacity combines with high spring snowmelt to fuel possible record surpluses. California's snowpack currently stands about 175% of normal, according to the state Department of Water Resources.

"We could see [over-generation] as high as 6,000 to 8,000 MW at a time, which will be the biggest over-generation that we've had," Berberich said.

On a related note, Berberich reminded board members that CAISO's "duck curve" forecast predicted that the ISO would be dealing with 13,000-MW solar-driven generation ramps in 2020.



The "duck curve" is coming faster than expected. Introduced in 2013, the curve predicted CAISO would be dealing with 13,000-MW solar-driven generation ramps by 2020. The ISO exceeded a 15,000 MW ramp earlier this month. | *CAISO*

"This last Sunday [Feb. 12], we blew through 15,000 MW," Berberich said. "So we're seeing this quicker and deeper than we expected and we'll have to continue to monitor that."

In 2013, CAISO published the California "duck curve" chart to illustrate the long-term impact of increased renewable penetration on its daily operations.

That forecast showed how the adoption of solar and other renewable resources would steadily undercut the ISO's "net load," which represents the portion of load being served by dispatchable resources such as gas-fired generation and imports.

Net load is calculated by subtracting the energy generated by variable renewable resources from total electricity demand. The curve turns sharply higher at sundown, indicating the need to rapidly ramp flexible resources to serve load.

A research report published last year by the ScottMadden consulting firm indicated that the "belly" of the curve was deepening more rapidly than originally predicted, with the corresponding ramping effects spread across the entire year and not just the typical spring day characterized by high renewable output depicted by the graph. (See *Report: Calif. 'Duck Curve' Growing Faster than Expected*.)

Local Officials Appeal to FERC for Relief as Oroville Water Levels Recede

Continued from page 1

years ago after heavy flows out of the reservoir tore a massive hole in the concrete lining of the main spillway.

Residents have since been allowed to return to their homes but face the potential for another evacuation if weather conditions once again destabilize the ground around the dam.

Criticism for FERC, California Agency

The spillway failure has generated criticism of both CDWR and FERC for their failure to heed previous warnings by three environmental groups who — during the dam's 2005 FERC relicensing proceeding — requested that the state pave the hillside below the emergency spillway to avoid the kind of erosion experienced earlier this month.

Continued on page 15

CAISO NEWS

Local Officials Appeal to FERC for Relief as Oroville Water Levels Recede

Continued from page 14

CDWR and the commission rejected the request, with a FERC engineer writing that the emergency spillway could safely handle 350,000 cubic feet of water per second (cfs). The flow was only 6,000 to 12,000 cfs when the spillway was damaged, according to a report from the Bay Area News Group.

Outflows are outpacing flows into the reservoir despite stormy conditions, and CDWR said it will continue to prioritize bringing the depth of the reservoir to a target level of 895 feet. The agency said Feb. 20 that it had increased outflows from 55,000 cfs to 60,000 cfs in anticipation of increased inflows from recent rains.

"As runoff flows into the reservoir, water levels will likely fluctuate but will remain within acceptable and typical depths during times of storm activity," the agency said in a Feb. 19 incident update.

CDWR said work crews continued to place rock and cement slurry into the areas affected by erosion, as ordered by FERC in a letter Feb. 13. In addition to ordering emergency repairs, FERC also ordered the state to convene an independent board of consultants to review current conditions and risk-reduction measures and to later conduct a forensic analysis to determine the cause of the failure.

"We have people there 24/7 from our San Francisco office as well as our Washington, D.C., office working with state officials … to protect public safety," acting FERC Chairman Cheryl LaFleur said in remarks at the winter meeting of the National Association of Regulatory Utility Commissioners on Feb. 14.

Rainy Winter

After years of drought, the region has experienced unusually high levels of precipitation this winter, which has filled the reservoir to capacity and left the lake's elevation at about 900 feet above sea level. Snowpack in the Sierra Nevada mountains currently stands at about 175% of normal ahead of the spring melt, which tends to peak at the beginning of April, sending additional flows into the lake.

View of Oroville Dam and Lake Oroville in background, in 2005.

The 770-foot-high Oroville Dam in Butte County is the tallest in the U.S. and impounds one of California's largest manmade lakes, a key source of water for farms in the state's Central Valley and residents in Southern California, hundreds of miles to the south.

The dam's Edward Hyatt and Thermalito generating facilities, which have a combined 933 MW capacity, remain offline, and three 230-kV transmission line segments in the area under CAISO control have been de-energized. The ISO said it had reoptimized its dispatch system to maintain reliability while continuing to meet demand within its balancing authority area.

"The loss of the Edward Hyatt power plant at Oroville dam is handled as we do with all generator outages," the ISO told *RTO Insider*. "The outage, as well as the line outages, do not threaten grid reliability."

County Seeks FERC Help

Officials from Butte County last week urged FERC to order CDWR to immediately establish its own public safety program to relieve the county of the "severe strain" on its "limited resources" (P-2100).

The county asked that the CDWR be ordered to provide law enforcement and other personnel needed to ensure public safety in the face of threats attributable to the dam, "including not just flood hazards but also fire, crime and other emergency services."

Those personnel "should have the capacity to organize and implement all necessary public safety measures to prevent death from a failure of the dam spillways, including the orderly evacuation of the hundreds of thousands of people from the area downstream of the dam," the county said in its Feb. 15 filing.

The filing also called out FERC for its failure to address Butte County's previous entreaties, including a 2009 complaint in which the county argued that CDWR was in violation of its federal license for not contributing to covering the costs of ensuring adequate public safety at the Oroville site.

The commission rebuffed that complaint, and later denied the county a rehearing, after determining that the dam was in good condition and that the county had not pointed to any direct license violations.

"Because the commission has refused to order DWR to do what DWR is legally and morally obligated to do, and what other similarly situated licensees have done, Butte County has no choice but to request the commission to exercise its authority … to order DWR to take actions to effect its obligations as a Federal Power Act licensee, to protect public health, safety and welfare," the county said.

CAISO NEWS

Questions Linger over CAISO Small TO Interconnection Proposal

By Robert Mullin

Stakeholders have lingering questions about CAISO's proposal to protect small transmission owners from bearing the costs of network upgrades needed to interconnect generation serving load outside their service territories.

While the proposal was introduced to accommodate the specific circumstances faced by Valley Electric Association, the most recent draft allows CAISO to apply the plan to other small TOs that may join the ISO in the future. (See *CAISO Issues Final Plan for Small TO Interconnection Costs*.)

It was the ISO's effort to retain that flexibility that prompted most stakeholder concerns.

"If we're really trying to make this specifically helpful for this particular instance, it makes a lot of sense for us to make this as narrowly applicable as possible," John Newton, a regulatory analyst at Pacific Gas and Electric, said during a Feb. 13 call to discuss the proposal.

Under the proposal, CAISO would examine case-by-case whether a TO should be allowed to fold low-voltage generator interconnection costs into high-voltage transmission revenue requirements — which would spread those costs across the ISO's full rate base to avoid burdening ratepayers of small TOs with outsized fees.

Without the change, a $5 million network upgrade would increase Valley Electric's low-voltage transmission access charge (TAC) by 18.75% to $7.44/MWh, said Steve Rutty, CAISO's director of grid assets. A $25 million upgrade would nearly double the utility's low-voltage TAC to $12.15/MWh.

By contrast, spreading the $25 million upgrade across the entire ISO would result in a 0.09% increase in the combined high-voltage and low-voltage TACs for Valley Electric and PG&E, while Southern California Edison would see a 0.06% bump.

Network Upgrade ($ millions)	VEA		PG&E		SCE		SDGE	
$0	$6.26	(0.0%)	$7.32	(0.0%)	$0.44	(0.0%)	$14.35	(0.0%)
$5	$7.44	(18.8%)	$7.33	(0.1%)	$0.45	(1.6%)	$14.38	(0.2%)
$10	$8.61	(37.5%)	$7.33	(0.2%)	$0.46	(3.2%)	$14.41	(0.4%)
$15	$9.79	(56.3%)	$7.34	(0.3%)	$0.47	(4.8%)	$14.44	(0.6%)
$20	$10.96	(75.0%)	$7.35	(0.4%)	$0.47	(6.4%)	$14.47	(0.9%)
$25	$12.14	(93.8%)	$7.36	(0.5%)	$0.48	(8.0%)	$14.50	(1.1%)

The table shows the approximate increase in each TOs low-voltage TAC for network upgrade costs on their respective systems under CAISO's current cost allocation methodology. | *CAISO*

Proposed Criteria

The ISO will determine eligibility for the relief based on whether the TO is:

- Very small relative to other TOs, with a gross load of 2 million MWh or less (currently about 2.2% of the load of the ISO's largest TO);
- Located in a renewable resource-rich area gaining "elevated" interest for generator procurements; or
- Not subject to a renewable portfolio standard or does not need the new interconnecting generation to meet that requirement.

Joseph Abhulimen, program and project supervisor at the California Public Utilities Commission's Office of Ratepayer Advocates (ORA), wondered how the ISO landed on the 2 million MWh threshold, nearly triple Valley Electric's load.

"Why is that number significant?" Abhulimen asked.

"Originally, in the draft proposal, we had proposed 5% [of the largest TO's load], which would've equated to around 4 million MW," Rutty said. "It would allow a utility such as [Valley Electric] to really significantly increase their size."

Some stakeholders thought the 5% figure was too generous, Rutty explained, so the ISO narrowed it down to closer to 2%.

"We also wanted an even number, so we picked 2 million [MWh]," Rutty said. "The reason why we're sticking at a fixed number is so that it's not a moving target on them. As you know, loads change over time."

The ISO was also concerned that a lower gross load threshold could subject relatively small TOs — and their ratepayers — to sharply increased low-voltage TAC rates once they exceeded the cap, Rutty noted.

'Resource Rich'

Abhulimen also wondered about how the ISO would determine what qualifies as a "resource-rich" area. "What is the primary determinant for that designation?" he asked.

Bill Weaver, CAISO senior counsel, said the term was intended to allow case-by-case, rather than formulaic, determinations.

Stakeholders "can go to our board, they could comment at FERC, and we could really make a case-by-case determination whether we think someone meets this criteria, rather than trying to establish a bright-line test that may prove infeasible for future areas," Weaver said.

"I'm still very concerned that I would have expected that there would be certain criteria established that would say that this particular [TO] is in a resource-rich area for X and Y reasons," Abhulimen said. "It's very hard for someone to comment on this particular principle when you don't know what criteria were used to make this determination."

Kallie Wells of Resero Consulting stumped ISO staff with a question about whether the proposal would apply to TOs that don't serve any load.

"Most likely that would be something we would have to take up on a case-by-case basis with a different set of criteria," Rutty said. "I don't know that we would have any low-voltage, transmission-only type [TOs] that would be under 200 kV under those scenarios. But if it did come into play we would have to take a look at it at that time."

PG&E's Newton wondered how the new proposal would apply with the potential for the ISO to expand into other parts of the West. "Do you anticipate that is policy will apply broadly?" he asked.

Rutty replied that it — and anything in the

Continued on page 17

CAISO News

CAISO Proposes TO-focused Black Start Procurement

By Robert Mullin

CAISO's straw proposal for procuring black start resources would entail significant collaboration with affected transmission owners.

The draft plan also calls for costs to be allocated to the transmission owner area in which the black start resource is located, rather than across the entire CAISO footprint, as the ISO initially considered.

The ISO developed the proposal after identifying a need for additional black start resources in the transmission-constrained San Francisco Bay Area, which is served by Pacific Gas and Electric. (See *CAISO Kicks off Initiative to Procure Black Start Resources*.)

Black start resources serving the Bay Area are relatively far from population centers, unlike in Southern California, where capability is more evenly distributed near major load centers and can provide a more rapid restoration.

The ISO's initiative represents the second phase of a 2013 undertaking to address NERC reliability standard EOP-005-2, which requires transmission operators to develop plans for system restoration following blackouts.

Under the proposal, CAISO and the TO would jointly develop specifications describing the requirements and selection criteria for the black start resource. Criteria could include generator minimum load, the unit's proximity to critical loads, interconnection voltage, megawatt output and reactive power capabilities and type of unit.

Responses to the subsequent procurement would be turned over to the TO, which would evaluate them against the selection criteria and then submit a written recommendation to CAISO.

The ISO would then evaluate the TO's recommendation and approve or reject the choice. Once a resource is approved, CAISO would begin the contracting process with both the black start resource owner and TO.

"The length of any contractual commitment by the ISO and the black start service provider carry different risks and benefits to each party," CAISO said in its proposal. "A longer commitment term to the ISO will provide greater certainty of sufficient black start capability, but the ISO may also want reasonable exit provisions to address changes in circumstances."

CAISO is considering basing compensation on a cost-of-service approach rather than providing a capacity-type payment sufficient to support an otherwise unprofitable generator in operation.

"These arrangements should be expected to provide some reasonable expectation of cost recovery and margin to the black start service provider, but predicated on the basis that the resource is providing an incremental service — as opposed to an RMR [reliability-must-run] arrangement," the ISO said.

CAISO is also considering a standard five- or 10-year contract with a clause requiring one year's notice for termination in order to provide sufficient time to obtain a replacement resource or reach an RMR agreement to keep the contracted resource in place until a replacement is in service.

Under the proposal, the ISO would allocate the black start contract costs to the host TO, which could then recover the expense from its customers through its reliability services rate schedule. The ISO will likely need to revise its own Tariff to include black start services in the schedule.

"CAISO recognizes this approach would allocate incremental black start costs to all transmission customers within a PTO [participating transmission owner] transmission access charge area. However, to the extent this capability assists in restoring the PTO's system, all transmission customers will benefit from this restoration," the ISO said.

CAISO has scheduled a Feb. 21 call to discuss the proposal and is asking stakeholders to submit comments by Feb. 28. ISO staff are specifically seeking input on the proposed contract terms.

Questions Linger over CAISO Small TO Interconnection Proposal

Continued from page 16

Tariff — would be applied to similarly situated customers.

"That said, we're not hiding anything here," Rutty said. "We're not trying to sneak this in. We have no new [TO] with less than 2 million MWh in the pipeline for [TO] participation."

Gaming Concerns

Charles Mee of the California ORA posed what he called an "extreme" hypothetical situation in which a small TO contracts with external resources to serve all of its local load while all generation within its area is contracted to serve load in other TOs — thereby evading any upgrade costs being rolled into its low-voltage TAC.

"So do you consider all the generators that, contractually, are not serving the local load be qualified for this treatment?" Mee asked.

"I think so," Rutty responded. "We see what you're getting to — that we don't want to create a system that can be gamed. But at the same time, we want to ensure that each [TO] can find the lowest-cost capacity for its load-serving needs, which is why we started this" proposal.

Rutty added he couldn't imagine Mee's hypothetical being cost-efficient for a transmission-owning utility and that any hint of manipulating the system could result in a "very easy" Section 206 complaint at FERC.

"I think we need to think about that, so include it in your comments," he added.

Comments on the proposal must be submitted to CAISO by Feb. 22. The ISO expects to seek approval for the plan at next month's Board of Governors meeting March 15-16.

ERCOT NEWS

Board of Directors Briefs

IMM Year in Review: Low Prices, Windy, Lots of RUC

Potomac Economics' Beth Garza, director of ERCOT's Independent Market Monitor, summed up her 2016 market year-in-review as simply as she could at the Board of Directors meeting Feb. 14. "Cheap, windy and all RUCed up," she said to laughter.

Market prices dropped to an all-time low of $24.62/MWh for load-weighted average real-time energy and $2.45/MMBtu for natural gas, down from $26.77 and $2.57, respectively. While prices were low, a 30% increase in wind energy production led to an increase in its curtailments, and reliability unit commitments almost quadrupled, from 70 "unit days" to 269.

Garza said almost a third of those RUC events are under review as potential enforcement actions primarily from generators failing to comply with ERCOT dispatch instructions or not accurately reflecting the resource's status.

"We see evidence of uncertainty and confusion about what you're supposed to do when you receive a RUC instruction," she said. "Thirty percent of RUC events in 2016 had something wrong with them. That's too much. We either have a problem with the rules or people's understanding of the rules."

It was the same message Garza delivered to the Technical Advisory Committee in January. (See *ERCOT RUC Activity Jumps Sharply in 2016*.)

"When ERCOT issues a RUC instruction, there are ways for that generator to express a preference to opt-out. 'Yes, I will come online, but I'm forgoing any make-whole payments that might come my way' in exchange for, 'I get to keep all the revenue,'" she said. "Because of that mechanism, I believe the increase in RUC activity that we're seeing is a … result of generators trying to get some assistance in making that commitment decision."

Garza pointed out that the ERCOT market is a self-commitment market, without rules or obligations to commit in real time besides financial incentives.

"Just because you have a day-ahead award does not mean you are required to start your unit in real time. That's very different than other markets," she said. "That difference leads to a commitment decision that is de-centralized. Every generator is making their own decisions. 'Does it make sense for me to start today or tomorrow evening?'

"ERCOT is in the tenuous position of sometimes trying to figure out [whether] that action will actually happen, and when do they have to step in and ensure the adequacy of the grid, which they do through RUC instructions."

Much of that problem is expected to be resolved by a rule change approved by the board and the TAC last year and scheduled to be implemented in late June. NPR744 enables qualified scheduling entities that submit bids and offers on behalf of resource entities or load-serving entities to opt out of RUC settlement by telemetering a resource's status during the first interval it is online and available.

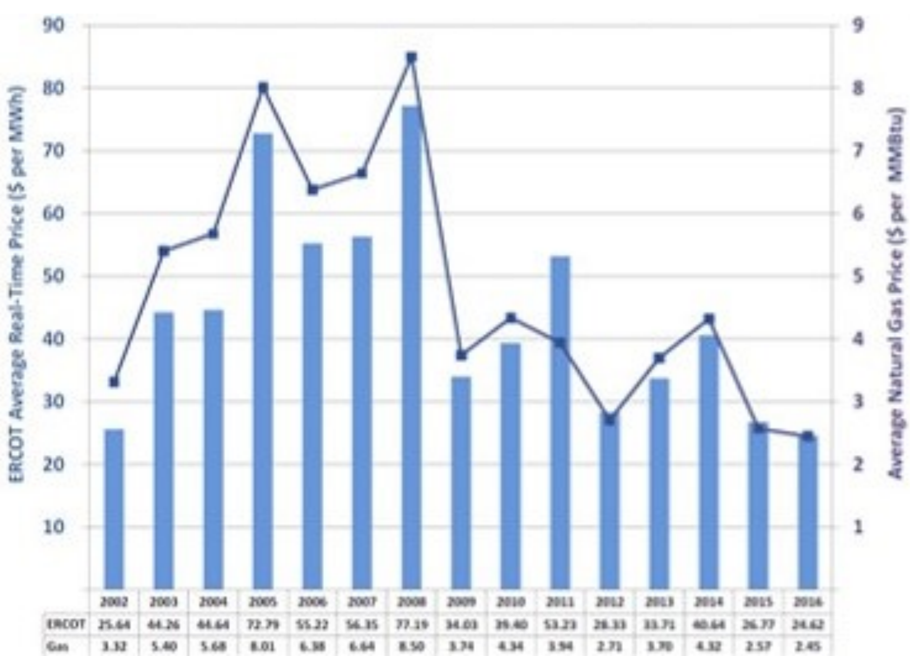
When unaffiliated Director Peter Cramton suggested the problem was a procedural issue that would be corrected by the protocol change, Garza said, "That's my hope."

"There are myriads of individual-type situations that could continue to be problematic," she said. "We're working with the ERCOT 744 team to understand how it's being implemented. I hesitate to say it will all go away, but I will continue to raise awareness of this issue."

The 269 unit days (a unit committed for as little as an hour counts as a day) resulted in only $1.2 million in make-whole payments, which are paid for by entities that were short generation. Another $1.4 million was clawed back from generators with offers in the day-ahead market and distributed to all load, the difference being market energy prices don't cover start-up or minimum energy costs.

Half of the payments from day-ahead offers are clawed back from generators that opt out of RUC dispatch orders. Garza said generators RUCed for a thermal constraint are often motivated to opt out because their real-time energy prices will likely exceed their operating costs. But those RUCed for a local voltage issue, which would not cause a price spike, would generally obey the RUC order to qualify for make-whole payments, she explained. The bulk of RUC activity took place in the Houston area and South Texas, two regions where infrastructure projects have recently been energized or are under construction.

Garza also said zonal price differences indicated that wind energy once trapped



ERCOT average real-time price vs. average natural gas price | *Potomac Economics*

Continued on page 19

ERCOT NEWS

Board of Directors Briefs

Continued from page 18

behind constraints is now serving load. The West zone's increased oil and gas production activity and congestion around Houston instead of the West led to lower prices in the West, reversing recent trends.

ERCOT Releases 2016 State of the Grid Report

ERCOT has released its 2016 State of the Grid report, titled "Inside the Promise."

The promise, the ISO said, "is to coordinate the operation of the grid and market that serve electric consumers. In 2016, ERCOT implemented new tools to help manage more renewables and upgraded aging equipment for increased functionality. ERCOT also worked closely with stakeholders to update criteria used to determine the need for new transmission projects and improvements."

The report highlights the ISO's demand and energy usage records set last year, new milestones for wind generation, the doubling of installed solar capacity and new lows for average wholesale market prices.

Magness Foresees Growth in Utility-scale Solar

CEO Bill Magness began his regular report to the board and members by asking, "What could be more romantic than an ERCOT board meeting on Valentine's Day?"

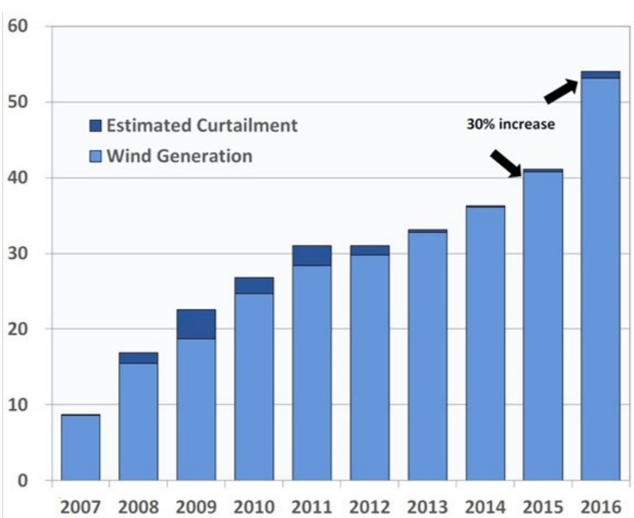
Magness said the Long-Term System Assessment shows continued load growth for the ERCOT market, with every scenario indicating significant increases in utility scale solar resources that could accelerate the need for additional transmission infrastructure in West Texas. He said the falling costs of solar and its potential to replace older generation may shift the "summer resource adequacy challenge" from the traditional 4-5 p.m. window to the 8 p.m. hour.

"A lot of the best solar resources are not congruent with the best wind resources," Magness said. "Net peak resource adequacy issues are something we have to keep an eye on. We'll have to work on ramping issues, just like we did for wind."

Staff and the Regional Planning Group endorsed six major transmission projects in West Texas last year, and others are under review.

The Port of Brownsville near the Mexico border, where several LNG facilities have been proposed, could be "the big wild card," Magness said. That will require additional generation in the fast-growing Lower Rio Grande Valley or additional transmission, he said.

"We're going to have continued challenges to meet that load," he said.



ERCOT wind production and curtailment (TWh) | *Potomac Economics*

ERCOT's preliminary net revenues for 2016 show a $13.4 million favorable balance, Magness said. The system administration fees were up $2 million, thanks to a stronger Texas economy. Personnel costs and purchases of computer hardware and other equipment were a combined $6.2 million under budget.

However, milder weather at the start of 2017 has left ERCOT "a little behind," Magness said. Administrative fees are already $1.4 million under budget.

According to the CEO's operational report, ERCOT has 254 active generation-interconnection requests totaling 59,896 MW, including 26,732 MW of wind generation, as of Dec. 31. The ISO had 17,604 MW of wind capacity in commercial operation at year-end.

Another Above-Normal Texas Summer Seen

ERCOT Senior Meteorologist Chris Coleman predicted another hotter-than-normal summer in Texas this year, saying it will follow recent patterns.

"Eight or nine of the past summers have been hotter than normal," he said. "That's just been the trend. It would really be going out on a limb to forecast a mild summer for Texas this year."

Using the latest information from the National Oceanic and Atmospheric Administration, Coleman said 2016 was Texas' third warmest year on record, dating back to 1895. He said this winter has been the sixth-warmest on record, with Austin recording 17 days of 80-degree temperatures or warmer.

Still, frigid temperatures early in the year helped ERCOT set a new winter peak of 59,650 MW on Jan. 6, breaking the previous record of 49,263 MW, set in January 2016.

Coleman said there is increasing potential for a warmer-than-normal spring that will likely produce a spring load peak in May. He will issue his final spring forecast and preliminary summer forecast March 1 as part of ERCOT's Seasonal Assessment of Resource Adequacy, but he said there's "no reason to deviate from a warmer-than-normal spring" prediction.

He also projected a wet spring. Texas recorded its two wettest years on record, with almost 74 inches of rain, in 2015 and 2016. The rainfall ended the state's drought and any possibility of long-term droughts into the next decade, Coleman said.

Technology Refresh on Schedule, Budget

CIO Jerry Dreyer told the board that ERCOT's four-year effort to update its software and hardware technology — some of it dating back to the last decade — is on

Continued on page 20

ERCOT NEWS

Board of Directors Briefs

Continued from page 19

schedule and "on budget, or slightly below."

The $48 million DC4 program, the ISO's fourth data center refresh, is aimed at replacing technology at the end of its life and support, including networks, telecommunications, servers and storage. It was approved as part of ERCOT's administrative fee request in 2015.

"Most equipment we're running today is from the 2010 era," Dreyer said. "You take on a lot of risk when you're running outdated equipment. You take on compliance risk and security risk."

Dreyer said he had no major risks and issues to report. He said 38% of the new technology has been deployed and 40% of the budget was spent through 2016. Some new technology has completed testing and is already being migrated.

Dreyer pointed out that his IT group supports three data centers, 4 million GB of stored data, more than 400 distinct applications and 1,400 servers. He said that at the same time the DC4 program is replacing 400 systems, ERCOT will also be making architectural improvements.

The project will conclude in 2019.

"The intention is to reduce the impact of an outage across multiple lines of business," Dreyer said. "IT does not run the grid … but reliable technology is key. In order to ensure reliability at the top, we need to keep the underpinnings working as well."

Board Approves 5 Revision Requests

The board unanimously approved four nodal protocol revision requests (NPRRs) and one Planning Guide revision request (PGRR) previously approved by the TAC. (See Revision Requests, Shadow-Price Cap Change Endorsed, *ERCOT Technical Advisory Committee Briefs*.)

- NPRR794: Moves reporting requirements for unregistered distributed generation from the Commercial Operations Market Guide to the protocols.
- NPRR800: Incorporates futures prices in calculations of collateral requirements.
- NPRR805: Clarifies the criteria under which congestion revenue right (CRR) account holders can submit multi-month offers for long-term auctions. The months must be consecutive, within the period covered by the auction and during months when the account holder has ownership of the CRR.
- NPRR806: Clarifies that municipalities and cooperatives not participating in ERCOT's competitive market (non-opt-in entities, or NOIEs) have the option of accepting a refund or capacity for their pre-assigned CRR-eligible resources. The NOIEs cannot select one option for some months of the year and the other option for the remaining months.
- PGRR053: Modifies the conditions proposed generating resources must meet to be included in steady state working group base cases, requiring only the data provided for full interconnection studies.

TAC Cancels February Meeting

With a "limited number" of voting items on the agenda, the TAC has canceled its Thursday meeting. The committee will resume its regular schedule March 23 before the board's next scheduled meeting in April.

TAC Chair Adrianne Brandt told committee members to expect an email vote on a revision to the Commercial Operations Market Guide (COPMGRR044), which aligns with NPRR794.

— Tom Kleckner

ISO-NE NEWS

NEPOOL Extends IMAPP Timeline

By William Opalka

The New England Power Pool's Integrating Markets and Public Policy collaborative process will suspend its monthly meetings until May to allow ISO-NE more time to develop a market design for accommodating state-sponsored clean energy contracts without disrupting the Forward Capacity Market.

In addition to providing the RTO with time to develop a "conceptual market approach that could be implemented in the near term," the delay will give states time to analyze long-term proposals discussed to date and for them to hold "off-line" discussions with stakeholders, IMAPP Chair William Fowler said in a memo released Wednesday.

ISO-NE's proposal could be presented to the IMAPP group as soon as May and implemented for FCA 13 in February 2019, which will procure resources for the 2022/23 capacity commitment period. Any proposed market rule changes to its Tariff would require FERC approval.

NEPOOL Secretary David T. Doot told *RTO Insider* that FERC's plans for a technical conference were cited by one IMAPP participant in a conference call Thursday as another reason to go slow. (See related story, *LaFleur Plans Technical Conference on State Generator Supports*, p.6.)

The original timeline set out last summer had hoped to have NEPOOL complete its work in December 2016. A revised schedule issued in November contemplated a proposal sent to ISO-NE by the second quarter of this year.

"The ISO's near-term priority is for the region to develop a workable proposal for accommodating state-supported resources while minimizing their potential to suppress FCM prices and affect regional reliability," ISO-NE spokesman Marcia Blomberg said.

Stakeholders in the IMAPP process have identified multiple paths to accommodating clean energy resources, including the introduction of a price on carbon or a two-tiered approach to the FCM that creates a separate class for clean energy. (See *Markets vs. Climate Goals the Subject at NECA Conference*.)

New England is the furthest ahead in contemplating the effects of out-of-market contracts on wholesale electricity markets, but the issue is gaining currency in NYISO and PJM. Three New England states are currently reviewing out-of-market long-term contracts for clean energy procurement. (See *New England to Charge Ahead on Clean Energy Makeover in 2017*.)

"Once the ISO has a market-based proposal, it would go through the NEPOOL Markets Committee for discussion. With recent state targets in mind, the ISO anticipates needing a near-term solution in place for FCA 13, likely requiring a FERC filing by the end of 2017 to impact the March 2018 FCM windows [for resource qualification]. The ISO is examining options and is targeting additional stakeholder discussions by May 2017," Blomberg said.

Work on proposals will continue among stakeholders over the next several months, with interim IMAPP updates provided at NEPOOL's monthly Participants Committee meeting.

"These are very complex discussions and sometimes there were reasons for a high [degree of] optimism and other times a low [degree of] optimism," said Doot, an attorney with Day Pitney. "But this is hard and it's going to take some time."

MISO NEWS

GCPA MISO South Regional Conference

MISO South Conference Focuses on Transfer Limit, Tx Investment, Climate

Some Officials Say Region Has Yet to be Fully Integrated

By Amanda Durish Cook

NEW ORLEANS — Three years after the region's integration, MISO South, with its plentiful gas generation, constrained interface into the North and capacity for severe weather, still doesn't feel fully "in" the RTO, speakers told the Gulf Coast Power Association's MISO South Regional Conference on Thursday.

Jennifer Vosburg, president of Louisiana generating at NRG Energy, said MISO's North-South transfer constraint under the RTO's settlement with SPP limits South's participation in North. "It's a challenge to how competitive MISO South continues to be," Vosburg said.

"The drive to integrate into MISO was, 'We're going to be fully in MISO,'" Vosburg said. "We're proud that the Planning Resource Auction limit is 600 MW more this year. That's not fully integrated … MISO South is not on the same playing field as MISO North."

Multiple panelists said the constrained North-South interface has exacerbated an "illiquidity" issue in MISO South.

Plentiful capacity in South is unable to help shortage conditions in North, Vosburg said, and South will remain isolated until it can fully participate in the market. She added that since integration, it is often easier to sell in the PJM capacity market than participate in MISO's capacity market.

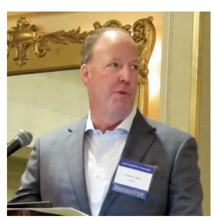
Vosburg said MISO's once-thriving independent power producers have become "a lonely table."

Paul Zimmering, an attorney at Stone Pigman who has represented the Louisiana Public Service Commission, said the North-South transfer limit should have been examined by MISO much earlier than its currently underway footprint diversity study. "This is 2017, and we were hoping this would have been looked at earlier. We thought that we would get an evaluation earlier on, but it's happening now and it's great," Zimmering said.

However, Zimmering said MISO is doing a good job through its Transmission Expansion Plan playing catch-up on other transmission projects in the Entergy territory that were ignored prior to the incorporation of MISO South. He said 86% of Public Utility Regulatory Policies Act qualifying facilities in South now participate in the MISO market.

"One MISO is a goal, and I don't think we're there just yet," he added.

Zimmering also said regulation challenges exist in MISO South, where states — Louisiana, Texas and Arkansas — are located in both SPP and MISO. "There are a lot of — I wouldn't call them divided loyalties — but different interests to look out for," he said.



Bear

MISO President and CEO John Bear pointed out the $2.3 billion in transmission investment since MISO South's addition in 2014 and said the RTO has created almost $2.5 billion in total savings over the region's three years of existence.

The value "is real and it's happening, and I think it's a really good story," Bear said.

Although the region hasn't experienced a hurricane since integration, operations have withstood significant weather events, Bear said: tornados in northern Arkansas in 2014; a Texas dam at risk because of heavy rains in 2015; flooding in eastern Texas and Louisiana; and persistent regionwide heat in 2016.

Matt Brown, vice president of federal policy at Entergy, said MISO's footprint-wide climate differences are a benefit to MISO South, allowing lower planning reserve margins. Brown said Entergy operating companies saved about $412 million in 2014 and 2015 after joining the RTO. Transmission investment in MISO South has doubled from $359 million in MTEP 14 to $886 million in MTEP 16.

Brown

Jim Schott, vice president of transmission for Entergy Louisiana, said the company has noticed that the RTO can better identify congestion for future projects and has sounder congestion management practices, decreasing instances of transmission loading relief (TLR).

"Since December of 2013, TLR and [local area procedures] have hardly been uttered once," Brown said.

Schott also said MISO membership means Entergy plans projects further in advance to fit into the annual MTEP schedule.

He also made a case for allocating costs of economic transmission upgrades to benefiting local resource zones alone. The RTO is considering changing cost allocation for economic projects in time for 2018, when costs can be shared with MISO South. "Benefits generally flow to some region, and the region should bear those costs," he said. (See *MISO Stakeholders Propose Changes to Market Efficiency Cost Allocation Process*.)

Ted Kuhn, consultant at Customized Energy Solutions, said integration has brought pricing transparency — and added bureaucracy — to MISO South. "It takes time to get things through a larger process. It takes time to know which stakeholder meetings to go to, which person to talk to. It's a process that will kill you if you don't know it," he said.

Continued on page 23

MISO NEWS

GCPA MISO South Regional Conference

MISO South Conference Focuses on Transfer Limit, Tx Investment, Climate

Some Officials Say Region Has Yet to Be Fully Integrated

Continued from page 22

SPP Seam and MISO South

Laurie Dunham, vice president and manager of regional planning for Duke-American Transmission Co., said SPP and MISO need better coordination of the models in their joint studies. She urged stakeholders to get involved in interregional planning meetings.

Dunham said large-scale transmission projects aren't always needed to resolve reliability issues, and, in some cases, the addition of "2 to 5 miles of line and a reactor" eliminates a problem.

Patrick Clarey, a FERC attorney adviser, noted that SPP is facing challenges with greater wind penetration. MISO and SPP's possible overlay study, designed to last through 2019, could produce transmission projects to solve SPP's problem, he said. (See related story, *SPP Eyes 75% Wind Penetration Levels*, p.31.)

Ted Thomas, chairman of the Arkansas Public Service Commission, said his state is in a good position — for now.

"It's easy to be in my position when gas prices are low. Our utilities aren't stirred up, our customers are satisfied, the legislature is calm," Thomas said. However, he added, "if the last three weeks are any indication of the next three years, administrations will change, federal policies will zig-zag … and the consumer needs to be protected throughout."

MISO South and the Climate

Thomas said the electric industry's long 30- to 40-year capital cycles create a high risk of stranded costs. He said with Arkansas, Texas and Louisiana's low-cost energy when compared to California's prices, MISO South can wait to implement more expensive and experimental carbon-reduction measures.

"We can't stick our heads in the sand. But we can wait and see. We don't have to take the risk that the high-cost states take," Thomas said. "I know that carbon is a long-term problem, and I question if we have a solution. I know that some states have a political appetite to reduce carbon, but I also know that Arkansas, and I suspect Louisiana, aren't those places," Thomas said. He added that even if Arkansas eliminated carbon emissions by 2018, it would not be enough to impact global temperature rise.

Other panelists maintain that MISO South is ripe for increased renewable penetration and more energy efficiency programs.

Siobhan Foley, the City of New Orleans' FUSE Executive Fellow for Climate Action, said solar has come down dramatically in price and now is viable in terms of cost. She said MISO South can reduce carbon through several smaller solar projects. "It really is about smaller wedges and more of them, sharing and distributing in different ways," Foley said.

Dunham said that the Clean Power Plan's uncertain future should not stop the adoption of renewables and storage. "I don't think it's ever 'pencils down.' We need to be always modifying and adapting," she said.

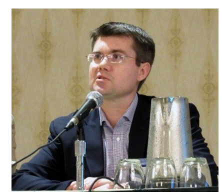
Low Rates, High Bills

Some officials think MISO South could do with more energy efficiency programs to reduce the region's high energy consumption.

"We have low rates, but we have really high bills," said Logan Atkinson Burke, CEO of consumer advocate Alliance for Affordable Energy. She said Entergy New Orleans customers have among the highest energy use rates in the country. Mississippi, Alabama and Louisiana rank among the worst in the country in available energy efficiency programs.

Thomas said energy efficiency programs can help defer "big decisions" and capital expenses by keeping demand low.

Jeff Baudier, chief development officer of Louisiana-based Cleco Holdings, said the company's addition of a heat recovery steam generator to the Cabot coal plant in the St. Mary Parish in Franklin, La., will add 50 MW of capacity with no additional emissions. The project is expected to be in service in the first quarter of 2018.


Romaine

Ted Romaine, director of origination for renewable generation developer Invenergy, said commercial and industrial customers, especially Internet companies like Google, Amazon and Facebook, are increasingly making off-site renewable energy deals such as virtual power purchase agreements.

"This is a market that's really picked up steam in the last few years. … We see more buyers come into the market, and interest continues to grow. This isn't a Silicon Valley-exclusive market," Romaine said.

ERCOT, SPP and PJM lead in corporate off-site renewable deals with a 77% share of the U.S. and Mexico, Romaine said. He said although MISO doesn't have any such contracts, it will in the future. He expects more than 20 first-time corporate renewable buyers nationwide in 2017. He added that vertically integrated MISO South utilities might bend to pressure from big energy users such as Google to create green tariffs — renewable energy purchasing programs — even if they have no legal obligation to do so. He said there is "strong potential" for solar-based virtual power purchase agreements in MISO South.

"If we don't start recognizing that multinational corporations have sustainability agendas, they're going to go somewhere else," Baudier said.

MISO NEWS

GCPA MISO South Regional Conference

Rivals Debate Next Step for MISO After Rejection of Auction Design

By Amanda Durish Cook

NEW ORLEANS — Two consultants on either side of MISO's rejected capacity auction redesign faced off in a post-mortem debate at the Gulf Coast Power Association's MISO South Regional Conference last week.

Kathleen Spees, a principal adviser at The Brattle Group who endorsed MISO's forward auction design for the RTO's retail-choice areas and worked on a simulation analysis for the RTO, said some of MISO's design elements could be revised to win FERC approval. But Independent Market Monitor David Patton pressed for a reconsideration of the hybrid prompt proposal he designed with the RTO last year.

The rejected auction proposal was an attempt to provide investment price signals to incent generation in retail choice areas in southern Illinois and Michigan. (See *FERC Rejects MISO's 3-Year Forward Auction Proposal*.)

Spees, who joked that she and Patton should have come dressed as Hillary Clinton and Donald Trump for the debate, said FERC's unusually short order lacked commission guidance on how MISO's proposal could be salvaged. The order was among more than 60 the commission issued in the last week before losing its quorum with the resignation of former Chairman Norman Bay.

"I think that leaves many of us scratching our heads about what to do next," Spees said at the Feb. 16 conference. She said she thought a compromise could be reached over how far into the future the auction is held and suggested that, in a new proposal, MISO keep a sloped demand curve for its retail-choice areas while regulated utilities maintain vertically integrated statuses.

Patton said MISO "dodged a bullet" with the rejection. "You operate the system as a whole. You can't pretend that 10% of your footprint operates separately," he said.

The Monitor continued to advocate for his own proposal, which would apply a sloped demand curve to deregulated areas and produce separate clearing prices for retail-

© RTO Insider

choice and regulated load.

Spees said MISO's proposal failed because it did not maintain an integrated market or contain a transmission allocation plan between two markets. "MISO has a uniquely challenging situation where there are two business models in conflict," she said. There is "a not-so-small-it-can't-be-ignored portion of the system that relies on market signals."

Patton said current rules only buoy regulated utilities, which continue to expand generation even when wholesale prices don't support construction.

"We exist in an environment where only a regulated market can afford to build anything," he said. "We've designed a capacity market in MISO that doesn't set efficient prices; it sets inefficiently low prices, especially in MISO South."

Patton said while he monitors both prompt and forward markets, he prefers a prompt design. He said while it's "nifty" for future resources to be able to sell capacity, an owner of a plant with a 30-year lifespan won't usually make decisions on the viability of their generation based on clearing prices in year one.

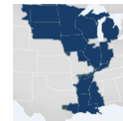
Spees, however, said a three-year forward auction provides more of an opportunity for supply and demand to reach equilibrium and avoid "boom and bust" cycles with volatile clearing prices. However, she said accurate load forecasting in a three-year market presents a challenge. "In my view, we've seen both prompt and forward markets do well…They both can be workable constructs," she said.

The two were in agreement in opposing MISO's adoption of New England's Pay-for-Performance capacity bonuses and penalties. PJM adopted similar rules in its Capacity Performance construct. Patton said he preferred incentives to stay in the energy market. (See *FERC Defends PJM Capacity Performance Model Before DC Circuit*.)

"If it ever hits on days where no one is expecting it, it can cost people a heck of a lot of money," Patton said, adding that unpredictable load is not the fault of the generator.

Spees also said performance incentives belong in the energy market, not the capacity market. However, she said there is no MISO enforcement for capacity underperformance, and she said the penalty should be "something north" of $0/MW-day.

MISO NEWS



Commissioners Ask MISO to Share Tx Project Cost Data

Weber Questions Closed Meetings

By Amanda Durish Cook and Rich Heidorn Jr.

WASHINGTON — Texas Public Utility Commissioner Ken Anderson and other state regulators sharply questioned MISO officials last Monday over its refusal to share with them raw cost data on transmission projects.

The exchange came during an in-person gathering of the Organization of MISO States Board of Directors at the winter session of the National Association of Regulatory Utility Commissioners.

OMS President and Indiana Utility Regulatory Commissioner Angela Weber, who has been calling for the organization to be more transparent itself, joined Anderson in pressing the RTO.

Anderson was already riled up when he arrived about 10 minutes late for the OMS meeting, having gotten lost looking for the conference room in an interior hallway of the Renaissance Hotel. He burst into the meeting, arms waving and complaining that the session had been scheduled in an unnumbered room. "There is a number outside," Weber calmly informed him before going on with a discussion of an appeals court brief.

Minutes later, Anderson was steamed up again. Priti Patel, manager of customer and state and regulatory affairs for MISO North, was explaining that the RTO aggregates cost data from transmission developers before sharing the figures with state commissions because it considers them proprietary information.

Anderson | © *RTO Insider*

"This is the problem in MISO … really? Proprietary?" Anderson asked testily.

Weber and other regulators at the Feb. 13 meeting also expressed dismay and called on MISO to provide more visibility on project costs.

The discussion ended when — at the urging of Iowa Utilities Board Member Libby Jacobs — Patel agreed to ask her superiors whether state regulators could sign confidentiality agreements to be privy to the more granular information as the RTO receives it from the developers.

Before FERC Order 1000, Patel had explained, MISO only required "minimal" project information such as facility statuses and in-service dates. New Tariff requirements dictate that developers provide the RTO with regulatory status, right-of-way status, permitting status, and design and engineering status. She said MISO can investigate causes of schedule delays and cost overruns greater than a 25% deviation from the budget.

The Organization of MISO States Board of Directors had an in-person meeting last Monday at the NARUC winter session in D.C. | © *RTO Insider*

While MISO's monitoring could intersect with state regulators, the RTO is not infringing on states' rights, Patel said, reminding OMS members that MISO does not determine rates. "We're not there to judge the prudency of a cost," she said.

MISO gives more weight to operations and maintenance planning than construction costs when evaluating project bids, Patel said. "What we're evaluating is the actual infrastructure," she said. Patel added that developers are keenly aware of costs, however, noting that 10 of the 11 bidders on MISO's competitive Duff-Coleman project wrote a cost cap into their proposals.

OMS Executive Director Tanya Paslawski said ratemaking power ultimately lies with FERC, and both MISO and states "are limited in what they can do."

Weber said state access to developer information varies from state to state, pointing out that commissioners in Indiana do not have access to cost information.

OMS Reviewing Own Transparency

OMS is also reassessing the appropriateness of using closed sessions during its meetings.

The topic came up in early February after some OMS members requested a closed session to discuss MISO and PJM's FERC filing to implement targeted market efficiency projects (TMEPs). Weber said some members wanted a closed session to discuss different state viewpoints of the TMEP. She questioned whether OMS should use closed sessions for simple disagreements.

"I felt that … it's a very broad interpretation of closed meetings. Once you get into that broad interpretation, there are going to be more and more closed meetings," Weber said at a Feb. 2 OMS Executive Committee meeting.

OMS bylaws dictate that meeting be generally open because it is composed of public commissions.

Weber said the organization could work to clarify the language that permits closed sessions only when strategy on a FERC filing is discussed.

OMS should not enter closed session every time a legal issue comes up in discussion, she said. "Almost everything we do touches on legal" proceedings.

Planning Subcommittee Briefs

MISO Seeks to Improve Tx Cost Estimates

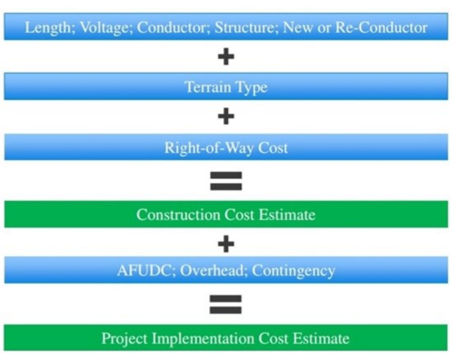
MISO is seeking stakeholder input on improving how it estimates costs in its competitive bidding process.

The RTO is proposing separate approaches for transmission lines and substations, MISO transmission design engineer Devang Joshi said at a Feb. 14 Planning Subcommittee meeting.

For transmission lines, MISO will consider length, voltage, structure and conductor type, terrain type and right-of-way cost.

For substations, the RTO will take into account the number of new lines and major equipment positions added; bus and breaker arrangement; land cost, grading, fencing, any equipment to ground the lines and a control enclosure; and major equipment additions such as a reactors, capacitors or transformers.

MISO uses cost estimates to calculate benefit-to-cost ratios on potential market efficiency and multi-value projects. Before Order 1000, transmission owners or other stakeholders provided the estimates. But with the advent of competition for such projects, TOs' cost estimates are now confidential information.



Tx line project cost estimates | *MISO*

In evaluating bids, MISO will continue to weigh cost and design at 30%, project implementation at 35%, operations and maintenance at 30% and transmission planning participation at 5%.

MISO Senior Substation Design Engineer Alex Monn said once feedback is received, the RTO will put together a guide on its cost estimation process.

Rules on Non-Transmission Alternatives Ready for PAC Review

After two years of work, Business Practices Manual language on non-transmission alternatives is nearing completion and ready to move to the Planning Advisory Committee for review, MISO principal adviser Matt Tackett said.

Under the new process in BPM 020, once transmission issues are identified for the annual Transmission Expansion Plan, "the planning process will explore alternative solutions to those issues with the objective of recommending the best overall solutions." MISO will provide developers minimum planning requirements "to provide for the consideration of both transmission and non-transmission alternatives."

The RTO said it will "defer, de-scope or cancel the transmission project previously proposed" if a non-transmission alternative is selected over a traditional transmission project.

"I think as we approach the MTEP 18 planning season, most of us would agree to move this on. The vetting isn't over, but it's a good time to make a transition to the PAC," Tackett said.

Generators Identified in MISO Retirement Analysis

MISO has compiled generator data for its MTEP 17 retirement sensitivity study scope.

The study will use 378 forecasted generator retirements from 2004 through 2027 and 30 planned generator additions in MISO, SPP, PJM and SERC Reliability territory to determine transmission system needs.

MISO engineer Anton Salib asked stakeholders to submit any changes to the generator retirement list by Feb. 22. At the beginning of March, the RTO will post the final list of retiring generators and future resource additions to be used in the study. Results will be reviewed in the spring during sub-regional planning meetings.

Salib said the retirement analysis is only an informational study and MISO will not recommend any project in the MTEP 17 cycle based on the study.

The MTEP study will share information with the RTO's Regional Transmission Overlay Study and market congestion planning study. (See "Studies Could Assist in Relieving North-South Constraint," *MISO Planning Advisory Committee Briefs*.)

— Amanda Durish Cook

MISO Endorses 2 Michigan Projects for Expedited Review

MISO is recommending two of three Michigan projects requested for expedited review be approved before its 2017 Transmission Expansion Plan.

The RTO recommended that transmission developer Michigan Electric Transmission Co. (METC), an ITC Holdings subsidiary, move ahead with a new $12 million, 120-kV substation and 2 miles of new double-circuit 120-kV structures in east Michigan, and a new $6.6 million, 120-kV station to serve 5 MW of new DTE Energy load in southeast Michigan.

In submitting the request, METC had argued that waiting until December 2017 to get regular MTEP approval did not allow enough time to support the projects' early 2018 planned in-service dates. (See "Four Expedited Review Projects Under MISO Inspection," *MISO Planning Advisory Committee Briefs*.)

After an independent study and a Technical Study Task Force review, MISO agreed.

A third project, a 138-kV station to serve 35 MW of new Consumers Energy load in western Michigan, was withdrawn from expedited review after Consumers delayed the needed in-service date to Jan. 1, 2020, because of a request from the load customer. The project will move into the normal MTEP 17 cycle for evaluation.

— Amanda Durish Cook

NYISO NEWS

Court Declines to Halt Long Island Offshore Wind Lease

By William Opalka

A federal judge on Wednesday rejected a request to halt a federal lease of waters off Long Island for an offshore wind site (16-cv-2409).

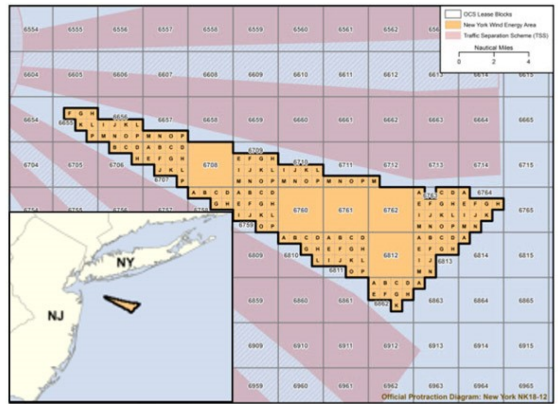
Nine commercial fishing organizations and businesses and coastal towns in New Jersey, Rhode Island and Massachusetts sought an injunction in December to halt the lease even before the U.S. Bureau of Ocean Energy Management awarded it to Norwegian company Statoil. The company won the rights to the 80,000-acre New York Wind Energy Area with a $42.5 million bid.

The fishing groups said the lease would cause irreparable harm to fishing areas that produce scallops and squid; the municipalities cited "economic and natural resource interests" in the site.

"To meet the standard for irreparable harm, plaintiffs must present sufficient evidence that the purported injury is certain, great, actual, imminent, and beyond remediation. Plaintiffs have failed to do so," D.C. District Court Judge Tanya S. Chutkan wrote. "Most significantly, plaintiffs have not shown that their purported injuries are imminent or certain."

BOEM conducted an environmental assessment of the lease area. The plaintiffs claim the bureau, part of the U.S. Department of the Interior, violated the National Environmental Policy Act and the Outer Continental Shelf Lands Act.

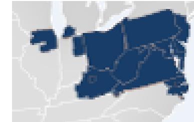
"Plaintiffs' only argument for why there is an imminent and irreparable harm, despite construction being years away if it happens at all, is that once the lease is issued, Statoil will have made a significant financial investment in the development of a wind facility and will have attained some 'property rights' in the ocean area, meaning the balance of harms for whether to issue an injunction later in this case will have changed," the judge explained. "In the court's view, this factor does not weigh strongly enough to create an imminent harm sufficient to warrant preliminary injunctive relief. The court maintains its authority to ultimately enjoin the lease in this litigation if necessary. Moreover, Statoil's decision to invest in this lease is already made with full awareness that its proposals for a wind facility may be rejected and it may never construct or operate such a facility."



New York Wind Energy Area | *Bureau of Ocean Energy Management*

The lease is one of the linchpins of Gov. Andrew Cuomo's plan to develop 2.400 MW of offshore wind facilities off Long Island by 2030. (See *Cuomo Proposes 2,400 MW of Offshore Wind by 2030*.) The Long Island Power Authority also signed a contract with developer Deepwater Wind to build a 90-MW facility off Montauk Point in the Rhode Island/Massachusetts Wind Energy Area. (See *90-MW Wind Farm OK'd off Long Island*.)

PJM NEWS



FERC Defends PJM Capacity Performance Model Before DC Circuit

By Rory D. Sweeney

"It's undisputed that PJM did not have the authority to make all these changes unilaterally."

Randolph Elliott, American Public Power Association

WASHINGTON — A group of environmentalists, regulators and public power advocates told the D.C. Circuit Court of Appeals last week that it should overturn PJM's Capacity Performance construct, saying it was fast-tracked into implementation without proper review and discriminates against renewable generators and demand response (16-1234, 16-1235, 16-1236, 16-1239).

PJM developed CP in response to increasing generation forced outage rates, which peaked at 22% during the 2014 polar vortex cold snap, when the RTO had to implement emergency procedures to avoid blackouts. CP phased out seasonal resources and increased both bonuses for overperformance and penalties for nonperformance.

FERC approved PJM's plan — which was submitted without stakeholder approval — in June 2015, saying the changes were justified by "the combination of deteriorating resource performance and the ongoing change in the resource mix in the PJM region." (See *FERC OKs PJM Capacity Performance: What You Need to Know*.)

FERC's approval is being challenged by a group including the American Public Power Association, National Rural Electric Cooperative Association, New Jersey Board of Public Utilities, Public Power Association of New Jersey, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, American Municipal Power and the Advanced Energy Management Alliance.

High Costs, Ignored Alternatives

"The common thread in all of these appeals is that PJM rushed to assemble its Capacity Performance proposal, and FERC rushed to approve it, ignoring any alternative proposals despite the proposal's high cost to consumers, its discriminatory effect on certain capacity resources and other flaws," APPA attorney Randolph Elliott said. "This is like getting to the 5-yard line and having the referee push you over the goal line, or hitting a triple and having the umpire wave you home."

The opponents argue FERC failed to demand sufficient evidence that PJM's proposal would result in just and reasonable rates, saying that while the increased costs of the new requirements have been estimated, there was no attempt to quantify the reliability benefits it would produce.

They also contend that limiting capacity bidders to year-round resources discriminates against renewables and DR and that FERC unreasonably imposed limits on aggregating resources across locational deliverability areas. Also under dispute are PJM's default offer cap, its unit-specific operating parameters and the design of its nonperformance penalties.

"It's undisputed that PJM did not have the authority to make all of these changes unilaterally," Elliott said. "The proposal was so controversial among the stakeholders that PJM did not even try to get the support they needed to file it unilaterally under [Section 205 of the Federal Power Act], so they elected to file this Section 206 complaint along with the other Tariff changes they filed under Section 205. … FERC said that the unilateral Tariff changes that PJM had made were just and reasonable, but then it turned around and said, 'Because you did those, you've rendered your operating agreement and some other provisions in your Tariff unjust and unreasonable.' Now how could those both be true at the same time? So they then turned around and granted the complaint, and said, 'In light of the changes that you've made unilaterally, we have no choice but to grant your complaint.'"

The 2014 cold-weather outages were a "conflation of events that really showed a number of weaknesses in the system."

Carol Banta, FERC

Judge Janice Rogers Brown asked if it would have been acceptable for FERC to initiate the Section 206 filing. Elliott argued no. But Matthew E. Price, representing CP supporter Exelon, later argued that it's well within FERC's purview to also order parallel revisions when an order is issued.

'Strange Result'

"It would be a very strange result if the law were somehow different because PJM had initiated the 206 proceeding and pointed out to FERC, 'Hey, here are some areas where you might want to consider making some changes,' rather than leaving FERC to hunt around in other tariffs and identify changes that might need to be made," he said.

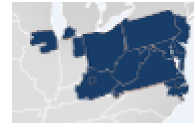
Carol Banta, an attorney from FERC's Office of General Counsel, defended the commission's order approving CP, saying FERC fairly and carefully weighed PJM's proposal and is entitled to deference in its conclusion. She noted that the commission found the proposal not unreasonably discriminatory toward any stakeholder.

FERC approved the proposal, she said, because it transferred the risk for performance from consumers to suppliers. The 2014 outages were a "conflation of events that really showed a number of weaknesses in the system," she said. "It showed that we were already paying for reliability that we weren't getting.

"When we talk about what are the reliability benefits that customers are getting for what

Continued on page 29

PJM NEWS



FERC Defends PJM Capacity Performance Model Before DC Circuit

Continued from page 28

they're paying, it's also in the context of what they were getting and not getting before," she said. "A conventional resource, if it's unable to guarantee its performance, it can fix something: It can upgrade its equipment; it can firm up its fuel arrangements. It has options, and actually this entire market proposal is to put those risks on suppliers. … If you have a wind farm, you can't order more wind, so the commission agreed that it's a reasonable accommodation for resources that couldn't improve their performance just by making investments to allow them to still participate in these markets."

Dictating Terms

This exemption for intermittent resources, like wind and solar, to aggregate their production so they can also guarantee year-round performance remained a focus throughout the hearing for Senior Judge David Sentelle. He asked why the commission hadn't allowed conventional resources, like natural gas- and coal-fired plants, to also aggregate.

"PJM is not supposed to be dictating the terms here," he said. "I can understand why aggregation would be a good thing, but would it not then be a better thing if they were allowed to cross-aggregate with traditional resources?"

Allowing such aggregation would create opportunities for companies to exercise market power, Price pointed out.

The technical aspects of the case appeared to be a challenge for the judges to hash out beyond the legal questions.

"There are many things in this case I don't fully understand," Senior Judge A. Raymond Randolph said. "What exactly is a delivery area, and second of all, why wouldn't they be allowed to [aggregate] across delivery areas?"

"PJM didn't provide the level of detail that the commission needs to approve that," Banta said. "That could still happen."

Price explained that the delivery areas are defined by transmission constraints, so resources "wouldn't necessarily be able to deliver energy" to other areas.

Randolph also asked if any stakeholders had challenged that decision, and Banta said that American Municipal Power had made it part of its appeal.

> **"There are many things in this case I don't fully understand."**
>
> **Judge A. Raymond Randolph, D.C. Circuit Court**

Costs vs. Benefits

Also participating in the nearly hour-long hearing was attorney Katherine Desormeau for the NRDC, who focused on CP's cost versus the value of its benefits.

"PJM has acknowledged from the outset that this proposal will increase costs on consumers, but it did not support its final proposal with any evaluation of the costs," she said. "And it didn't attempt to evaluate the reliability benefit that was the purpose of the Capacity Performance proposal. … [FERC concludes] that the costs will be outweighed by benefits, but we have no way of knowing what FERC thought that was."

Price replied that the proposal was designed to meet PJM's reliability objective of no more than one outage every 10 years. "That reliability standard is a bedrock principle of capacity market design that goes back many years and is true in all of the regions under FERC's authority," he said. "When you hear petitioners complain about the costs of this program, what they're complaining about are the costs of achieving that standard. What they're really arguing to you is that standard is problematic because it costs too much and they're willing to tolerate more risk, but that standard was not litigated in this proceeding. … Petitioners should not be able to make essentially a collateral attack on this well-settled reliability standard by complaining about the costs of the program."

In their final brief, the challengers noted that the commission approved CP on a split vote, citing former Chairman Norman Bay's dissent. (See *Norman Bay's Dissent: 'Two Carrots and a Partial Stick'*.)

FERC's final brief cited precedents in which the agency's decisions have been given "great deference," saying its factual findings should be considered conclusive if supported by "substantial evidence" — "more than a scintilla, but … less than a preponderance of the evidence," the standard in civil trials.

The D.C. Circuit also has pending before it a challenge to ISO-NE's similar Pay for Performance rules (*New England Power Generators Association v. FERC*, D.C. Cir. Nos. 16-1023, 16-1024). Banta noted that in both cases, FERC has said it's reasonable for all capacity resources to be expected to perform year-round "regardless of technology type."

PJM Board OKs $1.5B in Tx Upgrades

PJM's Board of Managers on Wednesday approved more than $1.5 billion in transmission upgrades, led by a project to rebuild aging lines in Burlington, Mercer and Middlesex counties in New Jersey.

The project, in the territory of Public Service Electric and Gas, will replace transmission equipment as old as 80 years. It will rebuild and upgrade the 138-kV lines in the Metuchen-Edison-Trenton-Burlington corridor to 230 kV.

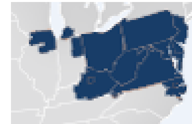
"The growing need to replace aging infrastructure, energy efficiency and the resulting reduction in the growth of demand for electricity are affecting transmission development," PJM CEO Andy Ott said in a statement. "The current round of projects approved by the board reflects the trend."

Other projects approved include transformer replacements and line rebuilds in the PSE&G, Metropolitan Edison, PPL, American Electric Power, Dominion, and Duke Energy Ohio and Kentucky areas.

PJM has now authorized more than $30.8 billion in transmission additions and upgrades in its Regional Transmission Expansion Plan since 2000.

— Rich Heidorn Jr.

PJM NEWS



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 meetings 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***.

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

Markets and Reliability Committee

2. PJM Manuals (9:10-9:30)

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

A. Manual 22: Generator Resource Performance. Revisions developed as part of a periodic review of the manual.

B. Manual 27: Open Access Transmission Tariff Accounting and Manual 13: Emergency Operations. Revisions will add Mid-Atlantic Interstate Transmission Co. as a transmission owner in PJM. MAIT is a new subsidiary of FirstEnergy that owns and operates the company's transmission assets in the Met-Ed and Penelec utility territories. (See *NJ Opposition Derails FirstEnergy's Tx Reorganization — but not Projects*.)

3. FERC Order 825 – Shortage Pricing (9:30-9:50)

Members will be asked to endorse the proposed shortage pricing and operating reserve demand curve solution and associated manual revisions. (See "Order 825 Implementation Moves Forward," *PJM Market Implementation Committee Briefs*.)

4. Transmission Substation Equipment in FERC Order 1000 (9:50-10:05)

Members will be asked to endorse proposed a Regional Transmission Expansion Plan process changes related to the treatment of transmission substation equipment under FERC Order 1000, and associated Operating Agreement revisions. (See "Endorsements Sail Through by Acclimation," *PJM Planning Committee and TEAC Briefs*.)

5. Draft Pseudo-Tie Agreements (10:05-10:20)

Members will be asked to endorse a *pro forma* pseudo-tie agreement and a reimbursement agreement for pseudo-ties into PJM, along with related Tariff and Operating Agreement revisions. (See "Committee Endorsements," *PJM Operating Committee Briefs*.)

6. Replacement Capacity (10:20-10:40)

Members will be asked to endorse a proposed problem statement and issue charge regarding procurement of replacement capacity in the Incremental Auctions. (See "PJM Has No Objection to IMM's 'Paper Capacity' Report," *PJM Market Implementation Committee Briefs*.)

Members Committee

Consent Agenda (1:20-1:25)

Members will be asked to endorse:

B. Tariff, Operating Agreement and Reliability Assurance Agreement revisions to clean up definitions.

C. Revisions to the PJM Tariff regarding operating parameters.

1. Transmission Substation Equipment in FERC Order 1000 (1:25-1:45)

Members will be asked to endorse changes to RTEP processes. See MRC item 4, above.

2. Energy Market Uplift Senior Task Force (EMUSTF) (1:45-2:15)

Members will be asked to endorse proposed Phase 1 and Phase 2 proposals endorsed by the MRC in January. (See "Work on Uplift Moves Forward Despite NOPR," *PJM Markets and Reliability and Members Committees Briefs*.)

— Rory D. Sweeney

SPP NEWS

SPP Eyes 75% Wind Penetration Levels

By Tom Kleckner

LITTLE ROCK, Ark. — Fresh off setting the wind penetration record for North American RTOs, SPP is setting its sights even higher.

Rew

The RTO's two most recent studies of wind and other variable resources analyzed wind-penetration levels as high as 60% and found that the RTO has the potential to serve 75% of its load with wind, Operations Vice President Bruce Rew told SPP's Variable Generation Integration Workshop on Wednesday.

But why stop there? Asked how high a penetration level SPP could handle, Casey Cathey, SPP's manager of operations analysis and support, replied with a smile: "As high as you want."

That's a big change, Cathey said, recalling "we were freaking out about 20% in 2009."

SPP set the record for wind penetration at 4:30 a.m. Feb. 12, topping out at 52.1%, with several hours also registering above 48.5%. (See adjacent story.) The RTO has set seven wind peaks in the last 14 months, the latest coming Feb. 9 when the footprint produced 13,342 MW of wind energy.

"We've been studying [wind] at higher load levels than SPP's minimum [load] at times," Rew said. "With nukes and hydro, we could have a majority of our load being served by [non-thermal generation] using the existing system we have now."

32 GW of Wind?

SPP currently has 87,635 MW of generating capacity, with gas (42%) and coal (31%) providing the great bulk of it. Wind accounts for 18% of the capacity (16,124 MW of nameplate generation), with hydro (4%) and nuclear (3%) trailing. An additional 32 GW of wind capacity is in the interconnection queue, along with more than 4 GW of solar.

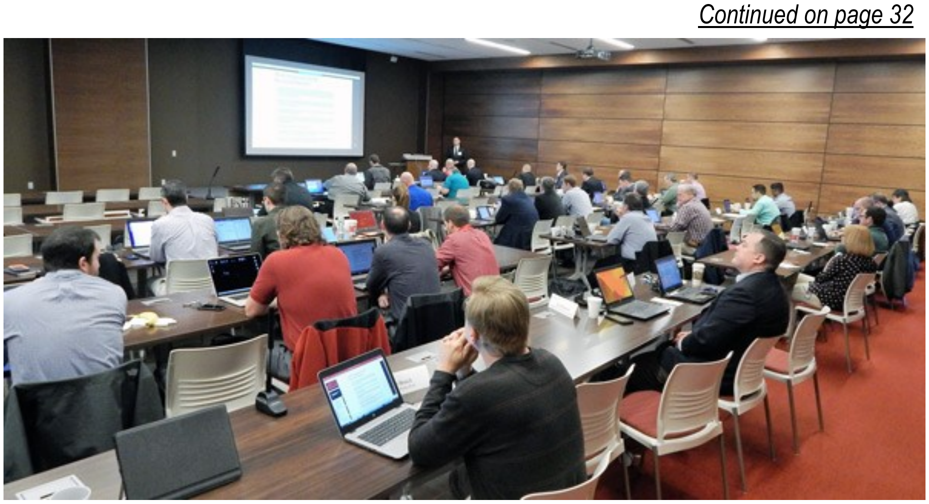
Cathey said a "good" wind-capacity factor is around 30%, but SPP's newest wind projects have factors of more than 50%.

"Maybe not all that 32 [GW] will be installed, but we know we'll have more than 16" GW, he said.

Staff last week shared the results of its latest variable generation study, which looked at requirements to reliably operate at higher wind-penetration levels. Using 45% and 60% scenarios, staff analyzed transient stability, frequency response, seasonal voltage stability, seasonal load-pocket stability and five-minute ramping.

The study assumed 27,419 MW of wind generation would be in service by the end of 2019.

Continued on page 32



SPP's Variable Generation Integration Workshop | © *RTO Insider*

SPP First RTO to 50% Wind Energy Penetration Level

By Tom Kleckner

ERCOT may have more wind, but SPP can lay claim to becoming the first North American RTO to obtain more than half of its power from it.

At 4:30 a.m. Sunday, SPP's footprint generated 11,419 MW of wind energy at the same time its load was 21,919 MW. The wind-penetration mark of 52.1% broke the RTO's previous record of 48.2%, set last April, and ended a friendly battle with ERCOT to see who could reach the 50% level first.

The two neighboring grid operators sit in the nation's most wind-rich regions. Texas may top all other states with more than 20 GW of installed capacity — with ERCOT managing more than 17 GW of that — but SPP and its 14-state footprint is not far behind, with more than 16 GW of installed capacity and another 21 GW in the interconnection queue.

In the early 2000s, SPP counted less than 400 MW of wind energy, reporting it as "Other" in its fuel-mix data. Wind now makes up about 15% of the RTO's nameplate generating capacity, trailing only natural gas and coal generation.

SPP added 4,000 MW of wind capacity in 2016, boosting its maximum simultaneous wind generation peak from 9,948 MW to 12,336 MW. It has set seven peaks for wind generation since last year, the latest coming Feb. 9 at 13,342 MW. Staff has even thrown out a 60% penetration number, saying it expects to crack that level this April.

"Ten years ago, we thought hitting even a 25% wind-penetration level would be extremely challenging, and any more than that would pose serious threats to reliability," SPP Vice President of Operations Bruce Rew said in a statement. Fifty percent "is not even our ceiling. We continue to study even higher levels of renewable, variable generation."

Several stakeholder groups are already at work trying to determine how best to add even more wind to SPP's 550,000-square-mile footprint. (See adjacent story.)

Continued on page 32

SPP NEWS

SPP Eyes 75% Wind Penetration Levels

Continued from page 31

"I don't that that we will hit 27 [GW] in three years, but when you see a number like this, I think there's going to be a lot of wind coming in," SPP's Jason Tanner said.

"We discovered we needed additional data," Cathey said, citing the longitude and latitude of every wind farm in the footprint as an example. "We really need a good, robust plan for handling this stuff."

The transient stability study showed the system could handle 45% and 60% wind penetration for simulated events. But it found the SPP damping ratio criteria of 0.8% — a measure of how quickly oscillations in a system decay after a disturbance — to be very low, and out of line with the 3 to 5% used by much of the industry.

Frequency response was found to be fully compliant with NERC criteria and indicated that new and existing renewable resources can be reliably integrated at higher penetration levels. However, three of the four cases used in the voltage-stability analysis found limitations. A 2021 case at the 60% level was successful in the planning models without operation outages.

Staff determined further analysis is needed in the ramping five-year outlook to focus on the risk of forecast errors.

Recommendations

Based on the study's results, SPP staff recommended:

- Using an online voltage stability analysis tool to manage voltage fluctuations;
- Having the Transmission Working Group define the requirements for a voltage stability analysis of low-load scenarios;
- Asking the TWG to consider increasing the existing damping ratio (0.8%) in SPP's voltage disturbance performance requirements;
- Installing transient stability contingency screening and other tools measuring signal changes over time for next-day operational analysis;
- Quantifying the risk of load and renewable forecast deviations;
- Having the TWG assess the cause and impact of modes of inter-area oscillation for machines identified by the SPP study; and
- Using the report's findings as parameters for future phasor measurement unit siting.

Staff will present the study's findings and recommendations to SPP's Board of Directors and Markets and Operations Policy Committee in April.

"We are reliable, we are secure," Golden Spread Electric Cooperative's Mike Wise said. "That's a great distinction to talk about."

But when is too much wind too much? The Export Pricing Task Force found that SPP's neighbors share the same problems in working with massive amounts of wind.

"There are things that can be changed in different areas, but there's not a silver bullet," Sam Loudenslager, the task force's staff secretary, told attendees. "We're not alone in this. There's a lot of wind around us, and we're all going to be competing to manage it."

So far, the task force has focused primarily on educating members and other stakeholders, Loudenslager said. He said the group is planning to provide market and Tariff changes for consideration to the Strategic Planning Committee in April or May.

Staff described several market mechanisms it is pondering to deal with the issue, including adopting coordinated transaction scheduling (CTS), which reduces uneconomic flows across RTO borders by allowing traders to submit "price differential" bids that would clear when the price difference between the regions exceeds a threshold set by the bidder.

NYISO has been using CTS with PJM since November 2014 and began it with ISO-NE in December. PJM and MISO plan to launch CTS later this year. (See "MISO-PJM Coordinated Transaction Scheduling Delayed," *MISO Market Subcommittee Briefs*.)

Staff is also evaluating RTO-to-RTO energy transfers similar to the CTS and market-to-market processes, multiday economic commitments, and ramp products, among others, as possible solutions.

Caspary and Wise | © *RTO Insider*

SPP First RTO to 50% Wind Energy Penetration Level

Continued from page 31

The RTO has approved more than $10 billion in transmission infrastructure over the last decade, much of it to connect rural, isolated Midwest wind farms to distant population centers. (See "Stakeholders Try to Grasp Wind Energy's Implications," *SPP Board of Directors/Members Committee Briefs*.)

"If we start pushing 12 to 15 GW of output, we're at the point where we should be concerned," SPP's Casey Cathey, manager of operations analysis and support, told the Markets and Operations Policy Committee last month. "We're not trying to say the sky is falling, but it's important we have a grip on the traditional resources and that we leverage them, as opposed to manually pushing more resources online in case the wind drops."

PG&E Sees Future Growth Tied to EVs

By Robert Mullin

Pacific Gas and Electric will continue to be a "critical partner" in California's efforts to meet its ambitious greenhouse gas reduction goals despite "uncertainty at the federal level," the company's top executive said last week.

The company's key area of focus in that effort: capitalizing on the electrification of transportation as the state strives to put 1.5 million electric vehicles on the road by 2025.

"With the transportation sector accounting for about 40% of California's greenhouse gas emissions, we expect to play a significant role in helping the state address these emissions by investing in the infrastructure necessary to enable electric vehicle adoption," PG&E CEO Tony Earley said during a Feb. 16 call to discuss fourth-quarter earnings.

The utility earned $692 million during the fourth quarter of 2016, compared with $134 million during the same period a year earlier. Full-year earnings came in at $1.39 billion, up 60% from the previous year. Operating revenues for the year increased 5% to nearly $17.67 billion on rising electric (+2%) and natural gas sales (+20%), largely the result of rate increases over the previous year. The company also booked an additional $325 million in out-of-period gas revenues based on a 2016 California Public Utilities Commission decision related to a previous under-collection of gas transmission fees.

Earley noted that the PUC in December authorized PG&E to spend $130 million over the next three years to build the infrastructure to support about 7,500 automobile charging stations. The company last month filed an additional request to lay out $250 million to support the charging of medium- and heavy-duty vehicles, such as transit buses.

"We are confident in our ability to execute on a strong growth plan through continued investments in upgrading and modernizing our system, as we help the state achieve its clean energy goals," said PG&E electric division President Geisha Williams, who will assume the company's top spot later this year upon Earley's retirement.

PG&E's electric transmission business is coming under pressure from slow load growth across the state, which has reduced the need for new transmission projects, according to CFO Jason Wells.

But the company said the reduction in incremental transmission projects should be offset by spending to interconnect new utility-scale renewable projects developed to meet California's 50% by 2030 renewable portfolio standard — helping to keep 2018 and 2019 outlays equal to current levels.

Wells roughly quantified how the increased use of electric vehicles could help the utility counter the trend of decreasing retail loads stemming from energy efficiency measures and the wider adoption of rooftop solar. A plug-in electric car consumes about half the electricity of an average household.

"So you can think of for every two electric vehicles we add to the system, essentially we're offsetting the decline that we see from distributed generation," Wells said.

Based on state agency estimates, the utility expects to have about 600,000 electric vehicles and 150,000 charging stations within its service area by 2025, Wells added. There are currently about 5,000 public chargers in the region.

Williams said PG&E should be somewhat buffered from the expected statewide growth of community choice aggregators (CCAs), which directly draw customers away from the state's three investor-owned utilities.

"Our service area is made up of many small municipalities and counties," Williams said. "So, in our case, we think that that transition to higher levels of CCA adoption are going to take a little bit longer."

But PG&E is still preparing for that potential shift by maintaining a "flexible" energy portfolio, according to Williams. The utility procures more than half of its energy supplies from third parties under long-term agreements, 40% of which represent output the company is under no obligation to take after 2021.

"So, we believe, we've got the triggers that we need to be able to meet the load over time," Williams said.

Duke Earnings Dip on Sale of International Operations

Duke Energy saw its 2016 earnings drop more than 20% to $2.15 billion ($3.11/share) from $2.82 billion ($4.05/share) in 2015 largely because of a loss on the sales of its international energy operations.

For the fourth quarter, Duke reported a loss of $227 million ($0.33/share), compared to a profit of $477 million ($0.69/share) for the same period in 2015.

The company's adjusted earnings were $3.24 billion ($4.69/share) for the year up from $3.15 billion ($4.54/share) a year earlier. Adjusted earnings exclude merger costs, severance charges, asset impairments, a 2015 charge associated with the Edwardsport IGCC regulatory settlement, and the loss on the sale of its hydroelectric and natural gas generation plants, transmission and natural gas processing facilities in Central and South America.

The company said results were bolstered by favorable weather, cost controls and the early close of its acquisition of Piedmont Natural Gas.

"2016 was a transformational year for Duke Energy as we acquired Piedmont Natural Gas and exited our international business," CEO Lynn Good said.

Duke has realigned its reporting segments into three major categories: Electric Utilities and Infrastructure; Gas Utilities and Infrastructure; and Commercial Renewables.

The Electric Utilities segment earned $483 million in the fourth quarter, down from $569 million in the last quarter of 2015. The company blamed higher operations and maintenance expenses, tax rates, interest expenses and depreciation and amortization costs.

The Commercial Renewables unit earned $10 million in the fourth quarter, down from $17 million a year earlier, because of lower investment tax credits resulting from lower solar investments, partially offset by higher production tax credits from additional wind facilities placed in service.

— Rory D. Sweeney

Entergy Beats Expectations Despite 80% Drop in Earnings

By Tom Kleckner

Entergy reported an 80% drop in 2016 fourth-quarter earnings, but the company soothed investors by beating analysts' expectations and focusing on the wind-down of its merchant nuclear energy business.

The New Orleans-based corporation said Wednesday its fourth-quarter operational earnings were $55.5 million ($0.31/share), as compared to $282.6 million ($1.58/share) in 2015. That still beat analysts' projections of 11 to 13 cents/share.

Entergy CFO Drew Marsh attributed the as-reported $9.88/share loss to previously disclosed impairment charges and "special items" related to the sale or closing of Entergy Wholesale Commodities' (EWC) nuclear plants. In recent months, the corporation has announced plans to close or sell the business's five nuclear units. (See *Entergy, Consumers Announce Closure of Palisades Nuke* and *Entergy to Shut Down Indian Point by 2021*.)

Marsh also reminded financial analysts during a conference call that 2015's quarterly earnings results included "significant" income tax benefits related to the combination of two Louisiana operating companies.

Entergy CEO Leo Denault called 2016 a "pivotal year for our company," saying it had achieved a "critical milestone" in shutting down EWC and eliminating "the risk associated with the merchant power business," which has been hurt by low energy prices and increased operating costs.

"We have finalized plans … through a deliberate, planned and orderly process to cease all merchant nuclear operations by 2021," Denault said. "I think this year will probably be a negative cash flow year because we have three refueling outages in the business."

Denault said as its merchant nuclear plants "sequentially go away," Entergy will continue "rightsizing" the organization, which began with its decision to shut down Vermont Yankee in 2014.

Entergy noted Moody's had placed the corporation under review for a potential credit upgrade and that Standard & Poor's had revised its outlook to "positive" from "stable."

Entergy also reported year-end earnings of $1.27 billion ($7.11/share), beating Zacks' consensus estimate of $6.83/share. Investors responded by driving Entergy's share price to $73.55 at Friday's close, up $2.59/share since Wednesday's open.

The company affirmed its guidance for 2017 at $4.75 to $5.35/share, saying it expects positive rate cases for its various operating companies.

PPL's Earnings Soar, Exceeding Expectations

PPL's earnings from ongoing operations rose 11% to $1.67 billion last year, boosted by a 39% jump in the fourth quarter as the company benefited from a strong performance by its utilities and gains on currency hedges.

Reported earnings more than doubled to $1.9 billion ($2.79/share) for the year, compared with $682 million ($1.01/share) in 2015, which included a $921 million loss from discontinued operations, primarily the spinoff of its competitive supply business to Talen Energy.

The company's results exceeded the high end of its 2016 reported earnings forecast range of $2.55 to $2.70/share.

Reported fourth-quarter earnings were $465 million ($0.68/share), compared with $399 million ($0.59/share) in 2015. Eliminating special items, fourth-quarter earnings from ongoing operations were $409 million ($0.60/share) versus $294 million ($0.43/share) a year earlier.

CEO William Spence said the company made $3 billion in infrastructure investments last year and plans an additional $16 billion over the next five. "We are confident in our ability to deliver our projected 5 to 6% compound annual earnings growth range from 2017 to 2020 even if the exchange rate declines well below current levels," Spence said in a statement.

The company announced that it is increasing its quarterly common stock dividend from 38 cents/share to 39.5 cents/share, payable to shareowners of record as of March 10. The increase is PPL's 15th in 16 years.

— Rory D. Sweeney

COMPANY BRIEFS

Enbridge, Spectra Merger Expected to Close in March

Enbridge's $28 billion acquisition of Spectra Energy is awaiting clearance under the Canadian Competition Act and is on track to close in March.

Under the merger, Enbridge's oil pipeline, rail and electric transmission holdings will be combined with Spectra's 90,000-mile network of gas pipelines. The U.S. Federal Trade Commission has already approved the deal.

More: *Fuel Fix*

PJM CIO O'Brien Adds 'Senior' to VP Title


O'Brien

PJM's Board of Managers last week promoted Thomas O'Brien to senior vice president and chief information officer. O'Brien, previously a vice president, has been serving as the CIO since June 2015, when CEO Andy Ott gave him the title after succeeding Terry Boston. (See *Boston Retirement Prompts Additional Promotions at PJM*.)

"Now more than ever our industry needs visionary leadership around information technology," Ott said in a statement. "Tom's knowledge and leadership of PJM's information technology, security and resilience vision and strategy has been a real asset."

O'Brien is responsible for PJM's IT services activities, including business solutions, application development services, and infrastructure and operations. Prior to joining PJM in 2002, he was employed by GPU Energy and FirstEnergy.

More: *PJM*

Continued on page 35

COMPANY BRIEFS

Continued from page 34

42 Railroad Ave Buys Maine Power Plant Fueled by Wood Chips

Alabama-based company 42 Railroad Ave has purchased a shuttered 24-MW power plant fueled by wood chips in Penobscot County, Maine, and plans to bring it online by the end of June.

The company, which develops heavy industrial and small town revitalization projects, is purchasing the plant from Niagara Worldwide for an unspecified amount after four years of negotiations and has already begun the re-permitting process, CEO Steven Johnson said.

The plant's projected revenue is $34 million per year, Johnson said.

More: *Portland Press Herald*

Renjel Named Duke's New VP of Fed Affairs, Strategic Policy


Renjel

Duke Energy announced last week that it has appointed Louis Renjel as its new vice president of federal government affairs and strategic policy effective March 20.

Renjel will oversee federal affairs; FERC and gas policy; and environmental and energy policy. He joins Duke from CSX Corp., where he has served as vice president of strategic infrastructure since 2009.

He will replace Cari Boyce, vice president of policy, sustainability and stakeholder strategy, who has led the federal affairs team on an interim basis since August 2016 and will move into a new role at the company.

More: *Duke Energy*

Tres Amigas Scales Back NM Grid Connection Project

Tres Amigas announced last week it has scaled back a $1.5 billion project in New Mexico that would connect the three continental U.S. interconnections to one that would cost about $200 million.

The announcement came after state Land Commissioner Aubrey Dunn said in a statement the company failed to meet certain benchmarks and abandoned its plan.

Russell Stidolph, Tres Amigas' CFO, said technological advances and changes in the project's business model reduced the amount of money and land required, but the project has not been abandoned. The company and the State Land Office both indicated they are open to negotiating a new lease.

More: *The Associated Press*

Toshiba Chairman Resigns as Nuclear Business Takes $6B Hit

Toshiba, which has struggled to make money in nuclear power since purchasing Westinghouse Electric in 2006, said last week it plans to write off more than $6 billion and stop building new nuclear plants. Toshiba also announced its chairman, Shigenori Shiga, would resign.

Westinghouse, which Toshiba purchased for $5.4 billion, is facing spiraling cost overruns at its U.S. nuclear plant projects, and Toshiba said it wants to sell all or part of its controlling stake in the company. However, previous efforts to sell a portion of its shares were unsuccessful.

In 2015, Westinghouse purchased American construction company CB&I Stone & Webster. Toshiba's auditors later determined Westinghouse overpaid and the construction company was saddled with liabilities for which Westinghouse failed to account.

More: *The New York Times*

DTE's St. Clair Plant to be Fully Restored by July

DTE Energy's St. Clair Power Plant, which was damaged by a fire in August, should be fully restored by July, according to DTE Electric President Trevor Lauer.

Speaking in Michigan at the Economic Development Alliance of St. Clair County's semi-annual luncheon last week, Lauer said that DTE still plans to close the plant between 2020 and 2023 along with eight other plants.

The company will soon begin the approval process for a new $1 billion plant in East China that will begin operations by 2022.

More: *The Times Herald*

Smitherman Named to NRG Board in Investor Shakeup


Smitherman

NRG Energy ousted the chairman of its board of directors and added two new members in a deal struck with a pair of hedge funds that collectively own 9.4% of the company's stock.

One of the new additions is former Texas Public Utility Commission Chairman Barry Smitherman, who is reportedly under consideration by the Trump administration to be the next chairman of FERC.

The hedge funds — Bluescape Energy Partners and Elliott Associates — were able to force the resignation of Chairman Howard Cosgrove and Director Edward Muller and, along with Smitherman, add former TXU CEO John Wilder, who chairs Bluescape. The investors are seeking to push NRG into lowering its operating costs by offloading unprofitable assets, such as coal-fired power plants.

More: *Houston Chronicle*

El Paso Electric Files Rate Hike Request with PUCT

El Paso Electric filed a request with the Public Utility Commission of Texas for a $42.5 million increase in revenues, an increase of 8.7%.

According to the company, the average West Texas residential bill would see an increase of $8.25/month. The company says the additional revenue is needed cover the expenses of a new power plant in El Paso.

The company received a $37 million rate increase last year.

More: *El Paso Times*

Pruitt Begins Hostile Takeover at EPA

Continued from page 1

Senate voted 52-46 to confirm him. He was supported by all Republicans except Sen. Susan Collins of Maine. Every Democratic senator except two — Sens. Joe Manchin of West Virginia and Heidi Heitkamp of North Dakota, both from coal-producing states — opposed him.

The vote came after Democrats argued on the Senate floor overnight Thursday in opposition, saying action should be delayed until Oklahoma officials release emails detailing Pruitt's communications with oil and gas companies during his tenure as attorney general.

Democrats criticized Pruitt's campaign contributions from the oil and gas industry and his 14 lawsuits against EPA as attorney general, including challenges to the agency's Clean Power Plan, Cross State Air Pollution Rule, the Mercury and Air Toxics Standards, regional haze rule and emission regulations on new power plants.

'False Paradigm'

At his confirmation hearing in January, Pruitt said he will seek only to ensure predictable regulation that respects states' jurisdiction. He said he would seek to end a "false paradigm that if you're pro-energy, you're against the environment." (See *Dems Unmoved by EPA Pick's Charm Offensive*.)

Pruitt rejected calls that he recuse himself as EPA administrator from any lawsuits he filed as attorney general, saying said he would consult with EPA's ethics counsel on a case-by-case basis.

He defended letters he sent to EPA and other federal officials — on state government stationary and signed by him — that had been authored by oil and gas companies. He insisted he was "representing the interests of the people of Oklahoma," noting that the oil and gas industry is responsible for one-quarter of the state's budget.

Last week, an Oklahoma judge ordered Pruitt to release thousands of emails related to his communication with the oil, gas and coal industries. The judge ruled in favor of the Center for Media and Democracy, which has been seeking the correspondence under public records laws for more than two years.

Hostile Work Environment?

Pruitt's plans for the agency are certain to be met with skepticism, if not hostility, by many in the EPA bureaucracy.

Last Monday, about 300 people, including dozens of EPA employees, held a lunch hour rally outside the agency's Chicago regional headquarters in opposition to Pruitt's appointment.

In addition, more than 400 former EPA officials signed a letter to Congress opposing Pruitt's confirmation.

"Our perspective is not partisan. Having served under both Republican and Democratic presidents, we recognize each new administration's right to pursue different policies within the parameters of existing law and to ask Congress to change the laws that protect public health and the environment as it sees fit," they wrote. "However, every EPA administrator has a fundamental obligation to act in the public's interest based on current law and the best available science. Mr. Pruitt's record raises serious questions about whose interests he has served to date and whether he agrees with the longstanding tenets of U.S. environmental law."

As attorney general, they said, Pruitt had "shown no interest in enforcing environmental laws," noting that while he issued more than 50 press releases celebrating lawsuits to overturn EPA rules, he issued none referring "to any action he has taken to enforce environmental laws or to actually reduce pollution."

"We are most concerned about Mr. Pruitt's reluctance to accept and act on the strong scientific consensus on climate change," they added.

What's Next for CPP?

Inside EPA reported last week that President Trump is planning to attend a swearing-in ceremony for Pruitt at agency headquarters, where the president will sign executive orders.

The Washington Post reported Monday that one executive order will direct EPA to rewrite the Clean Power Plan and the Interior Department's Bureau of Land Management (BLM) to eliminate a moratorium on coal leasing on federal lands.

A second order will direct EPA and the Army Corps of Engineers to rewrite the 2015 Waters of the United States rule, which gives the federal government authority over wetlands, rivers and streams that feed into major water bodies. Trump

Sen. Ed Markey (D-Mass.) was among the Democrats who criticized Oklahoma Attorney General Scott Pruitt during an all-night session before Pruitt's confirmation as EPA administrator.

signed legislation last week undoing the Stream Protection Rule finalized by the Office of Surface Mining in December, which prohibited coal mines from dumping waste in waterways.

Pruitt, who led a legal fight by states against the Clean Power Plan, told the Senate Environment and Public Works Committee that climate change is real but that the impact of human activities and how to fix it are the subject of "continued debate and dialogue."

Pruitt acknowledged the Supreme Court's finding in *Massachusetts v. EPA* that carbon dioxide was a pollutant under the Clean Air Act. "I think the court has spoken very emphatically about this issue, and the EPA has a legal obligation to respond," he said.

He said he challenged the CPP because the agency created emission limits that coal-fired generators can't meet — thus requiring a switch to other generation sources and exceeding its authority to regulate "inside the fence line."

The D.C. Circuit Court of Appeals, which heard arguments on the challenges to the CPP in September, has yet to issue a ruling. If the rule is ultimately upheld — an appeal to the Supreme Court is likely — it will not be a simple matter to undo. (See *Analysis: No Knock Out Blow for Clean Power Plan Foes in Court Arguments*.)

"Decades of law, much of it created by conservatives' judicial heroes, requires presidents and agencies to abide by the rule of law and justify regulatory reversals. They have to take a hard look at science and other underlying facts," Georgetown University Law professor William W. Buzbee wrote in December.

IPPs File Challenge to Illinois Nuclear Subsidies

By Rich Heidorn Jr.

Independent power producers last week filed suit in federal court challenging Illinois' zero-emission credits for Exelon's Quad Cities and Clinton nuclear plants, calling the program "illegal and unfair."

The lawsuit seeks to overturn the Future Energy Jobs Act, which authorized the ZEC program, contending the law violates FERC jurisdiction over the wholesale electricity market.

It was filed in the Northern District of Illinois, Eastern Division, by the Electric Power Supply Association (EPSA), Dynegy, Eastern Generation, NRG Energy and Calpine, naming the Illinois Power Agency and the Illinois Commerce Commission as defendants (1:17-cv-01164).

Jonathan Schiller, a managing partner of the plaintiffs' attorneys Boies, Schiller & Flexner, said Illinois' legislation will fail for the same reason that the Supreme Court last year unanimously rejected Maryland's attempt to subsidize a combined cycle plant. (See *Supreme Court Rejects MD Subsidy for CPV Plant*.)

"The *Hughes [v. Talen Energy]* decision clearly stated subsidies tied to wholesale power market prices — such as ZECs — are plainly illegal. The ZEC program is designed to allow Illinois to take actions that directly affect the wholesale electric market in an attempt to replace the federally regulated market prices with costs determined by the state instead," Schiller said. "The credits are directly tied to the Illinois nuclear plants' participation in interstate energy markets and are unconstitutional as a result."

The plaintiffs cite an estimate that the out-of-market payments will total $235 million annually over 10 years.

Separately, EPSA also made two filings with FERC calling for expedited action to reject the ZEC programs in Illinois and New York. New York's program also has been challenged, despite regulators' contention that the program was designed to avoid the jurisdictional problems cited by the court in *Hughes*.

EPSA said its filings — answers to other parties' comments — argue "that there is no merit to the procedural or substantive objections raised, urging the commission to act decisively and without delay" (EL16-49, EL13-62).

The commission, however, will be unable to act until a third commissioner is confirmed to restore its quorum.

EPSA noted with alarm that officials in Connecticut, New Jersey and other states are considering ZEC-type supports for their nuclear fleets.

"The commission should not allow opposing parties to obfuscate matters and should remain focused on the issue at hand to address the recognized threat to the markets through imposition of a minimum offer price rule (MOPR) on existing units for the capacity auctions used in New York and PJM to protect consumers and markets," EPSA President John E. Shelk said in a statement. "FERC should take this corrective action and then work with all stakeholders on fuel-neutral market reforms and state concerns consistent with competitive market principles."

Federal Briefs

Governors to Trump: Support Renewable Energy

A coalition of eight Republican and 12 Democratic governors sent a letter to the White House last Monday asking President Trump to support renewable energy.

The letter requests that the government help modernize the grid, support basic research and make it easier to build offshore wind projects.

The governors additionally pointed to hundreds of thousands of jobs created by renewable energy in their states as evidence of its economic benefits.

More: *Greentech Media*

BNEF Factbook: 2016 Electric Prices Fell by 2.2%

Retail electricity prices across the U.S. fell 2.2% in 2016 in real terms from 2015 levels, according to Bloomberg New Energy Finance's Sustainable Energy in America Factbook.

The Factbook, which is in its fifth edition, also found that on average, consumers presently pay 4% less per kilowatt-hour for electricity compared with 2007, when adjusted for inflation.

Electricity demand declined by 1.1% in 2016, while gross domestic product rose by 1.6%.

More: *MinnPost*

EIA: 2016 Coal Production at Lowest Level Since 1978

In 2016, natural gas exceeded coal as the primary fuel for electricity, even though 92% of U.S.-produced coal went to electricity generation, according to data from the Energy Information Administration.

Last year coal production came in at 749 million tons, the lowest domestic total since 1978. However, EIA predicts that rising natural gas prices along with removal of Obama administration regulations under President Trump and the Republican-controlled Congress will increase production and demand.

That data also indicates 11.2 GW of new natural gas power generation should come online this year, with another 25.4 GW in 2018.

More: *The Intelligencer*

STATE BRIEFS

ARIZONA

Utilities Agree to Close Navajo Generating Station

The utilities that own the coal-fired Navajo Generating Station decided last week to close it when their lease expires at the end of 2019. Their stated reason is they are overpaying for power.

To run until 2019, the utility owners — which include Salt River Project, the U.S. Bureau of Reclamation, Arizona Public Service, Tucson Electric Power and NV Energy — need to reach an agreement with the Navajo Nation, which owns the land, to decommission the three-unit, 2,250-MW plant after the lease expires. If an agreement is not reached, they will need to close at the end of this year to have time to tear down the plant's three generators by 2020.

The Central Arizona Project, which uses some of the Bureau of Reclamation's share of the power, provided a presentation concluding it would have saved $38.5 million in 2016 if it had purchased power on the open market rather than from the Navajo plant.

More: *The Arizona Republic*

CALIFORNIA

PG&E in Talks with IRS to Try to Write off Fine

Pacific Gas and Electric is preparing to send a letter to the IRS in an apparent attempt to get permission to write off some of the $1.6 billion fine levied for the deadly San Bruno explosion. According to State Sen. Jerry Hill, the company is seeking clarification on whether it can pass on $850 million of the fine, to be spent on improving its natural gas system, to ratepayers.

"This was supposed to cost them money. This was supposed to be a penalty for them for their egregious illegal actions and the death of eight individuals in the City of San Bruno," Hill said. "That's what this is a payment for. That's what this is a penalty for. And they're trying to get out of it is frankly what they are doing."

The company hasn't sent the letter yet, according to Hill, but provided a copy to the Public Utilities Commission as required.

More: *KNTV*

MANITOBA

Manitoba Hydro to Start $92M Tx Line Project in 2018

Manitoba Hydro will begin construction in 2018 on a pair of 230-kV transmission lines covering about 150 km total after receiving approval from the province on Jan. 30, the company said last week.

The $92 million St. Vital Transmission Complex will stretch south from Winnipeg's St. Vital Station. One line will serve Winnipeg-area customers, and the other will reinforce supply elsewhere.

The project is expected to be completed in 2020.

More: *CBC News*

MARYLAND

Regulators Grant $38M Rate Increase to Delmarva

In a ruling that modified a proposed order by the chief public utility law judge, the Public Service Commission denied a significant amount of Delmarva Power & Light's request for a $66 million increase in its electric distribution rate, instead granting a revenue increase of $38.3 million.

Delmarva's request, 65% of which included recovery of costs related to reliability expenditures and capital investments in smart meters, would have resulted in a $21.42 increase to the average residential monthly bill. The commission's decision is expected to result in a monthly increase of $10.84. The decision also authorizes Delmarva to increase its fixed residential customer charge from $7.94 to $8.17.

The utility also sought approval to extend and expand its Grid Resiliency Program by more than $9 million over two years, which was denied by the chief judge and not appealed.

More: *Maryland Public Service Commission*

MINNESOTA

Legislature Approves Xcel Energy Natural Gas Plant

In an end run around utility regulators, both chambers of the Legislature have approved a new Xcel Energy natural gas-fired power plant that will be located in Becker. The plant is intended offset losses that will occur when two coal-fired generators close in 2023 and 2026.

The Public Utilities Commission sidelined Xcel's proposal in October and requested research on renewable energy options. Gov. Mark Dayton said he will sign the Senate version of the bill.

More: *The Associated Press*

NEVADA

Lawmakers Seek to Revive Solar Industry

Lawmakers are seeking to bring the state's solar industry back to life after new rates for net metering in 2016 caused a 32% decline in the installation sector.

Both the Senate and the Assembly have created special subcommittees to focus on ways to make rooftop solar financially attractive to homeowners, but specific proposals are not anticipated until later in the session. Legislation that would require 80% of the state's power to come from renewable energy sources by 2040 also has been introduced.

The decline began after the Public Utilities Commission set new rates, effective Jan. 1, 2016, that eliminated financial incentives for net metering and sought to address any unreasonable subsidies provided by nonsolar customers to rooftop solar homeowners.

More: *Las Vegas Review-Journal*

Continued on page 39

STATE BRIEFS

Continued from page 38

TEXAS

Investigation Underway into Cause of Pipeline Explosion

An investigation is underway into the cause of a natural gas pipeline explosion near Refugio on Wednesday at about 12:30 a.m.

Kinder Morgan, which owns the pipeline, issued a statement saying it shut down the impacted pipeline segment and the fire has been extinguished. There were no injuries, the statement said.

More: *Fuel Fix*; *KHOU*

VERMONT

Vermont Yankee Retirement Increased CO2 Emissions

The retirement of the Vermont Yankee nuclear station in December 2014 led to higher carbon dioxide emission rates across New England after a decade of decline, according to a recent ISO-NE Electric Generator Air Emissions Report.

The plant's closure removed 604 MW of zero-emission capacity from New England's electric grid. The amount of carbon dioxide emitted by the regional power sector increased 2.5% in 2015, from 39,317 to 40,312 kilotons.

Vermont Yankee produced about 4% of New England's power. When it retired, most of its capacity was replaced with natural gas generation.

More: *The Republican*