RTO Insider

Your Eyes and Ears on the Organized Electric Markets

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

ISSN 2377-8016 : Volume 2018/Issue 31 July 31, 2018

FERC Flooded with Comments on Pipeline Permitting

Activists gathering outside FERC headquarters to protest the commission's approval of natural gas pipelines | © *RTO Insider*

By Rich Heidorn Jr.

Environmentalists and state officials called on FERC this week to broaden its review of natural gas pipeline applications while gas producers and electric generators said only minor changes are needed to the commission's 1999 policy statement.

FERC received about 2,000 comments in response to its Notice of Inquiry asking

Continued on page 36

Enviros, Industrials Challenge DOE Study on LNG Exports (p.31)

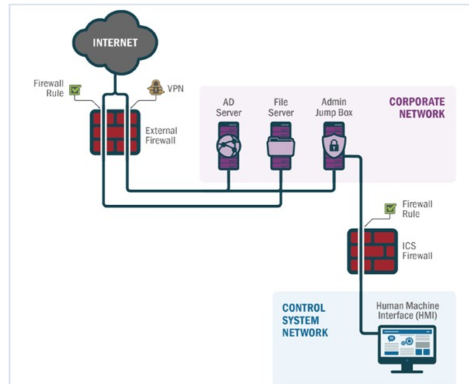
DHS: Russian Probes Hit Hundreds of Energy Cos.

By Rich Heidorn Jr.

Russian hackers gained the ability to manipulate U.S. utilities' industrial control systems (ICS), federal officials said in a briefing Wednesday that offered the most detailed account yet of a campaign that compromised hundreds of energy companies last summer.

The campaign, which began with phishing attacks and watering hole exploits to capture the credentials of vendors trusted by the utilities, did not result in any physical impact. But it was nonetheless troubling because of the length of time the hackers lingered in the utilities' systems and the access they gained, officials said.

The Department of Homeland Security's "Awareness Briefing" indicated the hackers had access to the same type of human-machine interfaces that suspected Russian agents used to cause blackouts in Ukraine in 2015. (See *How a 'Phantom Mouse' and Weaponized Excel Files Brought Down Ukraine's Grid*.)



Graphic shows how Russian hackers accessed control system networks after first penetrating the corporate networks. | *National Cybersecurity & Communications Integration Center*

Access but no Damage

"The punch line is this: In this campaign so far, the effect has been limited to being able to access the systems — to gain fairly sophisticated level access into the systems,"

Continued on page 34

AEP Cancels Wind Catcher Following Texas Rejection

By Tom Kleckner

American Electric Power on Friday announced it is canceling its proposed $4.5 billion Wind Catcher Energy Connection project, one day after receiving a negative ruling from the Public Utility Commission of Texas.

The PUC on Thursday denied AEP subsidiary Southwestern Electric Power Co.'s request to acquire a 70% interest in the project, which was scheduled to be completed in 2020 to take full advantage of the federal production tax credit.

AEP had said Wind Catcher would save customers of SWEPCO and sister company Public Service Company of Oklahoma (PSO) more than $7 billion over 25 years. PSO would have owned the remaining 30% share.

"We are disappointed that we will not be able to move forward with Wind Catcher, which was a great opportunity to provide more clean energy, lower electricity costs and a more diverse energy resource mix for our customers in Arkansas, Louisiana, Okla-

Continued on page 13

Also in this issue:

RTO Insider

CAISO ERCOT ISO-NE MISO NYISO PJM SPP

Editorial

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

Deputy Editor / Senior Correspondent
Robert Mullin 503-715-6901

Production Editor
Michael Brooks 301-922-7687

Contributing Editor
Peter Key

ISO-NE/NYISO Correspondent
Michael Kuser 802-681-5581

MISO Correspondent
Amanda Durish Cook 810-288-1847

PJM Correspondent
Rory D. Sweeney 717-679-1638

SPP/ERCOT Correspondent
Tom Kleckner 501-590-4077

Subscriptions and Advertising

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

Account Executive
Marge Gold 240-750-9423

Technical Director
Ben Gardner

RTO Insider LLC
10837 Deborah Drive
Potomac, MD 20854
(301) 299-0375

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

Correction

The headline for an article in last week's newsletter about MISO's efforts to comply with FERC Order 845 incorrectly referred to "Order 835." (See *Little Work Needed to Comply with Order 845, MISO Says*.)

COUNTERFLOW
BY STEVE HUNTOON

Offshore Wind: Edifice Complex

If you peruse my columns (and thank you if you do), you may have noticed chronic heartburn over all manner of subsidies.

To be sure, I think everyone should have the right to buy a Tesla. But I don't think anyone should have to contribute toward someone else's Tesla.

Ditto someone's microgrid, rooftop solar, home battery, grid battery, new nuclear plant, old coal plant, etc.

Which brings me to today's topic: offshore wind. Coming soon to a beach near you if the ambitions of just about every state north of Virginia pan out.

Now, please don't get me wrong, I think wind energy is wonderful. If you've been to Atlantic City in the last 12 years, you may have noticed five wind turbines in the back bay. Yours truly did the resource analysis, the financials, the permitting and the contracting for that project. I drove the stakes in the ground to mark where the turbines were placed. Back then, wind project development was a jack-of-all-trades business. I was the jack.

Offshore Wind in Reality is Anti-wind

My objection to offshore wind is that in reality it's anti-wind. Here's why: Whatever value you want to assign to wind (and other renewables), it is critical that we make the most of our collective money.

Offshore wind squanders that money.

How do we know that? Because *on*shore wind is a fraction of the cost.

For a given amount of subsidy dollars, to get 1 million MWh of offshore wind, we could get 11 million MWh of onshore wind.

Here are the numbers, using a recent study by analysts who support offshore wind (seeking to show that offshore wind is more valuable than onshore wind). They define value as the market revenues in $/MWh. So, in PJM for example, onshore wind has a value of $39/MWh, and offshore wind has a value of $45/MWh.[1]

But here's the thing. Onshore wind costs in the range of $30 to $60/MWh per Lazard's most recent Levelized Cost of Energy analysis.[2] Offshore wind is estimated by Lazard to have a mid-point cost of $113/MWh — which I would suggest is way too low,[3] but let's go with it.

Using the midpoint of the Lazard cost range for onshore wind of $45/MWh, and subtracting the onshore value of $39/MWh, means that onshore wind on average needs a subsidy of $6/MWh.

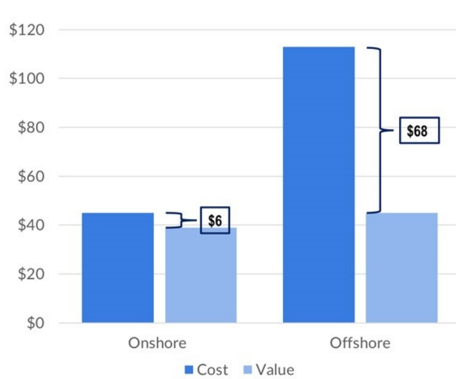
Using the Lazard cost midpoint for offshore wind of $113/MWh, and subtracting the offshore value of $45/MWh, means that offshore wind on average needs a subsidy of $68/MWh.

See the difference? Offshore wind sucks up $68/MWh, when onshore wind needs only $6/MWh. We can get on average 11 times more onshore wind from a given dollar of subsidy. Wow.

Lots of Onshore Wind Out There

It's important to point out that the enormous subsidy of offshore wind cannot be based on a claim that we're running out of onshore wind. In PJM, for example, only some 8,200 MW of onshore wind have been installed, while the potential onshore wind resource is a staggering 365,000 MW.[4]

Yes, you read that right. Installed wind in PJM is only 2% of the potential wind resource. And the PJM onshore potential is *43 times* the total offshore wind currently planned for the entire East Coast (8,500 MW).



Relative subsidy needed ($/MWh) | *Lazard Levelized Cost of Energy Analysis*

The undeveloped onshore resource is out there, waiting. Why sacrifice so much to subsidize offshore wind when that same subsidy dollar could create 11 times more onshore wind? With 11 times more environmental benefits?

Offshore Apologia Doesn't Hold Up

I raised these concerns at the summer meeting of Mid-Atlantic regulators, to a panel of offshore wind proponents (no skeptics allowed on the panel). I received answers something like these (answers in quotes with my comments following):

1. "There's not enough onshore wind in places like New Jersey." If you care about global warming, why should you care if the wind is built in your state? And even if that mattered, offshore wind isn't going to be located in New Jersey — or any other East Coast state for that matter. By federal law, each state's offshore boundary extends only 3.5 miles from the coastline (with the notable exception of, where else, Texas). So this must be about political bragging rights instead of responsible use of taxpayer and consumer dollars.
2. "Offshore wind is a better resource than onshore wind." This misses the point that offshore wind, being a better resource, is already reflected in the value-cost comparison above.
3. "Offshore wind costs are declining, as shown in Europe." True enough, but as the current numbers reflecting the most recent decline show, offshore wind is nowhere close to making sense. When and if it ever is, that would be the time to spend scarce taxpayer and consumer dollars on it, instead of on onshore wind.
4. "It's a long-term investment." A bad idea is a bad idea. It doesn't become a good idea by calling it an investment and thereby taking money from people who could productively use it. Whenever offshore wind comes to make sense, then, and only then, would it be a good idea.

The Economic Development and Jobs Scam

As a final note, let me address a couple other leading arguments for offshore wind

Continued on page 4

COUNTERFLOW
By Steve Huntoon

Offshore Wind: Edifice Complex

Continued from page 3

subsidies: economic development and jobs. The economic development claim typically comes from the wind developer's consultant, and not only fanciful, it still pales in comparison to the negative impact of the subsidy cost (which somehow doesn't appear in the press release).

As for jobs, let me give as an example the U.S. Wind project of 248 MW in Maryland, which the state Public Service Commission claimed would create 4,540 new jobs in the operating phase of the project,[5] a claim that was cranked into the press release.[6]

This is a ridiculous number of new jobs for a relatively small (yet expensive) wind project. U.S. Wind claimed only 250 new jobs during the operating phase.[7]

So how could the Maryland commission come up with 4,540 new jobs? The commission's consultant took its estimate of 226 new jobs and multiplied it by 20 years of project operation.[8] So every year, the *same* 226 jobs got counted again and again and again, for a total of 20 times. Is "scam" too strong of a word?

Oh, and as the Maryland People's Counsel pointed out, the economic development claims completely ignored the negative effects on Maryland businesses (and jobs) from having to pay the enormous subsidies.[9] This is the free-lunch fallacy.

Bottom Line: All Ashore Please!

Subsidies are costly, especially when they sacrifice many times better options and can't possibly produce the claimed benefits.

Politicians and regulators should suppress their Edifice Complex and support the wind resources that makes sense.

--

[1] http://eta-publications.lbl.gov/sites/default/files/offshore_erl_lbnl_format_final.pdf (subtracting the $6/MWh of additional energy and capacity revenue on pdf page 15 from the offshore value on pdf page 11 to get the net onshore value). 2016 data are used from the study, rather than 2007-2016 data, because the latter do not fully reflect the fundamental change in natural gas prices over time.

[2] https://www.lazard.com/media/450337/lazard-levelized-cost-of-energy-version-110.pdf, pdf page 3.

[3] Pegging the cost of offshore wind is difficult because numbers bandied about in the trade press and in press releases can be deceptive. Some reported numbers are north of $200/MWh, and then there is a surprise like Maryland's claim of offshore renewable energy credits at $131.93/MWh. Now, with RECs, the developer is assuming some level of energy revenue that needs to be added to get total cost. But more importantly about the Maryland report is that the actual REC cost is $163/MWh in year one, escalating at 1% per year. Now, you might wonder how an REC cost starting at $163/MWh can actually cost $131.93/MWh. It can't. The Maryland Public Service Commission converts the actual cost into a present value in 2012 dollars by an assumed discount factor. https://webapp.psc.state.md.us/newIntranet/Casenum/NewIndex3_VOpenFile.cfm?FilePath=C:\Casenum\9400-9499\9431\\121.pdf, pdf page 78. Of course, there's no end to such nonsense — the Maryland commission could have converted to 1912 dollars and said the cost was $6.50/MWh.

[4] Installed wind in PJM is available here: https://www.pjm.com/planning/services-requests/interconnection-queues.aspx (sort by generation interconnection, in-service status and wind fuel type). Total wind in PJM is estimated from total resource by state, developed by AWS Truepower for the National Renewable Energy Laboratory, which is available here: https://openei.org/doe-opendata/dataset/acf29328-756e-4d14-bd3e-f2088876e0e6/resource/337aca6a-c8f1-4813-b0e6-670beb47a900/download/windpotential80m30percent1.xls (estimates exclude areas unlikely to be developed such as urban areas). And from prorating each state's total potential resource by the PJM installed portion of the total state installed capacity, as provided by the American Wind Energy Association, which is available here: https://www.awea.org/statefactsheets. Spreadsheets available by request from the author.

[5] https://webapp.psc.state.md.us/newIntranet/Casenum/NewIndex3_VOpenFile.cfm?FilePath=C:\Casenum\9400-9499\9431\\121.pdf, pdf page 11.

[6] https://www.psc.state.md.us/wp-content/uploads/PSC-Awards-ORECs-to-US-Wind-Skipjack.pdf.

[7] https://webapp.psc.state.md.us/newIntranet/Casenum/NewIndex3_VOpenFile.cfm?FilePath=C:\Casenum\9400-9499\9431\\3.pdf, pdf page 54.

[8] https://webapp.psc.state.md.us/newIntranet/Casenum/NewIndex3_VOpenFile.cfm?FilePath=C:\Casenum\9400-9499\9431\\85.pdf, compare Tables 20 and 21 on pdf pages 130 and 131.

[9] https://webapp.psc.state.md.us/newIntranet/Casenum/NewIndex3_VOpenFile.cfm?FilePath=C:\Casenum\9400-9499\9431\\113.pdf.

Infocast SPP & MISO Markets Summit

Overheard

RTOs, Stakeholders Both Concerned with Ballooning IC Queues

KANSAS CITY — Infocast's first SPP and MISO Markets Summit last week faced tough competition at its hotel, which was also hosting the U.S. women's national soccer team, the Detroit Tigers, Journey and Def Leppard.

Still, the July 24-26 conference attracted participants and industry representatives from the RTOs' footprints for panel discussions on resource mix, gas builds for reliability, competitive wind pricing, unlocking solar energy's potential, demand response and energy efficiency initiatives, and the future of the Western grid.

Much of the focus was on the RTOs' interconnection queues, which have ballooned in recent years as renewable developers chase expiring federal tax credits.

Renewable projects account for 78 GW of the almost 90 GW in MISO's queue, and about 74 GW of the 77 GW in SPP's queue. Neither RTO has a coal project on the books.

MISO and SPP are used to the growth of wind power, which supplies about 17-18 GW of energy for both RTOs. But the explosion of solar and battery projects (36 GW in MISO, 20 GW in SPP) has come as a surprise.

Vikram Godbole, MISO's director of resource utilization, said solar projects now outnumber wind projects in a queue with a "historic" amount of generation. He said the generation is almost 7 GW higher than the "most extreme" staff forecasts of a year ago.

"I never thought that would happen," Godbole said. "At what point does it end, I don't know. We'll continue to see a rise in solar the next few years, especially as the projects with wind [production tax credits] drop out."

"The reason you're seeing solar is because of the tax credits," said Ameren's Jeff Dodd. "That's not a shock."

"It's mind-boggling when you look at it,"

said **Steve Purdy**, SPP's manager of generator interconnection. He compared the queue with the RTO's summer peak load of 50 GW, saying, "You can see the challenge we have in squeezing that enormous amount of generation into a relatively small amount of load.

"That's led to areas where we don't have enough load to absorb all the requests," Purdy said. "We've resorted to creative engineering and engaged our stakeholder group to help with those challenges, both in technical issues and the process issues."

SPP stakeholders in April approved an overhaul of the generator interconnection process, leading to a simpler three-stage process that mimics MISO's. (See "Members Approve Three-Stage Process for GI Requests," _SPP Markets and Operations Policy Committee Briefs_.)

The grid operators say they hope recent changes to the GI process will help them work through the backlog of requests and weed out developers trying to manipulate the process. Godbole said MISO is just now processing 2016 February and August cycles.

"A lot of GI customers are getting anxious about being able to start construction on time," Godbole said. "They need some idea of whether they'll get a [GI agreement] before the summer of 2019."

"It's going to be very difficult for anything in the 2017 cycle to get a GIA in time, just based on the cycles," Dodd said.

The simpler, three-stage study processes include heftier security deposits at each stage. That helps ensure only the most serious developers are involved, as studies have to be redone when a project is withdrawn.

"The interconnection process is becoming the long-delaying issue in the development cycle. We have to put more thought into how we enter these queues as a customer," said Tradewind Energy's **Derek Sunderman**. "We're trying to stay ahead of those changes so that we can continue to have a pipeline of projects. Security deposits ... have become the No. 1 driver on the budget side of this business."

Sunderman said the changes seem to indicate the three-stage study process "is moving forward." He said a Tradewind analysis of MISO's recent study results showed fewer customers dropped out at the later stages, an indication of the more favorable results they were getting for their projects.

"That tells us the interconnection customers are becoming very educated," Sunderman said. "The problem is the study length. It's just not working as fast as we would like."

Western Grid Hears the Markets Call

David Kelley, director of seams and market design for SPP, said improved renewable technology is not only evident within RTOs, but in the efforts to create markets and new services in the Western Interconnection.

"Many of the states and utilities are looking at integrating more renewables," he said during a panel on Western grid regionalization. "RTOs and markets are very capable of providing the type of environment and economies of scale that facilitate that type of development. It's hard to argue against how broader regions plan the system than individual companies doing it on their own."

Kelley noted SPP had 3 GW of wind energy on its system in 2008. "Now, it's 17 gigs," he said. "Our robust transmission planning system helped do that."

"The biggest hurdle of getting renewables to the market is the tariff's ways [through pancaked rates] it takes to get the power to a load-serving entity," said **Swaraj Jammalamadaka**, a former MISO staffer, now director of transmission for Apex Clean Energy. "MISO, SPP, PJM ... they are definitely a benefit for integrating low-cost generation in the system."

Markets also provide transparency into price, costs and benefits, said Kelley and Pat McGarry, managing director of The Energy Authority.

Continued on page 6

Infocast SPP & MISO Markets Summit

Continued from page 5

"The transparency is real in RTO markets," McGarry said. "It can cause issues, because now, everybody can see what the prices are. If you self-commit a generating unit when the prices are low, it's, 'Why are you running?'"

"For us, the biggest struggle is the market no longer depends upon fixed [power purchase agreements]," Jammalamadaka said. "A significant enabler in markets like SPP's is people are able to sell their power through very intelligent financial instruments. They can only be made available if you have a liquid market."

SPP is among those attempting to offer market services in the West, having been working to integrate the Mountain West Transmission Group, a collection of eight Rocky Mountain-area entities, since January 2017. That deal has been on life-support since Xcel Energy, which accounts for 40-50% of Mountain West load, announced in April it was withdrawing from the group. (See *Xcel Leaving Mountain West; SPP Integration at Risk*.)

"That certainly changes things from the cost-benefit perspective," Kelley said. "[The remaining entities] are in a very deliberate process of calculating the benefits and costs of participating in SPP. We expect that process to take place over the next few weeks before they make a final decision."

Grappling with Adding Value to Coal Resources

Without new coal-fired generation in their futures and with increasingly large amounts of renewable energy disrupting their fuel mix, how are SPP and MISO to incent new coal resources?

Casey Cathey, SPP's manager of operations engineering analysis and support, said while the RTO is fuel agnostic, it does value flexibility. To ensure coal resources are valued, he said the grid operator is evaluating two products that may provide benefits for their generation: a multiday economic commitment and a de-commitment enhancement.

"Coal unit parameters are too expensive for the day-ahead engine to pick up. It can cost $200,000 to start, so maybe we can disperse that cost over a period greater than 24 hours," Cathey said. "A multiday economic commitment would be better able to assess coal and compensate it, instead of having to self-commit."

He said a de-commitment enhancement isn't as easy as it sounds, with day-ahead positions and financial obligations that must be accounted for.

"It will help coal in two ways. It will help to further optimize commitments instead of coal having to self-commit; it will help … maximize its revenue in the de-commitment process," Cathey said of an action that's up to the market participant. "It's basically placing that decision in the hands of the RTO, which theoretically should make a little more money [for coal resources], through optimal cycling. If other resources completely de-commit, it could potentially inflate prices for those resources that stick around."

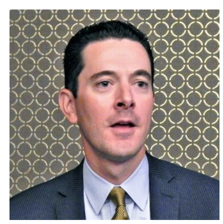
"The real question may be how we incent the right resource characteristics," said Laura Rauch, MISO director of resource adequacy coordination. "We commonly think of coal as the resource we know and love because of these attributes, but as Casey said, it's about making sure we have the market signals to go and motivate people to build resources with the right characteristic. We have to have the forward projections with the states and load entities, so that we're not just reacting, but that we're getting the generation built to replace some of these retired units with the transmission to support it, and with the general attributes we need to keep the system reliable."

Lincoln Electric System's Dennis Florom, whose company owns interests in several coal plants, said there's still a place for new coal generation, although "it's going to be a tall order."

"We need to look at new ways to clean it; we need to look at ways to change public perception. It's not a resource people want to build," he said. "As we bring in new resources such as storage, it's actually going to have an interesting play. You're going to see those storage resources placed in areas of high congestion … where prices are typically high. As you bring in resources that will eliminate congestion, you're going to see a flattening of prices.

"That makes me wonder if, out in the distance, somewhere, maybe the next 10 years, we see prices flatten," Florom said. "People will recognize that resources with higher fixed costs, but low variable costs, will be able to take advantage of those flattening prices."

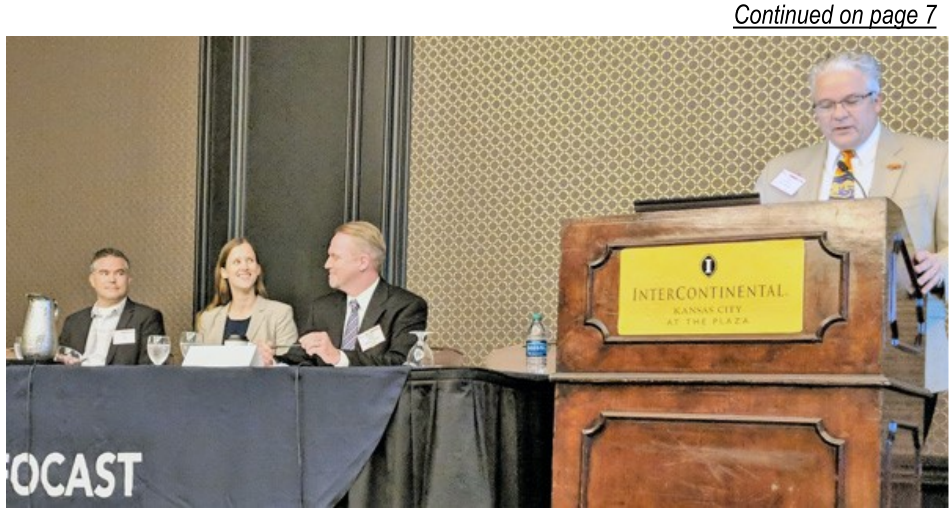
Gas Generation No Ordinary Bridge Fuel



Appearing on a panel discussing gas-fired generation's role in grid resilience and reliability, Vectren Director of Regulatory Policy and MISO Affairs **Justin Joiner** asserted that gas is not a bridge fuel but, rather, "a highway."

"[Gas units are] foundational to the adoption and use of the latest technological advances to meet load needs," he said. "Gas is cost effective, flexible, reliable, resilient

Continued on page 7



RTO Insider's Tom Kleckner moderates a discussion on the RTOs' generation mix, featuring (left to right) SPP's Casey Cathey, MISO's Laura Rauch and Lincoln Electric System's Dennis Florom. | *Infocast*

Infocast SPP & MISO Markets Summit

Continued from page 6

and fast ramping. Additionally, resiliency is a regional matter. How one meets its load needs in a resilient manner is a system-by-system consideration, unique to each LSE.

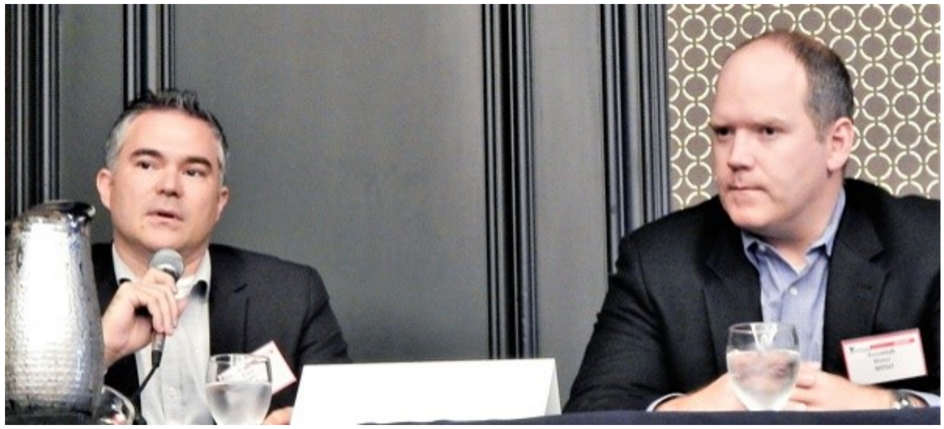
"If you look at the MISO queue and the amount of baseload retirements [20 GW recently, 12-20 GW forthcoming], there is a need for fast-ramping, dispatchable generation. Gas will meet that need," Joiner said.

Scott Wright, MISO's executive director of strategy, agreed with the critical role gas-fired generation can play. He pointed to the 10 GW of gas projects in the ISO's queue, noting most will be used to address continued retirements of legacy resources.

"Due to its reliability and flexibility attributes, gas-fired generation will support future change," Wright said. "Preliminary studies from our planning scenarios indicate that we'll be calling on a comparable amount of total gas capacity in the future to provide ramping that is at least two to two-and-a-half times the amount of today's gas ramping. This means we'll need more capability, not less, from gas-fired generation, despite and related to the large growth expected in renewable resources."

Natasha Henderson, who manages regulatory and market affairs for West Texas-based Golden Spread Electric Cooperative, said all generation types will continue to contribute to resilience. But given quick-start gas units' ability to cover sudden drops in renewable energy, she said gas-fired generation should be compensated accordingly.

"At this juncture, gas generation is the most critical type of generation to meet reliability and resiliency needs, and flexible gas generation will become increasingly important as we see more and more renewables added to the system," Henderson said. "As technology advances and the resource mix continues to change, wholesale market structures will need to not only react but proactively adjust. It's critical that we both define the attributes of reliability and resiliency and ensure that markets properly compensate these attributes to incent the correct future generation mix."



Casey Cathey (left) and Jeremiah Doner | © *RTO Insider*

MISO, SPP Improving the Interregional Process

Cathey also engaged Jeremiah Doner, MISO's director of seams coordination and membership services, in a friendly discussion over improvements to the interregional planning process and January's "Big Chill."

Having failed to agree on a single interregional project so far, the two grid operators are working to reduce hurdles, such as building a joint model and eliminating the $5 million threshold to qualify as an interregional project. To save time, SPP and MISO will now study potential projects within their own regional models. They have also added new benefit metrics, such as the avoided cost of other projects. (See *MISO, SPP Loosen Interregional Project Requirements*.)

"It doesn't take an engineering power flow model to determine projects need to be built. We have artificial human barriers … because of the model build and barriers like the $5 million threshold," Cathey said. "There's no reason we shouldn't build a $4 million project if it leads to benefits. SPP stakeholders are getting a little bit tired of talking about interregional projects. We should be building transmission across the seam.

"But give MISO kudos as well. They recognize the same thing," Cathey said.

"We're both on board and at the table working on these problems," Doner said.

The two also talked about the Jan. 17 severe weather event, when generation shortfalls in MISO South led to heavy north-south transfers across SPP's system and a maximum generation alert in the region.

Cathey, a Louisiana native, noted temperatures in his home state were 30 degrees Fahrenheit lower than they should have been. Older generating units, without proper cold-weather packaging, tripped offline, costing MISO 5 GW of capacity.

"It was a challenging day," he said. "There are a number of things that could have been done differently that day. We could have been a little more proactive. We're discussing with [MISO and neighboring Southern Co. and the Tennessee Valley Authority] how we can learn from it and better forecast these issues.

"We practice load shedding, but we don't practice emergency purchases, which prevents load shedding. We're working on that with the neighboring reliability coordinators. That alone would have helped MISO," Cathey said.

"That's a very accurate description of what happened that day," Doner said. "It's important to remember we kept the lights on. MISO is very appreciative of the emergency energy we had to purchase on that morning. We're in this together to keep the lights on. We should support each other, and we did that day."

Wind Developers Argue for Level Playing Field

A pair of wind developers said that while technological improvements continue to improve wind energy's competitiveness,

Continued on page 8

Infocast SPP & MISO Markets Summit

Continued from page 7

the loss of the PTC threatens to tilt what they say is now a level playing field.

"Yes, wind energy has evolved to where it's cost competitive," EDP Renewables' Rorik Peterson said when asked what harm the PTCs' expiration would cause. "But there's no form of electric generation that doesn't receive some sort of federal support. If the PTCs expire, that leaves wind without any form of support. As to fairness in the marketplace aspect, I take exception to that."

"On a level playing ground, we compete quite well," said Apex's Mark Mauersberger. "Having us be the only generation that doesn't benefit from a subsidy is unfair."

Peterson said solar energy's increasing competitiveness, as evidenced by its growing presence in the MISO and SPP interconnection queues, "will certainly change the landscape."

"I would expect with the phaseout of the PTCs and the loss of their full value after 2020, the tariffs on solar panels rolling off, that solar will consume a greater share of the renewables market," he said. "I would expect to see a decline of consumption of wind after 2020, but I still expect to see wind be a viable component of the generation mix going forward."

If so, then technology will continue to play a key role.

"One of the largest cost components of the wind project is the turbine," said Mauersberger, whose company's Dakota Range Wind project in South Dakota will use 72 turbines to generate 300 MW of energy. "Using [fewer] turbines shrinks the footprint, reducing the cost of cabling, roads and other civil costs. That trickles down to really reasonable pricing. We're seeing pricing down south [in Texas and Oklahoma] in the $15/MWh range. I think that's where we're headed pretty quickly."

— Tom Kleckner

| © RTO Insider

CAISO NEWS

CAISO Board OKs RC Rate Plan, RMR Change

By Robert Mullin

CAISO's push to become a reliability coordinator (RC) passed its first milestone last week after its Board of Governors approved the proposed rate design for its newest line of business.

The board also passed an "interim" rule change for the ISO's reliability-must-run program, as well as approving RMR designations for two NRG Energy gas-fired generators in the Southern California Edison service territory.

Approval of the RC rate scheme came just a week after Peak Reliability, the current RC for the Western Interconnection, announced that it would cease operations at the end of 2019. (See *Peak Reliability to Wind Down Operations*.) Peak made the decision to fold after most of its customer base defected to CAISO, which promised to offer similar reliability services at significantly lower cost.

"That's compatible with our plan to stand up our own RC and offer those services to others in the West anyway," CAISO CEO Steve Berberich told board members during their July 26 meeting. "We intend to work very closely with Peak to make sure we have a reliable transition of these services."

Phil Pettingill, CAISO director of regional integration, told the board the ISO is "uniquely positioned" to provide RC services in the West because of its "very detailed" network model, which can be leveraged "to potentially increase reliability in at least that portion of the interconnection that we're operating."

"Because we already have these tools and that infrastructure in place, our projections are showing that we've got an opportunity to provide that RC service at roughly 40% of what the current costs are, and provide that higher quality service at the same time," Pettingill said. The ISO estimates it will be able to provide RC services to the entire interconnection for about $18.5 million, compared with Peak's current budget of $45 million. (See *CAISO Puts $18.5 Million Price Tag on RC Services*.)

Revenue Requirement Component ($ in millions)	Modified Cost of Service Study
Operations & Maintenance Budget	$192.6
Debt Service (including 25% reserve)	16.9
Cash Funded Capital	22.0
Other Costs and Revenues	(18.6)
Operating Costs Reserve Adjustment	(7.8)
Revenue Requirement sub-total prior to RC funding	$205.1
RC Core Service Income (9%)	(18.5)
GMC Revenue Requirement	$186.6

| *CAISO*

CFO Ryan Seghesio told the board that CAISO based its RC rate design on the existing rate design, rather than calling out RC services as a distinct function from other ISO operations. He noted that RC services would initially represent about 2% of CAISO's annual costs upon roll-out to the ISO's balancing authority area on July 1, 2019, followed by an increase to 9% as others in the West join by the end of next year. The ISO plans to hold its overall revenue requirement to about $205 million, even after introducing RC services.

With the revenue requirement largely stable, Seghesio said RC revenue streams will decrease CAISO's grid management charge rate — the ISO's primary revenue source — by $11 million, as well as reduce rates for Western Energy Imbalance Market participants. Supplemental RC services will be billed separately, potentially further reducing other ISO charges.

Seghesio noted that some RC customers have asked the ISO to implement stronger cost containment measures in its proposal, "essentially assuring or guaranteeing some maximum level of cost increase year over year." But CAISO management "currently believes our existing cost containment measures are adequate," he said, pointing out that the ISO's revenue requirement is capped by FERC.

Seghesio said the RC allocation will remain fixed at 9% at least until the ISO performs its next cost-of-service study.

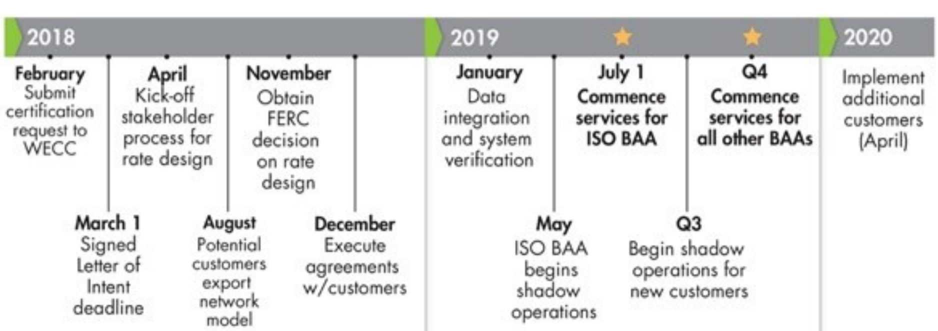
"We're very confident at this point that the 9% represents a good look at how the 2020 cost-of-service study will look, because that's the data we've used" to arrive at the estimate, Seghesio said.

Speaking during public comment on the proposal, Jeff Rehfeld, senior counsel with NaturEner, expressed "disappointment" that the ISO plans to charge generation-only balancing authorities the same rates as BAs that serve load. The company is a renewable energy developer that operates two generation-only BAs in Montana.

"Our balancing authorities, due to their generation-only characteristics, do not require some of the reliability coordinator services that are required to be provided to other balancing authorities which have load and transmission. And, similarly, the amount of attention and resources that a reliability coordinator must devote to a generation-only BA" is less than required for BAs with load, Rehfeld said.

The proposed rate structure "is not defensible under a cost-causation analysis, [nor] is it fair or equitable," he said, because it requires generation-only BAs to subsidize other RC customers. He held up Peak's funding model as more equitable.

"In the case of gen-only and, particularly, your company, the variability of the resources and also the prospect these resources will be operating in two separate



RC implementation timeline | *CAISO*

Continued on page 10

CAISO NEWS

CAISO Board OKs RC Rate Plan, RMR Change

Continued from page 9

RC areas, adds a complexity that justifies our volumetric [megawatt] calculation" for determining rate, Pettingill responded. "I think it's really the operational engineering analysis that supports our logic."

Jim Shetler, general manager of the Balancing Authority of Northern California, said his group is "comfortable" with the Tariff changes as proposed. He also pointed to another milestone for CAISO's RC effort: its first customer commitment.

"In keeping with the concept of early notice on what entities intend to do, I would like to report that at its meeting yesterday, the BANC commission authorized me to go forward with transitioning our services from Peak RC to the ISO, and we'll be looking forward to making that happen," Shetler said.

CAISO plans to file the RC rate proposal with FERC at the end of August.

RMR Actions

The Board of Governors on Thursday also approved a modification to the ISO's RMR program that would replace the existing *pro forma* RMR agreement with an "interim" version of the agreement. CAISO management sought the change "pending the development of a more comprehensive proposed amended RMR agreement" targeted for board approval in March 2019.

The interim agreement contains a provision allowing for its termination and the immediate re-designation of an affected RMR unit under a "new comprehensive agreement" upon FERC approval, said Keith Johnson, CAISO infrastructure and policy manager.

Pacific Gas and Electric and the Six Cities group of publicly owned utilities in Southern California supported the proposal, while Calpine called it "piecemeal and unnecessary."

Johnson was careful to note that the interim agreement would not apply to the two gas-fired plants the board on Thursday agreed to designate as RMR — the 54-MW Ellwood Generating Station and one unit at the 1,516-MW Ormond Beach plant. NRG announced in March that it planned to retire the plants, along with its Etiwanda Units 3 and 4. (See *NRG Set to Retire California Gas Plants*.)

CAISO determined that Ellwood's retirement would leave a 45-MW deficiency in the local capacity requirement for the Santa Clara subarea next year, while the loss of Ormond Beach would result in a 170-MW shortage for the Moorpark subarea. The ISO expects the units will also be needed in 2020 while the region awaits completion of a 230-kV transmission line and SCE completes the procurement of new resources expected to be online in 2021.

Eric Eisenman, director of ISO and FERC relations for PG&E, said his company was "neutral" on the specific RMR designations but urged CAISO to more quickly address the company's concerns about the RMR mechanism, such as the lack of a must-offer obligation for RMR units and their existing rate of return.

Eisenman acknowledged that the RMR revision process is moving along, "but not at the pace that matches the urgency PG&E has expressed and continues to express."

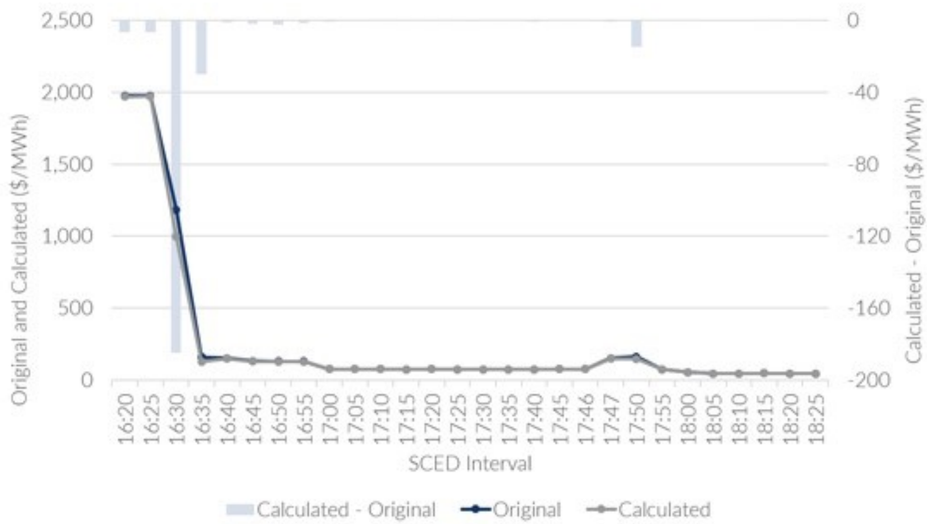
"In all likelihood, if there are any new RMR designations in the PG&E footprint for 2019, PG&E will oppose the terms and conditions before this board and before FERC," Eisenman said.

CAISO Governor Ashutosh Bhagwat noted the ISO's expressed concerns about the difficulty of rushing through an initiative as complex as that related to RMRs.

"But I do share PG&E's sense of urgency. I feel like the faster we can get this done, the better, because we're essentially [placed] in the position of *ad hoc* negotiations every single time" the ISO negotiates an RMR, Bhagwat said. "That's clearly not ideal."

ERCOT NEWS

TAC Briefs



Impact to the hub average LMP (7/18) | *ERCOT*

Stakeholders, Staff Discuss Price Investigation Notices

ERCOT stakeholders and staff last week discussed several alternatives to market price investigation announcements, following a July 20 market notice that raised anxiety levels during the height of the recent Texas heatwave.

The grid operator sent the market notice following discovery of inaccurate definitions of two double-circuit contingencies in its market systems. According to the notice, staff had begun "an investigation of market prices."

The market's shadow price at the time was $20/MWh, when it should have been around $24/MWh.

"It happened at a very heightened time in the market. There was high anxiety when this was noticed," Reliant Energy's Bill Barnes said during the July 26 Technical Advisory Committee meeting. "I appreciate the market notice … but we were surprised to see how small the change in price was. Why the fire drill?"

Staff explained there is no threshold for issuing a market notice on price investigations and that they were only following protocols.

"There's a tradeoff of me sending something out as soon as we're investigating," said Kenan Ogelman, ERCOT's vice president of commercial operations. "If I try to understand what's going on, there could be some delay."

Citigroup Energy's Eric Goff suggested staff could have sent an initial notice that a contingency had been found but that it wasn't related to the market's operating reserve demand curve.

"[The notice] just said a price correction without the details," Goff said. "That caused some uncertainty as we moved into high-priced periods."

ERCOT sent the notice following the discovery of an error in the definition of two double-circuit contingencies east of Dallas. Only one of the contingencies was part of a binding transmission constraint that lasted only four hours.

The issue affected the July 18 real-time operating day and the July 20 day-ahead operating day.

Corrected day-ahead prices were published on July 23. Staff will have to ask the Board of Directors for approval to resettle the real-time prices during its Aug. 7 meeting.

Staff said ERCOT is making "procedural changes" to ensure the error doesn't happen again.

"I think there is a better answer out there," Ogelman said. "We appreciate the conversation. We want to eliminate [that problem]."

TAC Endorses Long-delayed Governing Amendments

The TAC unanimously endorsed proposed amendments to ERCOT's articles of incorporation and bylaws, ending a monthslong series of delayed votes and redline exchanges.

"We've ended up with a very, very good work product," said ERCOT Assistant General Counsel Vickie Leady.

The amendments include identifying the Public Utility Regulatory Act as the source for the board's mandatory composition, and using Public Utility Commission rules to govern the distribution of assets and winding up provisions in the event ERCOT is decertified as an independent organization.

The amendments will be presented to the Human Resources and Governance Committee on Aug. 6, and then to the board Aug. 7. Staff plans to use an email vote to seek approval from its nearly 300 corporate members, and then file the amendments for the PUC's approval in mid-September.

The ISO hopes to have the amendments in place by January.

Staff have created a website to store the different versions of the proposed changes. The amendments are the first updates since 2000.

New Leadership Confirmed to ROS

The committee confirmed new leadership for its Reliability and Operations Subcommittee.

Golden Spread Electric Cooperative's Tom Burke will become chairman, replacing Oncor's Alan Bern after he stepped down from the role in June. Tenaska's Boon Staples will replace Burke as vice chair.

Committee Endorses 17 Revision Requests, Changes

The committee unanimously approved new language in a remanded Nodal Protocol revision request (NPRR) incorporating an intraday or same-day weighted average fuel price into the mitigated offer cap.

The TAC unanimously cleared NPRR847 in

Continued on page 12

ERCOT NEWS

TAC Briefs

Continued from page 11

May, but the Board of Directors sent it back in June over concerns that the calculation of blended fuels was "vague and confusing." (See "Board Approves 8 Change Requests," *ERCOT Board of Directors Briefs: June 12, 2018*.)

Staff told stakeholders the original language did not define the calculation correctly, using the total fuel volume twice.

The NPRR is meant to ensure resources are capped at the appropriate cost during high fuel-price events and that LMPs reflect the true incremental cost of fuel.

The committee also unanimously approved 16 other changes, clearing a backlog produced by the cancellation of its June meeting: seven NPRRs, a revision to the Nodal Operating Guide (NOGRR), two changes to the Planning Guide (PGRRs), three revisions to the Retail Market Guide (RMGRRs), an update to the Resource Registration Glossary (RRGRR), a system change request (SCR) and a change to the Verifiable Cost Manual (VCMRR).

- NPRR856: Clarifies that for day-ahead make-whole settlement purposes, the "offline but available for SCED deployment" status is considered an online status and will be considered an offline status after system implementation.
- NPRR862: Incorporates a number of revisions addressing recent changes made by the PUC's rulemaking related to reliability-must-run service (Project No. 46369).
- NPRR866: Addresses two objectives related to mapping registered distributed generation and load resources to transmission loads in the network operations model by codifying the existing process for mapping a load resource or an aggregate load resource to its appropriate load point in the model; and by outlining how to map a registered DG facility to its appropriate load point in the model.
- NPRR873: Outlines expectations for posting information pertaining to intra-hour wind power and load forecasts on the Market Information Systems public area. The NPRR also proposes two new definitions and acronyms for the intra-hour wind power and intra-hour load forecasts (IHWPF and IHLF, respectively).
- NPRR874: Changes the net allocation to load settlement stability report by breaking out the load-allocated congestion revenue rights monthly revenue zonal amount from the other load-allocated charges, and by providing dollars per megawatt-hour by congestion management zone.
- NPRR875: Adds clarifying language to sync the protocols with NPRR864, which modifies the reliability unit commitment engine to scale down commitment costs of fast-start resources with less than one-hour starts.
- NPRR877: Allows for the use of actual metered interval data for initial settlement of an operating day for electric service identifiers that currently require BUSIDRRQ load profiles.
- NOGRR174: Harmonizes the automatic voltage regulator and the power system stabilizer testing requirements with the recently approved NERC Standard MOD-026-1, Verification of Models and Data for Generator Excitation Control System or Plant Volt/Var Control Functions.
- PGRR061: Includes locations for registered DG facilities in the annual load data request process.
- PGRR062: Proposes new processes, communication and document sharing and storage requirements to be included in the new generation interconnection or change request application.
- RMGRR152: Changes the cancellation method from the MarkeTrak cancel-with-approval process to the 814_08 cancel-request Electronic Data Interchange transaction.
- RMGRR153: Removes references to Sharyland Utilities, which no longer operates as a distribution service provider in the retail market, and updates American Electric Power contact information.
- RMGRR154: Removes references to the Lite Up Texas discount, which ended in August 2016.
- RRGRR017: Supports NPRR866 by providing a process for mapping registered DG facilities to their appropriate load points in the network operations model.
- SCR796: Modifies the Market Management System's validation rules for bids and offers to exclude resource nodes within a private-use network site as valid settlement points for day-ahead market energy-only offers and bids, and for point-to-point obligation bids.
- VCMRR022: Directs ERCOT to contract a coal index price with a fuel vendor and includes a methodology for calculating the quarterly fuel adder for coal-fired and lignite-fired resources based on that index.

— Tom Kleckner

The ERCOT TAC met July 26.

ERCOT NEWS

AEP Cancels Wind Catcher Following Texas Rejection

Continued from page 1

homa and Texas," AEP CEO Nick Akins said in a statement.

Wind Catcher included a 2-GW wind farm, to be built by Invenergy on 300,000 acres in the Oklahoma Panhandle, and a 360-mile, 765-kV transmission line from the facility to Tulsa, where it would have been connected to the PSO and SWEPCO grids.

FERC and Arkansas and Louisiana regulators had already approved the project. The Oklahoma Corporation Commission had yet to issue a ruling but had also expressed concerns.

Saying the project's costs placed an undue burden on SWEPCO's Texas ratepayers, the PUC rejected an administrative law judge's proposal for decision (PFD) on the utility's request for a certificate of convenience and necessity to participate in the project (Docket No. 47461).

"I don't believe I could approve the PFD, because I don't believe it provides sufficient safeguards for the ratepayers," said PUC Chair DeAnn Walker. "The costs are known. The benefits are based on a lot of assumptions that are questionable."

"They're asking us for $4.5 billion in taxing authority against the people of Texarkana and Longview," Commissioner Arthur D'Andrea said during the PUC's open discussion, referencing the major cities in SWEPCO's East Texas footprint.

"It's one thing when the story is, 'We need this generation to go forward,'" D'Andrea said. "But when the question is, 'We don't need it, and we think it will lower the rates, and we think it's a good deal and it's a financial play.' … You have a burden to show the taxpayers and businesses of Texarkana and Longview really have something to gain from that. I don't think [SWEPCO has] met that burden."

Settlement Unlikely

The PUC in May approved a 478-MW wind farm for Southwestern Public Service, following a settlement agreement between SPS and various parties. (See *Texas PUC Issues Final Order for SPS Wind Farm*.)

SWEPCO was never able to reach a settlement with its intervenors.

"The only reason it worked in the SPS case was because everyone agreed to [customer protections]," Walker said. "We don't have that situation here, where everyone could agree to what I believe are reasonable conditions."

Thompson & Knight attorney Rex VanMiddlesworth, who represented the Texas Industrial Energy Consumers trade group, said SWEPCO's "unnecessary $4.5 billion investment of ratepayer money" was built on a series of improbable assumptions that included $4.75/MMBtu gas prices in 2021, a federal carbon tax by 2026 and the cancellation of most other wind projects in SPP's interconnection queue. The Energy Information Administration predicts Henry Hub gas prices will be $3.66/MMBtu in 2021, not reaching $4.75/MMBtu until 2046.

VanMiddlesworth also said Wind Catcher was "burdened" by the $1.6 billion generation tie across Oklahoma.

"That made the project 40% more expensive to construct than other wind projects, while delivering 8% less energy," he told *RTO Insider*. "The commission properly found that this was not a risk that should be imposed on Texas ratepayers."

During AEP's quarterly earnings conference call Wednesday, Akins seemed prepared for what might come, telling analysts that the company's "first signal of 2021 capital budgets" assumed no Wind Catcher expenditures.

Akins said Wind Catcher was incremental to AEP's base plan, which supports 5 to 7% growth in transmission and other investment among its regulated companies.

"If Wind Catcher were not to happen, there would still be opportunities for those kinds of resources to be applied to our resource plans in [the Wind Catcher] states," Akins said. "Obviously, we don't want to miss the opportunity for Wind Catcher because it's a great way to deal with the resource plans in all of those states at one time, rather than independently with perhaps less efficient projects."

Akins likened AEP's situation to being in a football field's red zone, "with time running out, 3rd down with two plays to go, needing a touchdown, with both plays already called. They're called Texas and Oklahoma."

The Texas play resulted in a sack, though, and time ran out.

New England Women in Energy and the Environment

New England Women Talk Climate Change, Resilience

By Michael Kuser

NEWIEE panelists (left to right): Penni McLean-Conner, Eversource; Ellen Miller, Avangrid; Elizabeth Henry, ELM; Alison Brizius, City of Boston; and Katherine Kemen, Partners HeathCare. | © RTO Insider

LOWELL, Mass. — Adapting to climate change in New England calls for building resilience into both the region's infrastructure and its people, and women are particularly suited to help face the challenge.

So said participants at the New England Women in Energy and the Environment's 4th annual panel discussion in the "Women Shaping the Agenda" series July 26.

Massachusetts Gov. Charlie Baker's Executive Order No. 569 nearly two years ago called for an integrated strategy on climate change, calling it not just an environmental but a cross-government, cross-sector issue, said **Katie Theoharides**, assistant secretary of climate change in the state's Executive Office of Energy and Environmental Affairs.

"You name it, this issue touches everything," Theoharides said in her keynote appearance.

Theoharides said Massachusetts' plan for climate change adaptation will be issued in September. Her office is also working with the state's Emergency Management Agency to update its hazard mitigation plan, which will be folded into the climate plan.

"The state has focused on moving from standalone climate change plans and reports to incorporating those types of actions, and their funding, into the mainstream," Theoharides said. "That effort has formed the basis for an environmental bond bill (H.4599) that is still in conference right now.

"Most of our resiliency language that we put in there will not be conferenced because it was previously agreed to by both the Senate and the House, so we're very excited to see the executive order actually getting codified into state law."

By coincidence, lawmakers finalized the environmental bond bill on the same night Theoharides spoke.

It's also important to work with other states, she said, as in the "phenomenally successful" Regional Greenhouse Gas Initiative, the country's first effort to set a cap on emissions from the power sector and reinvest carbon allowance auction proceeds into strategies to reduce energy consumption and thereby continue making gains to reduce emissions.

"We're very focused on science and data as tools to use in governing … which has helped us deal with climate change in a nonpartisan way," Theoharides said. "We don't make it a blue state/red state issue."

Follow the Money

Using the plan as a guide for the state's spending on climate change will help build on progress made so far, as "it's important to figure out where the money all goes," Theoharides said.

"One of the first things I learned about in state government was how the budget process works, how procurement works," she said, adding that her agency early on determined how to tap existing funding streams to support climate initiatives. "We're not going to have a giant pot of money right away to do this work; we need to build that pot of money. In the interim, figuring out ways to use the existing money more strategically and to get the priorities into that funding is important."

Elizabeth Henry, president of the Environmental League of Massachusetts, said the lack of money usually poses the biggest obstacle to implementing climate change adaptation programs, and that she was "very excited" to see the state increasing environmental funding.

"We're also working to link carbon mitigation and climate adaptation in a really fundamental way," Henry said. "We see this core problem of carbon as also potentially being part of the solution. So we're advocating to put a price on carbon … and see [it] as a key part of the solution."

Stormy Weather

Alison Brizius, director of climate and environmental planning for the city of Boston, said two years ago the city released a comprehensive plan to prepare it for the impacts of climate change, including a citywide vulnerability assessment looking at the climate change vulnerabilities we face and the very large-scale key strategies across the sectors on how we're going to deal with those challenges."

Flooding and sea level rise pose the greatest threats in Boston, so Brizius and her team began to plan how to raise key infrastructure district by district and parcel by parcel. She said the city also must handle increasing temperatures and storm runoff and is working to "embed" the values of resilience in planning processes.

Penni McLean-Conner, chief customer officer and senior vice president at Eversource Energy, said her company had built the new Seafood Way Substation in South Boston last year — one of the first in the nation to build for resilience.

"It is designed to handle flooding; it's 23 feet above sea level; it's designed to

Continued on page 15

New England Women in Energy and the Environment

New England Women Talk Climate Change, Resilience

Continued from page 14

withstand hurricanes," McLean-Conner said. "That's a 50-year investment. We were thinking about that investment knowing we were going in an area that needed to have resiliency."

Another utility veteran, Ellen Miller, vice president for projects at Avangrid Networks, said the company's regulated utilities are "looking at what we have to do to prepare for the increasing frequency and duration of storms that we're experiencing."

Miller highlighted the New England Clean Energy Connect project of Avangrid subsidiary Central Maine Power to deliver 1,200 MW of Canadian hydropower to Massachusetts as an example of a strong stakeholder process. She also said Avangrid had "recently announced a $2.5 billion plan to harden our system in response to climate change."

Katherine Kemen, program manager for emergency preparedness at Partners HealthCare, said her stakeholder process involved corporate managers. Because it would be prohibitively expensive to provide backup systems for every part of a large hospital, she said she has to be realistic in choosing what solutions to propose.

"We're in the third phase of a strategic resiliency initiative," Kemen said. "We started with 30 critical sites across our system, including data centers and research centers, and mapped out projections ... to 2030 and 2070."

Women's Role

Women are the most vulnerable to climate change, but in some ways, the things that make women more vulnerable also make them more poised to deal with the issue, Theoharides said.

In the U.S., climate change is projected to hit poor women the hardest of any demographic, she said.

"From what I've seen of women working in this field, anything from helping negotiate the Paris Agreement to really shaping the field of adaptation, 10 years ago women were at the forefront," Theoharides said.

"I think women are really good at collaborating across disparate spaces; they're really good at bringing cross-cutting issues together. I think we're good at building partnerships and looking for different answers, so there's a real role for women to play as connectors," she said. "Listening is a key aspect of this work."

Julie Chen, vice chancellor for research and

| © RTO Insider

innovation at the University of Massachusetts Lowell, which hosted the event, said women learn to be resilient from their own life experiences, whether from dealing with overt misogyny — a male client asking another man a technical question even when a woman is in charge — or microaggressions, which are tiny acts in themselves but have a decidedly negative cumulative impact on women.

Chen also promoted her university as a great research source for the women in the audience.

The school has "over 40 faculty who work in energy and environmental areas, everything from solar, wind, fuels, the grid, energy storage [and] nuclear. They do experiments; they do modeling; they have unique testing equipment that you might want to take advantage of," Chen said.

ISO-NE NEWS

DC Circuit Denies Review of Algonquin Pipeline Expansion

By Michael Kuser

A D.C. Circuit Court of Appeals panel on Friday declined to review FERC's approval of plans to expand capacity on the Algonquin Gas Transmission natural gas pipeline.

The court also dismissed a petition from a group of elected Boston officials for lack of standing.

Circuit Judge Sri Srinivasan filed the opinion (Case No. 16-1081) for the three-member panel July 27, denying petitions from the Town of Dedham, Mass., Riverkeeper, and a coalition of other environmental groups that said the commission should have evaluated three separate Algonquin expansion projects in a single environmental impact statement.

The court noted that FERC approved the Algonquin Incremental Market (AIM) project in March 2015, that Algonquin submitted the application for the Atlantic Bridge project in October 2015 and that the company has yet to file its application for the Access Northeast project.

"The projects thus were not under simultaneous consideration by the agency," and thus not improperly segmented, the court said. It also found FERC reasonably concluded that the projects were not interdependent, as they each had separate timelines for approval and commencing service.

The petitioners also contended that the commission failed to consider sufficiently the cumulative environmental impacts of the three projects. But the court said FERC took into account the AIM project's EIS when evaluating Atlantic Bridge's, and that Access Northeast is too early in development.

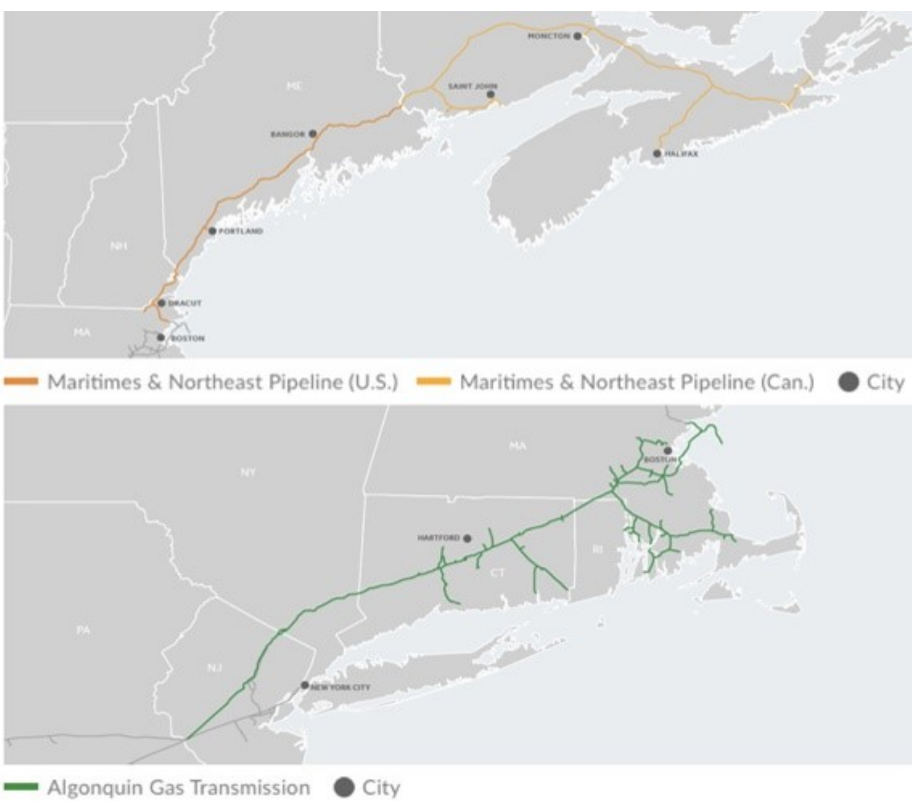
"The adequacy of an environmental impact statement is judged by reference to the information available to the agency at the time of review, such that the agency is expected to consider only those future impacts that are reasonably foreseeable," the court said.

The $972 million AIM project includes about 5 miles of new pipeline, the West Roxbury Lateral, which would run adjacent to a quarry outside Boston, and larger-diameter replacement pipeline next to the Indian Point nuclear plant on the Hudson River in New York.

The petitioners questioned FERC's reliance on testimony from the Nuclear Regulatory Commission and Indian Point owner Entergy that AIM — which will lay pipeline 2,370 feet from the plant's security barrier — posed no increased threat to the nuclear plant.

"We disagree," the court said, ruling that FERC had "permissibly decided to credit the NRC's expert conclusions, and to accept that NRC's 'extensive formal responses' had adequately addressed the opposing experts' concerns."

The court also said it lacked jurisdiction to consider petitioners' contention that the third-party contractor preparing the project's EIS, Natural Resource Group, had a conflict of interest, as they had not raised the issue with FERC.



| Enbridge

Not Really Boston

Although the commission did not initially contest the Boston delegation's standing, Algonquin raised the issue as an intervenor in the case, which led the court to address the issue. The delegation consisted of nine elected representatives from Boston, including the mayor, a congressman and two state legislators.

The delegation's claim of injury for standing purposes rested on the West Roxbury Lateral's allegedly adverse safety, health and environmental effects on the city. The delegation staked its standing primarily on the mayor's participation in the petition, claiming that effectively made the city a party.

"We are unpersuaded by the delegation's theory," the court said. "While the city of Boston could in theory bring an action, the mayor does not act as the city when he files a lawsuit in his own name.

"The city code specifies the process by which a lawsuit is initiated on behalf of the city of Boston. ... That process did not take place here."

ISO-NE NEWS

DC Circuit Dismisses Union Challenges to FCA Results

By Michael Kuser

The D.C. Circuit Court of Appeals last week dismissed claims by a labor union that FERC had failed to consider the effects of the closure of the Brayton Point power plant on ISO-NE's Forward Capacity Auctions 9 and 10 but did suggest the commission should act on a similar claim regarding FCA 8.

Circuit Judge Cornelia Pillard filed the opinion for the three-member panel July 24, dismissing claims by the Utility Workers Union of America Local 464 and its president, Robert Clark, who contended that high clearing prices in FCAs 9 and 10 — resulting from the "illegal" closure of Dynegy's 1,488-MW Brayton Point station in Massachusetts — increased the cost of their retail electricity service. The union represented workers at the plant, which closed last year.

The petitioners challenged FERC's orders approving the results of those wholesale auctions as just and reasonable under Section 205 of the Federal Power Act.

"Because no record evidence establishes a causal link between the claimed manipulative closure of Brayton Point and the clearing prices of FCA 9 and FCA 10 that FERC approved, we hold that petitioners lack standing to challenge FERC's acceptance of those results," the court said.

The union and others also had challenged Brayton Point's closure before the commission as an attempt to manipulate the results of FCA 8.

In September 2014, the commission split 2-2 over whether it should reject the results from FCA 8 because of unchecked market power, allowing the 2017/18 auction results to become "effective by operation of law" (ER14-1409). Under the FPA, rates take effect 60 days after they are filed with FERC, absent a commission order to the contrary. (See *Court Asked to Force FERC Action on Disputed ISO-NE Capacity Auction*.)

In the absence of final FERC action, the court lacked jurisdiction to consider that FCA 8 petition.

The court said, "Petitioners' long-pending request that the full commission revisit Brayton Point's retirement in the FCA 8 proceedings has yet to be resolved. We trust the commission will give it appropriate consideration without further delay."

Missing Link

The court suggested the petitioners erred in referring solely to events that occurred in FCA 8, which saw total capacity costs for 2017/18 rise to $3.05 billion (or $7.025/kW-month) — almost double the previous high — as the region's capacity shifted from an expected surplus to a deficiency of more than 1,000 MW. Prices surged again the following year to $9.55/kW-month for FCA 9 covering 2018/19 but fell to $7.03/kW-month in FCA 10.

"It might seem intuitive, given the laws of supply and demand, that the non-participation of a large plant like Brayton Point would exert some upward pull on auction prices," the court said. "Again, that logic might suffice in relation to FCA 8, given that Brayton Point retired after the deadline for other suppliers to participate in that auction. But in this context, where petitioners challenge successive Forward Capacity Auctions exclusively by reference to events during FCA 8, the link is missing."

The court said New England has structured its forward capacity markets to safeguard against undesired effects in one auction rolling through succeeding ones.

The cycle of annual auctions, "conducted three years before generators assume the resulting obligations, are spaced so as to permit the market to account and correct for the events of the previous auction," the court said.

MISO NEWS

Deep Carbon Cuts in Midwest Possible by 2050, Group Says

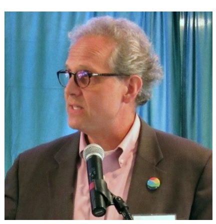
By Amanda Durish Cook

MILWAUKEE — Middle America could significantly decarbonize over the next three decades, but today's actions and investment decisions and future public policy will be critical to meeting that goal, says a new report by a diverse group of regional energy experts.

Judi Greenwald addresses conference attendees. | © *RTO Insider*

The report by the Midcontinent Power Sector Collaborative (MPSC) says the midcontinent electricity sector could "substantially decarbonize by midcentury," possibly reducing CO_2 emissions by 80 to 95% from 2005 levels using existing technology. Entitled "A Road Map to Better Energy," the analysis was released at a July 24 conference hosted by the Great Plains Institute and the MPSC, a group of regulated utilities, generation and transmission cooperatives, merchant power providers, environmental organizations, and regulatory agencies.

"That's a really, really critical finding," Jeff Deyette of the Union of Concerned Scientists said of the carbon reduction potential. "We should be saying that loud and a lot, especially to those that are" doubters.



Great Plains Institute CEO **Rolf Nordstrom** praised the group for tackling such a contentious subject. He said the roadmap is especially important considering the diverse interests of the group's members.

"The truth is the world is lousy with roadmaps. Who put this one together is important," he said. "In today's environment, where the public discourse can be so fractured and groups can talk past one another … it seems all the more important to note that — it's in the name — this group is so collaborative," Nordstrom said.

In the study scenarios in which carbon emissions fall to either 80% or 95% below 2005 levels, the midcontinent region would shift further from coal-fired generation, with no new coal capacity built even when considering carbon capture technology.

In a 95% reduction scenario with low natural gas prices and moderate renewable prices, the 2050 resource mix becomes nearly all wind generation and natural gas with carbon capture technology. With low renewable costs and moderate gas prices, wind dominates with slightly more solar participation. Nuclear generation remains largely static in both cases.

"The key finding is the region can do this," said Franz Litz of the Great Plains Institute, adding that in California, solar and wind don't complement each other well, whereas in the midcontinent, the two renewable resources have a more symbiotic relationship.

In a business-as-usual study model that included combinations of either moderate gas prices/low renewable costs or low gas prices/moderate renewable costs, the MPSC found that carbon emissions drop from about 500 million metric tons of carbon dioxide equivalents (MMT CO_2) in 2016 to slightly less than 300 MMT CO_2 by 2050.

MISO's current generation mix consists of 77% natural gas and coal, with 18% non-emitting resources.

Policies?

The group said that despite regulatory uncertainty and the demise of the Clean Power Plan, it expects "substantial decarbonization will ultimately be required of the sector."

Deyette said polices are needed to accelerate the transition: "We're just not going to get there on the current voluntary choices of the utilities," he said.

Consultant Judi Greenwald, who once served as an adviser on climate change to Energy Secretary Ernest Moniz, pointed out that even today's natural gas boom was nudged along beginning in the 1970s with generous government subsidies that encouraged research and development into extraction.

"It may look like market forces, but it has its roots in a mix of technology exploration and public policy," Greenwald said.

The Lost Study

Greenwald pointed out that the U.S. itself released a study on decarbonizing by 2050 in November 2016 as a component of the Paris Agreement on climate change.

"Maybe you missed it — there was a lot going on that month," Greenwald joked.

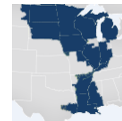
The paper, "United States Mid-Century Strategy for Deep Decarbonization," is no longer available on the White House website, but a version can be found on the U.N. website. It charts a threefold strategy for decarbonization: transforming the energy system, sequestering carbon and reducing non-CO_2 emissions to bring net emissions from under 7 gigatons of carbon dioxide equivalent (CO_2E) in 2005 to about 1 gigaton CO_2E by 2050.

"Its status is somewhat indeterminate," Greenwald said of the strategy paper.

Nordstrom encouraged attendees to think about what other countries are doing, espe-

Continued on page 19

MISO News



Deep Carbon Cuts in Midwest Possible by 2050, Group Says

Continued from page 18

cially China, which produced 60% of the world's solar panels in 2017 and is currently leading the world in electric bus adoption.

"This is our time to determine where the puck is going to be, to use a tired, tired sports metaphor," Nordstrom said.

'Long-lived Choices'

MPSC members say time is of the essence to get to a mostly decarbonized electricity sector in three decades.

"2050 is 32 years away. Some think that's a long time, others not so much," Greenwald said. She pointed out that even building appliances last about 10-20 years, while cars stay on the road 15-20 years. Investments being made now will determine the pace of decarbonization, she said. "You want to affect these investments now if you want to get going.

"Deep decarbonization of the U.S. economy is a challenge, but it's doable," Greenwald said. "It's up to us. The emissions that we will have in the next several decades are up to us."

"The choices that we make today are long-lived choices," agreed Litz.

Miles Keogh, executive director of the National Association of Clean Air Agencies, said the plan to 2050 should be viewed through a backward timeline. "Alright, it's as if we're getting married by 2050, and we have to have all this new generation built by then; we have to count backwards to see when we have to start constructing," he said.

Keogh warned that 2050 is fast approaching and steps must be taken now if deep decarbonization is the goal.

"I think we have the money; I don't think we have time," he said, warning that as more time goes by without meaningful work, "the more unlikeable, strident and vigorous the driver has to be." Keogh said the most universally disliked drivers tend to be policies. He pointed out that of the state regulators in MISO, only three — Iowa, Minnesota and Illinois — did not sue the federal government over the Clean Power Plan.

Keogh also said the immediate future holds little to no chance of any sweeping federal policies.

"The movement toward decarbonization is now not a federal matter; it's a state and local matter," he said. "We're going to have this president until 2020, 2024 maybe. So legislation on the federal level is not going to be an immediate, immediate driver," Keogh said.

Greenwald said she's often asked if she's an optimist or a pessimist regarding the goal of deep decarbonization. On that, she quoted physicist and clean energy pioneer Amory Lovins: "I am neither — because they are just two different forms of fatalism. I believe in applied hope. Things can get better, but you have to make them so."

Greenwald added there's no one silver bullet for decarbonization, "just a lot of buckshot," meaning a variety of strategies.

Utilities Preparing

Xcel Energy's Nicholas Martin said his company has moved beyond meeting renewable portfolio standards. He also said natural gas generation plays only a "supporting role" in its fleet.

"For many utilities, it's been a transition from coal to gas. For us, it's been a transition from coal to largely renewables," he said. Xcel has pledged an 80% carbon-free energy fleet by 2030 in the upper Midwest and 60% in the rest of its service territory by the early 2030s.

"I can see us going beyond that," Martin added.

Franz Litz | © *RTO Insider*

Greg Ryan (left) and Nicholas Martin | © *RTO Insider*

DTE Energy's Greg Ryan said his company plans for at least an 80% reduction in emissions levels from 2005 by 2050.

"The Clean Power Plan was going to be not too heavy of a lift," Ryan admitted. "Especially after the 2016 election, we believed this is something we can lead the way on."

The Regulator Perspective

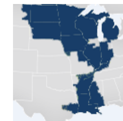
Minnesota Public Utilities Commission Chair **Nancy Lange** said utilities should keep customers content so they stay on the grid and don't exit for community aggregation programs that could disrupt the utility structure.

"To me, there's a continuum of cost on one side and carbon on the other side, and reasonable people should care about both," said Arkansas Public Service Commission Chair Ted Thomas, who also chairs the Organization of MISO States. "Look at my state; we're on the cost side of the continuum, no doubt."

Lange said regulators must reflect often on whether their decisions stifle innovation.

"I know … we'll probably have gas plant proposals in front of us. That risk about climate is going to ripen, especially in Minnesota's case," she said, referring to Minnesota Power's contested plan to partner with Dairyland Power Cooperative on a new 550-MW natural gas plant on the Wisconsin-Minnesota border. Opponents of the proposed plant say it could compromise the state's ability to meet its own emission-reduction targets.

MISO NEWS



MISO Stakeholders to Reconsider Restoration Energy Pricing

By Amanda Durish Cook

After years of inactivity on the topic, MISO's Steering Committee is directing the Market Subcommittee to re-examine whether the RTO should create a process to compensate resources for energy delivered during a system restoration event where the real-time market has ceased to function.

Steering Committee members made the decision during a July 25 conference call. The Market Subcommittee will host discussion on the topic at future meetings.

Reliability Subcommittee Chair Bill SeDoris brought the issue forward for assignment by the Steering Committee, saying the time is ripe to create a pricing structure for energy used to restore the system from blackout conditions. The RSC pointed to MISO's declining reserve margin, its tendency to enter more emergency conditions and FERC's possible future rulemaking to promote resilience.

"This issue is key to compensation for the ultimate act of resilience: the restoration of the bulk electric grid," the RSC said in its submittal.

SeDoris said the need for a restoration power price was raised in stakeholder meetings as far back as 2012. In 2015, the project was added to the Market Roadmap with low-priority status and has since been in "parking lot" status, the term MISO gives to low-priority market improvements that are on hold. During this year's June meeting to kick off the Market Roadmap ranking process, SeDoris urged the RTO to resume work on the project. (See *MISO Stakeholders to Rank Market Improvement Ideas*.)

"It's always been low priority … but given all the talk around resilience and reliability, the time is right to get this in front of stakeholders again," SeDoris said, adding that it would be unfortunate if MISO and its members were to face a blackout without a restoration pricing mechanism in place.

Consumers Energy's Jeff Beattie asked if LMP would provide a pricing framework for restoration energy.

The RSC said day-ahead and real-time markets will not be running during a restoration event because the MISO system will be broken into multiple islands with "widespread blackouts and loss of contiguousness."

"There are no markets if the system is black, and the markets don't start back up until the system is stable," SeDoris explained.

SeDoris also said restoration compensation would differ from MISO's existing black start services definition because black start resources derive their revenues from the capacity they provide, not MISO's energy market. Black start generators are those able to restore electricity without using an outside electrical supply.

While SeDoris agreed with other Steering Committee members that utilities will be naturally incentivized to restore service and that the probability of reaching a system restoration event is extremely low, he contended that having no compensation rules could make a bad situation worse. Other Steering Committee members had said MISO could sort through the details of compensation once it recovered from total blackout.

"There's nothing out there to say, 'We pay $1,000/MWh or cost of new entry,'" SeDoris said, throwing out examples. "How would we end this? Are we looking at litigation?"

MISO News

Informational Forum Briefs

MISO Navigates Hot June, July

MISO issued two maximum generation alerts and conservative operations declarations because of severe weather in June and a heatwave in July.

Both months were hotter than normal, and MISO recommended suspending transmission and generation maintenance in the North and Central portions of its Midwest region on July 5, when temperatures and loads were both above forecasts. The RTO said its system was stable throughout the event.

MISO spokesperson Mark Brown said staff coordinated closely with members and neighboring system operators during the event to manage generation and transmission resources. “MISO and our members train regularly and intensively to manage the power system in all types of conditions,” Brown told *RTO Insider*, adding that the alerts are meant to provide “situational awareness” to members.

The RTO also declared a hot weather alert for MISO South July 20-23 when the average temperature was 99 degrees Fahrenheit.

MISO Senior Director of Systemwide Operations Rob Benbow also said the system performed well during June despite above-normal temperatures and severe weather in the South region.

“We did see some hot weather alerts in the Central and North regions … at the middle to the end of the month, and we also experienced a transmission system emergency due to a forced outage in the South region in the early part of June, and that was followed by conservative ops and a max gen alert on the following day until that facility was returned to service,” Benbow said during a July 24 Informational Forum.

The day after severe weather on June 3, MISO declared a transmission system emergency in South with a maximum generation alert and conservative operations instructions. Benbow said the event caused real-time price spikes.

MISO’s June load peaked at 121 GW on June 29, up about 10 GW from last June’s peak. Average load was just under 77 GW, up 7 GW from a year earlier. Average real-time energy prices were $31.74/MWh, up 13%, which MISO attributed to localized congestion and higher demand.

MISO Reviewing Hartburg-Sabine Proposals

MISO has received multiple proposals for its second competitively bid transmission project, but it will not reveal the number of companies behind the proposals for at least another month — if at all.

The second request for proposals for the Hartburg-Sabine 500-kV junction project closed July 20, part of MISO’s 2017 Transmission Expansion Plan. The project will be in service by 2023 and is meant to alleviate system congestion in eastern Texas. The RTO opened the submittal window in early February.

However, MISO only identifies the number of proposals and their submitters once they’ve been judged and accepted as complete during an initial review expected to wrap up in early September, CEO John Bear said. The RTO will then post a list of finalists advancing to the evaluation process. Incomplete proposals are not revealed.

“MISO is pleased with the robust number of responses to the request for proposals,” Aubrey Johnson, executive director of competitive transmission, said in a statement. “This shows broad interest from qualified transmission developers and underscores the confidence in our competitive selection process. We look forward to moving to the next phase of the selection process to identify the best proposal for this important project.”

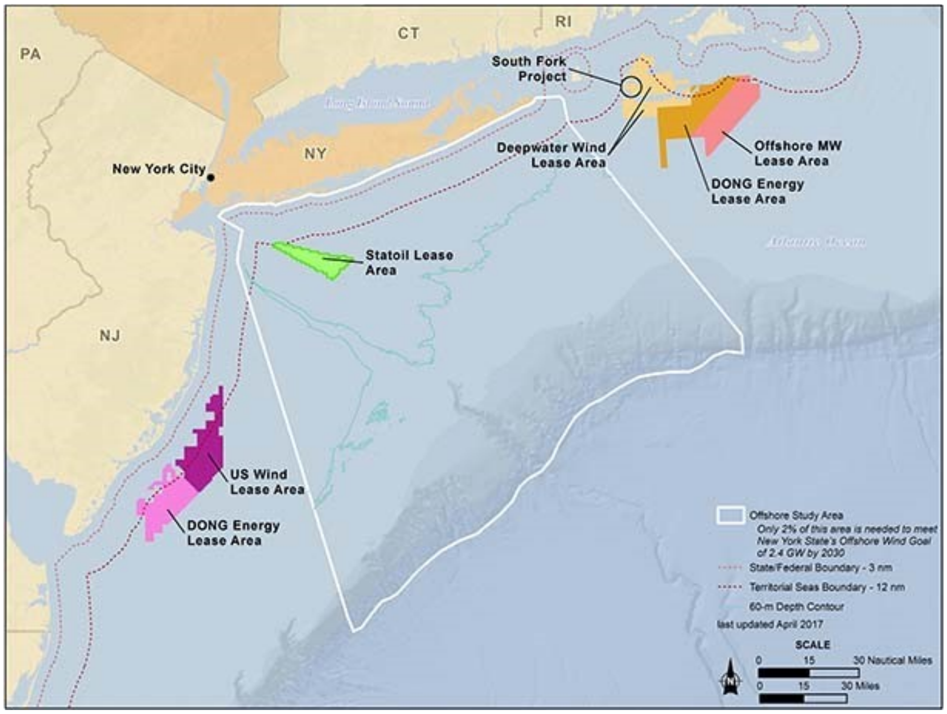
MISO plans to announce its selected developer for the project by Dec. 31. Bear said the project is expected to cost $129 million and have a benefit-to-cost ratio of 1.35:1. He added that it is the RTO’s first competitive project to include a substation.

— Amanda Durish Cook

NYSERDA Talks Offshore Wind Contract Terms

By Michael Kuser

At what point will an offshore wind bid in New York become firm and binding? And how will state agencies ensure a project delivers its promised benefits?



New York offshore wind study area | *NYSERDA*

State officials discussed these and other issues with developers and stakeholders when they met in New York City last Monday to explore contract terms for the planned fourth-quarter solicitation for 800 MW or more in offshore wind energy, the first part of a two-phase plan to develop 2,400 MW by 2030. (See *NYPSC: Offshore Wind 'Ready for Prime Time'*.)

The New York State Energy Research and Development Authority held a July 23 technical conference to discuss the agency's request for information (RFI) issued July 20, soon after the state's Public Service Commission issued an order (Docket No. 18-E-0071) authorizing the solicitation.

"We know that we have a lot of work to do in a short period of time, which is why we wasted no time trying to pull together this conversation," NYSERDA CEO Alicia Barton said.

The agency's RFI covered the procurement schedule and quantity, interconnection and deliverability, offshore wind renewable energy certificate (OREC) pricing options, bid price evaluation, economic benefit, project viability, environmental issues and eligibility and contract provisions.

Binding Provisions

"We're interested to know how much time you would need to develop your proposals ... and secondly, we are looking for these bids to be firm and binding for a period of six months," Doreen Harris, NYSERDA director for large-scale renewables, told prospective developers. "Is this duration reasonable?"

Anbaric Project Manager Howard Kosel said the term "firm" seemed to clearly apply to pricing but asked if "binding" referred "to all internal approvals, court approvals, all necessary such that, if awarded, would be bound to contractually execute?"

NYSERDA Deputy Counsel Peter Keane clarified the agency's approach would be similar to that for the renewable portfolio standard.

"We consider the submission of a proposal as an offer," Keane said, noting that a developer would include its terms in its proposed contract and that NYSERDA can form a contract by accepting. "We do, however, require that within a reasonable amount of time, about 30 days, they provide a corporate confirmation that the authority has been given to the execution parties, etc."

NYSERDA must issue its offshore wind solicitation in consultation with the New York Power Authority and the Long Island Power Authority. The agency will announce the award in the second quarter of 2019 and, if needed, issue a second solicitation next year to meet the 800-MW goal.

"Will the capacity that NYPA and/or LIPA be purchasing, if they decide to go forward, be a subset of the 800 MW or would it be additive to, and if so, would that be known as part of the" request for proposals? asked Clint Plummer, Deepwater Wind vice president of development.

Keane said the PSC would have to weigh in on that issue, but his "feeling" was the NYPA and LIPA capacity would be additional.

"Either of the other two power authorities could go out on their own; theoretically, there's an option that they could join with us and just make a long-term financial commitment for whatever capacity we procure," Keane said. "In either case, I don't see those as being automatically subtracted from our Phase 1 goal."

Harris agreed with Keane and read from the authorizing order: "The quantity of ORECs that is procured by NYSERDA, NYPA and/or LIPA toward the Phase 1 goal need not be limited to the proportional share of retail load to be served but instead could be based on quantities being efficient for each particular solicitation or award."

Enforcement Mechanisms

NYSERDA plans to announce the award in the second quarter of 2019 and, if needed, issue a second solicitation next year to meet the 800-MW goal. The agency ex-

Continued on page 23

NYISO NEWS

NYSERDA Talks Offshore Wind Contract Terms

Continued from page 22

pects the Department of Interior's Bureau of Ocean Energy Management to identify new lease areas for New York early in 2019.

Harris did not attribute questions from those participating in the conference via the web. One asked how NYSERDA would determine or quantify a shortfall in claims — either estimated benefits or expenditures — made at the time of the bid.

"In the land-based renewables context, we do have a very similar category, albeit it was for a slightly different purpose," Harris said. "However, on the land-based side, we do audit the spending of the awarded developers to verify, through a third-party audit, the spending records that they are claiming to have executed in their project development."

There will be contractual ramifications for a shortfall, she said.

"What kind of enforcement mechanism should we have?" Keane asked. "We need to have something for you to win eligibility points for the economic benefits that you pledged."

Wind developers must submit their bids in terms of both fixed-price ORECs and variable — or index — ORECs, and NYSERDA has the authority to specify under what conditions an index OREC contract may revert to a fixed price.

"I don't think NYSERDA expects to have discretion to just order that trigger on its own for whatever reason. My thought is it would be some sort of event," Keane said.

Compliance Payments

One web participant expressed concerns about the OREC compliance obligation for load-serving entities in cases of project delays or cancellations: "If there is not an alternative compliance payment, what will happen if projects are not constructed and there are not enough ORECs available for an energy service company [ESCO] to purchase the requirement?"

Harris explained that ORECs will follow a scheme similar to that for zero-emission credit obligations, with LSEs and ESCOs only responsible for purchasing a prorated share of whatever volume of ZECs NYSERDA acquires from eligible nuclear generators.

"If there was a circumstance where a project was delayed, and it came online in July instead of May, and there were fewer ORECs to be had in a given year, it wouldn't impact the ESCO or LSE in any way other than to just reduce the pro rata share of the ORECS that it would be obligated to purchase," Harris said.

Transmission and More

Another meeting participant asked how the grid will accommodate large injections of power if 800 MW or more is awarded in Phase 1.

"This is expected to be a primary consideration for the transmission working group ... to be formed prior to Sept. 28 this year," said Matt Vestal, NYSERDA technical adviser.

Kosel pointed to NYISO's "fairly rigorous" and time-consuming interconnection process, in which costs are not determined until well into the process. With 70% of the RFI's evaluation criteria based on price, he asked how developers can be expected to plan without knowing costs for system deliverability upgrades.

Vestal said developers have been thinking about those issues for a long time and probably have significant understanding of where their interconnection costs lie.

"We're seeking to understand and want to be able to assess the reasonableness of those interconnection costs as we evaluate those prices," Vestal said. "We include that question specifically in the RFI, but NYSERDA, as well as the commission, certainly understands that these prices can be incrementally uncertain relative to the other costs required for offshore wind on the generation side."

Nora Madonick of Arch Street Communications pointed out the RFI did not address "anything specific to minority, women-owned or service-disabled veteran-owned businesses, and I'm wondering if a percentage has been discussed or if you would like input on that in the RFI, and, if so, in what category."

NYSERDA now has no plan for a set percentage, but stakeholders can address that topic under any part of the RFI they like, Keane said.

Stakeholders can submit comments on the RFI until 5 p.m., Aug. 10, to offshorewind@nyserda.ny.gov. NYSERDA will post all comments on its website.

NYISO NEWS

NYISO Management Committee Briefs

Heat Wave Causes 5-Year Peak Load High

RENSSELAER, N.Y. — NYISO experienced a peak load of 31,293 MW on July 2, the highest demand so far this summer but falling far short of the all-time peak of 33,956 MW, the ISO's Management Committee heard last week.

Operations Vice President Wes Yeomans on Wednesday informed the committee about grid operations during a six-day heat wave in early July, which will be reported formally in August.

High temperatures and humidity on July 1 caused the grid to have "experienced a very high peak for a Sunday," Yeomans said.

The ISO activated demand response on July 2 in New York City's Zone J in response to the weather and the forced outage of a 345-kV line in the city, he said. Last summer, demand never exceeded 30,000 MW, with the peak of 29,699 MW occurring July 19, coming in 7% below the 10-year average of 31,968 MW.

The 33,956-MW record came at the end of a weeklong heat wave on July 19, 2013.

The ISO in May reported a total of 42,169 MW of resources available to meet this summer's expected peak demand of 32,904 MW, 2.9% above the 10-year average. (See *NYISO Ready to Meet Summer Demand*.)

COO Rick Gonzales delivered the operations report for June, noting that high levels of wind curtailment upstate were coincident with scheduled outages of the Browns Falls-Taylorville 115-kV line and the forced outage of the Marcy-Coopers Corners 345-kV line.

MC Approves Change on Congestion Data Reporting

The committee voted in favor of changing how NYISO reports historic congestion, supporting the Business Issues Committee vote earlier in July that the current process is resource-intensive and the resulting data under-utilized.

The vote recommends that the Board of Directors endorse the new process, which will require Tariff changes. (See "BIC OKs Change on Congestion Data Reporting," *NYISO Business Issues Committee Briefs: July 11, 2018*.)

No Cost of Service Study

The committee voted that a new cost of service study (CSS) should not be conducted during late 2018 and 2019 to inform a decision on whether a modification of the 72%/28% cost allocation between withdrawal billing units and injection billing units is warranted, pursuant to Tariff Section 6.1.2.3.

Chris Russell, manager of customer settlements, said that language included in Rate Schedule 1 requires a vote by the committee in Q3 2018 to determine whether a new CSS should be conducted to evaluate the allocation between withdrawals and injections.

The ISO's current RS1 allocation provides rebates for recoveries from non-physical transactions.

MC to Help Fill Board Vacancies

Committee Chair Erin Hogan said she had been asked to form a subcommittee to help fill two upcoming vacancies on the board after Directors Thomas F. Ryan Jr. and Jane Sadowsky complete their terms.

Hogan asked that each sector representative by Aug. 1 provide two candidates to serve on the subcommittee in order to complete preliminary work next month and get a search firm to select board candidates by Thanksgiving.

— Michael Kuser

FERC Clarifies New York TOs' Cost Recovery

New York transmission owners will be eligible for full cost recovery when regulated backstop solution reliability projects are canceled, FERC said last week, clarifying a 2017 order (ER17-2327-001).

The TOs asked for clarification or rehearing of the commission's Oct. 17, 2017, order approving revisions to NYISO Rate Schedule 10, which were intended to expand its applicability for all regulated projects resulting from the ISO's reliability, economic or public policy-driven transmission planning processes.

The TOs said they were concerned about the 2017 order's reference to Order 679, which implemented incentives ordered by Congress under Section 219 of the Federal Power Act and allows a public utility receiving a reliability incentive to recover only up to 50% of prudently incurred costs in abandoned projects.

The commission's July 25 order clarified that Order 679 did not affect the TOs' previously established right to 100% recovery on a reliability project if the ISO cancels it as unnecessary or if the project cannot be completed because of the failure to obtain necessary permits.

The commission approved the 100% recovery as part of the ISO's Reliability Agreement in 2004. "This occurred before the promulgation of FPA Section 219 and the commission's regulations issued in Order No. 679 implementing Section 219," the commission said. "New York transmission owners' right to cost recovery was thus not approved as an incentive under Section 219, nor could it have been."

The order directed the ISO to remove the abandoned plant recovery provisions to avoid any ambiguity in the Tariff.

— Michael Kuser

| NYSEG

NYISO NEWS

FERC Grants NYISO Waiver on Grandfathered Tx Contracts

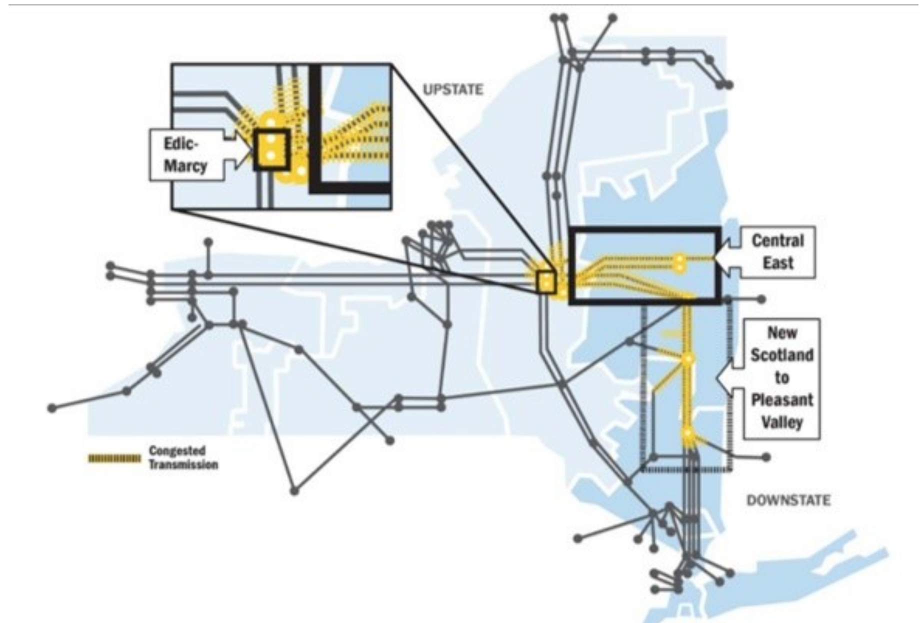
FERC on Wednesday granted NYISO a temporary Tariff waiver to allow it to reserve 256 MW of transmission congestion contracts (TCCs) for load-serving entities in two upcoming auctions while it seeks commission approval of a permanent fix (ER18-1889).

The waiver will allow 14 LSEs to renew grandfathered agreements for TCCs that would otherwise be sold in the Autumn Centralized Transmission Congestion Contract Auction in August and the November 2018 Reconfiguration Auction.

Last month, stakeholders approved Tariff changes to allow extensions of historic fixed-price TCCs, which originated from grandfathered agreements before NYISO's formation. (See "Proposal to Extend TCCs Advances," *NYISO Business Issues Committee Briefs: June 20, 2018*.)

The proposal, if approved by the ISO's Board of Directors, will be filed for FERC approval later this summer.

The commission approved the waiver based on NYISO's statement "that despite expeditiously pursuing the extension proposal with stakeholders, it is impossible to complete the required process of review and approvals, including commission review, prior to the Autumn Centralized TCC Auction."



Locations of congested transmission | *NYISO*

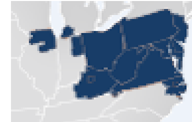
Without a Tariff waiver, the ISO said it would risk overselling the amount of available transmission capacity.

The commission's July 25 order noted that the waiver is limited to the two auctions and that the 256 MW represent only 1% of average total transmission capacity supporting new TCCs.

The commission said it also relied on the assertion of the New York Municipal Power Agency, a joint action agency of 36 member municipalities, that it needed the waiver to support the long-term supply contracts between its member municipalities and the New York Power Authority.

— Michael Kuser

PJM NEWS



Poll: PJM Stakeholder Process Imperfect, Necessary

By Rory D. Sweeney

The PJM Stakeholder Super Forum was held July 25.

VALLEY FORGE, Pa. — The results are in from a PJM member poll on the stakeholder process. The findings? It's not perfect, but it'll have to do.

Stakeholders reviewed the results and considered next steps at a "stakeholder super forum" on Wednesday. The effort to review the process rose out of concerns raised by multiple RTO participants.

Observations of the results showed there was strong agreement that PJM's main job is to maintain grid reliability; robust, nondiscriminatory and competitive markets; and efficient operations. Additionally, many respondents agreed that "all things considered, the PJM stakeholder process is superior to the stakeholder processes of other RTOs" and that PJM's staff provide highly satisfactory technical expertise and analysis to support the process.

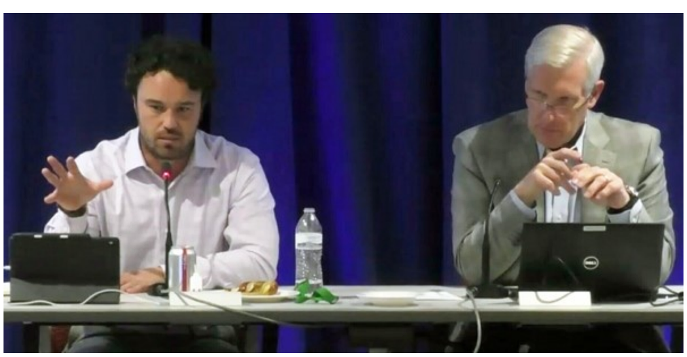
However, members also agreed that the process takes on more issues than it can process and resolve; that PJM and members can do a better job prioritizing issues; and that standing committees need to better manage their subcommittees and task forces.

"On balance … we do think that of the bad ideas that are out there, we think that this is a good one," Gabel Associates' Mike Borgatti said, referring to the stakeholder process.

Ironically, or perhaps as expected, respondents showed less agreement on what to do when the stakeholder process cannot reach agreement on an issue.

PJM's Dave Anders facilitated the meeting, along with Borgatti, who chairs the Members Committee. Anders confirmed that the total of 204 respondents was representative of the usual participation in MC votes, which is usually about one-fifth of the roughly 1,000 members. Borgatti said that "all around the same time frame" earlier this year, he received feedback from members, PJM staff, board members and other stakeholders about concerns with the current process.

That feedback initiated the poll, which relied on the same questions used during the Governance Assessment Special Team (GAST) that PJM implemented in 2009 following FERC Order 719, which required the board to prove it was responsive to stakeholders. Borgatti said the GAST responses provide a baseline for where the process has improved or worsened in the ensuing years.



Mike Borgatti (left) and Dave Anders

He stressed the purpose of the meeting was to identify issues members would like to consider addressing and not to formulate solutions.

"This is purely informative. … We're not solving anything now," he said. "I personally don't believe it's my responsibility to tell you what conversations you should be having" or what the membership should be voting on.

Stakeholders then listed issues they would like to consider addressing. Among them were subjects that have come up recently, such as how to handle proposals introduced at the MC or the Markets and Reliability Committee rather than at lower committees and reducing the threshold for proposals from lower committees to be recommended for consideration at the MRC and MC. A major consideration was prioritizing issues and limiting the number being considered simultaneously.

Stakeholders also wanted to discuss procedures for handling issues when there is no consensus on a solution or when a FERC decision is anticipated, but they did not want to change PJM's voting mechanisms. In fact, while several stakeholders expressed concerns through the poll about sector-weighted voting, stakeholders didn't add it to the list of issues to consider. Instead, they will consider whether PJM should take a stronger role in placing members in their correct sector.

Borgatti said the issues will be distilled into a few ideas for consideration and then included in a problem statement and issue charge to be endorsed by the membership later this year.

PJM Ponders Advancing VOM Effort over Objections

By Rory D. Sweeney

VALLEY FORGE, Pa. — PJM's effort to include variable operations and maintenance (VOM) costs in energy market cost-based offers appears to be on its way to FERC following a long-awaited vote to revise the current rules at last week's meeting of the Markets and Reliability and Members committees.

Stakeholders rejected five proposals, including one of them twice, after which PJM's Stu Bresler indicated the RTO might recommend its Board of Managers approve changes anyway. He said his starting point for the recommendation would be PJM's proposal, which was twice rejected in its original form and also in a revised alternative motion.

Stakeholders said they would keep a close watch on what recommendation staff develop, and Brian Wilkie with Rockland Electric Co. (RECO) called Bresler's plan "disappointing."

PJM's Melissa Pilong presented the issue and a comparison of the proposals. They had been put into a voting order based on how they came to be considered by the MRC. (See "VOM Update," *PJM Market Implementation Committee Briefs: July 11, 2018*.)

The initial proposal was sponsored by American Electric Power and would allow use of default U.S. Energy Information Administration calculations for the amount of VOM costs allowed in offers. The proposal was rejected with a sector-weighted vote of 2.28 in favor and 2.72 opposed. Such sector-weighted votes have a threshold of 3.35 to be endorsed.

AEP's Brock Ondayko had been promoting the proposal as preferable to a proposal from RECO because it used data that were independently developed and published.

"What we have proposed, and what was accepted earlier, is this concept of using data from an independent provider that has no agenda or opinion of PJM's markets," Ondayko said. "The point is there's actual data. … Nothing is hidden from public view. … There's no data with the potential defaults in the other package."

PJM's proposal remained unchanged from past discussions as the only one that would allow units to include fixed costs in their energy offers if they failed to clear in the year's capacity auction. It was also rejected with 2.86 in favor and 2.14 opposed.

The Independent Market Monitor's proposal would limit costs allowed in energy offers to "short-run marginal costs," which would be defined. The proposal was rejected with 1.83 in favor and 3.17 opposed.

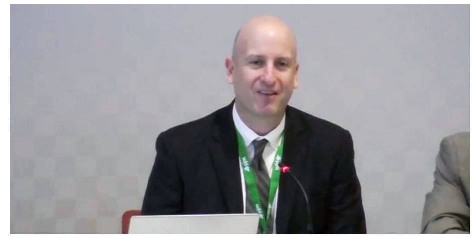
"This is about the prevention of market power," Monitor Joe Bowring had said prior to the vote, noting that PJM's manuals don't clearly define several related components.

RECO's proposal was meant to strike a compromise between generator-friendly and load-friendly proposals to ensure that stakeholders wouldn't be stuck with the status quo if coalitions stood their ground and those proposals failed to win endorsement, Wilkie said. It would allow generators to recover VOM costs up to limits that would be posted into Manual 15. Almost all unit types would be capped at \$3.50/MWh for the costs. Sub- and super-critical coal and biomass would be capped at \$4/MWh; nuclear at \$3/MWh; and wind, solar and hydro at \$0/MWh.

"I agree. They're not based on data," Wilkie said in response to Ondayko's comments. "They're a compromise between the data the IMM thinks is reasonable and the data EIA thinks is reasonable."

He said his customers would benefit most from the Monitor's numbers, but he was particularly concerned with the appearance that generators were simply trying to increase revenues by moving the costs to the energy market as opposed to the capacity market, where they're currently allowable.

"If it's just and reasonable for these costs to be in the unit's capacity offer, then it's hard to understand how it can instead be just and reasonable for them to be in the energy offer. It can be one or the other, but toggling those costs back and forth based on where generators think there's going to be the most money doesn't seem like a sound market design principle," Wilkie said.



Greg Poulos

Greg Poulos, the executive director of the Consumer Advocates of the PJM States (CAPS), agreed with that perception.

"I would call that market shopping. … That's a concern," he said.

However, Exelon's Jason Barker said many asset owners agreed RECO's proposal "parrots" the Monitor's proposal.

The proposal had a similar voting result with 1.97 in favor and 3.03 opposed.

Stakeholders next voted on an alternative proposed by Adrien Ford with Old Dominion Electric Cooperative. Ford had offered a friendly amendment to the PJM proposal to remove the language that allowed units to include fixed costs in their energy offers if they failed to clear in that year's capacity auction so that the package aligned with the other three.

Staff wanted to "get a read" on favorability for the package that was originally endorsed at the Market Implementation Committee meeting, so they did not consider it friendly. Because it was the motion endorsed by the lower committee, a stakeholder had to object to the motion being friendly, so Citigroup Energy's Barry Trayers did so.

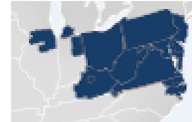
Ford then offered it as an alternative motion, but it too was rejected, receiving 2.65 in favor and 2.35 opposed.

American Municipal Power's Steve Lieberman motioned for a revote of the original PJM proposal, which was seconded by Trayers, but that was also rejected, receiving 2.93 in favor and 2.07 opposed.

Following the vote, Bresler informed stakeholders that PJM may not be satisfied with retaining the status quo and might

Continued on page 28

PJM NEWS



PJM Stakeholders End Transmission Replacement Task Force

By Rory D. Sweeney

VALLEY FORGE, Pa. — Seeing no hope to resolve a nearly two-year standoff on supplemental projects for replacing end-of-life transmission infrastructure, PJM stakeholders are seeking a new tack after voting last week to sunset the Transmission Replacement Process Senior Task Force (TRPSTF).

PJM's Fran Barrett, task force administrator, provided a report on the group's recent activity. Factions in the task force have been at odds, and RTO staff attempted to put it on hiatus at its most recent meeting. (See *PJM Seeks to Suspend Task Force in 'Unprecedented' Move*.)

Ed Tatum

Following the review, American Municipal Power's Ed Tatum motioned to sunset the TRPSTF because "it doesn't seem fruitful to continue on." Old Dominion Electric Cooperative's Adrien Ford seconded it, but Dominion Energy Marketing's Jim Davis suggested that any action on disbanding the task force should wait until the D.C. Circuit Court of Appeals rules on ODEC's request to overturn FERC's policy of allocating all costs from Form 715 projects to the zone of the transmission owner whose criteria triggered the upgrades. (See *FERC OKs Cost Allocation of PJM Transmission Projects*.)

LS Power's Sharon Segner called that case "potentially a gamechanger," along with a CAISO complaint pending at FERC.

"Those two are the external factors that change the debate here. … My view is that [the TRPSTF] hasn't been a particularly productive task force," she said.

PJM and its TOs submitted compliance filings in March in response to a commission ruling that TOs weren't properly complying with their obligations under Order 890 to provide stakeholders with adequate information on supplemental projects — transmission expansions or enhancements not required for compliance with reliability, operational performance or economic criteria.

Tatum said approval and implementation of the compliance filings will go on with or without the task force, so putting it on hiatus would remove any chance for all stakeholders to be involved in determining "the meat of what would actually be in those meetings" required by FERC's order.

Barrett said the task force has been tasked with navigating "a strange intersection between the stakeholder process and a [FERC] directive that's before the TOs and PJM," but "we are at the end, and we were gearing up for a vote."

He confirmed, following an inquiry from Tatum, that no one has voiced an opinion to him either way on whether to continue the task force. Tatum acknowledged it "has been the most unusual stakeholder process I've ever been involved in."

GT Power Group's Dave Pratzon called the task force "duplicative" and "not a great idea." He endorsed sunsetting it in favor of developing a way to address the issues on a comprehensive scale.

"We appreciate it and that it has been moving at a good clip and it certainly has slowed down," said Greg Poulos, executive director of the Consumer Advocates of the PJM States (CAPS). "Where it goes from here is a question, but it certainly has been useful."

The motion was endorsed by stakeholders.

Tatum then offered a proposal that would define what information must be presented at each of the meetings required by FERC. AMP's proposal would attempt to fully use each end-of-life project to address any reliability violations and seeks to define the dispute resolution process for challenging project proposals.

The proposal reflects many of AMP's proposals in the task force but "softened" some of them so that it "erred on the side of what we think the TOs would say," Tatum explained.

Pratzon called Tatum's proposal "totally inappropriate" because it hadn't been vetted through a lower committee. Several TO representatives agreed. However, load interests continue to be interested in addressing the concerns raised in the task force.

"The issues remain. I don't feel like we're to the finish line. Certainly, my members care deeply about these issues," said Susan Bruce, representing the PJM Industrial Customer Coalition.

PJM staff questioned several of Tatum's contentions that the proposal wouldn't adversely impact the delicate timing of the Regional Transmission Expansion Plan process, among them that projects in dispute resolution would not hang in limbo. Tatum agreed to continuing to work with staff and acknowledged that staff do not agree with AMP's belief that it would work without a hitch.

PJM Ponders Advancing VOM Effort over Objections

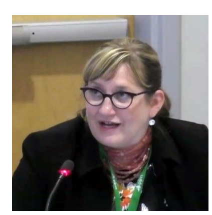
Continued from page 27

consider making its own recommendation to the Board of Managers. He said he would "start" with PJM's proposal as the basis for the recommendation.

Susan Bruce, representing the PJM Industrial Customer Coalition, promised "robust oversight" of staff's development of the potential recommendation.

Wilkie called Bresler's announcement "disappointing."

Asked to opine on PJM's rules for such situations, CEO Andy Ott said he felt the board being informed of stakeholders' voting record on the issue would provide enough evidence of their preferences so that the board would be properly informed before considering staff's recommendation.



Susan Bruce

PJM NEWS

MRC/MC Briefs

Seasonal Aggregation

Suzanne Daugherty and Dave Anders

VALLEY FORGE, Pa. — PJM stakeholders at last week's meeting of the Markets and Reliability and Members committees unanimously endorsed proposed revisions for aggregating seasonal resources.

PJM's Andrea Yeaton presented the revisions, which would allow for dispatching resources individually based on their seasonal ability but account for them cumulatively for the purposes of Capacity Performance. (See "Seasonal Aggregation," *PJM Market Implementation Committee Briefs: July 11, 2018*.)

Independent Market Monitor Joe Bowring reiterated a request that the rules be amended to explicitly state that PJM has the authority and ability to call on resources without calling all resources in a zone and does not have to schedule the dispatch a day ahead.

"I think it's less than clear" in the current language, Bowring said.

Default Details

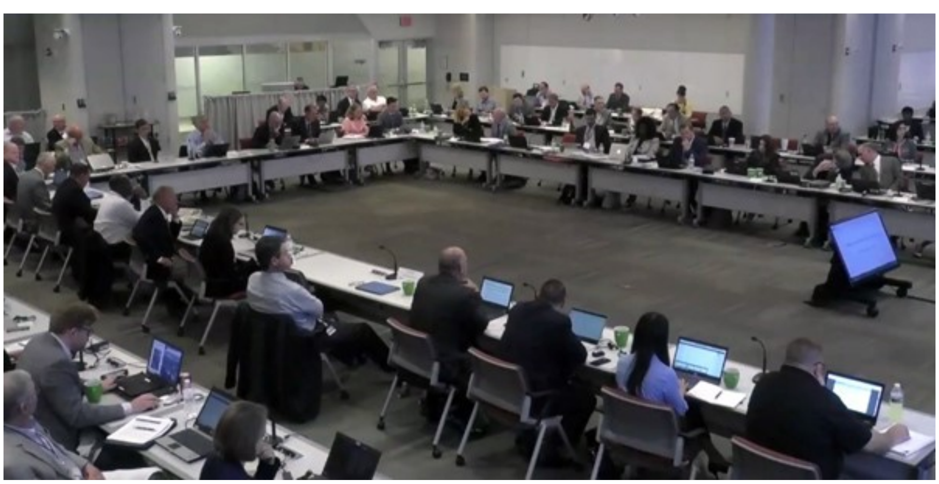
PJM's Suzanne Daugherty announced that the RTO submitted a request to FERC for waiver of rules requiring staff to liquidate "the large [financial transmission rights] portfolio of a recently defaulted PJM member." The waiver would "reduce [PJM's] liquidation of GreenHat's portfolio to only the portion of the FTR portfolio that is about to become effective for the next calendar month, for each monthly auction for the period from the FTR auction conducted in July until the FTR auction conducted in October" (ER18-2068).

Staff had planned to liquidate the FTR positions in a way that minimizes the resulting burden on all other market participants, who will end up covering the remaining defaulted amount. (See "Credit and Default," *PJM MRC/MC Briefs: June 21, 2018*.)

However, PJM said in its filing that it "has encountered adverse pricing effects of attempting to maximize the liquidation of this portfolio irrespective of price," specifically in the most recent auction that closed on July 27.

"For periods with less liquidity … this large portfolio in combination with PJM's obligation to offer a price designed to maximize the likelihood of liquidation, irrespective of a price floor, would essentially cause the prices to significantly diverge from the expected day-ahead price outcomes," PJM said. "An unbounded liquidation of a large FTR portfolio for periods with less liquidity can and will cause a market disruption event and result in distorted market outcomes that may be unjust and unreasonable."

The waiver "will provide PJM with time to further communicate with stakeholders regarding the concerns of the current Tariff-imposed liquidation process given the significant default allocations that will be incurred under the current liquidation process and to discuss any alternative liquidation process the PJM members may prefer be applied after the FTR auction conducted in October."



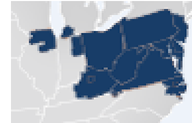
The PJM MRC met on July 26.

Fuel Security

Because the MRC and MC ran late, a special MRC meeting scheduled to follow the meetings was postponed. A meeting of the now-sunset Transmission Replacement Process Senior Task Force was scheduled for July 31, so staff moved the fuel security session to that time slot. Staff plan to announce they have almost completed the base case for studying the impacts on the system from several fuel-security related contingencies, such as extreme cold weather or gas pipeline interruptions.

Continued on page 30

PJM NEWS



MRC/MC Briefs

Continued from page 29

Manual Revisions Approved

Stakeholders endorsed by acclamation several manual revisions and other operational changes:

- Manual 3A: Energy Management System (EMS) Model Updates and Quality Assurance (QA). Revisions developed to include or update technical specifications and procedures.
- Manual 14A: New Services Requests Study Process and Manual 14G: Generation Interconnection Requests. PJM sought to split out part of Manual 14A into a new Manual 14G to better organize interconnection information. (See "Interconnection Procedure Split," *PJM PC/TEAC Briefs: June 7, 2018*.)
- Manual 11: Energy & Ancillary Services Market Operations. Revisions developed to address inconsistencies between PJM's governing documents regarding price-based offers above $1,000. PJM plans to introduce additional system controls to improve validation of price-based offers by November. (See "Energy Market Caps," *PJM Market Implementation Committee Briefs: July 11, 2018*.)
- Revisions to the Reliability Assurance Agreement and Manual 18 associated with changes developed by the Demand Response Subcommittee to address issues identified with atypically low customer load during the winter peak load (WPL) calculation period. The Market Implementation Committee endorsed the changes in June. The proposal would use measurement and verification processes that already exist for a similar process and minimize administrative adjustments. It would define "low usage" days as less than 35% of the five-day WPL average and allow the exclusion of up to two such days from the WPL calculation. The measure was also endorsed at the MC via the consent agenda. (See "Now is the Winter of Our Discontent (with DR Rules)," *PJM Market Implementation Committee Briefs: Sept. 13, 2017*.)
- Tariff revisions to implement a 10-cent/MWh minimum monthly credit requirement for FTR bids submitted in auctions and cleared positions held in FTR portfolios. Staff announced they will move the effective date up from October to Sept. 3. The measure was also endorsed at the MC via the consent agenda. (See "Credit Requirements," *PJM Market Implementation Committee Briefs: July 11, 2018*.)
- Problem statement and issue charge setting black start fuel requirements, which include pushing the anticipated start date for the stakeholder group back a month to December. Staff also added "critical non-fuel consumables" to the list of requirements to develop and minimum tank suction level to compensation-related issues to hash out. The measure was unanimously endorsed, but several stakeholders voiced concerns with adding another issue to the agenda when many have already expressed concerns about overscheduling. (See "Black Start Fuel Assurance," *PJM Operating Committee Briefs: July 10, 2018*.)

— Rory D. Sweeney

FERC & FEDERAL NEWS

Enviros, Industrials Challenge DOE Study on LNG Exports

By Rich Heidorn Jr.

Energy Secretary Rick Perry at the ribbon-cutting ceremony for the Cove Point LNG export facility. | *Dominion Energy*

Environmentalists and industrial gas consumers last week challenged a Department of Energy-funded study that concludes U.S. economic growth would be boosted by unlimited LNG exports — even if they double current natural gas prices.

More than a dozen comments were filed by the July 27 deadline in response to the June 7 study, performed by NERA Economic Consulting for the department's Office of Fossil Energy. DOE said it plans to consider the study in responding to 25 pending applications for LNG exports to countries lacking free-trade agreements with the U.S.

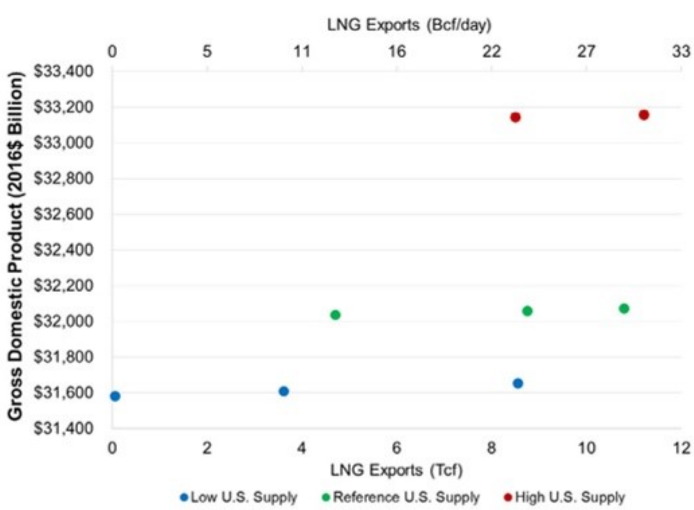
Although there is a consensus that exporting too much domestic natural gas could expose U.S. consumers, industrial users and electric generators to much higher world prices, there is no agreement on what that tipping point is, or how soon the U.S. could get there. (See *No Agreement on Tipping Point for LNG Exports*.)

The NERA study — the fifth DOE has commissioned since 2012 examining the economics of LNG exports — suggests that policymakers should not worry about any price increases, finding "consistently positive relationships between LNG exports and measures of economic performance" such as gross domestic product and U.S. living standards.

The Natural Gas Act requires DOE to determine whether natural gas exports to countries without FTAs with the U.S. are in the "public interest." Exports to countries with FTAs do not require such reviews.

The Industrial Energy Consumers of America (IECA) said the DOE study "confirms that excessive volumes of LNG exports to non-free-trade agreement countries is not in the public interest under the Natural Gas Act."

The group, which represents 3,700 U.S. manufacturing facilities, said it is not opposed to LNG exports. "We are against excessive LNG exports which would result in U.S. prices being dictated by global demand like crude oil is today."



| *NERA Economic Consulting*

IECA said the Supreme Court has defined "public interest" under the NGA as requiring "plentiful supplies … at reasonable prices."

"The study's most likely scenario assumes that LNG exports up to 30.7 Bcfd could increase prices 117% above today's Henry Hub prices by 2040 and 44% above the [Energy Information Administration's Annual Energy Outlook] 2018 price (which assumes only 14.5 Bcfd of LNG exports)," IECA said. "Such price hikes plainly threaten the plentiful supply of natural gas at reasonable prices for domestic consumers."

Other Comments

The American Petroleum Institute said it agrees with the study's conclusion of a "consistently positive relationship" between LNG exports and U.S. economic performance. "The study thereby confirms what multiple past studies have concluded, which is that U.S. LNG exports are a clear net benefit to the economy and are therefore in the public interest," wrote Todd Snitchler, API's director of market development.

The US LNG Association said the study should allow DOE "to grant approvals to all U.S. LNG export applications to non-FTA countries without the need for any further macroeconomic studies" for at least four years.

Environmental groups criticized the study for ignoring the costs of climate change and the growth of renewable energy.

"The study should be adjusted to give much greater emphasis to low demand scenarios that align with the Paris Climate Agreement," said a coalition of more than 60 groups in the U.S., Canada and Europe, including Food & Water Watch, 350.org and the Center for Biological Diversity. "Even if minimal progress in international climate policy making was a robust assumption, the study fails to assess the real-world trends occurring with renewable energy and the threat they pose to gas demand. The study does not attempt to either account for substantial progress in renewable energy installations and cost reductions made in recent years or

Continued on page 32

FERC & FEDERAL NEWS

Enviros, Industrials Challenge DOE Study on LNG Exports

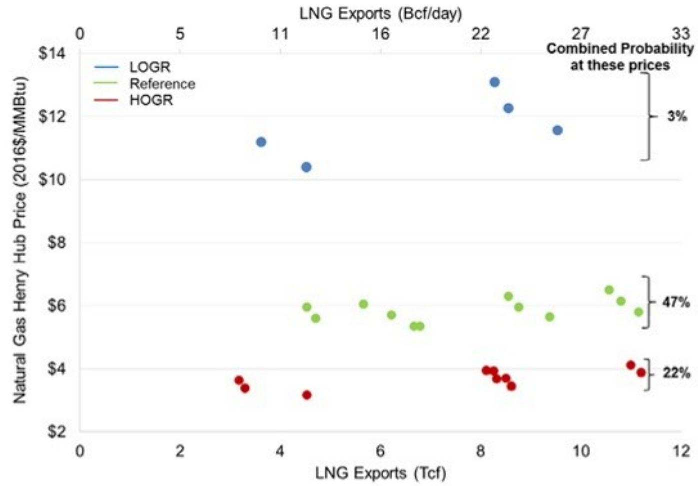
Continued from page 31

assess projections of substantial progress to come." (See How Long a Bridge for Natural Gas?)

54 Scenarios

The DOE examined 54 scenarios based on four major sources of uncertainty affecting U.S. LNG exports: natural gas supply conditions in the U.S.; natural gas demand in the U.S.; and gas supply and demand in the rest of the world. None of the scenarios limited LNG export volumes.

It found a 68% probability that LNG exports will be between 9 and 30.7 Bcfd in 2040. DOE has approved 21.4 Bcfd of LNG exports to non-FTA countries. The DOE study said there is a 12% probability that exports will reach that level by 2030 and a 63% chance of hitting that level by 2040.



| *NERA Economic Consulting*

About 80% of the increase in LNG exports would be satisfied by increased U.S. natural gas production, "with positive effects on labor income, output and profits in the natural gas production sector," the study said.

"The higher world prices that bring forth those supplies improve U.S. terms of trade, so that there is a wealth transfer to the U.S. from the rest of the world equal to the increase in prices received for LNG exports times the quantity exported. The transfers from natural gas related activity to the U.S. economy improve the average consumer's ability to demand more goods and services leading to higher economic activity," NERA said.

"These two factors more than make up for the dampening economic effects that are observed in these scenarios, including slightly slower output growth of some natural gas-intensive industries, costs of substituting other fuels for a small fraction of natural gas use in power generation, and infinitesimal reductions in natural gas use by households and other industries.

"Even the most extreme scenarios of high LNG exports that are outside the more likely probability range, which exhibit a combined probability of less than 3%, show higher overall economic performance in terms of GDP, household income and consumer welfare than lower export levels associated with the same domestic supply scenarios," the study said. "It is also important to note that our analysis also shows that the chemicals subsectors that rely heavily on natural gas for energy and as a feedstock continue to exhibit robust growth even at higher LNG export levels and is only insignificantly slower than cases with lower LNG export levels."

Cove Point LNG | *Dominion*

But IECA President Paul Cicio said the study "lacks credibility due to … the inability of the economic models to determine whether the oil and gas industry is consuming U.S. or imported goods to produce, transport and build LNG terminals, thereby overinflating economic growth and job projections due to LNG exports."

IECA said the study's conclusions conflict with that of a 2012 NERA study that acknowledged the difficulty of forecasting natural gas prices and that the new study uses proprietary NERA models that cannot be replicated by third parties.

Trump Administration Promoting Exports

The Trump administration has praised LNG exports as evidence of the nation's "energy dominance."

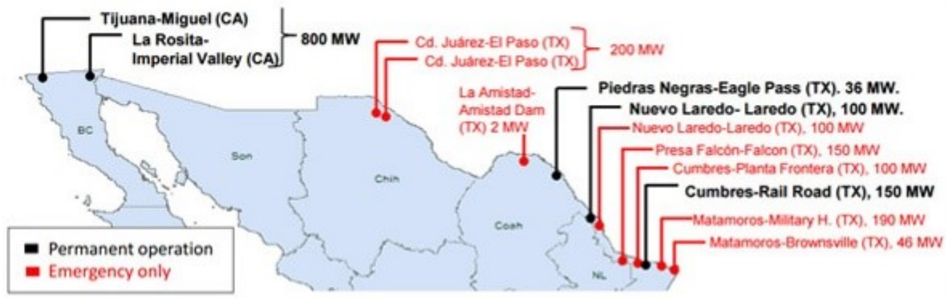
Last Thursday, Energy Secretary Rick Perry appeared at a ribbon cutting for Dominion Energy's Cove Point LNG export facility in Maryland, the second in the U.S. Perry noted that the U.S. is exporting natural gas to 30 nations and last year became a net gas exporter for the first time in 60 years.

Also last week, DOE finalized rules to eliminate public interest reviews for "small-scale" LNG exports to non-FTA countries. The rules, effective Aug. 24, apply to applications to export no more than 51.75 Bcf/year.

FERC & FEDERAL NEWS

FERC OKs DC Tie Operations Between Texas, Mexico

FERC last week granted AEP Energy Partners' request to transmit power between ERCOT and Mexico over existing DC tie connections, easing concerns that the Texas grid operator might find itself subject to the federal agency's jurisdiction (TX18-1).



| *Mexico Ministry of Energy*

The American Electric Power subsidiary made the request on behalf of Sharyland Utilities, AEP Texas and Electric Transmission Texas. The DC tie operators asked the commission to allow them to provide transmission service over the ties and to confirm that the ties' use would not subject ERCOT or any of its market participants to FERC jurisdiction.

Texas officials have expressed unease that a pair of transmission projects along the U.S.-Mexico border could place ERCOT's freedom from federal jurisdiction in jeopardy.

The ISO's transmission grid is located solely within the state and not synchronously interconnected with the rest of the U.S. Under the Federal Power Act, FERC has no jurisdiction over transmission lines that cross international boundaries if they don't also cross U.S. state lines. ERCOT has several synchronous (AC) and asynchronous (DC) ties with Mexico, but energy does not flow between Texas and other U.S. states through Mexico's national grid.

Public Utility Commission Chair DeAnn Walker has said the federal agency could exert its jurisdiction over ERCOT through the U.S. Constitution's Commerce Clause "if the commingling of power between ERCOT and the rest of the United States occurs." (See *Regulators Fear Cross-Border Tx Risks ERCOT's FERC Exemption*.)

Sharyland sister company Nogales Transmission has applied for a presidential permit to build an HVDC interconnection between Arizona and Mexico (OE PP-420). Nogales last year asked the Department of Energy to delay processing its permit until it can obtain "the necessary FERC disclaimer" of jurisdiction.

Further west, Mexico is considering a major project that would link the state of Baja California, which is part of the Western Electricity Coordinating Council, with the rest of the country's grid and with California.

ERCOT said it was pleased with the FERC order. "[It] alleviates any current or future jurisdictional concerns resulting from new interconnection projects with Mexico and other neighboring states," spokesperson Leslie Sopko told *RTO Insider*.

AEP asserted that if FERC granted the parties' request, the DC ties would become facilities for the transmission and wholesale sales of electric energy in interstate commerce "solely by reason of" a commission order.

"The continuing operation of the ties in compliance with the requested Section 211 order would not cause the tie operators to become 'public utilities'" as defined by the FPA, the utilities said.

Commission Eases 2006 Requirements on Westar Energy

The commission on July 27 granted Westar Energy's request to remove mitigation measures and reporting requirements imposed in connection with its 2006 acquisition of a ONEOK Energy Services gas plant (EC06-48).

Westar asked FERC to remove the measures and quarterly and annual reporting requirements, saying that changes in the SPP market since the 2006 acquisition made the decade-old requirements no longer necessary. SPP went live in 2014 with its Integrated Marketplace, which included day-ahead, real-time and financial transmission rights markets, and a consolidated balancing authority that replaced 16 legacy BAs.

In approving Westar's acquisition of ONEOK's 300-MW Spring Creek facility and a 75-MW power purchase agreement from the Oklahoma Municipal Power Authority (OMPA), the commission ordered the utility to increase transfer capabilities into its BA to reduce its 42% share of the market.

Westar requested a clarification of the order, committing to not use 225 MW of network integration transmission service during the winter period. The commission granted the request, but OMPA in 2007 requested a rehearing. FERC asserted Westar had asked SPP to move Spring Creek from the Oklahoma Gas & Electric BA to Westar's, undermining the mitigation alternative. FERC agreed, directing that Westar continue to model the facility in OG&E's BA.

Westar filed its request in 2016, arguing that SPP's consolidated BA meant its market share should be measured using the RTO's entire capacity, rather than that of the utility's former BA area. It also pointed out that the OMPA contract had expired in 2015.

SWEPCO ROE with East Texas Co-ops Reduced

FERC on July 26 approved a settlement agreement between Southwestern Electric Power Co. and two East Texas cooperatives, East Texas Electric (ETEC) and Northeast Texas Electric (ER18-1560).

The settlement reduces SWEPCO's return on equity with ETEC from 11.1% to 10.1%, effective Sept. 1, 2017. It also revises the utility's formula rate templates that govern its power supply agreements with the two co-ops.

— Tom Kleckner

FERC & Federal News

DHS: Russian Probes Hit Hundreds of Energy Cos.

Continued from page 1

said Jon Homer, chief of the industrial systems control group for the Hunt & Incident Response Team at the department's National Cybersecurity & Communications Integration Center. "But ... they have not caused physical impact as a result of that access. So, they had access to be able to do it, but they haven't actually caused any physical [damage]."

Jeannette Manfra, assistant secretary for the department's Office of Cybersecurity and Communications, said the detection of the infiltrations — the subject of a March 15 DHS alert — was the result of the "partnership" among DHS, the power industry, the Department of Energy, the intelligence community and the FBI.

"We were able to work very closely as soon as we identified a threat and respond to that and ensure that in this case the Russians were not able to achieve any significant goal in terms of actually disrupting infrastructure," she continued. "To be clear, there was no threat for the electrical grid to go down. ... While they were in a position to be able to manipulate some systems, there wasn't a broader threat to our entire electric grid."

DHS held Wednesday's webinar "to raise awareness more broadly so that others could defend against this," Manfra said. It held another webinar July 30 and one more is scheduled for Aug. 1.

Hackers 'Stuck Around'

Homer said the campaign was "an advanced persistent threat in its classic definition. We're looking at someone at an organization that got in and stuck around."

He said the campaign targeted or affected "hundreds of victims" focused on electric generation, transmission and distribution. "But there were also victims ... in the nuclear sector, in the aviation sector, critical manufacturing [and] government entities."

The targets — none of which was identified — included small, medium and large organizations selected for their "strategic placement," Homer said. DHS said the targets' names "align with open-source lists (organized by subject-matter areas) published by third-party industry organizations."

Homer said the power generation, transmission and distribution companies were penetrated despite having "good, sophisticated networks from a cyber defense perspective. They have the right tools. They have the budgets. They have the capabilities to defend their networks from this effort."

Pre-existing Relationships

The campaign began in early 2016 with the penetration of the first of many "staging targets," small organizations with less sophisticated networks such as vendors, integrators and strategic R&D partners.

"They were selected because of their pre-existing relationship with the intended target," Homer said. "This is not a target of opportunity-type campaign. This is not one where the threat actor went around and said, 'Who forgot to patch their systems last month?'"

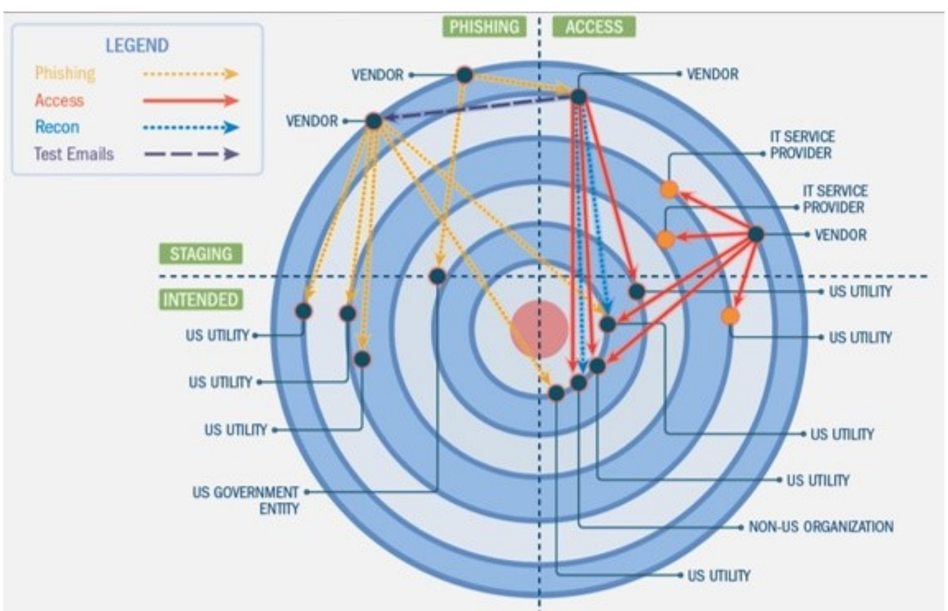
The campaign was dormant for more than a year after the first penetration, until early 2017, when a second vendor network was compromised. That network was used to launch a phishing attack against another vendor and government entity, allowing the hackers to move to another vendor, which was used to phish operators at the utilities. Later, the first compromised vendor was used to access several utilities and IT service providers.

Homer said the hackers used the staging targets' networks, so when the intended targets reviewed activity logs, it appeared "as if the traffic or the code was originating from ... one of their trusted partners."

Because control systems are customized for their application, it takes utilities' technicians months to learn how to operate them. "In the same regard a threat actor who wished to manipulate a control system has to understand that particular setup, architecture and design," Homer said.

Thus, the hackers scoured file servers "for specific file names and specific keywords — things pertaining to vendor information and reference documents."

The hackers were aided because some of the companies' "jump boxes" — computers



Graphic illustrates how hackers used vendors (on the outside of the bull's-eye) as "staging targets" to win access to utilities — the "intended targets." | *National Cybersecurity & Communications Integration Center*

Continued on page 35

FERC & FEDERAL NEWS

Entergy Penalized for Late Reporting on Gas Shortfall

By Michael Kuser


Rhode Island State Energy Center | *Entergy*

FERC last week approved a $115,000 civil penalty against Entergy for failing to promptly inform ISO-NE of the inability of its Rhode Island gas-fired generator to meet its capacity obligations because of pipeline restrictions.

The commission's July 25 order accepted an agreement between Entergy and the Office of Enforcement assessing the civil penalty and requiring reimbursement of $47,084, plus interest over the 2013 incident (IN18-5).

Entergy's Rhode Island State Energy Center (RISE), a two-unit combined cycle natural gas plant, was paid $1,459,610 a month for 575 MW of capacity during delivery year 2013/14. (Entergy sold RISE to the Carlyle Group in 2015 for $490 million.)

Enforcement's investigation found that, despite becoming aware at approximately 9:30 p.m. on Dec. 26, 2013, that it would be unlikely to meet its capacity commitment for the next day because of pipeline problems, Entergy waited until the following morning to contact the RTO about the issue.

RISE had a contract for firm transportation service with Tennessee Gas Pipeline for up to 45,000 Dth/day, which allowed it to bank in its "operational balancing account" (OBA) gas unneeded on a given day for future use.

On the morning of Dec. 26, Entergy offered RISE into ISO-NE's day-ahead market. RISE received a commitment for 9,900 MWh. Entergy planned to use about 36,540 Dth from its OBA to meet the capacity obligation, which it determined would require 71,540 Dth of gas to produce.

On Dec. 18, however, TGP had issued a "Critical" notice to shippers saying it anticipated potential disruptions in service and that customers should "match physical flow with scheduled volumes." On Dec. 26, Tennessee issued another notice, warning of restrictions on gas delivery downstream of its compressor station in Agawam, Mass., including RISE.

Despite low gas delivery pressures, Entergy began operating RISE at 2:45 a.m. on Dec. 27. "RISE not only took gas volumes it had scheduled from Tennessee but attempted to pull additional gas volumes from the pipeline," according to Enforcement's settlement agreement with the company.

RISE was able to meet its offer and ramp rate for about an hour, but when pipeline pressures continued to drop, Entergy contacted ISO-NE at 5:31 a.m. to advise that the plant could not meet its obligation. With ISO-NE's approval, RISE operated at a reduced level of 310 MW for the remainder of the operating day, while the RTO dispatched other generators to fill the gap.

Enforcement concluded Entergy's violations were the result of a "failure to exercise sufficient diligence" to ensure that RISE was able to meet its dispatch obligations but that it did not intend to violate the RTO's market rules.

FERC said its penalty also reflected Entergy's cooperation in the investigation and the steps it has taken to prevent repeat violations.

DHS: Russian Probes Hit Hundreds of Energy Cos.

Continued from page 34

used to authenticate access to the ICS — contained files with information such as IP addresses, ports and default user names.

They also were aided by publicity photographs on some companies' websites that inadvertently revealed security information.

"These are things like … cutting a ribbon or something like that, and there's the CEO talking to the mayor," Homer explained. "But in the background of the picture are control systems, and on these control systems are very important things like set points and safety guards and configurations and diagrams and all these kinds of things. All of this is very valuable information, but it's in the background and the organization didn't realize what they had published."

Lessons Learned

The campaign ultimately allowed the hackers to get across the ICS firewalls and gain control of the human-machine interfaces used by the utilities' system operators.

DHS officials concluded the initial access to corporate networks came primarily through the capture of legitimate credentials. All victims had externally facing, single-factor authenticated systems. Intrusions came via virtual private networks, Microsoft Outlook web access and remote desktops.

Officials said the investigation illustrated the need to require multifactor authentication for all external interfaces and to block all external server message block (SMB) network traffic. "There's really not a good business justification for having external SMB outbound," Homer said.

FERC & FEDERAL NEWS

FERC OKs GridLiance West Incentives, Questions ROE

By Robert Mullin

FERC last week granted GridLiance West incentive rate treatments for upgrades to a Nevada transmission line that connects to the CAISO grid, but it also ordered that the project's overall 10.6% return on equity be subject to settlement judge procedures (ER18-1693).

The commission approved full recovery of GridLiance's "prudently incurred" costs for its investment in upgrading the 14-mile, 230-kV Bob-Mead line if the project is abandoned for reasons outside the company's control, as well as a 100% full "construction work in progress" incentive. FERC also granted the company a 50-basis-point "transco" adder made available to independent transmission developers.

GridLiance last year acquired Valley Electric Association's 230-kV network in a deal valued at about $200 million, providing the company with 164 miles of transmission between CAISO and the interior West. (See *GridLiance Gets OK to Acquire Valley Electric Tx Assets*.)

The Six Cities group of Southern California public utilities protested inclusion of the adder, contending GridLiance had requested it just four months after reaching a settlement allowing for an overall 10.1% overall ROE, which included a 50-basis-point RTO participation adder.

Six Cities argued there was "overlapping justification" for the company's prior request for a regulatory asset incentive (coupled with the RTO adder) and its current request for the transco adder because the latter "is designed to recognize the business model-related benefits provided by independent transmission companies," similar to the rationale for the regulatory asset incentive already granted to GridLiance, the commission noted in its order.

But the commission rebuffed that contention, saying the functions of the transco adder and the regulatory asset incentive differ, and that it was "not persuaded that they rely upon overlapping justifications."

"As an independent transco, GridLiance West satisfies the requirements for the transco adder. In contrast, the commission granted GridLiance West the regulatory asset incentive based upon a determination that GridLiance West had demonstrated that its request for that incentive satisfied the nexus test established in Order No. 679," the commission said.

FERC also rejected as beyond the scope of the proceeding Six Cities' request that GridLiance be ordered to disclose all authorized incentive adders in future transmission development proposals to CAISO because the adders could have a "material impact" on transmission projects in the ISO.

But while the commission favored GridLiance's request for the adders, it also said its preliminary analysis indicated the overall 10.6% ROE for the Bob-Mead project might be too generous.

"Based on the record in this proceeding, the commission does not have a basis for determining whether GridLiance West's overall ROE, inclusive of the transco adder granted above, falls within the zone of reasonableness," FERC said in ordering settlement procedures.

FERC Flooded with Comments on Pipeline Permitting

Continued from page 1

whether it should reconsider how it balances project benefits against adverse consequences in light of the shale gas revolution, global warming and other changes since it last considered the issue almost 20 years ago (PL18-1). (See *FERC Outlines Gas Pipeline Rule Review*.)

Most of the comments before Wednesday's filing deadline came from individuals opposed to fracking and pipeline expansions.

The commission asked for comments on four topics: the reliance on precedent agreements to demonstrate project need; landowner interests and the use of eminent domain; the evaluation of alternatives and environmental effects under the Natural Gas Act and National Environmental Policy Act; and the efficiency and effectiveness of the commission's certificate process.

Status Quo

The Edison Electric Institute, Electric Power Supply Association, American Petroleum Institute, American Gas Association and Interstate Natural Gas Association of America (INGAA) generally supported continued use of precedent agreements, while calling for a streamlining of the permitting process and opposing regional reviews of pipelines or consideration of greenhouse gas emissions.

"EPSA believes the assessment of project need should continue to be based on precedent agreements (i.e., contracts with pipeline project customers), which remain the most objective evidence of market demand for pipeline capacity," said the group, which represents independent power producers. "EPSA urges the commission not to make the certificate review process more unwieldy or challenging at this time in which significant investment in infrastructure will be needed to meet expected demand and ensure reliability."

The industry groups proposed only modest changes, for example, improvements to FERC's website and communications to make it easier for landowners to participate in the process.

Other gas backers cited the economic boost the shale revolution has provided. "The energy renaissance that has occurred in this country, spearheaded by the increased development of natural gas production in Pennsylvania, has increased domestic economic activity, has dramatically improved air quality, and has significantly increased the nation's energy security and global competitiveness," said the Pennsylvania Chamber of Business and Industry.

The Marcellus Shale Coalition, which represents about 200 producing, midstream, transmission and supply chain members in the shale play, said producers have been hurt by limited pipeline capacity.

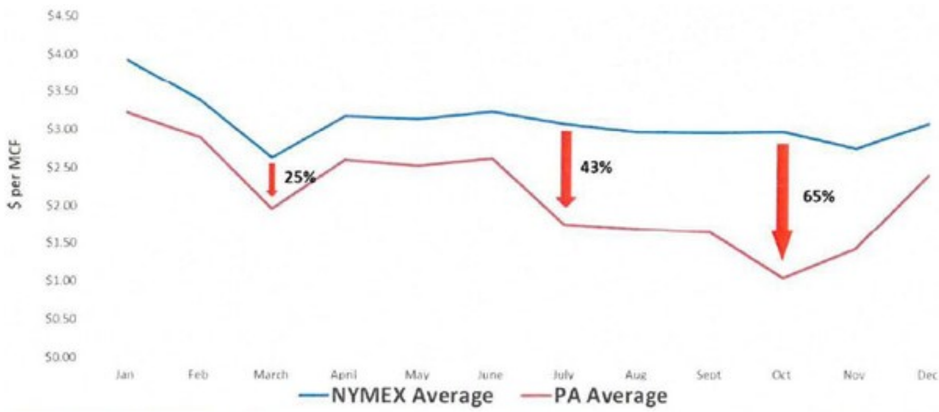
Continued on page 37

FERC & FEDERAL NEWS

FERC Flooded with Comments on Pipeline Permitting

Continued from page 36

“Natural gas produced in some regions of Pennsylvania has sold for over 65% less than natural gas produced and sold in other basins across the nation,” it said. “While efforts continue in Pennsylvania and throughout the Appalachian Basin to grow natural gas demand and usage, it is clear that the natural gas produced in Pennsylvania must also be transported to larger, more established markets where demand is greater,” the group said.



| Marcellus Shale Coalition

Calls for Change

The attorneys general of Massachusetts, Illinois, Maryland, New Jersey, Rhode Island, Washington and D.C. countered that the commission’s reviews are too narrow. “In assessing project need, the commission generally fails to account for the extent of regional need for new gas capacity or the evolving market for gas demand and relies too heavily on precedent agreements as proof of need for isolated projects,” they said.

“The commission’s single-minded reliance on precedent agreements is also contrary to the existing policy statement, which directs the commission to ‘consider all relevant factors reflecting on the need for the project,’ including studies of projected demand, the market to be served and potential cost savings to consumers.”

The American Antitrust Institute said FERC should evaluate precedent contracts between a pipeline and an affiliated customer differently than one with an unaffiliated customer to support the commission’s policy of promoting competition.

“Importantly, the repeal of the Public Utility Holding Company Act in 2005 removed restrictions on integration between energy companies. Vertical integration, particularly between pipelines and electric or gas distribution companies, can create anticompetitive incentives to engage in conduct that restrains competition and harms consumers. These possibilities can strongly influence the incentives motivating pipeline construction and the effects of affiliate precedent contracts on competition and ratepayers.”

INGAA said the commission shouldn’t differentiate between affiliates and non-affiliate customers agreements “because both appropriately represent market need. While FERC has the authority to investigate allegations of undue discrimination in favor of an affiliated entity if it has any concerns, it is unnecessary for the commission to distinguish between precedent agreements with affiliated and unaffiliated entities.”

The Industrial Energy Consumers of America said the current process “does a good job in identifying the need for new pipeline capacity within the context of serving domestic demand.”

But it said the commission should set a higher bar for pipelines intended to deliver gas for LNG exports. “The LNG export ‘cost versus benefit’ equation is significantly different because the supply is not serving the domestic market, which is the ‘public interest.’ LNG exports serve the public of other countries,” the group said.

Regional vs. Individual Review

Others, including the Nature Conservancy and Virginia’s U.S. senators, Mark Warner and Tim Kaine, said FERC should look at the combined impact of multiple projects in a region and seek to collocate them where possible.

“When multiple projects are being proposed [in the same region], we recommend that FERC consider cumulative impacts through issuance of a programmatic environmental impact statement (PEIS) that would simultaneously consider the purpose and need of each project, the aggregate impacts of all proposed or foreseeable projects on the affected area and the optimal combination of pipelines to deliver gas from the production areas to markets,” the environmental organization said. “This request is consistent with the Council on Environmental Quality guidance on ‘Effective Use of Programmatic NEPA Reviews’ issued on Dec. 18, 2014.”

The senators also agreed with the Conservancy and New Jersey Department of Environmental Protection that FERC should do more to limit pipelines crossing land set aside for conservation.

Some commenters said the commission should not issue final certifications for projects that haven’t obtained all required state and federal environmental permits.

Tolling Orders

The senators and others also said FERC should end its use of tolling orders, which keep rehearing requests in legal limbo.

“As a result of this strategy, FERC prevents court challenges to its decision in a meaningful time frame,” said the VOICES coalition, which represents more than 200 organizations opposed to fracking. “Meanwhile, it grants the pipeline company the power of eminent domain and the right

Continued on page 38

FERC Flooded with Comments on Pipeline Permitting

Continued from page 37

to begin and continue construction, all the while knowing that challengers are awaiting their ability to challenge the project in court. The result is that even in those cases where legal challenges to FERC approvals have succeeded, the victories have come too late to genuinely impact the FERC decision already rendered."

The group cited the nearly yearlong tolling order that preceded a successful court challenge to the TGP NorthEast Upgrade Project. "The court determination that FERC had violated the National Environmental Policy Act by engaging in illegal segmentation and failing to consider cumulative impacts came only after the pipeline was fully constructed and in operation."

A coalition of environmental groups, including the Natural Resources Defense Council, Sierra Club and Earthjustice, said FERC should use an "all relevant factors" approach in determining project need. Relying almost exclusively on precedent agreements, they said, ignores that "there may be alternatives to the proposed capacity to meet the purported demand, such as using underutilized existing pipeline capacity or alternative, cleaner energy resources."

The groups also said pipelines may not remain economic for their entire 40- to 50-year lifespan because flat load growth and competition from renewables and distributed energy resources may undermine gas demand.

"An integrated, more comprehensive review would assess the need for new pipelines based on the energy needs of the region(s) directly affected by the project. Such an assessment would examine factors such as existing and proposed pipeline capacity, long-term energy needs and state policies."

GHG Emissions

Perhaps the most contentious issue FERC will have to navigate is pipelines' contributions to GHG emissions.

Most of the individual comments filed were form letters from fracking opponents and climate activists in which only the first sentence varied. ("Dear Secretary: Your greed in placing profit ahead of respect for the Earth and its inhabitants is appalling." "Dear Secretary: We need to keep as many fossil fuels in the ground as possible, and we need to protect our families and our homes from pipeline leaks and environmental damage." "Fracking is an irresponsible action, which puts our health in danger. It devastates water and land.")

All five commissioners voted in favor of initiating the pipeline review. But Democrats Cheryl LaFleur and Richard Glick have repeatedly dissented or issued concurrences in protest of the Republican majority's refusal to consider GHGs on individual projects.

Last August, the D.C. Circuit Court of Appeals ruled that FERC's environmental impact statement for the Southeast Market Pipelines Project should have included "reasonable forecasting" of the project's impact on GHG emissions. In May, however, the Republican majority said FERC will no longer prepare upper-bound estimates of GHG emissions when "the upstream production and downstream use of natural gas are not cumulative or indirect impacts of the proposed pipeline project." Republicans Kevin McIntyre, Neil Chatterjee and Robert Powelson said they were taking the action to "avoid confusion as to the scope of our obligations under NEPA and the factors that we find should be considered" when determining whether a project is in the public convenience and necessity under the NGA. (See *FERC Narrows GHG Review for Gas Pipelines*.)

Numerous commenters disagreed in their filings this week.

The Harvard Electricity Law Initiative argued that "accounting for the economic risks and environmental harms of downstream and upstream greenhouse gas emissions in a certificate proceeding is consistent with judicial precedent and commission practice."

The NRDC coalition quoted from a March dissent by Glick, who called climate change "the single most significant threat to humanity."

"It is difficult to understand how NEPA's demand that an agency take a 'hard look' at the environmental impacts of its actions can be satisfied if the impacts of GHG emissions are ignored," he wrote.

EEI and individual utilities said, however, that pipelines have helped reduce CO_2 emissions by allowing gas generators to replace coal.

The Competitive Enterprise Institute, a conservative think tank, opposed considering GHGs, saying "Saving the planet one gas pipeline at a time is a fool's errand.

"Worse, importing climate concerns and [social cost of carbon] analysis into public convenience and necessity determinations will fuel spurious ideological controversies, discourage economically beneficial investment in U.S. energy infrastructure and make natural gas prices more volatile."

Empire Pipeline Tioga County Extension | *National Fuel Gas*

AEP Relieves Wind Catcher Uncertainty, Stock Up

During American Electric Power's second-quarter earnings call with financial analysts last week, CEO Nick Akins was pressed about the uncertainty the company's proposed Wind Catcher Energy Connection was placing on its share price. In the company's earnings release, Akins had promised the company's investments in its regulated businesses "will continue to support our 5 to 7% earnings growth rate."

During the July 25 call, Akins was asked at what point do you decide that you are better off walking away from the table and the uncertainty?

"A very fair question," he responded. "We cannot afford to continue to allow this thing to languish given construction has started and the company is incurring expenses associated with it."

Two days later, AEP removed the uncertainty, canceling Wind Catcher, a $4.5 billion, 2-GW wind farm in the Oklahoma Panhandle. The move came one day after the Texas Public Utility Commission rejected the proposal. (See related story, *AEP Cancels Wind Catcher Following Texas Rejection*.)

Wall Street appeared to like the company's reaction. After closing the day of the earnings call at $69.38, AEP stock ended the week at $71.14/share, up $1.76. That's still well below the company's 12-month high of $77.63, which it hit in November.

Ohio-based AEP reported a "very healthy quarter" thanks to a late winter and early summer, with second-quarter earnings of $528 million ($1.07/share). That was up from the prior year second quarter of $375 million ($0.76/share).

NextEra Energy Earnings Up

NextEra Energy announced a small increase in second-quarter earnings last week, reporting net income of $795 million ($1.64/share). That was a $2 million improvement from the prior year's quarter of $793 million ($1.68/share).

The Florida company's adjusted earnings of $1 billion ($2.11/share), compared to $881 million ($1.86/share) in last year's second quarter. That beat Zacks Investment Research's consensus estimate of $2.07/share.

NextEra announced in May it will pay Southern Co. almost $6.5 billion for Gulf Power, Florida City Gas and shares in the Oleander and Stanton natural gas power plants. CEO Jim Robo said the company "remains on track to meet its objectives for the year."

Despite the good news, NextEra's stock lost $2.03/share following the July 25 earnings announcement, finishing the week at $166.99.

Xcel Energy Beats Analysts' Expectations

Xcel Energy reported a 16% increase in second-quarter earnings boosted by favorable weather and sales growth, exceeding analysts' expectations.

The Minneapolis company on Thursday announced earnings of $265 million ($0.52/share), up from $227 million ($0.45/share) a year ago. Zacks' analyst survey had forecasted profits of 47 cents/share.

The results exclude the effects from 2017's federal tax legislation.

The company's stock finished the week at $46.59/share, up 68 cents.

– Tom Kleckner

NextEra to Close Duane Arnold Nuclear Plant

NextEra Energy Resources last week announced that it will close the 615-MW Duane Arnold Energy Center, Iowa's only nuclear power plant, five years earlier than expected as a result of a buyout agreement with Alliant Energy.

Florida-based NextEra said that Alliant, the plant's largest customer, will pay $110 million to NextEra in September 2020 to cover the last five years of their power purchase agreement. Alliant will instead buy 340 MW of power from four wind farms that NextEra plans spend $250 million to repower, part of a $650 million package of investments in Iowa renewables.

The deal is contingent upon Alliant getting approval from the Iowa Utilities Board to recover the buyout payment from ratepayers. Alliant said the deal will save its customers nearly $300 million over 21 years beginning in 2021.

"Partially replacing energy from Duane Arnold with NextEra's additional wind investments in Iowa will bring significant economic benefits to our customers," Alliant CEO Patricia Kempling said in a statement.

NextEra said it expects to gradually reduce staff at the plant, which employs 500 now, over the next seven years as it decommissions it. It also said it is evaluating redevelopment opportunities for the plant site, including new solar energy, battery storage or natural gas facilities.

Duane Arnold is one of numerous nuclear power plants experiencing economic difficulties because of cheap natural gas and falling renewable generation costs. Bloomberg New Energy Finance Analyst Nicholas Steckler said in May that 24 of the 66 nuclear plants operating in the U.S. were either scheduled to close or wouldn't make money through 2021.

– Peter Key

Duane Arnold Energy Center | *NextEra*

COMPANY BRIEFS

SCE&G Wants Failed Nuclear Plant Expansion Evidence to Stay Private

Attorneys for South Carolina Electric & Gas on July 25 asked South Carolina Circuit Judge John Hayes to ensure that two state agencies can't publicly release records involving its role in the failed attempt to expand the V.C. Summer nuclear power plant.

The Attorney General's office and the Office of Regulatory Staff want to join lawsuits filed against the SCANA subsidiary over the failed expansion, which cost it and state-owned utility Santee Cooper $9 billion.

SCE&G wants to make sure that if they do, they can't release evidence from the lawsuits to the public.

More: *The Post and Courier*

Santee Cooper to Maintain VC Summer Equipment

Santee Cooper's board of directors voted July 23 to spend $8 million to maintain the equipment it purchased for the failed V.C. Summer nuclear power plant expansion through the end of the year.

The board likely hopes that an entity building a nuclear reactor somewhere else in the world will be willing to purchase the equipment for it.

The state-owned utility and SCANA bought nearly all the parts they needed for the two reactors they planned on adding to the Summer plant. One estimate puts their value at $861 million.

More: *The Post and Courier*

Uranium Leaks Through Floor at Westinghouse Fuel Rod Factory

Radioactive uranium has leaked through the floor of a Westinghouse factory in Richland County, S.C., that makes fuel rods for nuclear reactors.

The uranium seeped through a three-inch hole in a concrete floor in a part of the factory where acid is used, according to the Nuclear Regulatory Commission, which learned of the leak July 12.

South Carolina Department of Health and Environmental Control officials said they have no reason to believe that the uranium has trickled off the site or that the leak poses a threat to public water supplies.

More: *Greenville News*

PacifiCorp Moving Forward with Wind Power and Tx Project

PacifiCorp said July 23 it will move forward with a mammoth wind power and transmission project after Idaho regulators approved the project on July 20.

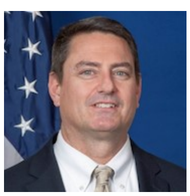
The company will build 1,150 MW of wind power and a 140-mile transmission line in Wyoming and retool 900 MW of turbines in Wyoming and Washington.

PacifiCorp had to get the project approved by regulators in Wyoming, Washington and Idaho.

More: *Portland Business Journal*; *KIFI/KIDK*

FEDERAL BRIEFS

NRC Names Office of Investigations Director



Shuttleworth

The Nuclear Regulatory Commission on July 23 named Edward "Andy" Shuttleworth director of its Office of Investigations.

Shuttleworth had been acting assistant director for intelligence at Immigration and Customs Enforcement's Homeland Security Investigations, the latest in a number of leadership posts he has held in the division. He has more than 30 years of experience in law enforcement.

The Office of Investigations develops policy, procedures, and standards for conducting all NRC investigations of alleged wrongdoing.

More: *Nuclear Regulatory Commission*

TVA Boosts Capacity of Browns Ferry Unit 3

Browns Ferry nuclear plant

The Tennessee Valley Authority has boosted the capacity of the Unit 3 reactor at its Browns Ferry Nuclear Plant in Alabama by 155 MW.

TVA plans to boost the capacity of the plant's other two units by similar amounts by next spring. The cost of the three upgrades will be $475 million.

More: *Times Free Press*

FERC Approves Requests for Atlantic Coast Pipeline in NC

FERC on July 24 issued an order granting requests by Atlantic Coast Pipeline and Dominion Energy Transmission to begin some work for the Atlantic Coast Pipeline in North Carolina (CP15-554).

"This is great news and another major step forward for the project," said Dominion spokesman Aaron Ruby.

Atlantic Coast Pipeline is a joint venture between Dominion, Duke Energy, Piedmont Natural Gas and Southern Company Gas that is building a 600-mile natural gas pipeline through West Virginia, Virginia and North Carolina.

More: *WV News*

4th Circuit Upholds Mountain Valley Eminent Domain Ruling

A panel of the 4th U.S. Circuit Court of Appeals on July 25 affirmed the ruling of a lower court judge who sided with the Mountain Valley Pipeline in an eminent domain lawsuit brought by landowners in the natural gas pipeline's proposed path. An attorney for the plaintiffs said his clients are evaluating the ruling and possible next steps.

NextEra Energy, one of the pipeline's five developers, told shareholders on July 25 that the pipeline won't be completed by

Continued on page 41

FEDERAL BRIEFS

Continued from page 40

late this year as had been anticipated. A federal appeals court has issued a stay that put a hold on stream crossings that the pipeline must make in West Virginia. If that is lifted, CFO John Ketchum said, the pipeline will be placed in service in the first quarter of next year.

On July 23, Mountain Valley Pipeline was granted permission by FERC to adjust its work schedule so it can work on the pipeline in every available minute of daylight (CP16-10). In Virginia, Democratic state lawmakers have urged Gov. Ralph Northam to halt construction of the Mountain Valley and Atlantic Coast pipelines in the state and insist on a review of every spot they will cross a waterway.

More: *The Associated Press*; *The Roanoke Times*; *Virginia Mercury*

Los Angeles Wants to Put Pumped Storage at Hoover Dam

The Los Angeles Department of Water and Power wants to spend $3 billion on a pumped-storage project at the Hoover Dam.

The project would involve building a pump station about 20 miles downstream from Lake Mead, the reservoir created by the dam, and a pipeline that would transport water from the Colorado River at that point back to where it could be used to power the dam's generators.

The project must be approved by the Interior Department's Bureau of Land Reclamation and the National Park Service. Los Angeles would like to have the project completed by 2028.

More: *The New York Times*

TVA Draining Coal Ash Pond at Allen Plant

The Tennessee Valley Authority has notified the Tennessee Department of Environment and Conservation it plans to close and drain a "leaking" and "contaminated" coal ash pond close to its now-closed Allen Fossil Plant.

The action is similar to actions TVA has undertaken at other retired fossil plants, including John Sevier in East Tennessee and Widows Creek in Alabama, a TVA spokesman said.

Arsenic, lead, and other toxins, were found in groundwater close to the East Ash pond last July.

More: *Memphis Flyer*

Yucca Mountain Restart Dead for Year Thanks to Compromise Bill

Efforts to restart the process of turning Yucca Mountain in Nevada into a repository for spent fuel from the nation's nuclear power plants appear done for the next year after a House-Senate conference left language authorizing spending for them out of a compromise defense bill released on July 23.

The House Armed Services Committee had authorized $30 million to store waste from nuclear power plants in Yucca Mountain in the defense bill, and the House had included $120 million in a separate spending bill to revive the licensing process for the repository with the Nuclear Regulatory Commission. Both items were rejected by the Senate in large part out of deference to Sen. Dean Heller (R-Nev.), who is up for reelection this fall.

More: *Las Vegas Review-Journal*

Republican Rep Introduces Carbon Tax Bill


Curbelo

U.S. Rep. Carlos Curbelo (R-Fla.) on July 23 introduced a bill calling for a tax on industrial carbon-dioxide emissions that would start at $24 per metric ton in 2020 and increase annually thereafter.

The bill is almost certain to fail in the Republican-controlled House, but Curbelo said he hoped it would at least renew a debate on climate change, which many Republicans refuse to admit is occurring.

Rep. Brian Fitzpatrick (R-Pa.) has signed on as a co-sponsor of the bill. He and Curbelo are among 17 House Republicans who in March 2017 introduced a resolution acknowledging the negative impact of climate change.

More: *Reuters*

STATE BRIEFS

CALIFORNIA

PUC Approves Cutting San Onofre Reimbursement by $750M

The Public Utilities Commission on July 26 approved a settlement that will cut $750 million from electric customers' share of the costs for the premature closing of the San Onofre nuclear power plant.

A plan that the PUC approved in 2014 called for customers to pay $3.3 billion in charges related to the shutdown of the plant until 2022. The settlement that the commission just approved will stop their payments for the plant as of December.


San Onofre nuclear plant

Plant owners Southern California Edison and San Diego Gas & Electric negotiated the settlement with Citizens Oversight, a San Diego-area consumers group that sued SCE and the commission over the 2014 plan.

More: *Los Angeles Times*

COLORADO

Black Hills Energy Must Devise Residential Time-of-Use Plan

The Public Utilities Commission on July 25 ordered Black Hills Energy to devise a time-

Continued on page 42

STATE BRIEFS

Continued from page 41

of-use plan for its 85,000 residential customers in the Pueblo area.

The PUC also denied the utility's request to create a separate class of customers covering residential customers with solar generation and net-metering plans.

Both issues had been decided earlier in the year in Black Hills' rate case, but it had asked the PUC to reconsider them.

More: *Pueblo Chieftain*

MASSACHUSETTS

Utilities Seeking $426 Million for Negotiating Hydro Contracts

Eversource Energy, National Grid and Unitil have asked the Department of Public Utilities for $426 million over 20 years for negotiating contracts to procure hydroelectricity from Hydro-Quebec and Central Maine Power's New England Energy Clean Connect project, which won a state hydropower solicitation.

The utilities say the payments, which are the maximum they can receive under the legislation authorizing the hydro procurement, are necessary to recognize the "financial obligation" they bear. Critics of the payments say the utilities have very little risk under the contracts.

More: *CommonWealth Magazine*

MICHIGAN

PSC Reduces DTE's, Consumers' Rates to Reflect Tax Cuts

The Public Service Commission on July 24 ordered DTE Electric and Consumers Energy to reduce their rates by nearly $270 million annually to reflect their savings from the Tax Cuts and Jobs Act.

The commission ordered DTE to reduce its rates by $156.9 million, which amounts to $2.46/month for a residential customer using 500 kWh/month. It ordered Consumers to cut its rates by $112.7 million, which amounts to $2.35/month for a similar residential customer.

The commission said the cuts will begin showing up in August electric bills.

More: *The Associated Press*

DEQ Approves DTE's Air Quality Application for Gas Plant

The Department of Environmental Quality has approved DTE Energy's air quality application for the 1,150-MW natural gas-fired power plant it plans to build in East China Township.

The Public Service Commission approved the $1 billion plant earlier this year.

DTE plans to break ground on the plant in August and expects it to be operational by 2022, replacing three coal plants that it's supposed to retire by 2023.

More: *Port Huron Times Herald*

NEVADA

Environmental Groups Come Out Against Retail Choice

Four environmental groups said July 26 they oppose opening the state's electric market to competition because it could disrupt the progress the state has made in adopting clean energy.

Question 3 on the November ballot will give voters a chance to decide whether to let NV Energy retain its status as a monopoly power supplier in the state. The utility released a plan in May to double its current level of renewable energy generation by 2023 and has vowed to spend $30 million to defeat the effort to open the state's power market.

The groups siding with NV Energy are the Natural Resources Defense Council, Sierra Club, Southwest Energy Efficiency Project and Western Resource Advocates.

More: *Greentech Media*

NEW JERSEY

BPU Proposes Rule Establishing Offshore Wind Funding Mechanism

The Board of Public Utilities on July 25 proposed a rule that would establish a mechanism for funding the development of offshore wind capacity by establishing an Offshore Wind Energy Certificate (OREC).

The rule would establish a process by which offshore wind farms receive funds and return their revenues to the customers of the state's electric utilities. It also describes the roles and responsibilities of the parties involved in the offshore wind development process, including the utilities, the offshore wind developers and the OREC administrator.

More: *Board of Public Utilities*

NEW MEXICO

Cities Opposing Nuclear Storage Facility in State

The Las Cruces City Council voted 4-3 to approve a resolution opposing a proposal to build a temporary storage facility for spent fuel from the nation's nuclear power plants 35 miles east of Carlsbad.

Three other city councils and a county commission have approved resolutions opposing the facility, for which Holtec International is seeking a license from the Nuclear Regulatory Commission.

Las Cruces' resolution opposes the transport and storage of high-level nuclear waste in the state. The Albuquerque and the Bernalillo County resolutions oppose the transportation of high-level nuclear waste through their jurisdictions.

More: *Las Cruces Sun-News*

PENNSYLVANIA

3rd Circuit Agrees Nuns Waited Too Long to Challenge Pipeline

A panel of the 3rd U.S. Circuit Court of Appeals on July 25 upheld a lower court ruling that an order of Roman Catholic nuns in Lancaster County had failed to make their religious objections to the Atlantic Sunrise Pipeline known while FERC was considering the project.

The nuns' attorney had argued that the federal Religious Freedom Restoration Act doesn't mention when or where a religious freedom suit must be filed and said the nuns' religious liberty wasn't affected by the pipeline until it was being built.

Williams Partners said gas should start flowing through the pipeline in late August.

More: *The Philadelphia Inquirer*; *Lancaster Online*

Continued on page 43

STATE BRIEFS

Continued from page 42

SOUTH DAKOTA

PUC Gives Otter Tail Permission To Build 250-MW Peaker

The Public Utilities Commission on July 26 voted unanimously to approve a settlement stipulation presented by Otter Tail Power and PUC staff that allows Otter Tail to build a $140 million, 250-MW simple cycle natural gas-fired power plant near Astoria in Deuel County.

Otter Tail will begin work on Astoria Station, which it will own and operate, in 2019 and expects it to begin generating power by March 2021.

More: Public Utilities Commission

VIRGINIA

State Upping Offshore Wind PR Efforts

Gov. Ralph Northam said July 25 that the Department of Mines, Minerals and Energy has selected BVG Associates to help the state attract companies that provide supplies and services to offshore wind developers.

BVG was a respondent to a May 21 request for proposals to help the state plan how to build out an industry supply chain, meet port infrastructure requirements and provide long-term maritime service needs.

More: Gov. Ralph Northam; The Associated Press

Rappahannock Co-op Members Petition SCC Seeking Bylaw Vote

Appalachian Mountain Advocates, a nonprofit public interest law firm, has filed a petition with the State Corporation Commission on behalf of three Rappahannock Electric Cooperative members who want to force the co-op's board to allow members to vote on a series of proposed bylaw changes.

The petitioners are the founders of Repower REC, which describes itself as a "grassroots coalition of concerned REC members" working with Solar United Neighbors of Virginia, a nonprofit that advocates for solar power.

More: Virginia Mercury

WISCONSIN

PSC Approves ATC Tx Project To Serve Foxconn Factory

The Public Service Commission voted 3-0 July 26 to approve American Transmission Co.'s plan to build a substation and transmission lines to power Foxconn Technology Group's massive flat-screen plant in Mount Pleasant.

The substation and transmission lines are expected to cost from $117 million to $120 million, depending on the route used for the transmission lines.

The cost will be borne by 5 million power customers in ATC's service territory over the next 40 years.

More: The Associated Press