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

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SPP, PJM, MISO Moving to Change Day-Ahead Schedules

SPP, PJM and MISO all are likely to propose earlier day-ahead schedules later this month in response to FERC Order 809. Not everyone is happy about the changes.

SPP: 9:30 CT

SPP's Markets and Operations Policy Committee will vote this week on moving the deadline for day-ahead market offers up 90 minutes to 9:30 a.m. CT. p.2

PJM: 9:30 CT

PJM confirmed last week that it will seek to move the deadline for submitting day-ahead offers up 90 minutes, from noon to 10:30 a.m. ET. p.9

MISO: 10:00 CT

MISO will propose closing the day-ahead market one hour earlier during Daylight Savings Time and reducing the clearing time by an hour. p.16

ISO/RTO	Time for Submission of Bids (CCT)	Publication of Day-Ahead Commitments
NYISO*	4:00 a.m.	10:00 a.m.
ISO-NE*	9:00 a.m.	12:30 p.m.
PJM	9:30 a.m.	12:30 p.m.
MISO	10:00 a.m.	1:00 p.m.
ERCOT*	10:30 a.m.	1:30 p.m.
SPP	9:30 a.m.	2:00 p.m.
CAISO*	12:00 p.m.	3:00 p.m.

* No Change

Revised market timing — current proposals. (Source: MISO)

SunEdison Making $2 Billion Bet on Wind in Midwest, Canada

By Tom Kleckner

Uncertainty over renewable tax credits and competition from low-priced natural gas may be discouraging some wind power investors — but not SunEdison's TerraForm Power.

Established by SunEdison to own and operate its solar farms, TerraForm has since expanded its focus to wind and other clean-power assets, seeking long-term contracts that generate steady revenues for additional investments.

In the year since its July 2014 initial public offering, TerraForm has added 2 GW of wind assets to its portfolio. Last week, TerraForm made its biggest splash yet, joining with SunEdison to acquire a 930-MW energy portfolio for $2 billion from Invenergy Wind.

SunEdison's TerraForm Power is acquiring 930 MW of wind capacity from Invenergy, including the Prairie Breeze (top) and under-construction Prairie Breeze II farms (bottom), both in Nebraska. (Source: Invernegy)

Just the week before, TerraForm and Sun-

Continued on page 27

PJM Members: Capacity Performance Penalties May Hurt Dispatch Discipline

By Rich Heidorn Jr.

Members warned PJM officials last week that the way the RTO plans to calculate Capacity Performance could lead generators to ignore dispatch instructions to avoid penalties.

PJM expects generators' output to match their Capacity Performance obligations even at the beginning of a no-notice emergency, leaving no allowance for ramping. That could lead generators that are not producing at their full CP commitment when the emergency is called to exceed their obligation later in the hour to avoid or minimize penalties, stakeholders said.

The discussion came during an Operating

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SPP NEWS

SPP Moving to 9:30 Day-Ahead Close

By Tom Kleckner

SPP's Markets and Operations Policy Committee will vote this week on a recommendation to move the deadline for day-ahead market offers up 90 minutes to 9:30 a.m. CT.

The proposal, which has cleared four lower stakeholder groups, would have day-ahead results posted at 2 p.m. CT, up from 4 p.m. It also shortens the reoffer period to 45 minutes, with reliability unit commitment (RUC) offers due at 2:45 and results posted by 5:15.

The changes to SPP's operating tariff are intended to comply with the Federal Energy Regulatory Commission's Order 809, which moved the timely nomination cycle deadline for gas to 1 p.m. CT from 11:30 a.m. and added a third intraday nomination cycle. The commission ordered RTOs to adjust the posting of their day-ahead energy market and reliability unit commitment process results "sufficiently in advance" of the revised gas cycles, or explain why it is not suitable for their markets. (See *SPP Trying to 'Balance the Risk' on Gas-Electric Schedules*.)

'Incremental' Improvement

The revised timeline would not provide day-ahead market results before the 1 p.m. CT nomination deadline, but it would provide 30 minutes before the Intraday 2 nomination. RUC results would be available 45 minutes before the 6 p.m. evening gas nomination.

> **"Spending $1.5 million and not [getting] what we need … actually could make it worse for the market overall."**
>
> **Nebraska Public Power District**

The proposal has already been endorsed by majorities in the Gas Electric Coordination Task Force (4-2 with two abstentions); the Market Working Group (7-5-5); Regional Tariff Working Group (14-2-3); and Operating Reliability Working Group (9-1-1).

The task force's recommendation termed the changes "an incremental improvement over the existing timeline for improving coordination between the market results and the Timely and Evening nominations." The group also said the changes will allow for day-ahead market and reliability unit commitments to be provided before the evening nomination and sufficient time in the morning for "price formation" before the day-ahead market closes.

SPP estimates it will take approximately $1.5 million and 14 months to implement the current changes, which would require FERC's approval of the tariff changes and new software implementation. RTO officials' long-term goal is to post day-ahead market results before the timely gas nomination.

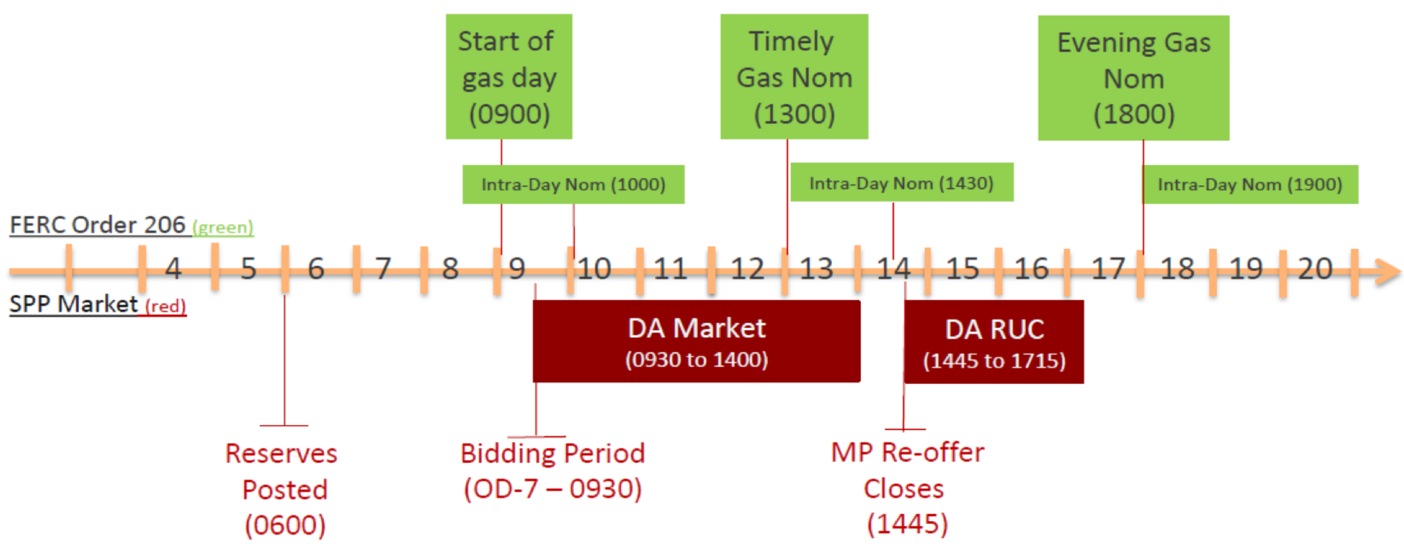
The change was opposed by several members in SPP's north, where cold weather affects natural gas supplies during critical time frames, including Lincoln Electric and the Omaha and Nebraska public power districts.

In stating its opposition, Nebraska Public Power District said SPP and its members should have taken their timeline concerns to FERC before developing a revision request. "Spending $1.5 million and not [getting] what we need … actually could make it worse for the market overall," NPPD said.

NPPD and City Utilities of Springfield also said the change would hurt forecast accuracy, particularly for wind generation.

Springfield noted that SPP has a large share of intermittent wind generation — making forecasts especially important —while experiencing fewer gas constraints than eastern RTOs.

"The greatest benefits of [the change] impact less than 10 days a year (3%) at the detriment of the remaining 355 days," Springfield said. "SPP has a relatively small percentage of gas generation in their average stack and a ~40% capacity benefit margin, which provides needed cushion in the current construct."



Proposed SPP schedule (CT) (Source: SPP)

SPP NEWS

One Year into Integrated Marketplace, SPP Fundamentals Largely Unchanged

By Tom Kleckner

SPP will soon file a full report on the Integrated Marketplace's first year of performance, but its most recent quarterly State of the Market report indicates the market expansion hasn't affected the fundamental dynamics in the region.

Electric prices are continuing to track natural gas prices, and congestion patterns "have generally remained consistent" with those under the old Energy Imbalance Service, according to the spring market report by the RTO's Market Monitoring Unit.

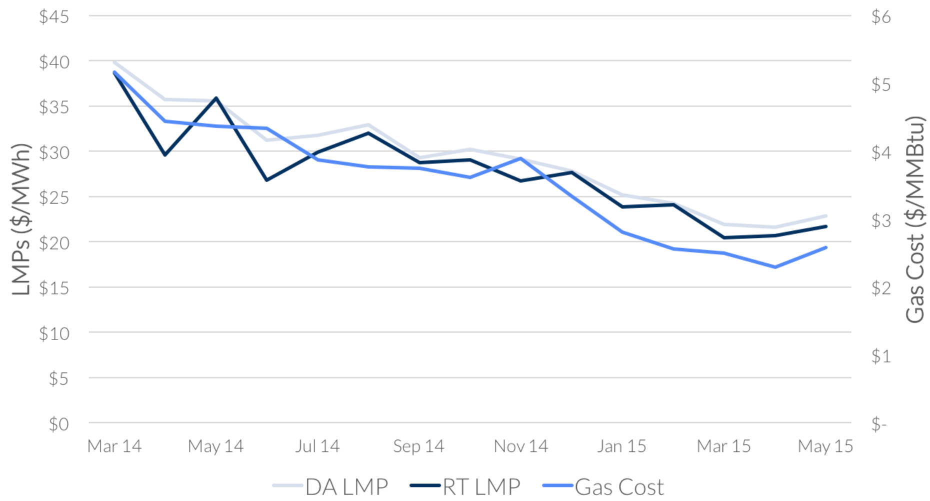
The Integrated Marketplace, which launched in March 2014, includes a day-ahead market with transmission congestion rights and a reliability unit commitment process and real-time balancing market. It also incorporated a price-based operating reserve market and combined the region's balancing authorities into a single SPP balancing authority.

The Federal Energy Regulatory Commission told SPP and its MMU to file an information report 15 months after the implementation of the market. A draft of the report is expected to be presented to the Board of Directors during its July 28 meeting.

Here are some highlights from the MMU report:

Gas, Electric Prices

Average gas prices for March, April and May were about half those for last year's spring, averaging $2.46/MMBtu, as compared to $4.66/MMBtu in 2014. That decline has led to a corresponding decline in the LMP. Day-ahead LMPs averaged $22.13 this spring, compared to $37.03 in 2014. Real-time LMPs were $20.95, compared to $34.72 last year.

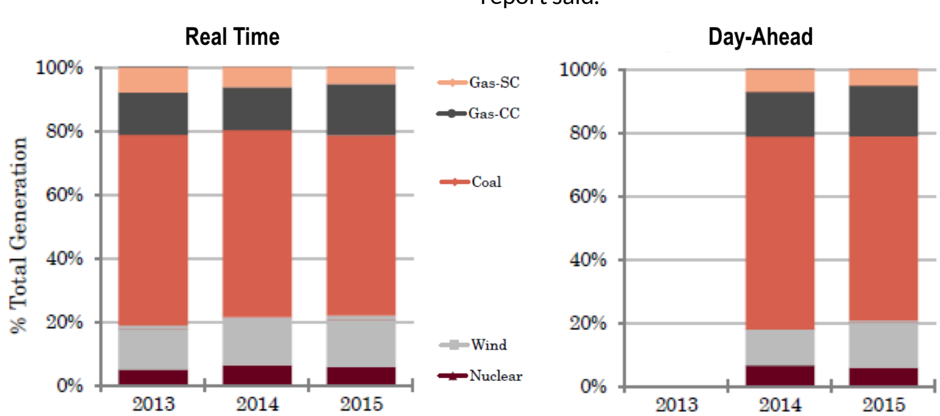


SPP power costs continued to track natural gas costs in the first year of the Integrated Marketplace. (Source: SPP State of the Market Report, spring 2015)

DA/RT Divergence

At the same time, the SPP system's day-ahead to real-time price divergence hit a high of -46.9% in March. Day-ahead prices were $22.06, compared to real-time average prices of $20.46. Divergence eased to -7.4% and -7.2% in April and May, respectively; it has only been in the positive once since the Integrated Marketplace's implementation, coming in May 2014 at 3.8% ($35.58 for day-ahead compared to $35.97 for real time).

The report partially attributed the price divergence to significant price volatility in the real-time market. "Prices are expected to be more volatile in the real-time balancing market than the day-ahead market," the report said.



Generation by fuel type, spring 2013/14/15 (Source: SPP State of the Market Report, spring 2015)

Virtual Trading

The day-ahead market's virtual trading is intended to promote convergence between day-ahead and real-time prices, improve day-ahead efficiency and moderate market power. The report said cleared demand bids — most placed by financial-only participants — steadily increased before leveling out this spring.

SPP said gross virtual profits for the Integrated Marketplace's most recent 12 months totaled just over $92 million, with gross virtual losses totaled nearly $71 million. It noted every Integrated Marketplace month has had a net profit from virtual transactions save for May 2014, which had a net loss of just over $700,000.

Cleared virtual bids as a percentage of reported load is averaging about 3% since the Integrated Marketplace's implementation; cleared virtual offers as a percentage of reported load is averaging just over 4%.

Cleared virtual transactions averaged 7% of load since March 2014. April 2015 saw the largest amount of virtual transactions, at 9.75% of reported load.

Gas-Electric Price Correlation Continues

SPP also pointed to a positive metric comparing gas prices from the Panhandle Eastern Pipeline with electricity prices. (SPP uses PEPL costs as a proxy for overall gas

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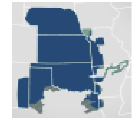
SPP NEWS



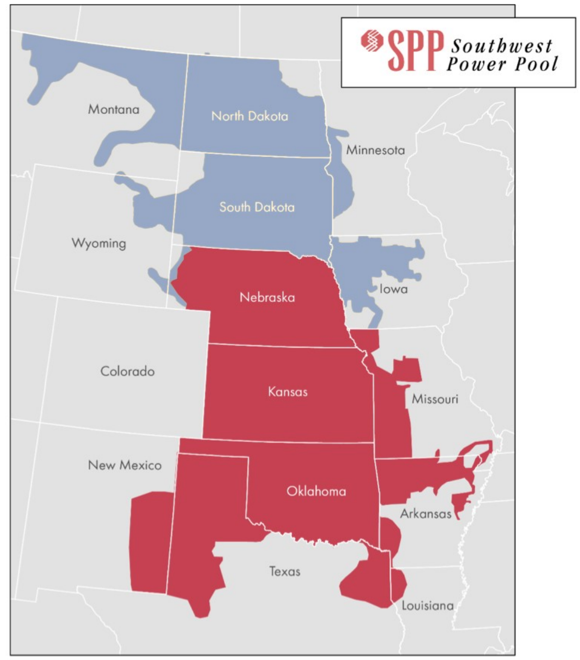
Northern Additions Boost SPP Membership to 90

By Tom Kleckner

SPP used social media recently to announce its membership had hit 90 with the addition of three cooperatives and an investor-owned utility that joined the RTO as part of the Integrated System.

- East River Electric Power Cooperative is a wholesale supply cooperative serving 24 rural electric co-ops and one municipally owned electric system with a total of more than 92,000 homes and businesses. The cooperative has a 40,000-square-mile service area covering 63 primarily rural counties in eastern South Dakota and western Minnesota.
- Northwest Iowa Power Cooperative is a generation and transmission cooperative supplying wholesale power to seven distribution co-ops serving more than 30,000 members and consumers. It covers 6,500 square miles in western Iowa.
- Corn Belt Power Cooperative, another G&T cooperative, provides energy to nine distribution co-ops and a municipal co-op in 41 counties in northern Iowa.
- NorthWestern Energy is an investor-owned utility providing electricity and natural gas to about 692,600 customers in Montana, South Dakota and Nebraska. It owns and operates wind, water, natural gas and coal-fired generation and delivers electricity to more than 416,100 customers.

SPP began coordinating transmission for the Integrated System on June 1. Full membership is expected in October. SPP has members from 14 states and 48,537 miles of transmission; the newest members will give SPP approximately 60,000 miles of transmission, stretching from northwest Louisiana, across the Great Plains to western Montana.



SPP Footprint 2014

Integrated System

(Source: SPP)

SPP Fundamentals Largely Unchanged

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costs in its footprint).

"Historically, gas prices and real-time prices have been highly correlated in SPP," the report said, noting the trend has continued into the Integrated Marketplace. "Workably competitive markets should experience highly correlated gas costs and energy prices in general."

Congestion Patterns

The report said congestion patterns have remained consistent with the Integrated Marketplace's implementation. Newly energized transmission service has eased congestion in northwest Kansas and the Kansas City area, but congestion remains an issue in the Texas Panhandle and northwest Oklahoma, where four flowgates registered the highest shadow prices in SPP's footprint this spring. (Shadow prices reflect congestion's intensity on a flowgate's path, indicating the marginal value of an additional megawatt of relief on a constraint in reducing the total production costs.)

The market report said low-cost generation north of the constraints and limited import capabilities were some of the driving factors.

Regulation Market

The report notes that SPP implemented its regulation-compensation market to comply with FERC Order 755 on March 1. The market includes payment to market participants based on changes in energy output for regulation deployment.

This March, SPP cleared more regulation mileage than necessary with a regulation mileage factor of 1.0 for both regulation up and down, according to the report. The 1.0 factor was adjusted to a more realistic value, averaging near 0.2, in April and May, resulting in fewer unused mileage make-whole payments.

RTO Insider Adds Kleckner to SPP, MISO South Coverage

Tom Kleckner
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501.590.4077

Tom Kleckner, a 24-year veteran of the electric industry, has joined *RTO Insider* to cover SPP and MISO South.

A former sportswriter for the *Corpus Christi Caller-Times*, Tom later worked in communications at Central and South West Corp. before its merger with American Electric Power, and at TXU during its contentious effort to build 11 coal plants in Texas. After a short stint helping ERCOT implement its nodal pricing program, Tom spent four years at SPP, managing communications for the implementation of the RTO's Integrated Marketplace.

Tom holds a journalism degree from The University of Texas at Austin and an MBA from Texas A&M University-Corpus Christi. He lives in Little Rock, Ark.

Read about the rest of *RTO Insider's* staff on our website.

PJM NEWS

Regulators, Generators, IMM Seek Changes to PJM Capacity Performance Order

By Rich Heidorn Jr.

State regulators, consumer advocates, generators and the Independent Market Monitor have asked the Federal Energy Regulatory Commission to modify its June 9 order largely approving PJM's Capacity Performance plan.

Most of the rehearing requests were filed Thursday, along with PJM's submission of a 556-page compliance filing responding to the commission's request for changes to its plan.

Maryland and D.C. regulators asked the commission to reverse the order, while generators sought relaxation of penalty provisions. Two filings seek expedited review before PJM's "transition" auctions begin July 27.

Load Forecast

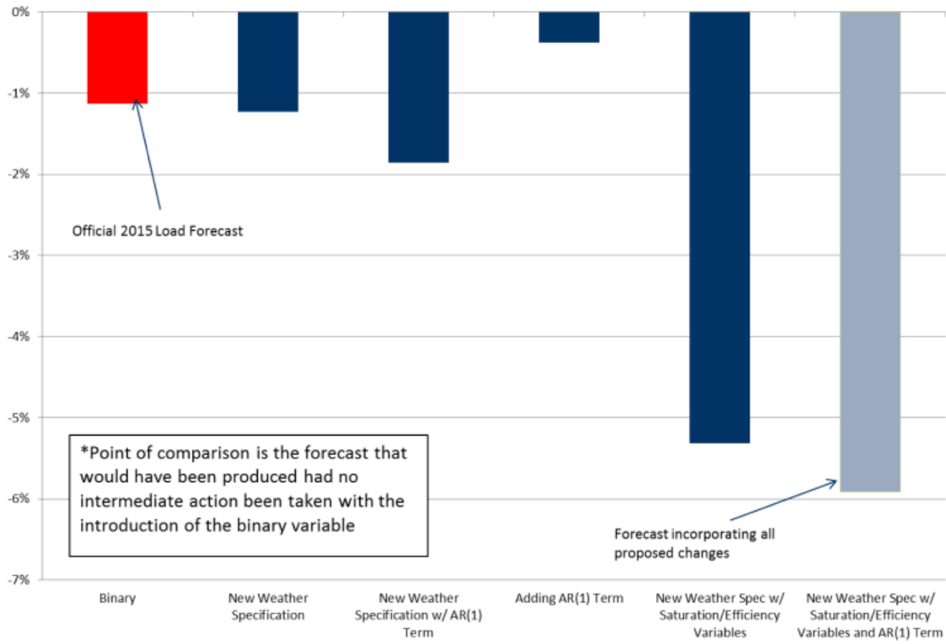
One asked FERC to order PJM to update its peak load forecasts for the upcoming capacity auctions or delay them (EL15-83).

The complainants — the PJM Industrial Customer Coalition, the Sustainable FERC Project and regulators or consumer advocates from Delaware, D.C., New Jersey, Maryland, Pennsylvania and West Virginia — say that PJM's newly designed load forecast could reduce the amount of capacity procured by approximately 7,000 MW, saving consumers about $625 million.

While PJM told stakeholders at the May Load Analysis Subcommittee meeting that the new model is a "noticeable improvement" over the current forecast, the plaintiffs say, the RTO has said the new forecasts won't be ready for incorporating in the capacity auctions until November.

The transition auction for delivery year 2016/17 is set for July 27-28 and that for 2017/18 for Aug. 3-4. The Base Residual Auction for 2018/19 is scheduled for Aug. 10-14.

The plaintiffs say FERC should either order use of the new models under the current auction schedule, delay the auctions until November or reinstate the short-term resource procurement target — also known as the "2.5% holdback" — for the BRA. FERC eliminated the holdback in its June 9 ruling. (See *FERC OKs PJM Capacity Performance: What You Need to Know*.)



Current vs. revised load forecast model: percentage impact to 2018 forecast* (Source: PJM)

They asked FERC to rule by July 17, saying continued use of the current model "will lead to substantial and imprudent over-procurement of capacity, resulting in unjust and unreasonable capacity prices for consumers."

The plaintiffs said PJM has overestimated the RTO's reliability requirement by an average of 6.25% in delivery years 2010/11 through 2015/16. The new model attempts to better account for energy efficiency and other factors.

PJM Vice President of Planning Steve Herling told *RTO Insider* on Thursday that the RTO reworked its load forecasting model with a focus on how it would affect the regional transmission expansion planning process. "We have not even begun to figure what the implication will be for" the capacity market, he said. "It started as an RTEP issue."

In addition, he said, there is more work to do, including updating zones with new metropolitan area mapping and investigating the current practice of using 40-plus years in weather simulations. And, he added, the model has yet to pass through the stakeholder process. "Any change like that has to go through a vetting process," he said.

Annual DR

Most of the same complainants — along with the Public Power Association of New Jersey, Duquesne Light Co. and regulators and consumer advocates from Illinois — also are seeking expedited hearing of a complaint seeking to allow annual demand response resources to bid into the transition auctions.

The plaintiffs acknowledged that the commission's June 9 order "did not discuss specifically" whether annual demand resources could participate in the transition auctions. "This specific issue was not raised for the commission's consideration because, ostensibly, it was clear from the operative provisions of the as-filed version of Section 5.14D [of PJM's Tariff] that the transition auctions applied to all Capacity Performance resources, which, by definition, includes annual demand resources and other types of resources."

The complainants said PJM has told them and other stakeholders that the Tariff does not permit annual DR's participation.

"PJM's view is that only generation capacity resources are eligible to participate in transition auctions. PJM has acknowledged,

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PJM NEWS

Regulators, Generators, IMM Seek Changes to PJM Capacity Performance Order

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however, that no operational basis exists for excluding annual demand resources from the transition auctions. It appears that PJM's concern is whether sufficient bases exist under the Tariff language that has been accepted by the commission to allow all types of Capacity Performance resources to participate."

PJM has not responded to the filing, but in a separate challenge by the Advanced Energy Management Alliance Coalition, the RTO said Thursday it intended to exclude DR and energy efficiency from the transition auctions.

PJM said the transition auctions were designed to "provide a glide path" for generation resources that needed time to make investments to meet Capacity Performance requirements.

"The decision to limit the transition auctions to generation capacity resources was made in light of the fact demand response resources or energy efficiency resources would not need the same glide path, and also taking into account the continued uncertainty associated with the availability [of] DR and EE to serve as Capacity Performance resources" following the D.C. Circuit's *EPSA* ruling voiding FERC's jurisdiction over DR (EL15-80). (See *Supreme Court Agrees to Hear Demand Response Appeal*.)

Market Monitor: 'Inconsistent' Incentives

The Monitor requested FERC revise findings in its June order that it said "create incentives in the energy market that are not consistent" with the Capacity Performance market design.

The Monitor cited FERC's rejection of PJM's proposal to allow parameter limits based only on resources' physical constraints, saying the commission's action would result in increased uplift payments.

"By permitting generation owners to establish unit parameters based on non-physical limits, the … order has weakened the incentives for units to be flexible and has weakened the assignment of performance risk to generation owners," the Monitor said. "Contractual limits, unlike generating unit operational limits, are a function of the interests and incentives of the parties to the contracts. If a generation owner expects to be compensated through uplift payments for running for 24 hours regardless of whether the energy is economic or needed, that generation owner has no incentive to pay more to purchase the flexible gas service that would permit the unit to be flexible in response to dispatch."

In contrast, NRG Energy and Dynegy asked FERC to clarify that capacity resources will not be penalized if PJM does not schedule them or reduces their output as the result of parameter limitations approved by the RTO.

The Monitor also called for changes regarding eligibility and documentation of risk premiums, the sub-zonal dispatch of DR and the calculation of "performance hours" and peak load obligations.

State Regulators Fear Higher Prices

The Illinois Commerce Commission said the commission's order will create unnecessary barriers to market entry and undermine market power mitigation, resulting in higher costs for consumers.

The ICC said FERC erred in eliminating unit-specific cost reviews and the 2.5% holdback. It also faulted FERC for limiting the types of resources permitted to aggregate for the

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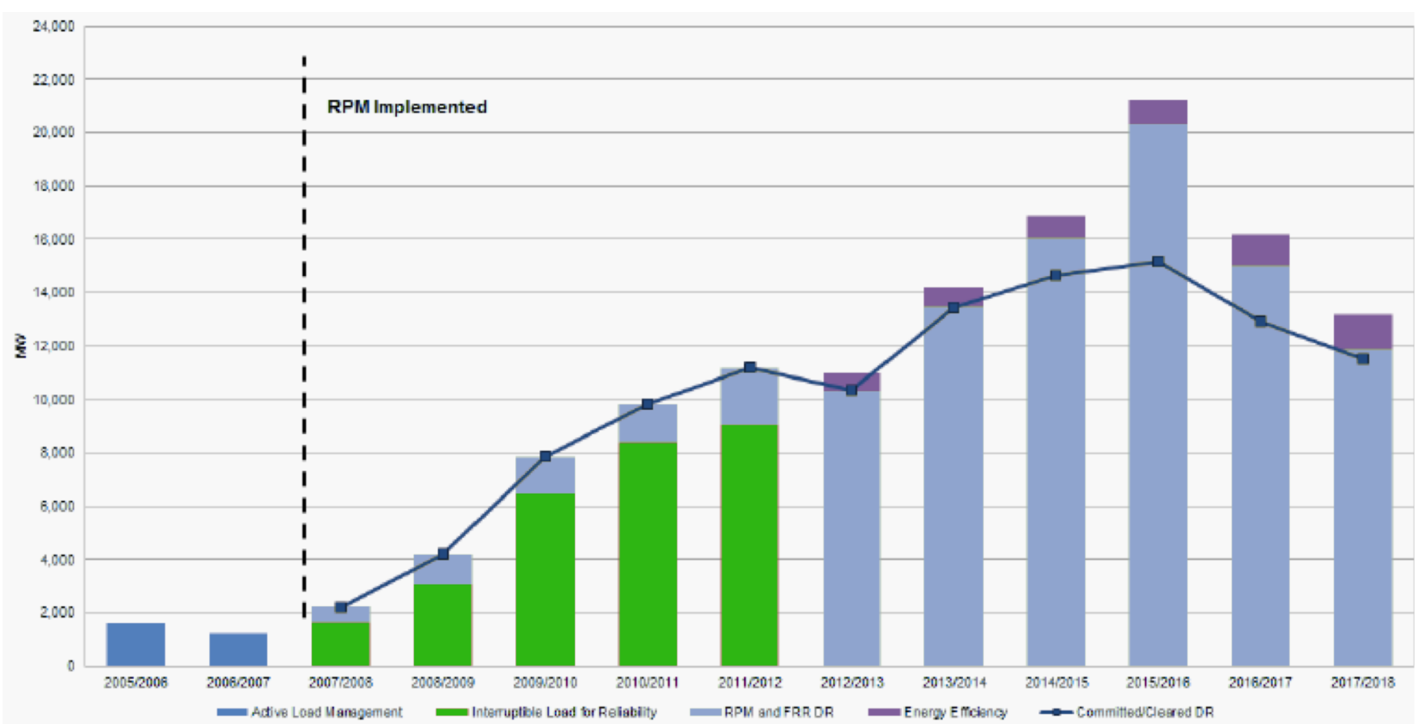

Demand-side participation in capacity market. (Source: PJM)

PJM NEWS

Regulators, Generators, IMM Seek Changes to PJM Capacity Performance Order

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purpose of performance measurements, and in prohibiting external resources lacking pseudo ties from offering as Capacity Performance.

The Pennsylvania Public Utility Commission and the Delaware Public Service Commission joined the ICC in challenging the commission's changes to PJM's market mitigation rules and the elimination of the 2.5% holdback. They also questioned how penalties will be calculated; changes to credit requirements; the transition mechanism; and the elimination of extended summer DR and limited DR.

The Delaware commission also filed a separate rehearing request asking FERC to "identify the components of the balance upon which it relied for the determination that the market rule changes were just and reasonable" and asking that PJM be required to make informational filings regarding the costs and benefits of the new rules.

"Without such a requirement from this commission, any information and/or data would only be available on an ad hoc basis, which would not provide an appropriate foundation for the commission to make any assessment as to the ultimate cost effectiveness to customers of [Capacity Performance] and, perhaps more importantly, whether the costs for the implementation of [Capacity Performance] are appropriate and necessary," Delaware said.

Generators: Penalties Excessive

The PJM Power Providers (P3) Group supported the commission's ruling but asked FERC to clarify that generators operating within their approved parameters would not be subject to non-performance penalties. It also asked for clarification on what "performance quantifiable risks" can be included in avoidable cost risk calculations for units seeking to submit offers above the market seller offer cap. Exelon also requested rehearing on the issue.

"While both PJM and the commission expressly supported Tariff provisions that allow risks of fulfilling the obligation ... to be reflected in capacity offer cap calculations, the commission should go one step further and direct PJM to specifically enumerate known risks," P3 said.

Essential Power, Competitive Power Ventures, NextEra Energy and Invenergy Thermal Development contested FERC's decision to eliminate monthly stop-loss limitations from PJM's proposal, saying it failed to justify its decision through "reasoned decision-making."

The coalition also said the commission erred in deciding that generator non-performance should not be excused even in circumstances beyond the control of generators, such as catastrophic weather events, compliance with state-approved tariffs or PJM-approved transmission outages.

Homer City Generating Station

GE Energy Financial Services, the operator of the 1884-MW Homer City coal-fired generating plant in Indiana, Pa., challenged FERC's decision to make generators liable for a failure to deliver due to problems with transmission lines and switchyard equipment outside plant boundaries.

It said FERC was wrong in agreeing with PJM that generators were the market participants best able to bear the risk of transmission outages. "The best-placed party to bear this risk is the relevant transmission owner (and through it, load), which already collects payments to maintain these facilities," it said.

"Unlike the 'strict liability' standard for generation delivery included in the CP revisions, transmission owners have limited their liability based on the customary 'prudent industry practice' standard. Thus, a supplier may have no recourse at law against its transmission 'vendor' — a sole source provider — even though the transmission owner has been paid to provide the service that it failed to deliver."

The generator acknowledged that PJM may designate a transmission outage as a "catastrophic *force majeure*" that excuses generators for non-performance. But it noted "those events are intended to be region-wide in nature, even though Homer City will be equally unable to deliver its power upon the failure of its local transmission lines."

"The penalties assessed against Homer City in that event would be funneled to other, luckier resources, which were fortuitously not in the wrong place at the wrong time."

Public Service Enterprise Group also asked the commission to reinstate the existing *force majeure* provisions.

Calls for Reversal

While most of the filings sought to tweak the new rules, regulators from Maryland and D.C. argued that FERC should reverse its approval of PJM's overhaul of the capacity market, saying it is "unnecessary for reliable service operations" and will increase end user costs in PJM by as much as $6 billion.

The commissions said the penalty provisions are not consistent with the higher revenues expected under the changes and said it should have held evidentiary hearings over the cost effectiveness of the changes. They also contend that the transition auctions are unnecessary.

Public Citizen also asked the commission to reverse its approval, citing the dissent by Chairman Norman Bay, who contended PJM's overhaul of the capacity market was unwarranted. (See *Norman Bay's Dissent: 'Two Carrots and a Partial Stick'*.)

The group also asked that the commission review rates resulting from future capacity auctions under its "just and reasonable" standard.

"Public Citizen does not believe that the findings in this case are supported by 'substantial evidence,' but rather by the commission's desire to further its market-based experiments in promoting and enabling ISOs and RTOs.

"Public Citizen fears that in doing so, however admirable its original intentions may have been, the commission may have lost sight of the primary goal of the [Federal Power Act], the protection of ratepayers from excessive rates and charges, and in fact may be slowly conceding its ability to protect ratepayers at all."

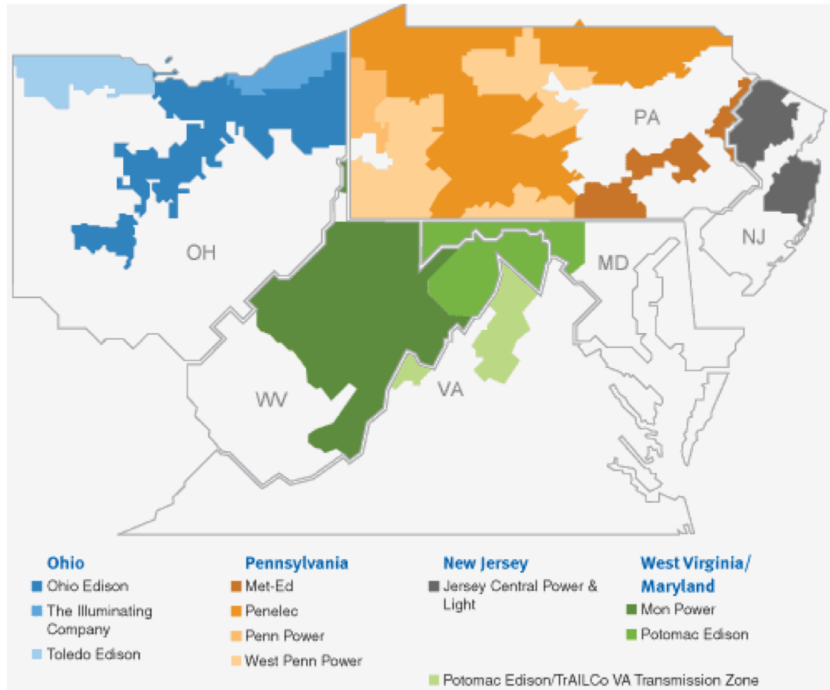
— Suzanne Herel contributed to this article.

PJM NEWS

FirstEnergy to Spin off its Last Utility-Managed Transmission Assets

By Suzanne Herel

FirstEnergy would spin off the transmission assets of Jersey Central Power & Light, Metropolitan Edison and Pennsylvania Electric into a new subsidiary under a plan it has submitted to regulators, saying the move would allow it to more cheaply and efficiently upgrade its grid.



FirstEnergy service territories (Source: FirstEnergy)

With the formation of the new company, Mid-Atlantic Interstate Transmission (MAIT), all 24,000 miles of the Akron, Ohio-based company's system would be managed by transmission affiliates.

The plan must be approved by New Jersey and Pennsylvania regulators and the Federal Energy Regulatory Commission. The company made no formal announcement of the proposal except for a June 19 filing with the Securities and Exchange Commission.

"When you have a separate transmission-only company, typically it carries a more favorable credit rating, so it can borrow money for less, and that results in lower costs for customers," FirstEnergy spokesman Doug Colafella said. "It's an arrangement that really allows a company to make the significant investments in transmission that we're looking at. It also allows our separate utilities to stay focused on the distribution system and respond quickly to customer needs."

FirstEnergy already operates American Transmission Systems (ATSI) in Ohio and northwest Pennsylvania and Trans-Allegheny Interstate Line Co. (TrAILCo) in western Pennsylvania.

The spinoff falls in line with FirstEnergy's "Energizing the Future" initiative, announced in 2012, to enhance its high-voltage transmission system.

FirstEnergy expects to invest $2.5 billion to $3 billion over the next five to 10 years on upgrades in the JCP&L, Met-Ed and Penelec zones, Colafella said.

The company estimates that streamlining the projects through one company with a higher credit rating will save $135 million in interest over the 30-year life of $1.5 billion in projects, according to FirstEnergy's filing with the New Jersey Board of Public Utilities.

"Consolidating all of the operating companies' transmission assets in a stand-alone transmission company can reduce investors' perception of financial risk, strengthen the credit profile of the transmission function and, in that way, provide improved access to capital and reasonable rates," it said.

Ron Morano, a spokesman for JCP&L, said that being relieved of the task of operating its transmission system will allow the company to better focus on customers' needs.

"For Jersey Central, it enables a more timely investment on new transmission projects," he said.

Under the plan, MAIT would own and operate all transmission assets of the three utilities, which would lease to the transmission subsidiary their real estate and real property rights.

Colafella said the spinoff would not affect transmission-related jobs at the utilities.

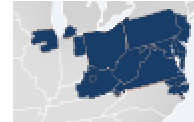
"It won't have any impact on employees day-to-day," he said. "It's more of an accounting arrangement."

It is, however, expected to lead to the creation of about 200 FirstEnergy jobs in New Jersey and Pennsylvania, he said, and the projects should provide work for roughly 600 engineering, project management and construction jobs in those states.

"When you have a separate transmission-only company, typically it carries a more favorable credit rating, so it can borrow money for less, and that results in lower costs for customers."

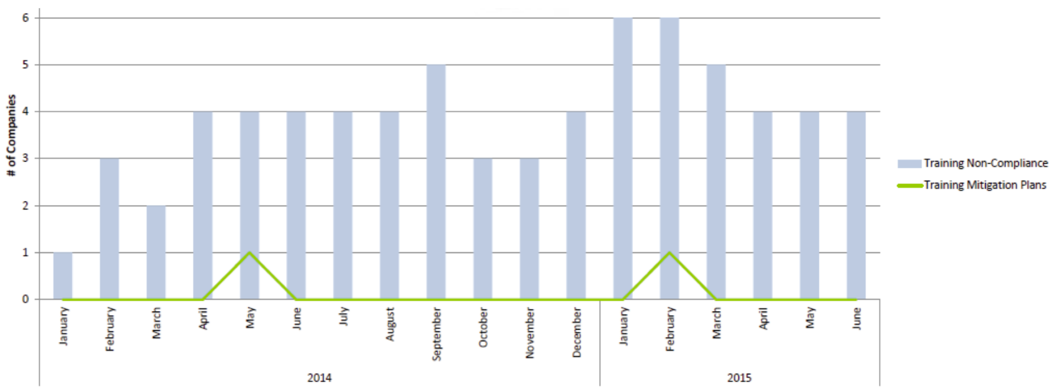
Doug Colafella, FirstEnergy spokesman

PJM NEWS



Operating Committee Briefs

PJM to Propose Earlier Day-Ahead Schedule



Compliance by demand response, energy storage providers. (Source: PJM)

PJM confirmed last week that it will seek to move the deadline for submitting day-ahead offers up 90 minutes, from noon to 10:30 a.m. ET.

Adam Keech, director of wholesale market operations, told the Operating Committee that the RTO will post day-ahead results as soon as they are complete — but no sooner than 12:30 p.m. — up from the current 4 p.m. The reliability assessment and commitment (RAC) run rebid window will be open until 2:15 p.m., up from the current 6 p.m.

Keech said PJM will seek to complete the RAC run assignments before the 3 p.m. deadline for the second intraday gas nomination cycle.

"We're going to commit as much as we can by 3 p.m., recognizing that if system conditions change we're going to need to make supplemental commitments," Keech said.

The RTO's explanation last week clarified the changes it outlined to the Markets and Reliability Committee on June 25. PJM officials acknowledged the lack of consensus among stakeholders on the changes but said they were necessitated by the Federal Energy Regulatory Commission's April order moving the timely nomination cycle deadline for gas to 2 p.m. ET from 12:30 p.m. and adding a third intraday nomination cycle. (See *PJM Moving on Day-Ahead Schedule Changes*.)

Keech said PJM officials are considering changes to their algorithms as well as faster computer servers as a way to meet their goal of reducing the market-clearing time to three hours from four. He said FERC's requirement that the RTO allow hourly pricing updates means it will have to process more data during the clearing process. (See "PJM Won't Be Ready for Flexible Generator Offers by November" in *PJM Markets and Reliability Committee Briefs*.)

PJM told FERC in a report last week that it will implement hourly offers by Nov. 1, following consultations with stakeholders (EL15-73).

Vote on Potential Expansion of Winter Testing

PJM plans to poll members on whether to expand the winter preparedness testing it began last year. The testing was credited with improving generator performance during the winter of 2014/15, but it came at a cost of about $7 million to load.

Susan Bruce, of the PJM Industrial Customer Coalition, said her members had questions about whether the testing "is a good use of ratepayer dollars."

"It's not a slam dunk to us that this should be expanded," she added.

Gregory Carmean, executive director of the Organization of PJM States, which represents state regulators, suggested generators — not load — should be shouldering the costs. "What's the rationale for load paying these costs in a Capacity Performance world?" he asked.

However, Brock Ondayko of American Electric Power noted that the coming 2015/16 winter will not be subject to the Capacity Performance rules, which don't take effect until delivery year 2016/17.

Dan Griffiths, executive director of the Consumer Advocates of PJM States, was more sympathetic to continuing the testing, calling it a "pragmatic question." But he requested time to poll his members before voting.

"If it's useful for identifying problems it should be done," he said.

Members will be asked to vote on four options, which would be reflected in Section 7.5 of Manual I4D:

1. Status quo with minor red-lined changes.
2. Option 1, with the addition that the program would end after winter 2015/16 for CP resources.
3. Option 1, plus the following changes: Expand the exercise period from the month of December to the months of November through January; expand the maximum temperature for the testing to 40 degrees Fahrenheit in PJM's southern zones (from 35 F); allow testing of more than 1,000 MW/day.
4. Option 3, with the program terminating after winter 2015/16 for CP resources.

In a survey in June, all but three of 119 respondents said they supported continuing the testing; 93 (78%) said they preferred maintaining the current rules while 26 (22%) favored making some changes, which were not specified. (See *Why Did PJM Grid Fare Better This Winter?*)

PJM Seeking to Tighten Training, Certification Rules

PJM will seek OC approval next month on an initiative to improve compliance with the RTO's training and certification requirements.

The requirements cover transmission owners, generation dispatchers, demand response providers and energy storage device operators. While transmission owners are usually in compliance, PJM said in a problem statement, non-compliance by some in the

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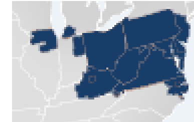
PJM NEWS



Operating Committee Briefs

Continued from page 9

other groups "has been continuing for many months and in many cases has increased or become chronic in nature."

Although those not in compliance are required to submit mitigation plans, most have not done so or have failed to comply with them.

In June, nine generating companies, five small generators (>75 MW) and four DR and storage providers were out of compliance with training or certification requirements. Aside from seven of the generators, none had submitted mitigation plans.

PJM said the problem could lead to operational or reliability problems as some members are unaware of their responsibilities for providing instantaneous reserves and other generator data.

Glen Boyle, manager of system operator training, said the RTO hopes to complete the work, which it is recommending be conducted by the System Operations Subcommittee, within three months. "We've talked internally and have some options" for solutions, he said.

PJM said it will not consider changing the existing training and certification requirements within the scope of the problem statement.

Disconnect Between PJM, Members on Meter Accuracy

A proposed update of Manual 1: Control Center Requirements has exposed a gap between PJM and some transmission owners regarding accuracy requirements for system control and monitoring meters.

As a result — at PJM's request — members last week endorsed changes to the manual except for Section 5.

"We need more time" before changing Section 5, PJM's Ryan Nice told the OC. "PJM needs a better overall picture of the accuracy of metering data."

While the manual requires accuracy of ± 2% for meters supplying data to PJM's energy management system (EMS), it's not clear that all meters are covered by that requirement. Some TOs have meters that are only accurate to within 3%, Nice said.

The gap affects real-time meters, not billing meters.

"We need to evaluate the cost" of requiring all meters to comply with the 2% requirement, Nice said, "to make sure the operational value justifies the cost and time to members."

— Rich Heidorn Jr.

Market Implementation Committee Briefs

Non-Event Tier 1 Credit to Continue, Obligation Added

VALLEY FORGE, Pa. — Tier 1 synchronized reserve resources would be obligated to respond in emergencies and subject to penalties if they couldn't, under a PJM-backed proposal approved Wednesday by the Market Implementation Committee.

The proposal retains Tier 1's ability to receive compensation outside of synch reserve events whenever the non-synch reserve market price is more than $0. Units could opt out of the performance obligation, but by doing so they would forfeit any credit they would have received outside of responding to an event.

Estimated Tier 1 megawatts would still be considered when clearing the synch reserve market so that opting out could not be used to withhold supply from the market and drive up prices.

In addition, units would be made whole for the cost of responding to a spin event. However, that would apply only to units scheduled by PJM to provide energy or self-scheduled resources that are dispatched by PJM to run above their minimum rate.

The PJM proposal was one of three presented to address a problem statement raised last fall by Independent Market Monitor Joe Bowring, who estimated that the payment scheme dating to 2012 results in about $85 million in unnecessary expenditures each year. (See *Monitor: Cut Pay for Tier 1 Synchronized Reserves*.)

The other plans were crafted by Bowring's Monitoring Analytics and PJM's Industrial Customer Coalition.

Bowring's proposal would have eliminated the compensation Tier 1 resources receive when they're not responding to an event — what he classified as an unearned "windfall" — and would not have imposed a performance obligation. It failed, garnering just 29% of the vote.

Bowring said Tier 1 resources already can offer as Tier 2. "All of the functionality that PJM wants to add through these complicated changes are already there," under current rules, Bowring said, sparking a brief debate with Adam Keech, PJM's director of wholesale market operations.

Keech said it is up to PJM to decide whether to accept Tier 1 resources seeking Tier 2 status.

"No one can force PJM to buy Tier 2 it doesn't need," Bowring agreed.

The proposal from the ICC would have compensated Tier 1 resources outside of an event, but at the non-synchronized reserve price.

The ICC's Susan Bruce said the proposal was a compromise between the approaches of PJM and the Monitor. "The Industrial proposal is smack dab in the middle between the two." It was rejected with a favorable vote of just 23%.

PJM's scarcity pricing scheme was created in 2012 to accurately price energy and reserves when reserves are short — defined as less than the largest generating unit that is on-line. The mechanism allows the market clearing price to rise, creating an incentive for resources to respond in an emergency.

PJM's proposal, which passed with 64% approval, will be heard at the Markets and Reliability Committee next month. If approved there, it will be presented to the Members Committee in October and implemented shortly thereafter. Manual language will be presented at the August MIC.

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PJM NEWS

Market Implementation Committee Briefs

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Earlier Replacement Capacity Transactions Approved

Market participants would be able to enter replacement capacity transactions earlier than Nov. 30 prior to the start of the delivery year if the need is linked to a physical reason that would prevent a participant from meeting its commitment, according to manual changes approved last week.

To prevent the opportunity for financial arbitrage between auctions, the changes prohibit generation that is replaced early from being recommitted for the delivery year.

The motion passed with 81% support, trumping an alternate measure introduced by Tom Rutigliano on behalf of EMC Development. That proposal, which would have placed no restrictions on what capacity could be replaced or on it being re-entered into the market, received 28% support.

Under the approved changes, replacements would be permitted when the owner could show the expected final physical position of the resource at the time of the request.

Existing generators could engage in such transactions if they are being deactivated, while new generators could replace themselves if their project was canceled or delayed. Demand response or energy efficiency resources could be replaced due to the permanent departure of their loads.

Package Calls for Notice on Pricing Interfaces

PJM would be required to provide more public notice before it creates "closed-loop" pricing interfaces under a proposal approved by the committee.

Under the changes, the RTO would announce the implementation of such interfaces at least five days before the close of the next monthly financial transmission rights auction. Currently, there are no notice requirements except for sub-zonal demand response, which is announced the previous day.

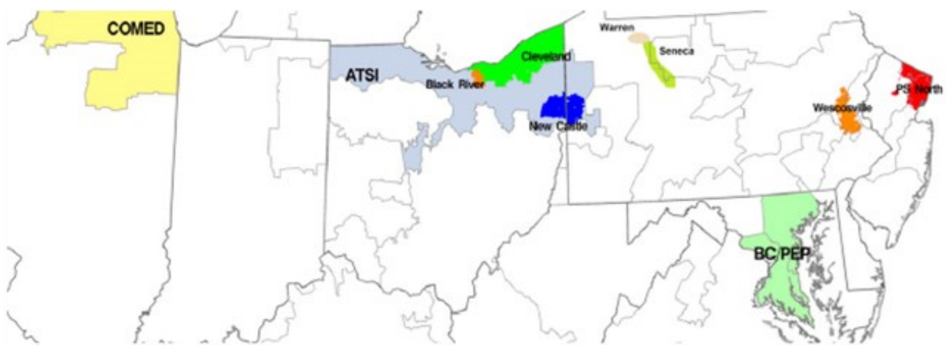
The RTO also will provide notice when it begins studying a potential new interface that will be defined and able to be used, such as looking into modeling the interface. Notices will be posted on the OASIS site, triggering an email to stakeholders. The rule will allow an exception to the advance notice requirements for planned, emergency or maintenance outages of less than 10 days.

The proposal is the product of a problem statement introduced by DC Energy late last year calling for more operational transparency. (See *PJM MIC to Consider Earlier Notice on Pricing Interfaces*.)

PJM uses closed-loop interfaces to capture operator actions in LMPs rather than in uplift because its modeling software is unable to set prices for voltage problems.

The change was approved by acclamation with 10 members voting in opposition.

— Suzanne Herel



Closed-loop interfaces (Source: Monitoring Analytics LLC)

Planning Committee Briefs

Standards to be Developed for Order 1000 Projects

VALLEY FORGE, Pa. — A task force unanimously approved by the PJM Planning Committee last week will craft minimum design standards for greenfield projects that are competitively solicited under Federal Energy Regulatory Commission Order 1000.

PJM and stakeholders said the standards are needed because entities designated for such projects are not required to follow the design standards of the involved transmission owner. (See *Task Force Would Create Standards for Order 1000 Projects*.)

"The purpose of establishing minimum design standards is to assure a minimum level of robustness is provided such that the new competitively solicited facility would not introduce a weak point in the system in terms of performance," according to the problem statement.

Participation in the group will be open to all PJM members.

The standards will address transmission lines, substations and system protection and control design coordination. They will take into account factors such as the physical geography of a site and local ordinances.

The rules will not apply to upgrades or non-competitive projects.

The task force also is expected to explore the creation of a "common facility ratings methodology."

Tariff Tweaks Address Merchant Network Upgrades

The Planning Committee unanimously approved changing some tariff language to more accurately reflect how PJM processes requests for merchant network upgrades.

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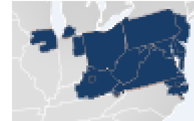
PJM NEWS



Planning Committee Briefs

Continued from page 11

"We're not actually changing the way we treat merchant upgrades," PJM's Jason Connell said.

He said the language was outdated because it addressed the only type of customer PJM accommodated in 2003: the interconnection customer. In 2006, it added other types of upgrade requests.

The changes address definitions, queue entry, agreements and the capacity market.

Two-Tiered Tx Project Fee Heads to FERC

PJM will file with FERC a two-tiered fee schedule for proposed transmission projects, the Planning Committee agreed.

For projects of $20 million to $100 million, the RTO will collect $5,000 to cover its study costs. For proposals greater than $100 million, it will charge $30,000.

PJM's Fran Barrett called the fee schedule, which will be implemented on a two-year trial basis, "conservative."

"We may be in a situation where we're under-collecting," he said, in which case the RTO would lean on the planning system budget. If the opposite turns out to be the case, the excess funds will be disbursed to members.

The Members Committee in February had approved a $30,000 fee for any project greater than $20 million, but planners subsequently concluded that was unnecessarily high. (See *PJM Lowers Proposed Tx Project Study Fee*.)

Initially, PJM had suggested that $30,000 be assessed on all greenfield projects and on all upgrades costing more than $20 million, but FERC rejected the idea, calling it discriminatory. (See *FERC Rejects Fee on Greenfield Transmission Projects*.)

Load Model Picked for 2015 IRM Study

The Planning Committee approved using a load model based on the 2003-2012 period in its calculation of Installed Reserve Margin (IRM) requirements.

Last year's selected load model used the timeframe of 2004-2011, but PJM's Patricio Rocha said that wasn't a good fit for this year because load models including 2012 were better aligned with coincident peak distribution. The alternatives were 2001-2012 and 1998-2004.

The 2015 study will set IRM requirements for base capacity auctions for delivery years 2016 through 2019 and establish the initial IRM for 2019/20.

— Suzanne Herel

FERC Orders $15 Million Penalty in PJM Market Manipulation Case

By Rich Heidorn Jr.

Federal regulators ordered a Florida energy trader to pay $15 million in penalties and repay almost $1.3 million in profits for making riskless up-to-congestion trades in PJM to cash in on line-loss rebates.

The Federal Energy Regulatory Commission imposed the penalty July 2 against City Power Marketing, of Fort Lauderdale, Fla., and its founder K. Stephen Tsingas (IN15-5), ruling that they were guilty of market manipulation and making false and misleading statements to commission investigators.

The commission ordered City Power to pay $14 million and Tsingas to pay $1 million in civil penalties and disgorgement of $1,278,358 in unjust profits, plus interest.

Chairman Norman Bay, who headed the Office of Enforcement during the City Power investigation, did not participate in the order.

The commission said City Power cashed in on line-loss rebates — or marginal loss surplus allocations (MLSA) — through three types of UTC transactions: "round-trip" trades that canceled each other out; trades between import and export pricing points of the same PJM interface with equivalent prices (SOUTHIMP-SOUTHEXP); and trades between two PJM nodes that historically had a very small price spreads (NCMPAIMP-NCMPAEXP).

The commission concluded that City Power created the false impression that it was trading to arbitrage price differences "when, in fact, it was engaging in trades solely to collect MLSA payments to the detriment of other market participants."

"As we have noted, trades that are prearranged to cancel each other out and involve no economic risk are wash trades, which are inherently fraudulent," the commission said.

The order also concluded that Tsingas attempted to mislead investigators by denying the existence of incriminating instant messages between him and a business partner, Timothy Jurco.

The allegations against City Power are virtually identical to those FERC made in its case against Rich and Kevin Gates and their Powhatan Energy Fund.

On May 29, the commission ordered the Gates brothers and their associates to pay $34.5 million in penalties and disgorged profits. If the Gates brothers don't pay up within 60 days, as they insist they won't, FERC will have to file a complaint in U.S. District Court to force payment. (See *FERC Orders Gates, Powhatan to Pay $34.5 Million; Next Stop, Federal Court?*)

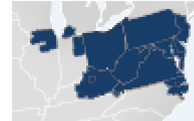
FERC also may face challenges collecting from Tsingas and his company, which said in April that FERC's investigation forced Tsingas to lay off all of his employees and "destroyed" the company. (See *UTC Trader: Firm was Ruined by 'Unfair' FERC Prosecution*.)

FERC investigators contend Tsingas' net worth is at least $10 million, including "a waterfront mansion" in Fort Lauderdale worth $3 million, a yacht, a house in Greece and several autos.

Tsingas told FERC his net worth is "roughly $1 million" and that his "yacht" is a nine-year-old, 32-foot outboard boat "without a cabin or a shower" and that his "mansion" is a simple three-bedroom house.

Attorneys for Tsingas and City Power did not respond to a request for comment.

PJM News



PJM Members: Capacity Performance Penalties May Hurt Dispatch Discipline

Continued from page 1

Committee briefing by PJM officials on the operating impacts of the rule changes and how they would assess penalties under several scenarios.

"We could have a lot of people not following PJM dispatch on no-notice events just to avoid these penalties," said Ed Tatum of Old Dominion Electric Cooperative.

Gabel Associates' Mike Borgatti said the rules could result in "perverse" market results. "It seems like a weird incentive structure," he said.

"PJM [could] lose control of the system," agreed David Pratzon of GT Power Group.

Vice President of Operations Mike Bryson acknowledged that the rules could lead to penalties for a generator, for example, with a 200-MW CP obligation that is producing only 100 MW at PJM's instructions when an emergency is called. (See "GEN Bill" example in chart.)

"Right now I think that's the case," he said. "We'll take it back for more discussion."

Performance Assessment Hours

The briefing focused on "Performance Assessment Hours" — whole or partial clock-hours for which PJM has declared an Emergency Action in response to locational or system-wide capacity shortages. Emergency Actions include voltage reduction warnings and actions and manual load dump warnings and actions.

Generators ordered off-line by PJM because of transmission constraints would be exempt from penalties.

Pratzon said he was concerned that could lead to subjective and inconsistent judgments in PJM settlements for CP penalties. "It's very difficult for us to see [how the penalty decision is made] isn't a very judgmental thing, based on what we know now," he said.

Bryson said the decision to restrict a generator's output will be made based on distribution factor analyses to answer, "Is the unit going to help or hurt?"

"It's not judgmental. It's going to be based on power engineering," he said.

Incremental Auction Opens

The second Incremental Auction for delivery year 2016/2017 opened Monday and will run through 5 p.m. Friday. Participation is mandatory for existing generators with a "positive minimum available position" and voluntary for other resources. Suppliers must confirm the modeling of their capacity resources before their sell offers will be accepted.

Unit	Status	CP Commitment MW * Balancing	Actual Output MW	CP Assessment Evaluation	CP Assessment
GEN Bob	Tripped at 1850	100	0	MWs not available at 1903, tripped prior to Emergency Event start time	YES 100 MW
GEN Sue	Tripped at 1904	200	0	MWs not available at 1903	YES 200 MW
GEN Dave	Off-line PJM directed (constraint inside emergency AECO region)	500	50	MWs not available at 1903	NO
GEN Joe	On-line	200	200	200 MW available at 1903	NO
GEN Bill	On-line	200	100	100 MW available at 1903 200 MW available at 2000	YES 100 MW (1 hr.)

How hypothetical Capacity Performance resources would be treated during a no-notice emergency (based on Atlantic Electric load dump on June 23). (Source: PJM)

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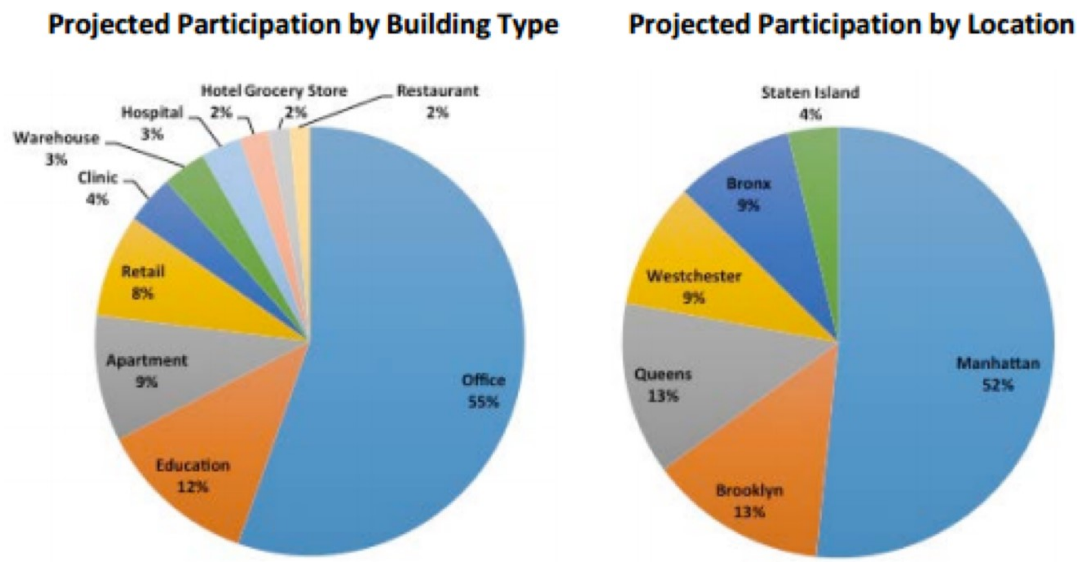
NYISO NEWS

REV Proposals Seek to Increase Customer Involvement, Conservation

By William Opalka



Consolidated Edison's proposed Building Efficiency Marketplace would be offered to 2,100 medium to large commercial buildings across its territory with interval metering and the potential to benefit from remote analytics. (Source: Con Ed)

New York utilities have filed 15 demonstration projects for consideration under the state's Reforming the Energy Vision initiative, many of them designed to increase consumer awareness and reduce power consumption.

The proposals were due July 1 under a February order by the New York Public Service Commission. The order directed investor-owned utilities to offer joint proposals with third parties to develop distributed resources, smart grid projects, microgrids and more. (See *New York PSC Bars Utility Ownership of Distributed Energy Resources*.)

Iberdrola

Rochester Gas & Electric and New York State Electric and Gas, both units of Iberdrola USA, have proposed three projects: the Energy Marketplace, an ecommerce website enabling consumers and distributed energy resource providers to interact; the Flexible Interconnect Capacity Solution, a model for connecting large-scale, controllable distributed generation to the grid, with the ability of the utility to either dispatch or curtail the power; and the Community Energy Coordination program, which would use community-based energy asset planning to procure distributed energy resources.

National Grid

National Grid has proposed projects at three locations around the state.

Renewable energy integration and automated demand management would be provided at the Buffalo Niagara Medical Campus, along with in-front-of-the-meter solar generation in a lower-income neighborhood. The company also has proposed a partnership with Clarkson University and the State University of New York at Potsdam to determine the feasibility of a community microgrid. In Clifton Park, it is proposing advanced metering for residential and small commercial customers to monitor and control energy use.

Central Hudson Gas & Electric

Central Hudson Gas & Electric, which got a jump on the others when it incorporated its demonstration projects in its recent rate case, has included a targeted demand response program that met PSC criteria. (See *Central Hudson Gets Rate Hike, OK on REV Project*.)

Its other projects include a utility-scale community solar project that would offer fixed rates to subscribers. Central Hudson and its partners are conducting a feasibility study for a microgrid project. Its "energy exchange" would provide customers with energy management information, including products and services, on a web-based platform.

Orange & Rockland

Orange & Rockland has proposed partnerships with third-party product and service partners to increase customer awareness on energy consumption, motivate customers to participate in utility programs, increase adoption of distributed energy and develop new revenue streams.

Consolidated Edison

Consolidated Edison has filed three separate plans. Its CONnectED Homes program would provide customers with tools to connect them with efficiency programs.

The Building Efficiency Marketplace is intended to illustrate the value of interval meter data analytics in engaging commercial customers to reduce their demand.

The virtual power plant would aggregate 1.8 MW of behind-the-meter distributed solar with battery storage to improve grid resiliency.

NYISO NEWS

NYPSC Staff Narrows Transmission Alternatives

By William Opalka

Seven projects proposed by transmission developers for the mid-Hudson region have cleared an initial screening by the staff of the New York Public Service Commission.

Those projects scored well enough on staff's efficiency and environmental ratings to warrant further study, according to an interim report filed on July 6 (12-T-502, et al).

The PSC has sought to jump-start transmission development in the counties north of New York City to alleviate congestion and deliver power from underutilized upstate generation resources to the higher demand areas of the state. (See *Tx Plan to Open NY Choke Points Without New ROWs*.)

The staff scored 21 proposed projects from four developers. Incumbent transmission owners that formed New York Transco — Central Hudson Gas & Electric, Consolidated Edison, New York Power Authority, New York State Electric & Gas, Niagara Mohawk Power, Orange and Rockland Utilities and Rochester Gas & Electric — have four projects on the list. NextEra Energy Transmission New York has one project and Boundless Energy NE has two.

Easterly view of existing Hudson River crossing, Athens, N.Y. (Source: New York Department of Public Service)

One developer, North American Transmission Corp., did not receive any favorable recommendations.

"These remaining scenarios are the most promising from an electric system benefit perspective and are significantly more environmentally compatible primarily because they are all designed to use existing rights-of-way," the report said.

One late development will further impact the proposals. Competitive Power Ventures said on June 12 that it has closed financing for its proposed 720-MW combined-cycle plant in Orange County. Because CPV had not been included in the commission's original analysis, staff will need to remodel power flows.

"The study is also to include an analysis of alternatives to a transmission facility and to address the issue of whether there is sufficient public need for a transmission facility as a matter of public policy," the report said.

FERC Accepts NYISO Voltage Support Rate Method

The Federal Energy Regulatory Commission on Tuesday accepted NYISO's new method for calculating payments for voltage support services (VSS), which will keep the overall expenditure constant in the near term (ER15-1042).

FERC said in April that the ISO needed to more fully explain its proposed methodology. The existing rate was set in 2002. (See *FERC Requests More Info on NYISO Voltage Compensation Change*.)

NYISO derived the $2,592/MVAR compensation rate by dividing the total VSS compensation paid to qualified VSS suppliers in 2012 by the total lagging and leading reactive power capability of all qualified VSS suppliers in 2012.

"This explanation demonstrates that the proposed amendments maintain the approximate total dollar value of the current VSS program in the near term," FERC wrote.

NYISO used 2012 as the base year for its calculations when it began developing the proposal. From 2014 onward, the payments will be tied to the consumer price index.

"We find that by applying a VSS compensation rate to both leading and lagging reactive power capability, NYISO's proposal reasonably addresses the failure of the existing rate to address a significant shift in reliability needs, from primarily lagging reactive power support to primarily leading power support," FERC also wrote.

The revisions are effective Jan. 1.

REV Straw Proposal Delayed Another Month

A crowded docket has delayed several key pieces of New York's Reforming the Energy Vision, including the Department of Public Service staff's Track 2 straw proposal on ratemaking and rate design.

That document — originally expected in January and then delayed twice to June 1 and July 1 — is now due on July 28, along with staff-proposed rules governing commission oversight of distributed energy resource suppliers.

The New York Public Service Commission secretary on Tuesday granted extensions to commission staff and a working group that faced July 1 deadlines. "These extension requests are generally premised on the need to address concerns expressed by parties and members of the public for relief from the potential burdens imposed by the simultaneous issuance of four products in this proceeding," the secretary wrote.

In requesting the delay, commission staff noted the overlap among the proposals, its own workload and the public comment periods for each.

The Market Design and Platform Technology Working Group report was expected on July 13.

A staff benefit cost analysis was filed July 1.

The August 2014 Track 1 straw proposal preceded the first REV order, which created the framework for development of clean and distributed energy resources. That led to the February PSC order that also set the schedule for these four docket items. (See *New York PSC Bars Utility Ownership of Distributed Energy Resources*.)

"Track 2 will propose specific regulatory reforms to the utility business model, rate-making approaches and rate design to achieve REV policy goals," according to the Rocky Mountain Institute, an advisor to the PSC.

MISO NEWS

MISO Proposes Earlier Day-Ahead Market Close

By Chris O'Malley

CARMEL, Ind. — MISO will propose closing the day-ahead market one hour earlier during Daylight Savings Time and reducing the clearing time by an hour in response to the Federal Energy Regulatory Commission's final rule on gas and electric schedules.

MISO officials said their proposal — Alternative 3 — was an effort to balance reliability and market efficiency concerns with stakeholder preferences. Most stakeholders preferred no changes.

FERC Order 809 moved the timely nomination cycle deadline for scheduling gas transportation from 11:30 a.m. to 1 p.m. CT (from 12:30 p.m. to 2 p.m. ET) and added a third intraday nomination cycle. The commission ordered RTOs to adjust the posting of their day-ahead energy market and reliability unit commitment process results "sufficiently in advance" of the revised gas cycles or explain why it is not suitable for their markets.

Three Alternatives

The RTO rejected Alternative 2, which officials said was most in line with Order 809 but was opposed by most stakeholders. In addition to reducing the clearing time by one hour, it would have aligned the day-ahead market with the timely gas nomination cycle by closing the day-ahead two hours earlier during DST and one-hour earlier during standard time. Only 18% of stakeholders supported the change.

Alternative 3 won a bare majority with 53% support, making it the second choice to the status quo Alternative 1, which was backed by 78%.

Alternatives 2 and 3 got much of their support from gas-dependent members in Zones 8 and 9 (Louisiana, Arkansas and eastern Texas).

"I know not everybody is going to agree with [the choice] given the voting that took place. I hope that everybody can understand how we got there and [that] it makes sense," Joseph Gardner, MISO's vice president for forward markets and operations services, told the Market Subcommittee last week in announcing the decision.

Gardner told stakeholders MISO will have to make a partial show-cause filing to defend the choice to FERC. MISO also will ask FERC to delay the implementation of the new hours to November 2016 rather than next April as required by FERC.

More Units to Call On

Gardner said Alternative 3 had several benefits. Moving the market before the Intraday 2 gas nominations could free up about 5,000 MW more than under the current approach.

"From a reliability perspective, by moving our timeframe up by shortening our window, we bring more units into the mix. That basically allows more units to be considered as part of the normal day-to-day process, in terms of getting them online [and] in terms of committing them economically," he said.

MISO estimates that natural gas-fired generation could rise to 50% of its generation pool in 2016/2017 as coal-fired plants are shuttered in response to the Environmental Protection Agency's Mercury and Air Toxics Standards. EPA's proposed Clean Power Plan is expected to spur gas use further.

From a market efficiency standpoint, Gardner pointed to the value of being able to trade during the "most liquid" time of the day "and then having that price discovery and know[ing] what price to put into the day-ahead market. So that's a consideration, too, as to why we didn't go with Alternative 2."

Not Ideal for Some

The change may be hard for some stakeholders to swallow. Gardner acknowledged that many have indicated that they found ways to manage their gas supply risks and thus didn't support moving up the day-ahead schedule.

Marc Nielsen of Alliant Energy said his company plans to add additional gas-fired generation and already conducted a great deal of modeling. "We supported Alternative No. 1. We're able with our gas supply resources to handle things perfectly as they are now," he said.

Gardner said he recognized Alliant's concern. "I hope people can understand how we ended up here," he said. "It's been a long journey."

But the tone among stakeholders at the Market Subcommittee was mostly supportive.

"I appreciate you guys looking at your processes and working toward also shortening the [market clearing] time. I think that was a big step, too, so thank you," Ameren's Jeff Moore told Gardner.

Moore asked whether Gardner thought FERC would be amenable to MISO's choice.

"I think we have a much better chance of succeeding [than sticking with the status quo], but we still are going to have to make a good argument," Gardner said.

PJM and SPP also will propose changes to their schedules in compliance filings due July 23. (See "PJM to Propose Earlier Day-Ahead Schedule," in *Operating Committee Briefs*, p.9, and *SPP Moving to 9:30 Day-Ahead Close*, p.2.)

No Schedule Changes for NYISO, ISO-NE

NYISO and ISO-NE are not considering any schedule changes in response to the Federal Energy Regulatory Commission's April order on gas-electric coordination.

FERC Order 809 moved the timely nomination cycle deadline for scheduling gas transportation from 11:30 a.m. to 1 p.m. CT (12:30 p.m. to 2 p.m. ET). It also added a third intraday nomination cycle (RM14-2).

"We are not contemplating market timing changes at this point in time and believe the additional 1.5 hours for generators to arrange day-ahead gas purchases will be helpful to reliability," NYISO spokesman Ken Klapp said.

ISO-NE, which shifted its day-ahead market schedule two years ago to align with the natural gas trading day, said it is already in compliance with the FERC rule.

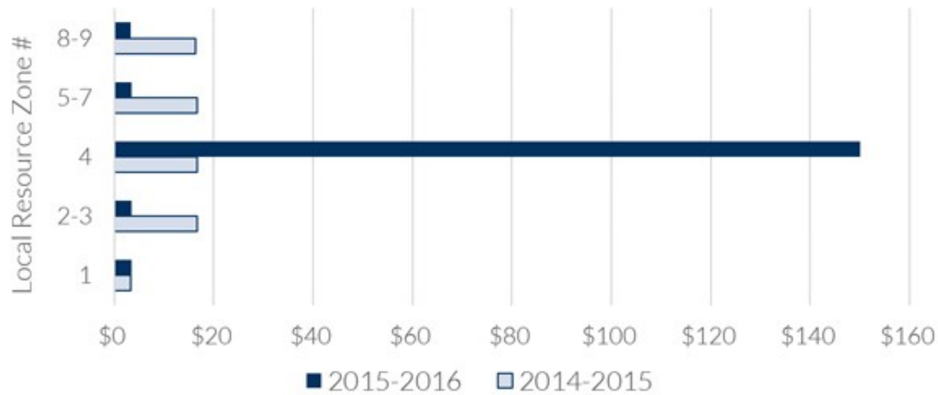
— William Opalka

MISO NEWS

MISO, Dynegy, Monitor: No Evidence of Misconduct in Capacity Auction

State Officials Join Calls for FERC Probe

By Chris O'Malley



MISO Planning Resource Auction clearing prices ($/MW-day) (Source: MISO)

MISO and its Market Monitor have joined Dynegy in denying allegations of improper conduct in the RTO's Planning Resource Auction last April, which resulted in a nine-fold price increase in Zone 4.

The filings with the Federal Energy Regulatory Commission were in response to complaints in May by a consumer group and the Illinois Attorney General that Dynegy may have illegally manipulated the auction (EL15-70).

MISO's 186-page response insists that it followed commission-accepted rules (EL15-70). It also stated that its Independent Market Monitor confirmed that the auction was in compliance "and produced the results it should have produced" despite prices in Zone 4 clearing at $150/MW-day compared with just $16.76 a year earlier.

"Those higher prices are the source of complainants' discontent. However, MISO conducted the auction exactly as required under its Tariff, and none of the complainants provides any evidence to the contrary. Accordingly, these complaints should be dismissed with prejudice," MISO told FERC.

MISO's filing came a day after public service commissions, consumer watchdogs and attorneys general in Illinois, Indiana, Iowa, Michigan, Minnesota and Wisconsin asked FERC to investigate the auction, saying they share concerns that Dynegy "was able to exercise market power" in Zone 4.

"Due to Dynegy's control of such a significant portion of the capacity available in Zone 4, the capacity market [in the zone] may no longer produce competitive market-based prices for capacity," the group wrote.

Public Citizen and Illinois Attorney General Lisa Madigan asked FERC on May 28 to investigate whether Dynegy illegally manipulated MISO's auction through its bidding strategy. Public Citizen also alleged MISO brushed aside recommendations by its staff that Zones 4 and 5 be merged due to their concerns about Dynegy's growing share of capacity in Zone 4 after the company acquired four generators from Ameren in recent years. (See *Public Citizen: Investigate Dynegy Role in MISO Auction*.)

Dynegy: We Didn't Withhold

In a 304-page filing with FERC last week, Dynegy said merging zones wouldn't have met the requirements of the MISO Tariff. The company said it made no secret of its opposition to merging, meeting at one point with FERC staff to discuss its position.

But Dynegy spent most of its filing denying the more serious allegations of physical or economic withholding. It said all 6,419 MW of its Zone 4 capacity was "either sold bilaterally or at wholesale, exported or offered into the auction."

The company also rejected claims of economic withholding, including an affidavit from consultant FTI Consulting Managing Director Susan Pope.

"Because of uncertainty about the quantity of offers into the 2015/16 PRA auction from non-Dynegy parties, at the time it formed its offers for this auction Dynegy would not have known with certainty whether and to what extent its non-zero priced offers would be needed to meet the Zone 4 local clearing requirement," Pope wrote. "This is because under the MISO PRA market rules, there is substantial uncertainty concerning the quantity of supply offers that will be made into the auction."

The company also rejected the Illinois attorney general's claim that Market Monitor David Patton improperly calculated its opportunity costs, saying his $155/MW-day estimate reflected its ability to sell capacity into PJM.

The company said the complainants ignored that PJM's most recent Incremental Auction cleared at $163/MW-day less than a month before MISO's auction last April.

Market Monitor's Response

Patton fired back at the complainants' premise that Dynegy had an unusually strong market presence in Zone 4 and free rein to commit economic withholding.

Zones with "pivotal" suppliers such as Dynegy "are extremely common," and that's one reason that RTOs have market power mitigation measures in place, he said, adding that MISO properly applies such measures in its Tariff.

"Our [monitoring] found no evidence of physical withholding," Patton said.

Patton also said that despite substantially lower auction prices in Zone 4 in previous years, "the simple fact the price of Zone 4 is higher in this planning year than in previous planning years provides no meaningful evidence in support of the complaint."

In fact, Patton contends prices in other MISO zones "are unreasonably low."

Patton has often argued that MISO's capacity market is flawed because it uses a vertical demand curve, which can result in unstable capacity prices. With a vertical demand curve, the last megawatt of capacity needed to satisfy the minimum requirement has a value equal to the deficiency price, while the

Continued on page 18

MISO NEWS

MISO, Dynegy, Monitor: No Evidence of Misconduct in Capacity Auction

Continued from page 17

first megawatt of surplus has no value.

"This means that as the surplus declines to zero, the market will suddenly start to clear at much higher prices," Patton said.

He also previously said the need for reform "may become particularly acute" as planning reserve margins decline toward the minimum requirement level with the anticipated retirement of significant amounts of coal-fired capacity as early as the 2015/16 planning years.

The $150/MW-day in Zone 4 "is still relatively low when comparing the cost of building a new unit at $247/MW-day," Patton added.

He said the Zone 4 clearing price also reflects the convergence between MISO and PJM markets, with more than 1,000 MW of capacity in the zone committed to PJM.

Reasons for Price Jump

In its filing, MISO said the fact that the auction prices vary sharply from one year to the next does not establish that prices are unjust or that they are "the product of any lack of oversight or administration on MISO's part; or that the price was the product of market manipulation."

Results can vary by location and by year due to commercial decisions of market participants or the supply of capacity offered into the auction, MISO said. In the most recent auction, higher-priced local resources were needed to meet the local reliability requirement in Zone 4, MISO said, because fewer resources were offered in at zero.

Compared to the prior auction, more price-sensitive offers were submitted and more capacity was procured through the auction than through bilateral contracts, MISO said.

Zones may be affected by differing state procurement rules applied to load-serving utilities.

"Each of these factors resulted in higher prices than in the 2014-2015 PRA and are examples of factors that can raise rates wholly independently of any seller misconduct."

The complainants failed to provide facts to back their claims and their arguments are speculative, collateral attacks, the RTO said.

"For example, Public Citizen speculates that the rate for Zone 4 '*may* be the result of illegal manipulation and gaming of the auction bidding process' and that 'Dynegy *may* have engaged in intentional capacity withholding.'"

Market Concentration


Madigan

In their complaints, Public Citizen and Madigan raised concerns about FERC's approval of Dynegy's acquisition of generating units from Ameren — questioning the commission's market power analysis at the time.

In its response, MISO said the two complainants did not intervene in the commission proceeding involving Ameren's application to sell generating units to Dynegy.

MISO said FERC rejected a protest that asserted Dynegy's proposed acquisition of the Ameren units should be analyzed in a submarket, "finding that the MISO balancing authority area properly defined the geographic market for the purposes of analyzing horizontal market power issues."

Moreover, MISO said it determined previously that 85% of the capacity for Zone 4 had to be located within the zone. That local clearing requirement was set as a function of local reliability needs, the capacity in the zone and its import capability.

Public Citizen alleged that failing to adjust the local clearing requirement following Dynegy's acquisition of new generation in the zone may have helped it execute a capacity withholding scheme.

MISO countered that Public Citizen failed to explain how the RTO could set aside the mathematical calculation that its Tariff requires "or how local reliability needs would have been satisfied under its approach given the amount of capacity in Zone 4 and capacity import limits."

Not 'Bullied'

One of the more incendiary allegations in the Public Citizen complaint is that MISO rejected recommendations by staff members to merge Zone 4 and Zone 5, given Dynegy's growing dominance in Zone 4.

The alleged motivation: fear that Dynegy would leave MISO for PJM.

Public Citizen cited minutes from a 2014 MISO Loss of Load Expectations Working Group in which a manager of economic studies purportedly stated that staff "are concerned with Dynegy's offer strategy in the next Planning Resource Auction as they [Dynegy] are now the dominant provider of capacity in the zone."

Public Citizen alleged the zone merger proposal was swatted down due to "stiff resistance" from Dynegy.


Volpe

The group specifically pointed to Dynegy executive Mark Volpe, who served as vice chair of MISO's Supply Adequacy Working Group, claiming his role and that of others in the auction design and coordination "do not lend credibility to the auction process and cry out for FERC review of the auction results under Section 206 at least."

In its response, MISO said there is no basis in fact that Dynegy "bullied it" or threatened to defect to PJM.

MISO said it did study and engage stakeholders in talks about combining Zones 4 and 5 but did not make the change "because additional consideration was warranted based on extensive stakeholder feedback."

That decision "was made based upon the requirements of the Tariff, overall stakeholder input and MISO's independent analysis — not based on threats or pressure from Dynegy."

Discussions about combining zones and other aspects of resource adequacy requirements should continue to be conducted through the stakeholder process, MISO insists, "which will more inclusively engender broad stakeholder and state regulator involvement as compared to settlement judge procedures."

ISO-NE NEWS

ISO-NE, NEPOOL Oppose Demand Curve Change for FCA 10

By William Opalka

The New England Power Pool Participants Committee urged federal regulators last week not to short circuit its stakeholder process in ordering a sloped demand curve for the next Forward Capacity Auction.

NEPOOL joined ISO-NE in asking the Federal Energy Regulatory Commission to reject a request by generators to force the RTO to adhere to a plan to change to the sloped demand curve for FCA 10 in February (ER14-1639).

The New England Power Generators Association made the request June 22 after ISO-NE backed off from its commitment to introduce a new curve for FCA 10, saying that making a change now would create reliability concerns. The generators asked FERC to reiterate a previous order that directed the RTO to continue efforts to eliminate administrative pricing in zones that are short of generation resources or suffer from transmission constraints. (See *NEPGA: Order Sloped Demand Curve in FCA 10*.)

ISO-NE withdrew its support for the change just before NEPOOL was scheduled to vote on it. At NEPOOL's June Planning Committee meeting, only 42% of stakeholders backed the sloped curve.

NEPOOL told FERC that although some of its members feel "frustration" with ISO-NE for reversing course despite "substantial progress," it wants any changes to result from the stakeholder process.

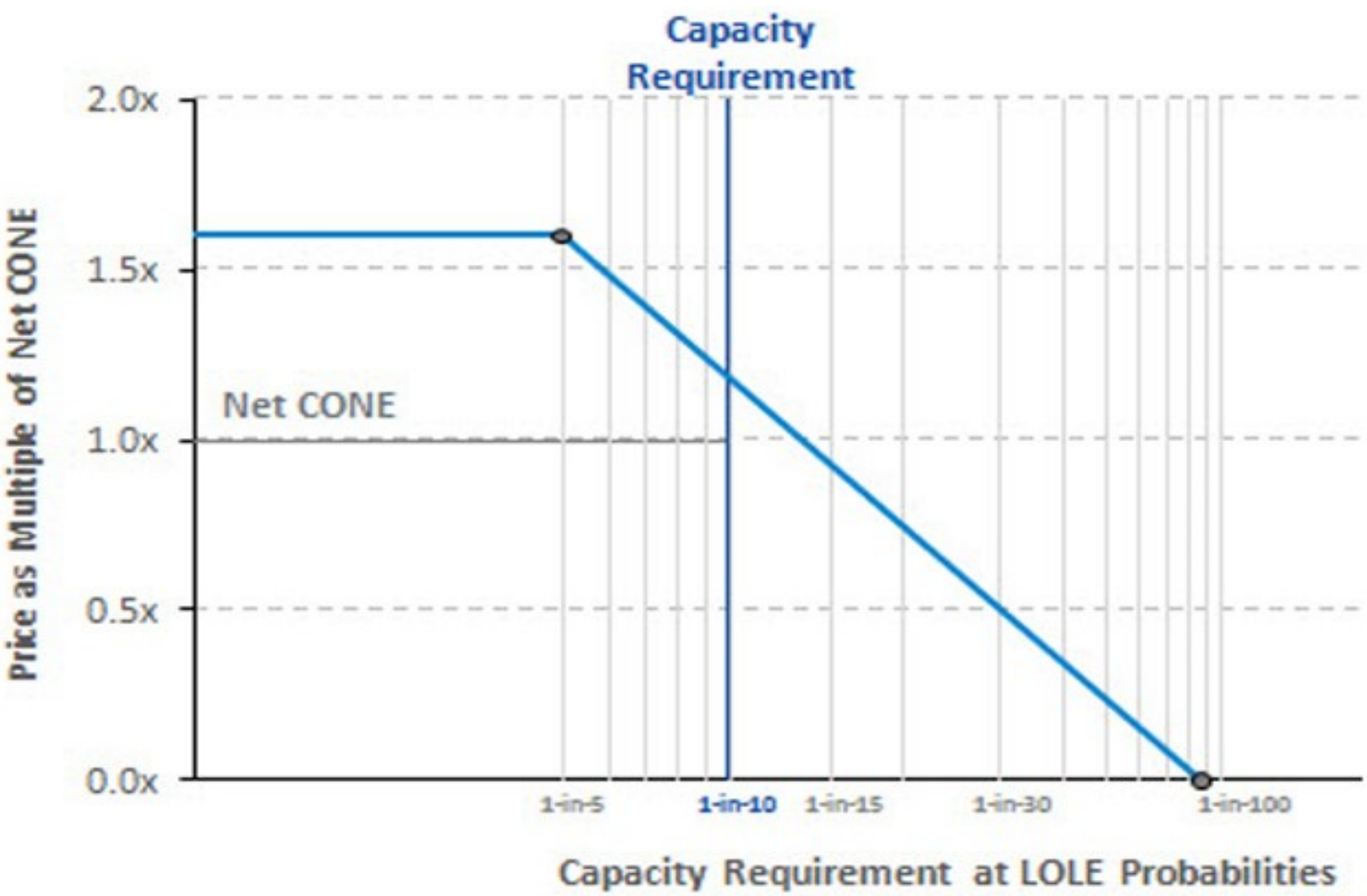
"NEPOOL takes no position under these circumstances on whether an order to implement sloped zonal demand curves generally is appropriate or justified," it wrote. NEPOOL's preference is to develop consensus in its own stakeholder process for "many interrelated issues," it said.

The Electric Power Supply Association also weighed in on the issue last week, expressing support for NEPGA and chastising the RTO for its reversal. "EPSA does not believe that the commission intended the ISO-NE to receive a free pass on this issue," it wrote.

In its reply to NEPGA, filed July 2, ISO-NE said the generators' motion should be dismissed on procedural and substantive grounds.

"NEPGA's proposed zonal demand curve design using potential FCA 10 capacity zone boundaries shows dramatically worse performance," it said.

NEPGA had asked for a Section 206 proceeding, but the RTO said "it falls far short of what is required under the commission's rules to initiate a proceeding."



Sloped demand curve (Source: ISO-NE)

ISO-NE NEWS

Massachusetts Attorney General to Study Gas Needs

By William Opalka

Massachusetts Attorney General Maura Healey has commissioned a study to assess New England's natural gas supplies and other energy needs.

The study, which is being funded by the Boston-based Barr Foundation, will identify options to address electric reliability needs through 2030. Economic consulting firm Analysis Group has been commissioned for the study, which will be completed by October.

"Our goal with this study is to identify the most cost-effective solutions for ratepayers that will also allow us to achieve our regional climate goals," Healey said in a statement. "As the state makes long-term decisions about additional gas capacity investments, we should understand the facts — what the future demand is, and which cost-effective energy and efficiency resources can be deployed to meet that demand."

Questions about the need for gas infrastructure have been tackled in studies by various states, stakeholders and ISO-NE, but Healey said they are either flawed or incomplete. "While there have been a number of prior studies conducted, none have answered the precise question of how much additional gas is needed in the New England region and whether that gas can by supplied by [liquefied natural gas] or additional pipeline capacity is needed," the statement said.

A 2014 study commissioned by ISO-NE concluded the region will face natural gas shortfalls during winters through 2020 due to insufficient pipeline capacity. (See *Pipeline Capacity, Retirements Top Concerns in ISO-NE Annual Plan*.)

Kinder Morgan has proposed a controversial natural gas pipeline that would bring gas from the Marcellus region of Pennsylvania, through New York and into Massachusetts and New Hampshire, with a terminus at Dracut, Mass. (PF14-22).

The Massachusetts Department of Public Utilities in April opened a docket to evaluate ways to bring extra natural gas into the state, including contracts between electric distribution companies and gas distributors, with cost recovery from ratepayers (15-37).

In light of the study, Healey asked the DPU to reconsider its denial of her motion to stay DPU approval of gas distribution companies' contracts for capacity on the Kinder Morgan pipeline. The attorney general said there are significant factual disputes to resolve, as well as questions about the legality of pipeline funding through ratepayer charges.

Iberdrola Withdraws UIL Acquisition; Plans to Refile

By William Opalka

Spanish energy giant Iberdrola SA on Tuesday dropped its bid to acquire UIL Holdings but promised to file a new application by the end of the month that would address objections raised by Connecticut regulators.

The Connecticut Public Utilities Regulatory Authority issued a draft decision June 30 that lambasted the companies' application, recommending a final rejection, while giving them a week to respond. PURA said the acquisition was not in the public interest and offered no benefit to consumers. (See *Connecticut Regulators Threaten to Reject Iberdrola-UIL Merger*.)

The companies last week asked for a 60-day extension to address the decision, which outlined conditions including "ring fencing" of the local utilities, a three-year rate freeze and a commitment to keep their headquarters in the state for seven years. PURA immediately rejected that request as not affording enough time for adequate review and said the companies should file a new application that resets the clock at 120 days.

"The applicants hereby withdraw the pending application, in order to have the docket terminated as of this date and the remaining procedural schedule cancelled, which would, in turn, facilitate the applicants' filing of a new application," Iberdrola wrote.

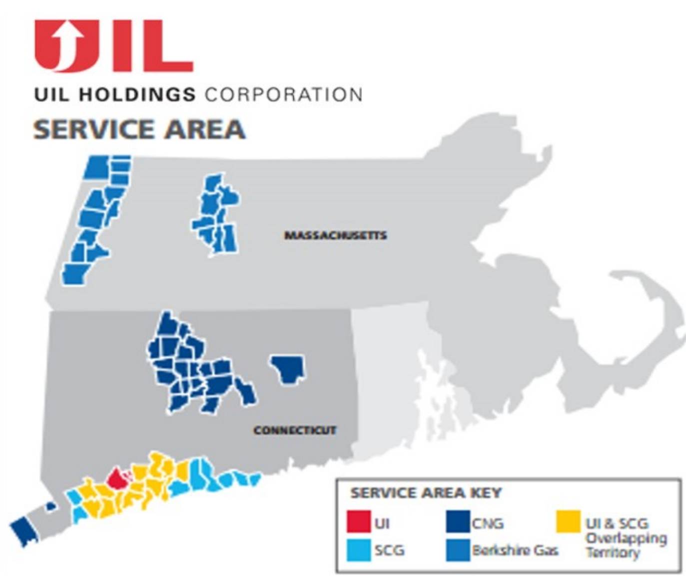
Iberdrola has offered $3 billion for Connecticut-based UIL, including its United Illuminating electric distribution utility and three gas distribution companies in Connecticut and Massachusetts.

In a separate filing made hours before the companies dropped their bid, the Connecticut Industrial Energy Consumers praised the PURA draft decision. "CIEC commends the authority for reaching conclusions regarding the public interest of the proposed transaction commensurate with the record evidence," the group wrote.

In mid-day trading, UIL stock shot up $1.46 after the announcement to $47.19.

PURA said June 30 it would not approve the deal without "ring fencing" provisions to protect UIL's Connecticut electric and gas distribution companies from bankruptcies by Iberdrola's other operations.

Regulators also said they "cannot conclude that the applicants will continue to possess the ability to provide safe, adequate and reliable service to the public." It said Iberdrola's financial strength and managerial expertise were adequate, but the company did "not possess the requisite suitability and responsibility to acquire UIL Holdings."



Company Briefs

Deepwater Wind Foundations En route via Barge to Rhode Island

Five 170-foot-tall concrete foundations that will support the nation's first offshore wind farm have been completed in Houma, La., and are starting their barge journey to the Deepwater Wind construction site off Block Island, R.I.

The 1,500-ton foundations, which will support five 6-MW turbines manufactured by Alstom, are expected to arrive off Block Island in mid-July, according to Deepwater Wind CEO Jeffrey Grybowski. The turbines are scheduled to be installed in mid-2016, with the project expected to be operational by the end of that year. National Grid has agreed to buy the wind farm's output under a 20-year contract.

More: *Associated Press*

Facebook Powering New Texas Data Center Entirely with Wind

Facebook announced that its new data center in Fort Worth, Texas, will run entirely on wind energy. The Fort Worth facility will be the third Facebook server center to be powered entirely on renewable energy. The other two are in Altoona, Pa., and Lulea, Sweden.

Facebook said it is working with Citi Energy, Alterra Power and Starwood Energy to tie 200 MW of wind energy to the Texas grid, and then to the data center. It said the wind facility will cover a 17,000-acre site about 100 miles from Fort Worth. Facebook says that it aims to produce 50% of its power needs from renewable energy by 2018.

Facebook's news follows separate announcements from tech giants Google and Amazon.com that they plan to step up commitments to renewable energy.

More: *EcoWatch*

Brattle Report Puts Nuclear Industry's GDP Input at $60B/Year

A report commissioned by a nuclear promotional group said U.S. atomic power contributes about $60 billion annually to the country's gross domestic product.

The report by the Brattle Group, commissioned by the trade organization Nuclear Matters, said the industry accounts for 475,000 full time jobs and provides 19% of U.S. electricity. The report said the industry provides about $10 billion in federal taxes and $2.2 billion in state taxes.

More: *Nuclear Street*

More than Half of Large Businesses Generating Some of Own Power

A Deloitte survey shows that more than half of about 600 large businesses in the U.S. are able to generate some of their energy onsite. Two years ago, only about a third of the companies generated some of their power.

The study showed that the largest companies – those with $500 million in annual revenue or more – are investing more in energy management, ranging from on-site generation to energy efficiency. The majority of the on-site power is still provided by diesel generators, but it is increasingly likely to include renewables such as solar or wind.

More: *Columbus Business First*

Coal Company Pans Song Lyrics — in Lawsuit

Peabody Energy, in asking a federal judge in Wyoming to dismiss a lawsuit filed by protesters who were jailed after demonstrating at a shareholders meeting, also wants the judge to purge the lawsuit of the famous John Prine protest lyrics that mention the company's name.

Thomas Asprey and Leslie Glustrom, who were jailed after demonstrating at a 2013 Peabody shareholders meeting, cited the lyrics from Prine's 1971 song "Paradise" in the lawsuit. Peabody said the lyrics tarnish its name.

The lyrics include the refrain about the company's mining practices in Muhlenberg County, Ky.:

And Daddy won't you take me back to Muhlenberg County

Down by the Green River where paradise lay?

"Well, I'm sorry my son, but you're too late in asking

Mister Peabody's coal train has hauled it away"

More: *Associated Press*

Environmentalists Say Dominion's Coal Ash Plans Inadequate

A coalition of environmental groups says Dominion Virginia Power's plan to close its 11 coal ash ponds doesn't do enough to prevent toxic materials from seeping into nearby rivers, and they've asked the state to step in.

The environmentalists have asked the Virginia Department of Environmental Quality to halt Dominion's plans to remove the coal ash if it shows pollutants are escaping. "Dominion's proposal to cap in place will not stop heavy metals and other toxic pollutants from leaking out of the sides and bottom of coal ash ponds right into water bodies used to kayak, fish and swim," said Emily Russell of the Virginia Conservation Network.

Company officials say the procedure for closing the ponds and moving the material to prepared disposal sites meets all state and federal regulations, and tests show the method is safe.

More: *Richmond Times-Dispatch*

Ameren Reaches Settlement On Missouri Coal Ash Plan

Ameren Missouri has settled a series of lawsuits dating back more than five years over its coal ash disposal plan, allowing the power generator to go forward with construction of a coal ash landfill at its Labadie power plant that it says is crucial to the plant's continued operation.

The settlement with Franklin County and the Labadie Environmental Organization requires Ameren to construct 5-foot berms to keep any ash or ash residue out of the Missouri River floodplain. The company also agreed not to bring in ash from other sites, or to use coal ash in the construction of the berms.

More: *St. Louis Post-Dispatch*

Continued on page 22

COMPANY BRIEFS

Continued from page 21

Maine Wind Farm Construction Begins

Construction has started on Maine's largest renewable energy project, a $420 million wind farm in Bingham that will have a capacity of 185 MW.

Developer SunEdison said it had secured $360 million in financing for the 56-turbine farm, which will increase the company's total wind generation capacity in Maine to 552 MW. The Bingham project's output will be sold to Eversource, National Grid and Unitil.

More: *Portland Press Herald*

Pump Malfunction Forces Indian Point Unit Shutdown

A water pump malfunction forced the shutdown of Entergy's Indian Point Unit 3 on Wednesday. Control room operators shut down the nuclear reactor after they found that one of the unit's condensate pumps automatically stopped while the unit was operating at full power, causing the steam generator's water levels to fluctuate, according to Entergy.

The condensate pumps, which are part of the system that feeds water into the plant's steam generators, are located away from the nuclear side of the plant, Entergy said. Operators safely shut down the reactor, the company said. The shutdown did not affect Unit 2, which is still operating at full power.

Entergy did not say when it expects to resume operations.

More: *Poughkeepsie Journal*

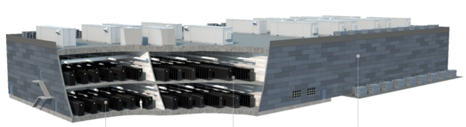
Solar Development Grows in Missouri

Ameren is planning a 15-MW solar farm on a 70-acre site in eastern Missouri. The project would be twice the size of Ameren's first utility-scale solar facility near St. Louis. Ameren's application with the Missouri Public Service Commission did not detail costs.

The state's renewable energy standard has stoked interest in renewable projects, as utilities are required to generate a portion of their electricity from non-carbon sources. Developers also are racing to build projects before a federal tax credit for renewable energy falls from 30% to 10% at the end of next year.

More: *St. Louis Post Dispatch*

Batteries Included, Some Assembly Required



Indianapolis Power & Light has broken ground on the first utility-scale battery storage project in MISO's 15-state territory.

The AdvancionTM Energy Storage Array will provide 20 MW of interconnected energy storage. The facility, which will provide additional stability to IPL's system, is due to go online in the first half of 2016.

IPL's parent, AES, pioneered the use of grid-connected lithium-ion batteries in 2008, in Indianapolis. AES has 86 MW of energy storage projects in operation worldwide and has announced an additional 260 MW of interconnected battery-based storage.

More: *Indianapolis Power & Light*

Talen Energy to Expand; Eyes AEP

Talen Energy, the independent power producer formed by the spinoff of PPL's generating assets and competitive producer Riverstone Holdings, is looking to grow. The Allentown, Pa., company holds about 15,000 MW of generation, primarily in the PJM region and some in Texas.

"We're as open to buying coal as gas as nuclear," CEO Paul Farr told Reuters. But he said its fuel mix is more likely to become more "gassy" while gas prices remain low. He did say, however, that Talen is looking at American Electric Power's coal generation holdings in Ohio. AEP has been signaling a willingness to unload its coal assets there.

More: *Reuters*

Minnesota Power Shutting Down Two Coal Units at Taconite Harbor

Minnesota Power announced last week that it will retire two coal-fired units at its Taconite Harbor plant in Schroeder, part of a larger plan to shift the company's generation portfolio from coal.

The company's commitment will be included in its "integrated resource plan" due to be filed with the Public Utilities Commission in September. Minnesota Power's fuel-mix currently has about 75% coal-fired generation and 25% renewables. That will change over the next 15 years to about a third coal, a third natural gas and a third renewables.

"It's a balanced portfolio of energy sources," said Al Rudeck, vice president of strategy and planning. "We think it's the best plan, and the most affordable plan, for our customers." Environmentalists applauded the announcement.

More: *Midwest Energy News*

FEDERAL BRIEFS

Mountaintop Removal Mining Falls 62% in Past 6 Years

The amount of coal mined using the controversial mountaintop removal method has plummeted 62% in the past six years, according to the US. Energy Information Administration.

All coal production has decreased 15% because of lower natural gas prices and a decreasing demand for coal, according to EIA. But the drop has been more acute for coal recovered by mountaintop removal, which involves clearing rock and soil overburden to expose a coal seam. The method, used mostly in central Appalachia, and decried by environmentalists, sometimes results in valleys being filled in by the waste material.

More: *The Hill*; *EIA*

Obama Administration Wants More Americans Getting Solar

The Obama administration is introducing measures that will triple the capacity of solar and other renewable energy installed in subsidized housing to bring green energy to lower- and middle-income Americans.

The administration's climate change initiative includes backing efforts to make it easier for homeowners to borrow money for renewable energy installations, primarily solar. Charities and investors also have committed to spending more than $520 million for solar and energy efficiency projects.

More: *The New York Times*

Senate Republicans Call for Revocation of NRDC's Status

The National Republican Senatorial Committee is calling for federal authorities to revoke the tax-exempt status of the Natural Resources Defense Council because of its "partisan" campaign against Sen. Mark Kirk of Illinois.

The Republican committee said the NRDC's campaign criticizing Kirk violates its nonprofit status, which prohibits it from engaging in political activity. Kirk is up for reelection in 2016.

The environmental group says the ads are purely educational. The NRDC's campaign followed major campaigns by the League of Conservation Voters and the Sierra Club against Kirk.

More: *The Hill*

DOE Providing $18 Million In Biofuels Research Projects

The Department of Energy is investing $18 million in six projects that aim to produce biofuels that would come to market for less than $5/gallon by 2019.

The projects, which seek to produce fuels or fuel additives from algal biomass, are underway at the Colorado School of Mines, Duke University's Marine Algae Industrialization Consortium, Global Algae Innovations, Arizona State University, University of California/San Diego and Lawrence Livermore National Laboratory.

More: *Biofuels Digest*; *CleanTechnica*

Energy Companies, Utilities Seek Last-Minute White House Meetings

Utility groups and energy companies are lobbying the White House before new carbon emissions regulations for power plants are released in August.

The White House has hosted at least eight meetings with industry groups in the past three weeks, including Duke Energy, manufacturer Honeywell and the National Mining Association. Opponents argue that the regulations imposed on states are too stringent, and the timetable is too short, to be reasonable.

"The point we left them was that in the Clean Power Plan, EPA is offering governors a basket of rotting carp," said the NMA's Luke Popovich.

More: *The Hill*

NRC Approves Transfer of Nuke License to Duke Energy Progress

The Nuclear Regulatory Commission has approved the transfer of the operating licenses of the Harris Nuclear Plant and the Brunswick 1 and 2 plants from the North Carolina Eastern Municipal Power Agency to Duke Energy Progress. The transfers were part of Duke's $1.2 billion acquisition of NCEMPA generation assets announced earlier this year. Closing of the deal is expected by the end of July.

More: *Charlotte Business Journal*

STATE BRIEFS

CONNECTICUT

New Law Shields Regulators' Communications

The General Assembly has exempted from public review some communications among members of the Public Utilities Regulatory Authority.

The legislature approved a bill exempting communications that occur between scheduled meetings after the regulatory agency said its communications were hampered by requests citing the Freedom of Information Act. Comments in public meetings are not exempt.

The three commissioners said they decide "complex, legal and technical matters" and discussions at public meetings can take hours.

More: *New Haven Register*

Company Settles Marketing Complaint

Electric retailer North American Power has agreed to pay $2.6 million to settle complaints by state authorities that the company quickly increased rates for customers it had enrolled with a low introductory rate.

The supplier will pay $100,000/month over the next 26 months to Operation Fuel, a nonprofit that provides home energy assistance to residents. The settlement resolves a two-year investigation by the Public Utilities Regulatory Authority. The company made no admission of wrongdoing under the terms of the settlement.

More: *New Haven Register*

ILLINOIS

Power Grid Upgrades Fail to Speed ComEd's Restoration Times

Commonwealth Edison did not improve the time it took to restore power last year despite having spent more than $600 million to pay for smart grid improvements, raising questions about the effectiveness of the improvements.

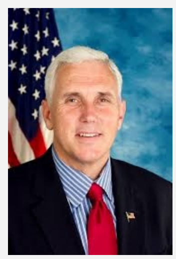
ComEd's restoration time averaged 196 minutes, according to its annual reliability report. The findings raised questions about the 2011 smart grid law, which allowed the utility to raise rates to finance a $2.6 billion grid modernization program over 10 years. ComEd also reported an average of just over one outage per customer last year, compared with 1.16 in 2012 and .99 in 2013.

Chief Operating Officer Terence Donnelly defended the utility's performance, saying ComEd's success in preventing outages has led to a longer average restoration time. "The outages that [occur cause] more significant damage and take longer to repair," he said.

More: *Crain's Chicago Business*

INDIANA

Pence to Obama: Nuts to Your CO2 Rule


Pence

Gov. Mike Pence has written to President Obama stating the coal-dependent state will not comply with the Clean Power Plan unless major revisions are made. Pence said the plan would force premature retirement of coal-fired plants, "threatening our stable source of affordable electricity."

The state would have to curb carbon dioxide emissions by 20% by 2030 under the plan that the Environmental Protection Agency is set to finalize in August. The state's power plants ranked No. 4 in the U.S. in 2012 for the amount of CO_2 emitted per unit of electricity.

Pence has repeatedly stated that he isn't convinced that climate change is mostly caused by human activity, and he vowed the state was ready to use all legal means necessary to fend off EPA's plan.

More: *The Indianapolis Star*

IOWA

Opposition Growing to Bakken Pipeline Plan

Anti-pipeline groups submitted more than 2,500 written statements with the Utilities Board to protest the Dakota Access pipeline, which would deliver 570,000 barrels of North Dakota crude oil across the state to Illinois.

"This huge hazardous liquid pipeline is threatening our land, our water and our very livelihoods, if not lives," said Brenda Brink, of the Iowa Citizens for Community Improvement. "There's not enough money in the world that they can give us to cross our land, they'll never do it," said Dick Lamb, a landowner.

The pipeline proposed by Energy Transfer Partners would cross four states.

More: *The Des Moines Register*

MARYLAND

Brattle Report: Nuclear Plant Benefits State

A report by The Brattle Group concluded that the Calvert Cliffs nuclear energy plant contributes $397 million to Maryland's gross domestic product and accounts, directly and indirectly, for 2,300 full-time jobs.

The study estimated that without the Exelon-operated plant, Maryland's carbon dioxide emissions would be about 9 million tons higher.

The industry-commissioned report comes at a time when some U.S. nuclear facilities – including several of Exelon's units in Illinois – are facing potential shutdowns due to economic and policy challenges. In Illinois, Exelon has proposed legislation that would help shore up its underperforming plants. (See *Exelon-Backed Bill Proposes Surcharge to Fund Illinois Nukes*.)

More: *Business Wire*

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STATE BRIEFS

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MASSACHUSETTS

Bill Promotes Canadian Hydropower

Gov. Charlie Baker is supporting legislation that could help import up to 2,400 MW of Canadian hydropower into the state.


Baker

Matthew Beaton, Baker's energy and environmental affairs secretary, said the state needs more electricity from renewable energy sources such as hydropower if it is to meet a 2020 deadline for reducing greenhouse gas emissions.

Baker's bill would require major electric utilities to seek long-term contracts from hydropower generators — most likely Canadian companies such as Hydro-Quebec and Nalcor Energy.

More: Boston Globe

MISSISSIPPI

PSC Approves Construction Of Two Solar Facilities

The Public Service Commission on July 9 approved the construction of solar facilities near the Golden Triangle Industrial Park and at Golden Triangle Regional Airport in Lowndes County. The two facilities will cost nearly $3 million and generate a combined 1.6 MW.

The new solar sites are among several approved by the commission this year. "The momentum is really picking up in Mississippi on solar power," Commissioner Brandon Presley said.

Silicon Ranch Investments and SR Walker East will build, operate and maintain the arrays.

More: Mississippi Public Service Commission

NEW HAMPSHIRE

Pipeline Approved By PUC Staff

State regulators are set to approve a plan to allow Liberty Utilities to secure 115,000 dekatherms of daily capacity on Kinder Morgan's proposed natural gas pipeline from the Marcellus Shale formation in Pennsylvania into New England.

The staff of the Public Utilities Commission signed off on the utility's request to use the Northeast Energy Direct project to serve its 90,000 customers. The three-member commission still has to formally approve the deal after a July 22 hearing.

Representatives of the Pipeline Awareness Network, an advocacy group, criticized the PUC's staff for endorsing the project despite testimony of the PUC's own expert witness and the agency's consumer advocate that questioned the need for the utility to procure such a large amount of capacity.

More: New Hampshire Union Leader

NEW YORK

Residential DR Program Starts

Residential air conditioners can be turned down by remote control during times of peak demand under a limited, voluntary program that began July 1.

Participating customers will be paid small stipends to take part in the program and could save an estimated $100/year or more through lower electricity use during times when the AC is dialed down. For now, Rochester Gas & Electric is offering the program only to certain customers in two towns in Ontario County. RG&E's sister company, New York State Electric and Gas, is offering its program in similar high-demand pockets in southern Erie, Chautauqua and Putnam counties.

New York regulators mandated the initiative as part of the overhaul of the state's energy distribution system, known as Reforming the Energy Vision. The hope is that "dynamic load management" programs will relieve stress on the electric distribution system and help consumers learn to better manage their own energy use.

More: Democrat & Chronicle

HIKO Energy Settles Fraud Claims

Electric retailer HIKO Energy has agreed to pay $1.25 million to settle fraud claims by the state attorney general.

The attorney general's lawsuit accused HIKO of defrauding 25,000 current and former customers between June 1, 2011, and Oct. 1, 2014. An investigation by the Consumer Protection Bureau found that the company promised lower rates to customers and then charged higher rates, enrolled new customers without their knowledge and made it difficult for customers to cancel their enrollment.

The settlement requires HIKO to pay $1.25 million to the attorney general's office to be used in a restitution program.

More: Buffalo News

Solar Capacity Quadruples in State

Solar energy capacity in the state quadrupled from 2011 to 2014, which officials say is a sign that solar power is becoming a more significant factor in meeting the state's energy needs.

By the end of last year, state residents had installed enough solar energy-generating capacity to produce 314.5 MW. In April, solar power accounted for nearly 0.1% of the state's electricity production, according to the U.S. Energy Information Administration.

The amount of electricity generated from solar energy tripled in Western New York over the last three years, thanks to a combination of lucrative government incentives and a steady decline in the cost of rooftop solar energy systems, according to a new report from the New York State Energy Research and Development Authority.

In addition to a 30% federal tax credit on new solar energy systems, the state is offering $1 billion in incentives for larger-scale solar projects through its NY-Sun initiative.

More: Buffalo News

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STATE BRIEFS

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State Awards Microgrid Grants

The state is awarding $100,000 in grants to 83 groups for microgrid projects through a competition that is designed to promote small-scale, community-run electric generation.

The winners include Central Hudson Gas & Electric and NRG Energy, which have partnered to evaluate the potential of a resilient microgrid at Stewart International Airport that would also benefit critical facilities in New Windsor. If the project study is approved, it may be eligible for up to $1 million for development of detailed designs and up to $7 million for construction.

More: *Times Union*; *Central Hudson G&E*

NORTH CAROLINA

Pork Producers Ask Lawmakers To Keep Renewable Mandate

The state's pork producers are asking lawmakers to maintain a provision in the state's renewable energy law that requires a small percentage of power to be derived from swine manure.

The state's utilities are asking, for the fourth year in a row, that the targets in the 2007 renewable energy law be postponed because no producers have been able to meet them. But some pork producers say they have already invested millions to develop manure management systems to capture methane from swine waste as an alternative to lagoon storage and field spraying. Smithfield Foods, the largest pork producer in the U.S., has spent $40 million developing projects at six of its hog farms.

"We don't want to see anything about the law get changed," Angie Maier, the N.C. Pork Council's policy development director.

More: *News & Observer*

NORTH DAKOTA

PSC Sees 'Continual Stream' Of Pipeline Applications

Despite the downturn in oil prices, the Public Service Commission is seeing "a continual stream of applications" for crude oil pipelines from oil-producing areas.

Commissioner Randy Christmann said the applications for infrastructure investment in the Bakken Shale oil-producing areas is a bullish sign for the oil-producing state, despite the slowdown in drilling. "It is going to make the next time it picks up … far more pleasant," Christmann said.

The PSC approved a siting application for a new pipeline last week and set a September hearing for a new 23-mile crude pipeline by NST Express.

More: *Bismarck Tribune*

OHIO

Local Officials Appeal to Governor For More Control over Drilling

Some municipal and county officials have asked Gov. John Kasich to grant more control to local government over oil and gas drilling.

"The notion that our communities have the right to bar or limit activities which threaten public health or the quality of life of their residents has a long tradition in Ohio law," the officials state in a letter to the governor, which was released by the anti-drilling group Environment Ohio. "… Yet the oil and gas industry has the audacity to insist that this basic principle of local control should not apply to its operations."

More: *Crain's Cleveland Business*

PENNSYLVANIA

Groups Accuses AG's Office of Failing to Conduct Fracking Probe

Advocacy group Food & Water Watch has accused the attorney general's office of failing to follow through on a promise to investigate complaints that the state Department of Health discounted reports of residents who said they had been sickened by hydraulic fracturing.

The group said Attorney General Kathleen Kane's office had done only "a few cursory interviews" instead of a full investigation. It has filed a right-to-know request seeking any documents relating to public health complaints and fracking.

A spokesman for the Democratic attorney general's office said it attempted to look into the allegations but were stymied by the Health Department, which was controlled by a Republican administration until January. "Our environmental crimes unit did pursue this investigation and interviewed a significant number of the complainants," a spokesman said. "But because the Department of Health under the last administration was not cooperative, it was difficult to determine how they responded."

More: *StateImpact*

RHODE ISLAND

Regulators Eliminate Switching Fee

The Public Utilities Commission has eliminated a "billing adjustment" charge assessed on electricity customers who switch from incumbent utilities to competitive suppliers.

The billing adjustment charge, which was put in place in 2010, was designed to compensate utility National Grid for the difference in the fixed rate it charges consumers for electricity and the underlying variable rates it pays to power generators from month to month.

The commission said the charge caused confusion among customers and inhibited the growth of competitive retail electricity markets.

More: *Providence Journal*

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STATE BRIEFS

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SOUTH DAKOTA

Judge Grants Eminent Domain To Dakota Access Pipeline

A county judge granted eminent domain status to the Dakota Access crude oil pipeline, although the state Public Utilities Commission has not yet approved the project that would deliver North Dakota petroleum though the state.

The judge's ruling will make it easier for surveyors to develop a route for the pipeline, which would run about 272 miles across the state. Dakota Access filed for the status in April, saying it was necessary for the surveyors to determine a suitable route for the pipeline.

Energy Transfer Partners is building the project, which would deliver 450,000 barrels of crude oil a day on a 1,134-mile route that terminates at a rail terminal and pipeline interconnection in Illinois.

More: Sioux Falls Argus Leader; Energy Transfer

VIRGINIA

Route Changes Filed for Atlantic Coast Pipeline

Dominion Transmission has filed proposed route changes for its Atlantic Coast Pipeline through southern Virginia to more closely align the natural gas pipeline's path with existing rights-of-way.

But Dominion has not altered the route through the western part of the state, where opposition to the project is strongest. "We're still exploring new opportunities for routes, refinements and adjustments," said Greg Parks, construction supervisor for the $5 billion, 550-mile pipeline project.

Dominion said that it is more difficult to co-locate the pipeline with existing utility corridors in the mountainous western region of the state.

More: Richmond Times-Dispatch

WISCONSIN

Lawmakers Try to Clear County Block of Enbridge Pipeline

Republican lawmakers have proposed to strip a county government of the authority to demand that a crude oil pipeline obtain more insurance.

The lawmakers added language to the state budget bill aimed at Dane County, which required a crude oil pipeline operator to boost its insurance coverage. That requirement has impeded completion of upgrades that Enbridge is installing on its Line 61 pipeline from Superior to Illinois. The upgrades would double the daily capacity of the 343-mile pipeline from 560,000 barrels to 1.2 million barrels. The language also allows the company to increase the pipeline's capacity in the future, without requiring county approval.

Enbridge said the county exceeded its authority since federal agencies regulate interstate pipelines. Enbridge also said that it has always been responsible for the costs of cleanups. But environmental groups protested the language, noting that Enbridge has a history of pipeline spills in the state.

More: Milwaukee Journal Sentinel

SunEdison Making $2 Billion Bet on Wind in Midwest, Canada

Continued from page 1

Edison announced they had finalized the acquisition of another 521-MW portfolio of operating wind farms in Idaho and Oklahoma from Atlantic Power. In January, the two companies closed a similar 521-MW package of wind and solar assets from First Wind Holdings.

The Deal

TerraForm said it intends to acquire net ownership of 460 MW of Invenergy's wind plants, with the remaining 470 MW to be acquired by a "warehouse" facility, a financing mechanism that will be sponsored by SunEdison and third-party equity investors.

The initial acquisition includes the 187-MW Rattlesnake farm in Texas, the 196-MW California Ridge project in Illinois and the 78-MW Raleigh wind farm in Ontario. The warehouse facility includes the three Prairie Breeze wind farms totaling 279 MW in Nebraska and the 190-MW Bishop Hill, Ill., facility.

The deal is expected to close in the fourth quarter, subject to the approval of the Federal Energy Regulatory Commission and the Public Utility Commission of Texas.

Bucking a Trend

The companies are upping their stake in wind at a time in which other developers have scaled back.

Second-quarter investments in U.S. wind projects were $9.4 billion, down 4% from the first quarter and 21% from 2014's second quarter, according to the American Wind Energy Association. Bloomberg New Energy Finance reported that global clean energy investment dropped 28% in the second quarter versus a year earlier. The U.S. entered 2015 with 65.9 GW of installed wind, AWEA says.

Yieldco Strategy

TerraForm is seeking value by "aggregat-[ing] a highly fragmented industry," CEO Carlos Domenech said.

The company's strategy is based on the use of "yieldcos," an increasingly popular method of holding renewable energy assets. Yieldcos allow developers to raise capital at lower costs by selling — or dropping — completed projects to the yieldco and using the proceeds to fund new projects.

"The thinking with warehouse assets is that as you drop or acquire assets into the warehouse, you'll be tranching those assets," SunEdison CFO Brian Wuebbels explained in a conference call last week. "Equity investors, debt investors, us … we all want to know the quality of the assets we're putting into the warehouse. Getting an investor to put down $2 billion into an empty warehouse without having an idea of the particular asset's performance would be creating [higher] costs. … By having definitive, high-quality assets, we can drive down the cost of capital."

The assets being acquired from Invenergy have a weighted average remaining contract life of 19 years.

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SunEdison Making $2 Billion Bet on Wind in Midwest, Canada

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UBS Securities noted only 93 MW will be under construction upon the deal's close, easing concerns about developmental risk. The deal also diversifies the portfolio of SunEdison, the world's largest renewable energy development company.

Invenergy

For Invenergy, a privately held company, the sale will provide capital to invest in more projects, CEO Michael Polsky told Bloomberg. "It's a new phenomenon. It's helped to proliferate renewable energy."

Domenech said he expects that TerraForm's "ongoing partnership" with Invenergy will result in additional acquisitions in the future.

Invenergy bills itself as North America's largest independent wind power generation company, with 51 wind farms in the U.S., Canada and Europe totaling more than 4.4 GW.

The company, which is selling 10% of its total contracted portfolio to TerraForm, will retain a 9.9% stake in the U.S. assets being sold, providing operation and maintenance services for the facilities.

Cash Flow

TerraForm and SunEdison say the assets they are purchasing should generate average unlevered cash available for distribution (CAFD) of $141 million annually over the next 10 years, a levered cash-on-cash return of about 8.4%.

Private equity investors have expressed "a lot of interest in the warehouse," Wuebbels said.

In announcing the deal, TerraForm raised its 2016 dividend target 26% to $1.70/share from $1.53 and projected a 20% compound annual growth rate from its current first-quarter dividend "driven by the increased visibility and growth provided by this transaction."

Market Reaction

Shares in both SunEdison and TerraForm stock rose following the sale announcement Monday, with TerraForm shares up 4.4% for the week.

Travis Hoium, a columnist for The Motley Fool, was less impressed, warning that yieldcos' appeal could fade if they turn out to be based on overly aggressive assumptions.

"Adding $141 million in cash available for distribution may sound like a lot, but the $2 billion price tag is steep for that kind of return. Remember that the cash flow from projects has to cover the depreciating value of a wind turbine over time as well as pay for debt that will be used to acquire the assets, so the return for shareholders may not be as attractive as it seems. … Unless TerraForm Power can re-up contracts for equal or greater electricity prices well beyond the current contracts, the company may not even earn its cost of capital back."

Name	Size (MW)	Ownership (%)	Commercial Operation Date	Contract Life (Yrs.)	Offtaker	Offtaker Rating
Assets Dropped At Close						
Raleigh (Ontario)	78	100	2011	16	Ontario Power Authority	Aa1
California Ridge (Ill.)	196	90	2012	18	TVA	Aaa / AA+
Rattlesnake (Tex.)	187	90	Aug 2015	13	Merrill Lynch Commodities	A1 / A
Total Assets Dropped At Close	**460**			**16**		
TerraForm Private Warehouse Assets						
Bishop Hill (Ill.)	190	90	2012	17	TVA	Aaa / AA+
Prairie Breeze (Neb.)	181	90	2014	24	Omaha Public Power	A1 / AA
Prairie Breeze II (Neb.)	66	90	Oct 2015	25	Lincoln Electric System	AA
Prairie Breeze III	32	90	Mar 2016	25	City of Grand Island	A1
Total Warehouse Assets	**470**			**21**		
Grand Total	**930**			**19**		**Aa2 / AA**

TerraForm-Invenergy wind farms transaction (Source: TerraForm Power)

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