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Concerns sparked by polar vortex may spur reforms

ANALYSIS

Concern is growing that the cold weather events of this winter have revealed serious flaws in electric power markets that could require fixes that go beyond reforms already proposed.

Initial concerns raised by the record high demand and power curtailments in the Northeast brought about by the cold weather focused on coordinating electricity and gas supplies. But the focus is now shifting to wider concerns about the reliability of the grid, especially given the prospect of a wave of coal plant retirements that are expected to hit the market in the next year or so.

On the face of it, the grid performed well through the cold weather. The lights did not go off, despite records set for both demand and prices. The PJM Interconnection on January 7 set a winter peak demand record of more than 141,312 MW. That day

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MISO, PJM work on transaction scheduling

MARKETS

The Midcontinent Independent System Operator and the PJM Interconnection are developing plans to adopt coordinated transaction scheduling to improve the economic efficiency of flows between the two markets, representatives from the grid operators said at a Friday meeting.

The ISOs believe coordinated transaction scheduling, or CTS, will improve the economic efficiency of real-time interchange scheduling by providing more flexibility for power flowing between the regions to respond to prices. MISO and PJM hope to be able to implement CTS in 2016, Rebecca Carroll, manager of real-time market operations at PJM, said during Friday's meeting.

CTS transactions would allow market participants to submit offers to flow power across the MISO-PJM border in 15-minute

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Real-time prices well below day-ahead in Calif.

MARKETS

Real-time prices in the California Independent System Operator real-time market are being depressed compared with day-ahead prices, particularly during high demand days, possibly because of under scheduling of certain resources in the day-ahead markets, according to a California energy consultant.

Energy consultant Alan Isemonger of Energy Market Expertise performed a study at the behest of the Western Power Trading Forum, looking at real-time and day-ahead markets between 2012-2013. Before starting his own consultancy, Isemonger worked at Cal-ISO from 2002-2011, including a stint in the market monitoring unit.

One of the assumptions going into the study, Isemonger said, was the expectation that day-ahead prices were going to be higher than real-time prices. Then, when day-ahead prices were high,

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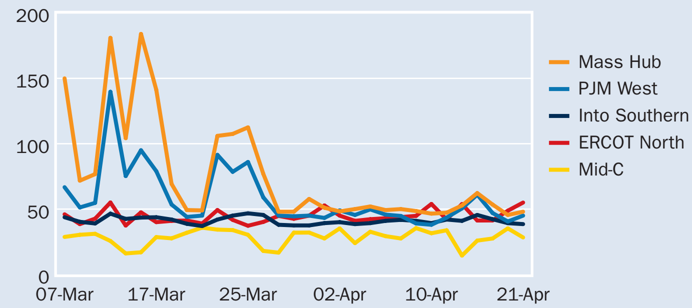
Price trends at key trading points ($/MWh)



Source: Platts

Low and high average day-ahead LMP for Apr 22 ($/MWh)

	On-peak low	On-peak high	Off-peak low	Off-peak high
ISONE	50.28	53.82	32.74	34.25
NYISO	37.98	58.14	30.10	34.63
PJM	40.89	47.95	24.51	32.70
MISO	35.38	62.45	24.76	40.70
ERCOT	55.10	86.58	29.79	37.14
SPP	52.65	59.03	24.14	29.35
CAISO	37.88	47.36	32.68	34.14

Note: Lows and highs for each ISO are for various hubs and zones. A full listing of average LMPs are availible for the hubs and zones inside this issue.

Day-ahead bilateral indexes and spark spreads for Apr 22

	Index	Marginal heat rate	Spark spreads @7k	@8k	@10k	@12k	@15k
Northeast							
Mass Hub	48.00	10418	15.75	11.14	1.93	-7.29	-21.11
N.Y. Zone-A	41.75	9344	10.47	6.00	-2.93	-11.87	-25.28
PJM/MISO							
PJM West	45.00	10223	14.19	9.79	0.98	-7.82	-21.03
Indiana Hub	42.50	8966	9.32	4.58	-4.90	-14.38	-28.60
Southeast & Central							
Southern, Into	38.50	8174	5.53	0.82	-8.60	-18.02	-32.15
ERCOT, North	55.00	11847	22.50	17.86	8.58	-0.71	-14.64
West							
Mid-C	28.29	6269	-3.30	-7.81	-16.84	-25.86	-39.40
SP15	47.25	9823	13.58	8.77	-0.85	-10.47	-24.90

Note: All indexes are on-peak. Spark spreads are reported in ($) and Marginal heat rates in (Btu/kWh). A full listing of bilateral indexes and marginal heat rates are inside this issue.

Inside this Issue

The company's current supply plan expires on May 31, 2015 and it has asked for Public Utility Commission approval by January 15, 2015 to provide time to implement the procurement plan.

— Mary Powers

Concerns may spur reforms ...from page 1

also saw 38,033 MW of forced outages in PJM, representing 20% of the RTO's installed capacity, more than double the level of outages in the RTO over the past five years.

But PJM was not alone. The Midcontinent ISO lost 28,736 MW, or 22% of its total generation, due to outages during the cold weather. In contrast, the New York ISO lost 4,135 MW or 10% of its total capacity due to outages, and ISO New England lost only 1,500 MW, or about 5%, of its total due to outages.

A closer examination shows that some systems, particularly PJM and MISO, came close to a more dire outcome. A report examining the polar vortexes and the price spikes in PJM by ICF International concluded that the RTO "'skated too close to the edge,' resulting in unnecessarily record high prices and strains on the grid."

PJM in particular was only 300 MW to 400 MW away from rolling blackouts, according to ICF. If margins were any tighter critical equipment could be put at risk and if that equipment fails, it could trigger cascading failures throughout the grid, it said.

That is "perilously close" to failure, Joe Dominguez, Exelon's senior vice president of government and regulatory affairs, said in an interview. A 160-GW system that claims to have a 20% reserve margins should never be that short, he said. "That is going to need to be examined."

Those concerns have been noted at the Federal Energy Regulatory Commission. Testifying before the Senate Committee on Energy and Natural Resources earlier this month, Acting Chairman Cheryl LaFleur said FERC has to "make sure that the rules are written so that we are properly rewarding the baseload facilities that are very stressed by the short term gas prices."

That is an issue that owners of coal and nuclear plants have been raising for quite some time. Most recently owners of large nuclear fleets have been warning that economic factors could force them to close more nuclear plants.

Exelon in particular has warned that some of its nuclear plants in MISO's southern Illinois region are at risk. Exelon says that subsidized low priced power from wind farms have forced its nuclear plants out of the market. And Exelon and others have noted that low-priced gas fired generation, in conjunction with low capacity prices, is pushing nuclear generation out of the market.

Dominguez noted that during the recent cold weather Exelon's nuclear plants continued to generate power even as a wide range of other resources, from coal and gas plants to wind farms, fell short. Exelon's nuclear plants came through with capacity factors of about 95%, he said.

Since the formation of competitive wholesale markets, FERC has insisted that market design is the best way to accomplish desired outcomes. But the recent cold weather events have brought that stance into question.

"I have consistently said we'll let the markets decide which fuels are the winners based on economics and affordability, but I can't be reliability neutral. On this subject it is just too important," FERC Commissioner Philip Moeller, who also testified at the April 10 Senate energy committee hearing, said.

The fact of the matter, though, is that in most RTOs market rules have favored gas-fired generation. But the recent cold weather highlighted their vulnerability. Gas utilities usually sign firm contracts for gas delivery to serve their customers through the winter. That usually leaves enough interruptible supplies for gas generators, but that was not true during the recent cold weather.

Moeller is also concerned about a coming wave of coal-fired plant retirements that are expected when the Mercury and Air Toxics Standards take effect in April of next year. "In 53 weeks we are going to lose all those MATS plants," Moeller said, referring to a 3 GW to 4 GW "wave" of retirements.

He is particularly concerned by the challenges he sees hitting the MISO region in the summer of 2016. MISO has adjusted its reserve margin to 2 GW from 6 GW, but that estimate assumes customers will be using less electricity. "That is a pretty big assumption to make," he said.

"If we have mild weather for the next two or three years, we might make it through, but if we have extreme weather in the summer or in the winter the system will be extremely stressed and that is where reliability is at stake," Moller said.

One of the areas Moeller is looking at is the interaction of environmental rules and reliability issues, but other industry experts say that FERC helped exacerbate some of the reliability problems with its advocacy of market based treatment of resources such as demand response.

Different RTOs, of course, treat DR differently, but how they treat it can make a big difference in reliability. The extremely high energy prices in PJM this winter were not only due to the very cold weather, but also reflect decisions made by regulators, ICF International said in its report. The report noted that DR accounts for half of PJM's planning reserve margin, and around 80% of that capacity is available only during the summer.

That level of DR participation depresses capacity prices and pushes physical generation out of the market even though that is precisely what is needed because it can be called on the winter, ICF said.

FERC is expected to soon rule on a proposal to reform DR in PJM, but no proposals have yet been formulated to address the subject that FERC has to date left to market mechanisms, the intersection of reliability and fuel choice.

As ICF said in its polar vortex report, the failure of administrative mechanisms, particularly in PJM, to allow gas-fired power plants to include firm fuel transportation costs in their energy market bid prices fails to ensure adequate generation supplies in winter.

Judah Rose, a senior vice president of ICF and one of the authors of that report, went even further in an interview, though he stressed that his opinions were his own and did not necessarily reflect the views of ICF. "FERC and PJM should stop signaling, even inadvertently, that fuel reliability is not needed," he said. "The Cost of New Entrant estimates in all regions (CONE) exclude the costs of reliable fuel supply and are used to suppress capacity prices."

More widely Rose sees the growing role of DR, the growing penetration of renewable resources and the increasing reliance on gas generators with interruptible fuel supplies and questions how the grid will function when all the resources incrementally available are non-firm.

He believes the threat is serious enough to warrant "a systematic and high level study of the Polar Vortex with potential for recommendations to DOE, FERC, Congress and others including new legislation or other legal changes."

That message, voiced by a variety of stakeholders, may be registering with FERC. "There appears to be a growing concern among FERC commissioners about the reliability of the system and the rapid move to natural gas," Paul Patterson, an analyst with Glenrock Associates, said.

Commissioner Moeller, for one, believes the level of pending retirements constitutes a high enough concern that it calls for "a more formal review process" that would include FERC, the EPA, and non-government entities to analyze the details of retiring units as well as the new units and new transmission that will be needed to manage the transition.

Moeller already has asked the industry to supply such information, but said the responses have been contradictory and he is "not exactly confident in a lot of the numbers. That has me very concerned going into the next two or three years."

Exelon's Dominguez goes even further. He argues that the $500 million in uplift fees incurred in PJM in January is a signal of the "failure of energy price formation."

"This winter was a game changer," he said. The current filings before FERC — examining the role of DR, incremental auctions and imports in capacity markets – reflect issues from a year ago. "What we are seeing now is a whole new layer."

Twenty percent of generation did not show up during the polar vortex, he said, and that needs to be examined in light of expectations for auctions that have already been conducted.

— Peter Maloney

MISO, PJM work on scheduling ...from page 1

scheduling intervals, according to a presentation at Friday's meeting. A CTS transaction will clear only when forecasted prices show a premium for the destination ISO at an amount greater than or equal to the spread specified by the market participant in its CTS offer.

CTS was approved by the Federal Energy Regulatory Commission for the New York Independent System Operator and ISO-New England in April 2012 and for NYISO and PJM in February 2014. NYISO expects to implement CTS with ISO-NE towards the end of 2015 and with PJM in November 2014, according to a March 26 NYISO presentation.

During Friday's meeting, officials from PJM and MISO presented data about the current levels of inefficient transactions between the two markets and the potential economic benefits of implementing CTS.

Net scheduled interchange between MISO and PJM was uneconomic — meaning that net flows went from the market with the higher real-time interface price to the market with the lower real-time interface price — in 47.1% of hours during 2013, according to the presentation. The total value of these economically inefficient interface transactions was about $26.7 million, according to the presentation.

The grid operators' analysis of inefficient interface scheduling found a higher percentage of uneconomic flows from PJM into MISO than in the opposite direction in 2013, according the presentation. The presentation also noted that MISO over the course of the year was predominantly an importer from PJM.

The analysis also showed that uneconomic flows decreased when the price differences between the two regions increased, but that "even at relatively higher price differences, a significant proportion of hours were uneconomic – signifying an opportunity for efficiency gains," according to the presentation. Net scheduled interchange was uneconomic in about 35.3% of the hours in which the difference in prices between the two markets was greater than or equal to $20 while net scheduled interchange was uneconomic in about 46.8% of the hours in which the difference in prices between the two markets was greater than or equal to $1.

A cost-benefit analysis conducted by PJM showed that the annual benefits of CTS could range from $17.5 million to about $76.1 million based on data from 2013 depending on the upper limit on how much flow could be adjusted and how closely prices in the two markets would be aligned.

However, during the meeting some stakeholders raised concerns about how the goal of increasing real-time price convergence between the markets by using CTS would be impacted by ongoing efforts in MISO and PJM to improve their interface price definitions. MISO and PJM have been working in recent months to improve their interface pricing definitions after MISO's market monitor raised concerns that the current pricing rules are resulting in double payments and double charges for certain interface transactions, but the ISOs and their market monitors have not yet come to agreement about the best solution.

"When interfaces are defined vastly differently, I don't know how you can expect convergence," one market participant said.

Another market participant said he had reservations about "getting too far ahead of ourselves with the implementation of this new trading product without first reaching some consensus about interface pricing definitions."

Other market participants also raised concerns about how CTS would impact bilateral contracts, the parties to which could be hit with charges if their flow is in the uneconomic direction.

"Adding a cost you can't predict into the mix actually discourages bilateral transactions and that's not something an RTO market should do," one market participant said.

The ISOs will hold another joint meeting on the issue in June and plan to go through their individual stakeholder vetting