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MEGAWATT DAILY

Monday, February 6, 2017

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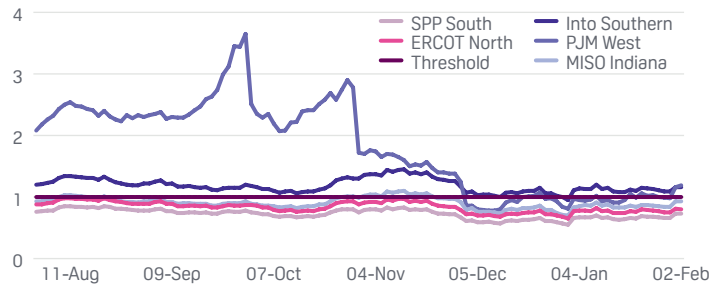
REGIONAL DAY-AHEAD PRICE CHANGES

	Day-ahead peak prices			Regional weather trends		
	04-Feb	Daily chg	Prior 7-day avg	04-Feb	Daily chg	7-day forecast
ISO Price Locations						
CAISO NP 15	29.29	-5.28 ▼	35.62	56.6	-0.9 ▼	59.6
ERCOT North Hub	23.71	-4.17 ▼	25.22	49.3	1.3 ▲	59.5
ISONE Internal Hub	38.67	-2.66 ▼	40.40	25.2	-1.4 ▼	29.3
MISO Indiana Hub	28.47	-4.06 ▼	32.87	23.6	3.8 ▲	29.6
NYISO Zone G	38.72	-4.03 ▼	39.90	26.2	-0.1 ▼	31.1
PJM West Hub	28.83	-2.30 ▼	29.15	27.0	-0.2 ▼	36.1
SPP South Hub	22.99	-8.74 ▼	28.84	36.1	5.0 ▲	43.4
Bilateral indexes						
Into Southern	–	–	26.96	48.7	-3.1 ▼	54.2
Palo Verde	22.25	0.00 —	24.79	56.6	-0.9 ▼	59.9
COB	30.42	0.00 —	32.48	40.6	6.6 ▲	41.4
Mid-C	29.74	0.00 —	31.36	40.6	6.6 ▲	41.4

Source: Platts

COAL-VS-GAS $/MWH FUEL COST RATIOS



The Platts coal-vs-gas fuel cost ratios indicate the regional competitiveness of gas versus coal for power generation. The ratio is calculated by dividing the $/MWh fuel cost for coal by that of gas. Gas generation is cheaper than coal generation when the ratio is greater than one. All price data reflects prompt month fuel contracts.

Source: Platts daily OTC coal prices and M2MS gas prices

PLATTS PEAK DAILY DEMAND (GW)

						Daily change		Five day forecast					Season		Season average			
ISO	31-Jan	01-Feb	02-Feb	03-Feb	04-Feb	Chg	% Chg	05-Feb	06-Feb	07-Feb	08-Feb	09-Feb	Min	Max	2017	2016	Chg	% Chg
BPA-Puget	8.40	9.26	9.31	8.94	7.73	-1.21	-13.53	7.55	8.65	8.59	8.19	7.56	7.11	10.97	9.05	7.99	1.06	13.27
IESO	21.05	20.97	21.82	23.29	21.35	-1.94	-8.33	20.34	22.41	21.77	21.70	23.80	19.17	22.82	20.96	21.60	-0.64	-2.96
CAISO	29.88	30.09	29.91	29.07	26.46	-2.61	-8.98	26.46	29.07	29.13	29.86	30.91	23.38	31.30	29.26	28.57	0.69	2.42
ERCOT	39.21	38.05	40.74	39.57	35.84	-3.73	-9.43	35.87	39.72	41.61	37.91	37.46	33.88	59.65	41.38	41.36	0.02	0.05
SPP	32.41	32.14	31.93	29.79	24.93	-4.86	-16.31	23.49	26.03	25.70	27.46	28.60	27.46	37.66	31.42	32.25	-0.83	-2.57
MISO	82.29	83.31	86.87	92.02	79.30	2.72	-13.82	75.71	81.31	79.40	87.42	92.75	71.51	99.80	83.80	85.01	-1.21	-1.42
PJM	109.22	102.81	106.78	118.43	110.82	-7.61	-6.43	100.46	104.80	96.14	100.84	118.46	87.25	128.85	105.20	107.11	-1.91	-1.78
NYISO	21.96	20.94	21.30	23.32	21.09	-2.23	-9.56	19.46	21.14	20.64	19.81	23.74	16.83	23.63	20.71	21.08	-0.37	-1.76
NEISO	18.28	17.20	17.37	19.04	17.78	-1.26	-6.62	16.14	17.62	17.91	16.47	19.11	13.46	19.58	16.96	17.30	-0.34	-1.97
AESO	10.98	10.89	10.84	10.67	10.33	-0.34	-3.19	10.37	10.77	10.76	10.64	10.20	10.10	11.44	10.90	10.64	0.26	2.44

Seasons are defined as: Summer (June – August), Fall (September – November), Winter (December – February), and Spring (March – May).

Source: Platts

NEWS

FERC grants staff more authority to tackle cases

The US Federal Energy Regulatory Commission on Friday expanded the authority it delegates to staff in one of its last actions before Norman Bay departs and takes with him the quorum needed to act on most of the commission's workload.

The order (AD17-10) was deemed necessary after President Donald Trump designated Cheryl LaFleur acting chairman of the agency, prompting former Chairman Bay to tender his resignation, effective February 3.

Bay's departure leaves LaFleur and Colette Honorable as the only sitting commissioners. Three are needed for a quorum, and Trump has yet to proffer a single name to fill the three open seats at the commission.

A number of delegations of authority to relevant office directors or their designees already exist, including the ability of the Secretary to toll rehearing requests that would otherwise automatically be denied if not acted upon within 30 days.

The order makes clear that these pre-existing delegations will remain in effect.

But given that the loss of a quorum will persist for "an indeterminate period," FERC said it recognized that it had "a continuing responsibility to carry out its regulatory obligations under the various statutes that the commission administers … in an effective and efficient manner consistent with the public interest."

New natural gas and power rate filings, for instance, "would take effect without suspension, refund protection, or the ability for protesting parties to appeal" if the commission sat idly by during the loss of a quorum.

Thus, the commission took steps while it still had three members "to ensure that staff has authority to prevent such filings from going into effect by operation of law during the period in which the commission lacks a quorum."

This order is similar to one in 1993

The order is very much in line with action the commission took in 1993, the last time FERC faced a serious threat of losing its quorum.

An order delegating authority was issued April 16, 1993, when there was a possibility that former Chairman Elizabeth Moler would be the only commissioner remaining a few months into President Bill Clinton's first term.

That was avoided, however, when the so-called "dream team" of James Hoecker, Vicky Baily, Don Santa and William Massey sailed through the Senate confirmation process and joined the commission in the first week of April 1993.

Friday's order takes many of the same steps the 1993 order did, but wisely adds elements, such as a specific delegation to staff for approving uncontested settlements, William Scherman, a partner with Gibson Dunn & Crutcher, said.

Scherman is a former FERC general counsel and helped prepare orders in 1993 that would have been issued to allow some of the commission's caseload to continue under a form of auto-pilot.

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Some rate filings covered by interim process

The new order, effective February 4, will allow the director of FERC's Office of Energy Market Regulation to accept, suspend and make effective, subject to refund, rate and other filings tied to Section 4 of the Natural Gas Act, Section 205 of the Federal Power Act and Section 6(3) of the Interstate Commerce Act.

The director would then either leave the filing alone, subject to further order of the commission, or set it for hearing and settlement judge procedures.

"For initial rates or rate decreases filed pursuant to Section 205 of the FPA, for which suspension and refund protection are unavailable, we also delegate to commission staff authority, pursuant to Section 206 of the FPA, to institute a proceeding to protect the interests of customers," the order added.

Under the order, the director also gains the authority to take action on uncontested filings seeking waivers from tariff conditions, rate schedules and service agreements, including waivers to capacity release and capacity market rules.

As Scherman noted, the director will also be able to accept settlements that are not contested by any party, participant or commission trial staff.

Further, staff will also be able to grant more time to submit filings, comment or take other actions where extensions of time are permitted by statute.

"I think this is a prudent order, and I think that this allows the commission to continue to conduct the vast majority of its business in the absence of a quorum," Scherman said. "But it should not be read as, in any way, obviating the need to get a new member on the commission as soon as possible."

FERC unable to act on major orders, rules, policy changes

FERC will still be unable to act on significant orders, petitions, rules and policy pronouncements as well as contested matters.

On enforcement, investigations can still proceed but the commission cannot issue orders to show cause or initiate action in federal court.

Also, timely requests for rehearing will remain in limbo until a quorum is reconstituted. While staff has had and will retain the authority to toll rehearing requests, the order specifies in a footnote that "authority to act on requests for rehearing is not being delegated."

Massachusetts Democratic Senators Edward Markey and Elizabeth Warren, said in filings with FERC opposing the commission's approval of Spectra Energy's Atlantic Bridge pipeline project, that the lack of a quorum blocks project opponents from having challenges heard by the commission.

In most cases, critics cannot take FERC to court until a rehearing request has been denied. So tolled requests effectively prevent litigation and prolong any perceived harm.

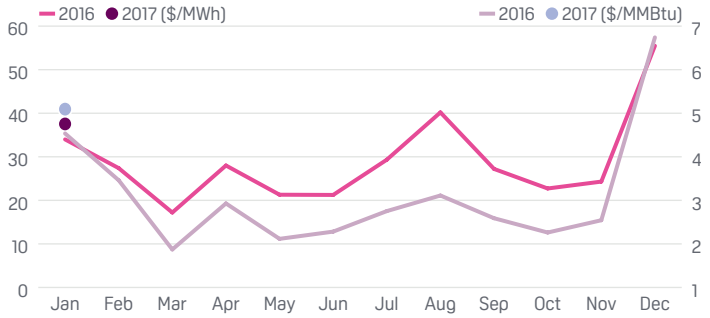
The expanded authorities granted to staff will remain in place until the commission once again has a quorum, and must be lifted within 14 days of that quorum being reestablished, the order said.

— *Jasmin Melvin*

ISO New England interconnection reform OK'd

ISO New England's attorneys have the go-ahead to submit tariff revisions allowing the clustering of interconnection requests for study and cost-allocation purposes after the proposal was endorsed Friday by the New England Power Pool Participants Committee.

ISO NEW ENGLAND AVERAGE REAL-TIME ELECTRICITY, SPOT NATURAL GAS* PRICES



*At Algonquin City-gate
Source: ISO New England, Platts

"The purpose of the Interconnection Clustering Revisions is to provide a clustering mechanism by which projects can be studied and information provided about the needed infrastructure and costs in a transparent way, so that projects can decide whether or not to move forward, and thereby help to reduce or eliminate backlogs in the interconnection queue caused by the lack of transmission infrastructure," according to a memo to the committee from Eric Runge, NEPOOL counsel.

Under the proposal, once a need for clustering two or more projects that would require a transmission upgrade has been identified, the ISO New England Planning Advisory Committee would identify a "Cluster Enabling Transmission Upgrade" as part of the Regional System Planning process, the memo states.

Such a CETU study would determine participation and deposit requirements, provide for withdrawal or backfilling the cluster, calculate cost estimates and determine cost allocation based on distribution factors.

The language would also prioritize the Northern/Western Maine queue backlog as "the first trigger for the clustering provisions ... with the plan being that the initiation of a cluster would commence fairly soon after the effective date of the Interconnection Clustering Revisions," the memo states, and the effective date is expected to be in early May.

David Doot, NEPOOL general counsel and secretary, said in an interview the next step would be for ISO New England attorneys to draft and submit tariff revisions to the US Federal Energy Regulatory Commission as part of a Section 205 filing, which means that FERC would have to either approve or reject the proposal within 60 days. Doot said he expects that filing would be submitted by late February or early March.

Participants face 'uncertainty' in FCA 12

ISO New England plans to start its next Forward Capacity Auction, FCA 11, for the planning year 2020-21, on Monday, said Vamsi Chadalavada, ISO New England chief operating officer.

The ISO is now preparing for qualification for FCA 12, notifying resources by February 24 of existing resource qualifications and values, which will precede FERC's decision on the Interconnection Clustering Revisions.

Doot said prospective participants in the auction will have to

decide how to proceed in the capacity auction "under this period of uncertainty."

The Participants Committee also learned Friday from Chadalavada that the ISO New England average real-time locational price fell sharply from December to January, but stayed above year-ago levels, largely because of a drop in natural gas prices.

Chadalavada presented a written market report showing that real-time LMPs averaged $37.54/MWh in January, down from $55.48/MWh in December, but up from $33.99/MWh in January 2016.

The power price moves may be partly attributed to gas prices, according to Chadalavada's presentation. Algonquin city-gate spot gas averaged $5.09/MMBtu in January, down from $6.741/MMBtu in December, but up from $4.535/MMBtu in January 2016.

The presentation showed that net energy for load was down about 19% from December and about 21% from January 2016.

— *Mark Watson*

FERC rejects MISO capacity auction proposal

The Midcontinent Independent System Operator cannot implement its proposed three-year-forward capacity auction for its competitive retail areas as a result of its rejection Thursday by the US Federal Energy Regulatory Commission.

On November 1, MISO filed a 1,682-page tariff proposal (Docket No. ER17-284) that provides four "options to demonstrate resource adequacy," according to a MISO fact sheet about what the organization calls its "Competitive Retail Solution" for areas that have competitive retail power markets, including Illinois and Michigan. The options are:

- Forward resource auction, in which a load-serving entity buys capacity through a three-year forward auction with a sloped demand curve.
- Forward fixed resource adequacy plan, which an LSE submits so as to be excluded from the FRA.
- Prevailing state compensation mechanism, which a state may establish so as to exclude its demand from the FRA, in which case resource adequacy is demonstrated through MISO's existing prompt-year planning resource auction.
- Long-term resource adequacy planning process, in which a jurisdictional authority may opt to keep competitive retail demand out of the FRA.

MISO currently operates a one-year planning reserve auction designed to meet the incremental capacity needs of the vertically integrated utilities that serve the vast majority of the MISO footprint, but MISO also has competitive retail areas in Illinois and Michigan, which may have less than their internal reserve requirements as early as this summer, according to a 2016 survey conducted jointly by MISO and the Organization of MISO States, a group of regulatory agencies for the MISO footprint.

MISO's forward resource auction resembles the PJM Interconnection's three-year-forward capacity auction model. MISO's planning reserve auction for 2015-16 resulted in capacity prices in the MISO Zone 4 portion of Illinois being much closer to those in the Northern Illinois Hub. MISO's Zone 4 price was $150/MW-day. PJM's Base Residual Auction for 2015-16, conducted in 2012, resulted in a market-clearing price of $136/MW-day for the Northern Illinois Hub. Other capacity prices in MISO's North and Central regions had a clearing price of $3.29/MW-day.

On Thursday, FERC rejected the CRS proposal, finding that it "has not been shown to be just and reasonable and not unduly discriminatory or preferential" (Docket No. ER17-284).

"MISO is evaluating the order and will work with stakeholders to determine next steps," MISO said in a prepared statement Friday. "Initial review suggests that process will be complicated by the lack of detail contained in the order concerning the reasons our proposal was rejected; or guidance that would allow MISO to better determine alternative paths to ensure reliability in competitive retail areas."

'Uncertain, ... potentially adverse, impacts'

Applying the proposed forward resource auction only to load in the competitive retail areas, primarily Illinois and Michigan, FERC said, would result in a "bifurcated approach" which "could have uncertain, and potentially adverse, impacts on price formation in both the forward auction and the prompt auction."

Such a bifurcated approach "will likely result in clearing prices and capacity resource selections that lack the desirable properties associated with a single marketwide clearing price," the FERC order said.

"Due to the bifurcated structure, which requires owners of these supply resources to decide whether to offer into the forward auction more than three years prior to the prompt auction for the same planning year, it is not clear the extent to which these supply resources will offer into the forward auction or how this uncertainty will impact clearing prices in the forward and the prompt auction," the FERC order said. "Such unpredictable and variable supply participation could result in significant and unnecessary price volatility in both the forward and the prompt auction."

But MISO said Friday that the bifurcated approach was "intentional and a key element of the CRS design."

"It is intended to address the needs of retail choice areas, while preserving the benefits currently derived by most of MISO's footprint through the current construct," MISO said.

Industry observers unsurprised by decision

One of the 20 commenters in the proceeding who opposed MISO's Competitive Retail Solution, David Patton, president of Potomac Economics, MISO's independent market monitor, said Friday that the FERC order "does not surprise me."

"FERC recognized the same economic problems with the MISO proposal that we have been raising with MISO and its stakeholders for the past year," Patton said in an email. "If MISO chooses to maintain its current Planning Resource Auction, it has the option of proposing the 'Prompt Alternative' proposal described in our comments, which would efficiently address the competitive retail planning needs."

Potomac Economics' proposal included providing one auction in which, in effect, only merchant generators could offer capacity for competitive retail load, and another auction in which any generator could offer to serve other types of load. Both of these would occur at the same time.

William Booth, a Washington-based energy attorney in the firm of Michael Best & Friedrich, said he, too, "was not surprised" by FERC's rejection of MISO's three-year-forward capacity auction proposal.

Although the eight-page FERC order did not cite arguments presented by commenters, Booth said, "There was an awful lot of opposition to the CRS proposal, and it was curious that there were no comments filed by Illinois."

"It doesn't seem like Illinois asked MISO to help them with their resource adequacy issue," Booth said. "I don't think Michigan asked MISO to address their limited resource adequacy issue. ... Perhaps MISO should take this as an opportunity not to follow up but to leave resource adequacy where it is, with the states."

Different demand curves 'could amplify volatility'

FERC's order states that small changes in supply participation in the FRA by resources in the noncompetitive areas "could result in substantial unnecessary year-to-year differences in forward auction clearing prices, even with a downward sloping demand curve that should reduce price volatility."

Conducting the FRA and PRA at different times could cause prices to diverge "even when such divergence is not supported by underlying supply and demand fundamentals," the order said.

Also, retaining a vertical demand curve in the PRA while applying a sloped demand curve in the FRA "would allow for variable amounts of capacity to clear in the forward auction, which could amplify volatility in the prompt auction," the order said.

Another problem with MISO's CRS proposal is that "MISO has not adequately explained or provided clear tariff language to demonstrate that the CRS proposal would reasonably allocate transmission capability across capacity zones and across sub-regions in the MISO footprint between the forward auction and the prompt auction," FERC said.

"In past prompt auctions, transmission capability constraints between zones and sub-regions have caused substantial price separation," the order said, but "the proposed bifurcated clearing mechanism requires MISO to choose how much transmission capability to allocate between the prompt auction and the forward auction, which could lead to improper or inefficient allocations."

— *Mark Watson*

FTR market value climbs again in February

Market value for prompt-month financial transmission rights obligations for February came in higher compared with both month- and year-ago levels for the second month in a row (*see FTR tables, pages 10-13*).

Total market value in the February FTR auctions for obligation contracts was $96.7 million, up 9% from January's total market value and 25% from what cleared in the February auction a year ago. Similar to last month, the higher value comes as supply of contracts was down both month on month and year on year. Total cleared FTR obligations in February amounted a market volume of 139.3 GWh.

FTRs — also known as congestion revenue rights, transmission congestion contracts and transmission congestion rights in some markets – are financial instruments that allow market participants to hedge against congestion on the electric grid. An FTR obligation contract entitles the contract owner to either be charged or receive compensation when there is congestion between specific points on the grid in day-ahead electricity markets.

Market value climbs on higher prices for contracts

The higher market value for the February auctions was supported by higher prices for on- and off-peak contracts in both positive and negative price categories. Weighted-average prices for on- and off-peak contracts in the positive price category cleared 16% and 18% higher, respectively, relative to January's prices. For the negative price category on-peak contracts cleared at an 8% premium over the previous month while off-peak contracts saw weighted average prices edge up 3%.

With FTRs, a positive price means that the contract buyer had to pay the ISO for the contract. A negative price means that buyers are being paid by the ISO to take on the risk of congestion in the opposite direction of the historical prevailing path flow.

Positive contracts accounted for 63% of the total market volume in February, down one percentage point from the previous month. On-peak contracts represented 51% of the cleared volume in both price categories, while off-peak contracts accounted for 43% of contracts. The remaining 6% was represented by baseload contracts covering congestion across all hours of the day.

Purchased contracts fall on higher sold volumes

Purchased contracts across both positive and negative price categories accounted for 82% of the market, down from 85% in January. The slip in purchased contracts was met by market participants selling an increased volume of contracts, which accounted for 18% of the market, up 3% points from the previous month.

PJM and MISO accounted for 52% of the market, up five percentage points from January with the combined shift coming primarily as a result of ISO-NE seeing cleared contract volumes coming in 68% lower compared to last month.

— *Jonathan Nelson*

Shell earnings decline, but US trading is stable

Royal Dutch Shell reported Thursday $1.0 billion in earnings attributable to shareholders in the fourth quarter of 2016, 44% below the $1.8 billion total in the fourth quarter of 2015. CEO Ben Van Beurden called 2016 a "transition year" in which the integration of gas company BG was a top priority.

The company also launched a divestitures program and sought cost and capital investment reductions, all against a backdrop of low commodity prices. Its Houston-based trading teams, however, kept their second-place rankings in North American natural gas and US wholesale power markets.

Shell's full-year 2016 earnings attributable to shareholders were $3.5 billion compared with $3.8 billion in 2015, an 8% decline.

Much of the "re-focusing" of the company has to do with Shell's $52 billion acquisition of the BG Group in 2016.

Van Beurden said that in full-year 2016 oil and gas production averaged 3,668 thousand boe/d, an increase of 24% compared with 2015.

He said that Q4 LNG liquefaction volumes increased 51% year over year to 8.57 million metric tons, "of which BG contributed 2.37 million mt." Full-year 2016 LNG liquefaction volumes were 30.88 million mt — with BG contributing 8.56 million mt — compared with 22.62 million mt

SHELL ENERGY NA GAS SALES

Quarter	Bcf/day (1)
Q1-15	11.4
Q2-15	9.5
Q3-15	9.8
Q4-15	10.2
Q1-16	10.7
Q2-16	9.5
Q3-16	10.6

(1) Quarterly average wholesale physical natural gas volumes sold in North America.

Source: Shell Energy

SHELL ENERGY NA POWER SALES (MWh) (1)

Quarter	CAISO	ERCOT	ISONE	PJM	Total
Q1-15	1,741,426	41,217,893	2,182,396	11,497,750	59,126,395
Q2-15	1,302,654	45,572,895	1,485,911	10,428,553	62,316,510
Q3-15	1,356,409	56,653,532	1,733,519	11,780,400	76,029,106
Q4-15	1,578,728	41,373,072	1,371,301	9,924,600	59,567,026
Q1-16	1,854,992	39,759,681	1,722,769	11,035,199	59,437,886
Q2-16	1,514,663	43,048,773	1,478,191	9,584,780	60,925,554
Q3-16	1,638,134	51,790,704	1,744,182	12,111,706	72,221,564

(1) Wholesale power sales in the United States.

Source: FERC filings compiled by Platts

in 2015.

LNG sales volumes of 15.34 million mt for fourth-quarter 2016 were 51% higher than for the same quarter a year ago, mainly reflecting "Shell's enlarged portfolio following the acquisition of BG." Full-year 2016 LNG sales volumes were 57.11 million mt, the company said in its earnings release.

Van Beurden said Shell wants to "simplify its portfolio," and is engaged in an asset sales program that is expected to total $30 billion "for 2016 to 2018." He called the company's divestment program "value-driven, not time-driven."

Capital investment in 2016 was $27 billion, $20 billion below the 2014 level, Van Beurden told analysts. "In 2017 we are moving to the low end of our range at around $25 billion, and that includes non-cash items."

The Shell CEO said he wants to reduce carbon intensity. He said, "Shell, in a consortium, has been awarded the tender for the Dutch offshore windfarms Borssele III and IV, which, together have a capacity of 680 MW. This demonstrates that Shell is preparing for — and investing in — the challenges and opportunities that the energy transition offers."

He said that the re-shaping of Shell is "starting to show." In 2016, the net reductions in staff was 6,500, which is ahead of the 5,000 employees the company said would leave Shell in 2016.

In 2016, it made progress in closing 25 offices, "including office moves in Houston from One Shell Plaza to Woodcreek, and in London. These are big moves to re-shape Shell."

Shell's gas and power trading is still highly ranked

Shell Energy North America is the primary marketer of Shell's natural gas production in North America. It claims access to production in gas fields in the Rockies, South Texas, Haynesville, Marcellus, Gulf of Mexico and in Canada.

Shell produces approximately 1.5 Bcf/d. SENA says it "fortifies" its supply by buying gas from other producers. Though 2015 and through to the end of third-quarter 2016, the company had average quarterly wholesale physical gas sales in North America of 10.24 Bcf/d.

In Platts *Gas Daily*'s ranking of North American gas marketers, Shell Energy North America routinely comes in second place to BP, and just ahead of Macquarie Energy.

As a seller of quarterly wholesale power in the US, Shell routinely comes in second behind Exelon Generation & Affiliates in Platts *Megawatt Daily*'s ranking.

Shell says it "manages 5,000 MW of power generation across North America." It has a handful of tolling agreements with generators. In many instances the firm acts, however, as a middle-man that arranges supplies for hundreds of townships and retail electricity providers across the country.

Shell's power trading operations are based in Houston, and its largest trading market is the Electric Reliability Council of Texas where, in third-quarter 2016, it executed 71% of all of its 72.2 million MWh of wholesale power sales in ERCOT.

— *Jeffrey Ryser*

FERC OKs PJM transmission rights reforms

Certain PJM Interconnection transmission auction revenue rights reforms went into effect Wednesday as a result of the US Federal Energy Regulatory Commission's acceptance of a compliance filing regarding ARRs and financial transmission rights.

The PJM November 14 compliance filing at issue tackled new requirements in a September 15 FERC order that sought to remedy problems with PJM's market for hedging transmission congestion price risk (EL16-6, ER16-121).

Auction revenue rights are allocated to firm transmission customers for their investment in the grid and can be converted into financial transmission rights, which are financial instruments used to offset market participants' transmission congestion costs in the day-ahead market. If holders of ARRs wish, they can hold them to receive revenue from the FTR auction.

For years, PJM has struggled to pay for FTRs that entitle their holders to a stream of revenue or charges based on the day-ahead price difference across a transmission path.

PJM had previously determined that the over-allocation of auction revenue rights was exacerbating the revenue inadequacy problem.

In the September 15 order, FERC "required PJM to revise its tariff to remove the use of historical generation resources for requested ARRs" in the first stage of the allocation process "to the extent those resources are no longer in service," Tuesday's FERC order states.

In September, FERC "agreed with PJM that FTR underfunding can be reduced by excluding from the FTR settlement process the real-time cost of a congestion imbalance, a cost that is not related to day-ahead congestion," Tuesday's order noted.

The ARR-related reforms in the order include allowing commercial generators to replace retirements across load zones, rate-based generators only to replace retirements within a load zone, and replacements only to be based on economics and feasibility, a PJM media release states.

Real-time M2M payments in balancing congestion

The order also allows inclusion of real-time market-to-market payments in balancing congestion, which will be allocated pro-rata to

real-time load plus exports, based on gross demand.

The ARR-related items went into effect on Wednesday, and the balancing congestion changes become effective June 1.

However, FERC required PJM to submit another compliance filing by March 2 to include details in the tariff and operating agreement about how PJM determines new ARR source points and to remove the requirement that FTR surpluses be allocated to ARR holders.

In its order on Tuesday, FERC denied a request for rehearing of the September 15 order.

— *Mark Watson*

FERC rules on IP&L's battery storage complaint

The US Federal Energy Regulatory Commission has given the Midcontinent Independent System Operator 60 days to make a compliance filing after granting an Indianapolis Power & Light energy storage complaint involving the utility's 20 MW utility-scale battery storage facility in downtown Indianapolis.

In a Wednesday order, FERC found MISO's Open Access Transmission, Energy and Operating Reserve Tariff to be "unjust, unreasonable, and unduly discriminatory or preferential because it unnecessarily restricts competition by preventing electric storage resources from providing all the services that they are technically capable of providing, which could lead to unjust and unreasonable rates."

FERC did not, however, approve another request by the AES subsidiary to be paid for the battery service, which the utility maintained is essential for grid stability.

IP&L filed the complaint on October 21, 2016.

IP&L asserted that its lithium ion battery facility, located at its 700 MW Harding Street generating station in downtown Indianapolis that recently was converted from coal to natural gas, is capable of providing other types of services for which it could be compensated.

For example, the utility said the battery facility meets the definition of "load modifying resource" under the MISO tariff and is capable of delivering 5 MW of energy for four continuous hours.

However, the tariff provisions under MISO's "stored energy resource" type "are the only provisions that account for the unique attributes of electric storage resources, and they limit the participation of electric storage resources, such as the battery facility," FERC said.

FERC questions MISO market participation rules

FERC agreed with IP&L that electric storage resources such as the battery facility should not be required to participate in MISO markets by using rules that were designed for other types of resources, such as demand response resources, generation resources or use-limited resources, "because those participation models do not accommodate the unique features of electric storage technologies."

Requiring electric storage resources to use participation models designed for a different type of resource "may fail to recognize electric storage resources' physical and operational characteristics and their capability to provide energy, capacity and ancillary services in MISO," FERC added.

As a result, the federal agency found MISO's failure "to recognize the unique physical and operational characteristics of electric storage resources could unnecessarily restrict competition by preventing electric storage resources from providing all the services that they are technically capable of providing, which could lead to unjust and unreasonable rates."

FERC gave MISO, a Carmel, Indiana-based grid operator in 15 states plus the Canadian province of Manitoba, 60 days to propose tariff changes "that accommodate the participation of all electric storage resources, regardless of the technology, in all MISO capacity, energy and ancillary service markets."

Nevertheless, FERC denied IP&L's request to be compensated for being a supplier of "primary frequency response."

IP&L spokeswoman Brandi Davis-Handy said in a Friday email that IP&L filed the complaint "to bring awareness of both the benefits of lithium ion battery storage and the regulatory challenges."

While FERC did not grant IP&L's request to be paid for the battery service, "they instead chose to make the provision of this service as a condition of interconnection with the grid," she noted. "We anticipate further discussions around this topic as the resource mix continues to change and the unique benefits of battery storage become more universally understood."

IP&L plans no additional battery storage projects

Although IP&L will continue to promote the benefits of battery energy storage for its 450,000 customers, Davis-Handy added, at this time "there are no current plans under way for IP&L to develop a battery storage system."

MISO spokesman Jay Hermacinski said in a Friday email that while the grid operator is still reviewing the FERC order, it was pleased the agency resolved the complaint "in a manner that affirms our broad approach to open and efficient markets."

The order "appears to align well" with MISO's existing efforts around storage integration, he said, and while a compliance filing is required by the order, "we believe the resulting market design changes are consistent with work already planned in the MISO market roadmap."

DAILY CSAPR ALLOWANCE ASSESSMENTS, FEB 03 ($/st)

	$/st	2016 Range	$/st	2017 Range
NOx Annual	5.00	3.00-8.00	5.00	3.00-8.00
NOx Seasonal	125.00	100.00-150.00	440.00	350.00-550.00
SO_2 Group 1	2.50	0.50-5.00	2.50	0.50-5.00
SO_2 Group 2	3.25	0.50-6.00	3.25	0.50-6.00

RGGI CARBON ALLOWANCE FUTURES, FEB 2 ($/allowance)

ICE	Settlement	Volume
Dec17 V16	3.97	0
Dec18 V16	4.09	0
Dec19 V16	4.22	0
Dec17 V17	3.97	100
Dec18 V17	4.09	0
Dec19 V17	4.22	0
Dec17 V18	3.97	0
Dec18 V18	4.09	0
Dec19 V18	4.22	0
Dec17 V19	3.97	0
Dec18 V19	4.09	0
Dec19 V19	4.22	0

The Regional Greenhouse Gas Initiative is a carbon cap-and-trade program for power generators in nine Northeast and Mid-Atlantic US states. One RGGI allowance is equivalent to one short ton of CO2. The volume listed is the number of futures contracts traded. Each futures contract represents 1,000 RGGI allowances.

Hermacinski said MISO intends to work with IP&L and other stakeholders "to build on prior successes as we develop the full storage participation model going forward."

During the past couple of years, IP&L has been transitioning its once coal-dominant coal fleet to natural gas. Besides converting Harding Street from coal to gas, the utility last year retired its 341 MW Eagle Valley baseload coal plant near Martinsville, where it is constructing a 650 MW combined-cycle gas plant.

IP&L's only remaining coal plant is the 1,700 MW Petersburg baseload generating station in Pike County, Indiana, about 100 miles southwest of Indianapolis.

— *Bob Matyi*

PG&E grid planning lacks public input: complaint

Pacific Gas & Electric should be required to open its transmission planning process to the public, according to a complaint filed with federal regulators by the California Public Utilities Commission and others.

PG&E conducts about 80% of its transmission planning, equalling about 60% of its annual capital investment, internally without stakeholder involvement, in violation of the US Federal Energy Regulatory Commission Order 890, according to the complaint filed Thursday (EL17-45).

"Transmission owners have an obligation to conduct all of their transmission planning in accordance with a suite of principles laid out in Order No. 890 — principles which require transparency, stakeholder involvement, and full access to the data and analyses underlying each transmission plan," said the complaint filed by the CPUC, the Northern California Power Agency, the City and County of San Francisco, the State Water Contractors and the Transmission Agency of Northern California.

In July, PG&E asked FERC for a $387 million, or 29%, transmission rate hike. In the request, PG&E noted that only 40% of its transmission capital expenses for 2016 and 2017 were submitted in the California Independent System Operator's transmission planning process or for generation interconnection upgrades, according to the complaint, which noted that the remaining projects are authorized by PG&E's chief financial officer and project managers.

"PG&E is carrying out those projects without providing stakeholders any opportunity to evaluate whether they are needed, whether they are efficient, or even what they constitute," the complaint said. Neither Cal-ISO nor the CPUC reviews the projects, which include substation and transmission line replacements and upgrades.

The current process leaves PG&E customers without a safeguard against rapidly escalating transmission rates, which have increased by 9.7% on average over the utility's last 11 rate cases, filed nearly annually, according to the complaint.

$1.5 billion this year and last falls outside external review

Out of PG&E's $2.5 billion in expected capital expenditures for transmission this year and last year, $1.5 billion falls outside of external reviews, the complaint said.

The PUC and others asked FERC to order PG&E to provide an open transmission planning process for projects that don't fall into Cal-ISO's transmission process. "That process must include an opportunity for stakeholders to review and comment on PG&E's planning criteria, assumptions, models, and proposed solutions, consistent with Order No. 890," the complaint said.

As an alternative, if supported by Cal-ISO, PG&E could have all its projects go through the grid operator's planning process, according to the complaint.

FERC was asked to act quickly on the complaint and in the meantime order PG&E to establish a stakeholder transmission planning group and to give the group "full and accurate" information on its transmission projects that don't fall under ISO review.

— *Ethan Howland*

OUTAGES

GENERATION UNIT OUTAGE REPORT

Plant/Operator	Cap	Fuel	State	Status	Return	Shut
Northeast						
Beck-2 PGS/OPG	103	h	Ont.	MO	Unk	01/30/17
Darlington-2/OPG	887	n	Ont.	MO	Unk	10/14/16
Destec/Destec Energy	140	g	Ont.	MO	Unk	02/01/17
Fitzpatrick/Exelon	852	n	N.Y.	RF	Unk	01/15/17
Lake Superior/Brookfield	120	g	Ont.	PMO	Unk	11/04/14
Lennox-1/OPG	525	g	Ont.	MO	Unk	01/30/17
Lennox-4/OPG	525	g	Ont.	MO	Unk	02/01/17
Npiroqfalls/Iroquois	131	g	Ont.	MO	Unk	01/03/17
Pickering-5/OPG	516	n	Ont.	MO	Unk	02/03/17
Ta Douglas/TransAlta	122	g	Ont.	MO	Unk	12/07/16
PJM & MISO						
Southeast & Central						
River Bend-1/Entergy	979	n	La.	RF	Unk	01/28/17
Saint Lucie-1/FP&L	1078	n	Fla.	MO	Unk	02/01/17
West						
Belden/PG&E	119	h	Calif.	PMO	Unk	10/24/16
Broadview-2/Pattern	167	w	N.M.	MO	Unk	01/30/17
Delta Energy/Calpine	880	g	Calif.	PMO	Unk	01/30/17
El Segundo 5-6/NRG	263	g	Calif.	MO	Unk	01/05/17
Encina-4/NRG	300	g	Calif.	PMO	Unk	01/08/17
Huntington Beach-1/AES	226	g	Calif.	PMO	Unk	01/29/17
Pio Pico-1/Apex	106	g	Calif.	MO	Unk	01/19/17
Redondo-6/AES	175	g	Calif.	MO	Unk	02/01/17
Sunrise/ChevronTexaco	586	g	Calif.	PMO	Unk	02/01/17
Sutter/Calpine	525	g	Calif.	MO	Unk	06/06/16

Daily generation outage references: MO=unplanned maintenance outage; RF=refueling outage; PMO=planned maintenance outage; Unk=unknown; OA=offline/available. Fuels: Nuclear=n; Coal=c; Natural gas=g; Hydro=h ; Wind=w; Solar=s

Sources: Generation owners, public information and other market sources.

APS' market-based rates safe; FERC probe ends

Arizona Public Service may continue to sell wholesale power at market-based rates in the Tucson Electric balancing authority area, the US Federal Energy Regulatory Commission said last Monday, after additional evidence from the company rebutted the presumption of market power in the BAA.

FERC launched a Federal Power Act section 206 investigation into APS (EL16-36) last February that put the utility at risk of losing its market-based rate authority in the Tucson area.

The probe was initiated following FERC's triennial review of Southwest utilities' updated market power analyses. APS' filing

submitted December 22, 2015, as part of that review revealed that it passed the pivotal supplier and wholesale market share indicative screens in the first-tier BAAs in the Southwest region, with the exception of failing the wholesale market share indicative screen in the Tucson Electric BAA.

The utility submitted a delivered price test analysis to rebut the presumption of horizontal market power inherent in failing that screen, but the commission concluded that it had adequate information to start a federal investigation of the justness of market-based rate authority for the utility in the Tucson Electric BAA, an order issued February 22, 2016, said.

APS filed additional information with the commission in April. That filing acknowledged that it failed to pass a market-power screen for the 2014 summer season, an indicator that its wholesale rates may no longer be just and reasonable within the BAA at issue, but insisted that its failure was "not an accurate indicator of APS' market power in the Tucson Electric" BAA, according to FERC's order Monday.

APS noted that its DPT analysis, covering the four season/load periods in the summer season, showed "fairly robust competition in the Tucson Electric" BAA in the base case, low price and high price scenarios.

FERC, however, did not rely on the results of the DPT to form its conclusions as APS did not include all 10 season/load periods in its analysis.

"Because the indicative screens are only intended to screen out sellers that raise no horizontal market power concerns, we find that sellers opting to submit a DPT to rebut the presumption of market power must comprehensively analyze 10 season/load periods even if the indicative screen failure(s) only occurred in a single season," FERC explained.

The commission said it also did not find persuasive in rebutting the presumption of market power APS' argument that it does not have generation and transmission rights in the Tucson Electric BAA.

"As long as APS possesses sufficient uncommitted generation capacity, and there is transmission available to deliver that uncommitted capacity to the destination market such that it triggers a screen failure, that raises a concern regarding horizontal market power," the commission said.

"Nevertheless, based on APS' other alternative evidence, we find, on balance, after weighing all other relevant factors, that APS has rebutted the presumption of market power in the Tucson Electric balancing authority area," it said.

Among that alternative evidence, FERC said, was a supplemental indicative screen analysis APS submitted for the 2015 and 2016 time periods, which showed that "APS passes the pivotal supplier analysis and the wholesale market share analysis in more current study years."

Accordingly, APS' wholesale market share in the Tucson Electric BAA drops to 15.8% in the 2015 summer season and falls further to 13.3% in the 2016 study period, compared with 22.4% for the 2014 summer season that failed the market-power screen.

The dips in APS' wholesale market share in the Tucson area for the 2015 and 2016 periods are primarily due to Tucson Electric's acquisition of Gila River Blocks 2 and 3; the retirement of APS' 206 MW Cholla Unit 2 in the APS BAA; and the expiration of some of APS' call option contracts, the utility has said.

Monday's order accepts APS' updated market power analysis and officially terminates the section 206 proceeding.

— *Jasmin Melvin*

FTR MARKET REPORT FOR FEBRUARY 2017

Top 50 participants by volume

Participant	Total GWh	Total dollars	Net neg. dollars	Net pos. dollars
Saracen Energy	10,029	7,058,268	-2,514,819	4,543,448
DC Energy	8,895	4,954,043	-1,683,337	3,270,706
NRG Energy	7,306	5,087,765	-2,841,478	2,246,287
Exelon Generation	5,749	11,863,953	-2,490,116	9,373,837
MAG Energy Solutions	4,818	1,434,656	-557,622	877,033
Vitol	4,532	2,657,048	-837,298	1,819,749
Castleton Commodities	4,414	2,315,373	-1,063,311	1,252,062
Tower Research Capital	4,193	2,984,362	-961,825	2,022,537
EDF Trading	3,906	2,853,850	-1,529,691	1,324,159
Noble Americas	3,742	1,500,794	-808,324	692,470
Monolith Energy	3,596	1,695,153	-1,168,776	526,377
Parma Energy	3,288	632,692	-378,887	253,805
Velocity American Energy	3,023	810,393	-443,839	366,554
NextEra Energy	2,956	1,723,867	-781,971	941,896
Shell Energy	2,788	2,061,049	-938,009	1,123,040
Engelhart CTP	2,328	575,756	-234,969	340,787
Luminant Energy	2,257	1,484,829	-147,826	1,337,003
Appian Way Energy Partners	2,199	2,761,705	-867,518	1,894,187
BioUrja Power	2,069	1,490,370	-841,753	648,617
SESCO Enterprises	1,795	2,186,491	-993,634	1,192,857
Hemsworth Capital	1,731	1,462,411	-975,998	486,412
Elmagin Power Fund	1,701	320,353	-268,514	51,839
J Aron	1,689	1,071,590	-699,820	371,770
LM Power	1,684	621,183	-48,371	572,812
Citigroup	1,642	3,613,983	-2,451,961	1,162,023
Z Global	1,614	151,259	-151,259	0
Perdisco Trading	1,575	150,091	-125,878	24,213
XO Energy	1,533	465,630	-229,808	235,822
Freepoint Commodities	1,352	1,961,418	-117,050	1,844,367
GRG Energy	1,347	786,708	-468,151	318,557
Uncia Energy	1,340	620,447	-583,429	37,018
Mercuria Energy America	1,210	521,086	-238,360	282,725
Manatee Transmission	1,173	326,749	-92,644	234,106
Tyne Hill Investments	1,170	169,009	-103,145	65,863
Clover Energy	1,144	654,070	-341,241	312,829
Canopus Power Trading	1,142	631,695	-157,354	474,341
Direct Energy	1,136	1,149,737	-588,609	561,128
ELMISO	1,133	614,450	-417,190	197,260
E.ON Global Commodities N. A.	1,123	282,799	-212,654	70,145
ATNV Energy	1,042	196,565	-67,148	129,417
Kansas City Power & Light	1,023	735,519	-158,575	576,944
Macquarie Energy	881	1,202,861	-380,687	822,174
Apogee Interactive	822	567,702	-228,570	339,132
TransAlta Energy	798	463,646	-131,398	332,248
Intergrid Mideast Group	790	253,143	-131,086	122,057
Cumulus Master Fund	706	1,795,329	-53,467	1,741,862
BP Energy	670	606,879	-395,541	211,339
Koch Energy Services	666	185,848	-149,939	35,909
Ames Energy	644	159,427	-151,662	7,765
Blackout Power Trading	623	112,537	-9,101	103,435

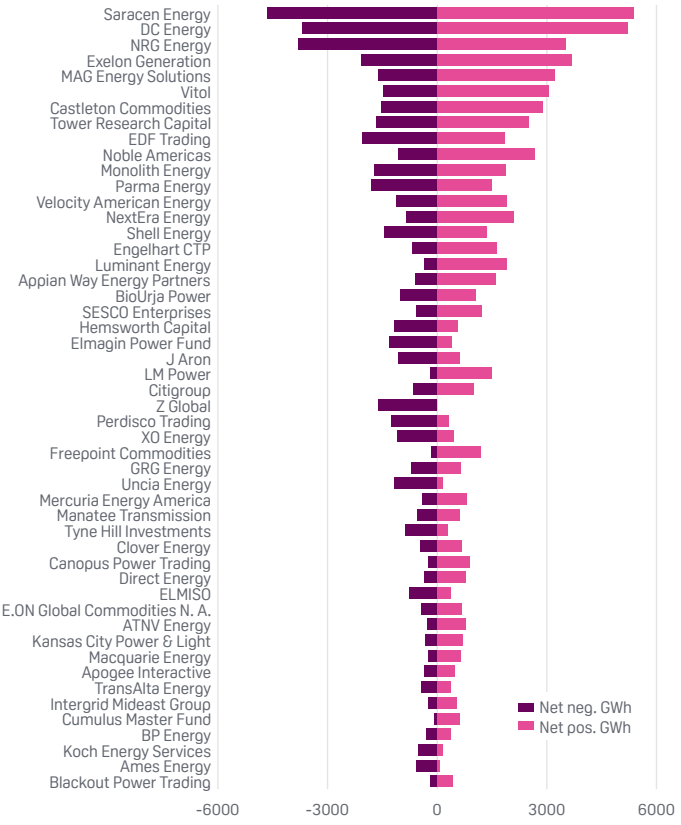
FTR MARKET REPORT FOR FEBRUARY 2017

RTO activity ranked by volume

RTO	Total GWh	Net neg. GWh	Net pos. GWh	Participants
PJM	37,161	-19,516	17,645	97
MISO	34,953	-16,704	18,248	87
CAISO	23,272	-9,306	13,965	51
SPP	21,161	-4,676	16,485	61
ERCOT	13,174	-5,581	7,593	42
NYISO	5,969	-2,839	3,130	30
ISONE	3,627	-922	2,705	25
Grand total	139,316	-59,544	79,772	393

RTO activity ranked by total dollars

RTO	Total dollars	Net dollars	Net neg. dollars	Net pos. dollars
MISO	22,582,015	274,654	-11,153,681	11,428,334
PJM	22,370,072	2,471,397	-9,949,338	12,420,735
SPP	17,346,782	10,484,900	-3,430,941	13,915,841
NYISO	14,855,341	3,121,782	-5,866,779	8,988,561
ERCOT	10,341,807	2,701,087	-3,820,360	6,521,447
CAISO	8,395,411	2,348,846	-3,023,282	5,372,128
ISONE	850,429	667,018	-91,705	758,724
Grand total	96,741,857	22,069,684	-37,336,086	59,405,771



Platts' compilation, analysis of FTR auctions

Platts each month compiles and analyzes data from the seven financial transmission rights auctions held each month by regional transmission organizations. FTRs are a hedging tool to protect market participants from the risk of congestion on the grid between specific points, which is reflected in higher prices.

Generally, companies that want to protect themselves against day-ahead congestion costs buy positive or prevailing-flow contracts that pay out if there is congestion. Also sold in auctions are negative or counterflow contracts, for which FTR holders receive a payout in the auction but are required to pay if there is congestion in the day-ahead market. Several ISOs also allow participants to sell back their existing FTR contracts in the auctions. Auction activity can be described in terms of the total volume and price of FTRs cleared in the auction, as well as in terms of positive and negative flow FTRs, and the net volume and value of contracts sold—net positive contracts (positive and zero-priced FTRs purchased by market participants and negative FTRs sold by market participants) minus net negative contracts (negative FTRs purchased by market participants and positive and zero-priced FTRs sold by market participants).

The graphs and tables are based on data from the individual RTO auctions and include only trading of FTR obligations for the prompt month. Some RTOs offer multiple time periods during their monthly auctions as well as options contracts, but those types of FTRs are not included in this feature.

Some market participants have multiple affiliates which trade FTRs. The data has been consolidated, combining entities from the same parent company, umbrella company or organization.

For questions, please contact Jonathan Nelson at (720) 264-6621 (jnelson@spglobal.com) or Matthew Eversman at (713) 655-2238 (matthew.eversman@spglobal.com)

FTR MARKET REPORT FOR FEBRUARY 2017

RTO breakout top 10 positive and negative contract paths by total dollars

Source	Sink	Shape	Total $	Total MWh	$/MWh	Contracts
CAISO						
Positive paths						
PALOVRDE_ASR-APND	TH_SP15_GEN-APND	Peak	274,038	178,875	1.53	11
SYLMARDC_2_N501	TH_SP15_GEN-APND	Peak	135,438	127,293	1.06	5
SYLMARDC_2_N501	TH_NP15_GEN-APND	Peak	115,937	59,285	1.96	4
MALIN_5_N101	CAPTJACK_5_N510	Peak	103,929	42,097	2.47	4
MALIN_5_N101	CAPTJACK_5_N504	Peak	93,648	37,933	2.47	2
MALIN_5_N101	TH_NP15_GEN-APND	Off-peak	89,807	46,261	1.94	6
MALIN_5_N101	CAPTJACK_5_N504	Off-peak	56,368	32,468	1.74	5
WESTWING_5_N501	TH_SP15_GEN-APND	Peak	52,466	26,549	1.98	3
MALIN_5_N101	CAPTJACK_5_N506	Peak	50,221	20,342	2.47	2
MALIN_5_N101	CAPTJACK_5_N510	Off-peak	48,750	28,080	1.74	3
Negative paths						
POD_OTMESA_2_PL1X3-APND	TJI-230_2_N101	Peak	151,088	6,780	-22.28	6
VALLEYSC_1_N038	ROA-230_2_N101	Peak	65,324	10,368	-6.30	3
ELCENTRO_2_N001	TJI-230_2_N101	Peak	60,801	3,840	-15.83	1
POD_MRGT_6_MMAREF-APND	TJI-230_2_N101	Peak	45,221	1,920	-23.55	1
DLAP_SCE-APND	MALIN_5_N101	Off-peak	44,529	31,250	-1.42	4
POD_LARKSP_6_UNIT 1-APND	TJI-230_2_N101	Peak	38,624	1,808	-21.36	3
POD_TRNSWD_1_QF-APND	ROA-230_2_N101	Peak	32,706	6,758	-4.84	1
IMPRLVLY_2_B2	ROA-230_2_N101	Peak	31,454	15,360	-2.05	3
DLAP_SDGE-APND	ROA-230_2_N101	Peak	31,291	3,979	-7.86	1
POD_GARNET_2_WIND1-APND	ROA-230_2_N101	Peak	29,206	6,067	-4.81	1
ERCOT						
Positive paths						
HB_NORTH	HB_HOUSTON	Peak	1,038,925	227,360	4.57	19
HB_WEST	HB_NORTH	Peak	476,743	369,568	1.29	25
HB_NORTH	LZ_NORTH	Peak	459,648	481,248	0.96	39
HB_NORTH	HB_HOUSTON	Peak	354,894	86,771	4.09	17
HB_SOUTH	LZ_SOUTH	Peak	312,768	156,384	2.00	33
HB_NORTH	HB_SOUTH	Peak	248,129	115,520	2.15	8
HB_WEST	HB_NORTH	Off-peak	218,098	145,398	1.50	16
HB_WEST	LZ_WEST	Peak	150,037	245,728	0.61	32
HB_HOUSTON	LZ_HOUSTON	Peak	138,341	382,816	0.36	44
HB_NORTH	LZ_NORTH	Peak	137,869	233,792	0.59	45
Negative paths						
HB_HOUSTON	HB_NORTH	Peak	223,723	48,960	-4.57	4
HB_HOUSTON	HB_NORTH	Off-peak	124,627	160,877	-0.77	17
HB_NORTH	HB_WEST	Off-peak	61,589	41,059	-1.50	11
HB_HOUSTON	HB_NORTH	Peak	52,352	12,800	-4.09	1
HB_NORTH	HB_WEST	Peak	51,517	39,936	-1.29	12
HB_NORTH	KEECHI_U1	Peak	49,967	19,200	-2.60	6
BYU_BYU_34	HB_SOUTH	Peak	49,200	25,088	-1.96	2
LZ_HOUSTON	HB_HOUSTON	Peak	43,365	120,000	-0.36	5
LZ_CPS	HB_NORTH	Peak	40,887	20,480	-2.00	3
MLSES_UNIT3	HB_NORTH	Peak	32,766	126,496	-0.26	1
ISONE						
Positive paths						
.H.INTERNAL_HUB	.Z.NEMASSBOST	Peak	166,497	82,944	2.01	66
.H.INTERNAL_HUB	.Z.NEMASSBOST	Off-peak	49,294	92,560	0.53	69
.H.INTERNAL_HUB	.Z.SEMASS	Peak	30,511	30,042	1.02	47
LD.SANDY_PD345 SMDINTLD	.Z.NEMASSBOST	Peak	18,885	9,600	1.97	1
.H.INTERNAL_HUB	.Z.SEMASS	Off-peak	18,327	23,840	0.77	43
UN.BERLN_NH13.8BURG	.Z.NEWHAMPSHIRE	Off-peak	16,454	6,400	2.57	1
.H.INTERNAL_HUB	.Z.RHODEISLAND	Peak	15,772	34,970	0.45	50
LD.BERLN_NH22	UN.TAMWORTH115 TAMW	Peak	13,536	7,040	1.92	23
UN.SHEFIELD34.5SHEF	LD.LYNDONVL34.5	Off-peak	13,211	2,400	5.50	5
UN.SHEFIELD34.5SHEF	LD.STJHNSBY34.5	Off-peak	13,207	2,400	5.50	5
Negative paths						
UN.OAKFIELD34.5OAKW	LD.CHSTERME46	Peak	4,847	5,888	-0.82	7
UN.OAKFIELD34.5OAKW	UN.CHSTERME46 WENF	Peak	3,266	3,968	-0.82	5
UN.OAKFIELD34.5OAKW	LD.CHSTERME46	Off-peak	2,915	4,960	-0.59	5
UN.OAKFIELD34.5OAKW	UN.CHSTERME46 WENF	Off-peak	2,915	4,960	-0.59	5
LD.BERLN_NH34.5	UN.BERLN_NH13.8BURG	Off-peak	2,821	3,664	-0.77	1
UN.BRAYTNPT20.0BRA3	.H.INTERNAL_HUB	Off-peak	2,042	24,000	-0.09	1
UN.PILGRIM 22.8PILG	LD.WALPOLE 14.4	Off-peak	1,940	1,600	-1.21	1
UN.SEABROOK24.5SBRK	.H.INTERNAL_HUB	Off-peak	1,839	25,760	-0.07	31
LD.BERLN_NH22	UN.PARIS 34.5GRPW	Off-peak	1,725	1,568	-1.10	2
.H.INTERNAL_HUB	AR.BEARSWMP13.8BSW1P	Off-peak	1,661	16,544	-0.10	3

FTR MARKET REPORT FOR FEBRUARY 2017

RTO breakout top 10 positive and negative contract paths by total dollars

Source	Sink	Shape	Total $	Total MWh	$/MWh	Contracts
MISO						
Positive paths						
AMIL.BALDSSAUX	INDIANA.HUB	Peak	137,453	28,256	4.86	4
AMIL.BALDWI51	INDIANA.HUB	Peak	130,053	25,216	5.16	1
AMIL.BALDWI52	INDIANA.HUB	Peak	130,053	25,216	5.16	1
AMIL.BALDWI53	INDIANA.HUB	Peak	130,053	25,216	5.16	1
AECI	INDIANA.HUB	Peak	124,041	23,232	5.34	2
MINN.HUB	ILLINOIS.HUB	Off-peak	99,619	40,691	2.45	4
ALTE.ROCKGEN2	INDIANA.HUB	Peak	89,553	30,240	2.96	1
NIPS.BENTONCO	NIPS.OAKDAPOAK	Peak	87,669	3,648	24.03	2
BREC.GREEN1	INDIANA.HUB	Peak	80,399	24,992	3.22	1
TVA	INDIANA.HUB	Peak	76,813	21,280	3.61	1
Negative paths						
INDIANA.HUB	AMIL.BGS6	Peak	133,334	38,720	-3.44	3
INDIANA.HUB	AMIL.BGS6	Off-peak	129,089	99,299	-1.30	5
INDIANA.HUB	SOCO	Peak	104,914	32,000	-3.28	1
AMMO.HANN_1.AZ	ALTW.CC.EMERY1	Peak	100,300	16,000	-6.27	2
AMIL.MRDSA.ARR	AMMO.AUDRN55	Peak	90,384	13,440	-6.72	6
INDIANA.HUB	ARKANSAS.HUB	Peak	89,948	16,000	-5.62	1
INDIANA.HUB	MICHIGAN.HUB	Peak	75,759	73,920	-1.02	2
INDIANA.HUB	ARKANSAS.HUB	Off-peak	52,752	28,230	-1.87	3
CIN.CAYUGA.2	NIPS.BCWF.SIG	Peak	37,603	8,000	-4.70	1
AMIL.MRDSA.ARR	CWLP.DALLMA84	Peak	34,611	9,728	-3.56	1
NYISO						
Positive paths						
HUD VL	CAPITL	Baseload	2,055,131	308,448	6.66	14
WEST	HUD VL	Baseload	1,839,910	100,800	18.25	3
PJM_GEN_KEYSTONE	HUD VL	Baseload	1,134,200	142,464	7.96	10
CENTRL	HUD VL	Baseload	641,034	34,944	18.34	3
NYISO_LBMP_REFERENCE	N.E._GEN_SANDY PD	Baseload	489,216	18,816	26.00	1
HUD VL	N.E._GEN_SANDY PD	Baseload	441,194	92,736	4.76	9
HUD VL	N.Y.C.	Baseload	169,162	79,296	2.13	9
UPPER RAQUET___HYD	MHK VL	Baseload	160,445	50,400	3.18	3
PJM_GEN_KEYSTONE	PLEASANTVLY___LBMP	Baseload	118,459	12,768	9.28	3
LINDEN COGEN____	N.Y.C.	Baseload	104,523	51,744	2.02	4
Negative paths						
HUD VL	PJM_GEN_KEYSTONE	Baseload	1,824,350	229,152	-7.96	2
PJM_GEN_KEYSTONE	CENTRL	Baseload	1,151,301	110,880	-10.38	26
HUD VL	WEST	Baseload	208,523	11,424	-18.25	3
DUNWOD	HUD VL	Baseload	135,055	185,472	-0.73	11
CENTRL	NORTH	Baseload	118,800	36,960	-3.21	3
PJM_GEN_KEYSTONE	WEST	Baseload	117,573	11,424	-10.29	9
BARRETT___2	PINELAWN_CC_1	Baseload	98,285	6,048	-16.25	6
MILLWD	HUD VL	Baseload	68,660	87,360	-0.79	8
CAPITL	HUD VL	Baseload	62,684	9,408	-6.66	4
NARROWS_GT1_7	BAYONEEC___CTG7	Baseload	51,994	12,768	-4.07	1
PJM						
Positive paths						
WESTERN HUB	SMECO_RESID_AGG	Peak	276,528	56,160	4.92	5
WESTERN HUB	SMECO_RESID_AGG	Off-peak	259,473	61,670	4.21	4
WESTERN HUB	DPL_ODEC	Off-peak	116,438	14,010	8.31	2
AEP GEN HUB	PENELEC	Baseload	102,884	67,200	1.53	1
WESTERN HUB	PSEG	Peak	99,849	33,600	2.97	2
PEPCO	BGE	Peak	96,760	30,624	3.16	7
N ILLINOIS HUB	AEP-DAYTON HUB	Off-peak	91,802	35,200	2.61	1
BGE	RIVERSID13 KV CT 7	Peak	75,520	30,208	2.50	4
FOWLER 34.5 KV FWLR1AWF	AK STEEL	Peak	74,923	7,744	9.68	1
PECO	FALLS 13 KV UNIT01	Peak	69,708	12,800	5.45	2
Negative paths						
BGE	WESTERN HUB	Peak	352,442	43,584	-8.09	4
WESTERN HUB	N ILLINOIS HUB	Peak	321,878	56,000	-5.75	3
AEP-DAYTON HUB	N ILLINOIS HUB	Off-peak	238,318	91,379	-2.61	11
WESTERN HUB	AEP-DAYTON HUB	Peak	217,553	58,048	-3.75	5
WESTERN HUB	N ILLINOIS HUB	Off-peak	151,345	26,400	-5.73	3
AEP-DAYTON HUB	N ILLINOIS HUB	Peak	131,136	65,568	-2.00	9
EASTERN HUB	PENELEC	Peak	105,354	13,920	-7.57	3
BGE	WESTERN HUB	Off-peak	91,738	15,277	-6.01	4
PERRYMAN13 KV CT 1	PEACHTAP13 KV 2SU	Peak	87,792	8,640	-10.16	4
HUDSONTP	ONTARIO	Off-peak	85,094	9,328	-9.12	4

FTR MARKET REPORT FOR FEBRUARY 2017

RTO breakout top 10 positive and negative contract paths by total dollars

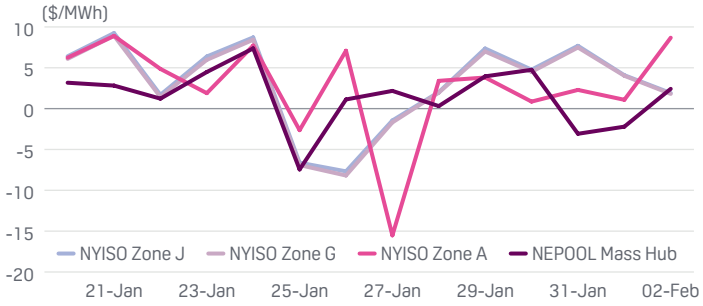
Source	Sink	Shape	Total $	Total MWh	$/MWh	Contracts
SPP						
Positive paths						
WFEC_HUGO_PLANT	WFEC_WFEC	Peak	151,414	74,624	2.03	1
OKGECENTWIND	OMPA_KNGFISHER	Off-peak	123,316	5,386	22.90	1
WFEC_HUGO_PLANT	WFEC_WFEC	Off-peak	118,792	46,816	2.54	1
WR.WPW	WR_WR	Off-peak	118,384	39,248	3.02	1
SPS.NICHOLS1	SPS.CAPRKWND1	Off-peak	73,485	12,496	5.88	2
CSWELKCITY	AEPM_CSWS	Off-peak	71,559	34,355	2.08	2
WR.FRW.1	WR.MGILL.4	Off-peak	67,767	15,171	4.47	3
KCPLLACYGNEUNLAC1	KCPL_GMOC_HUB	Peak	66,096	96,800	0.68	3
CSWELKCITY	CSWWEATHERFORDWIND	Off-peak	65,640	9,821	6.68	2
SECI_CIMARRON	TVA	Off-peak	61,269	12,074	5.07	1
Negative paths						
WFEC_MOORELAND_PLANT	OMPA_KNGFISHER	Peak	71,888	5,152	-13.95	5
WFEC_WFEC	WFEC_OKGE	Off-peak	65,877	36,784	-1.79	1
OKGESNRWIND	OKGECENTWIND	Off-peak	51,272	1,197	-42.84	1
WR.WOLF	WR_WR	Peak	45,238	100,480	-0.45	3
OKGESNRWIND	OKGECENTWIND	Peak	43,809	1,376	-31.84	1
WFEC_MOORELAND_PLANT	OMPA_KNGFISHER	Off-peak	40,631	2,077	-19.56	3
OKGETALOGAWIND	SECI.GENL.CIMARRONBEND_1	Off-peak	35,050	21,120	-1.66	4
OKGETALOGAWIND	OKGEKEENANWIND	Off-peak	34,145	3,872	-8.82	1
WFEC_WFEC	WFEC_OKGE	Peak	31,083	24,256	-1.28	1
WR.WOLF	WR_WR	Off-peak	29,341	112,640	-0.26	2

NORTHEAST POWER MARKETS

NORTHEAST DAY AHEAD POWER PRICES ($/MWh)

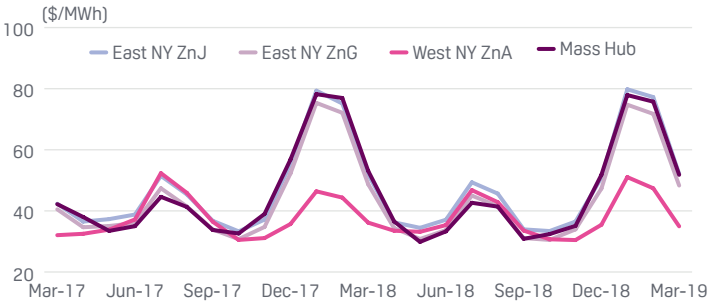
Hub/Index	Symbol	04-Feb	Marginal heat rate	Spark spread @7K	Spark spread @12K	Price change Chg	Price change % Chg	Prior 7-day Average	Month Min	Month Max	Yearly change Feb-17	Yearly change Feb-16	Yearly change Chg	Yearly change % Chg
On-Peak														
ISONE Internal Hub	IINIM00	38.67	8527	6.92	-15.75	-2.66	-6.4	40.40	36.37	41.86	39.56	33.47	6.09	18.2
ISONE NE Mass-Boston	IINNM00	38.70	8533	6.95	-15.72	-2.41	-5.9	40.36	36.37	41.77	39.49	33.39	6.10	18.3
ISONE Connecticut	IINCM00	38.50	10433	12.67	-5.78	-2.70	-6.6	41.71	38.50	46.85	42.11	33.51	8.60	25.7
NYISO Zone G	INYHM00	38.72	10494	12.89	-5.56	-4.03	-9.4	39.90	35.96	42.75	38.93	31.67	7.26	22.9
NYISO Zone J	INYNM00	38.90	11914	16.04	-0.28	-4.19	-9.7	40.15	36.21	43.09	39.18	33.00	6.18	18.7
NYISO Zone A	INYWM00	28.60	9694	7.95	-6.80	-2.10	-6.8	29.61	27.39	30.70	29.08	18.82	10.26	54.5
NYISO Zone F	INYCM00	40.42	12379	17.56	1.24	-4.45	-9.9	41.45	36.61	44.87	40.30	33.42	6.88	20.6
Off-Peak														
ISONE Internal Hub	IINIP00	29.72	6553	-2.03	-24.70	-7.03	-19.1	33.77	29.72	36.75	32.00	24.01	7.99	33.3
ISONE NE Mass-Boston	IINNP00	29.65	6539	-2.09	-24.76	-6.91	-18.9	33.65	29.65	36.56	31.91	23.94	7.97	33.3
ISONE Connecticut	IINCP00	29.56	8009	3.72	-14.73	-6.97	-19.1	33.54	29.56	36.53	31.80	23.88	7.92	33.2
NYISO Zone G	INYHP00	33.68	9127	7.85	-10.60	-0.02	-0.1	31.37	28.95	33.70	31.39	23.86	7.53	31.6
NYISO NYC Zone	INYNP00	33.70	10320	10.84	-5.49	0.02	0.1	31.40	28.93	33.70	31.39	24.06	7.33	30.5
NYISO West Zone	INYWP00	24.44	8286	3.79	-10.95	-0.63	-2.5	21.79	21.82	25.07	23.63	13.42	10.21	76.1
NYISO Capital Zone	INYCP00	36.34	11130	13.48	-2.84	0.53	1.5	34.00	30.09	36.34	33.31	26.12	7.19	27.5

NORTHEAST AVG. DAY-AHEAD/REAL-TIME PEAK PRICE SPREAD



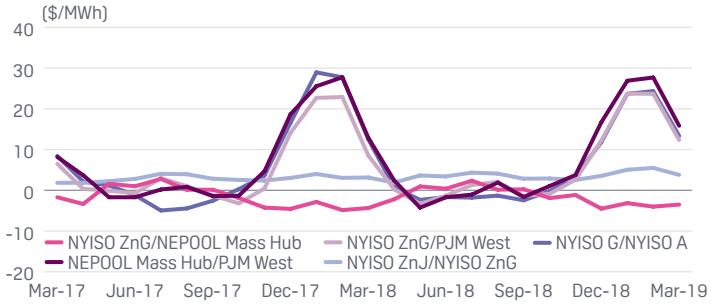
Source: Platts

NORTHEAST PLATTS M2MS FORWARD CURVE: ON-PEAK



Source: Platts

NORTHEAST PLATTS M2MS LOCATIONAL SPREADS: ON-PEAK



Source: Platts

Northeast spot power falls on warmer forecast

US Northeast dailies fell Friday as warmer temperatures are expected in New York City and Boston, rising above seasonal norms.

Mass Hub day-ahead on-peak for Monday delivery traded near the high $30s/MWh on Intercontinental Exchange, down $5 from Thursday's day-ahead settlement.

Algonquin Gas Transmission city-gates spot natural gas for Saturday-Monday delivery traded near $4.673/MMBtu on ICE, 64 cents below Thursday's day-ahead price, according to Platts Analytics' Bentek Energy. Throughput at AGT Stony Point compressor station averaged 1.7 Bcf/d over the trailing five-day period ended February 2, about 95% of capacity utilization.

Separately, Iroquois Waddington throughput averaged 968 MMcf/d over the same period, about 81% of utilization, according to Platts Analytics. This has contributed to increased net imports from eastern Canada, reaching 731 MMcf/d on February 2.

ISO New England predicted peakload of 17,500 MW Monday, up 250 MW from Friday's peakload.

Highs in Boston and Hartford are expected to range in the mid-30s to mid-40s Tuesday-Thursday, according to ISONE forecasts.

Balance-of-the-week on-peak traded in the low $40s/MWh on ICE.

West of the New England region, NYISO Zone G day-ahead on-peak traded in the mid-$30s/MWh. Zone A day-ahead on-peak was bid in the mid-$20s/MWh.

The New York ISO expected peak demand of 20,719 MW at 6 pm EST Monday, down 22 MW from Friday.

Transco Zone 6 New York spot gas traded 39 cents lower near $3.259/MMBtu on ICE, while Iroquois Zone 2 fell 39 cents to $3.672/MMBtu.

In the Mid-Atlantic region, PJM West Hub day-ahead on-peak traded in the high $20s/MWh on ICE, down $4.25 from Thursday's day-ahead index.

Highs in Philadelphia are expected to rise to 48 on Monday. Tuesday's highs are forecast at 53, 11 degrees above the norm.

Balance-of-the-week on-peak traded in the low $30s/MWh.

The Mid-Atlantic region of the PJM Interconnection forecast peakload of 36,146 MW Monday, down 2,365 MW from Friday.

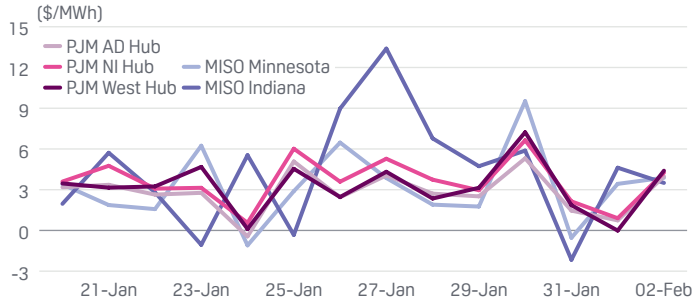
Texas Eastern M-3 day-ahead natural gas was trading about 38 cents lower near $2.859/MMBtu on ICE.

PJM/MISO POWER MARKETS

PJM/MISO DAY AHEAD POWER PRICES ($/MWh)

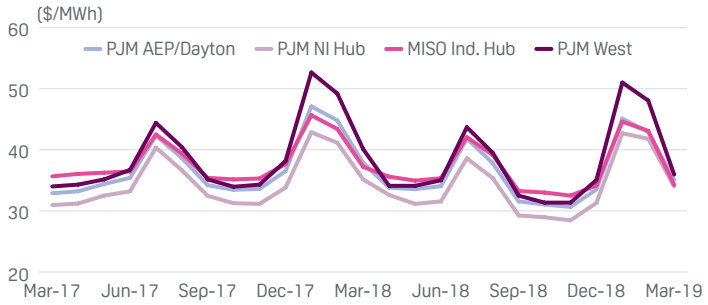
Hub/Index	Symbol	04-Feb	Marginal heat rate	Spark spread @7K	Spark spread @12K	Price change Chg	Price change % Chg	Prior 7-day Average	Month Min	Month Max	Yearly Change Feb-17	Yearly Change Feb-16	Yearly Change Chg	Yearly Change % Chg
On-Peak														
PJM AEP Dayton Hub	IPADM00	27.71	9253	6.75	-8.23	-2.44	-8.1	27.99	25.70	30.15	28.24	26.86	1.38	5.1
PJM Dominion Hub	IPDMM00	28.99	9553	7.75	-7.43	-2.20	-7.1	29.33	26.89	31.19	29.35	32.43	-3.08	-9.5
PJM Eastern Hub	IPEHM00	30.54	10678	10.52	-3.78	-0.50	-1.6	30.32	27.63	31.04	29.95	32.21	-2.26	-7.0
PJM Northern Illinois Hub	IPNIM00	26.29	8957	5.74	-8.93	-3.14	-10.7	27.53	25.08	29.43	27.42	25.93	1.49	5.7
PJM Western Hub	IPWHM00	28.83	10080	8.81	-5.49	-2.30	-7.4	29.15	25.97	31.13	29.01	30.71	-1.70	-5.5
MISO Indiana Hub	IMIDM00	28.47	9701	7.93	-6.75	-4.06	-12.5	32.87	28.47	32.53	30.45	23.79	6.66	28.0
MISO Minnesota Hub	IMINM00	17.40	6011	-2.86	-17.34	-11.36	-39.5	24.18	17.40	28.76	24.63	20.42	4.21	20.6
Off-Peak														
PJM AEP Dayton Hub	IPADP00	25.37	8472	4.41	-10.56	-0.74	-2.8	23.57	21.51	26.11	24.06	21.69	2.37	10.9
PJM Dominion Hub	IPDMP00	26.94	8878	5.70	-9.47	-0.65	-2.4	25.07	23.15	27.59	25.51	27.59	-2.08	-7.5
PJM Eastern Hub	IPEHP00	29.10	10173	9.08	-5.23	1.51	5.5	25.56	23.94	29.10	26.24	25.12	1.12	4.5
PJM Northern Illinois Hub	IPNIP00	22.58	7695	2.04	-12.63	-1.72	-7.1	22.13	18.49	24.30	21.75	19.49	2.26	11.6
PJM Western Hub	IPWHP00	26.69	9331	6.67	-7.63	-0.67	-2.4	24.62	22.94	27.36	25.19	24.74	0.45	1.8
MISO Indiana Hub	IMIDP00	24.25	8263	3.71	-10.97	-0.01	0.0	24.11	22.46	24.26	23.43	19.21	4.22	22.0
MISO Minnesota Hub	IMINP00	14.66	5065	-5.60	-20.07	-6.38	-30.3	18.06	14.66	21.04	18.42	15.97	2.45	15.3

PJM/MISO AVG. DAY-AHEAD/REAL-TIME PEAK PRICE SPREAD



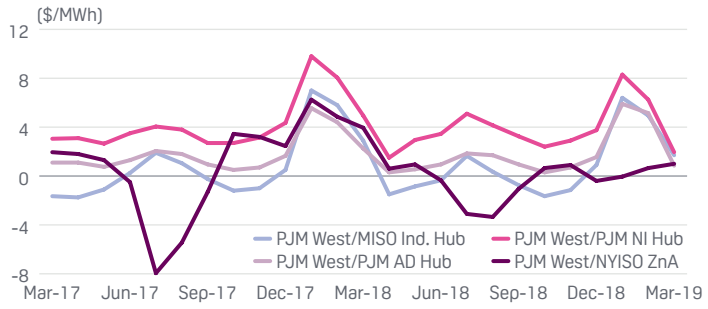
Source: Platts

PJM/MISO PLATTS M2MS FORWARD CURVE: ON-PEAK



Source: Platts

PJM/MISO PLATTS M2MS LOCATIONAL SPREADS: ON-PEAK



Source: Platts

Central dailies fall on warmer forecast

US Central day-ahead on-peak power prices fell as temperatures were expected to rise as high as the mid-60s on Monday.

The Midcontinent ISO projected peakload of 82,390 MW Monday, down 3,530 MW from Friday, including a decrease of 2,120 MW in MISO Central.

Coal accounted for 58.2% of Friday's generation mix at 3:55 pm EST, followed by natural gas (18.5%), nuclear (15.1%) and wind generation (6.5%).

In the coal-heavy MISO Central region, Indiana Hub day-ahead on-peak was cleared on the Intercontinental Exchange in the high $20s/MWh, down $3.25 from Thursday's day-ahead ICE index. Highs in Indianapolis are forecast to reach 52 degrees Monday, 14 degrees above the norm.

Balance-of-the-week on-peak was bid near the mid-$30s/MWh.

In the physical OTC coal market, Powder River Basin 8,800 Btu/lb coal for March was assessed unchanged at $12.55/st.

Weekly US coal train loadings fell for the first time this year on diminished action in the Powder River Basin, down to 61 trains/day in the week ended January 27, below 63.9 trains/day in the previous week.

In the spot gas market, Northern Natural Gas, demarcation spot gas, was down 16 cents near $2.877/MMBtu on ICE, widening the discount to the Henry Hub spot price, which fell 10 cents near $3.001/MMBtu.

In the PJM Western region, NI Hub day-ahead on-peak was cleared in the mid-$20s/MWh on ICE.

Peakload in the Western region was estimated at 55,199 MW Monday, down 3,713 MW from Friday.

Highs in Chicago are forecast to rise to 45 degrees Monday, 12 degrees above the norm.

Chicago city-gates spot gas prices were trading around $2.936/MMBtu on ICE, down 13 cents from Friday.

Farther east, AD Hub day-ahead on-peak traded in the high $20s/MWh on ICE, down $3.50. Balance-of-the-week was offered in the mid-$30s/MW.

West of the MISO footprint, Southwest Power Pool predicted peak demand of 34,721 MW at 9 am EST Friday and 28,639 MW at 9 am EST Monday.

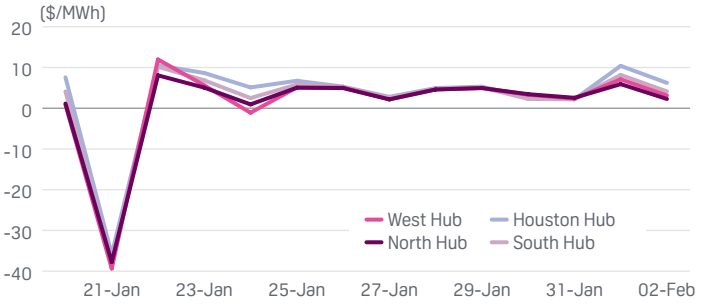
Wind generation in the SPP footprint is expected at 3,391 MW at 9 am EST Friday and at 5,802 MW at 9 am EST Monday.

SOUTHEAST POWER MARKETS

SOUTHEAST & CENTRAL DAY-AHEAD POWER PRICES ($/MWh)

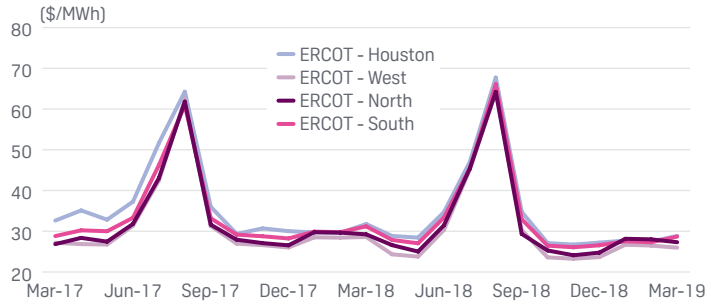
Hub/Index	Symbol	04-Feb	Marginal heat rate	Spark spread @7K	Spark spread @12K	Price change Chg	Price change % Chg	Prior 7-day Average	Month Min	Month Max	Yearly change Feb-17	Yearly change Feb-16	Yearly change Chg	Yearly change % Chg
On-Peak														
MISO Texas Hub	IMTXM00	28.92	10023	8.72	-5.70	-0.57	-1.9	29.18	28.92	30.25	29.45	21.73	7.72	35.5
MISO Louisiana	IMLAM00	28.75	9880	8.38	-6.17	-0.92	-3.1	29.19	26.14	29.67	28.38	22.29	6.09	27.3
SPP North Hub	ISNOM00	15.12	5224	-5.14	-19.61	-10.68	-41.4	19.38	15.12	26.73	21.58	17.53	4.05	23.1
SPP South Hub	ISSOM00	22.99	8390	3.81	-9.89	-8.74	-27.5	28.84	22.99	31.73	27.06	20.23	6.83	33.8
ERCOT Houston Hub	IERHM00	25.94	8897	5.53	-9.05	-3.67	-12.4	28.19	25.94	32.01	29.56	17.83	11.73	65.8
ERCOT North Hub	IERNM00	23.71	8218	3.51	-10.91	-4.17	-15.0	25.22	23.71	27.88	25.28	17.57	7.71	43.9
ERCOT South Hub	IERSM00	24.79	8682	4.80	-9.47	-3.69	-13.0	26.64	24.79	28.48	27.22	17.67	9.55	54.0
ERCOT West Hub	IERWM00	23.79	8634	4.50	-9.27	-3.99	-14.4	25.35	23.79	27.78	25.41	17.29	8.12	47.0
Off-Peak														
MISO Texas Hub	IMTXP00	24.83	8607	4.64	-9.79	1.11	4.7	23.39	21.85	24.83	23.26	18.60	4.66	25.1
MISO Louisiana	IMLAP00	25.10	8626	4.73	-9.82	1.23	5.2	23.55	21.81	25.10	23.39	18.48	4.91	26.6
SPP North Hub	ISNOP00	8.05	2781	-12.21	-26.69	-9.64	-54.5	11.85	8.05	17.69	12.73	13.05	-0.31	-2.4
SPP South Hub	ISSOP00	19.75	7208	0.57	-13.13	-5.51	-21.8	22.05	19.25	25.26	20.89	16.53	4.36	26.4
ERCOT Houston Hub	IERHP00	20.15	6913	-0.25	-14.83	-1.04	-4.9	19.41	16.08	21.19	19.25	10.77	8.48	78.8
ERCOT North Hub	IERNP00	19.92	6906	-0.27	-14.69	-1.14	-5.4	19.33	15.76	21.06	19.08	10.76	8.32	77.3
ERCOT South Hub	IERSP00	19.95	6989	-0.03	-14.30	-0.94	-4.5	19.25	15.79	20.89	19.03	10.68	8.35	78.1
ERCOT West Hub	IERWP00	19.41	7045	0.12	-13.65	-1.58	-7.5	19.26	15.69	20.99	18.85	10.39	8.46	81.5

ERCOT AVG. DAY-AHEAD/REAL-TIME PEAK PRICE SPREAD



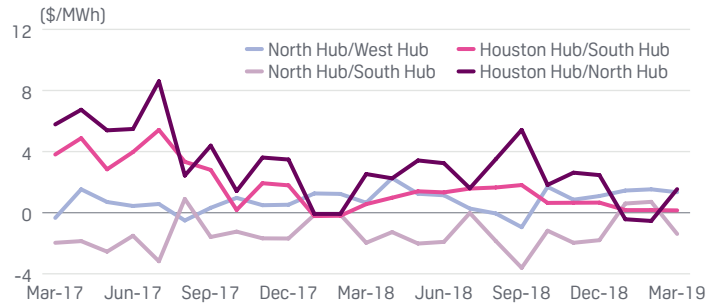
Source: Platts

ERCOT PLATTS M2MS FORWARD CURVE: ON-PEAK



Source: Platts

ERCOT PLATTS M2MS LOCATIONAL SPREADS: ON-PEAK



Source: Platts

ERCOT dailies fall on forecast, weaker gas

Electric Reliability Council of Texas day-ahead power prices dropped back near $20/MWh Friday as unseasonal warmth was expected to return starting Sunday amid falling natural gas prices.

ERCOT North Hub on-peak day-ahead dropped $3.50 to the low $20s/MWh for Monday delivery on the Intercontinental Exchange. Weekend on-peak was flat in the low $20s/MWh.

Houston Ship Channel spot gas fell 9 cents to $2.920/MMBtu for Saturday-Monday delivery on ICE.

Residential/commercial demand across Texas is expected to fall from 3.12 Bcf/d Friday to 2.22 Bcf/d Monday, data from Platts Analytics' Bentek Energy showed.

Temperatures were projected to trend much warmer for most of the footprint starting Sunday until Tuesday, with scattered showers and thunderstorms expected, according to the weather forecast.

High temperatures across Texas major load zones were forecast from the upper 70s to low 80s Monday, much higher than Friday's mid-50s to low 60s.

ERCOT forecast peakload around 40,950 MW Friday, 38,600 MW Saturday, 35,975 MW Sunday and 40,400 MW Monday.

Both balance-of-the-week and next-week on-peak prices were trading in the mid-$20s/MWh.

Trading activity was slim on ICE for Southeast Friday, while a major storm was expected in the region starting Tuesday, likely to hit record warmth in many cities.

On ICE, Into Southern weekend off-peak package was bid in the low $20s/MWh, slightly changed from the prior assessment.

High temperatures in Atlanta were expected around 66 Monday, 11 degrees above Friday, with lows forecast at 43, 4 degrees above Friday.

Spot gas at Florida Gas Transmission Zone-3 fell 11.5 cents near $2.950/MMBtu for Saturday-Monday delivery on ICE.

Southern Company footprint power use totaled about 537,682 MWh Thursday, according to US Energy Information Administration data.

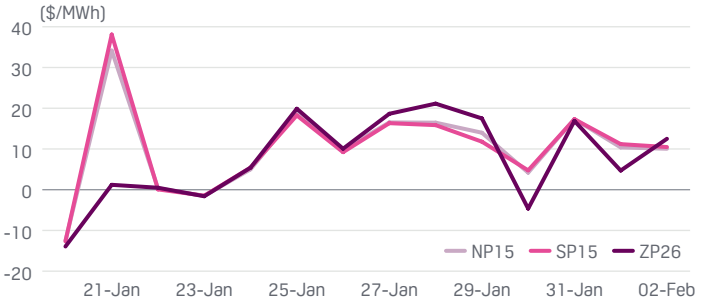
ERCOT implied power forwards prices fell, as NYMEX March natural gas contract settled 12.4 cents lower near $3.063/MMBtu on the bearish near term weather forecast by US National Weather Service, showing above-normal temperatures prevailing in most of the continental US except portion of Northeast and Alaska.

WEST POWER MARKETS

WESTERN DAY-AHEAD POWER PRICES ($/MWh)

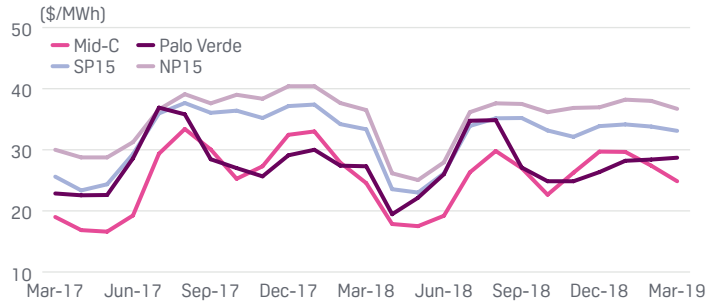
Hub/Index	Symbol	04-Feb	Marginal heat rate	Spark spread @7K	Spark spread @12K	Price change Chg	Price change % Chg	Prior 7-day Average	Month Min	Month Max	Yearly change Feb-17	Yearly change Feb-16	Yearly change Chg	Yearly change % Chg
On-Peak														
NP15	ICNGM00	29.29	8690	5.70	-11.16	-5.28	-15.3	35.62	29.29	39.20	35.20	25.28	9.92	39.2
SP15	ICSGM00	23.87	8405	3.99	-10.21	-9.02	-27.4	32.60	23.87	36.53	31.35	23.79	7.56	31.8
ZP26	ICZGM00	24.61	8664	4.73	-9.48	-8.75	-26.2	32.51	24.61	36.26	31.78	23.36	8.42	36.0
COB	WEABE20	30.42	10544	10.22	-4.20	0.00	0.0	32.48	30.42	33.14	31.29	18.23	13.06	71.6
MEAD	AAMBW20	23.50	8007	2.96	-11.72	0.00	0.0	26.75	23.50	26.50	24.69	19.84	4.85	24.4
MID-C	WEABF20	29.74	10417	9.76	-4.52	0.00	0.0	31.36	29.47	32.24	30.30	16.80	13.50	80.4
Palo Verde	WEACC20	22.25	7726	2.09	-12.31	0.00	0.0	24.79	22.25	24.75	23.19	18.90	4.29	22.7
Off-Peak														
NP15	ICNGP00	28.58	8482	4.99	-11.85	0.62	2.2	30.22	27.96	29.70	28.57	21.58	6.99	32.4
SP15	ICSGP00	27.85	9806	7.97	-6.23	0.62	2.3	29.46	27.19	28.66	27.73	21.47	6.26	29.2
ZP26	ICZGP00	28.01	9862	8.13	-6.07	0.76	2.8	29.49	27.25	28.67	27.81	21.17	6.64	31.4
COB	WEACJ20	26.93	9334	6.73	-7.69	0.00	0.0	27.96	26.71	27.88	27.11	17.15	9.96	58.1
MEAD	AAMBQ20	22.25	7581	1.71	-12.97	0.00	0.0	23.79	22.25	23.75	22.75	17.98	4.77	26.5
MID-C	WEACL20	25.18	8820	5.20	-9.08	0.00	0.0	26.24	25.18	26.56	25.74	15.86	9.88	62.3
Palo Verde	WEACT20	21.50	7465	1.34	-13.06	0.00	0.0	23.36	21.50	23.00	22.06	17.21	4.85	28.2

CAISO AVG. DAY-AHEAD/REAL-TIME PEAK PRICE SPREAD



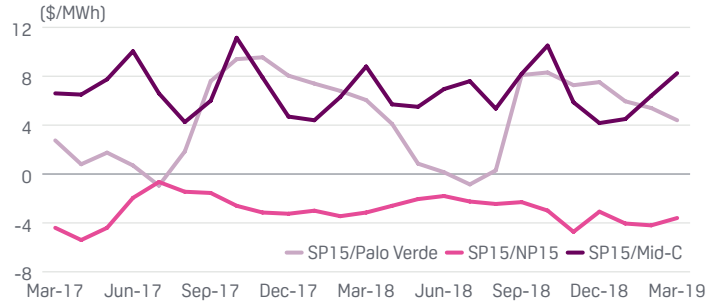
Source: Platts

WESTERN PLATTS M2MS FORWARD CURVE: ON-PEAK



Source: Platts

WESTERN PLATTS M2MS LOCATIONAL SPREADS: ON-PEAK



Source: Platts

Northwest power dailies fall after winter storm

Northwest power dailies were weaker Friday as a winter storm was forecast to leave the region over the weekend. In California, daily power prices were stronger on higher load expectations, despite sinking spot gas prices. Second-quarter power forwards dropped as the Dalles water supply forecast jumped.

In the Northwest, Mid-Columbia on-peak sank $5.75 to the mid-$20s/MWh for Monday delivery on the Intercontinental Exchange, down more than 19% from January 30.

Portland high temperatures were forecast near 43 Monday, 8 degrees below normal, according to CustomWeather.

On-peak balance-of-the-month fell $1.75 to the low $20s/MWh.

In California, SP15 on-peak day-ahead rose $2.25 to the low $30s/MWh on ICE. California ISO forecast peakload around 29,525 MW Friday, 26,800 MW Saturday, 27,300 MW Sunday and 30,050 MW Monday, up nearly 2% from Friday.

SoCal city-gates plummeted 22 cents to around $3.006/MMBtu for Saturday-Monday delivery, down nearly 14% since January 30.

Los Angeles high temperatures were forecast at 62 for Monday, 4 degrees below normal.

On-peak bal-month dropped almost 75 cents to the upper $20s/MWh.

In the Southwest, Palo Verde on-peak day-ahead slipped 25 cents in the low $20s/MWh on ICE, down more than 7% versus January 30.

Phoenix high temperatures were forecast at 73 Monday, near normal, with low temperatures expected at 55, 7 degrees above normal.

West power forwards were weaker as the NYMEX February natural gas contract fell 12.4 cents to settle at $3.063/MMBtu at 2:30 pm EST.

Mid-C on-peak March fell $2.25 to below $19/MWh on ICE, down nearly 14% from January 30. On-peak Q2 shed $1.25 near $17.75/MWh, down more than 39% versus January 30. The drop in Q2 prices comes as the Dalles water supply forecast for April-October 2017 increased to 96% of normal Thursday, up 7 percentage points from a seasonal low of 89% January 28.

Palo Verde on-peak March dropped $1.25 in the low $20s/MWh. SP15 on-peak March was down $1 in the mid-$20s/MWh.

BILATERALS

SOUTHEAST & CENTRAL DAY-AHEAD BILATERAL INDEXES ($/MWh)

Hub/Index	Symbol	06-Feb	Marginal heat rate	Spark spread @7K	Spark spread @12K	Price change Chg	Price change % Chg	Prior 7-day Average	Month Min	Month Max	Yearly change Feb-17	Yearly change Feb-16	Yearly change Chg	Yearly change % Chg
On-Peak														
Florida	AAMAV20	25.50	8644	4.85	-9.90	-0.75	-2.9	27.54	25.50	26.25	25.75	24.43	1.32	5.4
GTC, Into	WAMCJ20	26.00	8904	5.56	-9.04	-0.75	-2.8	28.11	26.00	26.75	26.25	23.89	2.36	9.9
Southern, Into	AAMBJ20	25.00	8562	4.56	-10.04	-0.75	-2.9	26.96	25.00	25.75	25.25	23.18	2.07	8.9
TVA, Into	WEBAB20	26.25	8838	5.46	-9.39	-1.25	-4.5	29.50	26.25	27.50	26.88	23.68	3.20	13.5
VACAR	AAMCI20	26.00	8567	4.76	-10.42	-1.50	-5.5	28.04	25.50	27.50	26.38	25.05	1.33	5.3
Off-Peak														
Florida	AAMAO20	22.75	7712	2.10	-12.65	0.25	1.1	22.61	20.50	22.75	22.25	20.61	1.64	8.0
GTC, Into	WAMCC20	23.25	7962	2.81	-11.79	0.25	1.1	23.18	21.25	23.25	22.75	21.46	1.29	6.0
Southern, Into	AAMBC20	22.00	7534	1.56	-13.04	0.25	1.1	21.86	19.75	22.00	21.50	20.65	0.85	4.1
TVA, Into	AAJER20	23.00	7744	2.21	-12.64	0.00	0.0	22.71	20.75	23.00	22.42	20.60	1.82	8.8
VACAR	AAMCB20	23.00	7578	1.75	-13.42	0.00	0.0	22.89	20.75	23.00	22.50	21.67	0.83	3.8

Note: Off-peak is for Saturday-Monday delivery.

WESTERN DAY-AHEAD BILATERAL INDEXES ($/MWh)

Hub/Index	Symbol	06-Feb	Marginal heat rate	Spark spread @7K	Spark spread @12K	Price change Chg	Price change % Chg	Prior 7-day Average	Month Min	Month Max	Yearly change Feb-17	Yearly change Feb-16	Yearly change Chg	Yearly change % Chg
On-Peak														
Mid-C	WEABF20	24.08	8709	4.73	-9.10	-5.66	-19.0	30.79	24.08	32.24	29.05	16.80	12.25	72.9
John Day	WEAHF20	25.00	9042	5.65	-8.18	-5.75	-18.7	31.82	25.00	33.25	30.05	17.82	12.23	68.6
COB	WEABE20	27.08	9620	7.38	-6.70	-3.34	-11.0	31.99	27.08	33.14	30.45	18.23	12.22	67.0
NOB	WEAIF20	27.50	9946	8.15	-5.68	-4.00	-12.7	31.71	27.50	34.00	31.00	18.75	12.25	65.3
Palo Verde	WEACC20	22.25	7982	2.74	-11.20	0.00	0.0	24.11	22.25	24.75	23.00	18.90	4.10	21.7
Mona	AARLQ20	22.75	8333	3.64	-10.01	-1.00	-4.2	25.07	22.75	24.75	23.80	18.69	5.11	27.3
Four Corners	WEABI20	22.50	8227	3.36	-10.32	-1.00	-4.3	24.96	22.50	24.75	23.65	18.81	4.84	25.7
Pinnacle Peak	WEAKF20	22.50	8072	2.99	-10.95	-1.00	-4.3	24.43	22.50	24.75	23.50	19.24	4.26	22.1
Westwing	WEAJF20	23.25	8341	3.74	-10.20	0.50	2.2	24.39	22.75	24.50	23.45	19.34	4.11	21.2
MEAD	AAMBW20	24.75	8715	4.87	-9.33	1.25	5.3	25.86	23.50	26.50	24.70	19.84	4.86	24.5
Off-Peak														
Mid-C	WEACL20	19.93	7208	0.58	-13.25	-5.25	-20.8	24.95	19.93	26.56	23.81	15.86	7.95	50.1
John Day	WEAHL20	21.00	7595	1.65	-12.18	-5.25	-20.0	25.96	21.00	27.50	24.83	16.89	7.94	47.0
COB	WEACJ20	23.92	8497	4.21	-9.86	-3.01	-11.2	27.08	23.92	27.88	26.05	17.15	8.90	51.9
NOB	WEAIL20	24.50	8861	5.15	-8.68	-2.00	-7.5	26.29	24.50	28.00	26.25	17.25	9.00	52.2
Palo Verde	WEACT20	21.50	7713	1.99	-11.95	0.00	0.0	22.29	21.50	23.00	21.88	17.21	4.67	27.1
Mona	AARLO20	21.25	7784	2.14	-11.51	-1.50	-6.6	22.79	21.25	23.25	22.29	17.04	5.25	30.8
Four Corners	WEACR20	22.00	8044	2.86	-10.82	0.25	1.1	22.82	21.75	23.00	22.25	17.28	4.97	28.8
Pinnacle Peak	WEAKL20	21.25	7623	1.74	-12.20	-1.50	-6.6	22.79	21.25	23.50	22.33	17.54	4.79	27.3
Westwing	WEAJL20	21.75	7803	2.24	-11.70	0.25	1.2	22.14	21.50	22.50	21.75	17.55	4.20	23.9
MEAD	AAMBQ20	23.50	8275	3.62	-10.58	1.25	5.6	23.00	22.25	23.75	23.00	17.98	5.02	27.9

Note: West off-peak includes all day Sunday.

PLATTS M2MS FORWARD CURVE, FEB 3 ($/MWh)

Prompt month: Mar 17

	On-peak	Off-peak
Northeast		
Mass Hub	42.20	36.00
N.Y. Zone G	40.50	34.25
N.Y. Zone J	42.35	35.25
N.Y. Zone A	32.05	24.20
Ontario*	22.27	13.63
*Ontario prices are in Canadian dollars		
PJM & MISO		
PJM West	34.00	28.90
AD Hub	32.90	27.90
NI Hub	30.95	24.90
Indiana Hub	35.65	28.65

	On-peak	Off-peak
Southeast & Central		
Southern Into	33.31	28.38
ERCOT North	26.84	19.56
ERCOT Houston	32.62	20.38
ERCOT West	27.18	17.42
ERCOT South	28.81	20.25
Western		
Mid-C	19.00	14.00
Palo Verde	22.85	19.70
Mead	24.37	20.92
NP15	30.00	22.70
SP15	25.60	21.90

ISO DAY-AHEAD LMP BREAKDOWN FOR FEB 4 ($/MWh)

Hub/Zone	Average	Cong	Loss	Change	Avg $/Mo	Marginal heat rate
Northeast						
On-peak						
ISONE Internal Hub	38.67	0.00	0.17	-2.66	39.56	8527
ISONE Connecticut	38.50	0.00	0.00	-2.70	42.11	10433
ISONE NE Mass-Boston	38.70	0.00	0.19	-2.41	39.49	8533
NYISO Capital Zone	40.42	-9.81	2.02	-4.45	40.30	12379
NYISO Hudson Valley Zone	38.72	-7.36	2.77	-4.03	38.93	10494
NYISO N.Y.C. Zone	38.90	-7.35	2.96	-4.19	39.18	11914
NYISO West Zone	28.60	-1.13	-1.12	-2.10	29.08	9694
PJM & MISO						
On-peak						
PJM AEP-Dayton Hub	27.71	-0.02	-0.84	-2.44	28.24	9253
PJM Dominion Hub	28.99	0.46	-0.03	-2.20	29.35	9553
PJM Eastern Hub	30.54	0.59	1.38	-0.50	29.95	10678
PJM Northern Illinois Hub	26.29	-0.78	-1.50	-3.14	27.42	8957
PJM Western Hub	28.83	0.16	0.10	-2.30	29.01	10080
MISO Indiana Hub	28.47	2.78	0.70	-4.06	30.45	9701
MISO Minnesota Hub	17.40	-5.64	-1.95	-11.36	24.63	6011
MISO Louisiana Hub	28.75	3.11	0.65	-0.92	28.38	9880
MISO Texas Hub	28.92	3.53	0.40	-0.57	29.45	10023
Southeast & Central						
On-peak						
SPP North Hub	15.12	-4.02	-1.32	-10.68	21.58	5224
SPP South Hub	22.99	2.08	0.44	-8.74	27.06	8390
ERCOT Houston Hub	25.94	–	–	-3.67	29.56	8897
ERCOT North Hub	23.71	–	–	-4.17	25.28	8218
ERCOT South Hub	24.79	–	–	-3.69	27.22	8682
ERCOT West Hub	23.79	–	–	-3.99	25.41	8634
Western						
On-peak						
CAISO NP15 Gen Hub	29.29	2.47	0.06	-5.28	35.20	8690
CAISO SP15 Gen Hub	23.87	-1.67	-1.20	-9.02	31.35	8405
CAISO ZP26 Gen Hub	24.61	-1.20	-0.94	-8.75	31.78	8664

Hub/Zone	Average	Cong	Loss	Change	Avg $/Mo	Marginal heat rate
Off-Peak						
ISONE Internal Hub	29.72	0.00	0.15	-7.03	32.00	6553
ISONE Connecticut	29.56	0.00	-0.01	-6.97	31.80	8009
ISONE NE Mass-Boston	29.65	0.00	0.09	-6.91	31.91	6539
NYISO Capital Zone	36.34	-11.80	1.48	0.53	33.31	11130
NYISO Hudson Valley Zone	33.68	-8.77	1.85	-0.02	31.39	9127
NYISO N.Y.C. Zone	33.70	-8.76	1.87	0.02	31.39	10320
NYISO West Zone	24.44	-1.47	-0.09	-0.63	23.63	8286
Off-Peak						
PJM AEP-Dayton Hub	25.37	0.08	-0.94	-0.74	24.06	8472
PJM Dominion Hub	26.94	0.40	0.32	-0.65	25.51	8878
PJM Eastern Hub	29.10	1.39	1.48	1.51	26.24	10173
PJM Northern Illinois Hub	22.58	-1.79	-1.85	-1.72	21.75	7695
PJM Western Hub	26.69	0.03	0.43	-0.67	25.19	9331
MISO Indiana Hub	24.25	1.72	0.82	-0.01	23.43	8263
MISO Minnesota Hub	14.66	-5.25	-1.81	-6.38	18.42	5065
MISO Louisiana Hub	25.10	2.80	0.59	1.23	23.39	8626
MISO Texas Hub	24.83	2.97	0.14	1.11	23.26	8607
Off-Peak						
SPP North Hub	8.05	-5.42	-0.84	-9.64	12.73	2781
SPP South Hub	19.75	5.11	0.34	-5.51	20.89	7208
ERCOT Houston Hub	20.15	–	–	-1.04	19.25	6913
ERCOT North Hub	19.92	–	–	-1.14	19.08	6906
ERCOT South Hub	19.95	–	–	-0.94	19.03	6989
ERCOT West Hub	19.41	–	–	-1.58	18.85	7045
Off-Peak						
CAISO NP15 Gen Hub	28.58	-0.02	-0.19	0.62	28.57	8482
CAISO SP15 Gen Hub	27.85	-0.01	-0.94	0.62	27.73	9806
CAISO ZP26 Gen Hub	28.01	0.00	-0.79	0.76	27.81	9862

WEEKEND BILATERAL INDEXES FOR FEB 4-5 ($/MWh)

	Saturday Index	Sunday Index
Southeast On-peak		
VACAR	25.75	25.75
Southern, into	24.75	24.75
GTC, into	25.75	25.75
Florida	25.25	25.25
TVA, into	25.75	25.75
Southeast Off-Peak*		
VACAR	23.00	23.00
Southern, into	22.00	22.00
GTC, into	23.25	23.25
Florida	22.75	22.75
TVA, into	23.00	23.00
West On-peak**		
Mid-C	29.74	22.52
John Day	30.75	23.50
COB	30.42	25.50
NOB	31.50	26.00
Palo Verde	22.25	19.25
Westwing	22.75	20.25
Pinnacle Peak	23.50	19.50
Mead	23.50	21.75
Mona	23.75	19.75
Four Corners	23.50	19.50
West Off-Peak**		
Mid-C	25.18	17.25
John Day	26.25	18.50
COB	26.93	22.25
NOB	26.50	23.00
Palo Verde	21.50	23.75
Westwing	21.50	23.25
Pinnacle Peak	22.75	23.00
Mead	22.25	25.25
Mona	22.75	22.75
Four Corners	21.75	24.50

*Southeast off-peak prices are for a Saturday-Monday package.
**West Saturday prices are for a Friday-Saturday package and Sunday prices are for Sunday only.

WEEKLY BILATERAL INDEXES FOR WEEK ENDING FEB 4 ($/MWh)

	Index	Change	Low	High
Southeast On-peak				
VACAR	27.95	-0.85	25.50	32.50
Southern, into	26.70	-1.45	25.00	30.50
GTC, into	27.80	-1.60	26.00	32.00
Florida	27.25	-2.35	25.50	31.25
TVA, into	28.85	-2.05	26.75	33.25
Southeast Off-Peak				
VACAR	23.82	1.71	20.75	26.25
Southern, into	22.86	1.47	19.75	25.50
GTC, into	24.25	1.86	21.25	27.00
Florida	23.61	1.90	20.50	26.25
TVA, into	23.50	1.07	20.75	25.75
West On-peak				
Mid-C	30.31	-2.99	29.00	33.50
John Day	31.33	-3.00	30.50	33.25
COB	31.68	-2.15	29.50	34.00
NOB	31.21	-2.37	28.75	34.00
Palo Verde	23.63	-4.87	22.25	25.00
Westwing	23.92	-4.83	22.75	25.25
Pinnacle Peak	24.00	-4.58	23.25	25.00
Mead	25.21	-5.17	23.50	26.75
Mona	24.42	-5.08	23.75	25.25
Four Corners	24.46	-4.83	23.50	25.75
West Off-Peak				
Mid-C	25.81	-0.61	25.00	27.00
John Day	26.82	-0.57	26.25	27.50
COB	27.67	-0.29	26.50	29.75
NOB	26.50	-0.18	25.00	28.00
Palo Verde	22.50	-4.00	21.50	23.25
Westwing	22.32	-3.93	21.50	23.25
Pinnacle Peak	23.07	-3.47	22.50	23.50
Mead	22.96	-3.93	22.25	23.75
Mona	23.04	-3.75	22.50	24.00
Four Corners	23.14	-3.93	21.75	24.25

NORTHEAST POWER MARKETS

NYISO SUPPLY MIX (GWh/d)

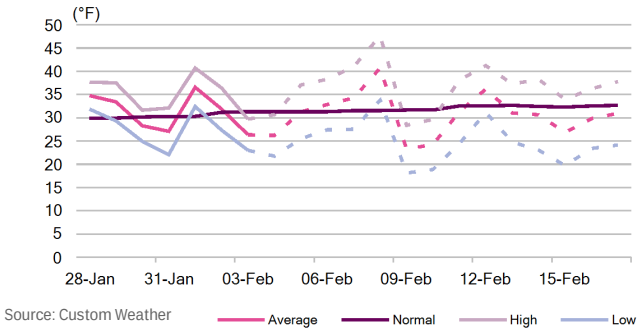
							Daily change		Season		Season average			
Category	29-Jan	30-Jan	31-Jan	1-Feb	2-Feb	% Share	Chg	% Chg	Min	Max	2017	2016	Chg	% Chg
Total Generation	316.68	348.65	366.33	375.88	363.83	85%	-12.05	-3.0%	288.04	422.52	351.78	360.49	-8.71	-2.0%
Gas	112.46	126.91	123.46	121.81	121.92	28%	0.11	0.0%	63.65	169.36	119.32	124.71	-5.39	-4.0%
Coal	16.46	22.03	24.36	20.61	20.81	5%	0.2	1.0%	9.51	32.71	19.32	19.24	0.08	0.0%
Nuclear	111.65	111.5	111.5	111.5	111.5	26%	0	0.0%	96.61	126.84	118.39	129.45	-11.06	-9.0%
Other	159.28	182.97	200.77	186.98	174.45	41%	-12.53	-7.0%	101.57	217.12	174.66	154.11	20.55	13.0%

ISONE SUPPLY MIX (GWh/d)

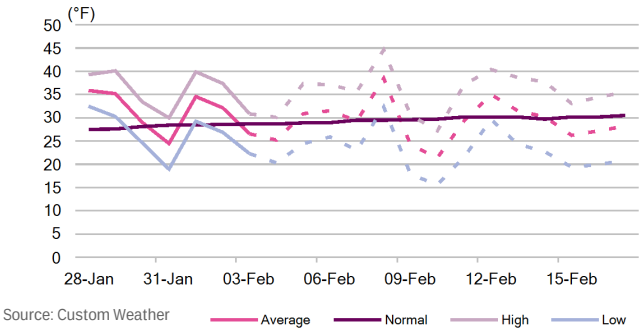
							Daily change		Season		Season average			
Category	29-Jan	30-Jan	31-Jan	1-Feb	2-Feb	% Share	Chg	% Chg	Min	Max	2017	2016	Chg	% Chg
Total Generation	265.25	287.81	299.85	297.3	293.91	82%	-3.39	-1.0%	257.58	321.67	289.76	286.54	3.22	1.0%
Gas	75.81	84.76	96.95	92.17	92.42	26%	0.25	0.0%	68.07	121.39	88.48	115.76	-27.28	-24.0%
Nuclear	97.8	97.8	97.8	97.8	97.8	27%	0	0.0%	79.95	97.8	94.61	93.34	1.27	1.0%
Coal	29.08	38.41	46.9	35	34.26	10%	-0.74	-2.0%	22.72	65.96	35.18	26.92	8.26	31.0%
Wind	7.38	6.69	3.93	3.6	11.54	3%	7.94	221.0%	1.99	22.43	10.11	7.77	2.34	30.0%
Other	110.09	125.2	127.86	133.29	121.71	34%	-11.58	-9.0%	91.05	154.45	124.26	103.35	20.91	20.0%

Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: Platts

NYISO TEMPERATURE

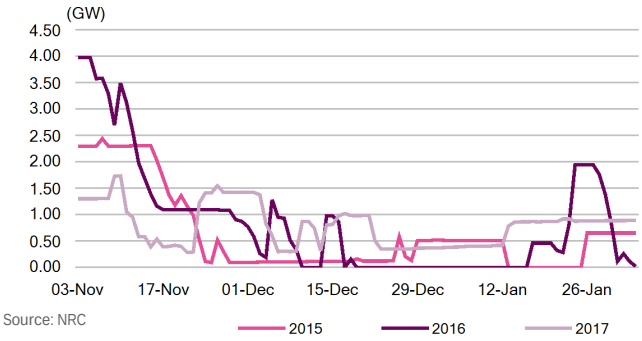


ISONE TEMPERATURE

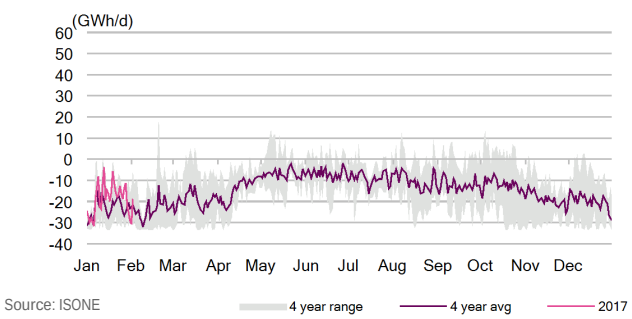


ISONE & NYISO LOAD PER DEGREE

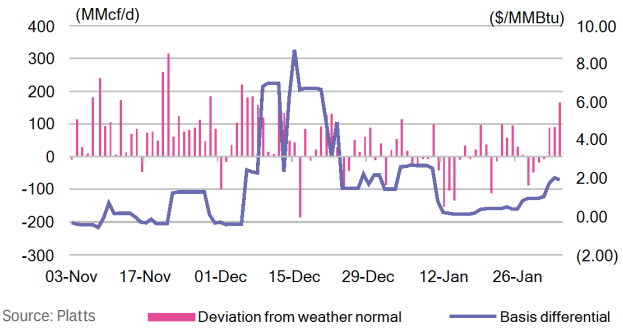
ISONE & NYISO NUCLEAR GENERATION OUTAGES



ISONE-NYISO INTERTIE TRANSMISSION E-W



ISONE POWER BURN VS. GAS BASIS



PJM/MISO POWER MARKETS

PJM SUPPLY MIX (GWh/d)

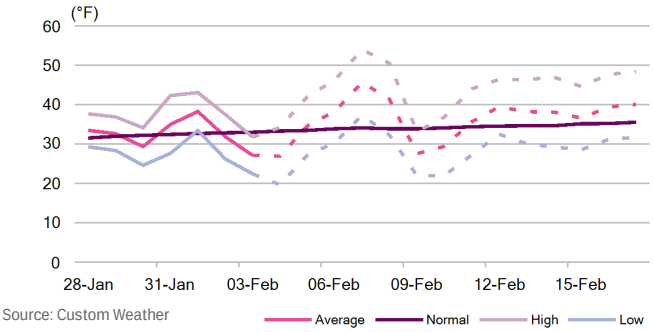
							Daily change		Season		Season average			
Category	29-Jan	30-Jan	31-Jan	1-Feb	2-Feb	% Share	Chg	% Chg	Min	Max	2017	2016	Chg	% Chg
Total Generation	2,151.48	2,428.96	2,430.2	2,216.99	2,246.56	100%	29.57	1.0%	1,880.39	2,799.45	2,282.86	2,153.06	129.8	6.0%
Gas	413.69	453.54	422.79	414.71	473.31	21%	58.6	14.0%	170.6	643.12	421.72	522.12	-100.4	-19.0%
Coal	872.79	1,046.98	1,064.84	905.39	870.01	39%	-35.38	-4.0%	686.29	1,291.71	962.02	746.12	215.9	29.0%
Nuclear	798.34	798.03	797.5	797.5	797.19	35%	-0.31	0.0%	729.66	799.41	776.9	773.18	3.72	0.0%
Other	15.42	66.61	62.7	102.82	111	5%	8.18	8.0%	-45.5	196.86	67.67	145.89	-78.22	-54.0%

MISO SUPPLY MIX (GWh/d)

							Daily change		Season		Season average			
Category	29-Jan	30-Jan	31-Jan	1-Feb	2-Feb	% Share	Chg	% Chg	Min	Max	2017	2016	Chg	% Chg
Total Generation	1,782.69	1,903.4	1,837.1	1,832.32	1,877.63	102%	45.31	2.0%	1,618.58	2,230.17	1,880.15	1,854.69	25.46	1.0%
Gas	207.27	272.29	217.72	223.9	272.92	15%	49.02	22.0%	132.48	495.17	279.65	376.83	-97.18	-26.0%
Coal	940.97	960.74	929.03	910.44	954.13	52%	43.69	5.0%	691.69	1,158.4	935.41	884.47	50.94	6.0%
Nuclear	259.75	257.14	257.55	261.44	262.41	14%	0.97	0.0%	183.04	295.16	275.77	283.76	-7.99	-3.0%
Wind	139.38	201.11	225.46	220.54	200.46	11%	-20.08	-9.0%	36.35	311.6	160.55	137.94	22.61	16.0%
Other	195	199.71	189.88	190.59	149.53	8%	-41.06	-22.0%	137.97	358.8	203.45	146.29	57.16	39.0%

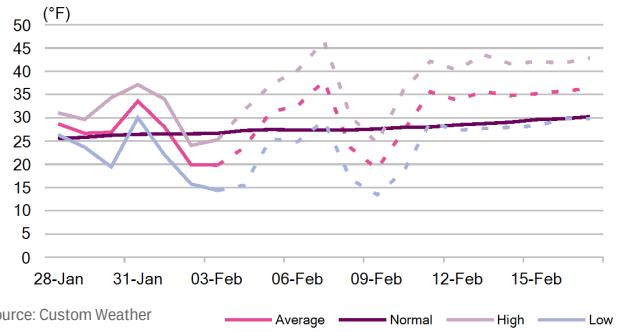
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: Platts

PJM TEMPERATURE



Source: Custom Weather

MISO TEMPERATURE

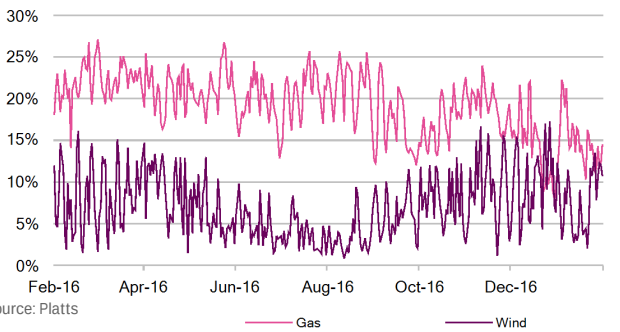


Source: Custom Weather

PJM & MISO LOAD PER DEGREE

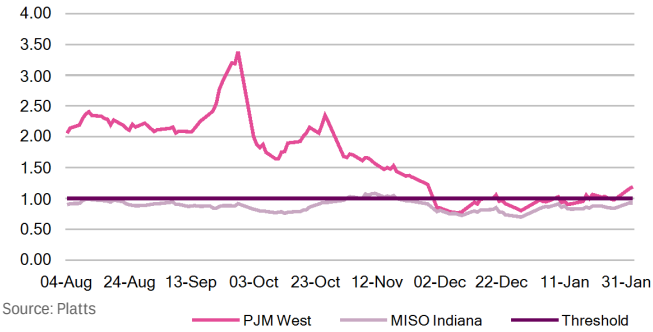
Source: Platts

MISO GENERATION MARKET SHARE - GAS VS. WIND



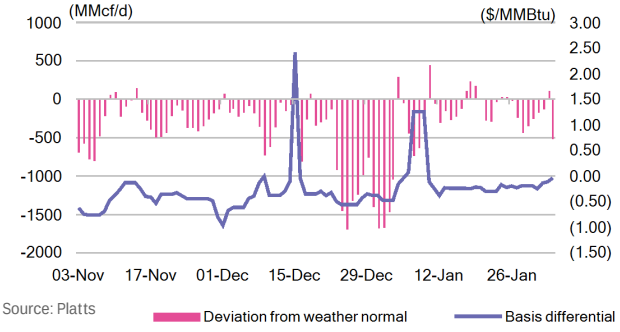
Source: Platts

PJM/MISO COAL-VS-GAS $/MWh FUEL COST RATIO



Source: Platts

PJM POWER BURN VS. GAS BASIS



Source: Platts

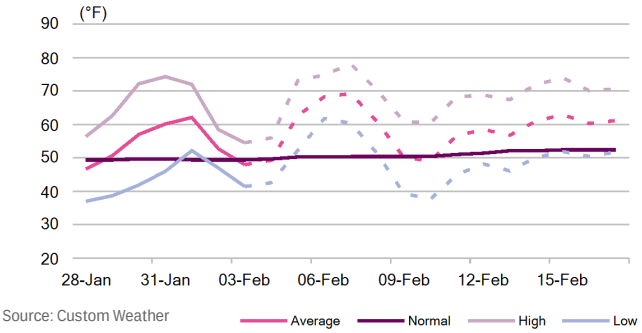
SOUTHEAST POWER MARKETS

ERCOT SUPPLY MIX (GWh/d)

							Daily change		Season		Season average			
Category	29-Jan	30-Jan	31-Jan	1-Feb	2-Feb	% Share	Chg	% Chg	Min	Max	2017	2016	Chg	% Chg
Total Generation	850.49	843.36	817.14	809.43	864.27	100%	54.84	7.0%	744.42	1,249.91	885.08	845.36	39.72	5.0%
Gas	315.93	307.33	291.67	332.87	337.72	39%	4.85	1.0%	194.68	640.87	315.7	362.23	-46.53	-13.0%
Coal	288.25	286.04	290.23	247.71	277.59	32%	29.88	12.0%	241.75	457.91	335.2	253.38	81.82	32.0%
Nuclear	122.03	123.33	123.33	123.33	123.33	14%	0	0.0%	122.03	123.33	123.3	112.94	10.36	9.0%
Wind	161.15	142.95	198.84	205.45	145.25	17%	-60.2	-29.0%	63.46	322.48	166.79	145.71	21.08	14.0%
Other	-36.88	-16.29	-86.92	-99.93	-19.62	-2%	80.31	-80.0%	-230.14	59.25	-55.9	-28.9	-27	93.0%

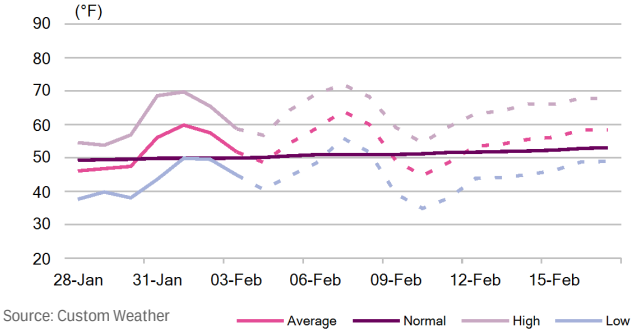
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: Platts

ERCOT TEMPERATURE



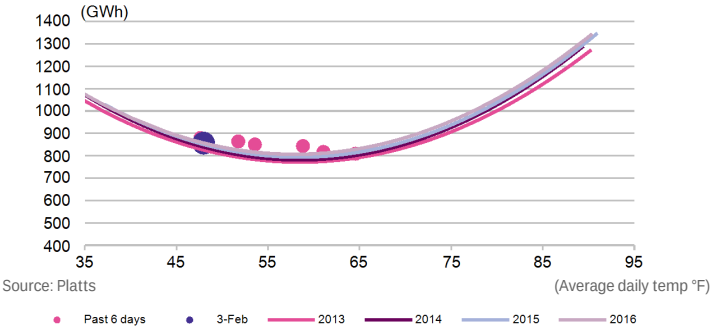
Source: Custom Weather

SOUTHEAST TEMPERATURE



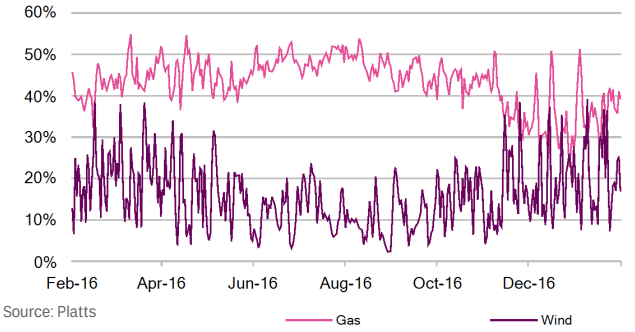
Source: Custom Weather

ERCOT LOAD PER DEGREE



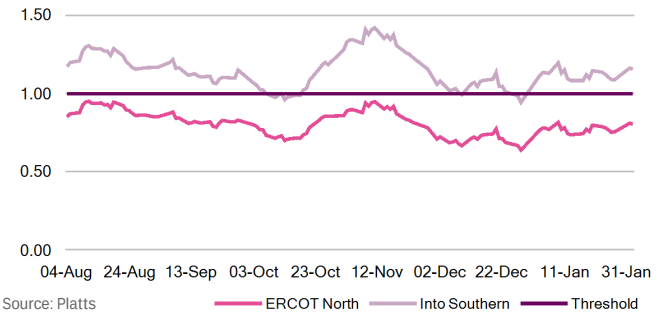
Source: Platts

ERCOT GENERATION MARKET SHARE - GAS VS. WIND



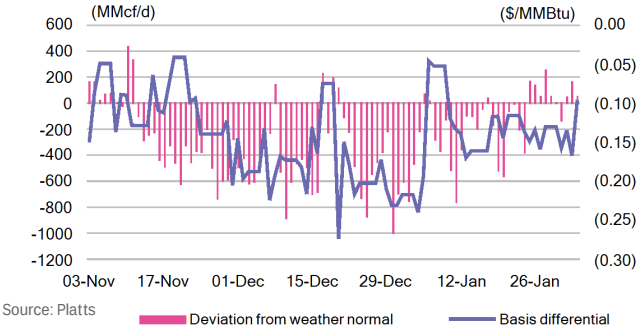
Source: Platts

SOUTHEAST COAL-VS-GAS $/MWh FUEL COST RATIO



Source: Platts

ERCOT POWER BURN VS. GAS BASIS



Source: Platts

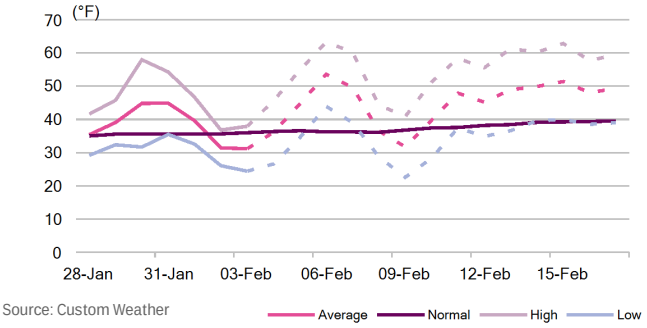
SPP POWER MARKETS

SPP GENERATION MIX (GWh/d)

							Daily change		Season		Season average			
Category	29-Jan	30-Jan	31-Jan	1-Feb	2-Feb	% Share	Chg	% Chg	Min	Max	2017	2016	Chg	% Chg
Total Generation	670.27	684.9	670.85	707.1	746.15	--	39.05	6.0%	55.29	867.17	707.2	675.03	32.17	5.0%
Coal	317.33	390.56	402.75	337.06	410.45	55%	73.39	22.0%	22.76	490.34	375.68	330.5	45.18	14.0%
Natural Gas	71.41	70.21	84.1	68.98	110.71	15%	41.73	60.0%	5.82	275.71	113.87	139.23	-25.36	-18.0%
Wind	212.06	153.34	112.95	230.36	153.43	21%	-76.93	-33.0%	8.45	252.02	148.29	117.78	30.51	26.0%
Nuclear Power	50.42	50.39	50.4	50.23	50.19	7%	-0.04	0.0%	4.19	50.42	48.9	62.17	-13.27	-21.0%
Hydro	19.05	20.39	20.65	20.47	21.37	3%	0.9	4.0%	0.57	25.06	20.44	25.15	-4.71	-19.0%
Diesel	0	0.01	0	0	0	--	0	0.0%	0	0.52	0.02	0.19	-0.17	-89.0%

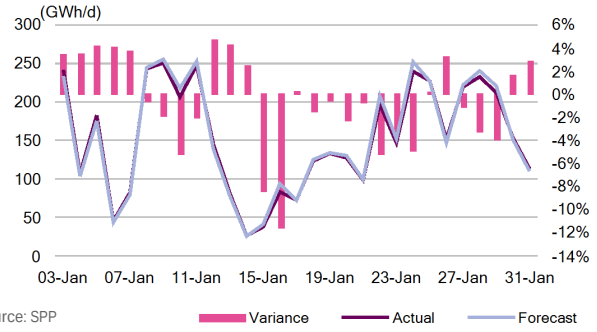
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: SPP

SPP TEMPERATURE



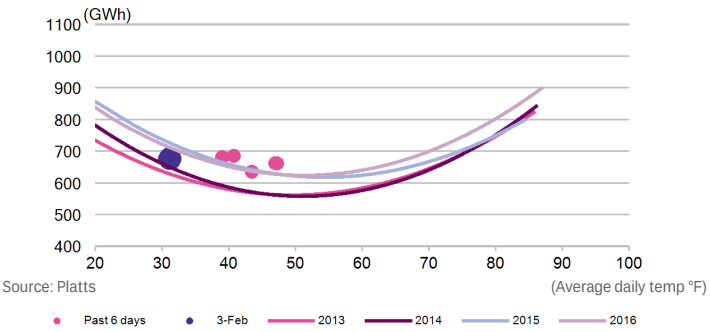
Source: Custom Weather

SPP ACTUAL WIND GENERATION VS. FORECAST



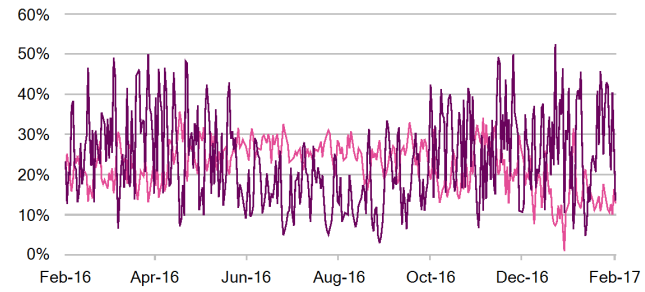
Source: SPP

SPP LOAD PER DEGREE



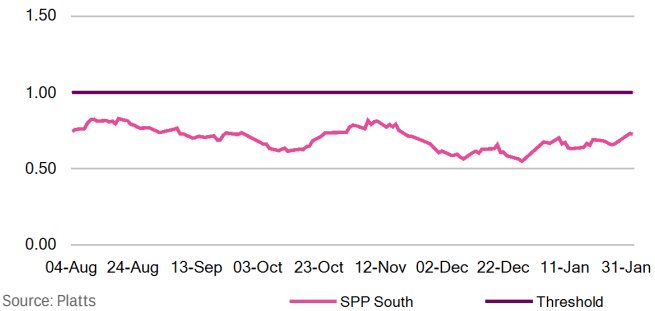
Source: Platts

SPP GENERATION MARKET SHARE - GAS VS. WIND



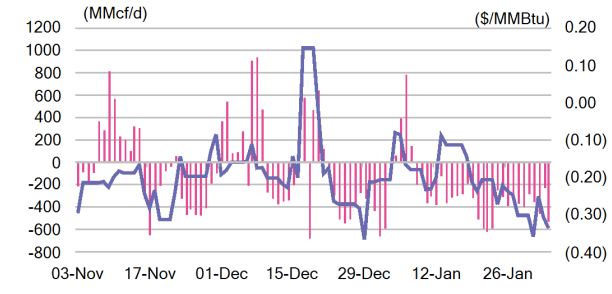
Source: Platts

SPP COAL-VS-GAS $/MWh FUEL COST RATIO



Source: Platts

SPP POWER BURN VS. GAS BASIS



Source: Platts

WEST POWER MARKETS

CAISO GENERATION MIX (GWh/d)

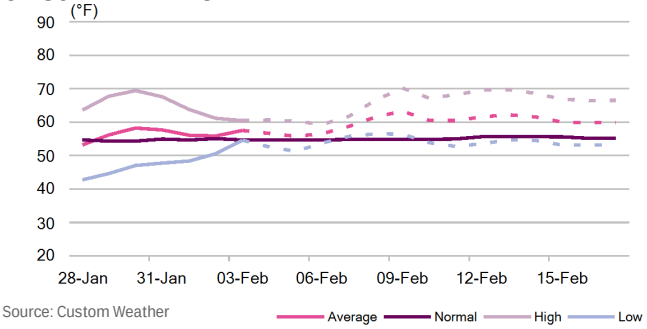
							Daily change		Season		Season average			
Category	29-Jan	30-Jan	31-Jan	1-Feb	2-Feb	% Share	Chg	% Chg	Min	Max	2017	2016	Chg	% Chg
Total Generation	557.58	608.09	611.7	617.07	613.92	--	-3.15	-1.0%	537.66	638.54	598.32	583.31	15.01	3.0%
Thermal Power	144.07	178.94	195.86	200.86	205.33	33%	4.47	2.0%	107.38	272.79	201.42	229.12	-27.7	-12.0%
Nuclear Power	54.52	54.5	54.49	54.35	54.26	9%	-0.09	0.0%	41.05	54.74	53.77	53.43	0.34	1.0%
Hydro	104.02	101.57	96.69	97.96	99.52	16%	1.56	2.0%	54.34	108.07	76.32	40.95	35.37	86.0%
Power Imports	157.99	179.4	168.93	170.29	161.8	26%	-8.49	-5.0%	103.3	212.57	172.52	165.85	6.67	4.0%
Solar PV	53.26	55.86	56.86	51	40.19	7%	-10.81	-21.0%	11.91	58.88	35.5	32.42	3.08	10.0%
Solar Thermal	3.14	2.33	2.9	2	1.48	--	-0.52	-26.0%	0	3.49	1.36	1.96	-0.6	-31.0%
Wind	7.49	2.3	2.77	7.34	18.11	3%	10.77	147.0%	2.3	64.18	24.24	24.69	-0.45	-2.0%
Bio + Geo	33.1	33.2	33.2	33.26	33.23	5%	-0.03	0.0%	30.25	34.94	33.19	34.89	-1.7	-5.0%

BPA GENERATION, LOAD, and TRANSMISSION (GWh/d)

							Daily change		Season		Season average			
Category	29-Jan	30-Jan	31-Jan	1-Feb	2-Feb	% Share	Chg	% Chg	Min	Max	2017	2016	Chg	% Chg
Total Generation	291.07	292.69	292.51	313.16	316.22	--	3.06	1.0%	43.83	383.11	322.81	296.61	26.2	9.0%
Hydro	208.72	212.71	214	217.34	220.81	70%	3.47	2.0%	30.05	270.31	229.88	200.6	29.28	15.0%
Thermal Power	73.49	76.78	75.9	80.37	81.12	26%	0.75	1.0%	13.52	99.29	75.18	72.54	2.64	4.0%
Wind power	8.85	3.2	2.61	15.45	14.29	5%	-1.16	-8.0%	0.03	81.91	17.75	23.47	-5.72	-24.0%
Load	168.52	171.19	175.85	190.09	189.07	--	-1.02	-1.0%	27.56	222.8	185.11	162.59	22.52	14.0%
Net Exports	124.28	120	117.53	124.49	126.22	--	1.73	1.0%	16.27	189.82	137.85	133.94	3.91	3.0%

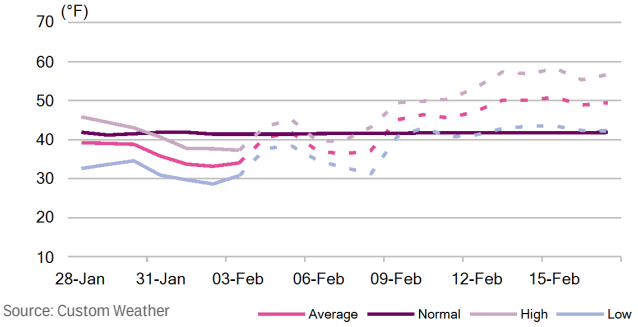
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: CAISO & BPA

CAISO TEMPERATURE



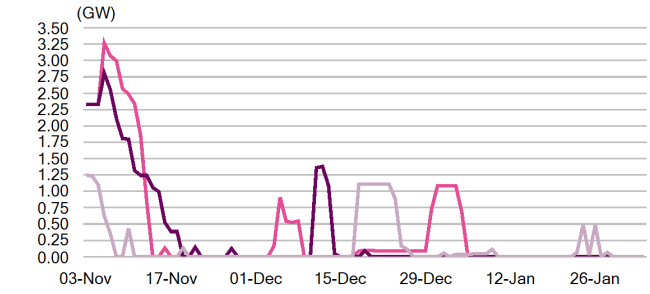
Source: Custom Weather

BPA TEMPERATURE



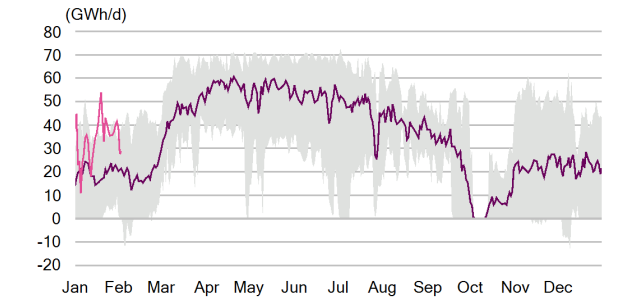
Source: Custom Weather

WESTERN NUCLEAR GENERATION OUTAGES



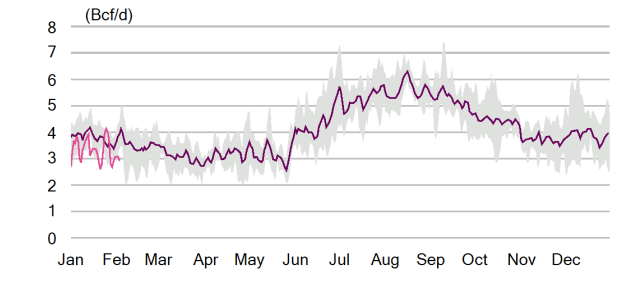
Source: NRC

BPA DC LINE TRANSMISSION FLOWS N-S



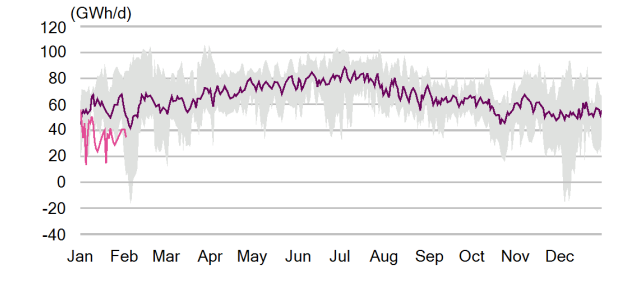
Source: BPA

YEAR-TO-DATE WEST POWER BURN



Source: Platts

BPA AC LINE TRANSMISSION FLOWS N-S

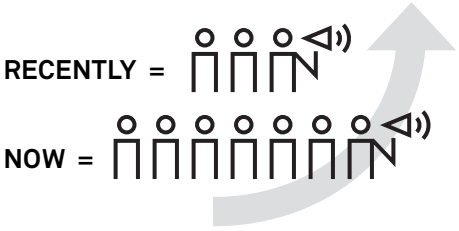


Source: BPA

www.platts.com/ice

The evolution of North American natural gas benchmarks

It's important to all of us that natural gas markets are as transparent as they can be. That's why S&P Global Platts is making changes to our price assessment process and evolving with the marketplace.



It started with price reporters

For many years, Platts has produced volume-weighted average indices based on voluntary price reporting. The price reporting process was formed in bi-lateral markets. However, in recent years, the majority of physical natural gas trading and confirmation has moved to electronic platforms. It's time to change with the times.

It continues with ICE

Platts has partnered with Intercontinental Exchange to include anonymized ICE data regarding physical natural gas transactions in Platts natural gas daily and monthly price assessments in North America. By capturing the ICE trade data, our benchmarks will reflect greater trading volumes and more counterparties, advancing the goal of greater market transparency.

S&P Global Platts + ICE

What goes in:

- ICE trade data
- Matched eConfirm trades
- All other price reporter trades

The result? Indices that capture:

- Greater participation
- Increased number of counterparties
- Higher index volumes and deal counts

For price reporters... It's a new day

No more end of day emails! Price reporters can use ICE eConfirm, a platform that most companies are already using for trade confirmation, to submit transactions. The result — eConfirm users will no longer need to email trade data to Platts. If you're not an eConfirm user today, contact ICE today to learn more.

For more about the Platts natural gas price assessment evolution, go to www.platts.com/ice

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NATURAL GAS