

MEGAWATT DAILY

Monday, December 12, 2016

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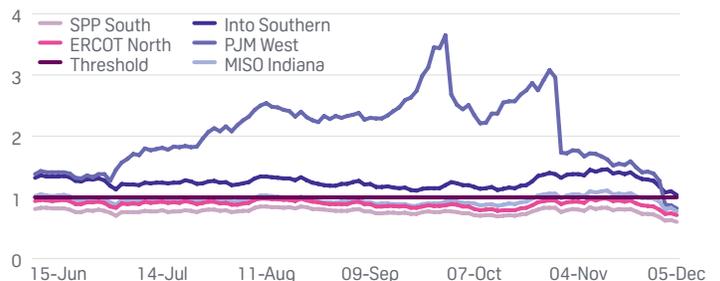
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REGIONAL DAY-AHEAD PRICE CHANGES

ISO Price Locations	Day-ahead peak prices			Regional weather trends		
	12-Dec	Daily chg	Prior 7-day avg	12-Dec	Daily chg	7-day forecast
CAISO NP 15	39.57	-0.33 ▼	39.30	58.6	-0.7 ▼	54.6
ERCOT North Hub	27.47	-11.10 ▼	30.58	43.3	6.5 ▲	51.1
ISONE Internal Hub	71.59	-5.18 ▼	51.88	27.0	-4.2 ▼	29.2
MISO Indiana Hub	39.03	-5.49 ▼	39.50	21.5	0.1 ▲	20.8
NYISO Zone G	58.04	6.83 ▲	43.65	30.3	-2.2 ▼	31.0
PJM West Hub	35.54	-5.74 ▼	34.98	28.6	-1.8 ▼	31.6
SPP South Hub	31.13	-2.31 ▼	34.56	31.7	9.4 ▲	30.3
Bilateral indexes						
Into Southern	34.00	-5.50 ▼	33.25	42.6	1.3 ▲	53.4
Palo Verde	30.18	1.68 ▲	30.06	57.5	-0.3 ▼	54.2
COB	41.25	7.25 ▲	38.21	40.4	5.1 ▲	28.7
Mid-C	36.24	6.40 ▲	35.19	40.4	5.1 ▲	28.7

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)

ISO	Daily change					Five day forecast					Season		Season average					
	06-Dec	07-Dec	08-Dec	09-Dec	10-Dec	Chg	% Chg	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec	Min	Max	2016	2015	Chg	% Chg
BPA-Puget	8.88	9.60	9.66	8.66	7.82	-0.84	-9.70	7.95	8.76	9.98	9.80	8.77	6.29	9.66	7.73	7.68	0.05	0.65
IESO	0.00	0.00	0.00	22.31	20.97	-1.34	-6.01	20.80	21.85	21.95	22.37	23.57	19.81	24.01	21.66	22.26	-0.60	-2.70
CAISO	30.58	31.06	30.32	29.26	26.56	-2.70	-9.23	26.51	29.08	29.07	29.21	29.09	23.46	31.06	28.33	28.73	-0.40	-1.39
ERCOT	40.89	41.75	51.06	46.73	37.89	-8.84	-18.92	35.17	37.14	37.20	42.21	39.93	33.84	51.06	41.12	42.20	-1.08	-2.56
SPP	30.13	32.34	35.59	33.55	26.39	-7.16	-21.34	24.53	27.68	29.90	33.30	31.77	26.01	38.08	31.92	30.43	1.49	4.90
MISO	85.81	87.80	93.07	91.94	83.68	-8.26	-8.98	79.47	85.72	91.04	99.72	103.35	70.02	97.75	84.78	87.09	-2.31	-2.65
PJM	107.48	105.34	112.47	114.65	107.83	-6.82	-5.95	105.27	103.03	108.69	119.00	126.13	84.62	130.53	107.08	110.05	-2.97	-2.70
NYISO	21.24	21.22	21.47	21.67	20.13	-1.54	-7.11	19.99	20.62	20.71	20.10	25.04	16.71	23.41	20.94	21.71	-0.77	-3.55
NEISO	17.40	17.30	17.41	17.95	17.48	-0.47	-2.62	17.10	17.55	17.47	16.42	20.69	13.37	19.57	17.13	17.99	-0.86	-4.78
AESO	11.38	11.38	11.43	10.59	10.21	-0.38	-3.59	10.27	10.79	10.79	10.78	10.51	9.80	11.43	10.52	10.60	-0.08	-0.75

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

Source: Platts



NEWS

FirstEnergy may sell 1,572 MW of Pa. generation

FirstEnergy tentatively has agreed to sell natural gas and hydro generation assets totaling 1,572 MW in Pennsylvania to an unidentified third party as the Akron, Ohio-based company pursues a strategy to exit the competitive generation business within 12 to 18 months.

In a filing with the US Securities and Exchange Commission earlier this week, FirstEnergy said it has signed a non-binding letter of intent to sell the assets for \$885 million, including the assumption of \$305 million of unsecured debt by the buyer.

Tricia Ingraham, a FirstEnergy spokeswoman, said in a Friday email the pending deal has an "exclusivity provision" that expires on December 31.

She said her company has not disclosed when the sale might close or when it might identify the purchaser. "I cannot speculate on when we would do either," she said.

The proposed sale is "consistent with our strategy to exit the competitive generation business," Ingraham added.

The gas plants in question include Springdale, Chambersburg, Gans and Hunlock and the company's ownership in the Bath County hydro plant. Of the gas plants, Springdale, a simple-cycle and combined-cycle facility, is the largest at 638 MW.

Springdale Units 1 and 2, representing total capacity of 88 MW, are peakers, while Units 3, 4 and 5, totaling 550 MW, are combined cycle.

Chambersburg, Gans and Hunlock are much smaller simple-cycle peakers. Chambersburg and Gans are rated at 88 MW,

Hunlock at 44 MW.

In the SEC filing, Irene Prezelj, FirstEnergy vice president of investor relations, also said the company's 50% ownership, 43 MW, in the Buchanan gas plant near Keen Mountain, Virginia, is expected to be marketed in separate sales process.

Pleasants may be bid into Mon Power RFP

As previously disclosed by the company, Prezelj said FirstEnergy also is weighing the possibility of offering its 1,300-MW Pleasants coal-fired generating station along the Ohio River near Willow Island, West Virginia, into Monongahela Power's request for proposals.

FirstEnergy wants to retain ownership of Pleasants and is looking to place the two-unit baseload plant in the rate base of Mon Power, a FirstEnergy subsidiary.

According to Prezelj, both FirstEnergy and its FirstEnergy Solutions merchant generating subsidiary have retained separate legal and financial advisors to help with the transition to becoming a fully regulated company, including advisors for potential asset sales, scenario planning, potential restructuring and related processes/activities.

In late November, Moody's Investors Service called a restructuring or bankruptcy the "most likely outcome" for FES, which owns 11,624 MW of unregulated generation, because of a "fundamental weakness" in the business.

Charles Jones, FirstEnergy president and CEO, acknowledged the possibility of a FES bankruptcy during a November 4 conference call with analysts, but stressed that is not the preferred path for FES.

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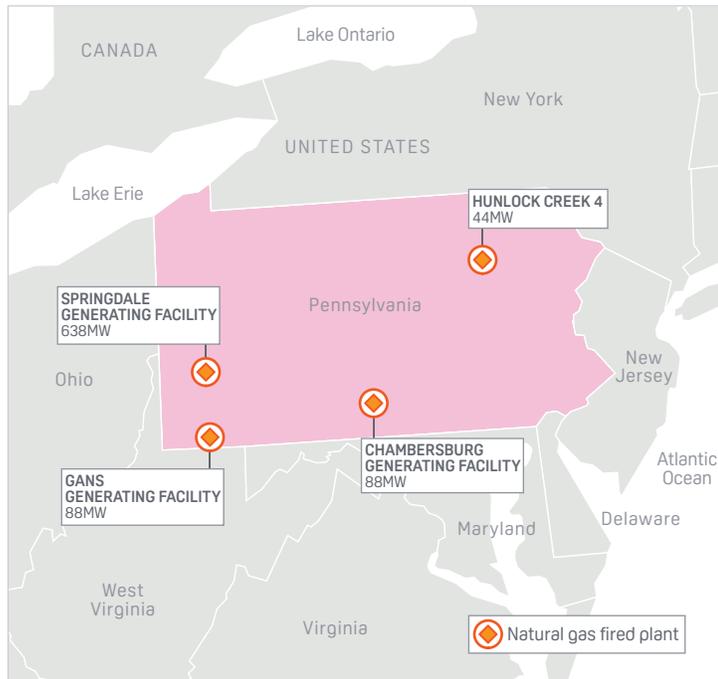
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FIRSTENERGY POTENTIAL SALE PLANTS (WHOLLY OWNED)



Source: FirstEnergy

SUBSCRIBER NOTE

S&P Global Platts and ICE Natural Gas Agreement

■ S&P Global Platts (Platts), the leading independent provider of information and benchmark prices for the commodities and energy markets, and Intercontinental Exchange (ICE), a leading operator of global exchanges and clearing houses, announced they have entered into a strategic agreement to strengthen North America's natural gas benchmarks, streamline the reporting process, and further improve transparency in over-the-counter (OTC) pricing. Under this agreement, ICE data regarding daily and monthly physical natural gas transactions will be anonymized and included as inputs into the Platts physical market price assessment processes. Not only will the addition of ICE data increase the volumes of natural gas underpinning the Platts natural gas benchmarks, it will expand the number of trades and market participants reflected in the Platts price assessment processes. After a transitional period, Platts will grant ICE exclusive rights to use Platts North American physical natural gas benchmarks in the settling and clearing of natural gas derivatives contracts. A key benefit of this agreement is that market participants will be able to use ICE exchange transactions and ICE eConfirm, an industry-leading electronic trade confirmation service, as a means of having their transactions data used in the Platts price assessment process. This brings additional data and efficiency to the assessment process, which traditionally comprises emailing trades to Platts. A transition period will apply before Platts incorporates the ICE data into its assessments and before ICE eConfirm can be used for submitting trades, and is targeted for mid-first half 2017. Visit the online resource www.platts.com/ice or contact Mark Callahan, Editorial Director Global Natural Gas and Power Pricing, at mark.callahan@spglobal.com or 713-658-3211 for additional information.

FirstEnergy enters into new financial arrangements

Prezelj also said that FirstEnergy and certain subsidiaries on December 6 entered into several new five-year syndicated credit facilities available through December 6, 2021, and concurrently terminated previous credit facilities that were to expire on March 31, 2019.

FirstEnergy and its 10 regulated distribution utilities entered into a new, \$4 billion revolving credit facility, an increase of \$500 million over its previous \$3.5 billion facility.

FirstEnergy Transmission LLC and its subsidiaries entered into a \$1 billion revolving credit facility, replacing a \$1 billion credit facility.

And, FirstEnergy entered into a \$1.2 billion term loan, replacing a \$1 billion term loan and separate \$200 million term loan.

On October 12, the Ohio Public Utilities Commission approved a new customer charge for FirstEnergy that potentially could amount to just over \$1 billion over five years.

The so-called "distribution modernization rider" is intended to allow the company to finance improvements to its electric infrastructure in northern Ohio.

However, the order does not specifically state how the money is to be spent, causing some critics to claim FirstEnergy could use the money to prop up its money-losing power plants. FirstEnergy says it will not do that.

On Wednesday, the PUC approved the rehearing requests of several parties, including the Sierra Club, Ohio Office of Consumers' Counsel and FirstEnergy.

— *Bob Matyi*

ISOs aid green power growth, but future unsure

ANALYSIS Independent system operators facilitate renewables development more effectively than other power market structures, a new study concludes, but experts say other coincidental factors may also be relevant, and renewables' future may depend more on politics and global energy economics.

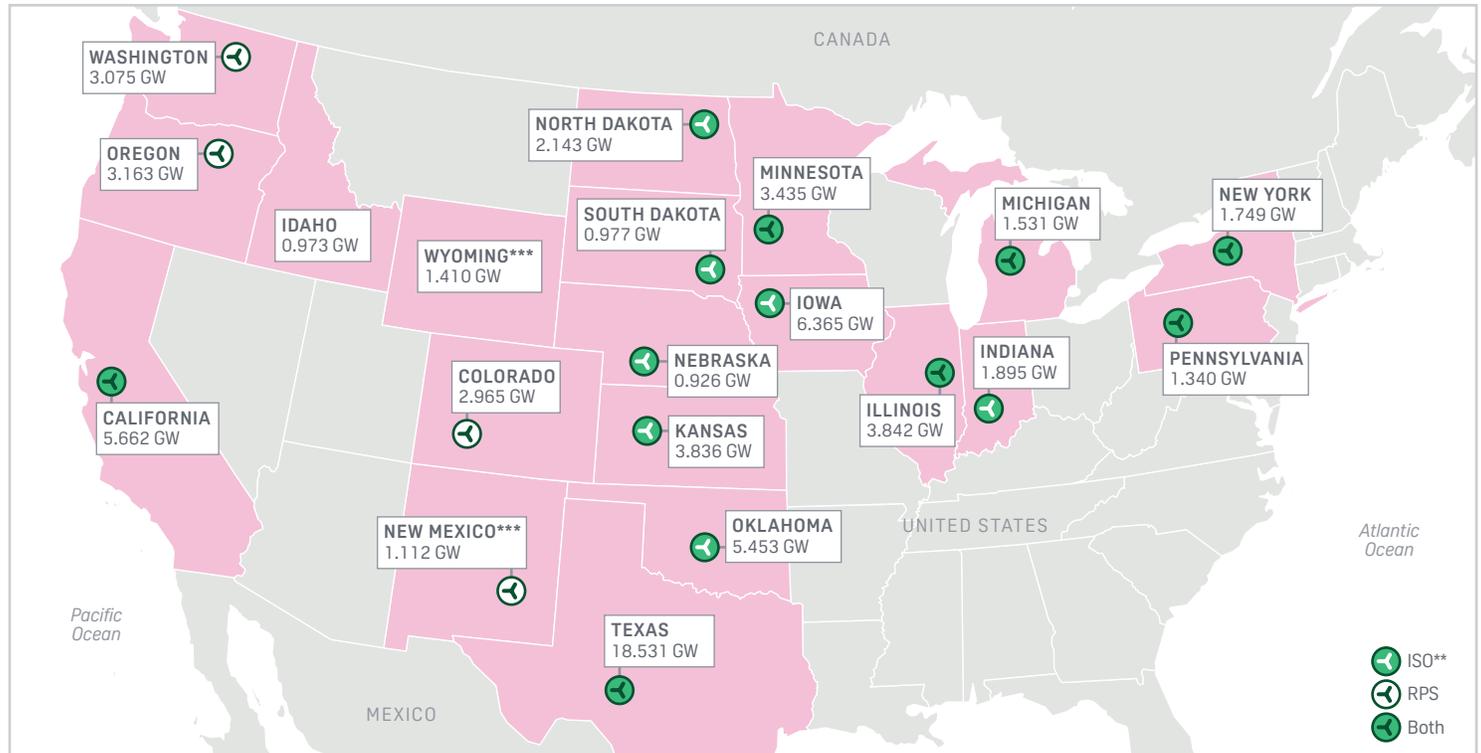
In a report issued Thursday entitled "The Role of RTO/ISO Markets in Facilitating Renewable Generation Development," The Brattle Group, an economics and finance consultancy based in Cambridge, Massachusetts, concluded that "investment in renewable generation significantly exceeds state [renewable portfolio standards] in some regions."

"The majority of these 'beyond-RPS' renewable generation investments have occurred in regions" with low-cost renewable resource potential and organized regional transmission organization/ISO markets "that provide transparent and liquid trading for both the 'energy' and 'green' attributes generated by the resources," the report states.

An analysis of the American Wind Energy Association's market report for the third quarter of 2016 shows that of the top 20 states, representing 70,383 MW of the nation's 75,716 MW of nameplate wind capacity, 14 of those states are mostly or totally within the boundaries of an ISO, and another two have some of their land area within an ISO footprint. Of those top 20 states, only 11 have RPSs.

ISOs' real-time energy market, lower-cost ancillary service management and easier transmission access and interconnection

TOP 20 STATES IN WIND CAPACITY*, ISO STATUS**, RPS STATUS



*As of September 30

**Most or all of state

***Less than half of territory in ISO footprint

Source: American Wind Energy Association

process facilitate renewable power development, Brattle said.

The Electric Power Supply Association "has long argued that the independent operation of the transmission system, larger geographic footprints, and economic dispatch in organized markets combine to facilitate better access for new resources including renewables," said EPSPA President and CEO John Shelk.

Other factors: resource potential, public support

"To be fair, there may also be other factors at work, though the advantages of organized markets are the dominant driver," Shelk said in an email Friday. "For example, organized markets, as a general rule with some exceptions, tend to be in areas of the country with both renewable resource potential and public support for the environmental benefits of renewables. Examples include the Northeast, Mid-Atlantic, Texas and California. But even in these areas the tool of organized markets is central to achieving desired public policy goals."

And some of the largest companies in those areas, such as Google and Amazon in California, have made commitments to obtain most or all of their electricity from renewable resources.

"Corporate demand for clean energy is part of what is driving growth," said Robert King, president of Good Company Associates, an energy market consultancy. "The Fortune 500 controls 39% of world [gross domestic product], and many of them have adopted commitments to clean power. They are now pushing for direct access or indirect access even in vertically integrated markets."

Matthew Cordaro, former MISO president and CEO, said he concurs

with The Brattle Group's conclusion, "but its findings are not surprising."

While ISOs' cost incentives and scale factors make renewables growth relatively quick and inexpensive, "RTO/ISOs further facilitate their integration because of geographic reach, and the interconnection and transmission support inherent in the concept of a grid manager and reliability steward," Cordaro said in an email Thursday.

As wind and solar lack a need for fuel and therefore have very little marginal cost, they benefit from the fact that ISOs work on marginal pricing, rather than on a regulated return on capital and variable cost recovery elements established by rate tariffs that grant local monopolies.

Tax policy and real-time spot markets interact

Another factor is how the federal production tax credit works with real-time spot markets, said Ron McNamara, managing director of First Principles Economics, an economic consultancy.

"The PTC creates a 'wedge' between the market price and the effective price received by a specific class of generators," McNamara said in an email Friday. "A real-time spot market then provides an opportunity for these generators to dump their power on the grid at prices that would be uneconomic but for the PTC."

Another factor is that the cost of ancillary services — e.g., frequency regulation, ready reserves — is charged by ISOs to the "beneficiaries" rather than to those who caused the cost, McNamara said.

"Thus intermittent renewable resources do not see/pay the true cost of their effects to the network in terms of reserves, operating procedures, or other mechanisms," McNamara said.

Eric Smith, Tulane Energy Institute associate director, said, "Over the last five years, much of the renewable power sold in the West and in Texas has been 'free riding' on existing, gas-fired, dispatchable capacity."

"Going forward, as more existing gas capacity is devoted to replacing baseload coal and nuclear generation, there may be a much higher premium on providing dispatchable capacity in order to make intermittent renewable power generation economically viable," Smith said in an email Thursday.

"Interminable delays in getting new gas pipelines approved" limit the ability of natural gas-fired generation to facilitate the growth of renewable power, Smith said.

Strong LSE balance sheets facilitate green PPAs

Joshua Rhodes, a University of Texas Energy Institute postdoctoral fellow, said renewables' developers benefit from the low cost of capital frequently ensured by power purchase agreements with local load-serving entities, such as Georgetown, Texas, an Austin suburb with a strong bond rating and which recently announced a commitment to 100% renewable power.

"A bank will throw 2.5% to 3% money at that all day long," Rhodes said Friday.

But perhaps a more significant factor in the growth of renewable generation in those states that happen to be in ISOs is those states' geographic characteristics, with strong wind and solar resources, Rhodes said.

A UT Energy Institute study released Thursday shows that for 1,347 of the nation's 3,110 counties, mostly in the nation's midsection, wind is the cheapest option for new generation, but Rhodes said ISOs do make a difference.

"Allowing those resources to connect to the grid can be a nontrivial cost," Rhodes said, and ISOs make that process easier and faster, and they also tend to facilitate the development of a more robust transmission system.

But McNamara said a regional transmission tariff "allows for the costs of the transmission upgrades necessary to bring remote generation from intermittent resources to be spread over a much wider base."

"The design and structure of RTOs and ISOs have largely allowed intermittent resources to privatize the gains and socialize the costs," McNamara said.

Michelle Foss, UT Bureau of Economic Geology chief energy economist, said that if President-elect Donald Trump succeeds in dropping the corporate tax rate from 35% to 15%, it is likely that only the mortgage tax deduction would be allowed to continue, eliminating other tax credits, including those for renewables.

As fuel and other marginal costs have decreased at the wholesale level, retail energy rates have generally increased, Foss said Friday. "Retail customers are only just now beginning to see the effect of cheap natural gas prices," she said.

At least part of the difference between falling fuel costs and rising retail power costs is the ancillary service cost of providing renewable

power to the grid, although that number is hard to calculate and retail customers never see it, Foss said.

With the likely low fuel costs resulting from Trump's promised ramp up of domestic energy production and elimination of carbon regulation, the revenue that renewable power might derive from continued low power prices likely would diminish renewable power's financial allure, according to Foss, and with no federal tax credits renewable power developers "simply can't get financing."

Renewable power providers need "either tax credits in order to be whole or higher natural gas prices in order to be whole, which would bring higher wholesale power prices, which will help balance the books for renewables developers," Foss said.

— [Mark Watson](#)

ERCOT coal sees 6th straight month of recovery

Higher gas prices in November are supporting the rebound in coal generation's market share in the Electric Reliability Council of Texas, with the release of the ISO's Energy and Demand report marking the sixth consecutive month coal has shown a recovery from the lows of 2015.

ERCOT coal generation market share in November came in at 32%, about five percentage points higher relative to year-ago levels when the gas market was facing low prices due to above-normal temperatures leading into winter. Coal output averaged 263.6 GWh/d, a 22% increase relative to November 2015.

While gas generation still claimed the highest share of supply in the market in November, market share for the fuel came in about eight percentage points lower relative to last year. Gas accounted for about 37% of generation in November with the yearly decline in market share also reflected by sharply lower output. November gas generation in ERCOT averaged 298.4 GWh/d, a 16% decrease from year-ago levels.

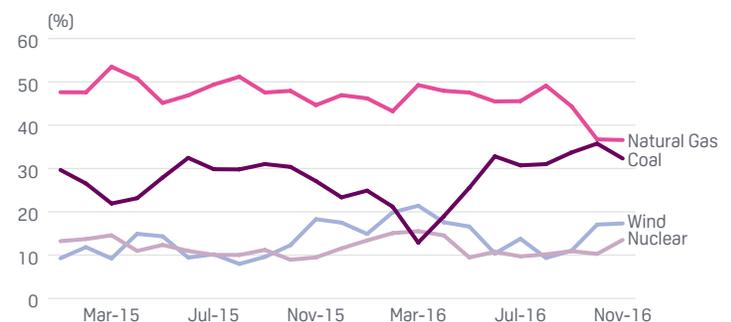
Higher gas prices lead to coal-gas shuffle

The shuffle in generation relative to 2015 comes as regional gas prices continue to remain higher compared to last year.

Spot natural gas at Houston Ship Channel averaged \$2.47/MMBtu in November, up about 20% from November 2015. Prices for gas at TX Eastern E TX averaged \$2.26/MMBtu, up 16% from November 2015. Platts Analytics' Bentek Energy estimates that PRB coal was just barely more competitive than gas at these price levels.

Higher gas prices led to lower heat rates across major trading hubs

ERCOT FUEL MIX



Source: Electricity Reliability Council of Texas

relative to a year ago including the Houston Hub, North Hub and West Hub. The market heat rate for on-peak day-ahead power across the three hubs last month was 9.50 MMBtu/MWh, down from 11.0 MMBtu/MWh in November 2015.

Wind comes in lower despite new output records

ERCOT posted two consecutive records for wind output during the month, the first on November 17 when output reached 14,122 MW and another on November 27 when output reached 15,033 MW. Total wind generation in November, however, came in 4% lower compared to 2015 and 12% lower month over month.

ERCOT wind generation averaged 141.3 GWh/d. A 13% decline in load-allowed wind market share to stay mostly unchanged from the previous month as November wind market share came in modestly over 17%, or three-tenths of a percent higher than October.

ERCOT has 17,189 MW of installed wind generation capacity with 1,944 MW expected to be added by the end of this month. If ERCOT wind capacity reaches 19,133 MW by the end of the year it would be an increase of more than 21% from 2015.

ERCOT wind capacity grew more than 26% from 2014 to 2015, the largest year-on-year growth for wind in ERCOT since an increase of 67% from 2007 to 2008.

— [Jonathan Nelson](#)

Michigan OKs creation of new electric/gas utility

Michigan regulators on Friday approved the creation of a Michigan-only electric and natural gas utility, the Upper Michigan Energy Resources Corp., in an effort to address a longstanding electric reliability problem in the state's Upper Peninsula.

Starting in January, some 40,000 customers previously served by Wisconsin Electric and Wisconsin Public Service, both subsidiaries of Wisconsin's WEC Energy Group, will be served by UMERC.

After the Michigan Public Service Commission approved UMERC's formation, PSC Chairman Sally Talberg said the commission "expects that creation of the Michigan-based utility will enable some 35,000 electric and 5,000 gas customers in the Upper Peninsula to have access to affordable, reliable and safe energy."

UMERC still needs final approval from the Wisconsin Public Service Commission and US Federal Energy Regulatory Commission, both of which are expected before the end of the year.

Amy Jahns, a spokeswoman for Milwaukee-based WEC, said in an interview that the new utility is on track to begin operating on January 1, 2017. It will have offices in Menominee and Iron Mountain, Michigan.

Jahns added that UMERC also plans to file a formal certificate of need application with the Michigan PSC early next year to construct two natural gas-fired plants in the UP representing about 170 MW. The reciprocating internal combustion engines will be in Marquette and Baraga counties and burn gas to generate electricity around the clock.

PSC approved settlement agreement

Earlier this fall, WEC entered into an uncontested settlement agreement with several Michigan intervenors, including the PSC staff and Michigan Attorney General Bill Schuette, in support of UMERC's creation.

Schuette, a Republican, and the PSC staff initially expressed concerns about the new utility but changed their minds after additional information was made available.

The PSC said its approval of UMERC was conditioned on several additional commitments made by the applicants, including: UMERC will provide the PSC staff with a capital and operations plan annually, to be submitted on June 1, 2017, and every year on June 1 thereafter; the applicants will allow the PSC staff to have access to all of Wisconsin Electric's books and records relating to the 431-MW Presque Isle coal-fired power plant near Marquette that the gas plants eventually would replace; and that the applicants will not seek or support changes before FERC that would shift any costs to UMERC customers that currently are shared between Wisconsin and Michigan.

PSC spokeswoman Judy Palnau said Aurora Gas Company was the last new utility formed in Michigan in 1984.

Michigan trying to address resource adequacy

The remote and sparsely populated UP for years has been both transmission and generation challenged.

In late August, Talberg warned Michigan "could go dark" in 10 years if efforts are not undertaken soon to deal with the state's growing electric reliability concerns.

For 2017 the Midcontinent Independent System Operator has forecasted a 300-MW capacity shortfall for Zone 7 in lower Michigan, which includes the state's most populous region in and around Detroit.

Both DTE Energy and Consumers Energy, the state's two largest electric utilities, either have retired or intend to shutter thousands of megawatts of coal generation, making them more dependent on natural gas, renewables and, in the case of DTE, nuclear.

— [Bob Matvi](#)

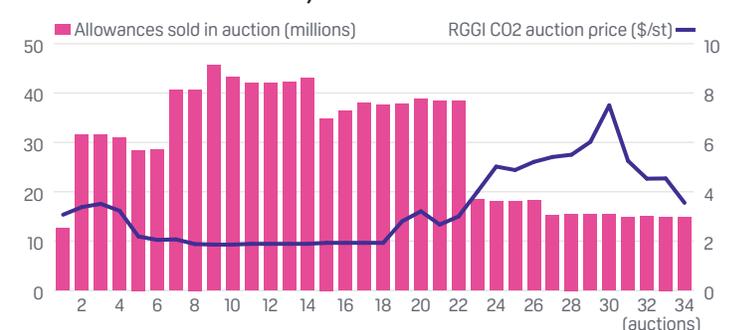
RGGI CO2 allowance prices fall to \$3.55/st

The price of the Regional Greenhouse Gas Initiative's carbon dioxide allowances fell to \$3.55/st Wednesday in the last auction of 2016, the cap-and-trade program's administrator said Friday.

The 34th RGGI auction price was nearly 22% lower than the previous auction in September and almost 53% below the December 2015 auction price, which set a record of \$7.50/st. This latest auction price was the lowest value since Auction 22 in December 2013, which sold at \$3/st.

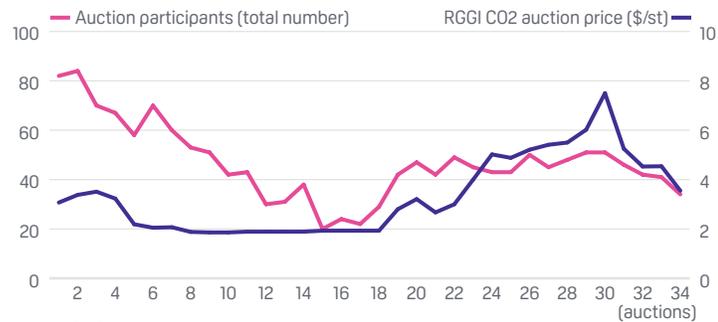
The uncertainty surrounding the Clean Power Plan appears to be

34TH RGGI AUCTION PRICE, ALLOWANCES SOLD



Source: RGGI Inc.

34TH RGGI AUCTION PRICE, PARTICIPANTS



Source: RGGI Inc.

continuing to dampen RGGI prices and auction participation.

The 34th auction saw all 14.791 million CO2 allowances sold, with bids ranging from \$2.10/st to \$13.75/st per allowance, according to a report from Potomac Economics, the auction's independent market monitor. The average bid was \$3.40/st and the median bid was \$3.46/st.

Thirty-three bidders, out of a potential 48, were involved in the 34th auction, with compliance entities purchasing 71% of allowances and compliance-oriented entities buying 40%. In auctions 1-34, compliance entities bought 77% of allowances.

The auction generated \$52.5 million for reinvestment in strategic programs, including energy efficiency, renewable energy, direct bill assistance and GHG-abatement programs. Cumulative proceeds from all RGGI CO2 allowance auctions exceed \$2.6 billion.

Under RGGI, power plant owners in nine states — Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island and Vermont — must buy CO2 allowances to cover their emissions.

"The elements that made RGGI such a successful program at its inception are just as relevant today," Katie Dykes, chairwoman of the Connecticut Public Utilities Regulatory Authority and also chairwoman of the RGGI board of directors, said in a news release. "The use of a market-based system to cap emissions allows for the most cost-effective reductions. And the auctioning of allowances and the reinvestment of auction proceeds provides benefits for consumers while locking in emissions reductions. The program's flexibility allows it to adapt to changing circumstances and support the goals of nine states across a diverse region."

The auction also included 10 million cost containment reserve allowances available for sale, but none sold as the CO2 auction clearing price was too low to trigger the sale, according to Market Insight: The Evolution Blog. The 2016 CCR trigger prices is \$8.

The CCR is a fixed additional supply of allowances that are only available for sale if CO2 allowance prices exceed certain price levels. All 10 million CCR allowances remain available for sale in 2016.

— [Kassia Micek](#)

PacifiCorp to end net metering for some

Taking advantage of regulatory procedures, PacifiCorp is on the verge of abolishing credits at the retail rate for residential net metering customers in Utah with the December 10 effective date of a new tariff.

The state's dominant electric utility filed an advice letter on November 9 that by state law is effective 30 days after filing unless the

DAILY CSAPR ALLOWANCE ASSESSMENTS, DEC 09 (\$/st)

	\$/st	2016 Range	\$/st	2017 Range
NOx Annual	6.50	3.00-10.00	6.50	3.00-10.00
NOx Seasonal	160.00	140.00-180.00	675.00	350.00-1000.00
SO ₂ Group 1	2.50	0.50-10.00	2.50	0.50-10.00
SO ₂ Group 2	4.25	0.50-10.00	4.25	0.50-10.00

RGGI CARBON ALLOWANCE FUTURES, DEC 8 (\$/allowance)

ICE	Settlement	Volume
Dec16 V15	3.91	0
Dec17 V15	4.06	0
Dec18 V15	4.21	0
Dec16 V16	3.90	0
Dec17 V16	4.05	0
Dec18 V16	4.20	0
Dec16 V17	3.90	0
Dec17 V17	4.05	0
Dec16 V18	3.90	0
Dec17 V18	4.05	0
Dec18 V18	4.20	0
Dec19 V18	4.36	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.

Utah Public Service Commission takes action and the PSC has shown no sign it intends to do so, according to PSC staffers and participants in the proceeding.

Solar interests are incensed. Without last-minute PSC action, the tariff will impose a December 9 cutoff date for "grandfathering" new net metered customers, residential solar provider Vivint Solar said. Concurrent with the advice letter, PacifiCorp applied to have new solar customers pay a demand charge and increased service charge.

"The result of RMP's proposed rate structure, the effects of which RMP seeks to accelerate through its advice letter filing, would be catastrophic to the residential solar industry and result in the loss of hundreds, if not thousands, of jobs," Vivint said, referring to PacifiCorp's Rocky Mountain Power division, which operates in Utah.

PacifiCorp is seeking to take advantage of a state law that says whenever a public utility files a schedule or rule that does not result in a rate increase or charge, that schedule or rule takes effect in 30 days unless the commission suspends or modifies it.

PacifiCorp proposed to change its net metering tariff so that customers who apply for net metering service after December 9 will take service under a new schedule whenever the commission rules on the company's new rate proposals.

Uncertainty could stifle installations

Utah Solar Energy Association President Ryan Evans said the tariff change would hurt the rooftop solar industry because PacifiCorp's customers would be reluctant to install new solar systems without knowing the terms.

"All intervenors agree it should be rejected or suspended at a minimum. Having a new class of customers starting December 10 would make it very difficult for someone to make an investment in rooftop solar," Evans said. "Investing in a system for \$20,000 or \$30,000 without knowing what they are signing up for would be very tough on new customers."

PacifiCorp spokesman Dave Eskelsen on December 8 said, "A lot of

people misunderstand what is going on here. Emotions have been running pretty high in this thing. We certainly reject the notion that we are trying to pull a fast one. This has been before the legislature and the commission for the past two years and has been through an exhaustive public process. The notion that we are doing something behind the scenes is just unfounded."

Eskelsen said PacifiCorp's reply comments filed Nov. 29 provide the best response. In this document PacifiCorp said it wanted to draw a firm line between those customers who should be grandfathered under the existing net metering tariff with its retail rate credit for excess energy customers put on the grid and those who would be subject to a new tariff such as what the utility proposed in the older docket.

"The purpose of the tariff filing is simply to provide unequivocal notice to customers who may now be considering private generation systems that the commission is in the process of fulfilling its mandate under the net metering statute and that net metering rates may change through that process," PacifiCorp said. "The tariff filing also indicates that Rocky Mountain Power believes the commission may wish to treat customers that have already installed private generation systems and subscribed to net metering differently than those who make that decision going forward."

Anyone who filed an application for a net-metered solar interconnection before the cutoff date will be grandfathered under the retail net metering credits provided under current Schedule 135, PacifiCorp said in the November 9 advice letter.

However, anyone applying for interconnection after that cutoff date will have to take service under a new Schedule 135A, in which new customers will be subject to all changes the PSC later approves to net metering service, including changes to credits, charges or rate structures resulting from new service schedules.

"It also forecloses future argument that customers who commence net metering service after December 9, 2016, should be grandfathered under existing rates because they made investments in private generation systems without knowledge that Schedule 135 rates might change," the company said.

Rate proposal set for August hearing

Berkshire Hathaway Energy subsidiary PacifiCorp's specific rate proposal is pending in another proceeding before the commission and is slated for extensive testimony and hearings through August 18, 2017, according to a procedural order filed in the PSC's net metering investigatory docket, which was opened in 2014. (Utah PSC Docket No. 14-035-114)

On November 9 the PSC opened a separate docket to receive PacifiCorp's advice letter and public comments on it. (Utah PSC Docket No. 16-035-28)

Utah Clean Energy, an advocacy group, said in a November 22 comment the commission should not allow PacifiCorp to subject new net-metered customers to more restrictive conditions prior to development of a full evidentiary record to determine whether those customers should be subject to different rates.

"We anticipate that creating 135A will effectively halt development of rooftop solar projects in Utah after December 9, 2016, by establishing a presumption that rates will change before

OUTAGES

GENERATION UNIT OUTAGE REPORT

Plant/Operator	Cap	Fuel	State	Status	Return	Shut
Northeast						
Atikokan-1/OPG	205	bio	Ont.	MO	Unk	12/02/16
Beck-2 PGS/OPG	103	h	Ont.	MO	Unk	04/11/16
Bruce-2/Bruce Power	750	n	Ont.	MO	Unk	12/02/16
Bruce-7/Bruce Power	823	n	Ont.	MO	Unk	11/18/16
Darlington-2/OPG	887	n	Ont.	MO	Unk	10/14/16
Harmon/OPG	149	h	Ont.	MO	Unk	11/21/16
Lake Superior/Brookfield	120	g	Ont.	PMO	Unk	11/04/14
Lennox-4/OPG	525	g	Ont.	MO	Unk	12/08/16
Pickering-7/OPG	520	n	Ont.	MO	Unk	09/02/16
Ta Douglas/TransAlta	122	g	Ont.	MO	Unk	12/07/16
Thunderbay-3/OPG	153	bio	Ont.	MO	Unk	12/05/16
PJM & MISO						
DC Cook-2/AEP	1081	n	Mich.	MO	Unk	10/06/16
Three Mile Island/Exelon	890	n	N.J.	PMO	Unk	12/01/16
Southeast & Central						
Ark. Nuclear-1/Entergy	858	n	Ark.	MO	Unk	09/26/16
Grand Gulf/Entergy	1443	n	Miss.	MO	Unk	09/08/16
Sequoyah-1/TVA	1177	n	Tenn.	MO	Unk	11/28/16
West						
Alamitos-1/AES	175	g	Calif.	PMO	Unk	12/04/16
Belden/PG&E	119	h	Calif.	PMO	Unk	10/24/16
Calif Flats N/First Solar	130	s	Calif.	MO	Unk	12/01/16
Colgate Powerhouse/YCWA	176	h	Calif.	PMO	Unk	12/04/16
Desert/First Solar	296	s	Calif.	PMO	Unk	12/08/16
Eastwood/SGE	200	h	Calif.	PMO	Unk	11/27/16
Encina-3/NRG	110	g	Calif.	MO	Unk	12/08/16
Etiwanda-3/AES	320	g	Calif.	PMO	Unk	11/30/16
Etiwanda-4/AES	320	g	Calif.	PMO	Unk	12/04/16
Ivanpah-1/NRG	123	s	Calif.	MO	Unk	12/08/16
Ivanpah-2/NRG	133	s	Calif.	MO	Unk	12/08/16
Ivanpah-3/NRG	133	s	Calif.	MO	Unk	12/08/16
La Rosita-1/Intergen	180	g	Mexico	PMO	Unk	12/08/16
La Rosita-2/Intergen	322	g	Mexico	PMO	Unk	12/08/16
Mandalay-1/NRG	215	g	Calif.	PMO	Unk	12/04/16
Mandalay-2/NRG	215	g	Calif.	PMO	Unk	12/04/16
Ocotillo/Pettern	265	w	Calif.	MO	Unk	12/04/16
Pine Flat/KRCD	210	h	Calif.	PMO	Unk	10/10/16
Silver State S/NextEra	250	s	Calif.	PMO	Unk	12/08/16
Sutter/Calpine	525	g	Calif.	MO	Unk	06/06/16
TDM/Sempra	625	g	Mexico	PMO	Unk	12/07/16

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.

PLATTS TO DISCONTINUE CSAPR BID/OFFER RANGES

■ S&P Global Platts will discontinue the daily CSAPR bid/offer ranges that publish in Coal Trader and in Market Data category EJ effective February 15, 2017. The daily CSAPR assessments will remain unchanged, with Platts continuing to publish the closing value. Only the high and low ranges will no longer be displayed. The relevant codes are as follows:

■ US Emissions CSAPR NOx Annual Vintage 1 ENOXY01 US Emissions CSAPR NOx Seasonal Vintage 1 ENOXS01 US Emissions CSAPR SO2 G1 Vintage 1 ES021Y1 US Emissions CSAPR SO2 G2 Vintage 1 ES022Y1 US Emissions CSAPR NOx Annual Vintage 2 ENOXY02 US Emissions CSAPR NOx Seasonal Vintage 2 ENOXS02 US Emissions CSAPR SO2 G1 Vintage 2 ES021Y2 US Emissions CSAPR SO2 G2 Vintage 2 ES022Y2

■ Please address any questions or comments to coal@spglobal.com and pricemethodology@spglobal.com.

any evidence has been presented," the group said. "Customers are unlikely to make the decision to install solar under such uncertain circumstances."

The state Division of Public Utilities asserted the advice letter tariff is premature and questioned whether the grandfathering is consistent with Utah law.

The state Department of Commerce's Office of Consumer Services said the commission should merge the issues contained in the advice letter docket with the net metering investigatory docket.

— [Jeff Stanfield, S&P Global Market Intelligence](#)

N.Y. PSC asks court to dismiss CES challenge

New York's Public Service Commission asked a federal court Friday afternoon to dismiss a lawsuit challenging a controversial part of the state's Clean Energy Standard that allows for billions of dollars of ratepayer subsidies for "at risk" nuclear power plants in upstate New York.

In October, the Coalition for Competitive Electricity sued PSC chair Audrey Zibelman and commissioners Patricia Acampora, Gregg Sayre and Diane Burman after they approved the CES at the behest of Andrew Cuomo, the state's Democratic governor.

The coalition, including major competitive power producers Dynegy, NRG Energy and Eastern Generation, among others, responded by filing the lawsuit in the US District Court for the Southern District of New York in Manhattan.

Among other things, they alleged that portions of the CES relating to nuclear subsidies discriminate against the wholesale power market and violate the Commerce Clause of the US Constitution.

While they do not contest the renewable portion of the CES, the competitive suppliers oppose the CES' use of zero emission credits, or ZRCs, to improve the competitiveness of the 1,900-MW Nine Mile Point and 614-MW R.E. Ginna nuclear plants, owned by Chicago-based Exelon, and Entergy's 838-MW James A. FitzPatrick nuclear plant that Exelon is negotiating to buy.

CES supporters warn nuclear plants could close

CES supporters have warned the plants could close without additional support, taking with them hundreds, if not thousands, of good-paying jobs in upstate New York and endangering grid reliability.

Opponents have countered that the state is improperly providing a bailout of nearly \$8 billion to an out-of-state company, Exelon, the largest nuclear generator in the US.

In their dismissal motion, Zibelman and the other three commissioners argued the CES does not violate any federal law. "Neither the Constitution's Supremacy Clause nor the [Federal Power Act] affords plaintiffs a private right of action to pursue those claims in court, and the FPA forecloses resort to this court's equitable power in lieu of a cause of action," they asserted.

The defendants noted that New York concluded it must reduce greenhouse gas emissions "and other environmental harms of producing electricity to serve New Yorkers." Commissioners also determined "that there are no feasible alternatives that could replace

the nuclear plants' zero-emission attributes in the short run if the at-risk nuclear plants were to retire."

More energy efficiency not a short-term solution

While New York already is attempting to maximize energy efficiency in the state, commissioners also concluded it was "unrealistic to assume that sufficient additional energy efficiency measures could be identified and implemented in time to offset" the potential loss of 27,600 GWh/year of carbon-free energy as represented by the upstate nuclear plants, the defendants added.

As a result, the state adopted the CES with its two primary goals of promoting the development of renewable energy while retaining zero-emission nuclear plants at risk of retiring.

The PSC "found both steps to be in the public interest and essential to achieving the state's overall objective: transforming the state's energy supply to include significantly more environmentally friendly resources," the defendants said.

Commissioners added that the plaintiffs electric generating facilities "emit significant quantities" of greenhouse gases and other harmful air pollutants. The roughly 30,000-MW generation portfolio of Houston-based Dynegy, for instance, relies heavily on natural gas and coal.

— [Bob Matyi](#)

Iberdrola seeks to build Mexican solar project

Iberdrola Renovables submitted an environmental approval request to Secretaría de Medioambiente y Recursos Naturales, Mexico's environmental ministry, for the construction of a 200-MW solar photovoltaic plant in Cuyoaco and Ocotepic in Puebla state.

This is Iberdrola's first solar project in Mexico. The Spanish energy giant is already the largest private power generator in the country with a total installed capacity of 6,000 MW. The company has 10 renewable and natural gas power plants under construction, worth \$3 billion and with a total capacity of 4,000 MW.

In October, the Mexican environmental authority rejected the photovoltaic project in its *Ecological Gazette*, without providing a reason.

The project will comprise 200 photovoltaic blocks of 1.2 MW and a 4.2-mile transmission line, according to the new application. The project's cost will be \$300 million with an expected payback period of seven years. The solar farm is expected to take 26 months to build and it will generate power over 25 years.

The solar farm will be built on agricultural lands in both municipalities. Iberdrola expects no alterations to any vegetation, so it believes that no authorization for the change of land use from authorities is needed.

According to the state newspaper, *El Sol de Puebla*, local communities support the development of the project, and they have already approved land leases.

For 2019, Iberdrola expects Mexico to be its main source of power generation, surpassing power generated in Spain. According to its second-quarter 2016 earnings report, Mexico already represents 25% of the company's total generated power.

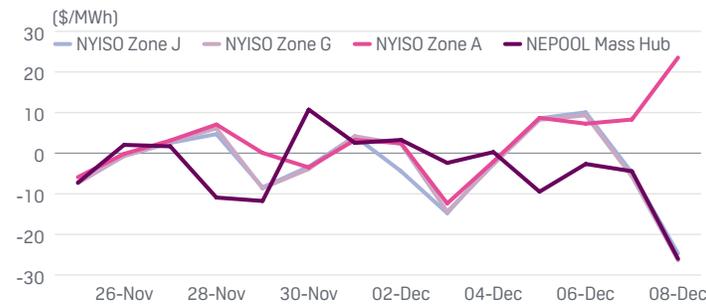
— [Daniel Rodriguez](#)

NORTHEAST POWER MARKETS

NORTHEAST DAY AHEAD POWER PRICES (\$/MWh)

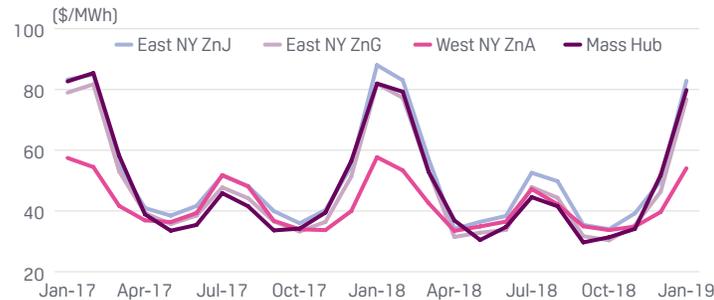
Hub/Index	Symbol	10-Dec	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly change			
				@7K	@12K	Chg	% Chg				Dec-16	Dec-15	Chg	% Chg
On-Peak														
ISONE Internal Hub	IINIM00	71.59	7293	2.88	-46.21	-5.18	-6.7	51.88	26.05	76.77	49.05	26.10	22.95	87.9
ISONE NE Mass-Boston	IINN00	71.85	7319	3.13	-45.95	-5.06	-6.6	52.07	25.93	76.91	49.18	26.20	22.98	87.7
ISONE Connecticut	IINC00	70.97	9007	15.81	-23.58	-5.40	-7.1	51.33	26.34	76.37	48.65	25.93	22.72	87.6
NYISO Zone G	INYHM00	58.04	11852	23.76	-0.72	6.83	13.3	43.65	31.29	58.04	42.78	23.54	19.24	81.7
NYISO Zone J	INYNM00	57.28	11697	23.00	-1.48	4.97	9.5	44.38	31.99	57.28	43.36	23.88	19.48	81.6
NYISO Zone A	INYWM00	22.63	6325	-2.42	-20.30	-6.93	-23.4	33.54	22.63	40.94	31.19	24.35	6.84	28.1
NYISO Zone F	INYCM00	85.05	17961	51.90	28.23	21.88	34.6	46.81	29.63	85.05	47.36	25.16	22.20	88.2
Off-Peak														
ISONE Internal Hub	IINIP00	55.41	5634	-13.43	-62.61	0.79	1.4	35.95	16.95	55.41	34.64	15.06	19.58	130.0
ISONE NE Mass-Boston	IINNP00	55.07	5599	-13.78	-62.96	0.88	1.6	35.79	16.99	55.07	34.41	15.06	19.35	128.4
ISONE Connecticut	IINCP00	55.02	6829	-1.38	-41.66	0.77	1.4	35.72	16.97	55.02	34.49	14.91	19.58	131.3
NYISO Zone G	INYHP00	47.58	9227	11.48	-14.30	9.32	24.4	32.46	21.01	47.58	31.78	12.77	19.01	148.9
NYISO NYC Zone	INYNP00	46.90	9095	10.80	-14.98	8.59	22.4	32.71	21.22	46.90	31.94	12.97	18.97	146.3
NYISO West Zone	INYWP00	13.08	3636	-12.10	-30.09	-5.16	-28.3	25.22	13.08	30.62	22.65	7.12	15.53	218.1
NYISO Capital Zone	INYCP00	75.17	15576	41.39	17.26	24.32	47.8	35.16	21.56	75.17	36.45	15.47	20.98	135.6

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



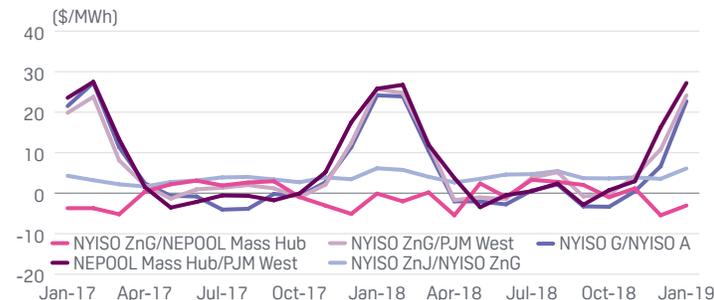
Source: Platts

NORTHEAST PLATTS M2MS FORWARD CURVE: ON-PEAK



Source: Platts

NORTHEAST PLATTS M2MS LOCATIONAL SPREADS: ON-PEAK



Source: Platts

Cold weather fuels Northeast demand

Northeast day-ahead and near-term power prices maintained strength Friday, with colder weather set to descend on the region next week.

High temperatures across the Northeast are predicted to be in the mid-30s to upper 40s at the start of the week, but then ratchet back as the week continues. Highs by Thursday and Friday are forecast in the 20s and teens. Lows are expected to be in single digits by Friday.

Grid operator outlooks across the region show steady demand from the beginning of the week through Wednesday before rising Thursday.

The ISO New England expected peakload Friday around 17.8 GW, around 18 GW Monday through Wednesday, and rising to about 19.2 GW Thursday.

In New York, the ISO predicted peakload for Friday around 20.7 GW, around 20.8 GW Monday and Tuesday, and rising to 21.7 GW Wednesday and 22.8 GW Thursday.

For the Mid-Atlantic region, the PJM Interconnection expected a peak of around 38.1 GW Friday, 37.3 GW Monday, Tuesday and Wednesday, then jumping to 40.4 GW Thursday.

In day-ahead trading, Mass Hub on-peak was slightly down on the day, edging down about \$2 with trades ranging in the low-to-upper \$70s/MWh for Monday delivery on Intercontinental Exchange. Mass Hub on-peak weekend packages were in the low \$70s/MWh, while on-peak balance-of-the-week packages were formed up in the mid-\$80s/MWh.

New York Zone G on-peak day-ahead packages were in the upper \$50s/MWh for Monday, while Zone A on-peak were in the upper \$20s/MWh.

PJM West Hub on-peak drifted down nearly \$4 to the mid-\$30s/MWh for Monday delivery. PJM West Hub on-peak weekend packages were in the upper \$30s/MWh, while off-peak weekend packages traded in the low \$30s/MWh. PJM West Hub on-peak balance-week packages were in the mid-\$60s/MWh.

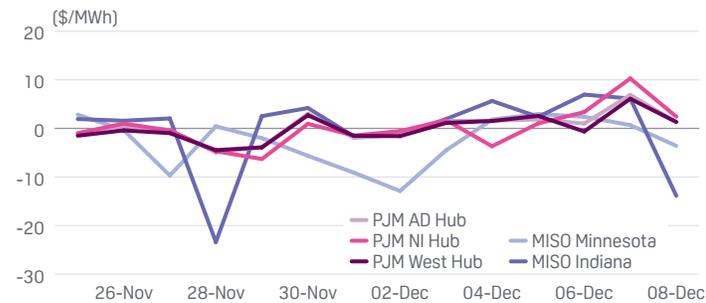
In forwards, PJM West Hub on-peak January rose less than \$1 to below \$59/MWh and on-peak February moved up 75 cents to be near \$57.75/MWh.

PJM/MISO POWER MARKETS

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

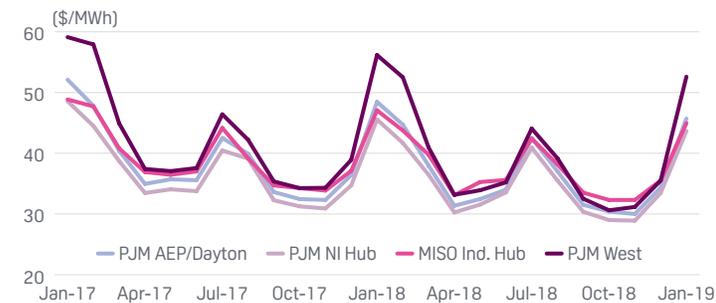
Hub/Index	Symbol	10-Dec	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly Change			
				@7K	@12K	Chg	% Chg				Dec-16	Dec-15	Chg	% Chg
On-Peak														
PJM AEP Dayton Hub	IPADM00	36.27	10085	11.09	-6.89	-5.13	-12.4	35.39	30.33	41.40	35.16	27.18	7.98	29.4
PJM Dominion Hub	IPDMM00	37.39	10043	11.33	-7.29	-4.82	-11.4	35.83	30.85	42.21	35.80	29.54	6.26	21.2
PJM Eastern Hub	IPEHM00	33.95	9113	7.87	-10.76	-5.75	-14.5	33.01	27.03	39.70	32.33	28.41	3.92	13.8
PJM Northern Illinois Hub	IPNIM00	35.87	9411	9.19	-9.87	-3.99	-10.0	34.35	30.02	39.86	34.34	25.92	8.42	32.5
PJM Western Hub	IPWHM00	35.54	10610	12.09	-4.66	-5.74	-13.9	34.98	30.41	41.28	34.79	28.38	6.41	22.6
MISO Indiana Hub	IMIDM00	39.03	11210	14.66	-2.75	-5.49	-12.3	39.50	33.31	51.94	38.88	24.89	13.99	56.2
MISO Minnesota Hub	IMINM00	34.54	9173	8.18	-10.64	-8.19	-19.2	24.83	16.86	42.73	26.56	20.64	5.92	28.7
Off-Peak														
PJM AEP Dayton Hub	IPADP00	29.65	8279	4.58	-13.33	-2.27	-7.1	27.09	21.53	31.92	26.79	18.97	7.82	41.2
PJM Dominion Hub	IPDMP00	32.09	8327	5.11	-14.15	-0.69	-2.1	27.21	21.79	32.78	27.20	21.00	6.20	29.5
PJM Eastern Hub	IPEHP00	29.57	7399	1.59	-18.39	-3.22	-9.8	25.95	19.10	32.79	25.41	20.88	4.53	21.7
PJM Northern Illinois Hub	IPNIP00	28.10	7562	2.09	-16.49	3.49	14.2	23.29	19.84	28.10	23.79	17.05	6.74	39.5
PJM Western Hub	IPWHP00	30.19	8891	6.42	-10.56	-1.72	-5.4	26.69	21.56	31.91	26.57	19.49	7.08	36.3
MISO Indiana Hub	IMIDP00	30.85	8825	6.38	-11.10	-0.28	-0.9	26.84	25.02	31.13	26.97	18.69	8.28	44.3
MISO Minnesota Hub	IMINP00	29.28	7921	3.40	-15.08	1.41	5.1	16.42	8.89	29.28	18.15	14.36	3.79	26.4

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



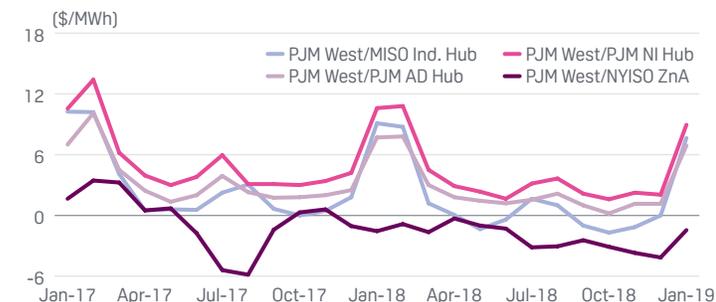
Source: Platts

PJM/MISO PLATTS M2MS FORWARD CURVE: ON-PEAK



Source: Platts

PJM/MISO PLATTS M2MS LOCATIONAL SPREADS: ON-PEAK



Source: Platts

Midwest remains in grip of cold weather

Midwest day-ahead power prices decreased Friday, with peakloads expected to pull back at the start of next week before cranking up later in the week on extreme cold weather.

Indiana Hub on-peak fell close to \$10, with values in the upper \$30s/MWh for Monday delivery. Indiana Hub on-peak weekend packages were valued in the mid-\$40s/MWh, although bids and offers were close to \$20 wide. Indiana Hub on-peak balance-of-the-week was valued around the mid-\$60s/MWh due to the cold.

Similar trends were seen in the western region of the PJM Interconnection. AD Hub on-peak was down about \$5 to the mid-\$30s/MWh and on-peak balance-week packages were in the upper \$50s/MWh. NI Hub on-peak tumbled about \$7 to the mid-\$30s/MWh and on-peak balance-week was in the upper \$50s/MWh.

In the Southwest Power Pool, North Hub on-peak was formed up in the low \$30s/MWh for Monday packages on ICE, while South Hub on-peak was around the upper \$30s/MWh.

The Midcontinent ISO predicted peak demand around 91.8 GW Friday, 89.3 GW Monday, 90.1 GW Tuesday, 94.8 GW Wednesday and 94.6 GW Thursday.

High temperatures in Minneapolis on Wednesday are forecast to be around 9 degrees, with lows going down to minus 2.

MISO's fuel mix Monday through Thursday this week saw wind contribute roughly 15% of the overall mix, coal around 47%, natural gas around 20% and nuclear around 15%.

In the Southwest Power Pool, peakload for Friday was predicted to be near 38 GW, slipping to 31.6 GW Monday, then increasing to 33.1 GW Tuesday, 35 GW Wednesday and 38 GW Thursday.

SPP's fuel mix also received a healthy contribution from wind, which averaged about 22% Monday-Thursday. Coal-fired generation was about 49% of the mix, natural gas about 20% and nuclear around 7%.

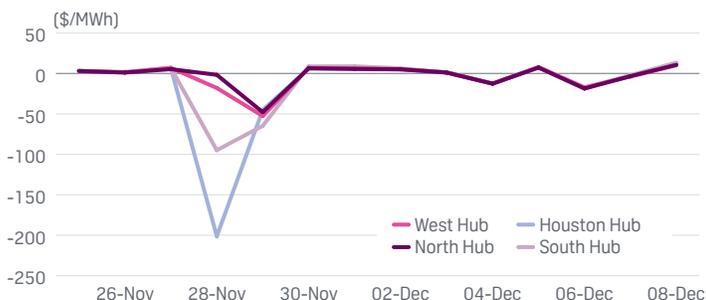
PJM's western region was expected to see a similar pattern, with peak around 59.2 GW Friday, 56.8 GW Monday, 56.6 GW Tuesday, 60.4 GW Wednesday and 65.7 GW Thursday.

SOUTHEAST POWER MARKETS

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

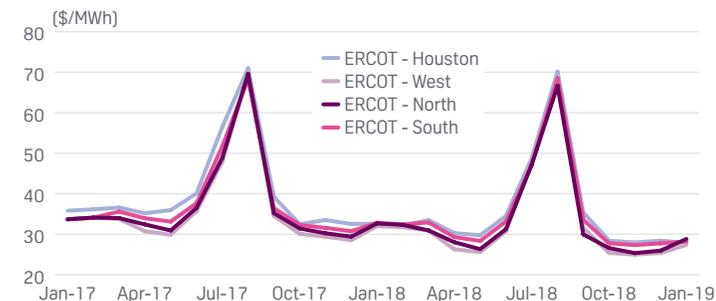
Hub/Index	Symbol	10-Dec	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly change			
				@7K	@12K	Chg	% Chg				Dec-16	Dec-15	Chg	% Chg
On-Peak														
MISO Texas Hub	IMTXM00	39.25	10863	13.96	-4.11	-5.57	-12.4	38.02	31.37	46.11	37.41	21.83	15.58	71.4
MISO Louisiana	IMLAM00	40.19	11114	14.88	-3.20	-5.23	-11.5	39.13	33.49	46.00	38.80	21.97	16.83	76.6
SPP North Hub	ISNOP00	23.33	6171	-3.13	-22.04	-10.58	-31.2	30.29	23.33	42.09	30.29	17.98	12.31	68.5
SPP South Hub	ISSOM00	31.13	8715	6.13	-11.73	-2.31	-6.9	34.56	30.37	43.67	34.29	20.46	13.83	67.6
ERCOT Houston Hub	IERHM00	27.77	7680	2.46	-15.62	-13.35	-32.5	31.11	26.87	41.12	29.96	21.92	8.04	36.7
ERCOT North Hub	IERNM00	27.47	7662	2.37	-15.55	-11.10	-28.8	30.58	26.97	38.57	29.60	19.47	10.13	52.0
ERCOT South Hub	IERSP00	28.53	7911	3.29	-14.75	-12.71	-30.8	31.54	27.25	41.24	30.82	20.64	10.18	49.3
ERCOT West Hub	IERWM00	26.52	7446	1.59	-16.22	-11.99	-31.1	30.59	26.49	38.51	29.61	19.63	9.98	50.8
Off-Peak														
MISO Texas Hub	IMTXP00	34.53	9626	9.42	-8.52	-0.53	-1.5	29.06	24.74	35.06	29.05	17.52	11.53	65.8
MISO Louisiana	IMLAP00	35.60	9939	10.53	-7.38	0.12	0.3	29.42	26.05	35.60	29.94	17.78	12.16	68.4
SPP North Hub	ISNOP00	20.34	5476	-5.66	-24.23	-7.07	-25.8	20.03	12.77	27.41	20.79	12.91	7.88	61.1
SPP South Hub	ISSOP00	30.27	8638	5.74	-11.78	0.09	0.3	26.68	24.57	30.27	26.94	15.29	11.65	76.2
ERCOT Houston Hub	IERHP00	22.09	6156	-3.03	-20.97	-4.44	-16.7	20.65	17.78	26.53	20.46	14.88	5.58	37.5
ERCOT North Hub	IERNP00	22.05	6221	-2.76	-20.48	-4.12	-15.7	20.57	17.72	26.17	20.40	13.38	7.02	52.5
ERCOT South Hub	IERSP00	22.16	6195	-2.88	-20.76	-4.80	-17.8	20.76	17.82	26.96	20.60	14.15	6.45	45.6
ERCOT West Hub	IERWP00	21.39	6098	-3.16	-20.70	-4.46	-17.3	20.01	17.25	25.85	19.96	13.33	6.63	49.7

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



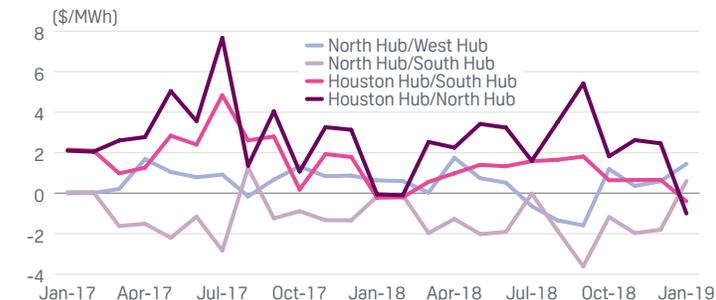
Source: Platts

ERCOT PLATTS M2MS FORWARD CURVE: ON-PEAK



Source: Platts

ERCOT PLATTS M2MS LOCATIONAL SPREADS: ON-PEAK



Source: Platts

ERCOT dailies sink as temperatures warm up

Electric Reliability Council of Texas day-ahead dailies lost almost 25% Friday as the cold front gradually diminished with warming temperatures expected next week.

ERCOT North Hub day-ahead on-peak plummeted \$10.75 to the high \$20s/MWh for Monday delivery on IntercontinentalExchange. Weekend on-peak was coming in the upper \$20s/MWh, while off-peak was in the high \$10s/MWh.

Balance-of-the-day real-time on-peak eased \$13.50 in the mid-\$20s/MWh as next-week real-time on-peak traded in the low \$30s/MWh.

High temperatures across Texas are forecast at 62-75 degrees Monday, rising from Friday's at 44-50 degrees.

ERCOT forecast peakload was expected at around 51,150 MW Friday, 46,275 MW Saturday, 38,025 MW Sunday and 39,775 MW Monday.

Gas heating demand across Texas is expected to fall from 3.78 Bcf/d Friday to 2.70 Bcf/d Monday, Platts Analytics' Bentek Energy data showed.

Spot natural gas at Houston Ship Channel for Monday delivery gained 4 cents to \$3.630/MMBtu on ICE.

In the Southeast, day-ahead markets were framed lower as the warmer temperatures were expected for next week in the footprint.

Spot gas at Florida Gas Transmission Zone-3 added 6.1 cents to \$3.702/MMBtu on ICE.

High temperatures in Atlanta were expected around 66 Monday, 10 degrees above normal, with a low of 47, 8 degrees above normal.

On ICE, GTC on-peak was bid and offered at the mid-\$30s/MWh, compared with the prior settlements at the high \$30s/MWh. Weekend on-peak was offered at the mid-\$30s/MWh.

In the term markets, ERCOT North Hub contracts were slightly higher Friday as the NYMEX natural gas futures strip gained ground on the updated eight- to 14-day outlook from National Weather Service showing cooler temperatures were expected over much of the continent.

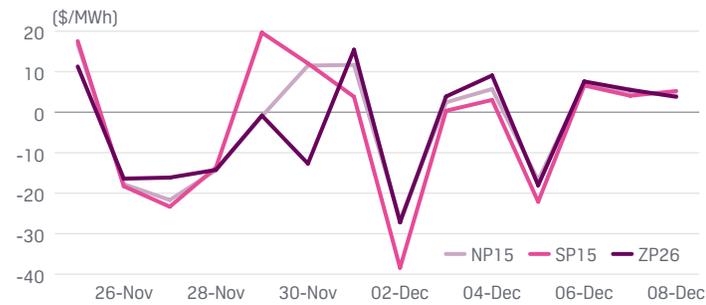
On ICE, the North Hub July-August package gained 50 cents in the high \$50s/MWh as the on-peak heat rate was bid at 17.25 MMBtu/MWh and offered at 17.50 MMBtu/MWh.

WEST POWER MARKETS

WESTERN DAY-AHEAD POWER PRICES (\$/MWh)

Hub/Index	Symbol	10-Dec	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly change			
				@7K	@12K	Chg	% Chg				Dec-16	Dec-15	Chg	% Chg
On-Peak														
NP15	ICNGM00	39.57	10319	12.73	-6.45	-0.33	-0.8	39.30	33.68	44.67	38.70	30.07	8.63	28.7
SP15	ICSGM00	35.97	9747	10.14	-8.31	-4.17	-10.4	34.67	26.58	41.41	33.55	29.34	4.21	14.3
ZP26	ICZGM00	35.77	9693	9.94	-8.51	-2.43	-6.4	36.86	30.05	42.84	36.01	29.01	7.00	24.1
COB	WEABE20	34.00	9605	9.22	-8.48	0.00	0.0	36.54	29.50	43.25	35.50	23.69	11.81	49.8
MEAD	AAMBW20	28.75	7997	3.58	-14.39	0.00	0.0	31.21	28.25	35.25	30.64	23.48	7.16	30.5
MID-C	WEABF20	29.84	8471	5.18	-12.43	0.00	0.0	33.22	22.46	42.43	31.74	21.39	10.35	48.4
Palo Verde	WEACC20	28.50	8045	3.70	-14.01	0.00	0.0	29.54	26.00	33.50	29.03	21.55	7.48	34.7
Off-Peak														
NP15	ICNGP00	31.51	8460	5.44	-13.19	0.83	2.7	31.31	29.19	32.40	30.96	25.76	5.20	20.2
SP15	ICSGP00	30.75	8493	5.41	-12.70	-0.03	-0.1	29.68	26.95	32.23	29.55	25.63	3.92	15.3
ZP26	ICZGP00	30.80	8507	5.46	-12.65	0.93	3.1	30.29	28.18	31.17	30.04	25.22	4.82	19.1
COB	WEACJ20	28.00	7910	3.22	-14.48	0.00	0.0	25.79	21.25	28.00	25.28	21.36	3.92	18.3
MEAD	AAMBQ20	24.50	6815	-0.67	-18.64	0.00	0.0	26.61	24.50	27.50	26.45	20.52	5.93	28.9
MID-C	WEACL20	23.73	6737	-0.93	-18.54	0.00	0.0	21.65	16.85	23.73	20.97	19.29	1.68	8.7
Palo Verde	WEACT20	24.00	6775	-0.80	-18.51	0.00	0.0	26.25	24.00	27.75	25.90	19.35	6.55	33.9

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



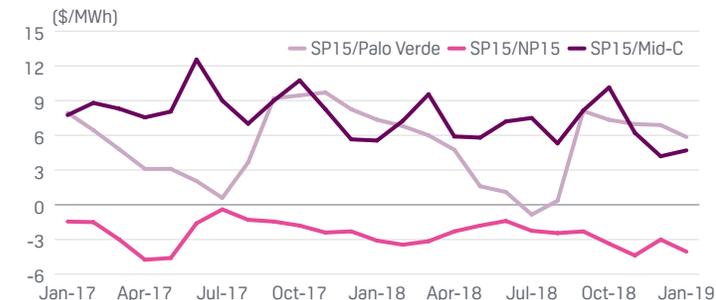
Source: Platts

WESTERN PLATTS M2MS FORWARD CURVE: ON-PEAK



Source: Platts

WESTERN PLATTS M2MS LOCATIONAL SPREADS: ON-PEAK



Source: Platts

West power dailies up with rising spot gas prices

West power dailies were stronger Friday with rising spot gas prices. SP15 on-peak day-ahead rose \$6 to the low \$40s/MWh for Monday delivery on Intercontinental Exchange, up nearly 21% since December 5. Off-peak added \$2.25 near the low \$30s/MWh for all-day Sunday and Monday delivery. On-peak balance-of-the-week was in the upper \$40s/MWh. On-peak next-week was in the low \$50s/MWh. On-peak balance-of-the-month was in the mid-\$40s/MWh.

SoCal city-gates gained 2 cents to around \$3.726/MMBtu for Saturday-Monday delivery.

Los Angeles high temperatures were forecast down to 61 Monday, 4 degrees below normal.

California ISO forecast peakload around 27,150 MW Sunday and 30,200 MW Monday. Demand peak is expected to hover around 30,000 MW throughout next week.

In the Northwest, Mid-Columbia on-peak jumped \$6.25 to the mid-\$30s/MWh, up nearly 11% from December 5. On-peak balance-of-the-week climbed \$12.75 near the mid-\$50s/MWh. On-peak next-week gained \$3.75 to the upper \$40s/MWh. On-peak bal-month rose \$7.50 to the low \$40s/MWh.

Portland high temperatures were forecast at 44 Monday, 3 degrees below normal. Some areas of the Northwest remain under a winter weather advisory and winter storm watch, according to the National Weather Service.

In the Southwest, Palo Verde on-peak added \$1.75 to the low \$30s/MWh. Off-peak advanced \$3.75 to the upper \$20s/MWh.

Phoenix high temperatures were forecast rising to 74 Monday, 7 degrees above normal.

Power forwards were stronger Friday as the NYMEX January gas contract added 5.1 cents to near \$3.746/MMBtu at around 2:30 pm EST.

Mid-C on-peak January was up \$2.25 in the low \$30s/MWh, up 13% versus December 5. On-peak February gained \$1 in the upper \$20s/MWh.

Palo Verde on-peak January rose 50 cents in the low \$30s/MWh as on-peak February advanced 75 cents in the low \$30s/MWh.

SP15 on-peak January moved up \$1.25 in the low \$40s/MWh as on-peak February increased 75 cents to the upper \$30s/MWh.

BILATERALS

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

Hub/Index	Symbol	12-Dec	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly change			
				@7K	@12K	Chg	% Chg				Dec-16	Dec-15	Chg	% Chg
On-Peak														
Florida	AAMAV20	33.75	9109	7.81	-10.71	-5.50	-14.0	32.96	29.75	39.25	33.06	20.76	12.30	59.2
GTC, Into	WAMCJ20	34.50	9331	8.62	-9.87	-5.00	-12.7	33.36	30.50	39.50	33.50	21.34	12.16	57.0
Southern, Into	AAMBJ20	34.00	9195	8.12	-10.37	-5.50	-13.9	32.46	28.50	39.50	32.66	20.47	12.19	59.6
TVA, Into	WEBAB20	35.25	9375	8.93	-9.87	-6.50	-15.6	34.36	30.50	41.75	34.47	21.89	12.58	57.5
VACAR	AAMCI20	34.50	9020	7.73	-11.40	-5.25	-13.2	33.46	29.25	39.75	33.59	22.66	10.93	48.2
Off-Peak														
Florida	AAMAO20	29.00	7827	3.06	-15.46	-4.50	-13.4	28.71	25.50	33.50	28.31	17.10	11.21	65.5
GTC, Into	WAMCC20	30.00	8114	4.12	-14.37	-4.50	-13.0	29.21	25.00	34.50	28.33	16.06	12.27	76.4
Southern, Into	AAMBC20	28.50	7708	2.62	-15.87	-4.50	-13.6	27.93	23.75	33.00	27.23	15.14	12.09	79.9
TVA, Into	AAJER20	30.00	7979	3.68	-15.12	-3.00	-9.1	28.54	24.00	33.00	27.81	16.13	11.68	72.4
VACAR	AAMCB20	29.25	7647	2.47	-16.65	-3.50	-10.7	28.25	23.50	32.75	27.42	16.27	11.15	68.5

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

WESTERN DAY-AHEAD BILATERAL INDEXES (\$/MWh)

Hub/Index	Symbol	12-Dec	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly change			
				@7K	@12K	Chg	% Chg				Dec-16	Dec-15	Chg	% Chg
On-Peak														
Mid-C	WEABF20	36.24	8764	7.29	-13.38	6.40	21.4	34.27	22.46	42.43	32.19	21.39	10.80	50.5
John Day	WEAHF20	37.25	9008	8.30	-12.37	6.50	21.1	35.25	23.50	43.50	33.18	22.40	10.78	48.1
COB	WEABE20	41.25	11134	15.32	-3.21	7.25	21.3	37.18	29.50	43.25	36.08	23.69	12.39	52.3
NOB	WEAIF20	40.25	9734	11.31	-9.37	6.50	19.3	35.79	27.00	42.75	34.50	23.87	10.63	44.5
Palo Verde	WEACC20	30.18	8308	4.75	-13.41	1.68	5.9	29.82	26.00	33.50	29.14	21.55	7.59	35.2
Mona	AARLQ20	30.50	8391	5.06	-13.12	0.50	1.7	33.75	28.00	41.00	32.28	22.40	9.88	44.1
Four Corners	WEABI20	29.75	8322	4.73	-13.15	1.25	4.4	30.46	24.75	34.50	29.48	21.64	7.84	36.2
Pinnacle Peak	WEAKF20	30.00	8259	4.57	-13.59	0.25	0.8	30.71	26.75	34.75	29.88	22.09	7.79	35.3
Westwing	WEAJF20	30.75	8465	5.32	-12.84	2.25	7.9	30.04	26.50	33.25	29.50	22.16	7.34	33.1
MEAD	AAMBW20	31.25	8469	5.42	-13.03	2.50	8.7	31.29	28.25	35.25	30.70	23.48	7.22	30.7
Off-Peak														
Mid-C	WEACL20	23.35	5647	-5.59	-26.27	-0.38	-1.6	22.80	16.85	23.73	21.37	19.29	2.08	10.8
John Day	WEAHL20	24.25	5865	-4.69	-25.37	-0.50	-2.0	23.79	17.50	24.75	22.31	20.26	2.05	10.1
COB	WEACJ20	28.25	7625	2.32	-16.21	0.25	0.9	27.00	21.25	28.25	25.77	21.36	4.41	20.6
NOB	WEAIL20	25.00	6046	-3.94	-24.62	0.75	3.1	24.04	21.25	26.00	23.54	21.51	2.03	9.4
Palo Verde	WEACT20	27.75	7639	2.32	-15.84	3.75	15.6	26.14	24.00	27.75	26.21	19.35	6.86	35.5
Mona	AARLO20	26.00	7153	0.56	-17.62	1.75	7.2	25.75	22.50	28.75	25.29	19.98	5.31	26.6
Four Corners	WEACR20	26.75	7483	1.73	-16.15	2.75	11.5	25.82	23.00	27.00	25.58	19.38	6.20	32.0
Pinnacle Peak	WEAKL20	25.25	6951	-0.18	-18.34	-0.25	-1.0	26.71	25.00	29.00	26.40	19.73	6.67	33.8
Westwing	WEAJL20	27.00	7433	1.57	-16.59	2.25	9.1	26.11	24.75	27.25	26.23	19.87	6.36	32.0
MEAD	AAMBQ20	28.50	7724	2.67	-15.78	4.00	16.3	26.46	24.50	28.50	26.79	20.52	6.27	30.6

Note: West off-peak includes all day Sunday.

WESTERN NEAR-TERM BILATERAL MARKETS (\$/MWh)

Package	Trade date	Range
Mid-C		
Bal-week	12/09	57.00-58.00
Bal-week	12/06	34.75-35.25
Bal-month	12/09	46.00-47.00
Bal-month	12/08	33.50-36.75
Bal-month	12/06	32.50-33.00
Bal-month	12/05	32.00-32.50
Next-week	12/06	38.50-39.00

PLATTS M2MS FORWARD CURVE, DEC 9 (\$/MWh)

Prompt month: Jan 17

	On-peak	Off-peak
Northeast		
Mass Hub	82.65	65.45
N.Y. Zone G	78.95	61.55
N.Y. Zone J	83.25	63.70
N.Y. Zone A	57.45	39.30
Ontario*	39.50	26.15

*Ontario prices are in Canadian dollars

PJM & MISO

PJM West	59.10	45.05
AD Hub	52.10	37.20
NI Hub	48.55	33.45
Indiana Hub	48.85	35.30

	On-peak	Off-peak
Southeast & Central		
Southern Into	44.15	34.70
ERCOT North	33.70	26.40
ERCOT Houston	35.80	26.50
ERCOT West	33.70	25.05
ERCOT South	33.65	26.50

Western

Mid-C	32.60	24.40
Palo Verde	32.40	28.40
Mead	34.90	30.15
NP15	41.80	35.55
SP15	40.35	33.95

ISO DAY-AHEAD LMP BREAKDOWN FOR DEC 10 (\$/MWh)

Hub/Zone	Average	Cong	Loss	Change	Avg \$/Mo	Marginal heat rate	Average	Cong	Loss	Change	Avg \$/Mo	Marginal heat rate	
Northeast													
On-peak						Off-Peak							
ISONE Internal Hub	71.59	-0.80	0.18	-5.18	49.05	7293	ISONE Internal Hub	55.41	0.00	0.46	0.79	34.64	5634
ISONE Connecticut	70.97	-0.80	-0.45	-5.40	48.65	9007	ISONE Connecticut	55.02	0.00	0.08	0.77	34.49	6829
ISONE NE Mass-Boston	71.85	-0.80	0.43	-5.06	49.18	7319	ISONE NE Mass-Boston	55.07	0.00	0.12	0.88	34.41	5599
NYISO Capital Zone	85.05	-65.33	1.55	21.88	47.36	17961	NYISO Capital Zone	75.17	-66.07	0.62	24.32	36.45	15576
NYISO Hudson Valley Zone	58.04	-37.97	1.90	6.83	42.78	11852	NYISO Hudson Valley Zone	47.58	-38.34	0.76	9.32	31.78	9227
NYISO N.Y.C. Zone	57.28	-37.19	1.92	4.97	43.36	11697	NYISO N.Y.C. Zone	46.90	-37.68	0.73	8.59	31.94	9095
NYISO West Zone	22.63	-4.39	0.07	-6.93	31.19	6325	NYISO West Zone	13.08	-4.42	0.18	-5.16	22.65	3636

PJM & MISO

On-peak							Off-Peak						
PJM AEP-Dayton Hub	36.27	0.50	0.12	-5.13	35.16	10085	PJM AEP-Dayton Hub	29.65	0.18	-0.45	-2.27	26.79	8279
PJM Dominion Hub	37.39	1.75	-0.01	-4.82	35.80	10043	PJM Dominion Hub	32.09	1.86	0.31	-0.69	27.20	8327
PJM Eastern Hub	33.95	-1.81	0.11	-5.75	32.33	9113	PJM Eastern Hub	29.57	-1.25	0.90	-3.22	25.41	7399
PJM Northern Illinois Hub	35.87	0.14	0.08	-3.99	34.34	9411	PJM Northern Illinois Hub	28.10	-0.91	-0.91	3.49	23.79	7562
PJM Western Hub	35.54	0.80	-0.91	-5.74	34.79	10610	PJM Western Hub	30.19	0.51	-0.25	-1.72	26.57	8891
MISO Indiana Hub	39.03	0.16	0.47	-5.49	38.88	11210	MISO Indiana Hub	30.85	-1.49	0.03	-0.28	26.97	8825
MISO Minnesota Hub	34.54	-1.53	-2.33	-8.19	26.56	9173	MISO Minnesota Hub	29.28	-1.33	-1.69	1.41	18.15	7921
MISO Louisiana Hub	40.19	0.99	0.80	-5.23	38.80	11114	MISO Louisiana Hub	35.60	2.31	0.98	0.12	29.94	9939
MISO Texas Hub	39.25	0.67	0.18	-5.57	37.41	10863	MISO Texas Hub	34.53	1.70	0.52	-0.53	29.05	9626

Southeast & Central

On-peak							Off-Peak						
SPP North Hub	23.33	-2.42	-0.23	-10.58	30.29	6171	SPP North Hub	20.34	-2.67	-0.22	-7.07	20.79	5476
SPP South Hub	31.13	5.25	-0.09	-2.31	34.29	8715	SPP South Hub	30.27	7.02	0.02	0.09	26.94	8638
ERCOT Houston Hub	27.77	-	-	-13.35	29.96	7680	ERCOT Houston Hub	22.09	-	-	-4.44	20.46	6156
ERCOT North Hub	27.47	-	-	-11.10	29.60	7662	ERCOT North Hub	22.05	-	-	-4.12	20.40	6221
ERCOT South Hub	28.53	-	-	-12.71	30.82	7911	ERCOT South Hub	22.16	-	-	-4.80	20.60	6195
ERCOT West Hub	26.52	-	-	-11.99	29.61	7446	ERCOT West Hub	21.39	-	-	-4.46	19.96	6098

Western

On-peak							Off-Peak						
CAISO NP15 Gen Hub	39.57	1.53	-0.13	-0.33	38.70	10319	CAISO NP15 Gen Hub	31.51	0.00	-0.25	0.83	30.96	8460
CAISO SP15 Gen Hub	35.97	-0.72	-1.50	-4.17	33.55	9747	CAISO SP15 Gen Hub	30.75	0.00	-1.01	-0.03	29.55	8493
CAISO ZP26 Gen Hub	35.77	-0.97	-1.44	-2.43	36.01	9693	CAISO ZP26 Gen Hub	30.80	0.00	-0.96	0.93	30.04	8507

WEEKEND BILATERAL INDEXES FOR DEC 10-11 (\$/MWh)

	Saturday Index	Sunday Index
Southeast On-peak		
VACAR	34.50	34.50
Southern, into	33.50	33.50
GTC, into	33.75	33.75
Florida	33.25	33.25
TVA, into	34.25	34.25
Southeast Off-Peak*		
VACAR	29.25	29.25
Southern, into	28.50	28.50
GTC, into	30.00	30.00
Florida	29.00	29.00
TVA, into	30.00	30.00
West On-peak**		
Mid-C	29.84	23.37
John Day	30.75	24.50
COB	34.00	28.50
NOB	33.75	27.50
Palo Verde	28.50	28.75
Westwing	28.50	29.25
Pinnacle Peak	29.75	28.50
Mead	28.75	29.75
Mona	30.00	29.00
Four Corners	28.50	28.25
West Off-Peak**		
Mid-C	23.73	23.25
John Day	24.75	24.00
COB	28.00	28.00
NOB	24.25	22.50
Palo Verde	24.00	26.75
Westwing	24.75	24.75
Pinnacle Peak	25.50	22.00
Mead	24.50	27.25
Mona	24.25	23.00
Four Corners	24.00	25.25

*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 DEC 10 (\$/MWh)

	Index	Change	Low	High
Southeast On-peak				
VACAR	34.70	6.55	32.75	39.75
Southern, into	33.55	5.80	31.00	39.50
GTC, into	34.30	5.80	32.00	39.50
Florida	33.75	5.35	31.50	39.25
TVA, into	35.55	6.35	32.75	41.75
Southeast Off-Peak				
VACAR	27.39	5.68	25.50	32.75
Southern, into	27.36	5.97	24.75	33.00
GTC, into	28.36	6.00	26.50	34.50
Florida	28.50	4.29	26.00	33.50
TVA, into	27.61	5.43	25.50	33.00
West On-peak				
Mid-C	36.24	13.84	29.00	44.00
John Day	37.21	13.79	30.75	43.50
COB	38.46	10.00	34.00	43.25
NOB	37.25	11.25	33.75	42.75
Palo Verde	30.38	6.34	28.50	33.50
Westwing	30.63	6.09	28.50	33.25
Pinnacle Peak	31.38	6.75	29.75	34.75
Mead	31.79	5.75	28.75	35.25
Mona	34.71	9.21	30.00	41.00
Four Corners	31.04	6.79	28.50	34.50
West Off-Peak				
Mid-C	22.53	4.93	18.00	26.50
John Day	23.54	5.00	22.50	24.75
COB	26.50	5.04	24.75	28.00
NOB	23.61	3.32	22.00	26.00
Palo Verde	26.00	4.83	24.00	27.75
Westwing	26.14	4.68	24.75	27.25
Pinnacle Peak	27.04	5.65	25.50	29.00
Mead	26.29	3.97	24.50	27.50
Mona	25.71	4.60	24.00	28.75
Four Corners	25.79	5.11	24.00	27.00

NORTHEAST POWER MARKETS

NYISO SUPPLY MIX (GWh/d)

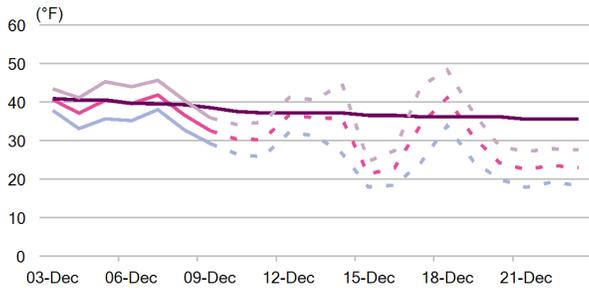
Category	4-Dec	5-Dec	6-Dec	7-Dec	8-Dec	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2016	2015	Chg	% Chg
Total Generation	300.04	353.35	361.57	367.99	349.88	85%	-18.11	-5.0%	300.04	367.99	342.41	360.49	-18.08	-5.0%
Gas	114.18	134.6	135.26	126.19	140.82	34%	14.63	12.0%	105.91	140.82	122.37	124.71	-2.34	-2.0%
Coal	14.25	18.74	19.19	19	20.14	5%	1.14	6.0%	13.19	20.61	16.95	19.24	-2.29	-12.0%
Nuclear	97.82	112.63	118.68	126.84	126.62	31%	-0.22	0.0%	96.61	126.84	109.25	129.45	-20.2	-16.0%
Other	163.53	163.1	156.74	158.5	123.84	30%	-34.66	-22.0%	123.84	193.07	165.24	154.11	11.13	7.0%

ISONE SUPPLY MIX (GWh/d)

Category	4-Dec	5-Dec	6-Dec	7-Dec	8-Dec	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2016	2015	Chg	% Chg
Total Generation	268.52	300.39	292.48	294.41	293.81	83%	-0.6	0.0%	263.84	300.39	283.88	286.54	-2.66	-1.0%
Gas	85.67	100.1	98.36	94.58	95.19	27%	0.61	1.0%	68.07	100.1	87.19	115.76	-28.57	-25.0%
Nuclear	97.8	97.8	97.8	97.8	97.8	28%	0	0.0%	97.8	97.8	97.8	93.34	4.46	5.0%
Coal	27.66	32.07	29.12	28.61	29.39	8%	0.78	3.0%	23.4	34.9	28.6	26.92	1.68	6.0%
Wind	11.62	3.52	5.37	3.3	8.05	2%	4.75	144.0%	3.3	21.16	10.59	7.77	2.82	36.0%
Other	101.59	130.84	122.61	129.76	123.81	35%	-5.95	-5.0%	101.59	130.84	117.03	103.35	13.68	13.0%

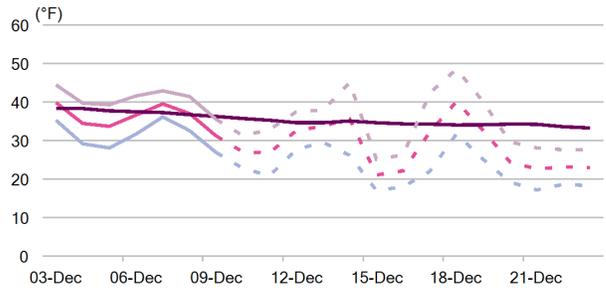
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: Platts

NYISO TEMPERATURE



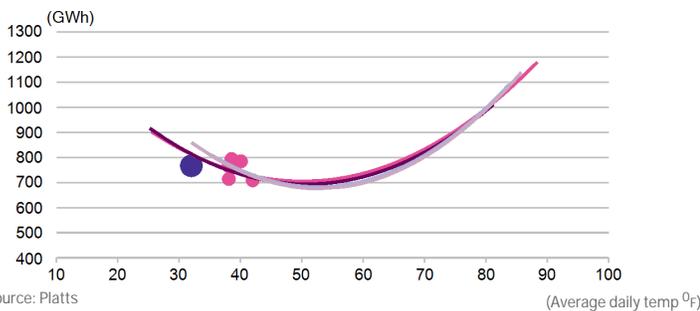
Source: Custom Weather. Legend: Average (red), Normal (purple), High (grey), Low (blue).

ISONE TEMPERATURE



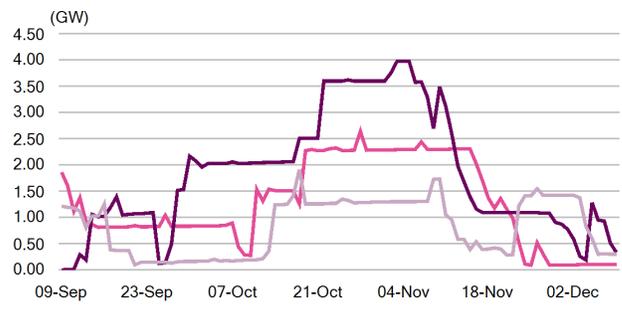
Source: Custom Weather. Legend: Average (red), Normal (purple), High (grey), Low (blue).

ISONE & NYISO LOAD PER DEGREE



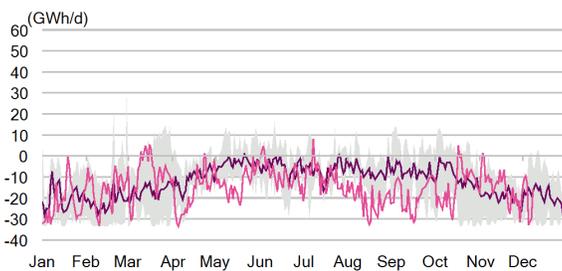
Source: Platts. Legend: Past 6 days (pink dots), 9-Dec (blue dot), 2013 (red), 2014 (purple), 2015 (blue), 2016 (grey).

ISONE & NYISO NUCLEAR GENERATION OUTAGES



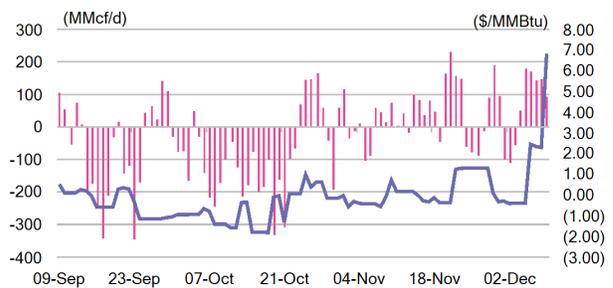
Source: NRC. Legend: 2014 (red), 2015 (purple), 2016 (grey).

ISONE-NYISO INTERTIE TRANSMISSION E-W



Source: ISONE. Legend: 4 year range (grey), 4 year avg (purple), 2016 (red).

ISONE POWER BURN VS. GAS BASIS



Source: Platts. Legend: Deviation from weather normal (red), Basis differential (blue).

PJM/MISO POWER MARKETS

PJM SUPPLY MIX (GWh/d)

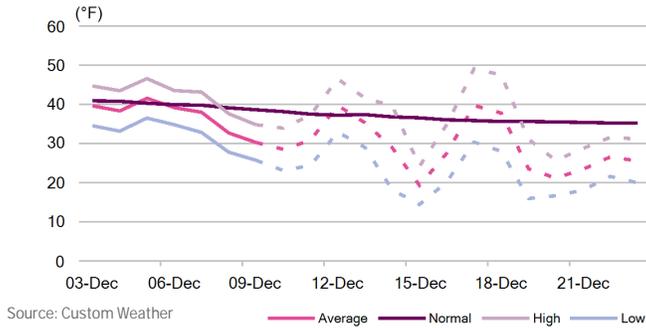
Category	4-Dec	5-Dec	6-Dec	7-Dec	8-Dec	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2016	2015	Chg	% Chg
Total Generation	2,040.12	2,216.01	2,290.1	2,191.26	2,097.03	100%	-94.23	-4.0%	2,038.62	2,290.1	2,142.31	2,153.06	-10.75	0.0%
Gas	435.13	460.61	465.06	444.72	442.42	21%	-2.3	-1.0%	411.08	465.06	445.27	522.12	-76.85	-15.0%
Coal	747.32	847.61	900.37	852.63	796.05	38%	-56.58	-7.0%	732.96	900.37	815.75	746.12	69.63	9.0%
Nuclear	729.66	731.84	742.51	751.51	751.51	36%	0	0.0%	729.66	751.51	745.1	773.18	-28.08	-4.0%
Other	76.71	97.1	119.78	144.71	104.94	5%	-39.77	-27.0%	48.1	144.71	94.59	145.89	-51.3	-35.0%

MISO SUPPLY MIX (GWh/d)

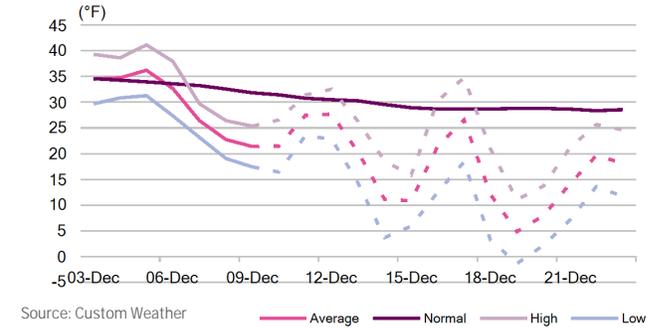
Category	4-Dec	5-Dec	6-Dec	7-Dec	8-Dec	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2016	2015	Chg	% Chg
Total Generation	1,720.41	1,839.26	1,862.67	1,916.26	1,817.03	103%	-99.23	-5.0%	1,720.41	1,916.26	1,820.27	1,854.69	-34.42	-2.0%
Gas	261.64	299.47	307.02	278.44	320.77	18%	42.33	15.0%	261.64	353.41	305.21	376.83	-71.62	-19.0%
Coal	850.36	851.58	826.69	875.79	832.88	47%	-42.91	-5.0%	826.69	927.56	863.62	884.47	-20.85	-2.0%
Nuclear	265	265.19	267.29	267.51	261.82	15%	-5.69	-2.0%	182.55	267.95	256.5	283.76	-27.26	-10.0%
Wind	121.99	204.74	258.43	296.01	273.89	15%	-22.12	-7.0%	47.94	296.01	160.64	137.94	22.7	16.0%
Other	175.46	200.98	189.27	186.15	81.33	5%	-104.82	-56.0%	81.33	415.51	205.26	146.29	58.97	40.0%

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

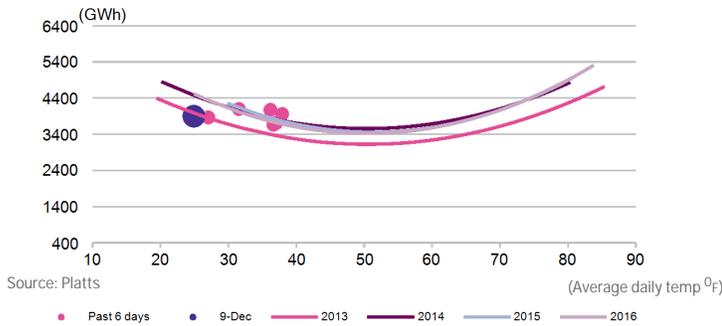
PJM TEMPERATURE



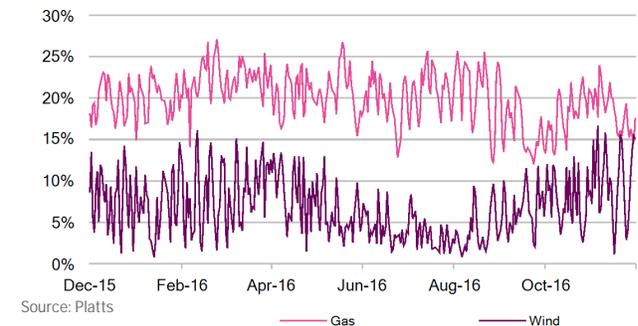
MISO TEMPERATURE



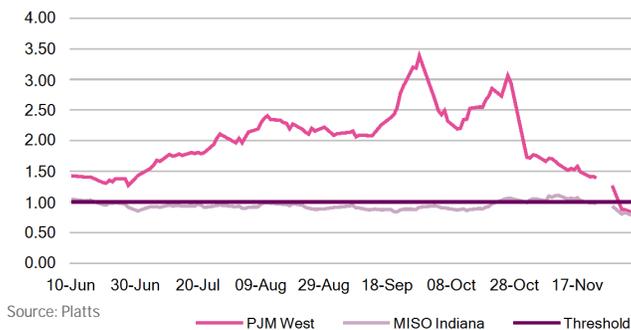
PJM & MISO LOAD PER DEGREE



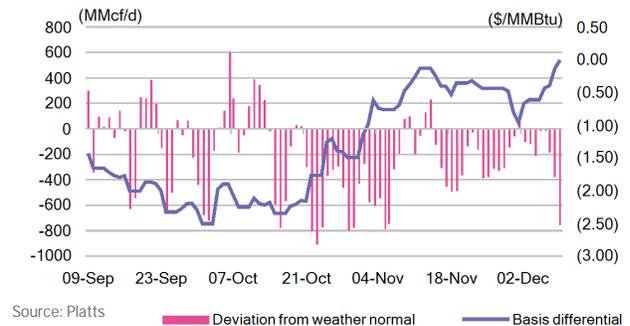
MISO GENERATION MARKET SHARE - GAS VS. WIND



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



PJM POWER BURN VS. GAS BASIS



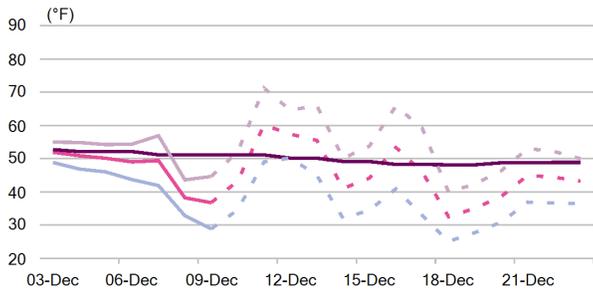
SOUTHEAST POWER MARKETS

ERCOT SUPPLY MIX (GWh/d)

Category	4-Dec	5-Dec	6-Dec	7-Dec	8-Dec	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2016	2015	Chg	% Chg
Total Generation	822.95	878.66	873.15	898.52	844.81	100%	-53.71	-6.0%	822.81	898.52	851.19	845.36	5.83	1.0%
Gas	260.83	285.67	297.96	350.61	485.94	58%	135.33	39.0%	251.94	485.94	324.76	362.23	-37.47	-10.0%
Coal	345.52	347.49	330.03	315.24	205.21	24%	-110.03	-35.0%	205.21	350.76	313.1	253.38	59.72	24.0%
Nuclear	123.33	123.33	123.33	123.33	123.33	15%	0	0.0%	123.03	123.33	123.29	112.94	10.35	9.0%
Wind	78.04	124.1	152.17	103.73	195.3	23%	91.57	88.0%	78.04	195.3	131.81	145.71	-13.9	-10.0%
Other	15.23	-1.93	-30.33	5.61	-164.97	-20%	-170.58	-3041.0%	-164.97	15.23	-41.77	-28.9	-12.87	45.0%

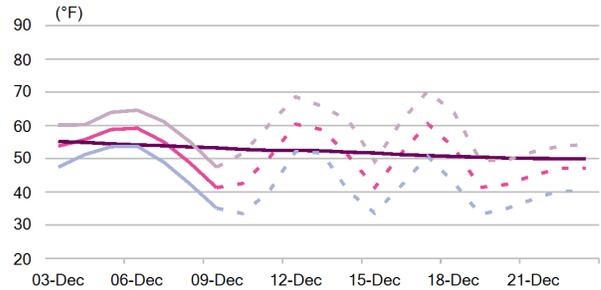
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: Platts

ERCOT TEMPERATURE



Source: Custom Weather

SOUTHEAST TEMPERATURE



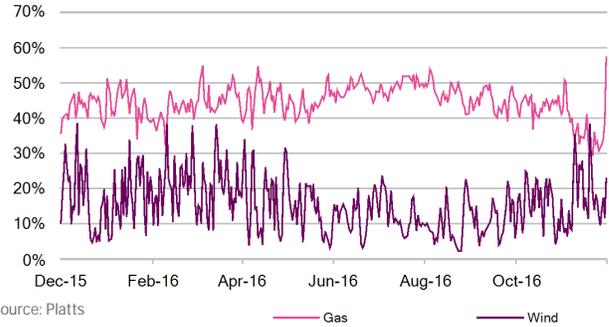
Source: Custom Weather

ERCOT LOAD PER DEGREE



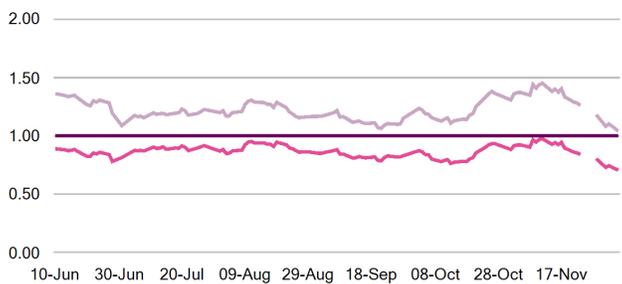
Source: Platts

ERCOT GENERATION MARKET SHARE - GAS VS. WIND



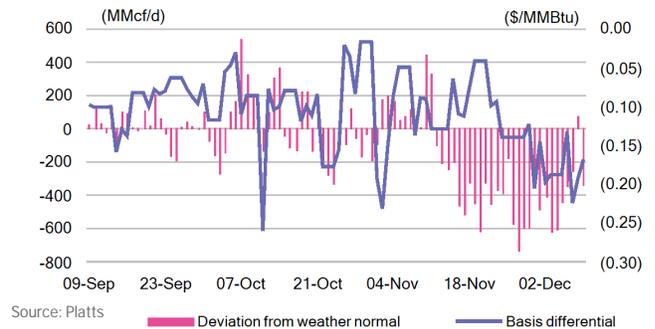
Source: Platts

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



Source: Platts

ERCOT POWER BURN VS. GAS BASIS



Source: Platts

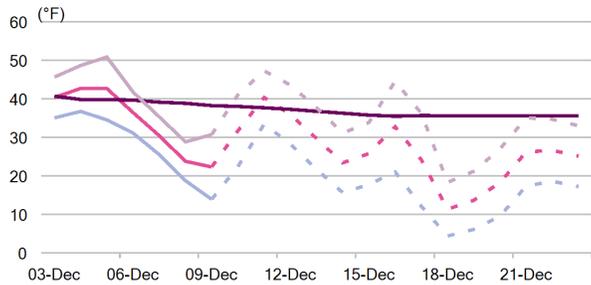
SPP POWER MARKETS

SPP GENERATION MIX (GWh/d)

Category	4-Dec	5-Dec	6-Dec	7-Dec	8-Dec	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2016	2015	Chg	% Chg
Total Generation	644.88	711.2	725.47	759.42	808.95	--	49.53	7.0%	64.28	808.95	639.39	675.03	-35.64	-5.0%
Coal	369.31	324.84	351.41	382.04	411.54	51%	29.5	8.0%	38.08	411.54	330.22	330.5	-0.28	0.0%
Natural Gas	149.39	119.14	143.3	146.16	201.54	25%	55.38	38.0%	17.97	207.3	148.94	139.23	9.71	7.0%
Wind	60.37	197.02	160.13	160.46	125.38	15%	-35.08	-22.0%	3.19	197.02	98.31	117.78	-19.47	-17.0%
Nuclear Power	50.37	50.4	50.39	50.38	50.36	6%	-0.02	0.0%	4.2	50.4	45.24	62.17	-16.93	-27.0%
Hydro	15.43	19.8	20.25	20.38	20.07	2%	-0.31	-2.0%	0.84	20.38	16.65	25.15	-8.5	-34.0%
Diesel	0	0	0	0	0.06	--	0.06	0.0%	0	0.07	0.02	0.19	-0.17	-89.0%

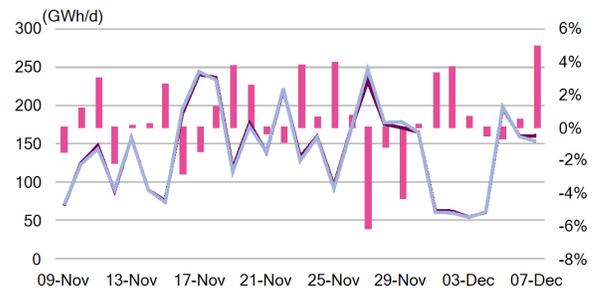
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: SPP

SPP TEMPERATURE



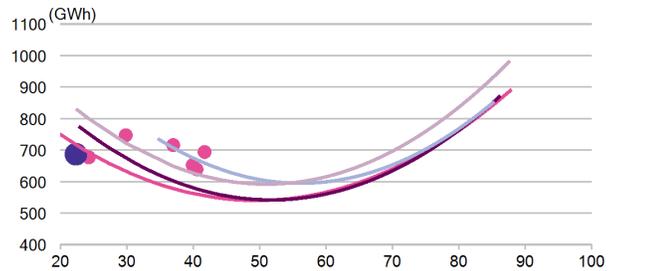
Source: Custom Weather. Legend: Average (red), Normal (purple), High (grey), Low (blue).

SPP ACTUAL WIND GENERATION VS. FORECAST



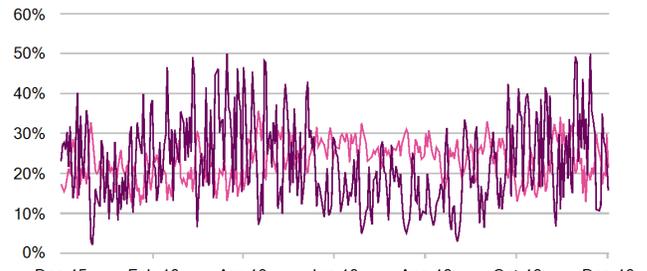
Source: SPP. Legend: Variance (red bars), Actual (purple line), Forecast (blue line).

SPP LOAD PER DEGREE



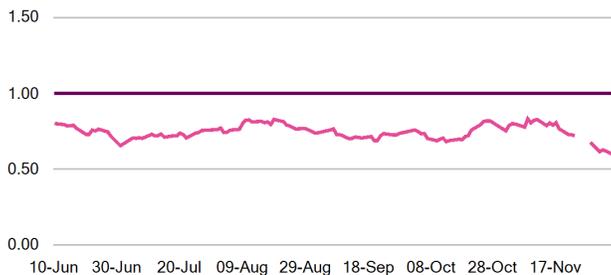
Source: Platts. Legend: Past 6 days (red dots), 9-Dec (blue dot), 2013 (red line), 2014 (purple line), 2015 (blue line), 2016 (grey line).

SPP GENERATION MARKET SHARE - GAS VS. WIND



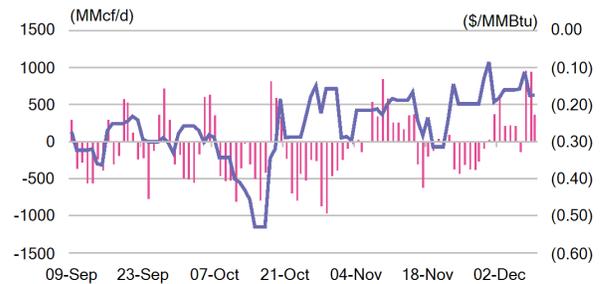
Source: Platts. Legend: Gas (red line), Wind (purple line).

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



Source: Platts. Legend: SPP South (red line), Threshold (purple line).

SPP POWER BURN VS. GAS BASIS



Source: Platts. Legend: Deviation from weather normal (red bars), Basis differential (blue line).

WEST POWER MARKETS

CAISO GENERATION MIX (GWh/d)

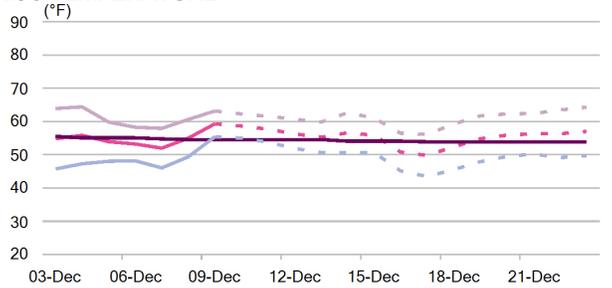
Category	4-Dec	5-Dec	6-Dec	7-Dec	8-Dec	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2016	2015	Chg	% Chg
Total Generation	548.01	608.22	615.59	627.09	622.96	--	-4.13	-1.0%	548.01	627.09	598.66	583.31	15.35	3.0%
Thermal Power	140.13	209.29	211.8	244.13	238.66	38%	-5.47	-2.0%	140.13	244.13	201.68	229.12	-27.44	-12.0%
Nuclear Power	54.66	54.69	54.73	54.74	54.59	9%	-0.15	0.0%	54.59	54.74	54.68	53.43	1.25	2.0%
Hydro	60.79	59.35	55.78	62.79	57.4	9%	-5.39	-9.0%	55.78	64.23	60.61	40.95	19.66	48.0%
Power Imports	190.13	175.22	177.63	179.6	194.63	31%	15.03	8.0%	170.6	194.63	182.57	165.85	16.72	10.0%
Solar PV	42.78	33.38	32.7	32.98	30.88	5%	-2.1	-6.0%	30.88	44.01	36.82	32.42	4.4	14.0%
Solar Thermal	3.27	0.46	0.87	1.67	0.97	--	-0.7	-42.0%	0.46	3.27	1.93	1.96	-0.03	-2.0%
Wind	23.97	42.91	49.12	18.28	13.12	2%	-5.16	-28.0%	6.07	49.12	27.66	24.69	2.97	12.0%
Bio + Geo	32.29	32.91	32.95	32.9	32.7	5%	-0.2	-1.0%	32.21	32.95	32.72	34.89	-2.17	-6.0%

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

Category	4-Dec	5-Dec	6-Dec	7-Dec	8-Dec	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2016	2015	Chg	% Chg
Total Generation	332.89	328.52	324.62	345.62	366.71	--	21.09	6.0%	48.39	366.71	304.51	296.61	7.9	3.0%
Hydro	191.76	217.16	223.06	231.1	244.02	67%	12.92	6.0%	32.4	244.02	195.02	200.6	-5.58	-3.0%
Thermal Power	59.22	90.02	95.53	97	97.11	26%	0.11	0.0%	15.67	97.11	72.41	72.54	-0.13	0.0%
Wind power	81.91	21.34	6.03	17.52	25.58	7%	8.06	46.0%	0.32	81.91	37.08	23.47	13.61	58.0%
Load	159.23	180.68	186.12	196.46	207.17	--	10.71	5.0%	28.8	207.17	158.74	162.59	-3.85	-2.0%
Net Exports	173.23	147.66	139.11	149.17	159.54	--	10.37	7.0%	19.6	189.82	145.78	133.94	11.84	9.0%

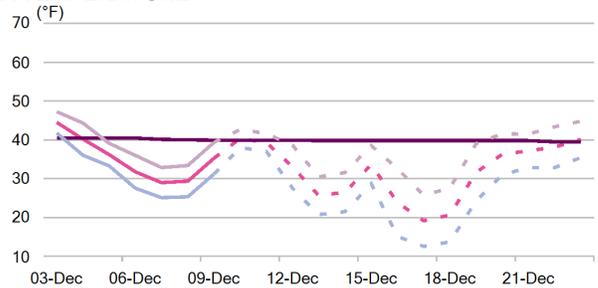
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: CAISO & BPA

CAISO TEMPERATURE



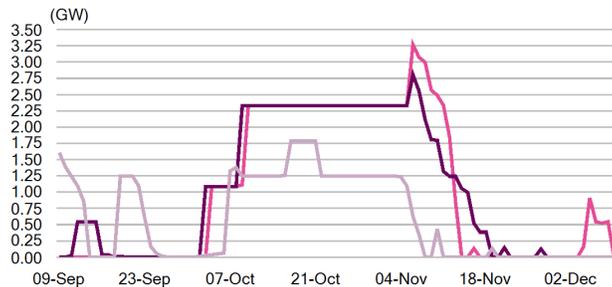
Source: Custom Weather. Legend: Average (red), Normal (black), High (grey), Low (blue).

BPA TEMPERATURE



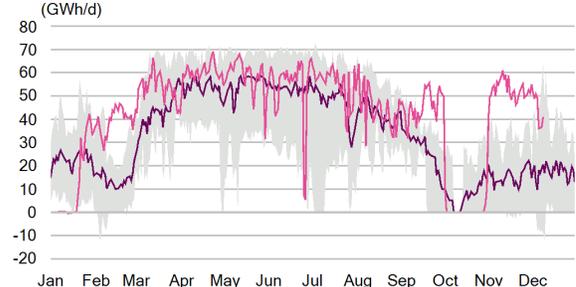
Source: Custom Weather. Legend: Average (red), Normal (black), High (grey), Low (blue).

WESTERN NUCLEAR GENERATION OUTAGES



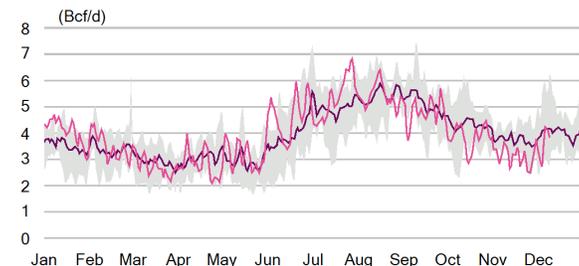
Source: NRC. Legend: 2014 (red), 2015 (black), 2016 (grey).

BPA DC LINE TRANSMISSION FLOWS N-S



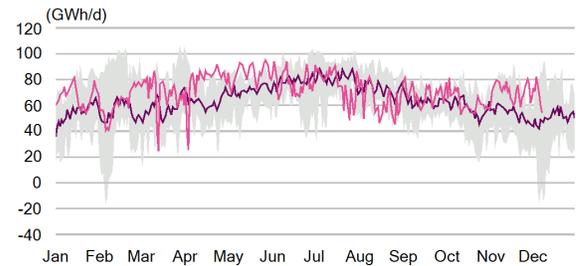
Source: BPA. Legend: 5 year range (grey), 5 year avg (black), 2016 (red).

YEAR-TO-DATE WEST POWER BURN



Source: Platts. Legend: 5 year range (grey), 5 year ave (black), 2016 (red).

BPA AC LINE TRANSMISSION FLOWS N-S



Source: BPA. Legend: 5 year range (grey), 5 year avg (black), 2016 (red).

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