

MEGAWATT DAILY

Monday, August 6, 2018

NEWS HEADLINES

California utilities pitch decarbonization plans

- Proposals follow IRP process dictated by 2015 law
- PG&E sees no need for new renewables

(continued on page 2)

DC Circuit tosses FERC order on PJM cost allocation

- FERC's decision to approve amendment was 'arbitrary': court
- Issue is remanded back to FERC

(continued on page 3)

Homeland Security forms group for cyber defense

- More opportunities exist for coordination across sectors
- Collaboration to focus on managing threats

(continued on page 3)

Market players, regulators weigh in on cyber risks

- 'This part of our business is in constant flux': Dominion
- 'More we can share information ... the better': ConEd

(continued on page 4)

Plentiful rainfall, temps boost TVA sales, net income

- Hottest fiscal year so far since 1965
- Sell-off not supported by studies: CEO

(continued on page 5)

KEY DRIVERS/MARKET HIGHLIGHTS

- Mass Hub on-peak jumps \$10.75 on higher demand, temps
- PJM West Hub climbs \$11 on higher demand, temperatures
- ERCOT day-ahead rises on demand, lower wind output forecasts
- Western power prices double for Monday delivery

INSIDE THIS ISSUE

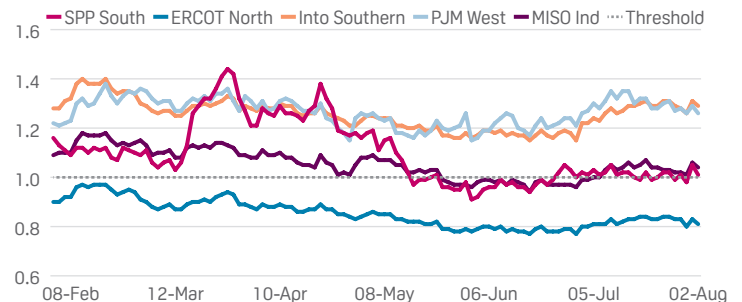
- Facebook signs wind PPA with EDPR Renewables 6
- FTR market value traded surges almost 85% on year 6
- New York generators urge FERC to block certain capacity sales 7
- Nueva Era pipe begins flowing gas across the US-Mexico border 8

REGIONAL DAY-AHEAD PRICE CHANGES

	Day-ahead peak prices			Regional weather trends		
	04-Aug	Daily chg	Prior 7-day avg	04-Aug	Daily chg	7-day forecast
ISO Price Locations						
CAISO NP 15	45.88	-4.16 ▼	59.94	73.1	0.0 ▲	76.4
ERCOT North Hub	30.00	-5.00 ▼	42.43	83.8	0.0 ▲	85.9
ISONE Internal Hub	34.77	-12.12 ▼	38.36	76.2	-3.0 ▼	77.5
MISO Indiana Hub	34.68	0.92 ▲	31.38	78.1	3.2 ▲	76.0
NYISO Zone G	37.40	-4.03 ▼	38.75	77.0	-0.7 ▼	79.7
PJM West Hub	37.71	0.77 ▲	34.11	78.1	1.6 ▲	79.0
SPP South Hub	25.36	0.00 —	30.54	80.7	-0.1 ▼	79.4
Bilateral indexes						
Into Southern	32.00	4.25 ▲	28.71	80.8	1.4 ▲	82.7
Palo Verde	103.00	0.00 —	97.51	77.0	0.2 ▲	79.8
C0B	62.00	0.00 —	85.82	67.2	1.5 ▲	75.4
Mid-C	58.73	0.00 —	81.96	67.2	1.5 ▲	75.4

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: S&P Global Platts daily OTC coal prices and M2MS gas prices

PLATTS PEAK DAILY DEMAND (GW)

						Daily change		Five day forecast					Season		Season average			
ISO	31-Jul	01-Aug	02-Aug	03-Aug	04-Aug	Chg	% Chg	05-Aug	06-Aug	07-Aug	08-Aug	09-Aug	Min	Max	2018	2017	Chg	% Chg
BPA-Puget	7.98	7.66	6.98	6.62	6.28	-0.34	-5.14	6.44	7.07	7.30	7.61	7.71	5.91	8.13	7.45	7.20	0.25	3.47
IESO	20.03	19.89	20.82	22.38	20.94	-1.44	-6.43	21.51	24.18	22.08	21.02	21.22	15.82	20.82	18.84	19.46	-0.62	-3.19
CAISO	43.93	43.97	42.90	37.14	34.19	-2.95	-7.94	34.66	40.11	41.64	41.70	40.32	28.76	43.97	38.47	37.56	0.91	2.42
ERCOT	59.93	65.56	66.12	60.06	54.34	-5.72	-9.52	55.84	61.28	58.90	59.66	56.16	48.71	68.87	61.59	61.53	0.06	0.10
SPP	40.64	43.28	45.31	40.79	36.06	-4.73	-11.60	38.00	39.58	36.58	35.09	35.55	31.64	45.31	39.21	42.38	-3.17	-7.48
MISO	94.94	100.42	103.69	101.77	99.34	-2.43	-2.39	99.97	104.20	99.81	98.69	99.58	77.13	107.20	93.89	99.83	-5.94	-5.95
PJM	114.42	126.30	126.31	125.39	120.99	-4.40	-3.51	130.18	142.30	142.47	135.18	128.91	52.14	145.13	107.81	119.42	-11.61	-9.72
NYISO	25.77	28.07	28.67	24.15	22.28	-1.87	-7.74	24.32	26.81	26.33	25.58	25.34	22.78	29.66	26.47	23.65	2.82	11.92
NEISO	20.76	20.17	23.64	19.82	17.41	-2.41	-12.16	18.78	20.53	21.28	20.35	19.33	17.23	23.64	19.79	17.76	2.03	11.43
AESO	10.85	10.92	10.83	9.28	8.88	-0.40	-4.31	9.00	9.75	9.85	9.72	9.81	9.21	10.97	10.55	9.93	0.62	6.24

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

Source: Platts



NEWS

'A decisive moment': Calif. utilities pitch decarbonization plans

- Proposals follow IRP process dictated by 2015 law
- PG&E sees no need for new renewables

More than 20 California power companies proposed plans Wednesday detailing how they will slash greenhouse gas emissions in line with the state's target of 40% below 1990 levels by 2030.

The filings with the California Public Utilities Commission include plans for tens of thousands of megawatts of additional renewable energy and energy storage, and charging infrastructure for several million electric vehicles. But it remains far from clear how utilities and other electric service providers will achieve that ambitious target, or whether they will succeed.

The proposals are part of the new integrated resource planning process created by a 2015 law that set California's climate targets. The new IRP process puts emissions reductions at the center of planning for power providers, while maintaining a focus on electric reliability.

Specifically, regulators have called for the electric sector as a whole to lower its emissions to 42 million metric tons by 2030, roughly halving the industry's emissions in 2015.

The filings reflect the extreme state of flux for California's utilities amid an exodus of customers to fast-multiplying local power agencies known as community choice aggregators, or CCAs. More than two dozen CCAs have launched or are exploring formation, gobbling up 15%

of regulated retail electric demand, the PUC estimates. That share could hit more than 80% by the 2020s.

Several pending regulatory decisions and legislative proposals further complicate the picture. At stake are how legacy costs are allocated among departing and remaining utility customers, along with a proposal to lift the cap on large energy users' direct power purchases from independent suppliers, which could further fragment the retail power sector.

"This is a decisive moment — 2030 is just over 11 years away," Southern California Edison said in its filing.

Like several other power providers, SoCal Ed, an Edison International subsidiary, proposed separate plans depending on the outcome of pending regulatory action. The utility's preferred proposal calls for around 4,200 MW of new renewables and about 1,600 MW of new energy storage, on top of already required amounts. The utility envisions 80% carbon-free power by 2030 across the state, as well as the addition of more than 16,000 MW of renewables, nearly 10,000 MW of energy storage and charging infrastructure for roughly seven million electric vehicles — well beyond the state's current target of five million emission-free vehicles by 2030.

SoCal Ed also called on regulators to adopt investor-owned utilities' proposal for allocating costs between its customers and those who have departed to CCAs.

Planning uncertainties

In its filing, Pacific Gas and Electric, or PG&E, saw no need for new renewables through 2030. "PG&E can meet its 2030 GHG planning target with its existing GHG-free resource portfolio and resources

S&P Global Platts

MEGAWATT DAILY

Volume 23 / Issue 150 / Monday, August 6, 2018

ISSN: 1088-4319

Megawatt Daily Questions? Email:
Electricity_Platts@spglobal.com

Managers North America Gas and Power Content

Rocco Canonica, +1-720-264-6626
Matthew Eversman, +1-713-655-2238
Joe Fisher, +1-713-658-3290
Chris Newkumet, +1-202-383-2141
Anne Swedberg, +1-720-264-6728

Editors

Jared Anderson, +1-212-904-2002
Brandon Evans, +1-720-264-6671
Jim Magill, +1-713-658-3229
Jasmin Melvin, +1-202-383-2135
J. Robinson, +1-720-264-6657
Jeff Ryser, +1-713-658-3225
Mark Watson, +1-713-658-3214
Harry Weber, +1-713-658-3257
Maya Weber, +1-202-383-2244
Kate Winston, +1-202-383-2012

Spot Market Editors

Meaghan Coleman, +1-713-655-2265
Kassia Micek, +1-713-655-2227
Eric Wieser, +1-202-383-2092
Jeff Zhou, +1-713-658-3217

Analysts

Eric Brooks
Richard Frey
John Hliffiker
Luke Jackson
Tyler Jubert
Mason McLean
John McManus
Ross Wyeno

Director, Americas Generating Fuels and Electric Power Pricing
Mark Callahan

Director, Americas Energy News
James O'Connell

Global Director of Generating Fuels
Simon Thorne

Platts President
Martin Fraenkel

Advertising

Tel: +1-720-264-6618

Manager, Advertisement Sales

Bob Botelho

To reach Platts: E-mail: support@platts.com; North America: Tel: 800-PLATTS-8; Latin America: Tel: +54-11-4121-4810; Europe & Middle East: Tel: +44-20-7176-6111; Asia Pacific: Tel: +65-6530-6430

Megawatt Daily is published daily by Platts, a division of S&P Global, registered office: Two Penn Plaza, 25th Floor, New York, N.Y. 10121-2298.

Officers of the Corporation: Charles E. Haldeman, Jr., Non-Executive Chairman; Doug Peterson, President and Chief Executive Officer; Ewout Steenbergen, Executive Vice President, Chief Financial Officer; Steve Kemps, Executive Vice President, General Counsel

© 2018 S&P Global Platts, a division of S&P Global Inc. All rights reserved.

The names "S&P Global Platts" and "Platts" and the S&P Global Platts logo are trademarks of S&P Global Inc. Permission for any commercial use of the S&P Global Platts logo must be granted in writing by S&P Global Inc.

You may view or otherwise use the information, prices, indices, assessments and other related information, graphs, tables and images ("Data") in this publication only for your personal use or, if you or your company has a license for the Data from S&P Global Platts and you are an authorized user, for your company's internal business use only. You may not publish, reproduce, extract, distribute, retransmit, resell, create any derivative work from and/or otherwise provide access to the Data or any portion thereof to any person (either within or outside your company, including as part of or via any internal electronic system or intranet), firm or entity, including any subsidiary, parent, or other entity that is affiliated with your company, without S&P Global Platts' prior written consent or as otherwise authorized under license from S&P Global Platts. Any use or distribution of the Data beyond the express uses authorized in this paragraph above is subject to the payment of additional fees to S&P Global Platts.

S&P Global Platts, its affiliates and all of their third-party licensors disclaim any and all warranties, express or implied, including, but not limited to, any

warranties of merchantability or fitness for a particular purpose or use as to the Data, or the results obtained by its use or as to the performance thereof. Data in this publication includes independent and verifiable data collected from actual market participants. Any user of the Data should not rely on any information and/or assessment contained therein in making any investment, trading, risk management or other decision. S&P Global Platts, its affiliates and their third-party licensors do not guarantee the adequacy, accuracy, timeliness and/or completeness of the Data or any component thereof or any communications (whether written, oral, electronic or in other format), and shall not be subject to any damages or liability, including but not limited to any indirect, special, incidental, punitive or consequential damages (including but not limited to, loss of profits, trading losses and loss of goodwill).

ICE index data and NYMEX futures data used herein are provided under S&P Global Platts' commercial licensing agreements with ICE and with NYMEX. You acknowledge that the ICE index data and NYMEX futures data herein are confidential and are proprietary trade secrets and data of ICE and NYMEX or its licensors/suppliers, and you shall use best efforts to prevent the unauthorized publication, disclosure or copying of the ICE index data and/or NYMEX futures data.

Permission is granted for those registered with the Copyright Clearance Center (CCC) to copy material herein for internal reference or personal use only, provided that appropriate payment is made to the CCC, 222 Rosewood Drive, Danvers, MA 01923, phone +1-978-750-8400. Reproduction in any other form, or for any other purpose, is forbidden without the express prior permission of S&P Global Inc. For article reprints contact: The YGS Group, phone +1-717-505-9701 x105 (800-501-9571 from the U.S.).

For all other queries or requests pursuant to this notice, please contact S&P Global Inc. via email at support@platts.com.

added to comply with existing mandates," the PG&E subsidiary said.

The San Francisco-based utility has borne the brunt of the CCA revolution. With an estimated CCA load growth of 23,000 GWh in its service territory in 2018 and 2019, the utility expects 42% of its demand to migrate to CCAs by the end of 2019.

San Diego Gas & Electric, or SDG&E, which already covers nearly half its retail sales with renewables, identified a need for "only approximately 700 GWh of incremental renewable power in the outer years" of the planning period. Even that may be too much, depending on the growth of alternative suppliers. "It is difficult to predict the volume of load that SDG&E will serve over the next few years, much less by 2030," the Sempra Energy utility said in its filing.

Like SoCal Ed, SDG&E is calling for more progress in the transportation sector. "To truly achieve a low-carbon future, we must focus more on transportation," a utility official said in an email. "About 50% of all [greenhouse gas] emissions in San Diego comes from the movement of people and goods."

CCAs, meanwhile, are planning for growth. Carved out of PG&E's territory, East Bay Community Energy, which launched in June, anticipates its net load to jump to 6.4 TWh in 2019 from 1.4 TWh in 2018. Between 2021 and 2023, it anticipates seeking long-term contracts for 2,355 MW of wind, solar, storage and hydropower, according to its August 1 filing. CleanPowerSF, which is rolling out across San Francisco, is seeking up to 600 MW of new renewables, according to its plan.

— [Garrett Hering, S&P Global Market Intelligence](#)

DC Circuit tosses FERC order on PJM transmission cost allocation

A federal appeals court has thrown out a US Federal Energy Regulatory Commission order that left individual transmission owners to foot the entire bill for certain high-voltage projects in PJM Interconnection.

"Given the significant regional benefits of high-voltage transmission lines, FERC's decision to approve the amendment was arbitrary," the DC Circuit Court of Appeals said in its August 3 decision (*Old Dominion Electric Cooperative v. FERC*, 17-1040), which remanded the issue back to FERC.

Order 1000 required grid operators to come up with a way to allocate costs of transmission projects chosen to meet regional needs for electricity. FERC approved PJM's cost-allocation plan in March 2013, finding that high-voltage transmission facilities have significant regional benefits, including reliability, that accrue to all members of PJM.

In July 2013, Dominion proposed to rebuild an aging high-voltage transmission line between Elmont and Cunningham, Virginia. At first, the project did not qualify for regional cost allocation because it was not needed to meet the planning and reliability criteria of PJM, North American Electric Reliability Corporation, or Dominion.

Dominion later changed its planning criteria, and argued the project should be eligible for regional cost allocation. In 2015, PJM proposed to allocate half the costs to Dominion and spread the remainder among 23 other utilities.

But an Ohio-based utility complained that Dominion had unilaterally

imposed costs on other utilities by adopting new planning criteria. So a batch of utilities proposed a tariff amendment to prohibit cost sharing for any project planned only to satisfy individual utilities' planning criteria.

FERC initially rejected the utilities' amendment, but later reversed course and accepted the proposal, noting that 98% of previous projects to address utilities' planning criteria produced only local benefits.

Commissioner Cheryl LaFleur dissented from FERC's decision as well as on a separate order on a high-voltage Dominion line from Cunningham to Doooms, Virginia. LaFleur said she preferred to preserve PJM's bright-line thresholds for regional cost allocation for all double-circuit 345 kV and 500 kV and above projects.

The DC Circuit threw out FERC's order, noting that the amendment unfairly denies cost sharing for all projects – including high-voltage lines – that are included in PJM's regional plan only to satisfy the planning criteria of individual utilities. "The amendment thus produces a severe misallocation of the costs of such projects," the court concluded.

For instance, Dominion would get only 47% of the benefits from the Elmont-Cunningham project, and 43% of the benefits from the Cunningham-Doooms project, but would have to pay for both projects under the amendment. This represents a wholesale departure from the cost-causation principle, the court said.

Citing LaFleur's dissent, the court noted that the 98% of projects that produced no regional benefits involved low-voltage facilities for which costs had never been regionally shared. And FERC has long recognized the difference in benefits from high-voltage and low-voltage projects, the court added. "Thus FERC could hardly say that trying to distinguish between high- and low-voltage facilities was not worth the trouble," the court said.

While Order 1000 might technically allow the amendment, FERC must also follow its pre-existing, cost-causation principle to make a reasonable effort to match costs to benefits, the court said. "We fail to see how a categorical refusal to permit any regional cost sharing for an important category of projects conceded to produce significant benefits can be reconciled with the background principle," the court said.

However, the economic merit of Dominion's planning criteria and the appropriateness of the two projects remain open issues on remand, the court said.

— [Kate Winston](#)

Homeland Security forms group to coordinate US cyber defense across sectors

■ More opportunities for coordination across sectors

■ Collaboration to focus on managing threats

Saying critical industries such as energy utilities and banks often face similar cyber threats, the US Department of Homeland Security has created a central body to coordinate protection and develop a "government/industry playbook" across multiple sectors.

The National Risk Management Center is intended to identify cyberrisks and coordinate threat management across critical infrastructure, aiming to integrate the defense strategies that are in play in various parts of the US.

"Risk management activities are frequently stove-piped and

opportunities exist for additional coordination across sectors and between government and industry, a distinct need given the crosscutting nature of critical infrastructure technologies like industrial control systems and the internet of things," the DHS wrote Tuesday in a fact sheet on the National Risk Management Center.

To effectively protect critical infrastructure, the DHS acknowledged that the National Risk Management Center will first need to define what constitutes "truly critical" parts of the nation's systems. This will be among the first government-industry activities the new center tackles, the department said.

Efforts to protect critical infrastructure have "too often" been focused on the primary assets and entities involved in the critical infrastructure segments, the DHS said, noting that the more peripheral contributors to critical infrastructure functions and the interconnections between sectors have gone overlooked.

For instance, an April attack on a third-party data system used by various energy companies for scheduling gas flows on pipelines highlighted the vulnerability that companies can expose themselves to when they inevitably engage an outside entity to manage some part of their business.

"What I find fascinating is that ... it's the infrastructure that's moving the commodity that gets put under the microscope but not the vendor," Kimberly Denbow, the American Gas Association's senior director of security, operations and engineering services said in an interview earlier in 2018. More emphasis should be put on ensuring that third-party entities are able to provide a high level of cyber protection, especially when those businesses are working closely with critical infrastructure companies, she said.

The DHS also said the National Risk Management Center will focus on moving beyond information sharing about the risks and problems and increase the focus on collaboratively developing trusted ways of managing threats. The center will aim to develop a framework for highlighting crucial supply chain elements across different infrastructure sectors and finding secure ways to address supply chain needs.

Nation-state actors have tried to breach critical infrastructure operations in multiple sectors, requiring coordination between industry and government, the department said. The DHS said the new center will be tasked with developing a standardized playbook for how to efficiently and effectively integrate risk management between the public and private sectors.

In creating the center, the DHS said it was responding both to the "increasingly complex threat environment" and to rising demand from industries for better integrated government support.

— [*Sarah Smith, S&P Global Market Intelligence*](#)

Market players, regulators weigh in on evolving cyber risks for energy

An uptick in public disclosure of cyberattacks by the federal government and the US' calling out of Russia for its role in cyber intrusions have put a brighter spotlight on risks facing the energy sector.

Industry and federal agencies are working to improve their ability to anticipate different kinds of threats, spanning from the

extraordinary, sophisticated, nation-state attack all the way down to the hacktivists and script kiddies, a term characterizing unskilled individuals who use existing computer scripts or code to hack into computers.

Here are some key comments from gas and power players and their regulators on areas they have identified as needing more attention:

Dominion Energy

"The thing we need from [regulators and legislators] is ... an understanding that this part of our business is in constant flux, and it will continue to be that way," said Tom Arruda, Dominion's director of information technology risk management. "Any regulations that prescribe specific cyber defenses, they may help us for the moment, but because of the ever-changing nature of the business, they don't necessarily last very long." Policymakers also should "make sure that anything that gets passed actually has an impact on security of our assets, and isn't just a compliance regulation or creating some paperwork on something that doesn't actually improve our defenses or defensive posture."

Consolidated Edison

Spokesman Allan Drury said ConEd was "in regular touch" with the federal government and its regulator on cyber threats facing the industry. "The more we can share information and expertise back and forth, the better," Drury said, adding that "the more informed regulators and other public officials are about this topic, the better."

Southwest Power Pool

Certain government information sharing and threat identification programs are very costly for companies, "contributing to a lack of participation that diminishes their value," said Barbara Sugg, SPP's vice president of IT and chief security officer. Though costly, these programs allow participating companies to share real-time security and internet traffic information with analysts who are able to spot trends and "rally the troops" if they identify any anomalies that might have gone unnoticed had they only had access to one company's real-time data, she said, adding that "the more participants that are part of it, the more valuable it is, and bringing the cost down is going to be the only way to get some of these other entities to participate."

Edison Electric Institute

Scott Aaronson, vice president of security and preparedness, said the partnership between industry and government "has been tremendous," but more must be done to ensure "that the right people can get the right information at the right time," and "that includes both getting people [security] clearances and declassifying information so companies can protect their systems" without having to go into a secure room. "Getting actionable intelligence out into the community so we can take action to protect our systems is huge," he said.

American Gas Association

Gas industry executives "are just not getting clearances. This is something legislators could fix or help fix," AGA President Dave McCurdy said. "We're still trying to get clearances for CEOs and top executives. Not every CEO needs a clearance."

Interstate Natural Gas Association of America

INGAA Security Director Rebecca Massello echoed displeasure with the "cumbersome and slow" process associated with being able to get security clearances. "From an operator perspective, you need at least two to three people on staff that have clearance that can be filtering through this threat information ... to determine if and how they need to respond in their individual network," she said, adding that "if the process of getting a clearance can take six months to two years, that kind of puts you at a hindrance in your ability to get that information."

Department of Energy

"All the legislation is in place that we need," according to Bruce Walker, assistant secretary for DOE's Office of Electricity. Now it's about R&D and making sure "the oil, natural gas and electric sectors are in lock step with the federal government" when it comes to preparing for and responding to incidents.

Federal Energy Regulatory Commission

"The day is not going to come when we may declare victory, at least in our lifetimes, over cyber problems," Chairman Kevin McIntyre said during a power grid forum. "It is a matter that commands constant vigilance" as threat actors "mean to harm our national security and ... our pockets." Through the oversight of a suite of reliability standards imposed on the power sector, FERC has "an official function in monitoring and asking ourselves constantly whether that suite of regulations ... is doing what it's intended to do in terms of the protection of our grid from a cyber standpoint," McIntyre said.

But Commissioners Neil Chatterjee and Richard Glick have called attention to the lack of mandatory standards to safeguard natural gas pipelines against cybersecurity threats, comparable to those set for the power grid. While the Transportation Security Administration has authority to set mandatory standards, it relies on voluntary ones, and has only six full-time employees to oversee gas, oil and hazardous liquids pipelines across the country, the commissioners said in a joint op-ed. DOE may be a more appropriate venue to vest pipeline security responsibilities, they asserted.

— [Jasmin Melvin](#)

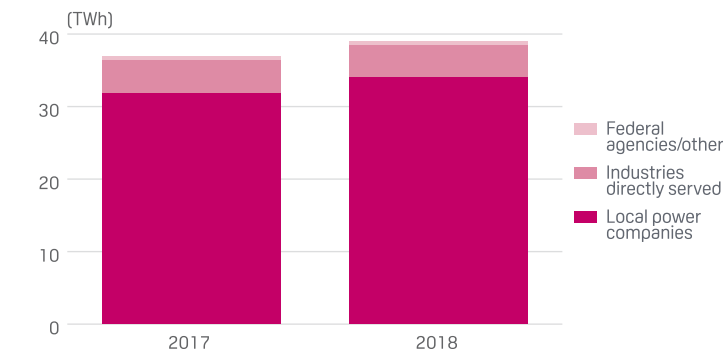
Plentiful rainfall, hot weather help boost TVA sales, net income: executives

- **Hottest fiscal year so far since 1965**
- **Sell-off not supported by studies: CEO**

Plentiful rainfall combined with hot weather to allow the Tennessee Valley Authority to boost the volume of its electricity sales by 5.7% in the second quarter and more than double its net income, compared with the same period of 2017, the federal agency's latest quarterly report shows.

In all, TVA sold about 39 TWh of electricity in the quarter ended June 30, the third quarter in the fiscal year of the Knoxville, Tennessee-based independent federal agency's fiscal year, according to the TVA quarterly report filed Friday at the US Securities and Exchange Commission. Founded in 1933, the TVA fills roles related to the environment and economic development as well as energy, the sale of which to more than 9 million people in seven states provides most of its revenue.

TVA ELECTRICITY SALES IN QUARTER ENDED JUNE 30



Source: TVA

Electricity sales in the most recent quarter totaled \$2.7 billion, up 5.4% from the same period of 2017, and its overall net income, at \$470 million, more than double the \$233 million in net income for the same period of 2017.

Cooling degree days

"Weather has been an important part of our financial results this year," said Bill Johnson, TVA's president and CEO, during Friday's call. "Our service area experienced warmer than normal weather in the third quarter of [fiscal year] 2018."

So far in the fiscal year, this has been TVA's hottest period since 1965 in terms of cooling degree days, TVA Chief Financial Officer John Thomas said.

The SEC filing shows that in the most recent quarter, cooling degree days were about 36% more than normal and about 24% more than the same period of 2017.

The TVA's complex of hydroelectric dams provides a significant portion of its energy, and most recent quarter had rainfall and runoff equivalent to 115% of normal, Johnson said. This has allowed TVA to produce 26% more hydropower so far this year.

In the most recent quarter, TVA's hydro facilities produced almost 3.5 TWh, about 4% more than they did in 2017, the quarterly report states.

Nuclear power provides by far the bulk of TVA's power, about 15.7 TWh in the most recent quarter, up about 26.7% from the same period of 2017, and facilities largely powered by natural gas provided about 7.6 TWh in the most recent quarter, up about 19% from the same period of 2017.

In contrast, coal-fired generation was down about 15% to 7.7 TWh in the most recent quarter, and purchased power was down about 22% to about 5.2 TWh.

Executive Branch reorganization plan

"A few weeks ago, the White House released an Executive Branch reorganization plan that proposes to sell off TVA's transmission system," Johnson said. "The wording of the proposal is similar to the administration's budget proposal back in February and similar to other divestiture ideas discussed since TVA's creation in 1933."

Previous studies have shown that the public power model provides "the best value" for TVA's patrons, and "as a result, Congress has never chosen to make changes in the TVA Act necessary to sell our assets."

— [Mark Watson](#)

Facebook signs wind PPA with EDPR to supply Indiana data center

■ US PPAs total approximately 1,000 MW

■ Facebook has PPAs in Europe as well

Facebook has signed a 15-year power purchase agreement with Energias de Portugal's US renewables subsidiary to secure wind power for a data center in Indiana, the two companies said Thursday. The deal continues the trend of direct procurement of green power by big tech companies.

The 139 MW EDP Renewables will supply Facebook will come from the 200-MW Headwaters II wind farm to be built in Randolph County, Indiana, EDPR said. Construction will begin this fall and an EPDR spokeswoman said Friday the facility will be operational in 2020.

"Corporate purchasers, like Facebook, who purchase fixed, competitively priced renewable energy have greatly contributed to the continued growth and success of the wind industry," said Joao Manso Neto, EDPR's CEO.

"Facebook is committed to finding new renewable energy projects on the same power grid for all of our facilities," Bobby Hollis, Facebook's Global energy director, said in a joint statement. Facebook's New Albany Data Center, approximately 80 miles south of Indianapolis, will be on the same transmission system as EDPR's Headwaters II wind facility.

Facebook has set a goal of 100% renewable power for its data centers, as well as for its Menlo Park headquarters. In 2017, the company switched all of its headquarter's electricity accounts to community choice aggregator Peninsula Clean Energy, and chose the CCA's 100% wind power option.

Facebook has also installed its own wind turbines at data centers such as in Altoona, Iowa.

PPAs have 'enabled' 1,000 MW of renewables

The deal with EDPR brings to five the number of PPAs with wind and solar developers Facebook has in the US, though the company is expected to sign more.

Its largest was a 437-MW PPA recently signed with PacifiCorp to supply solar power to Facebook's Prineville data center in Oregon. In March the company signed a 200-MW PPA to take power from what

will eventually be Enel Green Power North America's 320-MW Rattlesnake Creek Wind farm in Nebraska.

Facebook has "enabled over 1,000 MW of renewable energy to the grid in the US" with its PPAs, a company spokeswoman said Friday.

That MW total does not include a 15-year PPA signed in March with Walton Electric Membership Corporation in Georgia to supply Facebook's Newton Data Center near Atlanta. The Facebook spokeswoman said the amount of power covered by that PPA has not yet been determined.

The 1,000-MW estimate also does not include a 294-MW PPA signed in late May with a European asset management firm and Swedish power company Vattenfall to secure power from three wind farms in Norway. Facebook has said it is buying the wind power to supply data centers in Odense, Denmark, and Lulea, Sweden.

Global non-utility PPAs 5,400 MW in 2017

According to the American Wind Energy Association, 8,000 MW of PPAs have been signed by corporate and other non-utility customer through the end of 2017. In 2017, the total came to 2,178 MW, making it the second most active year, behind only 2015.

The global total of non-utility PPA's signed in 2017 came to 5,400 MW, according to the Global Wind Energy Council.

Almost 130 non-utility companies in the US have committed to 100% renewable energy targets. Reaching that goal is one of the more compelling factors behind the growth of non-utility wind and solar power purchases, along with the desire to secure long-term electric price stability, AWEA has said.

In addition to Facebook, companies active in pursuing renewable power supplies are such companies as Microsoft, Apple, Google, Amazon, Walmart, Citibank and Goldman Sachs.

— *Jeffrey Ryser*

FTR market value traded surges almost 85% on year, partly because of default

■ PJM volume almost doubled, value more than tripled

■ Baseload, on-peak prices almost flat on month

The market value of prompt-month transmission rights for August almost doubled in comparison with August 2017 partly because of the default of a significant PJM market participant and sale of its holdings, an analysis of independent system operator data shows.

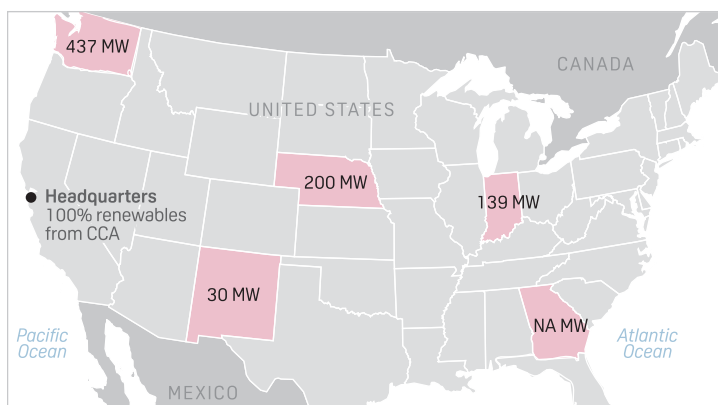
(For FTR tables, see pages 10-13.)

FTR market value in the July auctions for August monthly contracts surged almost 85% year on year to about \$175 million, and the month-to-month increase was 52%.

Total volume jumped 29.8% to 241.4 TWh in comparison with last August's total, and the month-to-month total was up 47.4%.

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 offset potential losses or hedge against the congestion component of locational marginal prices in day-ahead electricity markets. An FTR obligation contract entitles the holder to be compensated if congestion occurs between two points on the grid in the same

FACEBOOK PPAs FOR WIND AND SOLAR POWER



Source: S&P Global Platts

direction as stated in the contract. The contract holder is charged if congestion occurs in the opposite direction stated in the contract. This analysis is limited to the monthly FTR obligations market, and does not cover FTR options or long-term FTR markets, which can include quarterly and annual FTR contracts.

This August's PJM volume totaled 121.4 TWh, compared with 67.7 TWh in August 2017, and the dollar value totaled \$74.6 million, compared with \$20.3 million in August 2017.

In June, PJM declared GreenHat Energy in payment default, which prompted PJM to close out and liquidate GreenHat Energy's FTR portfolio, of which the 2018-19 planning year FTRs were offered for sale in the July FTR auction, with any unsold 2018-19 FTR positions offered in August.

This accounts for much of GreenHat Energy's extreme market volume in this month's list of top 50 participants — 51.6 TWh and \$33.3 million, in comparison with its nearest volume competitor, DC Energy with 16.1 TWh and \$10.7 million, and its nearest dollar competitor, NRG Energy, with 11.4 TWh and \$15.8 million.

This August's average value per MWh was up by about 42% compared with last August's, but only up about 3% compared with July's average.

August's baseload volume — representing around-the-clock transmission rights — was up by 37% from July's totals and was up by about 29% from August 2017's total. On-peak volume was up by 49.6% month on month and was up by almost 19% year on year, while this August's off-peak volume was up 46.5% from July and up almost 44% from August 2017.

Average baseload prices this August were almost flat with July but were up 77% from the August 2017 baseload prices. This August's on-peak average prices were again almost flat with July's but up by almost 40% from August 2017. This August's off-peak average price was up almost 10% from July, and up by 54.5% from August 2017.

— [Mark Watson](#)

New York generators urge FERC to block certain capacity sales

- Dispute linked to fight over BLC project cost allocation
- NYISO decision seen impacting clearing prices, reliability

New York generators say resources in PJM Interconnection should not be allowed to sell installed capacity into New York Independent System Operator across transmission lines owned by companies that got out of their obligation to pay for the contentious Bergen-Linden Corridor project.

The impermissible export of installed capacity (ICAP) over these transmission lines into NYISO will suppress ICAP clearing prices by as much as \$4.32/kW-month in NYISO Zone J, the Independent Power Producers of New York said Tuesday in a complaint to the US Federal Energy Regulatory Commission.

"Such price suppression could ... significantly contribute to the premature retirement of otherwise economic resources that are needed for reliability and resiliency in the NYISO and PJM and will likely stymie investor confidence," IPPNY said.

DAILY CSAPR ALLOWANCE ASSESSMENTS, AUG 03 (\$/st)

	2018	change	2019	change
NOx Annual	2.00	0.00	2.00	0.00
NOx Seasonal	270.00	0.00	270.00	0.00
SO ₂ Group 1	2.50	0.00	2.50	0.00
SO ₂ Group 2	3.00	0.00	3.00	0.00

RGGI CARBON ALLOWANCE FUTURES, AUG 02 (\$/allowance)

ICE	Settlement	Volume
Dec18 V17	4.49	0
Dec19 V17	4.71	0
Dec20 V17	4.99	0
Dec21 V17	5.27	0
Dec18 V18	4.50	0
Dec19 V18	4.72	0
Dec20 V18	5.00	0
Dec21 V18	5.28	0
Dec18 V19	4.50	0
Dec19 V19	4.72	0
Dec20 V19	5.00	0
Dec21 V19	5.28	0

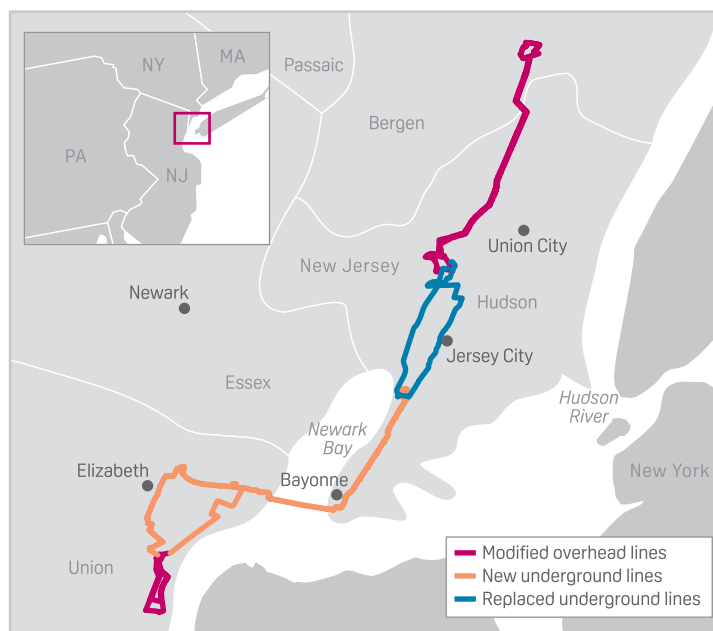
The Regional Greenhouse Gas Initiative is a carbon cap-and-trade program for power generators in nine Northeast and Mid-Atlantic US states. One RGGI allowance is equivalent to one short ton of CO₂. The volume listed is the number of futures contracts traded. Each futures contract represents 1,000 RGGI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

BLC project

The complaint is linked to who has to pay for the \$1.2 billion BLC transmission project. On July 19, FERC launched settlement talks to figure out who should pay for the project.

PJM originally spread the cost of the project among Consolidated Edison Company of New York, Linden VFT, Hudson Transmission Partners and Public Service Electric and Gas. But one by one, most of the parties got out of their obligation to pay for the project, leaving

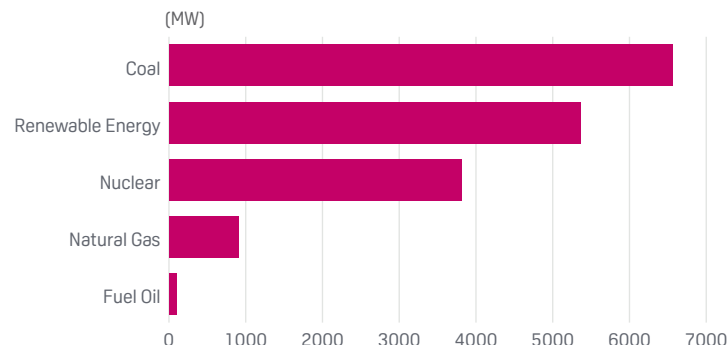
BERGEN-LINDEN CORRIDOR TRANSMISSION UPGRADE PROJECT



Source: PSEG

OUTAGES

US MEGAWATTS OFFLINE BY FUEL TYPE



Source: IIR Energy
For more information please contact IIR Energy at iirteam@iirenergy.com or at their website, www.iirenergy.com

NORTH AMERICAN DAILY GENERATION OUTAGES BY REGION, AUG 03

ISO Region	MW OFF	NERC Region	MW OFF
AESO	0	ERCOT	957
CAISO	192	FRCC	165
ERCOT	957	MRO	545
ISONE	0	NPCC	3,166
MISO	2,243	RFC ECAR	2,544
NYISO	416	RFC MAAC	800
Ontario IESO	2,740	RFC MAIN	0
PJM	3,023	SERC	1,718
SPP	107	SPP	27
		WECC	5,627
		US TOTAL	15,548

Source: IIR Energy

For more information please contact IIR Energy at iirteam@iirenergy.com or at their website, www.iirenergy.com

PSEG, and subsequently New Jersey ratepayers, to foot much more of the bill.

Linden VFT and HTP got out of paying for the project by converting their firm transmission withdrawal rights with non-firm TWRs.

Because of this conversion, PJM can curtail deliveries over Linden VFT's and HTP's facilities if the energy is needed in PJM, IPPNY argued. Since delivery is not guaranteed, resources should not be allowed to send installed capacity (ICAP) from PJM into New York over Linden VFT's and HTP's transmission lines, the group said. Instead, these resources should be offered into PJM's capacity market, the complaint said.

But NYISO is still allowing the sale of ICAP over these facilities based on PJM's assurances that those deliveries will not be curtailed, the group argued. NYISO's decision is impacting clearing prices and hurting reliability in both PJM and NYISO, the complaint said.

"With respect to the harm to PJM markets, the impermissible sale of ICAP artificially reduces the level of ICAP that would otherwise be available to supply the PJM market, which may unjustly be causing higher ICAP prices for PJM loads," the complaint said.

GENERATION UNIT OUTAGE REPORT, AUG 3

Plant/Operator	Cap	Fuel	State	Status	Return	Shut
Northeast						
Bruce-1/Bruce Power	830	n	Ont.	MO	Unk	07/26/18
Lennox-4/OPG	525	g	Ont.	MO	Unk	07/25/18
Pickering-6/OPG	520	n	Ont.	MO	Unk	07/23/18
Thunderbay CTS/Resolute	116	bio	Ont.	MO	Unk	08/03/18
Thunderbay-3/OPG	153	bio	Ont.	MO	Unk	05/17/18
PJM & MISO						
Southeast & Central						
West						
Ormond Beach-2/NRG	775	g	Calif.	MO	Unk	08/02/18
Redondo-7/AES	506	g	Calif.	MO	Unk	07/30/18
Redondo-8/AES	496	g	Calif.	MO	Unk	07/30/18

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.

Reliability worries

And NYISO faces the risk that ICAP exported over the VFT facility will not be available if PJM curtails such exports, IPPNY said. "If PJM is experiencing system stress in New Jersey for reasons other than an unexpected forced outage affecting the PJM system alone, it is likely that the NYISO is experiencing similar stressed system conditions in New York City," the complaint said.

IPPNY urged FERC to prohibit resources in PJM from scheduling ICAP to NYISO's Zone J over transmission lines that do not have firm TWRs, the complaint said. "Each monthly ICAP auction that occurs without a commission order directing the NYISO to prohibit these transactions will further add to the harms that have been incurred by NYISO and PJM customers since the beginning of the year," the complaint said.

— *Kate Winston*

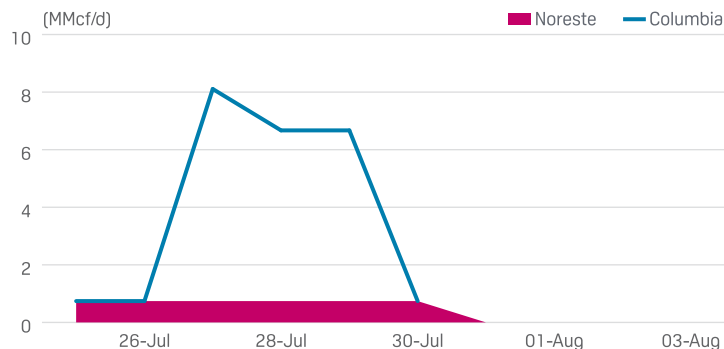
Nueva Era pipeline begins flowing gas across the US-Mexico border

- Delivering gas to combined-cycle power plants
- Pipeline may also deliver to LDCs in Monterrey

The 630 MMcf/d Nueva Era Pipeline started posting daily flow data on July 25, showing receipts from the US intrastate Impulsora Pipeline at the Columbia receipt meter for just under 1 MMcf/d and delivering volumes to the Noreste meter in the Monterrey area. Volumes at the border quickly increased to 8 MMcf/d July 27; however, that was likely a result of system testing for linepack or fuel given none of the downstream meters reflected the increase in flows.

The new US-Mexico cross-border system is a joint venture of Howard Energy Partners and Grupo Clisa. Nueva Era noted that a binding open season secured contractual flows of 504 MMcf/d by the Comision Federal de Electricidad (CFE). The CFE – together with

NUEVA ERA PIPELINE FLOWS



Source: S&P Global Platts Analytics

Iberdrola – will be operating the 889 MW-Noreste (Escobedo) power plant while the CFE operates the 849 MW-Huinala Complex. The Huinala complex is home to three combined-cycle units as well as Energia del Caribe's 150 MW-Huinala Flexicycle gas turbine unit.

Iberdrola last confirmed that the Noreste (Escobedo) power plant would enter commercial operations in December 2018; however, flow data on Nueva Era suggest that the power plant may be entering the testing phase of operations.

CFE generation data for 2017 shows that the three CCGT Huinala units had gross output of 3,783 GWh on 849 MW of capacity, implying a capacity factor of 51% and gas consumption of 70 MMcf/d. The gas turbine unit had a capacity factor of 9% in 2017 and consumption of 3 MMcf/d. The Huinala complex has been receiving gas from the Kinder Morgan Mexico (Mier-Monterrey) pipeline system but will likely switch

to supply from Nueva Era. Kinder Morgan Mexico has the ability to deliver into the Monterrey area, which will help free supply on the SISTRANGAS system, which has faced tight balances considering sample production on the latter pipeline has fallen by 0.4 Bcf/d (19%) from a year ago July.

Based on the Huinala data and the 889 MW Noreste (Escobedo) plant, the Nueva Era pipeline can be expected to flow 130 MMcf/d over the next few months.

That said, Nueva Era may also deliver volumes to local distribution companies in Monterrey as well as the 840 MW Iberdrola/CFE Noreste (El Carmen) CCGT planned for September 2019, when the latter could provide an incremental 55 MMcf/d assuming 50% utilization and a quoted heat rate of 6.6 MMBtu/MWh.

Power plant delays

Platts Analytics is tracking 1.9 GW of combined-cycle generating capacity in Mexico that is currently under construction and planned to enter service through the rest of 2018. Another 0.9 GW of capacity has been proposed for 2018 but has not yet broken ground.

US exports to Mexico are forecast to average 4.8 Bcf/d in Q4 2018 and aren't expected to reach 6 Bcf/d until seasonal cooling demand picks up by June 2019. From December 2018 to June 2019, there is an incremental 2.7 GW of combined-cycle capacity that is under construction, with another 2.9 GW of capacity that has been proposed but has yet to break ground. Historically, combined-cycle units have taken roughly 34 to 42 months to enter service from when first proposed, providing downside risk to US pipeline exports to Mexico.

— [John Hilfiker](#)

FTR MARKET REPORT FOR AUG 2018

Top 50 participants by volume

Participant	Total GWh	Total dollars	Net neg. dollars	Net pos. dollars
GreenHat Energy	51,675	33,304,544	-5,493,698	27,810,846
DC Energy	16,090	10,734,944	-5,690,647	5,044,297
NRG Energy	11,378	15,765,873	-5,076,697	10,689,176
Castleton Commodities	11,037	3,804,292	-1,690,801	2,113,490
Saracen Energy	10,216	5,160,417	-2,376,110	2,784,307
EDF Trading	5,511	2,670,474	-1,170,795	1,499,680
MAG Energy Solutions	5,071	3,049,385	-1,147,094	1,902,292
Monolith Energy	5,019	2,565,811	-2,332,146	233,665
Elmagin Power Fund	4,946	1,030,167	-780,647	249,520
NextEra Energy	4,454	1,121,394	-437,068	684,326
GRG Energy	4,141	1,478,909	-870,346	608,563
XO Energy	3,944	2,259,133	-989,339	1,269,794
Vitol	3,647	984,736	-47,690	937,047
Hemsworth Capital	3,605	1,688,050	-731,736	956,313
Exelon Generation	3,147	5,397,791	-3,802,841	1,594,950
Mercuria Energy America	3,103	1,857,053	-917,674	939,380
Direct Energy	2,836	3,463,111	-1,353,711	2,109,399
Apogee Energy Trading	2,759	2,489,846	-2,022,746	467,100
BioUrja Power	2,718	1,122,496	-967,084	155,412
Forest Investment Group	2,713	701,421	-560,503	140,917
Elliott Bay Energy Trading	2,445	2,288,510	-1,796,591	491,919
Appian Way Energy Partners	2,397	2,848,625	-1,441,199	1,407,426
Jane Street Energy Trading	2,363	2,721,488	-2,627,592	93,897
Luminant Energy	2,216	1,797,697	-210,934	1,586,763
Intergrid	2,150	858,971	-224,283	634,687
ELMISO	2,135	877,641	-523,923	353,718
Shell Energy	1,988	3,103,668	-983,529	2,120,139
ATNV Energy	1,960	1,018,199	-473,651	544,548
Dynegy Power	1,930	2,454,776	-305,672	2,149,104
Tyne Hill Investments	1,870	807,639	-326,872	480,768
Apogee Interactive	1,836	1,484,389	-877,963	606,426
Great Barrington Energy Fund	1,831	967,948	-603,698	364,249
Divine Power	1,807	282,824	-52,027	230,798
Clover Energy	1,785	772,643	-195,731	576,912
Bancroft Energy	1,765	442,422	-183,678	258,744
SIG Energy	1,739	1,523,734	-1,060,759	462,974
Velocity American Energy	1,712	1,540,214	-280,465	1,259,748
Tower Research Capital	1,639	1,386,026	-736,679	649,348
Black Oak Capital	1,591	2,147,829	-1,910,919	236,909
Perdisco Trading	1,559	171,779	-123,185	48,594
Freeport Commodities	1,520	2,039,767	-1,331,822	707,945
Transgrid Midwest	1,423	21,468	-2,783	18,685
Sanitas Power LLC	1,300	216,789	-187,314	29,474
Synergy Energy Trading	1,220	496,177	-22,735	473,442
Manatee Transmission	1,153	1,138,286	-1,050,060	88,226
SESCO Enterprises	1,136	2,335,675	-797,270	1,538,404
Duke Energy	1,089	511,350	-476	510,875
Gallus Capital	1,012	111,289	-51,442	59,846
Uncia Energy	958	569,674	-509,761	59,914
Citigroup	928	1,944,294	-1,006,069	938,225

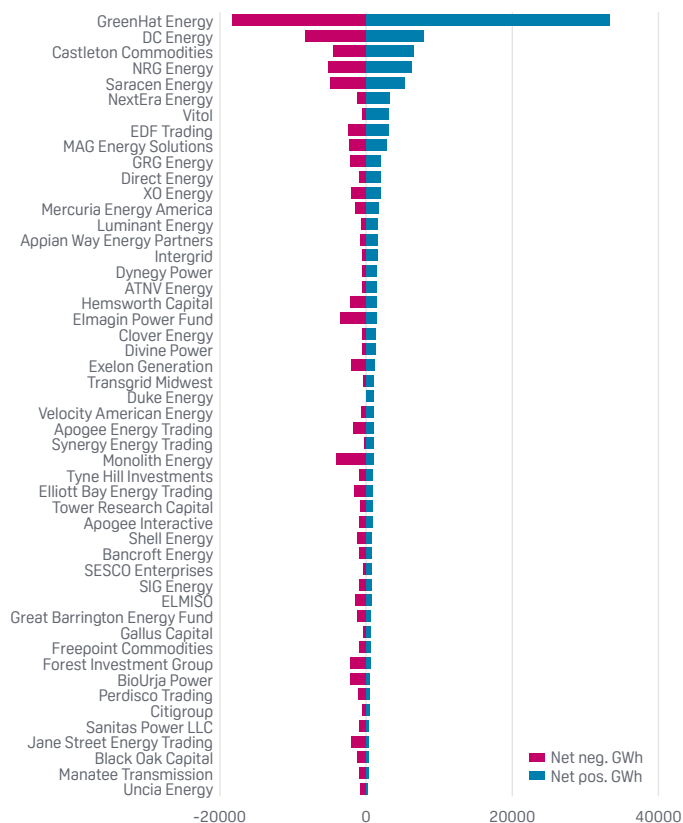
FTR MARKET REPORT FOR AUG 2018

RTO activity ranked by volume

RTO	Total GWh	Net neg. GWh	Net pos. GWh	Participants
PJM	121,395	-59,013	62,382	112
MISO	38,403	-19,603	18,799	76
SPP	24,782	-8,294	16,487	68
CAISO	23,274	-10,839	12,435	53
ERCOT	14,567	-5,329	9,237	45
ISONE	11,032	-1,925	9,107	25
NYISO	7,922	-3,398	4,524	36
Grand total	241,374	-108,402	132,972	415

RTO activity ranked by total dollars

RTO	Total dollars	Net dollars	Net neg. dollars	Net pos. dollars
PJM	74,602,281	6,565,074	-34,018,603	40,583,678
ERCOT	26,856,673	12,235,894	-7,310,390	19,546,284
CAISO	24,189,685	5,564,110	-9,312,787	14,876,898
MISO	19,867,738	1,224,343	-9,321,697	10,546,041
NYISO	16,507,235	179,032	-8,164,101	8,343,134
SPP	11,787,504	4,339,460	-3,724,022	8,063,482
ISONE	857,489	733,613	-61,938	795,551
Grand total	174,668,604	30,841,528	-71,913,538	102,755,066



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 Matthew Eversman at (713) 655-2238 (matthew.eversman@spglobal.com)

FTR MARKET REPORT FOR AUG 2018

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

CAISO

Positive paths

Source	Sink	Shape	Total \$	Total MWh	\$/MWh	Contracts
MALIN_5_N101	TH_SP15_GEN-APND	Peak	843,307	66,848	12.62	2
SYLMARDC_2_N501	TH_SP15_GEN-APND	Peak	706,740	53,642	13.18	2
TH_NP15_GEN-APND	TH_SP15_GEN-APND	Peak	667,571	78,459	8.51	5
POD_DIABLO_7_UNIT 1-APND	TOT108_2_N006	Peak	617,342	63,936	9.66	1
SYLMARDC_2_N501	SYLMARLA_2_N501	Peak	522,215	59,079	8.84	3
TH_ZP26_GEN-APND	TH_SP15_GEN-APND	Peak	452,441	47,433	9.54	7
POD_LEBECS_2_UNITS-APND	TH_SP15_GEN-APND	Peak	383,099	162,432	2.36	1
SYLMARDC_2_N501	TH_SP15_GEN-APND	Off-peak	357,412	86,085	4.15	6
POD_SUNRIS_2_PL1X3-APND	TH_SP15_GEN-APND	Peak	318,498	34,225	9.31	1
POD_ELKHIL_2_PL1X3-APND	TH_SP15_GEN-APND	Peak	317,884	35,135	9.05	1

Negative paths

TH_SP15_GEN-APND	DLAP_PGAE-APND	Peak	435,877	53,949	-8.08	1
POD_SANDLT_2_SUNITS-APND	DLAP_PGAE-APND	Peak	275,959	38,153	-7.23	1
POD_GENESI_2_STG-APND	DLAP_PGAE-APND	Peak	272,531	44,466	-6.13	1
POD_DSRTSN_2_SOLAR1-APND	DLAP_PGAE-APND	Peak	268,652	42,501	-6.32	1
AVSOLAR_7_N008	DLAP_PGAE-APND	Peak	156,408	19,756	-7.92	1
DLAP_SCE-APND	SYLMARDC_2_N501	Peak	152,181	10,040	-15.16	7
POD_IVANPA_1_UNIT3-APND	DLAP_PGAE-APND	Peak	130,248	25,123	-5.18	1
POD_IVANPA_1_UNIT1-APND	DLAP_PGAE-APND	Peak	106,958	20,631	-5.18	1
DLAP_SCE-APND	MALIN_5_N101	Peak	93,217	6,386	-14.60	5
DLAP_SCE-APND	SYLMARDC_2_N501	Off-peak	92,553	21,277	-4.35	6

ERCOT

Positive paths

HB_NORTH	LZ_NORTH	Peak	2,612,365	1,748,074	1.49	78
HB_WEST	LZ_WEST	Peak	2,208,621	226,982	9.73	44
HB_SOUTH	LZ_SOUTH	Peak	2,065,131	299,294	6.90	29
HB_HOUSTON	LZ_HOUSTON	Peak	1,907,270	953,635	2.00	47
HB_WEST	LZ_WEST	Off-peak	1,714,300	112,989	15.17	47
HB_WEST	LZ_WEST	Peak	518,129	62,822	8.25	34
HB_NORTH	LZ_NORTH	Peak	474,990	601,254	0.79	70
HB_SOUTH	LZ_SOUTH	Peak	454,701	102,874	4.42	30
WHCCS2_5_6	HB_NORTH	Peak	432,653	147,200	2.94	14
HB_HOUSTON	LZ_HOUSTON	Peak	413,175	356,595	1.16	38

Negative paths

HOVEY_GEN	LZ_WEST	Peak	458,180	2,834	-161.70	1
LZ_WEST	HB_WEST	Peak	358,077	36,800	-9.73	4
HB_NORTH	WHCCS2_4	Peak	270,408	92,000	-2.94	10
HOVEY_GEN	KING_KINGNW	Peak	188,238	1,104	-170.51	3
HB_NORTH	HB_WEST	Peak	164,283	101,237	-1.62	9
CBY_CBY_G2	HB_HOUSTON	Peak	162,395	175,867	-0.92	4
HOVEY_GEN	LASSO_GEN	Peak	148,984	1,472	-101.21	4
SCLP_PUN1	BSF_PUN1	Peak	134,983	2,208	-61.13	2
LZ_WEST	HB_WEST	Peak	131,960	16,000	-8.25	4
HLSES_UNIT4	HB_NORTH	Peak	120,402	31,280	-3.85	6

ISONE

Positive paths

.H.INTERNAL_HUB	.Z.SEMASS	Peak	40,300	99,507	0.40	21
.H.INTERNAL_HUB	.Z.NEMASSBOST	Peak	39,974	165,526	0.24	43
UN.POWERSVL115 GNRT	.H.INTERNAL_HUB	Peak	28,060	11,224	2.50	2
UN.POWERSVL115 GNRT	.H.INTERNAL_HUB	Off-peak	26,352	12,634	2.09	2
.H.INTERNAL_HUB	.Z.CONNECTICUT	Peak	16,136	120,078	0.13	34
.H.INTERNAL_HUB	.Z.SEMASS	Off-peak	14,696	98,512	0.15	43
.H.INTERNAL_HUB	.Z.NEMASSBOST	Off-peak	14,065	200,934	0.07	56
UN.GRAHAM 18.0MS1A	.H.INTERNAL_HUB	Peak	11,376	15,456	0.74	3
UN.GRAHAM 18.0MS1B	.H.INTERNAL_HUB	Peak	11,376	15,456	0.74	3
UN.SEABROOK24.5SBRK	.H.INTERNAL_HUB	Off-peak	11,322	98,136	0.12	36

Negative paths

UN.TIVERTON18.0TIVR	.Z.RHODEISLAND	Peak	5,108	14,720	-0.35	8
LD.SHERBORN13.8	LD.DEPOT 13.8	Peak	3,540	16,744	-0.21	5
.H.INTERNAL_HUB	.Z.MAINE	Peak	3,463	22,374	-0.15	5
UN.BPT_ENER16 BHCC	.H.INTERNAL_HUB	Peak	3,069	20,461	-0.15	2
LD.HANOVER 23 1690 LD	UN.MILSTONE24.0MIL3	Off-peak	1,805	18,048	-0.10	7
LD.SHERBORN13.8	LD.DEPOT 13.8	Off-peak	1,193	20,454	-0.06	17
LD.BAIRD 13.8	LD.DEVON_RR115	Peak	1,153	5,888	-0.20	2
LD.BAIRD 13.8	LD.MILVON 13.8	Off-peak	678	6,768	-0.10	2
LD.BAIRD 13.8	LD.DEVON_RR115	Off-peak	678	6,768	-0.10	2
UN.TOWANTIC18.0T01B	.Z.CONNECTICUT	Peak	642	31,501	-0.02	8

FTR MARKET REPORT FOR AUG 2018

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

Source	Sink	Shape	Total \$	Total MWh	\$/MWh	Contracts
MISO						
Positive paths						
MINN.HUB	INDIANA.HUB	Peak	309,558	78,421	3.95	1
MINN.HUB	INDIANA.HUB	Off-peak	179,284	64,221	2.79	1
AMIL.BALDWI51	AMIL.BGS6	Peak	135,310	90,197	1.50	158
AMIL.BALDWI52	AMIL.BGS6	Peak	121,729	81,144	1.50	177
ALTE.ROCKGEN2	INDIANA.HUB	Peak	91,951	57,408	1.60	1
CLEC.MPS3	LAGN.BC2_1	Peak	73,092	19,688	3.71	2
EEI	AMIL.BGS6	Peak	65,113	43,056	1.51	1
AMIL.BALDWI53	AMIL.IP.AZ	Peak	53,476	46,184	1.16	52
AMIL.BALDWI51	AMIL.IP.AZ	Peak	53,433	46,147	1.16	55
ALTW.OTTUMW1	ALTW.ALTW	Peak	51,122	14,352	3.56	1

Negative paths						
INDIANA.HUB	MINN.HUB	Peak	363,160	92,000	-3.95	3
INDIANA.HUB	MICHIGAN.HUB	Peak	100,888	119,122	-0.85	5
WPS.WPSM	WEC.WPPI	Peak	83,339	39,965	-2.09	1
INDIANA.HUB	AMIL.CNE	Peak	75,446	46,699	-1.62	2
INDIANA.HUB	AMIL.BGS6	Peak	43,952	27,232	-1.61	3
WPS.PULLIAM8	MGE.LRRGTOT	Peak	42,336	5,998	-7.06	1
WEC.OCONTFL	CE.ZIONEC.MVP	Peak	38,689	13,800	-2.80	1
WEC.OCONTFL	ALTE.SHEEPSIN1	Off-peak	33,070	14,100	-2.35	1
MEC.PHEC_1	MEC.CC.GDM1	Peak	31,823	4,158	-7.65	2
INDIANA.HUB	ARKANSAS.HUB	Peak	31,718	18,400	-1.72	1

NYISO

Positive paths						
HUD VL	WEST	Baseload	1,215,068	186,000	6.53	1
HUD VL	WEST	Baseload	939,764	169,632	5.54	4
CENTRL	WEST	Baseload	821,435	152,520	5.39	4
HUD VL	N.Y.C.	Baseload	515,108	168,888	3.05	10
CENTRL	WEST	Baseload	314,802	67,704	4.65	2
HUD VL	N.Y.C.	Baseload	262,483	83,328	3.15	7
HUD VL	WEST	Baseload	234,234	67,704	3.46	2
O.H._GEN_BRUCE	WEST	Baseload	227,664	22,320	10.20	4
OSWEGATCHIE___HYD	NYISO_LBMP_REFERENCE	Baseload	211,310	19,344	10.92	19
CENTRL	WEST	Baseload	174,208	26,040	6.69	11

Negative paths						
WEST	CENTRL	Baseload	504,882	93,744	-5.39	7
N.Y.C.	HUD VL	Baseload	487,878	159,960	-3.05	8
WEST	HUD VL	Baseload	335,359	51,336	-6.53	3
CENTRL	NORTH	Baseload	247,681	89,280	-2.77	4
WEST	CENTRL	Baseload	212,264	33,480	-6.34	2
CENTRL	NINE_MILE_2	Baseload	206,280	148,800	-1.39	10
WEST	CENTRL	Baseload	189,140	28,272	-6.69	6
N.Y.C.	HUD VL	Baseload	187,488	59,520	-3.15	4
CENTRL	NINE_MILE_1	Baseload	184,606	133,920	-1.38	9
CENTRL	FITZPATRICK___	Baseload	183,955	133,920	-1.37	9

PJM

Positive paths						
SPURLOCK22 KV SPURLK1	STUART2 22.8 KV ST2	Peak	433,033	74,189	5.84	23
ROCKSPRI24 KV WCATSTG	DPL_ODEC	Peak	422,076	69,258	6.09	4
EBEND 20 KV EB2_D	MIAMIFOR22 KV MI8	Peak	368,735	23,184	15.90	5
WESTERN HUB	BGE	Baseload	363,280	186,000	1.95	1
SUSQUEHA24 KV UNIT01	WESTERN HUB	Off-peak	285,526	131,600	2.17	5
CLFTYAEP345 KV UN1	MIAMIFOR22 KV MI7_D	Peak	251,104	20,314	12.36	10
BETHSTL 34 KV LD1	RIVERSID13 KV CT 7	Peak	184,838	16,744	11.04	4
AEP-DAYTON HUB	DEOK	Peak	176,682	33,230	5.32	7
CLFTYAEP345 KV UN1	MIAMIFOR22 KV MI7_D	Off-peak	167,823	28,501	5.89	2
WESTERN HUB	BGE	Peak	163,587	63,517	2.58	14

Negative paths						
MIAMIFOR22 KV MI7_D	LAWRENC218 KV G1	Peak	604,027	36,579	-16.51	5
DAY	AEP-DAYTON HUB	Peak	493,877	135,019	-3.66	4
KILLEN 23.4 KV G2	SPURLOCK18 KV SPURLK3	Peak	386,354	82,947	-4.66	12
STUART2 22.8 KV ST1	SPURLOCK18 KV SPURLK3	Peak	372,425	61,603	-6.05	11
DEOK	AEP-DAYTON HUB	Off-peak	351,305	138,819	-2.53	4
ATSI	COOK 26 KV CK2	Peak	313,166	63,296	-4.95	2
STUART2 4 KV DIES_A	SPURLOCK18 KV SPURLK3	Peak	300,095	49,570	-6.05	9
MIAMIFOR22 KV MI8	EBEND 20 KV EB2_D	Peak	298,500	18,768	-15.90	3
MIAMIFOR22 KV MI8	SANDERSO138 KV SAN3	Off-peak	256,701	34,592	-7.42	4
STUART2 22.8 KV ST1_A	SPURLOCK22 KV SPURLK2	Peak	250,730	41,474	-6.05	7

FTR MARKET REPORT FOR AUG 2018

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

Source	Sink	Shape	Total \$	Total MWh	\$/MWh	Contracts
SPP						
Positive paths						
WR.LEC.5	WR_WR	Peak	159,887	41,216	3.88	1
WR.WOLF	WR_WR	Off-peak	93,081	122,802	0.76	3
KCPLIATANUNIAT2	KCPL_GMOC_HUB	Peak	69,109	39,339	1.76	1
KCPLIATANUNIAT1	KCPL_GMOC_HUB	Peak	66,006	37,573	1.76	1
GRDAHUB2	WFEC_OKGE	Peak	54,995	24,398	2.25	1
WR.JEC.2	WR_WR	Peak	52,763	22,190	2.38	1
OKGESM2	OKGE_OKGE	Off-peak	51,409	91,706	0.56	1
OKGESM3	OKGE_OKGE	Off-peak	49,133	87,646	0.56	1
MPSLAKE_RDUN4	KCPL_GMOC_HUB	Peak	48,988	36,432	1.34	1
KCPLHUB	KACY_KACY	Peak	47,685	17,590	2.71	1
Negative paths						
AECC_FLTCREEK	AECC_CSWS	Peak	41,258	33,488	-1.23	1
AECC_FLTCREEK	AECC_CSWS	Off-peak	34,545	87,082	-0.40	2
WFEC_WFEC	SPS_SPS	Peak	26,546	20,056	-1.32	1
WR.MW.GMEC.MW	MKEC_KP_KINGIC4	Off-peak	22,092	3,384	-6.53	3
WR.GEEC.1	WR.MGILL.4	Peak	20,579	5,078	-4.05	4
CSWJLSTALL	WR.KMW.1	Peak	16,874	5,520	-3.06	3
WAUE_UGPM_COSUPP	NPPD_GRIS_GT1	Peak	16,502	12,843	-1.28	2
AECC_FLTCREEK	EDE_EDE	Peak	16,349	11,114	-1.47	2
WR.MW.GMEC.MW	PSGO_MDUM_LEWIS1	Peak	14,339	1,840	-7.79	1
WR_FLATRIDGE2SWPC02	SECI.KACY.CIM	Off-peak	12,644	18,800	-0.67	1

SUBSCRIBER NOTE

Platts discontinues Western non-firm electricity assessments

Effective Wednesday August 1, 2018, S&P Global Platts will discontinue non-firm electricity assessments for Western bilateral markets. The discontinued assessments were published in Market Data Category ES and available in the bespoke FTP Electricity Price Index files, also known as “SPDJL Lookalike” files. For further information regarding the discontinuation, please contact Platts at ElectricityPrice@spglobal.com and pricegroup@spglobal.com. For written comments, please provide a clear indication if comments are not intended for publication by Platts for public viewing. Platts will consider all comments received and will make comments not marked as confidential available upon request.

All affected symbols and descriptions are listed below (\$/MWh):

Symbol	Description	Symbol	Description
DEACJ20	CA-OR Border OPk FdDt DICt Non-Firm	NAMBQ28	Mead OPk TdDt Wknd Non-Firm
NEACJ20	CA-OR Border OPk FdDt Non-Firm	DAMBW20	Mead Pk FdDt DICt Non-Firm
DEACJ21	CA-OR Border OPk FdDt Wknd DICt Non-Firm	NAMBW20	Mead Pk FdDt Non-Firm
NEACJ21	CA-OR Border OPk FdDt Wknd Non-Firm	DAMBW21	Mead Pk FdDt Wknd DICt Non-Firm
DEACJ05	CA-OR Border OPk TdDt DICt Non-Firm	NAMBW21	Mead Pk FdDt Wknd Non-Firm
NEACJ05	CA-OR Border OPk TdDt Non-Firm	DAMBW00	Mead Pk TdDt DICt Non-Firm
DEACJ28	CA-OR Border OPk TdDt Wknd DICt Non-Firm	NAMBW00	Mead Pk TdDt Non-Firm
NEACJ28	CA-OR Border OPk TdDt Wknd Non-Firm	DAMBW28	Mead Pk TdDt Wknd DICt Non-Firm
DEABE20	CA-OR Border Pk FdDt DICt Non-Firm	NAMBW28	Mead Pk TdDt Wknd Non-Firm
NEABE20	CA-OR Border Pk FdDt Non-Firm	DEACL20	Mid-Col OPk FdDt DICt Non-Firm
DEABE21	CA-OR Border Pk FdDt Wknd DICt Non-Firm	NEACL20	Mid-Col OPk FdDt Non-Firm
NEABE21	CA-OR Border Pk FdDt Wknd Non-Firm	DEACL21	Mid-Col OPk FdDt Wknd DICt Non-Firm
DEABE00	CA-OR Border Pk TdDt DICt Non-Firm	NEACL21	Mid-Col OPk FdDt Wknd Non-Firm
NEABE00	CA-OR Border Pk TdDt Non-Firm	DEACL05	Mid-Col OPk TdDt DICt Non-Firm
DEABE28	CA-OR Border Pk TdDt Wknd DICt Non-Firm	NEACL05	Mid-Col OPk TdDt Non-Firm
NEABE28	CA-OR Border Pk TdDt Wknd Non-Firm	DEACL28	Mid-Col OPk TdDt Wknd DICt Non-Firm
DEACR20	Four Corners OPk FdDt DICt Non-Firm	NEACL28	Mid-Col OPk TdDt Wknd Non-Firm
NEACR20	Four Corners OPk FdDt Non-Firm	DEABF20	Mid-Col Pk FdDt DICt Non-Firm
DEACR21	Four Corners OPk FdDt Wknd DICt Non-Firm	NEABF20	Mid-Col Pk FdDt Non-Firm
NEACR21	Four Corners OPk FdDt Wknd Non-Firm	DEABF21	Mid-Col Pk FdDt Wknd DICt Non-Firm
DEACR05	Four Corners OPk TdDt DICt Non-Firm	NEABF21	Mid-Col Pk FdDt Wknd Non-Firm
NEACR05	Four Corners OPk TdDt Non-Firm	DEABF00	Mid-Col Pk TdDt DICt Non-Firm
DEACR28	Four Corners OPk TdDt Wknd DICt Non-Firm	NEABF00	Mid-Col Pk TdDt Non-Firm
NEACR28	Four Corners OPk TdDt Wknd Non-Firm	DEABF28	Mid-Col Pk TdDt Wknd DICt Non-Firm
DEABI20	Four Corners Pk FdDt DICt Non-Firm	NEABF28	Mid-Col Pk TdDt Wknd Non-Firm
NEABI20	Four Corners Pk FdDt Non-Firm	DARL020	Mona Utah OPk FdDt DICt Non-Firm
DEABI21	Four Corners Pk FdDt Wknd DICt Non-Firm	NARL020	Mona Utah OPk FdDt Non-Firm
NEABI21	Four Corners Pk FdDt Wknd Non-Firm	DARL021	Mona Utah OPk FdDt Wknd DICt Non-Firm
DEABI00	Four Corners Pk TdDt DICt Non-Firm	NARL021	Mona Utah OPk FdDt Wknd Non-Firm
NEABI00	Four Corners Pk TdDt Non-Firm	DARL000	Mona Utah OPk TdDt DICt Non-Firm
DEABI28	Four Corners Pk TdDt Wknd DICt Non-Firm	NARL000	Mona Utah OPk TdDt Non-Firm
NEABI28	Four Corners Pk TdDt Wknd Non-Firm	DARL028	Mona Utah OPk TdDt Wknd DICt Non-Firm
DEAHL20	John Day OPk FdDt DICt Non-Firm	NARL028	Mona Utah OPk TdDt Wknd Non-Firm
NEAHL20	John Day OPk FdDt Non-Firm	DARLQ20	Mona Utah Pk FdDt DICt Non-Firm
DEAHL21	John Day OPk FdDt Wknd DICt Non-Firm	NARLQ20	Mona Utah Pk FdDt Non-Firm
NEAHL21	John Day OPk FdDt Wknd Non-Firm	DARLQ21	Mona Utah Pk FdDt Wknd DICt Non-Firm
DEAHL05	John Day OPk TdDt DICt Non-Firm	NARLQ21	Mona Utah Pk FdDt Wknd Non-Firm
NEAHL05	John Day OPk TdDt Non-Firm	DARLQ00	Mona Utah Pk TdDt DICt Non-Firm
DEAHL28	John Day OPk TdDt Wknd DICt Non-Firm	NARLQ00	Mona Utah Pk TdDt Non-Firm
NEAHL28	John Day OPk TdDt Wknd Non-Firm	DARLQ28	Mona Utah Pk TdDt Wknd DICt Non-Firm
DEAHF20	John Day Pk FdDt DICt Non-Firm	NARLQ28	Mona Utah Pk TdDt Wknd Non-Firm
NEAHF20	John Day Pk FdDt Non-Firm	DEAIL20	NOB OPk FdDt DICt Non-Firm
DEAHF21	John Day Pk FdDt Wknd DICt Non-Firm	NEAIL20	NOB OPk FdDt Non-Firm
NEAHF21	John Day Pk FdDt Wknd Non-Firm	DEAIL21	NOB OPk FdDt Wknd DICt Non-Firm
DEAHF00	John Day Pk TdDt DICt Non-Firm	NEAIL21	NOB OPk FdDt Wknd Non-Firm
NEAHF00	John Day Pk TdDt Non-Firm	DEAIL05	NOB OPk TdDt DICt Non-Firm
DEAHF28	John Day Pk TdDt Wknd DICt Non-Firm	NEAIL05	NOB OPk TdDt Non-Firm
NEAHF28	John Day Pk TdDt Wknd Non-Firm	DEAIL28	NOB OPk TdDt Wknd DICt Non-Firm
DAMBQ20	Mead OPk FdDt DICt Non-Firm	NEAIL28	NOB OPk TdDt Wknd Non-Firm
NAMBQ20	Mead OPk FdDt Non-Firm	DEAIF20	NOB Pk FdDt DICt Non-Firm
DAMBQ21	Mead OPk FdDt Wknd DICt Non-Firm	NEAIF20	NOB Pk FdDt Non-Firm
NAMBQ21	Mead OPk FdDt Wknd Non-Firm	DEAIF21	NOB Pk FdDt Wknd DICt Non-Firm
DAMBQ00	Mead OPk TdDt DICt Non-Firm	NEAIF21	NOB Pk FdDt Wknd Non-Firm
NAMBQ00	Mead OPk TdDt Non-Firm	DEAIF00	NOB Pk TdDt DICt Non-Firm
DAMBQ28	Mead OPk TdDt Wknd DICt Non-Firm	NEAIF00	NOB Pk TdDt Non-Firm
		DEAIF28	NOB Pk TdDt Wknd DICt Non-Firm

SUBSCRIBER NOTE (CONT.)

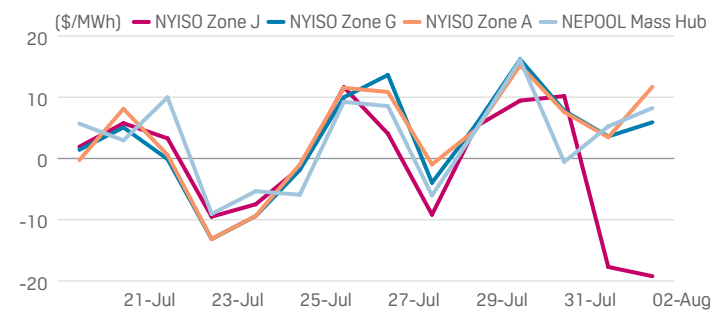
Symbol	Description	Symbol	Description
NEAIF28	NOB Pk TDt Wknd Non-Firm	DEAKF20	Pinnacle Peak Pk Fdt DICT Non-Firm
DEACT20	Palo Verde OPk Fdt DICT Non-Firm	NEAKF20	Pinnacle Peak Pk Fdt Non-Firm
NEACT20	Palo Verde OPk Fdt Non-Firm	DEAKF21	Pinnacle Peak Pk Fdt Wknd DICT Non-Firm
DEACT21	Palo Verde OPk Fdt Wknd DICT Non-Firm	NEAKF21	Pinnacle Peak Pk Fdt Wknd Non-Firm
NEACT21	Palo Verde OPk Fdt Wknd Non-Firm	DEAKF00	Pinnacle Peak Pk TDt DICT Non-Firm
DEACT05	Palo Verde OPk TDt DICT Non-Firm	NEAKF00	Pinnacle Peak Pk TDt Non-Firm
NEACT05	Palo Verde OPk TDt Non-Firm	DEAKF28	Pinnacle Peak Pk TDt Wknd DICT Non-Firm
DEACT28	Palo Verde OPk TDt Wknd DICT Non-Firm	NEAKF28	Pinnacle Peak Pk TDt Wknd Non-Firm
NEACT28	Palo Verde OPk TDt Wknd Non-Firm	DEAJL20	Westwing OPk Fdt DICT Non-Firm
DEACC20	Palo Verde Pk Fdt DICT Non-Firm	NEAJL20	Westwing OPk Fdt Non-Firm
NEACC20	Palo Verde Pk Fdt Non-Firm	DEAJL21	Westwing OPk Fdt Wknd DICT Non-Firm
DEACC21	Palo Verde Pk Fdt Wknd DICT Non-Firm	NEAJL21	Westwing OPk Fdt Wknd Non-Firm
NEACC21	Palo Verde Pk Fdt Wknd Non-Firm	DEAJL05	Westwing OPk TDt DICT Non-Firm
DEACC00	Palo Verde Pk TDt DICT Non-Firm	NEAJL05	Westwing OPk TDt Non-Firm
NEACC00	Palo Verde Pk TDt Non-Firm	DEAJL28	Westwing OPk TDt Wknd DICT Non-Firm
DEACC28	Palo Verde Pk TDt Wknd DICT Non-Firm	NEAJL28	Westwing OPk TDt Wknd Non-Firm
NEACC28	Palo Verde Pk TDt Wknd Non-Firm	DEAJF20	Westwing Pk Fdt DICT Non-Firm
DEAKL20	Pinnacle Peak OPk Fdt DICT Non-Firm	NEAJF20	Westwing Pk Fdt Non-Firm
NEAKL20	Pinnacle Peak OPk Fdt Non-Firm	DEAJF21	Westwing Pk Fdt Wknd DICT Non-Firm
DEAKL21	Pinnacle Peak OPk Fdt Wknd DICT Non-Firm	NEAJF21	Westwing Pk Fdt Wknd Non-Firm
NEAKL21	Pinnacle Peak OPk Fdt Wknd Non-Firm	DEAJF00	Westwing Pk TDt DICT Non-Firm
DEAKL05	Pinnacle Peak OPk TDt DICT Non-Firm	NEAJF00	Westwing Pk TDt Non-Firm
NEAKL05	Pinnacle Peak OPk TDt Non-Firm	DEAJF28	Westwing Pk TDt Wknd DICT Non-Firm
DEAKL28	Pinnacle Peak OPk TDt Wknd DICT Non-Firm	NEAJF28	Westwing Pk TDt Wknd Non-Firm
NEAKL28	Pinnacle Peak OPk TDt Wknd Non-Firm		

NORTHEAST POWER MARKETS

NORTHEAST DAY AHEAD POWER PRICES (\$/MWh)

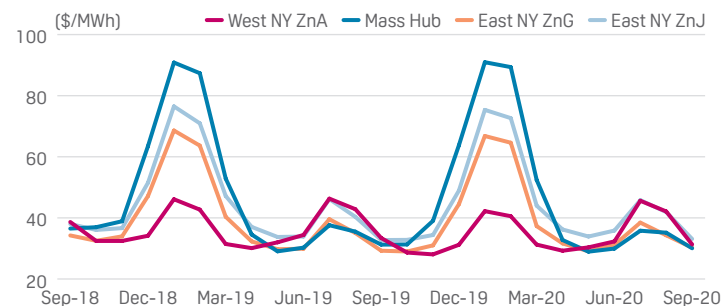
Hub/Index	Symbol	04-Aug	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly change			
				@7K	@12K	Chg	% Chg				Aug-18	Aug-17	Chg	% Chg
On-Peak														
ISONE Internal Hub	IINIM00	34.77	11287	13.21	-2.20	-12.12	-25.8	38.36	34.77	50.50	42.69	28.52	14.17	49.7
ISONE NE Mass-Boston	IINN00	35.35	11478	13.79	-1.61	-11.77	-25.0	39.00	35.35	54.02	43.80	28.49	15.31	53.7
ISONE Connecticut	IINC00	34.22	10865	12.17	-3.57	-11.75	-25.6	38.04	34.22	49.86	42.18	28.78	13.40	46.6
NYISO Zone G	INYH00	37.40	11874	15.35	-0.40	-4.03	-9.7	38.75	37.40	46.10	41.70	30.58	11.12	36.4
NYISO Zone J	INYN00	43.03	14488	22.24	7.39	-7.80	-15.3	42.58	43.03	50.83	47.75	33.05	14.70	44.5
NYISO Zone A	INYW00	34.99	12609	15.56	1.69	-2.89	-7.6	36.06	34.99	47.89	39.56	30.22	9.34	30.9
NYISO Zone F	INYC00	36.13	12165	15.34	0.49	-4.08	-10.1	37.53	36.13	44.24	40.18	28.04	12.14	43.3
Off-Peak														
ISONE Internal Hub	IINIP00	25.14	8161	3.58	-11.83	-2.87	-10.2	23.95	22.72	28.01	25.61	17.67	7.94	44.9
ISONE NE Mass-Boston	IINNP00	25.24	8195	3.68	-11.72	-2.85	-10.1	23.97	22.72	28.09	25.66	17.54	8.12	46.3
ISONE Connecticut	IINCP00	24.78	7867	2.73	-13.02	-2.96	-10.7	23.76	22.62	27.74	25.39	17.84	7.55	42.3
NYISO Zone G	INYHP00	24.97	7927	2.92	-12.83	-0.64	-2.5	23.74	24.97	27.05	25.66	19.08	6.58	34.5
NYISO NYC Zone	INYNP00	25.90	8719	5.11	-9.75	-2.04	-7.3	24.64	25.71	27.94	26.84	19.89	6.95	34.9
NYISO West Zone	INYWP00	22.49	8105	3.07	-10.81	-0.60	-2.6	21.23	22.36	23.44	22.85	15.17	7.68	50.6
NYISO Capital Zone	INYCP00	24.50	8247	3.70	-11.15	-0.87	-3.4	23.66	24.50	27.36	25.58	19.32	6.26	32.4

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



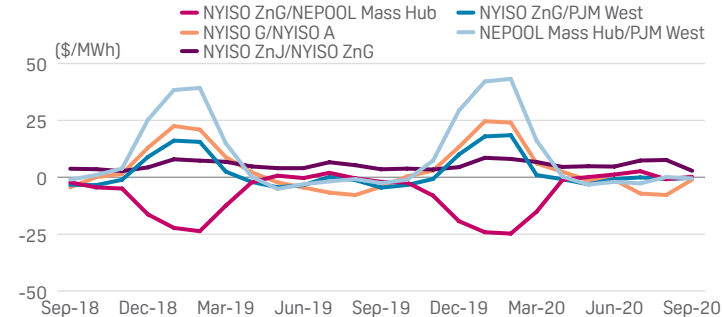
Source: S&P Global Platts

NORTHEAST PLATTS M2MS FORWARD CURVE: ON-PEAK



Source: S&P Global Platts

NORTHEAST PLATTS M2MS LOCATIONAL SPREADS: ON-PEAK



Source: S&P Global Platts

Mass Hub on-peak jumps \$10.75 on higher demand, temperatures

New England day-ahead power prices strengthened Friday on expectations of higher power demand due to above-normal forecast temperatures.

In the ISO New England footprint, Mass Hub on-peak day-ahead climbed \$10.75 to trade in the mid-\$50s/MWh for Monday delivery on the Intercontinental Exchange. Off-peak rose 75 cents in the upper \$20s/MWh.

High temperatures in Boston are forecast to be in the upper 80s on Monday, 5 degrees Fahrenheit above normal, according to CustomWeather.

ISO New England forecast peakload would rise 5.2% to around 23,500 MW on Monday from 22,350 MW on Friday, with peakload expected to be around 19,000 MW on Saturday and 20,750 MW on Sunday.

Mass Hub on-peak weekend was valued in the upper \$30s/MWh.

In the New York ISO territory, day-ahead average locational marginal prices softened.

NYISO Zone J New York City LMP on-peak dropped \$7.75 to around \$43/MWh for Saturday delivery, according to the ISO. Off-peak fell \$2 to about \$26/MWh.

NYISO Zone G Hudson Valley on-peak fell \$4 to about \$37.50/MWh as off-peak slid 75 cents to nearly \$25/MWh.

NYISO Zone A West LMP on-peak fell almost \$3 to about \$35/MWh, while off-peak dipped 50 cents to near \$22.50/MWh.

New York state high temperatures were forecast to be in the low to mid-80s on Saturday, near seasonal norms.

NYISO forecast peakload would fall 9.4% to about 24,000 MW on Saturday from 26,475 MW Friday, with peakload expected to be around 25,950 MW on Sunday.

NYISO Zone G and Zone A on-peak weekend were valued in the upper \$30s/MWh on ICE.

However, NYISO Zone K Long Island real-time prices spiked to \$435.42/MWh at 9:05 am EDT Friday as zonal load was at or above the forecast level throughout the morning.

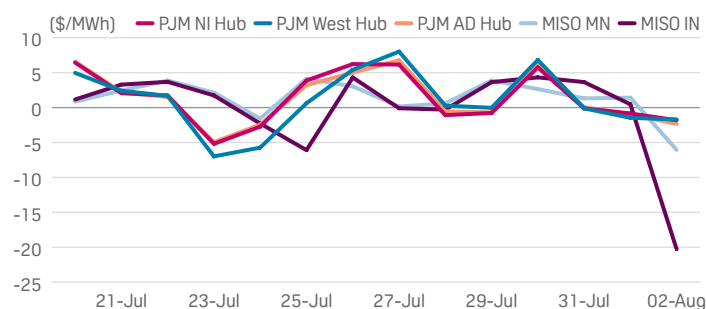
— Kasia Micek

PJM/MISO POWER MARKETS

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

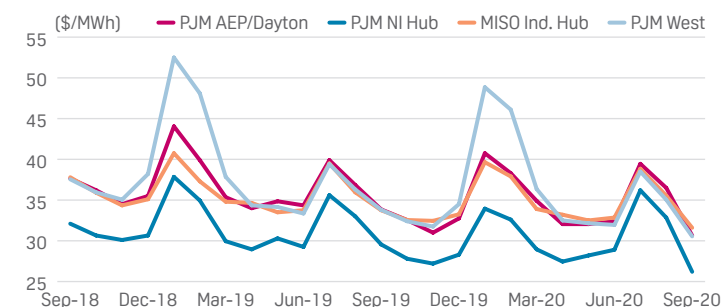
Hub/Index	Symbol	04-Aug	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly Change			
				@7K	@12K	Chg	% Chg				Aug-18	Aug-17	Chg	% Chg
On-Peak														
PJM AEP Dayton Hub	IPADM00	36.82	12764	16.63	2.20	0.58	1.6	33.01	36.24	37.68	36.78	30.80	5.98	19.4
PJM Dominion Hub	IPDMM00	37.92	12705	17.03	2.10	1.13	3.1	34.24	36.79	39.34	37.96	31.98	5.98	18.7
PJM Eastern Hub	IPEHM00	41.51	15604	22.89	9.59	-1.51	-3.5	38.19	41.51	44.71	42.97	29.14	13.83	47.5
PJM Northern Illinois Hub	IPNIM00	35.71	12597	15.87	1.69	0.70	2.0	32.23	35.01	36.97	35.78	29.71	6.07	20.4
PJM Western Hub	IPWHM00	37.71	14175	19.09	5.79	0.77	2.1	34.11	36.94	39.32	38.03	30.88	7.15	23.2
MISO Indiana Hub	IMIDM00	34.68	12234	14.84	0.66	0.92	2.7	31.38	32.21	34.68	33.53	30.92	2.61	8.4
MISO Minnesota Hub	IMINM00	21.97	7918	2.55	-11.33	-6.20	-22.0	28.54	21.97	30.27	27.08	25.69	1.39	5.4
Off-Peak														
PJM AEP Dayton Hub	IPADP00	20.48	7100	0.29	-14.13	-2.21	-9.7	20.34	20.48	22.69	21.40	19.65	1.75	8.9
PJM Dominion Hub	IPDMP00	20.77	6957	-0.13	-15.06	-1.98	-8.7	20.76	20.77	22.75	21.70	20.16	1.54	7.6
PJM Eastern Hub	IPEHP00	21.58	8112	2.96	-10.34	-1.93	-8.2	21.03	21.39	23.51	22.17	17.58	4.59	26.1
PJM Northern Illinois Hub	IPNIP00	19.24	6787	-0.60	-14.78	-0.96	-4.8	19.42	19.24	20.52	19.96	17.78	2.18	12.3
PJM Western Hub	IPWHP00	21.06	7919	2.44	-10.85	-1.91	-8.3	20.63	21.06	22.97	21.74	19.48	2.26	11.6
MISO Indiana Hub	IMIDP00	21.68	7648	1.84	-12.34	0.76	3.6	21.33	20.92	21.68	21.46	20.63	0.83	4.0
MISO Minnesota Hub	IMINP00	17.86	6436	-1.57	-15.44	-0.04	-0.2	19.79	17.86	20.21	18.79	16.45	2.34	14.2

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



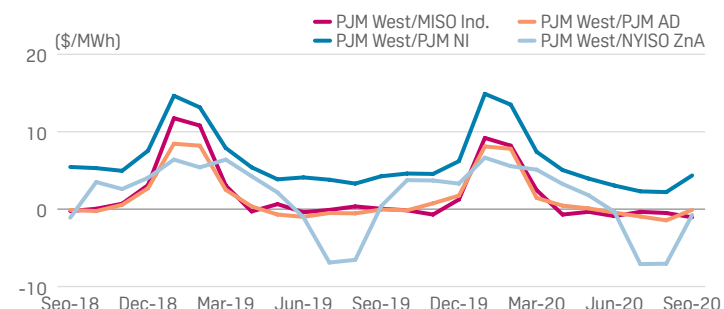
Source: S&P Global Platts

PJM/MISO PLATTS M2MS FORWARD CURVE: ON-PEAK



Source: S&P Global Platts

PJM/MISO PLATTS M2MS LOCATIONAL SPREADS: ON-PEAK



Source: S&P Global Platts

PJM West Hub climbs \$11 on higher demand, temperatures

Mid-Atlantic and Midcontinent power daily prices strengthened Friday on expectations of higher power demand as a result of above-normal temperatures.

In the PJM Interconnection's footprint, PJM West Hub on-peak day-ahead jumped \$11 to trade in the upper \$40s/MWh for Monday delivery on the Intercontinental Exchange, up 37% week on week. Off-peak added \$1.25 in the low \$20s/MWh, up 14% week on week.

AD Hub on-peak day-ahead climbed \$10.50 day on day to the mid-\$40s/MWh, which is also an increase of 35% week on week.

NI Hub on-peak day-ahead rose \$5.75 to the low \$40s/MWh, up 25% week on week.

High temperatures across the PJM footprint are forecast to be in the mid-80s to low 90s by Monday, as much as 8 degrees Fahrenheit above normal, according to CustomWeather.

PJM forecast peakload would rise 14.2% to around 141,925 MW on Monday from 124,350 MW on Friday, with peakload expected to be around 127,075 MW on Saturday and 131,525 MW on Sunday.

PJM West Hub on-peak weekend was valued in the upper \$30s/MWh on ICE.

The Midcontinent ISO was importing nearly 2,075 MW from PJM around 2:45 pm EDT Friday, above the scheduled level of roughly 475 MW, according to PJM data.

In MISO, Indiana Hub on-peak day-ahead advanced \$8.25 into the mid-\$40s/MWh for Monday delivery on ICE, up 32% week on week.

High temperatures in Indianapolis were forecast to rise into the upper 80s on Monday, 3 degrees above average, according to CustomWeather.

MISO forecast peakload would increase 7.2% to around 113,575 MW on Monday from 105,950 MW on Friday, with peakload expected to be around 102,175 MW on Saturday and 105,975 MW on Sunday.

In near-term markets, on-peak balance-of-the-week packages were valued in the upper \$30s/MWh across PJM and MISO, with load expected to fall throughout the week. On-peak next-week was seen in the low \$40s/MWh on ICE.

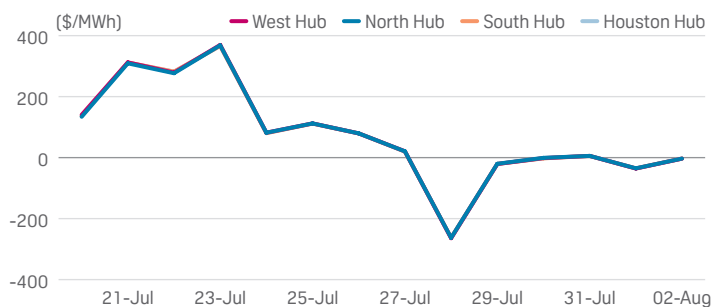
—Kassia Micek

SOUTHEAST POWER MARKETS

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

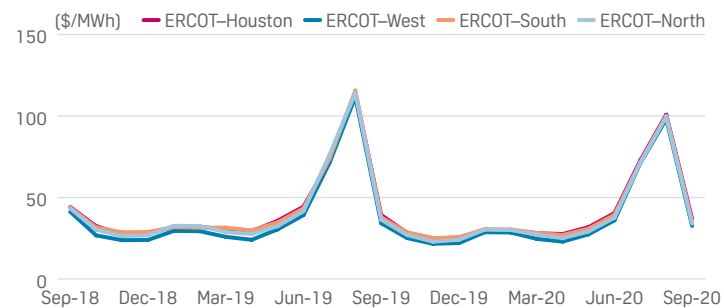
Hub/Index	Symbol	04-Aug	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly change			
				@7K	@12K	Chg	% Chg				Aug-18	Aug-17	Chg	% Chg
On-Peak														
MISO Texas Hub	IMTXM00	34.00	12431	14.85	1.18	1.67	5.2	31.13	30.41	34.00	32.01	33.18	-1.17	-3.5
MISO Louisiana	IMLAM00	33.91	12155	14.38	0.43	1.00	3.0	31.85	31.30	33.91	32.78	35.95	-3.17	-8.8
SPP North Hub	ISNOM00	21.62	7792	2.20	-11.68	-4.75	-18.0	29.33	21.62	31.55	27.63	27.44	0.19	0.7
SPP South Hub	ISSOM00	25.36	10479	8.42	-3.68	0.00	0.0	30.54	25.36	35.57	29.45	29.90	-0.45	-1.5
ERCOT Houston Hub	IERHM00	30.39	10515	10.16	-4.29	-5.37	-15.0	42.60	30.39	42.19	37.61	34.11	3.50	10.3
ERCOT North Hub	IERNM00	30.00	10969	10.86	-2.82	-5.00	-14.3	42.43	30.00	41.94	37.20	30.58	6.62	21.7
ERCOT South Hub	IERSM00	30.13	10937	10.85	-2.93	-5.46	-15.3	42.34	30.13	42.00	37.42	32.57	4.85	14.9
ERCOT West Hub	IERWM00	29.90	14106	15.06	4.46	-5.14	-14.7	42.65	29.90	42.22	37.30	30.53	6.77	22.2
Off-Peak														
MISO Texas Hub	IMTXP00	22.04	8058	2.89	-10.78	1.19	5.7	21.67	20.85	22.04	21.25	21.28	-0.03	-0.1
MISO Louisiana	IMLAP00	21.74	7793	2.21	-11.74	1.19	5.8	21.36	20.55	21.74	21.00	21.13	-0.13	-0.6
SPP North Hub	ISNOP00	10.81	3894	-8.62	-22.50	-1.79	-14.2	16.30	10.81	16.54	13.90	16.28	-2.38	-14.6
SPP South Hub	ISSOP00	13.40	5537	-3.54	-15.64	-0.53	-3.8	17.57	13.40	18.27	15.69	19.25	-3.56	-18.5
ERCOT Houston Hub	IERHP00	18.05	6246	-2.18	-16.63	-0.04	-0.2	19.13	18.05	19.74	18.54	19.97	-1.43	-7.2
ERCOT North Hub	IERNP00	17.57	6422	-1.58	-15.26	-0.21	-1.2	19.01	17.57	19.74	18.33	19.34	-1.01	-5.2
ERCOT South Hub	IERSP00	18.44	6691	-0.85	-14.63	0.09	0.5	19.24	18.33	19.78	18.73	19.81	-1.08	-5.5
ERCOT West Hub	IERWP00	18.24	8604	3.40	-7.20	0.06	0.3	19.21	18.18	19.78	18.62	19.39	-0.77	-4.0

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



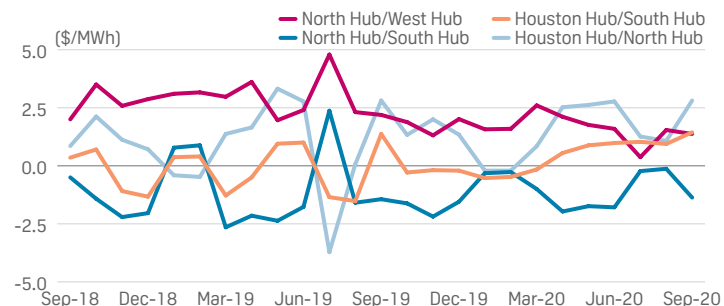
Source: S&P Global Platts

ERCOT PLATTS M2MS FORWARD CURVE: ON-PEAK



Source: S&P Global Platts

ERCOT PLATTS M2MS LOCATIONAL SPREADS: ON-PEAK



Source: S&P Global Platts

ERCOT day-ahead rises on higher demand, lower wind output forecasts

Next-day prices in the Electric Reliability Council of Texas rose Friday on expectations of higher demand and lower wind generation Monday, while August real-time futures kept weakening on cooler forecasts.

ERCOT North Hub next-day on-peak futures for Monday delivery were framed in the low \$40s/MWh on the Intercontinental Exchange, up about 19% from where the package settled Thursday.

The grid operator projected its peakload would reach 66.7 GW Friday, 63.2 GW Saturday, 64.8 GW Sunday and 68.4 GW Monday.

Further out, peak demand was projected to top out at 70.1 GW on August 8.

Strong wind generation was expected over the weekend, with daily wind output set to total 231 GWh Friday, 238 GWh Saturday, 216 GWh Sunday, before falling to average only 162 GWh Monday.

North Hub balance-of-the-week on-peak was valued in the low \$50s/MWh and its next-week counterpart was framed in the mid-\$50s/MWh.

It is "a bit hotter today, but still not overly humid," ERCOT meteorologist Chris Coleman said in a forecast Friday, adding it will be "hot and humid to start next week, but rain opportunities increase over much of ERCOT mid-to-late next week."

According to CustomWeather data, high temperatures in Dallas are expected to be in the mid-90 degrees Fahrenheit Friday through the weekend, before moving into the high 90s early next week and then falling again to the mid-90s late next week.

In the real-time market, prices across all hubs remained steady below \$30/MWh through 1:45 pm CDT Friday.

On ICE, North Hub August real-time on-peak futures were valued in the high \$60s/MWh, down about \$5 compared with Thursday.

According to the latest projections from the US National Weather Service, near-normal temperatures are expected across north and central Texas August 10-16 while above-normal temperatures are expected for the rest of the state.

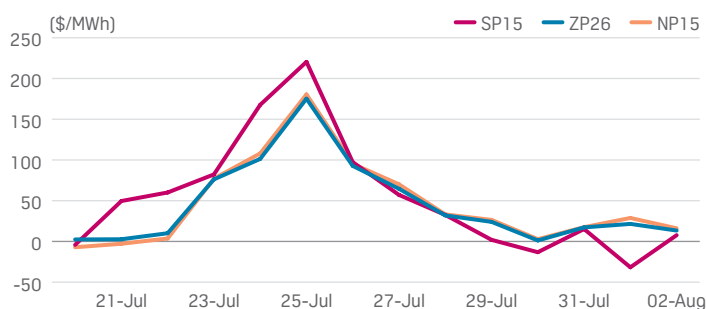
— Jeff Zhou

WEST POWER MARKETS

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

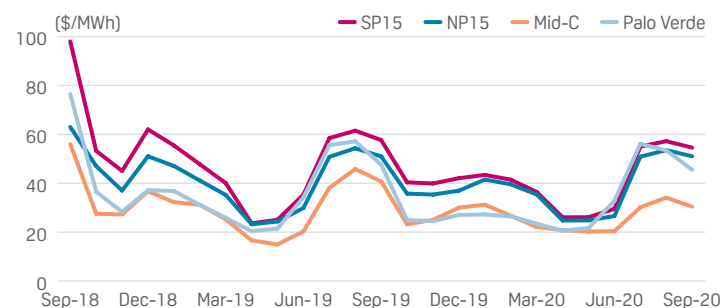
Hub/Index	Symbol	04-Aug	Marginal heat rate	Spark spread @7K @12K		Price change Chg % Chg		Prior 7-day Average	Month Min	Month Max	Yearly change			
On-Peak														
NP15	ICNGM00	45.88	13902	22.78	6.28	-4.16	-8.3	59.94	45.88	62.22	52.73	52.40	0.33	0.6
SP15	ICSGM00	102.85	25148	74.22	53.77	2.45	2.4	86.13	81.63	102.85	93.85	52.50	41.35	78.8
ZP26	ICZGM00	41.79	10218	13.16	-7.29	-6.28	-13.1	58.46	41.79	60.76	50.73	51.61	-0.88	-1.7
COB	WEABE20	62.00	24031	43.94	31.04	0.00	0.0	85.82	62.00	78.50	66.88	56.47	10.41	18.4
MEAD	AAMBW20	108.00	8054	14.13	-52.91	0.00	0.0	100.82	91.25	108.00	99.94	54.11	45.83	84.7
MID-C	WEABF20	58.73	26756	43.36	32.39	0.00	0.0	81.96	58.73	75.58	64.00	49.10	14.90	30.3
Palo Verde	WEACC20	103.00	7681	9.13	-57.92	0.00	0.0	97.51	89.79	103.00	97.20	49.94	47.26	94.6
Off-Peak														
NP15	ICNGP00	40.77	12355	17.67	1.17	-0.71	-1.7	40.51	38.63	41.48	40.11	30.79	9.32	30.3
SP15	ICSGP00	45.79	11197	17.16	-3.28	-6.95	-13.2	44.97	42.47	52.74	46.41	31.04	15.37	49.5
ZP26	ICZGP00	41.99	10265	13.36	-7.10	-0.24	-0.6	39.33	38.12	42.23	40.12	30.76	9.36	30.4
COB	WEACJ20	38.46	14907	20.40	7.50	0.00	0.0	43.39	33.50	38.46	36.36	28.99	7.37	25.4
MEAD	AAMBQ20	41.75	3113	-52.13	-119.19	0.00	0.0	43.86	38.75	41.75	40.38	27.40	12.98	47.4
MID-C	WEACL20	38.22	17412	22.85	11.88	0.00	0.0	41.71	32.15	38.22	35.81	27.99	7.82	27.9
Palo Verde	WEACT20	38.75	2890	-55.11	-122.15	0.00	0.0	41.68	37.00	38.75	37.94	25.65	12.29	47.9

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



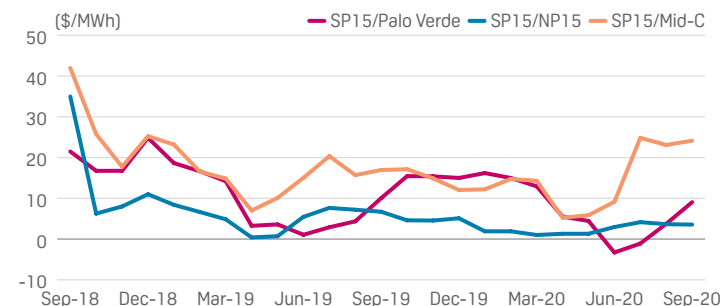
Source: S&P Global Platts

WESTERN PLATTS M2MS FORWARD CURVE: ON-PEAK



Source: S&P Global Platts

WESTERN PLATTS M2MS LOCATIONAL SPREADS: ON-PEAK



Source: S&P Global Platts

Western power prices double for Monday delivery

Western US power dailies strengthened Friday as the region braced for another week of higher-than-normal temperatures. Day-ahead prices more than doubled for Monday delivery.

Mid-Columbia day-ahead on-peak was bid in the mid-\$190s/MWh and offered in the low \$220s/MWh on the Intercontinental Exchange. For most of the last week, day-ahead on-peak prices in the hub fell, but high temperatures across the Northwest are expected to rise 15-20 degrees over the course of the week, according to CustomWeather.

Power dailies also soared in California, with SP15 day-ahead on-peak for Monday delivery jumping \$143 to trade in the mid-\$230s/MWh on ICE, representing a 157% price increase day on day.

The California Independent System Operator is anticipating peak demand of 41.9 GW for Monday, which will rise to 44.7 GW Tuesday and 45.6 GW Wednesday before falling slightly to 45.4 GW Thursday. In comparison, actual peak demand for Monday through Thursday of this week averaged 43.6 GW.

Spot gas prices at the Southern California Gas city-gate rose by \$8 to trade at \$21.428/MMBtu.

High temperatures in Los Angeles, which have remained near seasonal norms in the high 70s and low 80s most of this week, will climb to the mid- to high 80s early next week.

Prices in Northern California followed a similar trend, with NP15 day-ahead on peak trading in the low \$190s/MWh, up \$133 day on day. Sacramento temperatures are forecast to climb above 100 degrees several days next week.

In the Southwest, Palo Verde day-ahead on-peak for Monday delivery shot up \$120 to trade in the mid-\$220s/MWh. High temperatures in Phoenix will top 110 degrees several days next week, compared with a seasonal norm of 106 degrees. Las Vegas is also forecast to see temperatures above 110 degrees next week, compared to a seasonal norm of 104 degrees.

Near term on-peak prices were also high in California. The SP15 balance-of-the-week was bid at \$200/MWh and offered at \$440/MWh.

— Kelli Ainsworth

BILATERALS

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

Hub/Index	Symbol	06-Aug	Marginal heat rate	Spark spread @7K @12K		Price change Chg % Chg		Prior 7-day Average	Month Min	Month Max	Yearly change			
											Aug-18	Aug-17	Chg	% Chg
On-Peak														
Florida	AAMAV20	39.75	13731	19.49	5.01	8.50	27.2	33.43	30.50	39.75	33.19	32.70	0.49	1.5
GTC, Into	WAMCJ20	37.25	13070	17.30	3.05	8.50	29.6	30.96	27.50	37.25	30.44	31.77	-1.33	-4.2
Southern, Into	AAMBJ20	36.25	12719	16.30	2.05	8.50	30.6	29.93	27.00	36.25	29.69	30.93	-1.24	-4.0
TVA, Into	WEBAB20	38.00	13768	18.68	4.88	8.50	28.8	30.75	28.50	38.00	31.38	31.19	0.19	0.6
VACAR	AAMCI20	39.25	13149	18.35	3.43	8.50	27.6	31.86	29.50	39.25	32.56	31.39	1.17	3.7
Off-Peak														
Florida	AAMAO20	18.75	6477	-1.51	-15.99	0.50	2.7	18.57	18.25	18.75	18.58	22.55	-3.97	-17.6
GTC, Into	WAMCC20	21.25	7456	1.30	-12.95	0.50	2.4	20.86	20.75	21.25	21.08	19.97	1.11	5.6
Southern, Into	AAMBC20	18.25	6404	-1.70	-15.95	0.50	2.8	18.07	17.75	18.25	18.08	19.06	-0.98	-5.1
TVA, Into	AAJER20	19.00	6884	-0.32	-14.12	0.25	1.3	18.86	18.75	19.00	18.92	19.43	-0.51	-2.6
VACAR	AAMCB20	19.25	6449	-1.64	-16.57	0.50	2.7	18.86	18.75	19.25	19.04	19.14	-0.10	-0.5

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

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

Hub/Index	Symbol	06-Aug	Marginal heat rate	Spark spread @7K @12K		Price change Chg % Chg		Prior 7-day Average	Month Min	Month Max	Yearly change			
											Aug-18	Aug-17	Chg	% Chg
On-Peak														
Mid-C	WEABF20	259.26	170566	248.62	241.02	200.53	341.4	77.89	58.73	259.26	103.05	49.10	53.95	109.9
John Day	WEAHF20	261.25	171875	250.61	243.01	200.50	330.0	79.86	60.75	261.25	105.05	50.12	54.93	109.6
COB	WEABE20	236.75	88011	217.92	204.47	174.75	281.9	81.11	62.00	236.75	100.85	56.47	44.38	78.6
NOB	WEAIF20	243.50	160197	232.86	225.26	162.88	202.0	92.18	80.62	243.50	114.15	53.10	61.05	115.0
Palo Verde	WEACC20	223.25	9685	61.89	-53.36	120.25	116.7	98.04	89.79	223.25	122.41	49.94	72.47	145.1
Mona	AARLQ20	230.00	88632	211.84	198.86	140.00	155.6	91.25	82.50	230.00	115.45	54.03	61.42	113.7
Four Corners	WEABI20	235.75	96817	218.70	206.53	131.75	126.7	100.75	94.50	235.75	126.65	49.76	76.89	154.5
Pinnacle Peak	WEAKF20	218.25	9469	56.91	-58.34	120.25	122.7	95.89	88.75	218.25	119.00	50.94	68.06	133.6
Westwing	WEAJF20	218.25	9469	56.91	-58.34	120.25	122.7	95.89	88.75	218.25	119.00	50.50	68.50	135.6
MEAD	AAMBW20	249.75	10835	88.40	-26.85	141.75	131.3	101.54	91.25	249.75	129.90	54.11	75.79	140.1
Off-Peak														
Mid-C	WEACL20	56.66	37276	46.02	38.42	18.44	48.2	41.89	32.15	56.66	42.76	27.99	14.77	52.8
John Day	WEAHL20	58.75	38651	48.11	40.51	18.50	46.0	43.96	34.25	58.75	44.83	28.99	15.84	54.6
COB	WEACJ20	64.07	23818	45.24	31.79	25.61	66.6	44.05	33.50	64.07	45.59	28.99	16.60	57.3
NOB	WEAIL20	70.01	46059	59.37	51.77	31.26	80.7	45.29	36.25	70.01	48.42	29.40	19.02	64.7
Palo Verde	WEACT20	86.50	3753	-74.84	-190.08	47.75	123.2	46.21	37.00	86.50	54.13	25.65	28.48	111.0
Mona	AARLO20	75.00	28902	56.84	43.86	40.25	115.8	42.04	34.25	75.00	48.04	27.16	20.88	76.9
Four Corners	WEACR20	87.25	35832	70.21	58.03	47.75	120.9	48.07	39.50	87.25	55.50	25.74	29.76	115.6
Pinnacle Peak	WEAJL20	86.00	3731	-75.35	-190.60	47.75	124.8	45.71	36.50	86.00	53.63	25.67	27.96	108.9
Westwing	WEAJL20	86.00	3731	-75.35	-190.60	47.75	124.8	45.71	36.50	86.00	53.63	26.05	27.58	105.9
MEAD	AAMBQ20	88.50	3839	-72.87	-188.13	46.75	112.0	48.54	38.75	88.50	56.42	27.40	29.02	105.9

Note: West off-peak includes all day Sunday.

PLATTS M2MS BALANCE-OF-THE-MONTH, AUG 3, (\$/MWh)

	Symbol	On-peak	Symbol	Off-peak
Northeast				
Mass Hub	EMHTB00	41.05	EMHUB00	27.10
N.Y. Zone G	ENGTB00	41.63	ENGUB00	27.40
N.Y. Zone J	ENJTB00	46.48	ENJUB00	29.55
N.Y. Zone A	ENATB00	43.61	ENaub00	24.50
Ontario*	EONTB00	33.50	EONUB00	17.50
*Ontario prices are in Canadian dollars				
PJM & MISO				
PJM West	EPJTB00	38.61	EPJUB00	25.50
AD Hub	EECTB00	38.76	EECUB00	25.80
NI Hub	ECETB00	35.76	ECEUB00	23.05
Indiana Hub	ECITB00	38.11	ECIUB00	25.10

	Symbol	On-peak	Symbol	Off-peak
Southeast & Central				
Southern Into	ESTTB00	35.34	ESTUB00	24.98
ERCOT North	ETNTB00	64.91	ETNUB00	35.71
ERCOT Houston	ETSTB00	64.48	ETSUB00	37.18
ERCOT West	ETWTB00	62.90	ETWUB00	34.92
ERCOT South	ETHTB00	65.67	ETHUB00	35.96
Western				
Mid-C	EMCTB00	151.75	EMCUB00	50.00
Palo Verde	EPVTB00	195.00	EPVUB00	54.00
Mead	EMDTB00	204.53	EMDUB00	56.76
NP15	ENPTB00	150.00	ENPUB00	50.25
SP15	ESPTB00	199.50	ESPUB00	60.50

PLATTS M2MS FORWARD CURVE, AUG 3 (\$/MWh)

Prompt month: Sep 18

	On-peak	Off-peak
Northeast		
Mass Hub	36.50	25.05
N.Y. Zone G	34.25	22.55
N.Y. Zone J	38.00	23.75
N.Y. Zone A	38.65	19.80
Ontario*	19.59	9.99
*Ontario prices are in Canadian dollars		
PJM & MISO		
PJM West	37.55	25.40
AD Hub	37.65	25.60
NI Hub	32.10	20.05
Indiana Hub	37.80	25.15

	On-peak	Off-peak
Southeast & Central		
Southern Into	35.09	25.02
ERCOT North	43.25	25.12
ERCOT Houston	44.10	27.32
ERCOT West	41.25	23.12
ERCOT South	43.75	25.75
Western		
Mid-C	56.00	35.50
Palo Verde	76.50	39.75
Mead	80.46	41.73
NP15	63.00	41.00
SP15	98.00	51.00

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

Hub/Zone	Average	Cong	Loss	Change	Avg \$/Mo	Marginal heat rate
Northeast						
On-peak						
ISONE Internal Hub	34.77	0.00	-0.16	-12.12	42.69	11287
ISONE Connecticut	34.22	0.00	-0.70	-11.75	42.18	10865
ISONE NE Mass-Boston	35.35	0.00	0.43	-11.77	43.80	11478
NYISO Capital Zone	36.13	0.19	2.05	-4.08	40.18	12165
NYISO Hudson Valley Zone	37.40	0.00	3.14	-4.03	41.70	11874
NYISO N.Y.C. Zone	43.03	-5.13	3.63	-7.80	47.75	14488
NYISO West Zone	34.99	0.21	0.93	-2.89	39.56	12609

PJM & MISO

On-peak						
PJM AEP-Dayton Hub	36.82	0.41	-0.75	0.58	36.79	12764
PJM Dominion Hub	37.92	1.25	-0.49	1.13	37.96	12705
PJM Eastern Hub	41.51	2.73	1.61	-1.51	42.97	15604
PJM Northern Illinois Hub	35.71	0.16	-1.61	0.70	35.78	12597
PJM Western Hub	37.71	0.63	-0.09	0.77	38.03	14175
MISO Indiana Hub	34.68	1.04	1.03	0.92	33.53	12234
MISO Minnesota Hub	21.97	-7.37	-3.27	-6.20	27.08	7918
MISO Louisiana Hub	33.91	0.05	1.25	1.00	32.78	12155
MISO Texas Hub	34.00	-0.08	1.47	1.67	32.01	12431

Southeast & Central

On-peak						
SPP North Hub	21.62	-4.21	-0.65	-4.75	27.63	7792
SPP South Hub	25.36	-0.95	-0.16	0.00	29.45	10479
ERCOT Houston Hub	30.39	-	-	-5.37	37.61	10515
ERCOT North Hub	30.00	-	-	-5.00	37.20	10969
ERCOT South Hub	30.13	-	-	-5.46	37.42	10937
ERCOT West Hub	29.90	-	-	-5.14	37.30	14106

Western

On-peak						
CAISO NP15 Gen Hub	45.88	-33.09	-6.54	-4.16	52.73	13902
CAISO SP15 Gen Hub	102.85	18.76	-1.40	2.45	93.85	25148
CAISO ZP26 Gen Hub	41.79	-38.62	-5.09	-6.28	50.73	10218

	Average	Cong	Loss	Change	Avg \$/Mo	Marginal heat rate
Off-Peak						
ISONE Internal Hub	25.14	0.00	0.07	-2.87	25.61	8161
ISONE Connecticut	24.78	0.00	-0.28	-2.96	25.39	7867
ISONE NE Mass-Boston	25.24	0.00	0.18	-2.85	25.66	8195
NYISO Capital Zone	24.50	-0.60	1.58	-0.87	25.58	8247
NYISO Hudson Valley Zone	24.97	-0.44	2.21	-0.64	25.66	7927
NYISO N.Y.C. Zone	25.90	-0.88	2.69	-2.04	26.84	8719
NYISO West Zone	22.49	-0.04	0.13	-0.60	22.85	8105

Off-Peak

PJM AEP-Dayton Hub	20.48	0.32	-0.54	-2.21	21.40	7100
PJM Dominion Hub	20.77	0.03	0.02	-1.98	21.70	6957
PJM Eastern Hub	21.58	0.03	0.84	-1.93	22.17	8112
PJM Northern Illinois Hub	19.24	-0.37	-1.09	-0.96	19.96	6787
PJM Western Hub	21.06	0.03	0.32	-1.91	21.74	7919
MISO Indiana Hub	21.68	0.23	0.50	0.76	21.46	7648
MISO Minnesota Hub	17.86	-1.62	-1.46	-0.04	18.79	6436
MISO Louisiana Hub	21.74	0.06	0.74	1.19	21.00	7793
MISO Texas Hub	22.04	0.00	1.09	1.19	21.25	8058

Off-Peak

SPP North Hub	10.81	-2.48	-0.60	-1.79	13.90	3894
SPP South Hub	13.40	-0.29	-0.20	-0.53	15.69	5537
ERCOT Houston Hub	18.05	-	-	-0.04	18.54	6246
ERCOT North Hub	17.57	-	-	-0.21	18.33	6422
ERCOT South Hub	18.44	-	-	0.09	18.73	6691
ERCOT West Hub	18.24	-	-	0.06	18.62	8604

Off-Peak

CAISO NP15 Gen Hub	40.77	-1.17	-3.21	-0.71	40.11	12355
CAISO SP15 Gen Hub	45.79	0.85	-0.21	-6.95	46.41	11197
CAISO ZP26 Gen Hub	41.99	-1.39	-1.77	-0.24	40.12	10265

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

	Saturday Index	Sunday Index
Southeast On-peak		
VACAR	33.50	33.50
Southern, into	32.00	32.00
GTC, into	33.00	33.00
Florida	35.50	35.50
TVA, into	32.75	32.75
Southeast Off-Peak*		
VACAR	19.25	19.25
Southern, into	18.25	18.25
GTC, into	21.25	21.25
Florida	18.75	18.75
TVA, into	19.00	19.00
West On-peak**		
Mid-C	58.73	86.06
John Day	60.75	88.00
COB	62.00	85.00
NOB	80.62	91.75
Palo Verde	103.00	145.00
Westwing	98.00	140.00
Pinnacle Peak	98.00	140.00
Mead	108.00	150.00
Mona	90.00	130.25
Four Corners	104.00	146.75
West Off-Peak**		
Mid-C	38.22	27.25
John Day	40.25	29.50
COB	38.46	43.25
NOB	38.75	48.25
Palo Verde	38.75	28.00
Westwing	38.25	32.00
Pinnacle Peak	38.25	32.00
Mead	41.75	27.00
Mona	34.75	19.75
Four Corners	39.50	27.75

*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 AUG 4 (\$/MWh)

	Index	Change	Low	High
Southeast On-peak				
VACAR	30.65	-2.85	29.50	31.75
Southern, into	28.60	-3.00	27.00	31.00
GTC, into	29.70	-3.35	27.50	33.50
Florida	32.10	-3.00	30.50	34.50
TVA, into	29.75	-2.75	28.50	31.00
Southeast Off-Peak				
VACAR	18.50	-0.29	18.00	19.00
Southern, into	17.93	-0.18	17.75	18.50
GTC, into	20.29	0.68	19.25	21.50
Florida	18.43	-0.18	18.25	19.00
TVA, into	18.64	-0.11	18.25	19.25
West On-peak				
Mid-C	76.33	-90.70	47.00	118.00
John Day	78.29	-90.75	60.75	108.00
COB	78.79	-118.88	62.00	107.50
NOB	90.04	-107.84	77.00	109.50
Palo Verde	97.84	-117.83	88.00	103.00
Westwing	95.50	-116.17	88.75	98.75
Pinnacle Peak	95.50	-119.17	88.75	98.75
Mead	101.29	-121.25	91.25	108.00
Mona	91.46	-107.50	82.50	104.00
Four Corners	100.04	-107.50	94.50	104.00
West Off-Peak				
Mid-C	41.57	-4.33	30.00	57.00
John Day	43.64	-4.29	34.25	56.50
COB	43.03	-9.43	33.50	62.00
NOB	43.21	-15.79	36.25	55.50
Palo Verde	40.89	-20.22	36.00	49.25
Westwing	40.39	-21.40	35.50	48.75
Pinnacle Peak	40.39	-20.22	35.50	48.75
Mead	43.18	-20.57	38.75	51.00
Mona	37.89	-16.36	34.25	46.00
Four Corners	43.04	-16.78	38.75	52.00

NORTHEAST POWER MARKETS

NYISO SUPPLY MIX (GWh/d)

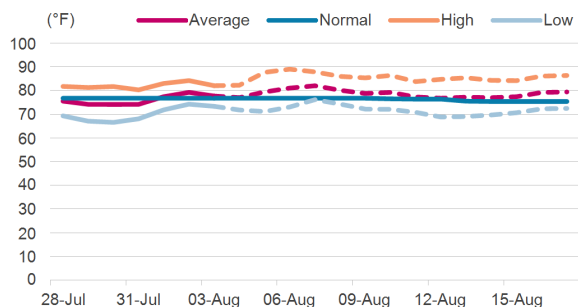
Category	29-Jul	30-Jul	31-Jul	01-Aug	02-Aug	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2018	2017	Chg	% Chg
Total Generation	339.8	363.93	373.16	473.93	427.05	85%	-46.88	-10.0%	229.16	510.97	379.77	397.78	-18.01	-5.0%
Gas	201.96	218.91	208.41	251.34	285.44	57%	34.1	14.0%	120.73	319.35	208.16	176.73	31.43	18.0%
Coal	6.13	9.67	8.5	15.53	15.81	3%	0.28	2.0%	1.04	20.62	9.68	9.04	0.64	7.0%
Nuclear	132.98	132.76	120.13	125.48	125.48	25%	0	0.0%	118.38	134.67	132.66	128.69	3.97	3.0%
Other	125.06	133.47	175.59	164.38	77.12	15%	-87.26	-53.0%	77.12	180.88	138.91	161.63	-22.72	-14.0%

ISONE SUPPLY MIX (GWh/d)

Category	29-Jul	30-Jul	31-Jul	01-Aug	02-Aug	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2018	2017	Chg	% Chg
Total Generation	317.04	329.05	344.11	341.75	399.46	86%	57.71	17.0%	204.73	408.45	305.5	306.61	-1.11	0.0%
Gas	165.4	204.41	208.77	204.83	241.52	52%	36.69	18.0%	84.92	255.73	172.91	116.28	56.63	49.0%
Nuclear	97.8	97.8	97.8	97.8	97.8	21%	0	0.0%	84.23	97.8	95.31	95.79	-0.48	-1.0%
Coal	0.59	0.53	0.45	0.38	0.39	--	0.01	3.0%	0	28.54	1.68	25.51	-23.83	-93.0%
Wind	6.04	4.13	1.36	6.85	9.21	2%	2.36	34.0%	1.36	19.55	6.81	6.5	0.31	5.0%
Other	94.92	73.49	90.45	85.81	117.62	25%	31.81	37.0%	-42.19	117.62	75.09	109.23	-34.14	-31.0%

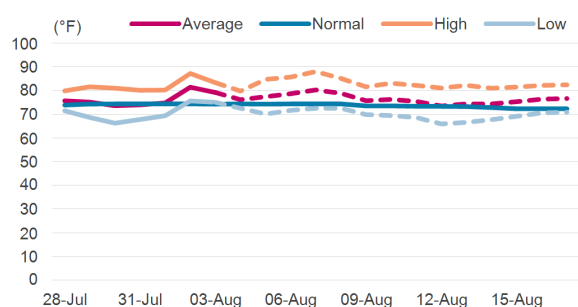
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: S&P Global Platts Analytics

NYISO TEMPERATURE



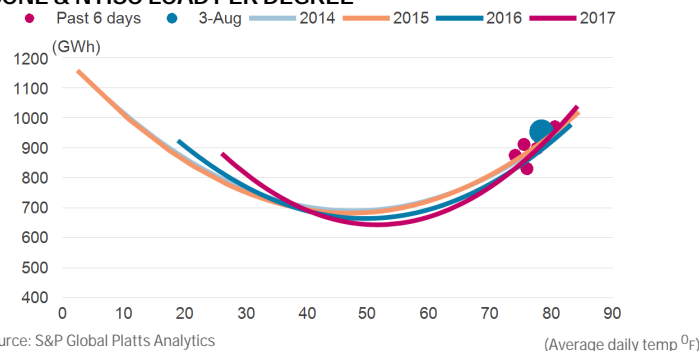
Source: Custom Weather

ISONE TEMPERATURE



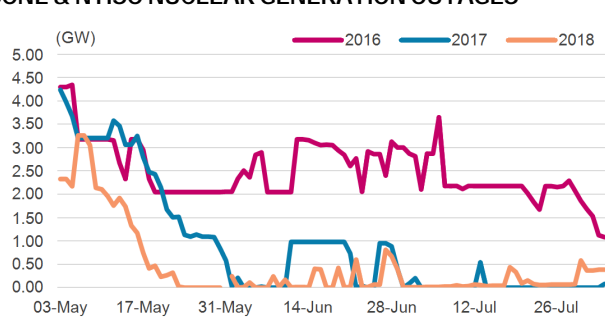
Source: Custom Weather

ISONE & NYISO LOAD PER DEGREE



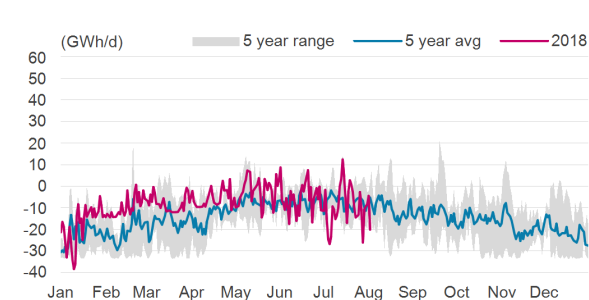
Source: S&P Global Platts Analytics

ISONE & NYISO NUCLEAR GENERATION OUTAGES



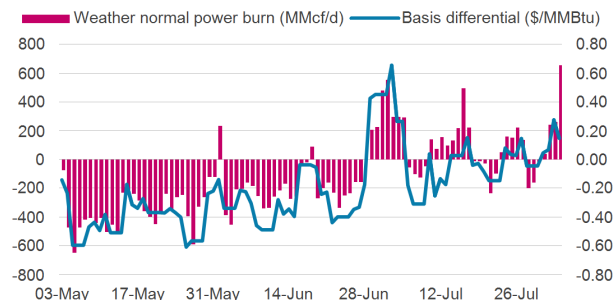
Source: NRC

ISONE-NYISO INTERTIE TRANSMISSION E-W



Source: ISONE

ISONE POWER BURN VS. GAS BASIS



Source: S&P Global Platts Analytics

PJM/MISO POWER MARKETS

PJM SUPPLY MIX (GWh/d)

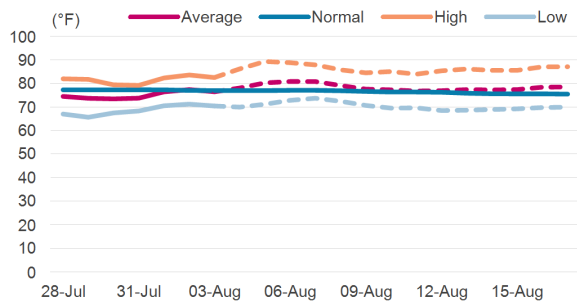
Category	29-Jul	30-Jul	31-Jul	01-Aug	02-Aug	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2018	2017	Chg	% Chg
Total Generation	2,208.44	2,358.35	2,402.25	2,411.49	2,352.58	101%	-58.91	-2.0%	1,964.31	2,906.68	2,418.62	2,384.89	33.73	1.0%
Gas	406.09	478.47	491.49	531.68	541.55	23%	9.87	2.0%	318.89	774.38	521.39	522.86	-1.47	0.0%
Coal	980.19	999.9	1,027.67	1,006.69	948.5	41%	-58.19	-6.0%	739.84	1,241.49	1,012.31	981.6	30.71	3.0%
Nuclear	796.26	796.26	795.95	796.26	796.26	34%	0	0.0%	764.47	801.11	792.86	793.18	-0.32	0.0%
Other	-62.15	90.73	109.71	64.6	51.6	2%	-13	-20.0%	-237.15	462.55	35.63	0.68	34.95	5140.0%

MISO SUPPLY MIX (GWh/d)

Category	29-Jul	30-Jul	31-Jul	01-Aug	02-Aug	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2018	2017	Chg	% Chg
Total Generation	1,866.56	2,012.86	2,018.29	2,040.48	1,960.08	103%	-80.4	-4.0%	1,814.22	2,374.79	2,099.09	2,029.88	69.21	3.0%
Gas	406.31	470.37	462.99	452.54	474.12	25%	21.58	5.0%	192.5	600.51	380.2	390.22	-10.02	-3.0%
Coal	883.6	989.61	1,004.29	984.79	928.2	49%	-56.59	-6.0%	594.62	1,144.52	889.69	990.15	-100.46	-10.0%
Nuclear	302.86	299.01	290.09	294.05	299.79	16%	5.74	2.0%	182.32	400.72	321.03	288.79	32.24	11.0%
Wind	5.59	12.7	39.64	76.72	26.93	1%	-49.79	-65.0%	5.59	225.33	100.34	87.78	12.56	14.0%
Other	197.95	205.27	181.61	193.51	174.48	9%	-19.03	-10.0%	111.34	813.53	373.94	229.64	144.3	63.0%

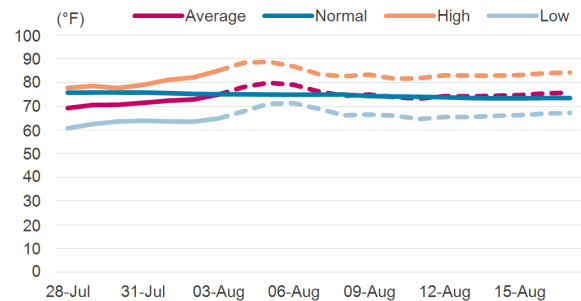
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: S&P Global Platts Analytics

PJM TEMPERATURE



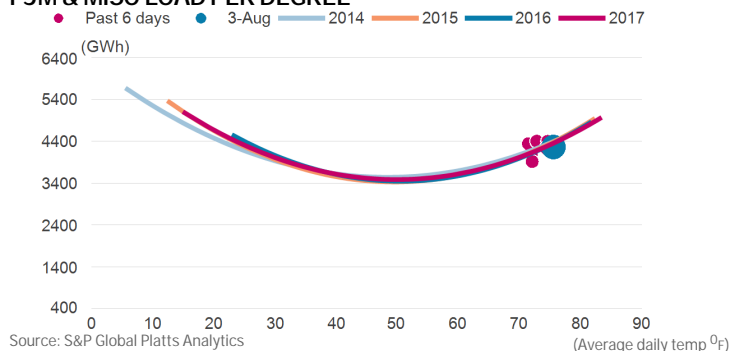
Source: Custom Weather

MISO TEMPERATURE



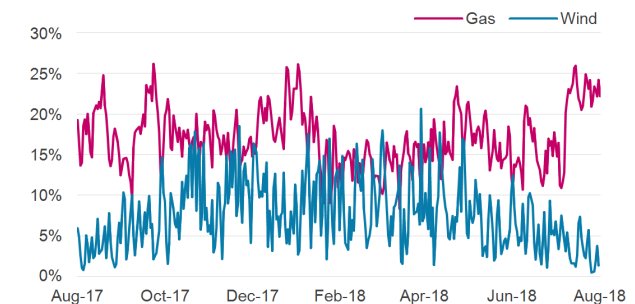
Source: Custom Weather

PJM & MISO LOAD PER DEGREE



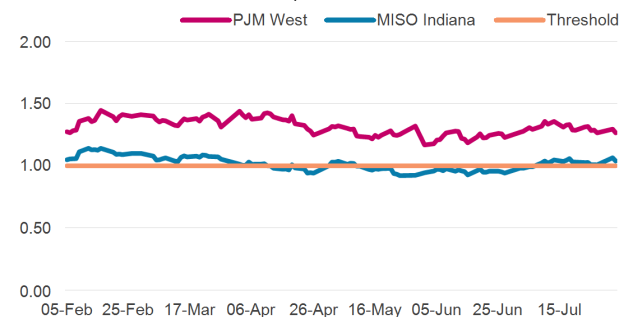
Source: S&P Global Platts Analytics

MISO GENERATION MARKET SHARE - GAS VS. WIND



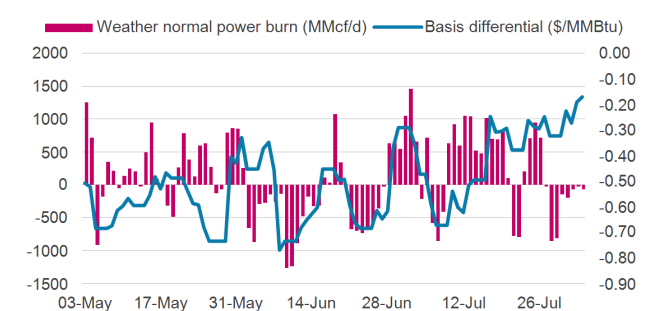
Source: S&P Global Platts Analytics

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



Source: S&P Global Platts Analytics

PJM POWER BURN VS. GAS BASIS



Source: S&P Global Platts Analytics

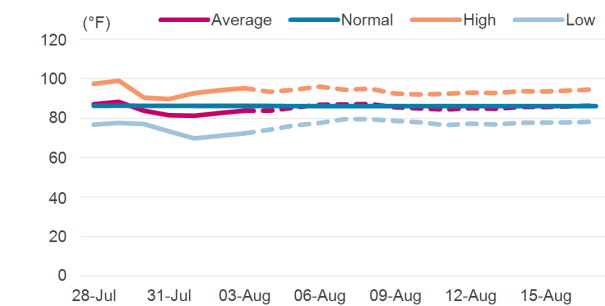
SOUTHEAST POWER MARKETS

ERCOT SUPPLY MIX (GWh/d)

Category	29-Jul	30-Jul	31-Jul	01-Aug	02-Aug	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2018	2017	Chg	% Chg
Total Generation	1,313.66	1,306.54	1,219.24	1,208.55	1,286.84	100%	78.29	6.0%	1,098.67	1,405.7	1,262.89	1,182.81	80.08	7.0%
Gas	764.71	694.91	661.22	651.6	665.27	52%	13.67	2.0%	567.07	792.97	680.31	577.05	103.26	18.0%
Coal	250.39	226.32	205.12	228.66	259.73	20%	31.07	14.0%	158.85	366.7	269.47	317.57	-48.1	-15.0%
Nuclear	123.33	123.33	123.33	123.33	123.33	10%	0	0.0%	110.98	123.33	123.13	101.33	21.8	22.0%
Wind	170.2	180.89	73.33	88.14	130.54	10%	42.4	48.0%	46.54	345.83	184.48	131.96	52.52	40.0%
Other	5.03	81.1	156.25	116.82	107.98	8%	-8.84	-8.0%	-176.01	156.25	5.49	54.89	-49.4	-90.0%

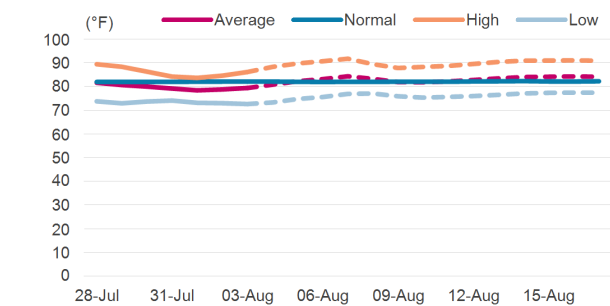
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: S&P Global Platts Analytics

ERCOT TEMPERATURE



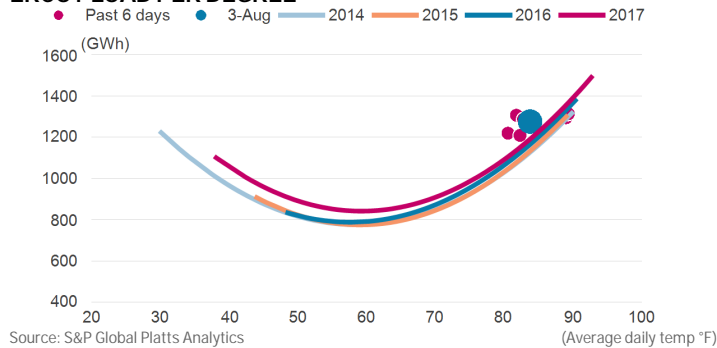
Source: Custom Weather

SOUTHEAST TEMPERATURE



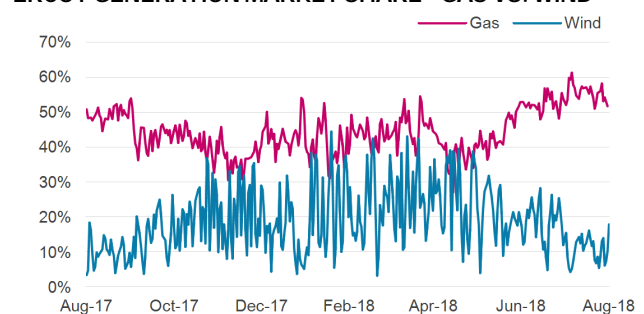
Source: Custom Weather

ERCOT LOAD PER DEGREE



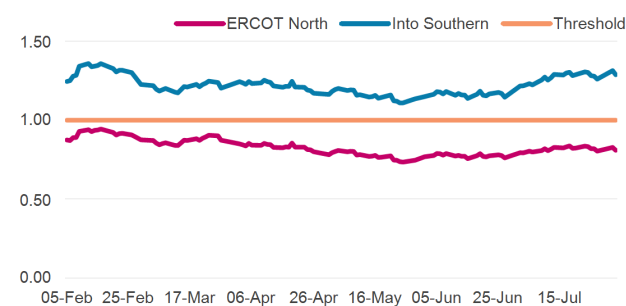
Source: S&P Global Platts Analytics

ERCOT GENERATION MARKET SHARE - GAS VS. WIND



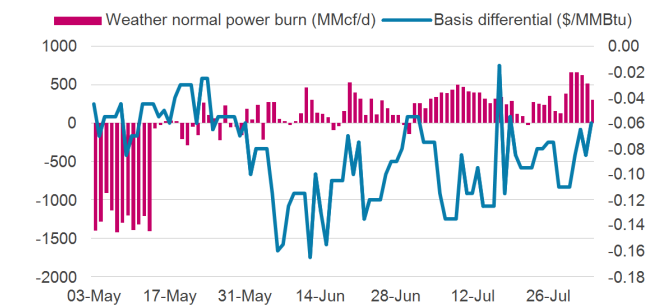
Source: S&P Global Platts Analytics

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



Source: S&P Global Platts Analytics

ERCOT POWER BURN VS. GAS BASIS



Source: S&P Global Platts Analytics

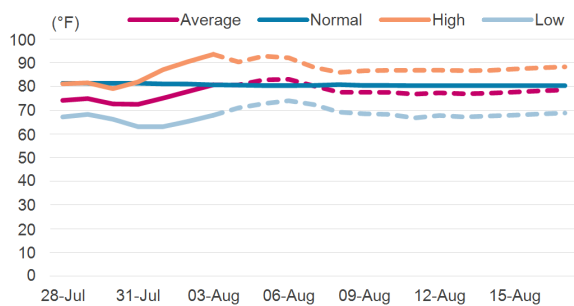
SPP POWER MARKETS

SPP GENERATION MIX (GWh/d)

Category	29-Jul	30-Jul	31-Jul	01-Aug	02-Aug	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2018	2017	Chg	% Chg
Total Generation	789.45	801.33	800.39	836.09	882.88	--	46.79	6.0%	67.82	996.9	857.4	814.62	42.78	5.0%
Coal	371.03	391.85	380.93	380.99	367.12	42%	-13.87	-4.0%	22.1	463.66	370.34	409.26	-38.92	-10.0%
Natural Gas	226.52	230.43	264.43	285.99	284.17	32%	-1.82	-1.0%	12.38	343.95	249.66	195.04	54.62	28.0%
Wind	97.09	82.42	55.34	70.27	132.76	15%	62.49	89.0%	25.72	315.82	148.65	121.24	27.41	23.0%
Nuclear Power	47.15	47.38	47.41	47.39	47.34	5%	-0.05	0.0%	3.94	48.03	44.93	47.5	-2.57	-5.0%
Hydro	45.74	47.32	50.36	49.51	49.54	6%	0.03	0.0%	3.52	50.36	42.02	39.84	2.18	5.0%
Diesel	1.91	1.94	1.93	1.93	1.95	--	0.02	1.0%	0	2.57	1.8	1.74	0.06	3.0%

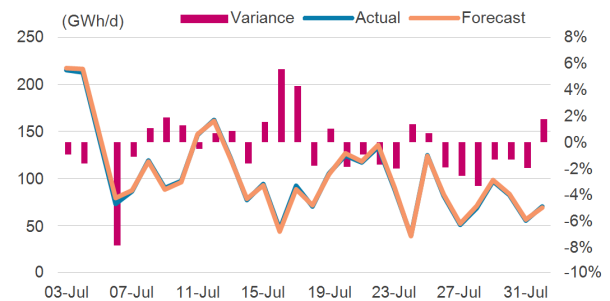
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: SPP

SPP TEMPERATURE



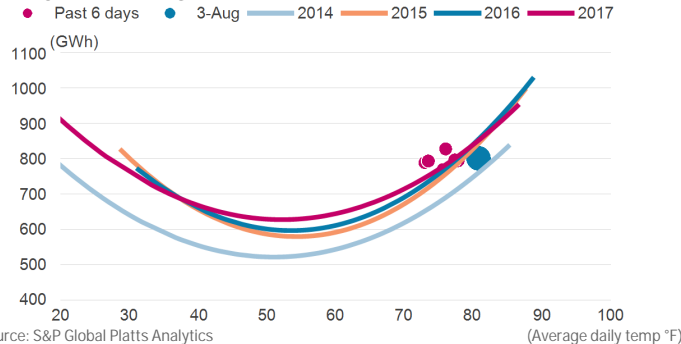
Source: Custom Weather

SPP ACTUAL WIND GENERATION VS. FORECAST



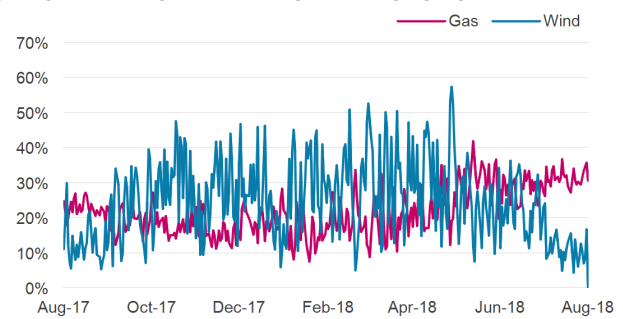
Source: SPP

SPP LOAD PER DEGREE



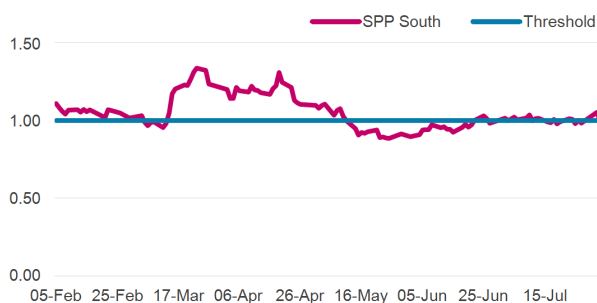
Source: S&P Global Platts Analytics

SPP GENERATION MARKET SHARE - GAS VS. WIND



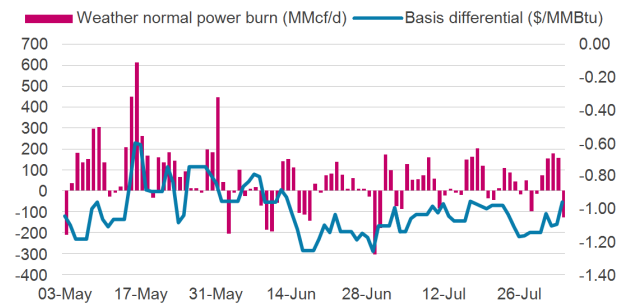
Source: S&P Global Platts Analytics

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



Source: S&P Global Platts Analytics

SPP POWER BURN VS. GAS BASIS



Source: S&P Global Platts Analytics

WEST POWER MARKETS

CAISO GENERATION MIX (GWh/d)

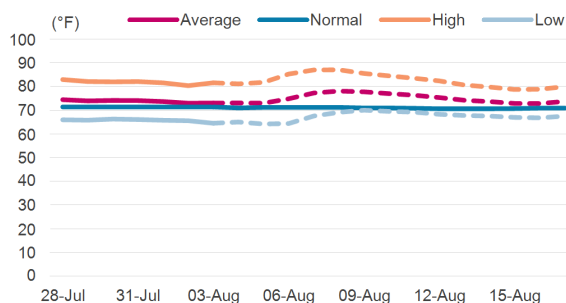
Category	29-Jul	30-Jul	31-Jul	01-Aug	02-Aug	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2018	2017	Chg	% Chg
Total Generation	749.9	829.59	838.84	843.97	827.43	--	-16.54	-2.0%	527.55	877.17	721.36	737.68	-16.32	-2.0%
Thermal Power	285.38	355.36	344.42	336.19	296.75	36%	-39.44	-12.0%	54.08	385.91	213.48	228.48	-15	-7.0%
Nuclear Power	54.47	54.45	54.45	54.48	54.48	7%	0	0.0%	54.22	54.81	54.54	46.72	7.82	17.0%
Hydro	86.05	92.93	89.77	85.16	84.78	10%	-0.38	0.0%	68.53	94.84	81.97	116.55	-34.58	-30.0%
Power Imports	147.64	153.97	184.23	179.16	188.25	23%	9.09	5.0%	130.76	221.54	173.68	170.29	3.39	2.0%
Solar PV	81.78	81.57	81.25	86.74	88.61	11%	1.87	2.0%	76.43	105.47	95.34	85.33	10.01	12.0%
Solar Thermal	3.23	2.73	2.7	3.75	2.16	--	-1.59	-42.0%	0.45	7.16	4.9	4.36	0.54	12.0%
Wind	54.25	51.23	44.38	60.99	74.54	9%	13.55	22.0%	23.17	103.86	59.8	52.07	7.73	15.0%
Bio + Geo	37.1	37.34	37.64	37.51	37.85	5%	0.34	1.0%	35.28	38.92	37.66	33.88	3.78	11.0%

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

Category	29-Jul	30-Jul	31-Jul	01-Aug	02-Aug	% Share	Daily change		Season		Season average			
							Chg	% Chg	Min	Max	2018	2017	Chg	% Chg
Total Generation	256.67	282.13	300.47	262.45	259.33	--	-3.12	-1.0%	38.71	418.84	311.95	312.12	-0.17	0.0%
Nuclear Power	27.41	27.39	27.32	27.39	27.47	11%	0.08	0.0%	4.6	27.76	25.54	18.22	7.32	40.0%
Hydro	180.27	203.85	193.99	153.08	142.4	55%	-10.68	-7.0%	18.59	357.2	227.82	217.17	10.65	5.0%
Thermal Power	41.53	41.07	38.63	38.11	37.01	14%	-1.1	-3.0%	3.24	42.31	25.87	43	-17.13	-40.0%
Wind power	7.46	9.81	40.53	43.87	52.46	20%	8.59	20.0%	1.26	75.78	32.72	33.74	-1.02	-3.0%
Load	159.66	162.34	162.22	156.44	150.02	--	-6.42	-4.0%	22.15	164.67	149.25	150.16	-0.91	-1.0%
Net Exports	97.02	120.4	138.27	106.03	109.33	--	3.3	3.0%	16.26	270.36	162.72	161.99	0.73	0.0%

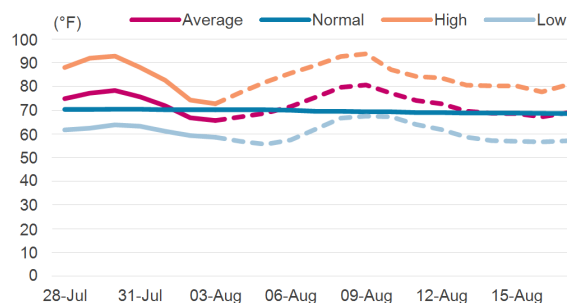
Seasons are defined as: Summer (June - August), Fall (September - November), Winter (December - February), and Spring (March - May). Source: CAISO & BPA

CAISO TEMPERATURE



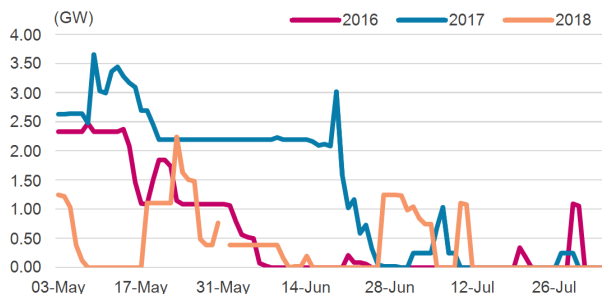
Source: Custom Weather

BPA TEMPERATURE



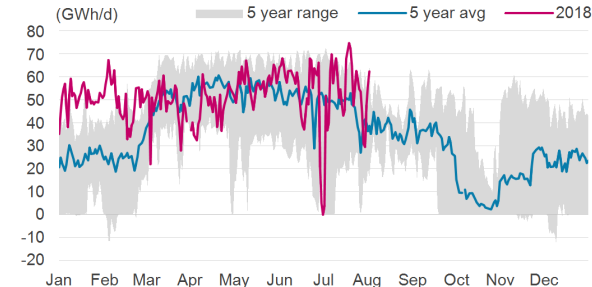
Source: Custom Weather

WESTERN NUCLEAR GENERATION OUTAGES



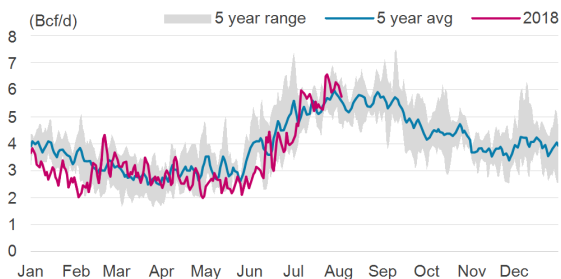
Source: NRC

BPA DC LINE TRANSMISSION FLOWS N-S



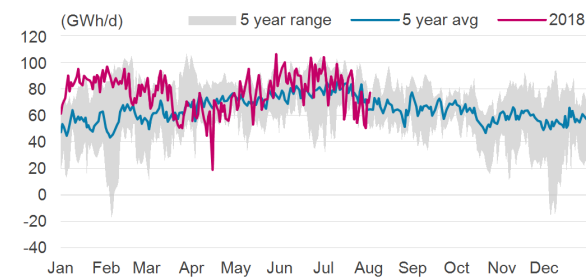
Source: BPA

YEAR-TO-DATE WEST POWER BURN



Source: S&P Global Platts Analytics

BPA AC LINE TRANSMISSION FLOWS N-S



Source: BPA

S&P Global Platts Power Webinar **Summer 2018**

August 8, 2018 | Online



Join our experienced editors to hear about what is happening in the North American Electricity market and submit questions to our wholesale electricity price specialists as they discuss the topics below:

- Current market dynamics - Summer power prices market dynamics, in Texas and California
- Electricity Assessments Methodology 101
- Proposed methodology changes & your real-time feedback

Attend S&P Global Platts Power Webinar Summer 2018 for free.

[Register here.](#)

S&P Global
Platts