

Megawatt Daily

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News Headlines

As Texas grid sets demand record, experts mull how utilities handle extreme heat

- Record seen to be topped through Aug. 8
- Retiring thermal too quickly poses problems

US POWER TRACKER: Northwest power forwards rise as hydropower falls, flows reverse

- CAISO imports fall nearly 13 percentage points in July
- Mid-C August end 72% higher than 2022 counterpart

PSEG's 2023 nuclear power output hedged at \$31/MWh; investing for EVs, electrification

- 2023 nuclear output of 30 TWh to 32 TWh expected
- Sold offshore wind power stake back to Orsted

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Platts peak daily demand (GW)

	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	29-Jul	30-Jul	31-Jul
ISO	7.32	7.33	7.45	7.56	7.42	7.16	7.18	7.67
BPA-Puget	20.36	21.30	21.30	21.56	21.55	17.42	17.16	13.70
CAISO	40.50	43.08	42.85	40.77	38.72	37.67	37.94	38.79
ERCOT	81.35	81.75	81.60	80.78	80.05	78.70	80.91	83.05
SPP	50.09	51.09	52.55	51.59	52.62	48.15	49.62	49.70
MISO	111.90	117.11	111.61	120.12	118.90	103.30	102.10	106.26
PJM	131.85	130.12	137.68	147.17	144.78	130.53	114.72	88.53
NYISO	25.44	25.29	27.11	28.33	28.74	25.22	20.13	22.14
NEISO	20.41	19.84	21.14	22.13	22.19	19.78	15.39	17.03
AESO	11.52	10.79	10.62	10.27	10.15	10.25	10.71	11.03

Season definitions: Summer (June – August), Fall (September – November), Winter (December – February), and Spring (March – May).

Source: S&P Global Platts

Regional day-ahead price changes

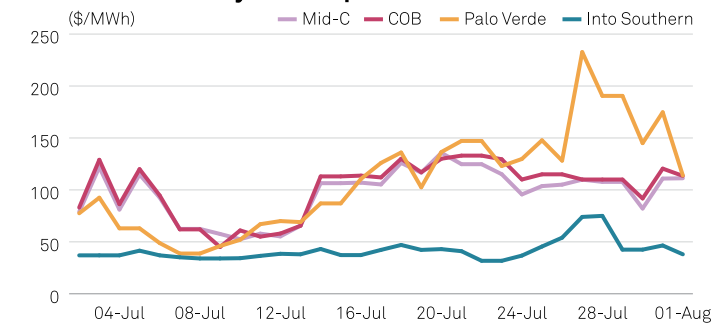
	Day-ahead peak prices		
	02-Aug	Daily chg	Prior 7-day avg
Southeast Bilateral Indices			
Into Southern	35.25	-2.75 ▼	53.21
Into GTC	35.25	-2.75 ▼	55.12
Florida	39.00	-2.75 ▼	57.54
Into TVA	36.25	-1.75 ▼	55.61
VACAR	35.25	-2.75 ▼	55.96
West Bilateral Indices			
Mid-C Hourly	—	—	105.77
Mid-C Day-Ahead	124.72	13.52 ▲	108.02
John Day	123.25	13.50 ▲	106.61
COB	115.00	1.50 ▲	113.43
NOB	120.00	0.00 —	119.60
Palo Verde	104.00	-9.88 ▼	168.31
Mona	111.56	0.50 ▲	164.94
Four Corners	112.50	-6.50 ▼	174.07
Pinnacle Peak	104.25	-10.00 ▼	168.61
Westwing	102.75	-10.00 ▼	167.11
Mead	107.16	-8.15 ▼	175.59
ISO Price Locations			
CAISO NP 15	61.64	1.59 ▲	64.46
ERCOT North Hub	75.00	0.00 —	84.42
ISONE Internal Hub	28.66	-3.69 ▼	58.53
MISO Indiana Hub	38.89	1.74 ▲	60.78
NYISO Zone G	29.21	1.86 ▲	58.10
PJM West Hub	32.21	-5.52 ▼	67.28
SPP South Hub	62.64	7.86 ▲	50.46

Source: S&P Global Platts

Regional weather trends

02-Aug	Daily chg	7-day forecast
80.1	-2.9 ▼	81.0
84.4	-0.8 ▼	85.5
77.8	-1.7 ▼	82.9
74.7	-0.8 ▼	76.7
70.8	0.1 ▲	73.1
70.8	0.1 ▲	73.1
70.8	0.1 ▲	73.1
70.8	0.1 ▲	73.1
73.9	-0.6 ▼	76.0
74.7	-0.8 ▼	76.7
74.7	-0.8 ▼	76.7
74.7	-0.8 ▼	76.7
74.7	-0.8 ▼	76.7
74.7	-0.8 ▼	76.7
74.7	-0.8 ▼	76.7
70.2	-1.4 ▼	72.2
92.4	-0.2 ▼	89.7
66.6	-2.2 ▼	71.2
75.6	1.9 ▲	73.5
69.7	-0.8 ▼	74.6
72.8	-0.1 ▼	76.5
84.5	0.8 ▲	78.7

Platts bilateral day-ahead power indexes



Source: S&P Global Commodity Insights

Daily change	Season		Season average				
	Chg	% Chg	Min	Max	2023	2022	Chg
0.49	6.82	5.75	8.23	7.19	7.15	0.04	0.58
-3.46	-20.16	13.70	22.69	18.74	18.71	0.03	0.15
0.85	2.24	25.24	43.08	32.87	35.33	-2.45	-6.94
2.14	2.64	58.58	83.05	75.41	74.04	1.37	1.85
0.08	0.16	33.78	52.62	43.76	45.94	-2.18	-4.74
4.16	4.07	77.21	120.12	99.62	102.28	-2.66	-2.60
-26.19	-22.83	30.85	147.17	113.52	120.97	-7.45	-6.16
2.01	9.99	15.70	28.74	22.17	22.92	-0.75	-3.29
1.64	10.66	11.72	22.28	16.95	17.64	-0.69	-3.90
0.32	2.99	9.34	11.52	10.48	10.25	0.23	2.27

News

As Texas grid sets demand record, experts mull how utilities handle extreme heat

- Record seen to be topped through Aug. 8
- Retiring thermal too quickly poses problems

Broiling under triple-digit high temperatures, the Texas grid set an unofficial peakload record of 83 GW on July 31, a new record forecast to be exceeded every day through Aug. 8. However, other parts of the US also suffered, about which electric utility experts offered insights in an Aug. 1 webinar.

The Electric Reliability Council of Texas' peakload of 83,047 MW on July 31 exceeded the 82,592 MW record set July 18, and as of 3:30 pm CT Aug. 1, ERCOT forecast load to peak at 83,965 MW that day.

The National Weather Service at 3:30 pm CT Aug. 1 had excessive heat warnings and advisories across the eastern two-thirds of Texas, Oklahoma and Kansas, all of Louisiana, most of Arkansas and Mississippi and the southwestern third of Missouri.

"It certainly has been a hot summer around the globe," said Morgan Scott, Electric Power Research Institute director of sustainability and ecosystem stewardship, during a United States Energy Association media briefing entitled, "Too Darn Hot: The Summer of 2023 Electric Utility Story."

"In the US, while we have seen some intensity records, we're

seeing more of a question around duration, particularly in Texas and Arizona," Scott said. "It's that duration piece of the heat experience that I would say is particularly interesting and observing the system reaction."

Certain instances have resulted in energy emergency alerts, but "we have not seen significant load-shedding events," Scott said.

SPP's 32-GW wind fleet

Lanny Nickell, Southwest Power Pool executive vice president and chief operating officer, said the summer has shown the danger of shifting away from conventional generation assets too quickly. Since the late 2010s, SPP's thermal generation outages during summer have had "a slight increase" to about 10% of summer peak.

"On the other hand, I'll tell you what really causes us a lot of challenges is when our vast amount of wind generation doesn't produce energy," Nickell said. "On average, you can expect about 15% to 20% of our wind generation to produce energy during the summer peak day, but we had an event on June 6 when out of 32,000 MW of nameplate wind generation, only 111 megawatts was produced. That's across 14 states, and it was highly unusual, highly unexpected, and it created a significant amount of challenge for us."

Federal, state and corporate utility goals of achieving net-zero emissions are "achievable," Nickell said, "as long as all options are on the table."

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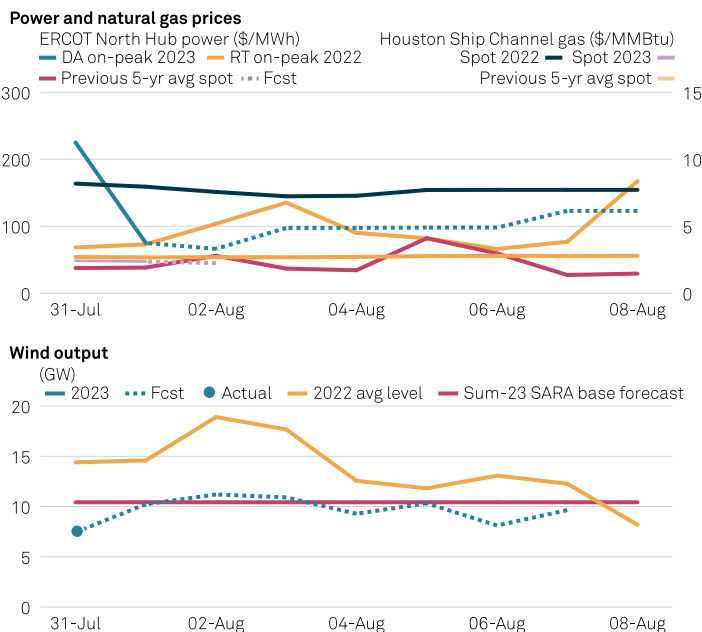
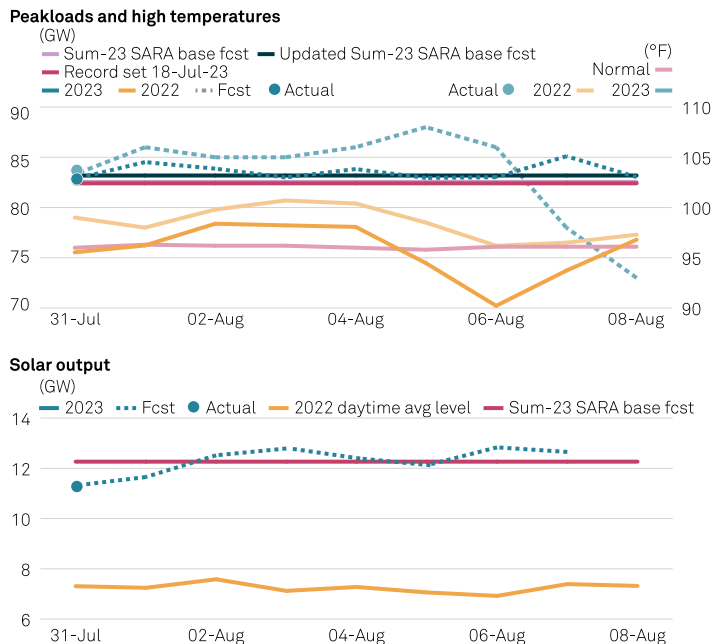
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ERCOT heat wave power fundamentals



Notes: Peakload forecast was issued 11:30 am CT Aug. 1. SARA is Seasonal Assessment of Resource Adequacy. Updated SARA is based on latest weather forecast. High temperature forecast for 2023 is for the Dallas-Fort Worth area. Actual high temperatures for 2022-23 and normal highs are population-weighted for the ERCOT market region. Renewable output actual and forecast levels are for hour ending at 5 pm CT, as of the noon CT Aug. 1 forecast. Renewable output levels for 2022 are daytime averages for solar and 24-hour averages for wind. Summer SARA renewable forecasts are for production during seasonal peak hour.
Sources: ERCOT, CustomWeather, S&P Global Commodity Insights

Regulatory challenges

“I’m more worried about the goals being set by 2030,” Nickell said. “It takes transmission. We’ve talked about all the stuff that we need to make this work. We need more resources. We need the right kind of resources. We need more transmission that can leverage access to resources that are performing when others aren’t. It takes at least 10 years to build significant transmission and probably more in certain parts of the country. So, I’m not as worried about 2050 as long as we start planning now. I am worried about 2030.”

Barry Ingold, Tri-State Generation and Transmission Association, an electric cooperative based in Westminster, Colorado, said his organization has plans to retire a 1.2-GW coal-fired plant in a quest to reduce carbon dioxide emissions, but seeks to replace it, at least temporarily, with a 300-MW, gas-fired plant, which “will be the challenge” from a regulatory perspective.

“Not only do you have to get through the Colorado Public Utility Commission, you have to get it through a separate commissions permitting process, and that’s where I see the risk,” Ingold said. “The Public Utility Commission may say, ‘Yes, we support this, go forth and build it,’ but you have to get it permitted through the Air Quality Control Commission who in the state of Colorado may be even far more challenging.”

— Markham Watson, Larry Flores, Amilcar Flores

US POWER TRACKER: Northwest power forwards rise as hydropower falls, flows reverse

- CAISO imports fall nearly 13 percentage points in July
- Mid-C August end 72% higher than 2022 counterpart

Power forwards continue to trend higher in the Western US as rising temperatures drive up load, with the exception of the California Independent System Operator footprint where hydropower generation is the highest in years, allowing California to send power to neighboring regions where such supplies are lacking.

CAISO’s above-normal hydropower generation is expected to continue through the third quarter, said Morris Greenberg, senior manager with the low-carbon electricity team at S&P Global Commodity Insights.

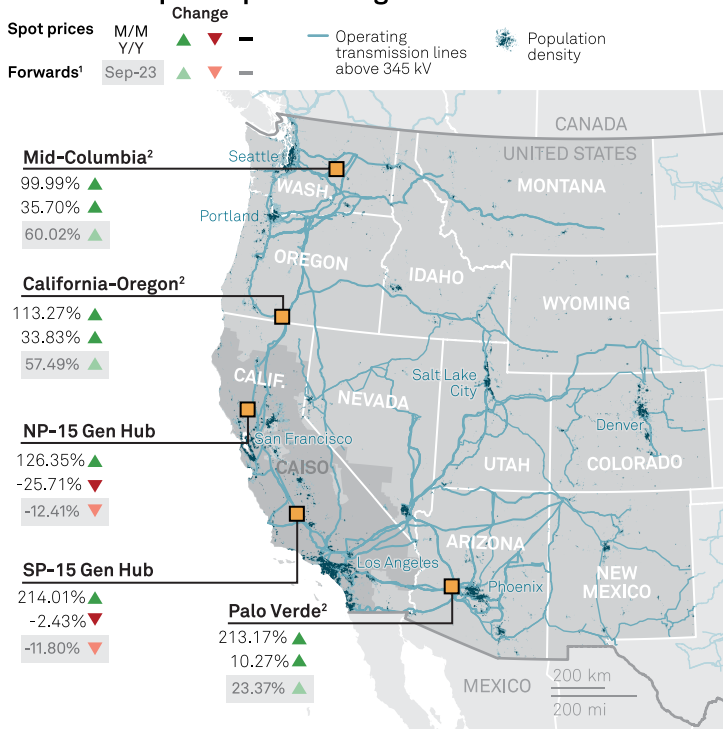
“California appears to be in relatively good shape given increases in battery capacity and hydro conditions,” Greenberg said. “Westwide extreme heat could lead to tightness and high prices in other markets, though.”

CAISO became the first US grid operator to surpass 5 GW of battery storage capacity. Installed battery storage capacity increased 68% year over year.

Western power forwards trend higher as hydro supplies fall

Western US power forwards continue to trend higher across the Pacific Northwest where hydro supplies have been lower than normal. The lack of hydro in the Northwest has caused thermal generation to climb and power generation flows to reverse course, with the Bonneville Power Administration importing generation this year and the California Independent System Operator exporting generation due to its strong hydro supplies.

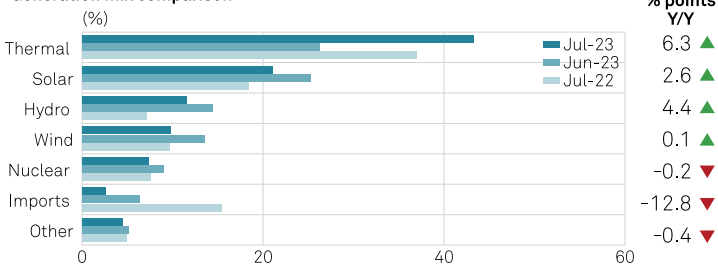
Western US power price changes



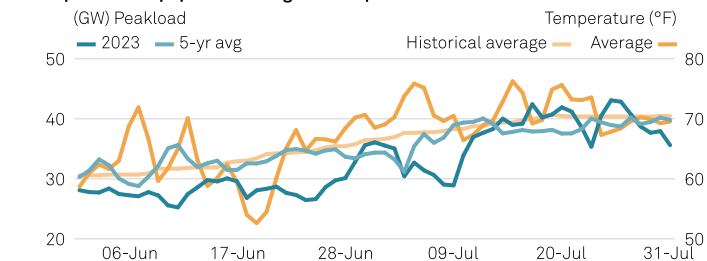
Day-ahead on-peak average price comparison (\$/MWh)

Location	Jul-23	Jun-23	Jul-22	M/M	Y/Y
Mid-Columbia ²	97.92	48.97	72.16	48.96	25.76
California-Oregon Border ²	102.01	47.83	76.22	54.18	25.79
CAISO NP15 Gen Hub	57.21	25.27	77.01	31.93	-19.80
CAISO SP15 Gen Hub	76.04	24.22	77.94	51.83	-1.89
Palo Verde ²	110.93	35.42	100.60	75.50	10.33

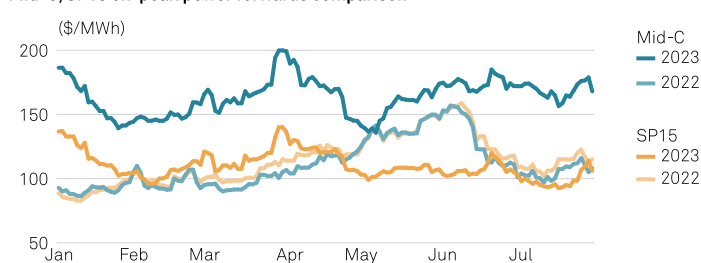
Generation mix comparison (%)



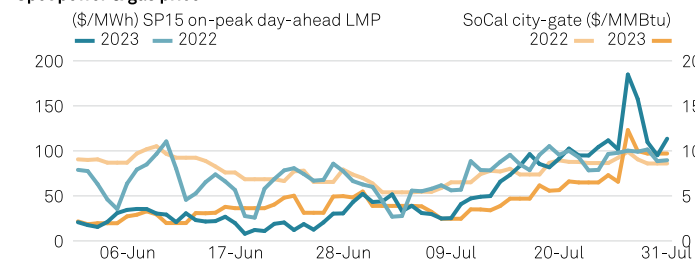
CAISO peakload & population-weighted temperatures



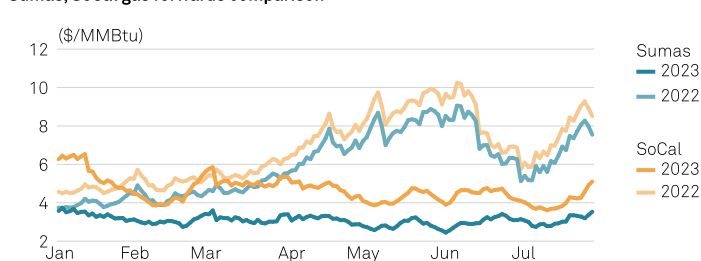
Mid-C, SP15 on-peak power forwards comparison



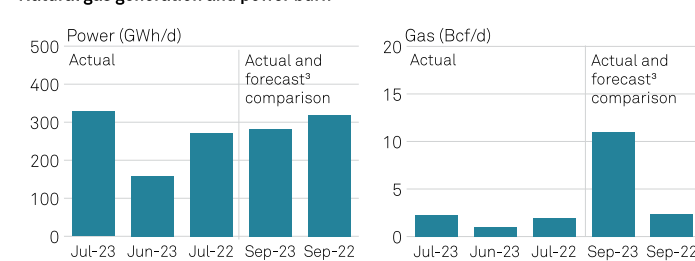
Spot power & gas price



Sumas, SoCal gas forwards comparison



Natural gas generation and power burn



Notes: (1) Forward prices reflect percentage changes from year-ago packages, (2) Platts Day-ahead Bilateral Indexes, (3) Assumes similar heat rate to September 2022.

Source: CAISO, CustomWeather, NASA Socioeconomic Data and Applications Center (SEDAC), S&P Global Commodity Insights, Platts Analytics
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Imports reverse, thermal rising

Battery storage is limiting California import requirements during early evening hours when battery discharge peaks, Greenberg said.

CAISO imports fell nearly 13 percentage points year on year to average 2.6% of the total July fuel mix, according to CAISO data. At the same time, thermal market share increased 6 points to average 43% of the mix while hydropower was up 4.4 points to nearly 12% of July's market share.

The drop in CAISO imports corresponds with the decrease in hydropower generation in the Northwest, which has led to a reversal of power flows with CAISO sending generation to the Northwest, which does not have the hydropower generation it typically relies upon.

The Northwest imported an average of 83 MW in July, according to Bonneville Power Administration data. In comparison, it exported an average of 3.7 GW a year ago.

Thermal generation market share increased 5 percentage points year on year, as hydropower generation fell nearly 13 points to 67% of the total fuel mix in July, according to BPA data.

Gas market share rises

"Gas is typically the marginal resource in California so gas, as well as carbon, prices will play a significant role in setting prices," Greenberg said. "SoCal gas prices have responded to periods of high power demand and this will continued for the balance of Q3."

Spot gas for SoCal city-gates averaged \$5.517/MMBtu in July, an increase of 67.5% from June but a decrease of 26.4% year over year, according to Platts pricing data from S&P Global Commodity Insights.

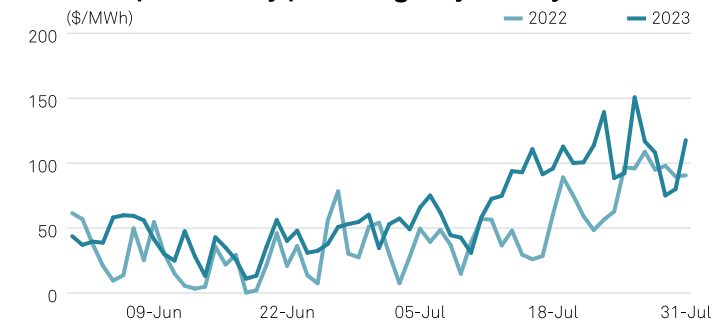
The dip in gas prices helped pull down CAISO power prices year on year. SP15 on-peak day-ahead locational marginal prices slipped 2.4% year on year to average \$76.04/MWh in July.

In addition, CAISO peakload was 5.3% lower in July compared to a year ago, also helping pull down wholesale power prices.

However, power prices increased outside of CAISO.

Mid-C on-peak day-ahead doubled month on month and was up 36% year on year to average \$97.92/MWh in July, according to S&P Global data. Likewise, Mid-C on-peak hourly prices averaged \$83.87/MWh in July, up 51% year on year and a jump of 109% from June.

Mid-C on-peak hourly prices higher year on year



Source: S&P Global Commodity Insights

Forwards curve

Power forwards continue to climb above year-ago packages, with the exception of CAISO.

Mid-C on-peak August rolled off the curve at \$192.50/MWh, 72% above where the 2022 package ended, according to S&P Global data. The on-peak September package ended July at \$167.90/MWh, 55% higher than its 2022 counterpart, while the October package is in the upper \$80s/MWh, 2% above.

Palo Verde on-peak August rolled off at \$206/MWh, 34% above where the 2022 counterpart ended, while on-peak September is in the mid-\$160s/MWh, 23% higher. Bucking the trend, on-peak October is in the mid-\$60s/MWh, 23% lower than the 2022 package a year ago.

The three-month outlook indicates a greater probability for above-normal temperatures across the Western half of the US, according to the US National Weather Service's Climate Prediction Center.

— Kassia Micek

PSEG's 2023 nuclear power output hedged at \$31/MWh; investing for EVs, electrification

- 2023 nuclear output of 30 TWh to 32 TWh expected
- Sold offshore wind power stake back to Orsted

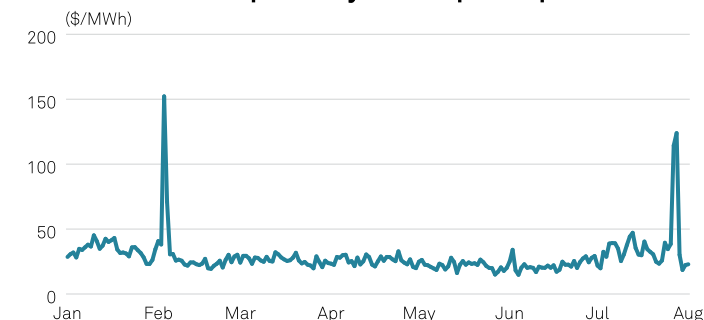
For full-year 2023, Public Service Enterprise Group is forecasting nuclear power generation output of 30 TWh to 32 TWh and has hedged approximately 95% of this production at an average price of \$31/MWh, executives said during the investor-owned utility's second quarter earnings call.

"On the operating side, the nuclear fleet produced approximately 7.7 TWh during the second quarter and 16 TWh for the year-to-date period in 2023, running at a capacity factor of 91.2% for the quarter and 95.8% for the year-to-date period," Daniel Cregg, PSEG's chief financial officer, said during the conference call.

On-peak day-ahead power prices in PJM Interconnection's PSEG Zone averaged \$28.54/MWh so far in 2023, according to PJM data.

For 2024, the nuclear fleet is forecasted to produce 30 TWh to 32 TWh of baseload output and has hedged 75% to 80% of this generation at an average price of \$38/MWh, Cregg said.

PJM PSEG Zone on-peak day-ahead power prices



Source: PJM

Subsidiary PSEG Nuclear operates the 2,295-MW Salem and 1,173-MW Hope Creek Nuclear Generating Stations in Lower Alloways Creek, New Jersey and is a part owner of the 2,549-MW Peach Bottom nuclear power plant in Delta, Pennsylvania.

PSEG owns 57% of Salem and Constellation Energy owns the remaining 43%, PSEG owns 100% of Hope Creek, and owns 50% of Peach Bottom with Constellation owning the other 50%.

“During the quarter, we completed PSEG’s exit from offshore wind generation through the sale of a 25% equity stake in Ocean Wind I, selling it back to Orsted, recovering our investment,” Ralph LaRossa, PSEG’s president and CEO said.

Capital spending plan

The utility portion of PSEG’s \$15.5 billion to \$18 billion spending plan remains focused on system modernization of aging distribution infrastructure, last-mile support in preparation for electric vehicle and building electrification, and aligning plans with New Jersey’s energy policies and the company’s clean energy investments, LaRossa said.

PSEG’s investment program drives expected compound annual growth rate in rate base of 6% to 7.5% from year-end 2022 to year-end 2027 with the low end of this rate base estimate assuming an extension of the utility’s natural gas system modernization program and clean energy investments at their current average annual level, while the upper end includes the remaining portion of proposals for medium and heavy duty EVs and energy storage programs as well as potentially higher amounts for energy efficiency above current levels, he said.

“Speaking of energy efficiency, the New Jersey Board of Public Utilities recently approved the second energy efficiency framework for the next 3-year cycle that will begin in July of 2024 and run through June of 2027,” LaRossa said.

This past May, the regulators approved a \$280 million 9-month extension of PSEG’s first energy efficiency program which synchs it up with the completion of the state’s first cycle in June 2024, he added.

Second quarter weather typically contains both heating and cooling sales, Cregg said, adding that 2023 winter weather during Q2 was 23% warmer in terms of heating degree days than Q2 2022, and summer weather was 34% cooler than Q2 2022 as measured by the temperature-humidity mix.

PSEG reported Q2 2023 net income of \$591 million, or \$1.18/share, compared to net income of \$131 million, or \$0.26/share, for Q2 2022.

— Jared Anderson

US could supply up to 25% of its power demand from offshore wind power: study

- ‘Technical potential’ of nearly 4,000 GW
- US power demand could triple by 2050

The US coastline, including the Great Lakes region, has the technical potential of nearly 4,000 GW of offshore wind power capacity which could supply up to 25% of US power demand, with

over 1,000 GW of this potential supply operating with capacity factors above 50%, according to a University of California, Berkeley study released Aug. 1.

“Offshore wind technology has astounding potential to form a major cornerstone of America’s electricity needs,” Nikit Abhyankar, senior scientist at the UC Berkeley Center for Environmental Public Policy, said in a statement.

The report called “2035 and Beyond: Abundant, Affordable Offshore Wind Can Accelerate Our Clean Electricity Future,” was supported by GridLab, a non-profit that provides technical grid expertise to help policy decision-making and Energy Innovation which is a nonpartisan energy and climate policy think tank.

“Technical potential” refers to the total achievable power generation of offshore wind, given various land-use, environmental, technology, and performance constraints, or in other words, technical potential represents an upper-bound estimate of how much power the US can produce from offshore wind, the researchers said.

“The technical ability to build out America’s offshore wind sector and enjoy all the benefits of clean, reliable, affordable electricity is there; we just need political leadership to pass the right policies, starting with much larger offshore wind commitments,” Mike O’Boyle, senior director of electricity policy at Energy Innovation, said.

“Increasing our investment in US ports, ship building, specialized steel manufacturing and transmission infrastructure are key to supporting offshore wind energy installation,” O’Boyle said.

The report found that offshore wind resources could greatly complement onshore resources like solar and wind power to help achieve a 95% clean electricity grid by 2050 without substantially impacting wholesale electricity costs.

Additional key findings include:

- The US will need to install at least 85 GW of land-based wind and solar power annually, as well as 27 GW of offshore wind power between 2035-2050 to meet increased electricity demand and reach net-zero emissions in 2050. By comparison, the US installed 28 GW of wind and solar in 2021
- US economic growth and increased electrification of buildings, transportation and industry will lead to a near tripling of US power demand, to over 10,000 TWh in 2050 from 4,000 TWh currently
- Offshore wind power complements solar and land-based wind electricity generation by producing power during peak evening hours and peak winter and summer months
- Significant national, regional and state policy support from grants, financing, planning and permitting approvals, coordinated across geographies, is needed to expand domestic manufacturing of components and associated supply chains

— Jared Anderson

Interior designates 3 Atlantic offshore wind areas as Pentagon weighs conflicts

- Potential to generate 4 GW to 8 GW
- 356,550 acres off Delaware, Maryland, Virginia

The US Interior Department on July 31 designated three areas offshore Delaware, Maryland and Virginia where it plans to hold competitive lease sales. The Central Atlantic region has the potential to generate 4 GW to 8 GW of power from offshore wind, the agency said in a news release.

The department's Bureau of Ocean Energy Management (BOEM) then launched an environmental assessment of the three areas, inviting the commercial fishing industry, the military and others to file comments on the designation of approximately 356,550 acres on the Outer Continental Shelf for offshore wind leasing.

Any lease sales in the three states could face potentially costly mitigation requirements to overcome concerns raised by the Defense Department (DOD) and NASA.

BOEM says it is engaged in an in-depth review with both agencies to determine if their activities can co-exist with wind energy development.

In comments to BOEM, the DOD's concerns stem mainly from conducting fighter jet training and exercises along the Mid-Atlantic coastline.

NASA has sizable operations in the Central Atlantic, including the Goddard Space Flight Center in Greenbelt, Md., and the Mid-Atlantic Regional Spaceport on Wallops Island, Va.

"The results of the final in-depth assessment from DOD and NASA will be used to inform whether [the Maryland offshore area] ... should be included in a possible lease sale, which would be the next step in the wind energy process," BOEM said.

If BOEM decides to move forward with a proposed lease sale, there would be an additional public comment period, with the agency disclosing any necessary mitigation actions ahead of time to inform bidders. A final sale notice would announce the date of the lease sale and the companies that are qualified to participate, a BOEM spokesman said.

North Carolina, which was originally part of the proposed wind call areas for the region, was not included in the July 31 designation.

BOEM documents show that the US Navy had determined that the proposed wind lease area that included North Carolina

would interfere with training exercises and defense radars.

The largest wind area is 176,506 acres and is located about 35 miles from the mouth of the Chesapeake Bay offshore Virginia. The areas off Delaware and Maryland are 101,767 and 78,285 acres, respectively.

— John Siciliano

Eversource takes \$331 million hit to offshore wind business value

- Impairment of 95 cents/share
- Still close to deal on divestment

Eversource Energy recorded a \$331 million after-tax impairment related to its offshore wind business for the second quarter, the company said Aug. 1, up from the \$220 million to \$280 million charge the developer estimated in May.

"Eversource evaluated its aggregate investment in the contracted projects, the uncommitted lease area and other related capitalized costs and determined that the offshore wind investment exceeded its carrying value," CEO Joseph Nolan said during second-quarter results call.

The impairment amounted to an impact of 95 cents/share. Eversource reported Q2 earnings of \$15.4 million, or 4 cents/share, compared with second-quarter 2022 earnings of \$291.9 million, or 84 cents/share. The S&P Capital IQ GAAP consensus earnings estimate for Eversource in the second quarter was 91 cents/share.

The writedown assumes that Eversource will qualify for investment tax credit adders like the 10% domestic content bonus and that the New York Public Service Commission will reprice Offshore Wind Renewable Energy Certificates for the planned, 924-MW Sunrise Wind project to account for inflation, Executive Vice President and CFO John Moreira said.

That decision is expected in October or November, according to Eversource.

Offshore wind sale update

Regarding plans to divest its 50% interest in a joint venture with Ørsted developing Sunrise Wind, Revolution Wind Offshore and the South Fork Wind Project, Nolan said Eversource is close to a deal even though it expected to make an announcement during the second quarter.

"It didn't take place, obviously, at the pace that all of us would have liked it to take place, but I just want to promise you that we are here at the one-yard line, and we are getting it over the goal line," Nolan added.

The impairment's increase over a previous estimate was due in part to "the completion of due diligence and kind of the current deal pricing," according to Moreira.

While analysts at Scotiabank told clients Aug. 1 that they still forecast Eversource's contracted portfolio to fetch more than \$2 billion, they also believe that "many investors will expect another write-down or two before the dust settles."

In January, Ørsted wrote down its investment in Sunrise



Wind by \$363 million in the face of cost inflation and rapidly rising interest rates.

Eversource in May agreed to sell its 50% stake in an uncommitted Massachusetts offshore wind lease area to Ørsted for \$625 million in cash.

Revolution Wind 2 Offshore, which Eversource is also developing with Ørsted, faced a setback in July when PPL subsidiary Rhode Island Energy, known legally as The Narragansett Electric Co., decided not to sign a power purchase agreement due to cost concerns.

Connecticut ratemaking

Connecticut regulators issued a proposed decision July 21 rejecting a request from Eversource utility United Illuminating for a \$130.6 million rate increase over three years, instead authorizing a one-year rate increase of less than \$2 million to be effective Sept. 1.

"We will have a day in court, and if this remains as is, I assume that [United Illuminating] will be in court as well to talk about that," Nolan said during the call. "I'm confident that we can get to a much better place."

Analysts at Guggenheim wrote July 24 that the draft decision indicates that Connecticut "continues to point to becoming a value-destructive state."

Eversource also has an approximately \$900 million deferred extreme weather balance in Connecticut, with recovery beginning no earlier than the end of 2025, Moreira said.

S&P Global Commodity Insights reporter Allison Good produces content for distribution on Capital IQ Pro.

— Allison Good

WEC expects new demand, grid operator rules to boost capacity needs

- Current plan calls for 3.3 GW of renewables
- Details of next five-year plan expected in fall

While WEC Energy Group's current five-year plan envisions quadrupling the company's renewable capacity, new developments like a planned Microsoft facility and new capacity requirements could further increase capacity needs in the next plan, company officials said Aug. 1.

During the second quarter, the company made progress on the investments in its existing \$20.1 billion five-year plan, Gale Klappa, the executive chairman for the board, said during WEC's Q2 earnings call. "As we've discussed, the plan is based on projects that are low-risk and highly executable," he said.

Citing the availability of new US tax credits for renewable energy projects, WEC in late 2022 unveiled a revised five-year capital plan that will allocate \$7.3 billion to building up to 3,300 MW in new wind, solar, and storage projects as it retires its coal capacity by 2035.

In fall 2023, WEC is planning to release the details of its next five-year plan, which will cover 2024 to 2028. The next plan will cover expected new demand growth, Klappa said.

New demand

For instance, Microsoft in Q1 2023 announced plans to make an initial investment of \$1 billion to create a new data center campus to be built south of Milwaukee, he said.

"So along with American Transmission Company, we're working closely, in fact on a weekly basis, with Microsoft to determine the full extent of the energy infrastructure that will be needed to serve this development," he said.

In addition to Microsoft, there is a new HARIBO plant up and running that will produce 132 million pounds of gummy bears in the next 12 months, Klappa said. And MISO's first tranche of long-range transmission plan grid projects will impact the next plan too, he said.

"I think we're going to see an uptick in transmission investments," he said. "I think we're going to see clearly some additional capacity needed," he said.

Capacity rules

In addition, MISO recently moved to a seasonal resource adequacy construct, which is expected to impact WEC's winter capacity reserve requirement, Klappa said. "That's all being factored into our new five-year capital plan," he said.

It is unclear at this point whether future capacity needs will necessitate further generator retirement delays, said Scott Lauber, the president and CEO of WEC. "We're evaluating what our capacity needs are," he said. "So right now, [there's] nothing to announce," he said.

WEC's Wisconsin subsidiary last year delayed the retirement of four units of its 1.1 GW coal-fired Oak Creek plant until 2024 and 2025, citing tight capacity in the Midwest and supply chain issues that were delaying renewable projects.

MISO officials said utility decisions to delay retirements helped reverse a capacity shortfall and ensure sufficient supply was available in the grid operator's most recent capacity auction.

For Q2 2023, WEC recorded a net income of \$289.7 million, or 92 cents/share, up from \$287.5 million, or 91 cents/share, in Q2 2022. For the first half of 2023, the company recorded a net income of \$797.2 million, or \$2.52/share, down from \$853.4 million, or \$2.70/share, in Q1 2022.

"After a down first quarter marked by one of the warmest winters on record, we delivered solid results in the second quarter," Klappa said in a statement. "And we're firmly on track for a strong 2023," he said.

— Kate Winston

Lack of results from gas-power cooperation forum leaves co-chairs frustrated

- Far apart in ideas for solving energy reliability
- Gas reliability organization akin to NERC

The US natural gas and electric power sectors are worlds apart in ideas for solving energy reliability during extreme events, with each demanding significant changes of the other, the leaders of a gas-electric coordination group said.

“We believe our country has a problem,” said the three co-chairs of the Gas Electric Harmonization Forum within the North American Energy Standards Board.

Co-Chairs Robert Gee, Susan Tierney and Pat Wood, all of whom have regulatory and policy experience at the federal and state levels, made their observations in a foreword that expressed only their views in a larger July 28 report from the forum. The lack of agreement between the gas and electric power sectors was especially troublesome after winter storms in 2021 and 2022 brought gas-fired power plant outages in parts of the US, they said.

With the lack of consensus, the co-chairs recommended the formation of a gas reliability organization similar to the North American Electric Reliability Corp. to address fuel transportation challenges that arise during high demand periods and bad weather, something that would require Congress and policymakers to carry out. The co-chairs’ recommendation was not among 20 recommendations that the broader forum sent to NERC and the Federal Energy Regulatory Commission.

“After a year of work through this process, combined with our own extensive experience, we recommend a more significant, structural solution that, if enacted, would accelerate the harmonization of the natural gas and electric power industries to the benefit of the country: a natural gas reliability organization akin to the one currently responsible for electric reliability, NERC,” the co-chairs wrote.

Gas reliability organization

In light of limited support for voluntary measures through the NAESB consensus-driven process, “we have thus pivoted to a measure that, although discussed during the forum but not included among our recommendations, requires congressional enactment, recognizing that this represents an even more challenging pathway,” Gee, Tierney and Wood said.

“With such an organization in place, we believe the balanced solutions discussed in this report would find home at an institutional forum empowered to more timely address these and other related matters on an ongoing basis,” the co-chairs said.

During the NAESB forum meetings when a gas reliability organization was discussed, gas sector representatives questioned the need for it, as they did when legislation along the same lines was introduced in the House of Representatives a few years ago.

With the GEH Forum report now with FERC and with NERC, the recommendations should be addressed on an individual basis, as some apply to federal policies on wholesale power market operations and others apply to state regulation of gas utilities and intrastate pipelines, the co-chairs said. It will be up to FERC and others to take action on any recommendations, they said.

Wood was a chairman at FERC and the Public Utility Commission of Texas. Gee had roles at the Texas PUC and the US Energy Department. Tierney, senior adviser at Analysis Group, served at the DOE and as a state regulator in Massachusetts. The three co-chairs noted that a previous effort by FERC to improve

gas and power market synchronization, after a winter storm wreaked havoc in Texas and the Southwest in 2011, resulted in only modest changes after FERC also encountered opposition from the two industries. “The consequences of that decision continue to linger in the face of the crises that emerged these past two winters,” the co-chairs said.

Separate camps

As was evident during nearly a year of meetings in the GEH Forum, the intransigence of the two sectors over the scheduling of gas deliveries and mismatched market operations — despite increased interdependence and reliability risks — was reflected in the report to NERC and FERC. The report was put together by the forum co-chairs based on recommendations that were subject to a vote by forum participants.

“As much as we are heartened by the strong support for some recommendations, the divergence of support between the two sectors on others is profoundly disturbing: it reflects a fundamental lack of agreement regarding the lessons learned from these past two winters and the challenges ahead in ensuring that outages no longer occur owing to a failure between these two systems,” Gee, Tierney and Wood wrote in the foreword.

The recommendations were designed to improve the ability of generators to obtain fuel at times when heating demand for gas climbs during extreme cold and gas-fired generators have difficulty scheduling gas deliveries on short notice. Many of the recommendations were tied to enhanced transparency in gas pipeline operations, including enhanced information on transportation capacity release options and production data leading up to high-demand periods. Several recommendations would involve FERC or state commissions in order to improve interactions between the power and gas industry during extreme weather.

The gas sector tended to support tweaks to power market operations that were generally opposed by the other sector, and vice versa. Among the recommendations that received much support from both sectors were the alignment of the power day with the day-ahead schedule of the gas day; state public utility commission support of gas and electricity demand response programs; and public service announcements for voluntary conservation.

“However, on many critical recommendations, the natural gas and electric industries hold widely divergent opinions,” the co-chairs said. These recommendations included FERC directing NAESB to revise business practice standards on the timely reporting of online gas pipeline data; expanding a tool to improve awareness and communication between the operators of gas infrastructure and the bulk power system; state measures to ensure that gas producers, marketers and pipelines are functioning 24/7 before and during extreme weather; state reporting requirements for intrastate gas pipelines that would be similar to FERC requirements for interstate pipelines; and state weatherization guidelines.

“We did not regard any of our 20 recommendations to be so

burdensome or so profoundly altering that they would engender strong opposition,” but that still happened, the co-chairs said.

A recommendation to have the NAESB consider changes to force majeure language in the organization’s base contract for gas sales was met with universal opposition from gas producers, effectively ending consideration for the time being. “We regard an act like this to be both disappointing and counterproductive,” the co-chairs said.

Gas industry response

An initial reaction from the Natural Gas Supply Association, representing major gas producers and related companies, expressed disappointment with the report. NGSA noted that its members supported 80% of the recommendations.

“Unfortunately, the foreword of this report suggests the reliability challenges referenced in recent winter storms were primarily a gas supply issue,” said Dena Wiggins, president and CEO of the association. “Yet, the findings in thorough investigations indicate that there is much work to do across both the gas and electric sectors to ensure gas availability for power, especially during emergency events.”

The GEH Forum at the NAESB was started after a joint report from NERC and FERC on the February 2021 winter storm that caused blackouts and gas supply problems in Texas and soaring gas prices in much of the Midwest.

— Thomas Tiernan

Texas manufacturing, retail indicators negative, weakening power, gas prices

- Retail sales down in 10 of last 12 months
- Power prices down on month, year

Texas industrial activity and retail sales worsened in July, but overall service sector performance improved, new Federal Reserve Bank of Dallas surveys show, which has coincided with surging power demand and weaker power and natural gas prices.

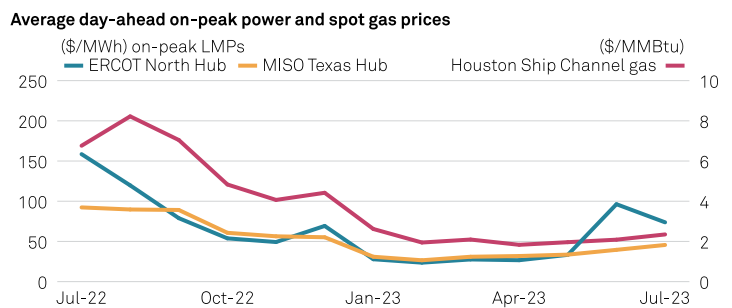
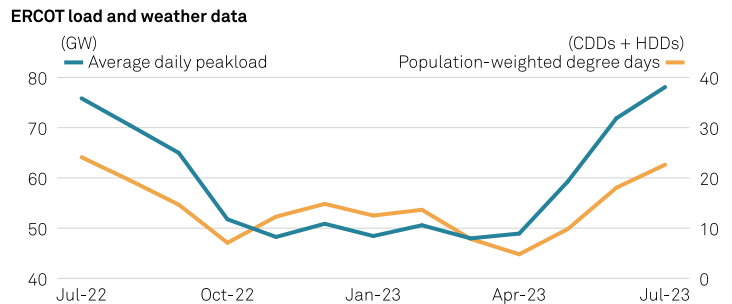
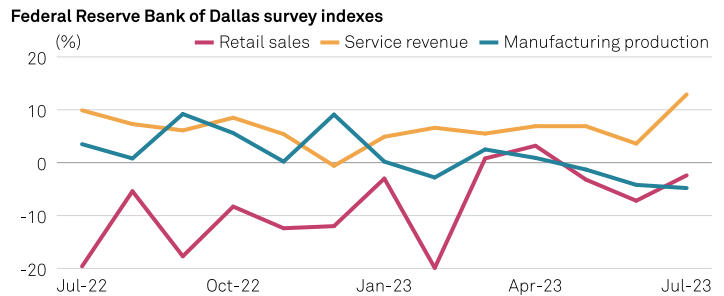
Released Aug. 1, the Dallas Fed’s Texas Retail Outlook Survey showed a retail sales index of minus 2.4%, up from June’s index of minus 7.2%. The index represents the difference between the 30.4% of respondents reporting a month-to-month increase in sales and the 32.8% reporting a decrease.

Since the novel coronavirus pandemic caused a national lockdown in March 2020, the retail sales index has shown month-to-month decreases in 30 of 41 months. Ten of those negative indexes occurred in the past 12 months.

The Dallas Fed collected data July 18-26 from 285 Texas service sector business executives, of which 57 were retailers.

The Texas Service Sector Outlook Survey’s revenue index, also released Aug. 1, was 12.9%, up from June’s 3.6%. This statistic represents the difference between the 30.4% of respondents reporting a month-to-month increase and the 17.5% reporting a decrease.

Texas manufacturing, weather and energy indicators



Sources: Federal Reserve Bank of Dallas, ERCOT, CustomWeather, S&P Global Commodity Insights

Released July 31, the Texas Manufacturing Outlook Survey showed a production index of minus 4.8%, reflecting the difference between 26.5% of respondents reporting a month-to-month increase in output and the 31.3% reporting a decrease.

The July production index was the third month in a row for negative numbers, and only seven of the 41 months since the March 2020 pandemic lockdown have shown negative production indexes.

The Dallas Fed collected data July 18-26 from 84 Texas manufacturers.

Energy market impact

Electric Reliability Council of Texas power demand in July, with an average daily peakload of 78.1 GW, was up sharply from June’s 71.9 GW and July 2022’s 75.8 GW. Weather cannot account for much of ERCOT’s power demand surge. Combined population-weighted average cooling and heating degree days in July were up 25.3% from June but down 6.2% from July 2022.

ERCOT North Hub day-ahead on-peak locational marginal prices in July were down sharply both on the month and year. July's price, at \$73.76/MWh, were down 23.4% from June's \$96.30/MWh and down 53.5% from July 2022's \$158.57/MWh.

Much of the Texas petrochemical complex lies within the Midcontinent Independent System Operator's Texas Hub footprint. MISO Texas Hub day-ahead on-peak LMPs averaged \$45.61/MWh in July, up 15.3% from June's \$39.55/MWh but down 50.6% from July 2022's \$92.32/MWh.

At the Houston Ship Channel, spot gas averaged \$2.348/MMBtu in July, up 12.5% from June's \$2.087/MMBtu but down 65.3% from July 2022's \$6.761/MMBtu, when global energy markets still were roiled by the war in Ukraine.

ERCOT's natural gas power burn averaged 6.1 Bcf/d in July, up 9.8% from June's 5.6 Bcf/d but down 0.4% from July 2022's 6.2 Bcf/d.

Worsening business conditions

Of the TMOS results, the Dallas Fed said, "Perceptions of broader business conditions continued to worsen in July."

For example, the general business activity index was minus 20%, reflecting the difference between 10.2% of manufacturing respondents reporting month-to-month improving conditions and 30.2% reporting worsening conditions. The June index was minus 10.7%. This index has been negative since May 2022. The most recent longer stretch of negative business activity indexes was 18 months from January 2015 through June 2016.

"Other measures of manufacturing activity also indicated contraction in July," the Dallas Fed said. "The new orders index has been in negative territory for more than a year and edged down to minus 18.1%. The capacity utilization and shipments indexes remained negative but moved up to minus 2.4% and minus 2.2%, respectively. The capital expenditures index continued to bounce around in the same low or slightly negative range since February; the July reading was minus 2.4%."

— Markham Watson

After fires, New York governor launches group focused on lithium-ion battery safety

- Fire July 27 at solar-plus-storage facility
- Followed June 26 incident at two other sites

With concern over the safety of lithium-ion batteries growing after three mishaps at energy storage facilities across New York, Governor Kathy Hochul Aug. 1 launched a working group to inspect such sites and ensure local communities can respond adequately in case of future incidents.

Hochul announced the move after at least three fires or overheating incidents at battery storage sites operated by Convergent Energy & Power. The most recent was a fire that erupted July 27 at a Convergent solar-plus-storage facility in Chaumont, near the Canadian border. That followed a June 26 incident in which fire alarms went off at two Convergent battery sites in the Orange County town of Warwick, with one of those facilities experiencing a fire that smoldered for several days.

"Following multiple fire safety incidents across New York, I've directed state agencies to immediately form the Inter-Agency Fire Safety Working Group to mobilize the personnel and resources necessary to keep New Yorkers safe," Hochul said in a statement. "The working group will collaborate with first responders and local leaders to identify best practices, address potential risks to public safety, and ensure energy storage sites across New York are safe and effective."

Convergent does not yet know the cause of the latest fire, according to a statement from a company representative.

"On Thursday, July 27 at approximately 1:00 p.m. we learned that a battery storage system that Convergent operates, manufactured by General Electric Co. (GE), located at a solar farm in Chaumont, New York, experienced a fire," the company said. "Members of our engineering team have been on-site and advising first responders."

"An investigation has been initiated and a root cause analysis will be performed to identify the causes of this incident," it continued. "While it is too early to report findings, we will provide updates as they become available to the extent possible."

In a June 29 update about the earlier Warwick incidents, the company said the issues at both sites occurred in Centipede modular battery systems manufactured by Powin.

Ambitious decarbonization agenda

The fires could complicate Hochul's effort to deploy massive amounts of battery storage across New York as part of an ambitious decarbonization agenda. While the state's 2019 Climate Leadership and Community Protection Act set a goal of installing 3 GW of battery storage by 2030, Hochul has called for doubling that figure. To that end, the state Department of Public Service and the New York State Energy Research and Development Authority presented an energy storage roadmap in December, laying out possible policy options to meet the expanded target.

While Hochul's office said fires at energy storage locations "exceedingly rare," the governor called on the working group to investigate the recent fires and to examine safety standards to ensure local emergency responders are trained and equipped to handle such incidents.

The working group will be led by NYSERDA alongside the New York Department of State and the state's Division of Homeland Security and Emergency Services' Office of Fire Prevention and Control.

New York is not the only state wrestling with the issue of battery safety. In California, the Moss Landing battery storage system temporarily shut down after two separate incidents in the past few years. Arizona has seen more than one battery storage fire, with its most recent in 2022. And in Massachusetts, residents raised concerns earlier this year about fire risks at two battery storage systems there.

At the federal level, the Consumer Product Safety Commission is investigating the safety of lithium-ion batteries, including residential storage facilities and those used by electric bikes and scooters.

— Jason Fargo

Virginia finalizes RGGI carbon market repeal, but legal challenges are pending

- RGGI provided \$657 million for Virginia
- State law would be overturned by a rule

Virginia is set to withdraw from the Regional Greenhouse Gas Initiative, forfeiting tens of millions of dollars in quarterly revenue for coastal restoration and energy efficiency programs.

On July 31, the state published a final rule to leave the 11-state carbon market and was then notified that the measure will face opposition in court. The Southern Environmental Law Center said it will challenge the repeal in Fairfax Circuit Court on behalf of four Virginia environmental groups.

The rule goes into effect Aug. 30 after a final 30-day comment period. An earlier comment period showed that a vast majority of Virginians engaging on the issue support RGGI.

Republican Governor Glenn Youngkin has said since his 2021 campaign that the RGGI market is pushing up power bills in the state, calling it a “regressive tax on families and businesses” that does nothing to reduce carbon emissions.

Under Virginia’s RGGI law, utilities can recover market compliance costs from ratepayers — fees that remain a relatively small portion of their overall power bills. State regulators on July 12 granted a request by Dominion Energy Inc. to levy an additional fee of \$4.44 to cover the utility’s RGGI costs through Dec. 31, when it would no longer be required to purchase allowances.

Under the RGGI, power plants that generate at least 25 kWh of electricity must purchase allowances, or credits, that are equal to the greenhouse gas emissions they emit. The credits are sold at quarterly auctions and on a secondary market. Such a market mechanism can incentivize polluters to switch to cleaner generation sources to avoid such costs.

The RGGI has yielded \$657 million in proceeds for Virginia since the state joined in early 2021.

Critics of the governor’s decision to pull Virginia out of the RGGI said an administration cannot use a rule to undo a state law, in this case the 2020 Clean Energy and Community Flood Preparedness Act that authorized the state’s RGGI program.

The law accompanied Virginia’s sweeping Clean Economy Act, which requires utilities operating in the state to deliver 100% carbon-free electricity by 2050.

The Virginia legislature’s Joint Commission on Administrative Rules objected to the Youngkin administration’s RGGI repeal strategy in December 2022.

“There are some serious questions about the legal foundation that the administration is using here,” Mandy Warner, the Environmental Defense Fund’s Virginia director, said in an interview.

Meanwhile, Pennsylvania Governor Josh Shapiro’s administration is awaiting a ruling by the state Supreme Court on whether it will lift an injunction that has kept the state from participating in the RGGI.

S&P Global Commodity Insights reporter Karin Rives produces content for distribution on Capital IQ Pro.

— Karin Rives

Hydrogen

Hydrogen watchers on all sides of US tax credit debate warn of cost of inaction

- IRA awards up to \$3/kg of hydrogen
- Balancing flexibility and policy certainty

US hydrogen industry watchers are warning that policy uncertainty could be costly to the emerging sector as individual stakeholders debate which producers should qualify for clean energy incentives.

The Biden administration has “got to lay something down. There is a cost to inaction,” Jason Grumet, CEO of the American Clean Power Association, said at a July 31 panel on federal hydrogen policy. “But they need to lay something down that is confident, that people can rely on. These are 30-year investments in energy infrastructure; we’re not just making apps here.”

The US Treasury Department is nearing the deadline for draft guidance on the Inflation Reduction Act’s 45V tax credit program, which awards up to \$3/kilogram of hydrogen depending on the carbon footprint of its production. The IRS decision on how to measure that carbon footprint could determine whether a project can qualify for the federal subsidy, prompting a flurry of lobbying in recent months.

While industry members have argued that strict rules could stifle the nascent industry, environmental groups say a poorly defined policy would defeat the purpose of the tax credit, intended to spur a market for the fossil fuel alternative. A point of contention is how hydrogen producers source their electricity, which could have an outsized effect on a project’s lifecycle greenhouse gas emissions.

Congress gave Treasury until Aug. 16 to propose rules, but some industry members have said the guidance may not come until autumn.

The challenge is striking a balance between flexibility and the policy certainty that is necessary to drive investment in clean hydrogen, panelists said at the Washington event.

“If the industry does not believe that what Treasury’s saying is something that they can rely on and make these investments, then everyone’s going to continue to wait,” Grumet said.

Conversely, Nathan Iyer, an associate at the think tank formerly known as the Rocky Mountain Institute, cautioned that overly inclusive guidance could incentivize hydrogen production pathways that end up driving CO₂ emissions. “Now is Treasury going to pull that route and potentially topple over all the projects that depended on it? That’s not a good outcome,” he said during the panel.

One option is a “safe harbor” system with strict eligibility requirements for the tax credit that can be expanded as new hydrogen production pathways develop, Iyer said. An example is running a hydrogen production plant on curtailed renewable electricity, despite RMI’s call for a requirement that plants procure new clean power capacity.

“We know that’s clean power. It doesn’t necessarily come from new clean power or new clean capacity,” Iyer said. “But we know

there’s probably an option to make that work.”

Paul Wilkins, a government affairs specialist with Electric Hydrogen Co., agreed that Treasury should err on the side of higher environmental standards. The electrolyzer manufacturer has argued for strict additionality and time-matching rules.

“The reason that we have a level of confidence around the industry’s ability to meet those requirements is looking at some of the historical precedents out there,” Wilkins said. “The Clean Air Act Amendments of 1990 are the classic example of where a lot of industries said the sky was going to fall and costs were going to be too high. The rules came out and, lo and behold, industry and innovation and competition won the day and it’s one of the most successful environmental programs we have.”

S&P Global Commodity Insights reporter Siri Hedreen produces content for distribution on Capital IQ Pro.

— Siri Hedreen

Subscriber Notes

Platts proposes to use reported US NYISO electric behind-the-meter solar generation RPI data

Platts, part of S&P Global Commodity Insights, proposes to start using actual behind-the-meter solar data for the calculation of its Renewable Penetration Index for the US New York Independent System Operator (NYISO).

The change would be implemented starting on Sept. 15, 2023.

Platts is proposing this change to provide increased transparency of the solar penetration in the NYISO generation mix.

The change would allow Platts to publish solar RPI calculations for peak and off-peak, as well as data as reported by

the ISO for daily hours 1-24.

The change would affect the daily calculations published in Megawatt Daily, Energy Trader, on Platts real-time fixed pages PEA 904, AGP 2904, on Platts Dimensions Pro, and in the Platts price database under the following codes:

Solar % - Peak	RPNSP00
Solar % - Off-peak	RPNSO00
NYISO RPI Solar Hour 1	RPNSC01
NYISO RPI Solar Hour 2	RPNSC02
NYISO RPI Solar Hour 3	RPNSC03
NYISO RPI Solar Hour 4	RPNSC04
NYISO RPI Solar Hour 5	RPNSC05
NYISO RPI Solar Hour 6	RPNSC06
NYISO RPI Solar Hour 7	RPNSC07
NYISO RPI Solar Hour 8	RPNSC08
NYISO RPI Solar Hour 9	RPNSC09
NYISO RPI Solar Hour 10	RPNSC10
NYISO RPI Solar Hour 11	RPNSC11
NYISO RPI Solar Hour 12	RPNSC12
NYISO RPI Solar Hour 13	RPNSC13
NYISO RPI Solar Hour 14	RPNSC14
NYISO RPI Solar Hour 15	RPNSC15
NYISO RPI Solar Hour 16	RPNSC16
NYISO RPI Solar Hour 17	RPNSC17
NYISO RPI Solar Hour 18	RPNSC18
NYISO RPI Solar Hour 19	RPNSC19
NYISO RPI Solar Hour 20	RPNSC20
NYISO RPI Solar Hour 21	RPNSC21
NYISO RPI Solar Hour 22	RPNSC22
NYISO RPI Solar Hour 23	RPNSC23
NYISO RPI Solar Hour 24	RPNSC24

Please send comments, questions, and other feedback to powerpricing@spglobal.com and pricegroup@spglobal.com by Aug. 11, 2023.

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.

Emissions markets

Emissions Markets, Jul 27 (Current Year Vintage)

	Symbol	Close	Change
RGGI Current Month Strip (\$/Allowance)	ARJAF00	13.850	0.150
RGGI Next Month Strip (\$/Allowance)	ARJAG00	13.880	0.120
RGGI Next December Strip (\$/Allowance)	ARECA04	14.170	0.110
CCA Current Month Strip (\$/Allowance)	ARJAH00	34.100	0.380
CCA Next Month Strip (\$/Allowance)	ARJAI00	34.290	0.390
CCA Next December Strip (\$/Allowance)	ARECB04	35.040	0.370
CCO Current Month Strip (\$/mt)	ARJAJ00	19.000	0.000
CCO Next Month Strip (\$/mt)	ARJAK00	19.550	-0.150
CCO Next December Strip (\$/mt)	ARECC04	19.750	-0.250

REC markets

Renewable Energy Certificate Markets, Jul 27 (\$/MWh)

	Symbol	Close	Change
RECs Current Year Vintage*			
Connecticut REC Class 1	RECCTC1	39.500	0.100
Massachusetts REC Class 1	RECMAC1	39.250	0.250
Maine REC Class 1	ARFAQ00	35.500	0.250
New Hampshire REC Class 1	ARFAV00	39.000	0.500
Rhode Island REC Existing	ARGAB00	10.850	0.000
Rhode Island REC New	ARGAC00	39.000	0.500
Vermont REC Tier 1	ARGAG00	NA	NA
NEPOOL REC Dual Qualified Class 1	ARHAA00	39.500	0.150
Maryland REC Tier 1	RECMDT1	31.750	0.100
New Jersey REC Class 1	RECNET1	34.300	-0.150
New Jersey REC Class 2	AREAW00	37.250	0.000
Pennsylvania AEC Tier 1	RECPAT1	34.150	-0.150
Ohio non-Solar REC	RECOHI0	7.650	0.250
DC REC Tier 1	ARGA000	26.000	0.500
Delaware REC Tier 1	ARGAS00	NA	NA
Virginia non-Solar REC	ARGAW00	35.000	-1.000
PJM Tri-Qualified REC Tier 1	ARHAD00	34.400	-0.100
Texas non-Solar Compliance REC	RECTX00	2.300	0.050
Texas Green-e Eligible Wind REC	ARFAI00	2.300	0.050
Michigan non-Solar REC	ARFAM00	2.750	0.000
New York REC Tier 1	ARGAK00	29.500	0.500
New York Wind REC	ARGAM00	21.750	0.000
M-RETS Compliance REC from CRS Listed Facilities FH	ARHAF00	2.300	0.200
M-RETS Compliance REC from CRS Listed Facilities BH	ARHAG00	2.650	0.000
NAR Any REC	ARHAI00	2.200	0.050
NAR Any Green-e Eligible REC	ARHAK00	2.200	0.050
NAR Green-e Eligible Wind REC	ARHAN00	2.200	0.050
California Bundled REC Bucket 1	RECCAB1	49.000	0.000
California Bundled REC Bucket 2	RECCAB2	31.000	0.000
California Bundled REC Bucket 3	RECCAB3	5.750	0.000
National Green-e Certified REC Any Technology	RECUSAV	2.450	0.050
National Green-e Certified Wind	RECUSWV	2.450	0.050
Solar RECs Current Year Vintage*			
Massachusetts SREC 1	RECMAS0	322.000	0.500
Massachusetts SREC 2	ARHAW00	265.000	-2.000
Maryland SREC	RECMDS0	59.500	0.000
New Jersey SREC	RECNETS0	219.000	1.000
Pennsylvania SAEC	RECPAS0	36.500	-2.500
Ohio SREC	RECOHSI	7.500	0.500
DC SREC	ARIAL00	430.000	2.000
Delaware SREC Class 1	ARIA000	NA	NA
Virginia In-State SREC \<1MW	ARIAX00	45.000	0.000
Texas SREC	ARIAR00	2.700	0.000
Texas Compliance SREC from CRS Listed Facilities	ARIAT00	2.700	0.000
New York SREC	ARIAE00	NA	NA
NAR SREC	ARJAA00	2.550	0.050
NAR SREC CRS Listed	ARJAC00	2.550	0.050

*Prices are for the value of the environmental attribute of the renewable energy certificate only and do not include energy. Additional pricing for California Bundled RECs, National Voluntary RECs, additional Classes/Tiers, and Prior and Next year Vintages can be found on <https://dimensionspro.spglobal.com/>.

I-REC markets

Platts Global I-RECs Assessments

	BRL/MWh	Brazil USD/MWh	Eur/MWh
Hydro			
Previous Year	0.660	0.138	0.125
Current Year	0.810	0.169	0.154
Wind			
Previous Year	0.940	0.196	0.179
Current Year	1.200	0.250	0.228
Solar			
Previous Year	0.940	0.196	0.179
Current Year	1.200	0.250	0.228
Biomass			
Previous Year	0.590	0.123	0.112
Current Year	0.730	0.152	0.139

Turkey	
Eur/MWh	USD/MWh
0.270	0.296
0.350	0.384
0.500	0.548
0.600	0.658
0.500	0.548
0.600	0.658
0.240	0.263
0.310	0.340

India		
INR/MWh	USD/MWh	Eur/MWh
49.000	0.596	0.543
65.000	0.790	0.720

Global Bitcoin Quarq Spreads

Spot European, July 31 (\$/MWh)

Nordics, Germany, France, Spain

	Spread	Renewable-Hydro	Renewable-Wind	Renewable-Solar
NO1	61.97	54.93	54.95	54.95
NO2	30.40	23.36	23.39	23.39
NO3	62.23	55.20	55.22	55.22
NO4	74.26	67.22	67.25	67.25
NO5	61.97	54.93	54.95	54.95
SE1	61.77	54.73	54.75	54.75
SE2	61.77	54.73	54.75	54.75
SE3	61.77	54.73	54.75	54.75
SE4	61.77	54.73	54.75	54.75
FI	40.41	33.37	33.40	33.40
DK1	23.62	16.58	16.60	16.60
DK2	23.53	16.49	16.52	16.52
Systemwide	57.69	50.65	50.67	50.67
Germany	19.90	12.87	12.89	12.89
France	21.69	14.65	14.67	14.67
Spain	0.11	-6.93	-6.91	-6.91

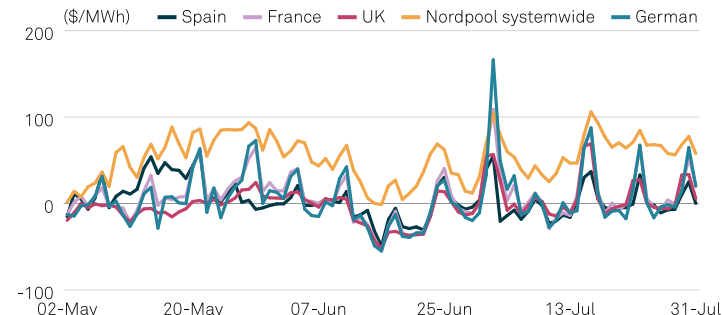
United Kingdom

	Spread	Renewable-Non-Biomass	Renewable-Biomass
GB	5.73	-7.77	-6.87

Spot North American, July 31 (\$/MWh)

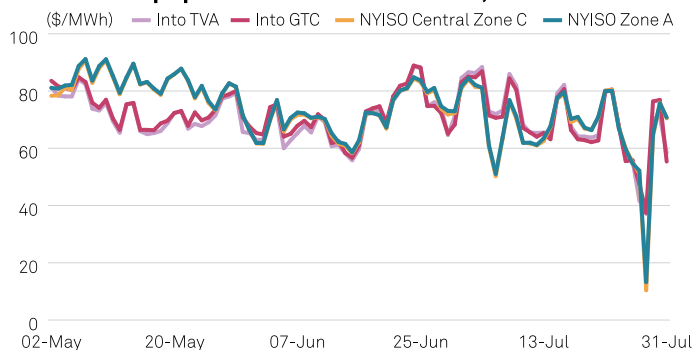
	Spread	Renewable-Any Tech	Renewable-Solar
Texas			
ERCOT AEN Zone	-61.52	-63.97	-64.22
ERCOT Bus Average	-58.74	-61.19	-61.44
ERCOT CPS Zone	-63.49	-65.94	-66.19
ERCOT Houston Zone	-58.93	-61.38	-61.63
ERCOT Hub Average	-58.75	-61.20	-61.45
ERCOT LCRA Zone	-61.72	-64.17	-64.42
ERCOT North Zone	-61.04	-63.49	-63.74
ERCOT Rayburn Zone	-62.78	-65.23	-65.48
ERCOT South Zone	-51.09	-53.54	-53.79
ERCOT West Zone	-62.99	-65.44	-65.69
Midwest			
SPP North Hub	69.74	67.29	67.04
SPP South Hub	55.81	53.36	53.11
Georgia			
Into GTC	55.36	52.91	52.66
Kentucky			
Into TVA	58.36	55.91	55.66
Indiana Hub	66.34	63.89	63.64
New York			
NYISO Zone A	70.73	68.28	68.03
NYISO Zone C	70.42	67.97	67.72
NYISO Zone D	71.58	69.13	68.88
NYISO Zone E	70.06	67.61	67.36
California			
CAISO NP16 Gen Hub	29.87	27.42	27.17
CAISO SP15 Gen Hub	-0.33	-2.78	-3.03
Washington			
Mid-Columbia	4.73	2.28	2.03

Bitcoin Quarq spreads Nordics vs Germany, UK, France, Spain Spot baseload



Source: S&P Global Commodity Insights

Bitcoin Quarq Spread NYISO vs Into GTC, Into TVA



Source: S&P Global Commodity Insights

Renewable Capture Prices

Renewable Capture Price Indexes (\$/MWh)

Date: 30-Jul*

Index	Symbol	Current	Previous
CAISO			
CAISO NP15 Gen Hub Solar	ACPIC00	50.12	54.96
CAISO NP15 Gen Hub Wind	ACPIA00	57.59	62.61
CAISO SP15 Gen Hub Solar	ACPID00	79.99	76.86
CAISO SP15 Gen Hub Wind	ACPIB00	92.29	113.07
CAISO ZP26 Gen Hub Solar	ACPIE00	45.33	50.44
ERCOT			
ERCOT North Hub Solar	ACPIL00	70.81	59.92
ERCOT North Zn Weighted Average LMP Wind	ACPII00	30.27	23.37
ERCOT South Hub Solar	ACPIN00	67.39	56.82
ERCOT South Zn Weighted Average LMP Wind	ACPIK00	25.41	10.91
ERCOT West Hub Solar	ACPIM00	71.16	60.11
ERCOT West Zn Weighted Average LMP Wind	ACPIJ00	34.23	23.47
ISONE			
ISONE Internal Hub Solar	ACPX00	25.42	52.33
ISONE Internal Hub Wind	ACPX00	27.94	48.51
MISO			
MISO Indiana Hub Solar	ACPIT00	34.85	43.04
MISO Indiana Hub Wind	ACPIR00	30.41	32.90
MISO Louisiana Hub Solar	ACPIU00	36.78	37.16
MISO Minnesota Hub Solar	ACPI00	35.41	45.87
MISO Minnesota Hub Wind	ACPIQ00	25.19	30.88
NYISO			
NYISO Hudson Valley Zone Wind	ACPXB00	28.46	55.23
NYISO West Zone Wind	ACPXC00	27.21	42.13
PJM*			
PJM Dominion Hub Solar	ACPXA00	141.12	50.98
PJM Dominion Hub Wind	ACPIX00	104.52	44.62
PJM Northern Illinois Hub Solar	ACPIZ00	151.57	51.72
PJM Northern Illinois Hub Wind	ACPIW00	65.23	43.29
PJM Western Hub Solar	ACPIY00	152.06	51.10
PJM Western Hub Wind	ACPIV00	92.80	43.84
SPP			
SPP North Hub Wind	ACPIO00	30.28	28.31
SPP South Hub Wind	ACPIP00	30.67	28.53

*Data is lagged 1 day, PJM data is lagged 4 days

Source: S&P Global Commodity Insights

US Renewable Capture Prices continue sliding except in SPP, ERCOT

- CAISO, MISO, Northeast slide with steady-to-lower demand
- ERCOT demand, lower generation support higher prices

Wind and solar Renewable Capture Prices continued sliding July 30 in the California, Midcontinent, New England and New York Independent System Operators as demand remained steady to weaker.

In the CAISO NP15 and ZP26 generation hubs, solar capture prices decreased by 8.81% and 10.13%, while it increased by 4.07% in the SP15 hub. MISO Indiana, Louisiana and Minnesota capture prices settled in the \$30s, with the exception of the Minnesota Hub Wind price, which was down to near \$25.25/MWh. In the Northeast ISOs, capture prices were down between \$14 and \$27.

Capture prices slide in ERCOT, SPP

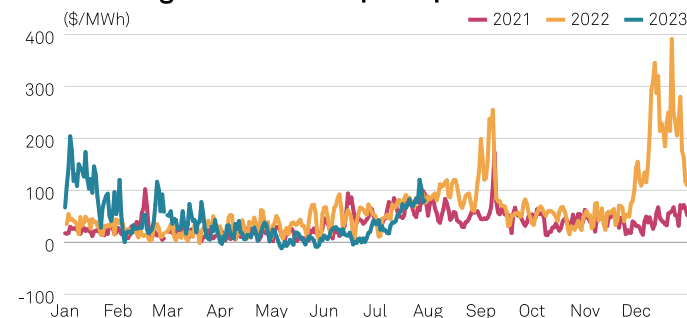
Meanwhile, Electric Reliability Council of Texas and Southwest Power Pool peakload demand increased, pushing up capture prices. SPP reported its peakload demand rising 3.05% even as the average daily temperature cooled off 3.5 degrees Fahrenheit into the low 80s F. ERCOT average temperature remained in the high 80s, however, even gaining 0.7 F to reach 89.4 F.

Lifted by demand as well as lower wind generation, ERCOT Wind Weighted Average Locational Marginal Prices increased up to 132.91% in the South Zone while North, South and West Hub solar capture prices all increased about 18.39%. At the same time, SPP North and South Hub Wind capture prices were up about \$2. Conversely, SPP wind curtailments were higher by about 1.11 GWh, according to Platts Renewable Curtailment Index.

Platts is part of S&P Global Commodity Insights.

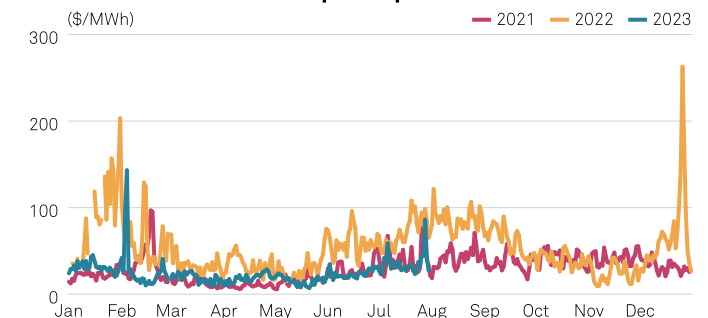
— Nicole Baquerizo

CAISO SP15 gen hub solar capture price



Source: S&P Global Commodity Insights

NYISO west zone wind capture price



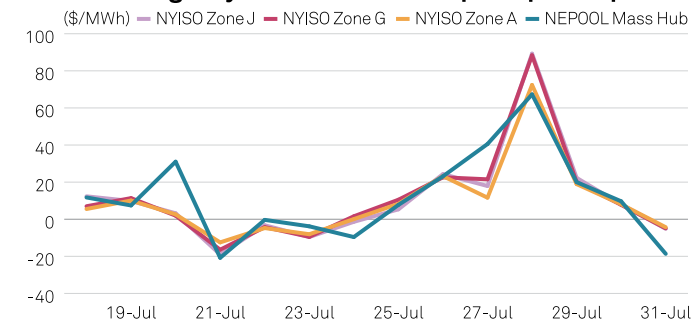
Source: S&P Global Commodity Insights

Northeast Power Markets

Northeast day ahead power prices (\$/MWh)

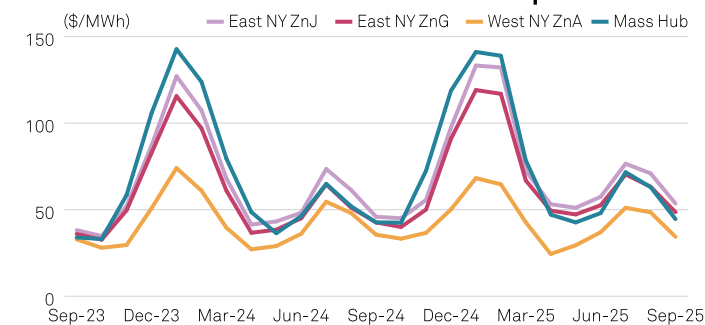
Hub/Index	Symbol	02-Aug	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly change			
				@7K	@12K	Chg	% Chg				Aug-23	Aug-22	Chg	% Chg
On-Peak														
ISONE Internal Hub	IINIM00	28.66	18196	17.63	9.76	-3.69	-11.4	58.53	28.66	32.35	30.51	110.17	-79.66	-72.3
ISONE NE Mass-Boston	IINN00	29.26	18575	18.23	10.36	-3.82	-11.5	59.34	29.26	33.08	31.17	110.88	-79.71	-71.9
ISONE Connecticut	IINC00	27.86	12408	12.14	0.92	-3.70	-11.7	57.43	27.86	31.56	29.71	108.70	-78.99	-72.7
NYISO Zone G	INYHM00	29.21	13010	13.49	2.27	1.86	6.8	58.10	27.35	29.21	28.28	113.94	-85.66	-75.2
NYISO Zone J	INYNM00	29.78	27701	22.25	16.88	1.82	6.5	61.97	27.96	29.78	28.87	117.92	-89.05	-75.5
NYISO Zone A	INYWM00	27.61	23200	19.28	13.33	1.51	5.8	50.59	26.10	27.61	26.86	98.53	-71.67	-72.7
NYISO Zone F	INYCM00	28.62	26626	21.10	15.72	2.02	7.6	64.10	26.60	28.62	27.61	121.79	-94.18	-77.3
Off-Peak														
ISONE Internal Hub	IINIP00	22.23	14111	11.20	3.33	-7.81	-26.0	34.43	22.23	30.04	26.14	78.31	-52.17	-66.6
ISONE NE Mass-Boston	IINNP00	22.72	14428	11.70	3.82	-8.15	-26.4	34.85	22.72	30.87	26.80	78.99	-52.19	-66.1
ISONE Connecticut	IINCP00	21.35	9510	5.63	-5.59	-7.22	-25.3	33.68	21.35	28.57	24.96	76.45	-51.49	-67.3
NYISO Zone G	INYHP00	20.86	9293	5.15	-6.08	1.09	5.5	31.44	19.77	20.86	20.32	74.71	-54.39	-72.8
NYISO NYC Zone	INYNP00	21.15	19674	13.62	8.25	1.15	5.8	31.92	20.00	21.15	20.58	76.44	-55.86	-73.1
NYISO West Zone	INYWP00	19.63	16492	11.30	5.35	0.29	1.5	28.61	19.34	19.63	19.49	67.15	-47.66	-71.0
NYISO Capital Zone	INYCP00	20.81	19356	13.28	7.91	1.24	6.3	32.21	19.57	20.81	20.19	76.80	-56.61	-73.7

Northeast avg. day-ahead/real-time peak price spread



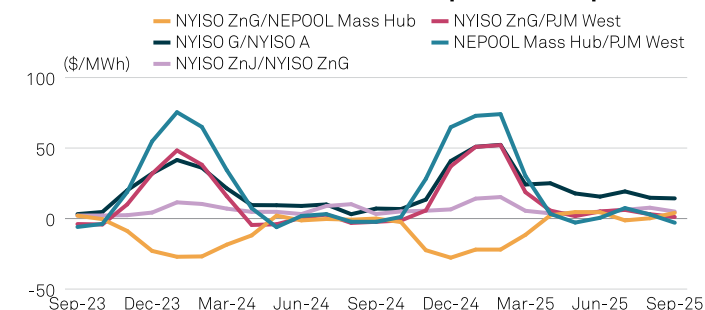
Sources: S&P Global Commodity Insights, NYISO, ISONE

Northeast Platts M2MS forward curve: on-peak



Source: S&P Global Commodity Insights

Northeast Platts M2MS locational spreads: on-peak



Source: S&P Global Commodity Insights

US Northeast power dailies rangebound amid increased demand

On the Intercontinental Exchange, Mass Hub day-ahead on-peak ticked down about \$1.50 from the previous settlement of about \$32.25/MWh to trade near \$31/MWh. Off-peak prices had an offer at \$27/MWh and a bid at \$23/MWh which were different from the previous settlement of \$24.50/MWh.

Conversely, in the New York System Operator footprint, locational marginal prices ticked up, with Zone G Hudson Valley and Zone J New York City rising about \$1.75 to near \$29.25/MWh and \$29.75/MWh, respectively. Zone A West traded up about \$1.50 to near \$27.50/MWh. Off-peak prices also inched higher and averaged about 75 cents higher, with the mean trading near \$10.75/MWh.

Temperatures and Demand

New York City and Boston were forecast moderate regional temperatures. New York City temperatures were forecast to reach a high near 78 degrees Fahrenheit and Boston temperatures were forecast to reach a high near 77 F, according to the US National Weather Service. Prices followed demand fundamentals, as NYISO peakload demand rose 1% to reach 20.74 GW. ISO-New England prices opposed demand fundamentals as peakload demand increased 4.10% to 16.50 GW.

Natural Gas and Forwards

Spot natural gas prices for Algonquin city-gates increased about 25 cents from the previous settlement to reach about \$1.50/MMBtu. Transco Zone 6 NY had an offer near \$1.25/MMBtu and a bid near \$1/MMBtu, which varied from the previous settlement of about \$1.25/MMBtu. In the forwards market, NEPOOL on-peak prices for August delivery settled near the weighted average price of \$39.25/MWh on ICE, compared with the prior price of about \$41.75/MWh. Peak prices for September delivery traded near \$33.75/MWh, relatively steady on the day.

Platts is part of S&P Global Commodity Insights.

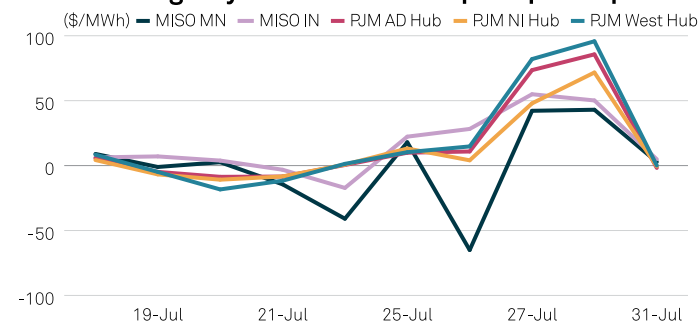
— Madeline Ryan

PJM/MISO Power Markets

PJM/MISO day ahead power prices (\$/MWh)

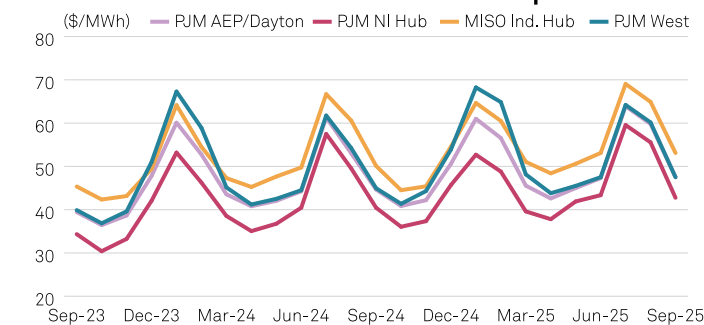
Hub/Index	Symbol	02-Aug	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly Change			
				@7K	@12K	Chg	% Chg				Aug-23	Aug-22	Chg	% Chg
On-Peak														
PJM AEP Dayton Hub	IPADM00	32.59	14882	17.26	6.31	-5.32	-14.0	61.97	32.59	37.91	35.25	109.04	-73.79	-67.7
PJM Dominion Hub	IPDMM00	34.27	12694	15.37	1.87	-6.76	-16.5	66.97	34.27	41.03	37.65	120.92	-83.27	-68.9
PJM Eastern Hub	IPEHM00	21.47	19174	13.63	8.03	-1.65	-7.1	78.60	21.47	23.12	22.30	124.31	-102.01	-82.1
PJM Northern Illinois Hub	IPNIM00	32.80	14643	17.12	5.92	-5.22	-13.7	63.46	32.80	38.02	35.41	104.75	-69.34	-66.2
PJM Western Hub	IPWHM00	32.21	28757	24.37	18.77	-5.52	-14.6	67.28	32.21	37.73	34.97	113.81	-78.84	-69.3
MISO Indiana Hub	IMIDM00	38.89	17359	23.21	12.01	1.74	4.7	60.78	37.15	38.89	38.02	117.47	-79.45	-67.6
MISO Minnesota Hub	IMINM00	49.75	22666	34.39	23.41	8.17	19.6	60.02	41.58	49.75	45.67	83.37	-37.70	-45.2
Off-Peak														
PJM AEP Dayton Hub	IPADP00	17.54	8007	2.21	-8.75	-1.94	-10.0	21.99	17.54	19.48	18.51	64.68	-46.17	-71.4
PJM Dominion Hub	IPDMP00	18.64	6902	-0.26	-13.77	-1.94	-9.4	23.19	18.64	20.58	19.61	68.34	-48.73	-71.3
PJM Eastern Hub	IPEHP00	12.16	10858	4.32	-1.28	-1.73	-12.5	18.61	12.16	13.89	13.03	65.80	-52.77	-80.2
PJM Northern Illinois Hub	IPNIP00	17.02	7598	1.34	-9.86	-1.93	-10.2	21.39	17.02	18.95	17.99	60.96	-42.97	-70.5
PJM Western Hub	IPWHP00	17.09	15261	9.25	3.65	-2.07	-10.8	21.31	17.09	19.16	18.13	65.82	-47.69	-72.5
MISO Indiana Hub	IMIDP00	21.77	9718	6.09	-5.11	0.78	3.7	26.79	20.99	21.77	21.38	74.51	-53.13	-71.3
MISO Minnesota Hub	IMINP00	21.75	9907	6.38	-4.60	2.32	11.9	24.99	19.43	21.75	20.59	46.28	-25.69	-55.5

PJM/MISO avg. day-ahead/real-time peak price spread



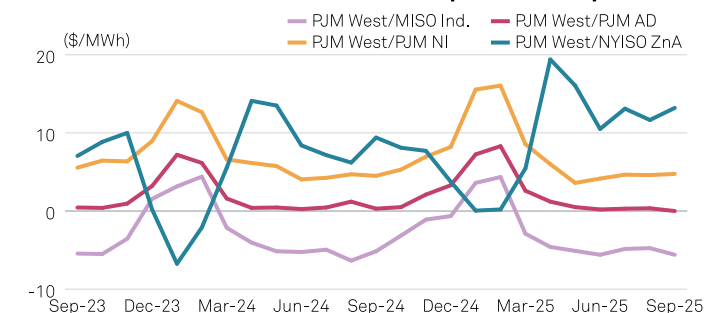
Sources: S&P Global Commodity Insights, PJM, MISO

PJM/MISO Platts M2MS forward curve: on-peak



Source: S&P Global Commodity Insights

PJM/MISO Platts M2MS locational spreads: on-peak



Source: S&P Global Commodity Insights

US PJM power follows natural gas down as SPP extends resources advisory

Spot power in the PJM Interconnection trended bearish on the Intercontinental Exchange during Aug. 1 trading, following falling regional natural gas prices, with Texas Eastern M3 sliding around 7 cents on ICE from Platts' assessed Aug. 1 price to \$1.11/MMBtu for next-day Aug. 2 flows.

West Hub day-ahead on-peak shed around \$2.25 to price about \$35.50/MWh and its real-time peak contract declined some \$5 to approximately \$34/MWh for Aug. 2 delivery.

The National Weather Service forecast high temperatures in Pittsburgh to rise 4 degrees Aug. 1 to Aug. 2 to 83 Fahrenheit.

On warmer temperatures, the regional transmission operator expected a 2.8% increase in its systemwide peakload demand from the day before to 123.6 GW Aug. 2.

West Hub weekend off-peak Aug. 5-6 dropped 75 cents to \$36.25/MWh, while AD Hub rose \$5.75 to also price at \$36.25/MWh.

SPP alerts

The Southwest Power Pool extended a Resource Advisory already in effect through Aug. 4 due to "high loads, variable energy resource forecast uncertainty and resource outages." A concurrent Hot Weather Advisory also remained in place until Aug. 2.

North Hub day-ahead peak tumbled about \$32.75 to \$47.50/MWh, while the corresponding South Hub contract rose about 50 cents to price at \$54/MWh for Aug. 2 delivery.

The balancing authority forecast Aug. 2 demand would be flat on the day at 51.2 GW and expected wind generation to rise 4.6% from the day before to 337.6 GWh.

The weather service forecast Omaha highs at 87 F and Tulsa highs at 103 F Aug. 2.

Platts is part of S&P Global Commodity Insights.

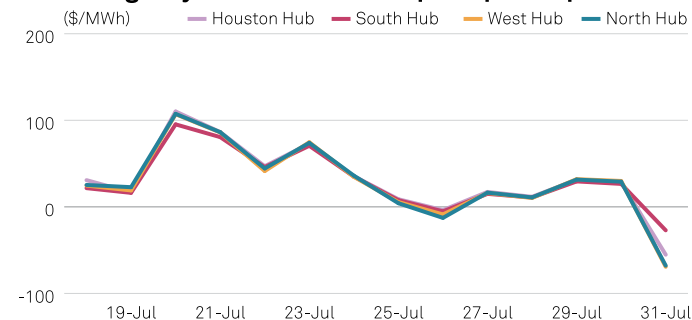
— Karen Rivera

Southeast Power Markets

Southeast & Central day-ahead power prices (\$/MWh)

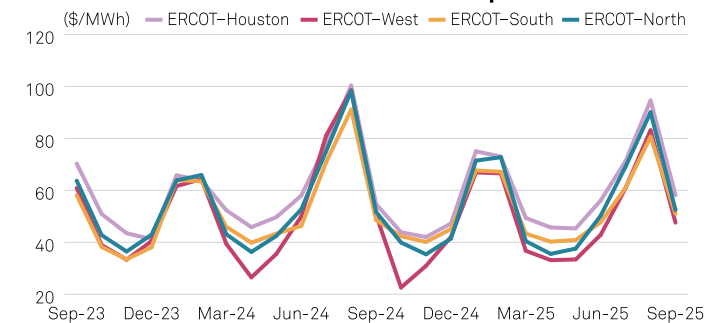
Hub/Index	Symbol	02-Aug	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly change			
				@7K	@12K	Chg	% Chg				Aug-23	Aug-22	Chg	% Chg
On-Peak														
MISO Texas Hub	IMTXM00	44.28	19857	28.67	17.52	-3.67	-7.7	45.02	44.28	47.95	46.12	89.73	-43.61	-48.6
MISO Louisiana	IMLAM00	38.59	16421	22.14	10.39	0.05	0.1	40.86	38.54	38.59	38.57	90.39	-51.82	-57.3
SPP North Hub	ISNOM00	42.45	19340	27.09	16.11	-1.36	-3.1	59.57	42.45	43.81	43.13	99.63	-56.50	-56.7
SPP South Hub	ISSOM00	62.64	29135	47.59	36.84	7.86	14.3	50.46	54.78	62.64	58.71	115.77	-57.06	-49.3
ERCOT Houston Hub	IERHM00	75.71	33724	60.00	48.77	-1.70	-2.2	84.55	75.71	77.41	76.56	117.95	-41.39	-35.1
ERCOT North Hub	IERNM00	75.00	33631	59.39	48.24	0.00	0.0	84.42	75.00	75.00	75.00	119.72	-44.72	-37.4
ERCOT South Hub	IERSM00	71.12	32925	56.00	45.20	-3.02	-4.1	80.53	71.12	74.14	72.63	112.25	-39.62	-35.3
ERCOT West Hub	IERWM00	73.73	33362	58.26	47.21	-0.85	-1.1	84.76	73.73	74.58	74.16	118.24	-44.08	-37.3
Off-Peak														
MISO Texas Hub	IMTXP00	21.75	9753	6.14	-5.01	0.42	2.0	24.60	21.33	21.75	21.54	65.80	-44.26	-67.3
MISO Louisiana	IMLAP00	21.75	9253	5.30	-6.46	0.67	3.2	23.81	21.08	21.75	21.42	65.96	-44.54	-67.5
SPP North Hub	ISNOP00	16.79	7649	1.42	-9.55	1.43	9.3	24.00	15.36	16.79	16.08	47.71	-31.63	-66.3
SPP South Hub	ISSOP00	15.28	7106	0.23	-10.52	-0.61	-3.8	21.56	15.23	15.89	15.59	59.67	-44.08	-73.9
ERCOT Houston Hub	IERHP00	23.12	10298	7.40	-3.82	-0.28	-1.2	22.29	23.12	23.40	23.26	62.92	-39.66	-63.0
ERCOT North Hub	IERNP00	22.39	10040	6.78	-4.37	-0.33	-1.5	21.62	22.39	22.72	22.56	62.87	-40.31	-64.1
ERCOT South Hub	IERSP00	23.51	10882	8.39	-2.42	-0.27	-1.1	22.64	23.51	23.78	23.65	62.82	-39.17	-62.4
ERCOT West Hub	IERWP00	24.44	11058	8.97	-2.08	-0.15	-0.6	23.69	24.44	24.59	24.52	62.79	-38.27	-60.9

ERCOT avg. day-ahead/real-time peak price spread



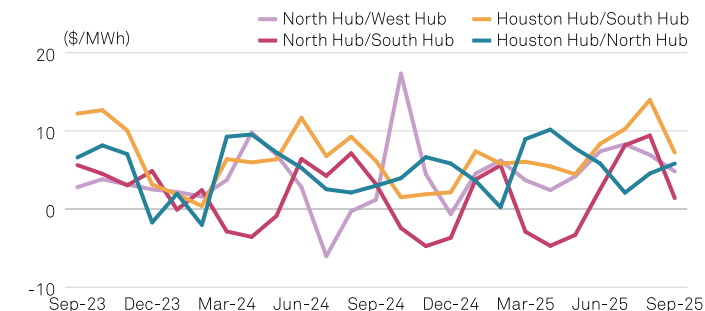
Sources: S&P Global Commodity Insights, ERCOT

ERCOT Platts M2MS forward curve: on-peak



Source: S&P Global Commodity Insights

ERCOT Platts M2MS locational spreads: on-peak



Source: S&P Global Commodity Insights

US ERCOT power prices slump, but excessive heat remains

ERCOT North Hub day-ahead on-peak contract decreased about \$10 to price at roughly \$66/MWh during Aug. 1 trading for Aug. 2 delivery on the Intercontinental Exchange, as wind production was set to increase. The real-time peak contract decreased nearly \$6 to price about \$66.25/MWh.

The balance-of-the-week Aug. 3-4 contract increased about \$20 to price \$105/MWh during Aug. 1 trading.

Georgia Power said the first new US nuclear reactor since 2016 was producing electricity commercially as of July 31. The 1,114 MW Unit 3 reactor joins two existing reactors at Plant Vogtle.

ERCOT weather, renewables

ERCOT has issued an Operating Condition Notice for extreme hot weather, with temperatures forecast to be above 103 F in the Texas North Central and South Central weather zones from Aug. 3 to Aug. 7.

The National Weather Service issued heat advisory warnings in effect through 9 pm Aug. 2 for parts of Texas, stating dangerous heat will continue throughout the week.

ERCOT forecast total wind production to increase 2.8% from Aug. 1 levels to 326.43 GWh Aug 2. The grid operator forecast total solar production to decrease 1% from Aug. 1 levels to 136.16 GWh Aug. 2.

Record demand

ERCOT reported a peakload demand record of 83.05 GW July 31. The grid operator forecast peakload demand to decrease 1% from Aug. 1 levels of 84.9 GW to 84.08 GW Aug. 2, both of which would set records.

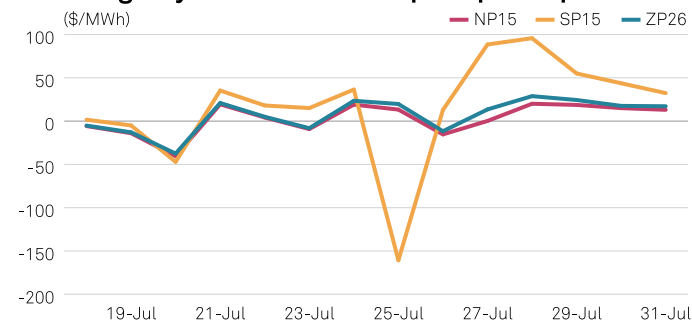
— Larry Flores

West Power Markets

Western day-ahead power prices (\$/MWh)

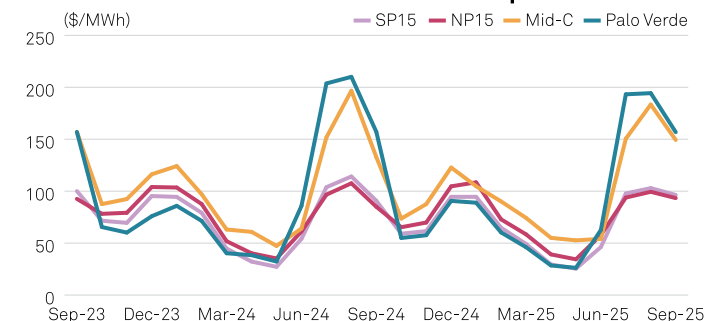
Hub/Index	Symbol	02-Aug	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly change			
				@7K	@12K	Chg	% Chg				Aug-23	Aug-22	Chg	% Chg
On-Peak														
NP15	ICNGM00	61.64	12158	26.15	0.80	1.59	2.6	64.46	60.05	61.64	60.85	102.52	-41.67	-40.6
SP15	ICSGM00	85.86	17776	52.05	27.90	-11.85	-12.1	122.90	85.86	97.71	91.79	110.86	-19.07	-17.2
ZP26	ICZGM00	61.79	12793	27.98	3.83	4.56	8.0	59.11	57.23	61.79	59.51	97.35	-37.84	-38.9
Off-Peak														
NP15	ICNGP00	52.09	10275	16.60	-8.75	-0.71	-1.3	57.93	52.09	52.80	52.45	87.46	-35.01	-40.0
SP15	ICSGP00	69.68	14428	35.87	11.73	-4.87	-6.5	78.60	69.68	74.55	72.12	86.74	-14.62	-16.9
ZP26	ICZGP00	53.55	11087	19.74	-4.41	-0.56	-1.0	58.29	53.55	54.11	53.83	84.90	-31.07	-36.6

CAISO avg. day-ahead/real-time peak price spread



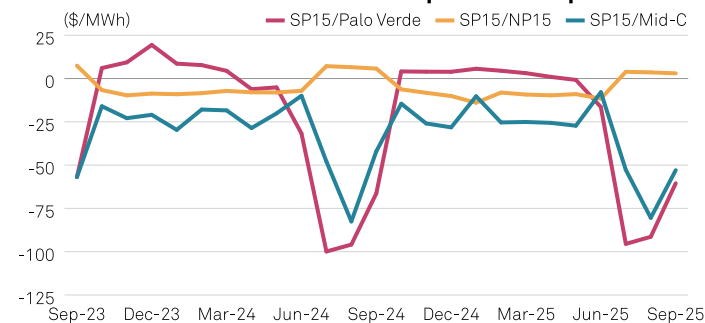
Sources: S&P Global Commodity Insights, CAISO

Western Platts M2MS forward curve: on-peak



Source: S&P Global Commodity Insights

Western Platts M2MS locational spreads: on-peak



Source: S&P Global Commodity Insights

US Western power dailies remain mixed with market fundamentals

Day-ahead power prices mostly declined across the California Independent System Operator and Desert Southwest region during Aug. 1 trading on the Intercontinental Exchange alongside regional natural gas prices and demand expectations.

SP15 on-peak for Aug. 2 delivery was valued around \$84.25/MWh, slipping almost \$7.75 from its previous settlement. Palo Verde day-ahead on-peak saw a \$9.50 decrease to price around \$104.50/MWh, and the off-peak package was down roughly \$2 to \$79/MWh.

SoCalGas city-gates traded 43 cents lower on the day at \$7.77/MMBtu for next-day flows, and Opal Kern River shed 4 cents to \$3.95/MMBtu.

Bearish fundamentals

The system operator estimated a 4.8% drop in its peakload demand to 36.65 GW Aug. 2, as CustomWeather forecast the ISO and Southwest's average daily temperature to ease to 70.2 F and 74.7 Fahrenheit, respectively.

Greater supply also put pressure as total generation output in the ISO footprint ramped up over 9% on the day to 798.77 GWh July 31 on the back of more than 28% higher gas-fired generation at 374.9 GWh.

Pacific Northwest

Conversely, spot power in the Pacific Northwest paced higher as wind supply in the Bonneville Power Administration slumped over 54% to 18.92 GWh July 31.

Mid-Columbia day-ahead on-peak leapt about \$18.50 on the day to trade around \$129.75/MWh, and the corresponding off-peak rose nearly \$8.75 to \$63.50/MWh.

In the hourly market, the Platts Mid-C on-peak hourly index for July 31 was up over 47% from the day-before price to \$117.67/MWh, and the off-peak index saw a 74% gain to \$64.91/MWh.

CustomWeather forecast the average daily temperatures in the region to remain steady on the day at 70.8 F.

— Grace Parker

Bilaterals

Southeast & Central day-ahead bilateral indexes (\$/MWh)

Hub/Index	Symbol	02-Aug	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly change			
				@7K	@12K	Chg	% Chg				Aug-23	Aug-22	Chg	% Chg
On-Peak														
Florida	AAMAV20	39.00	13198	18.32	3.54	-2.75	-6.6	57.54	39.00	41.75	40.38	122.00	-81.62	-66.9
GTC, Into	WAMCJ20	35.25	13558	17.05	4.05	-2.75	-7.2	55.12	35.25	38.00	36.63	121.22	-84.59	-69.8
Southern, Into	AAMBJ20	35.25	13558	17.05	4.05	-2.75	-7.2	52.82	35.25	38.00	36.63	117.72	-81.09	-68.9
TVA, Into	WEBAB20	36.25	16477	20.85	9.85	-1.75	-4.6	55.61	36.25	38.00	37.13	117.33	-80.20	-68.4
VACAR	AAMCI20	35.25	13056	16.35	2.85	-2.75	-7.2	55.96	35.25	38.00	36.63	117.85	-81.22	-68.9
Off-Peak														
Florida	AAMAO20	23.50	7953	2.82	-11.96	-0.25	-1.1	28.64	23.50	23.75	23.63	69.94	-46.31	-66.2
GTC, Into	WAMCC20	20.00	7692	1.80	-11.20	-0.33	-1.6	23.98	20.00	20.33	20.17	70.27	-50.10	-71.3
Southern, Into	AAMBC20	18.75	7212	0.55	-12.45	-0.25	-1.3	25.39	18.75	19.00	18.88	69.02	-50.14	-72.6
TVA, Into	AAJER20	18.75	8523	3.35	-7.65	-0.25	-1.3	25.39	18.75	19.00	18.88	68.74	-49.86	-72.5
VACAR	AAMCB20	18.75	6944	-0.15	-13.65	-0.25	-1.3	25.11	18.75	19.00	18.88	68.56	-49.68	-72.5

Western day-ahead bilateral indexes (\$/MWh)

Hub/Index	Symbol	02-Aug	Marginal heat rate	Spark spread		Price change		Prior 7-day Average	Month Min	Month Max	Yearly change			
				@7K	@12K	Chg	% Chg				Aug-23	Aug-22	Chg	% Chg
On-Peak														
Mid-C	WEABF20	124.72	31979	97.42	77.92	13.52	12.2	108.02	111.20	124.72	117.96	107.86	10.10	9.4
John Day	WEAHF20	123.25	31603	95.95	76.45	13.50	12.3	106.61	109.75	123.25	116.50	109.85	6.65	6.1
COB	WEABE20	115.00	29299	87.52	67.90	1.50	1.3	113.43	113.50	115.00	114.25	115.99	-1.74	-1.5
NOB	WEAIF20	120.00	30769	92.70	73.20	0.00	0.0	119.60	120.00	120.00	120.00	115.40	4.60	4.0
Palo Verde	WEACC20	104.00	13385	49.61	10.76	-9.88	-8.7	168.31	104.00	113.88	108.94	121.59	-12.65	-10.4
Mona	AARLQ20	111.56	28753	84.40	65.00	0.50	0.5	164.94	111.06	111.56	111.31	125.87	-14.56	-11.6
Four Corners	WEABI20	112.50	37688	91.60	76.68	-6.50	-5.5	174.07	112.50	119.00	115.75	125.68	-9.93	-7.9
Pinnacle Peak	WEAKF20	104.25	13417	49.86	11.01	-10.00	-8.8	168.61	104.25	114.25	109.25	121.60	-12.35	-10.2
Westwing	WEAJF20	102.75	13224	48.36	9.51	-10.00	-8.9	167.11	102.75	112.75	107.75	122.39	-14.64	-12.0
MEAD	AAMBW20	107.16	13792	52.77	13.92	-8.15	-7.1	175.59	107.16	115.31	111.24	129.32	-18.08	-14.0
Off-Peak														
Mid-C	WEACL20	63.93	16392	36.63	17.13	9.14	16.7	61.74	54.79	63.93	59.36	67.58	-8.22	-12.2
John Day	WEAHL20	61.50	15769	34.20	14.70	9.25	17.7	59.29	52.25	61.50	56.88	69.36	-12.48	-18.0
COB	WEACJ20	68.25	17389	40.78	21.15	9.25	15.7	66.68	59.00	68.25	63.63	73.82	-10.19	-13.8
NOB	WEAIL20	68.00	17436	40.70	21.20	9.00	15.3	71.07	59.00	68.00	63.50	73.67	-10.17	-13.8
Palo Verde	WEACT20	80.00	10296	25.61	-13.24	-1.00	-1.2	103.40	80.00	81.00	80.50	85.11	-4.61	-5.4
Mona	AARLO20	60.18	15510	33.02	13.62	-5.73	-8.7	87.42	60.18	65.91	63.05	76.89	-13.84	-18.0
Four Corners	WEACR20	66.50	22278	45.60	30.68	-17.50	-20.8	103.86	66.50	84.00	75.25	82.15	-6.90	-8.4
Pinnacle Peak	WEAKL20	80.25	10328	25.86	-12.99	-1.00	-1.2	103.64	80.25	81.25	80.75	79.86	0.89	1.1
Westwing	WEAJL20	80.75	10393	26.36	-12.49	-1.00	-1.2	104.14	80.75	81.75	81.25	79.61	1.64	2.1
MEAD	AAMBQ20	79.25	10199	24.86	-13.99	-0.75	-0.9	100.45	79.25	80.00	79.63	86.75	-7.12	-8.2

Platts M2MS Balance-of-the-month, AUG 1, (\$/MWh)

	Symbol	On-peak	Symbol	Off-peak		Symbol	On-peak	Symbol	Off-peak
Northeast					Southeast & Central				
Mass Hub	EMHTB00	40.74	EMHUB00	29.86	Southern Into	ESTTB00	45.36	ESTUB00	27.86
N.Y. Zone G	ENGTB00	40.57	ENGUB00	28.81	ERCOT North	ETNTB00	135.33	ETNUB00	52.52
N.Y. Zone J	ENJTB00	44.32	ENJUB00	30.21	ERCOT Houston	ETSTB00	133.58	ETSUB00	51.52
N.Y. Zone A	ENATB00	37.37	ENaub00	25.58	ERCOT West	ETWTB00	120.45	ETWUB00	55.16
Ontario*	EONTB00	37.97	EONUB00	29.31	ERCOT South	ETHTB00	115.78	ETHUB00	56.34
*Ontario prices are in Canadian dollars					Western				
PJM & MISO					Mid-C	EMCTB00	159.92	EMCUB00	80.78
PJM West	EPJTB00	45.97	EPJUB00	25.43	Palo Verde	EPVTB00	172.03	EPVUB00	101.22
AD Hub	EECTB00	45.29	EECUB00	25.68	Mead	EMDTB00	180.48	EMDUB00	106.58
NI Hub	ECETB00	41.59	ECEUB00	22.43	NP15	ENPTB00	84.79	ENPUB00	71.99
Indiana Hub	ECITB00	50.37	ECIUB00	28.13	SP15	ESPTB00	102.93	ES PUB00	72.27

Hourly Indices

System-wide renewable generation curtailments (MW)

	Symbol	31-Jul	30-Jul
Cal ISO Solar			
Local			
On-peak	CALSP00	116.12	111.79
Off-peak	CALS000	0.00	0.00
System			
On-peak	CASSP00	4.31	28.96
Off-peak	CASS000	0.00	0.00
Cal ISO Wind			
Local			
On-peak	CALWP00	0.72	0.96
Off-peak	CALW000	0.72	0.84
System			
On-peak	CASWP00	0.00	0.00
Off-peak	CASW000	0.00	0.00
SPP Wind			
On-peak	SPPWP00	885.47	780.60
Off-peak	SPPW000	9976.31	2989.92

Curtailment by hour (MW), Jul 31

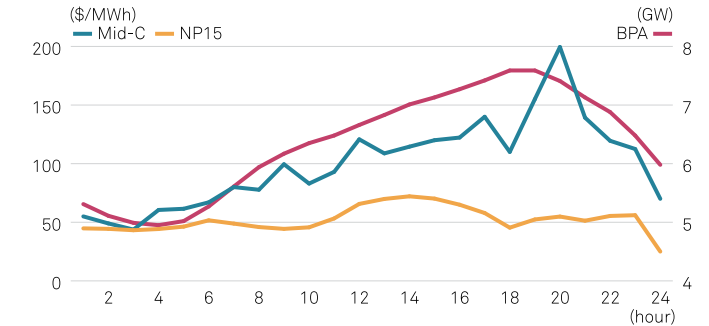
Hour	Cal ISO Solar		Cal ISO Wind		SPP Wind
	Local	System	Local	System	
1	0.00	0.00	0.18	0.00	1665.30
2	0.00	0.00	0.11	0.00	1525.54
3	0.00	0.00	0.68	0.00	1415.09
4	0.00	0.00	0.32	0.00	1067.52
5	0.00	0.00	0.00	0.00	920.84
6	0.00	0.00	0.00	0.00	655.48
7	0.31	0.00	0.00	0.00	123.53
8	0.87	0.00	0.00	0.00	0.00
9	5.62	0.00	0.00	0.00	0.00
10	10.57	0.00	0.00	0.00	0.00
11	14.57	0.00	0.00	0.00	2.47
12	17.18	1.62	0.00	0.00	0.00
13	17.10	0.42	0.55	0.00	0.06
14	17.05	0.00	0.00	0.00	22.28
15	11.74	2.27	0.00	0.00	81.85
16	10.35	0.00	0.00	0.00	105.77
17	3.92	0.00	0.00	0.00	93.31
18	5.27	0.00	0.00	0.00	29.70
19	1.57	0.00	0.00	0.00	3.90
20	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	3.19
22	0.00	0.00	0.17	0.00	419.41
23	0.00	0.00	0.00	0.00	1319.78
24	0.00	0.00	0.00	0.00	1406.76

Mid-C hourly bilateral indexes (\$/MWh)

	Symbol	31-Jul	Range	Deals	Volume (MW)
On-peak	MCRTP00	117.67	77.75-199.50	54	2527
Off-peak	MCRTO00	64.91	43.75-112.50	22	1253

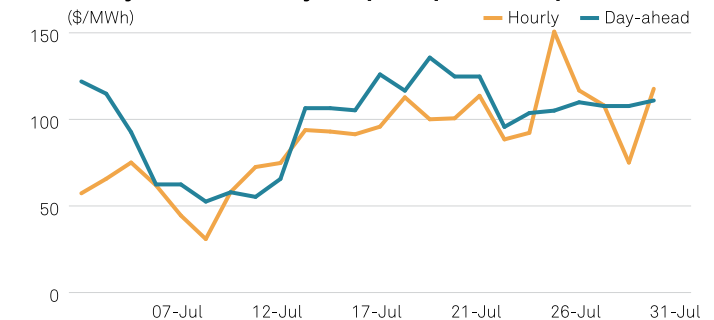
Hour	Symbol	31-Jul	Range	Deals	Volume (MW)	Jul-23 ending
1	MCRTH01	55.00	55.00-55.00	1	100	52.12
2	MCRTH02	49.00	30.00-55.00	3	144	49.03
3	MCRTH03	43.75	20.00-55.00	3	164	49.06
4	MCRTH04	60.50	45.00-70.00	5	227	48.94
5	MCRTH05	61.50	48.00-70.00	4	214	48.46
6	MCRTH06	67.00	48.00-80.00	5	304	51.07
7	MCRTH07	80.00	80.00-80.00	1	100	54.22
8	MCRTH08	77.75	70.00-80.00	2	130	56.90
9	MCRTH09	99.50	70.00-125.00	6	280	54.05
10	MCRTH10	83.00	70.00-90.00	4	185	56.38
11	MCRTH11	93.00	70.00-125.00	6	220	60.18
12	MCRTH12	120.75	85.00-125.00	3	235	65.14
13	MCRTH13	108.75	85.00-110.00	3	108	72.16
14	MCRTH14	114.50	110.00-115.00	2	57	75.64
15	MCRTH15	120.00	120.00-120.00	2	60	81.08
16	MCRTH16	122.25	122.25-122.25	1	50	88.72
17	MCRTH17	140.00	140.00-140.00	1	75	101.09
18	MCRTH18	110.00	110.00-110.00	1	73	112.19
19	MCRTH19	155.00	135.00-175.00	5	200	123.52
20	MCRTH20	199.50	135.00-240.00	8	438	129.23
21	MCRTH21	139.25	126.00-160.00	5	185	115.69
22	MCRTH22	119.50	100.00-126.00	5	181	95.68
23	MCRTH23	112.50	112.50-112.50	7	448	78.27
24	MCRTH24	70.00	70.00-70.00	1	100	62.77

Mid-C and NP15 hourly prices vs BPA hourly demand



Sources: S&P Global Commodity Insights, BPA, CAISO

Mid-C day-ahead/hourly on-peak price comparison



Source: S&P Global Commodity Insights

Renewable Penetration, Solar

Penetration Indices, Solar (%)

	Symbol	31-Jul	30-Jul
Cal ISO			
On-peak	RPCSP00	15.28	17.95
Off-peak	RPCS000	0.02	0.01
SPP			
On-peak	RPSSP00	0.29	0.34
Off-peak	RPSS000	0.00	0.00
ERCOT			
On-peak	RPESP00	10.22	11.13
Off-peak	RPES000	0.00	0.00
MISO			
On-peak	RP MSP00	1.72	1.89
Off-peak	RPMS000	0.02	0.01
PJM			
On-peak	RPPSP00	2.16	2.56
Off-peak	RPPS000	0.00	0.00
NYISO			
On-peak	RPNSP00	1.92	2.14
Off-peak	RPNS000	1.88	1.83
ISO New England			
On-peak	RPISP00	1.76	1.99
Off-peak	RPIS000	0.00	0.05

Hourly Penetration, Solar (%), Jul 31

Hour	Symbol	Cal ISO	Symbol	SPP	Symbol	ERCOT	Symbol	MISO	Symbol	PJM	Symbol	NYISO	Symbol	ISONE
1	RPCSC01	0.02	RPSSC01	0.00	RPESC01	0.00	RPMSC01	0.00	RPPSC01	0.00	RPNSC01	1.91	RPISC01	0.00
2	RPCSC02	0.02	RPSSC02	0.00	RPESC02	0.00	RPMSC02	0.00	RPPSC02	0.00	RPNSC02	1.89	RPISC02	0.00
3	RPCSC03	0.03	RPSSC03	0.00	RPESC03	0.00	RPMSC03	0.00	RPPSC03	0.00	RPNSC03	1.93	RPISC03	0.00
4	RPCSC04	0.02	RPSSC04	0.00	RPESC04	0.00	RPMSC04	0.00	RPPSC04	0.00	RPNSC04	2.01	RPISC04	0.00
5	RPCSC05	0.02	RPSSC05	0.00	RPESC05	0.00	RPMSC05	0.00	RPPSC05	0.00	RPNSC05	2.01	RPISC05	0.00
6	RPCSC06	0.02	RPSSC06	0.00	RPESC06	0.00	RPMSC06	0.12	RPPSC06	0.00	RPNSC06	1.97	RPISC06	0.00
7	RPCSC07	1.83	RPSSC07	0.00	RPESC07	0.01	RPMSC07	0.55	RPPSC07	0.03	RPNSC07	1.94	RPISC07	0.20
8	RPCSC08	12.66	RPSSC08	0.00	RPESC08	2.88	RPMSC08	1.89	RPPSC08	0.84	RPNSC08	1.93	RPISC08	0.93
9	RPCSC09	19.07	RPSSC09	0.02	RPESC09	13.11	RPMSC09	2.45	RPPSC09	2.54	RPNSC09	1.99	RPISC09	1.99
10	RPCSC10	21.71	RPSSC10	0.23	RPESC10	17.44	RPMSC10	2.54	RPPSC10	3.62	RPNSC10	2.27	RPISC10	2.85
11	RPCSC11	23.57	RPSSC11	0.47	RPESC11	17.61	RPMSC11	2.62	RPPSC11	3.91	RPNSC11	2.46	RPISC11	3.51
12	RPCSC12	25.75	RPSSC12	0.51	RPESC12	17.20	RPMSC12	2.64	RPPSC12	3.79	RPNSC12	2.49	RPISC12	3.79
13	RPCSC13	24.88	RPSSC13	0.49	RPESC13	16.04	RPMSC13	2.40	RPPSC13	3.57	RPNSC13	2.31	RPISC13	3.44
14	RPCSC14	23.81	RPSSC14	0.46	RPESC14	14.98	RPMSC14	2.39	RPPSC14	3.36	RPNSC14	2.05	RPISC14	2.97
15	RPCSC15	22.70	RPSSC15	0.43	RPESC15	14.07	RPMSC15	2.31	RPPSC15	3.19	RPNSC15	1.96	RPISC15	2.72
16	RPCSC16	21.77	RPSSC16	0.41	RPESC16	13.42	RPMSC16	2.25	RPPSC16	2.96	RPNSC16	1.85	RPISC16	2.59
17	RPCSC17	20.14	RPSSC17	0.39	RPESC17	12.71	RPMSC17	2.05	RPPSC17	2.50	RPNSC17	1.83	RPISC17	1.72
18	RPCSC18	15.77	RPSSC18	0.38	RPESC18	11.56	RPMSC18	1.71	RPPSC18	2.02	RPNSC18	1.75	RPISC18	0.95
19	RPCSC19	8.77	RPSSC19	0.37	RPESC19	8.89	RPMSC19	1.17	RPPSC19	1.50	RPNSC19	1.55	RPISC19	0.42
20	RPCSC20	1.85	RPSSC20	0.34	RPESC20	3.36	RPMSC20	0.48	RPPSC20	0.66	RPNSC20	1.40	RPISC20	0.10
21	RPCSC21	0.27	RPSSC21	0.13	RPESC21	0.21	RPMSC21	0.03	RPPSC21	0.07	RPNSC21	1.40	RPISC21	0.01
22	RPCSC22	0.00	RPSSC22	0.02	RPESC22	0.01	RPMSC22	0.00	RPPSC22	0.00	RPNSC22	1.46	RPISC22	0.00
23	RPCSC23	0.00	RPSSC23	0.00	RPESC23	0.01	RPMSC23	0.00	RPPSC23	0.00	RPNSC23	1.60	RPISC23	0.00
24	RPCSC24	0.00	RPSSC24	0.00	RPESC24	0.00	RPMSC24	0.00	RPPSC24	0.00	RPNSC24	1.68	RPISC24	0.00

Renewable Penetration, Wind

Penetration Indices, Wind (%)

	Symbol	31-Jul	30-Jul
Cal ISO			
On-peak	RPCWP00	5.56	6.79
Off-peak	RPCW000	11.21	11.25
SPP			
On-peak	RPSWP00	19.45	15.55
Off-peak	RPSW000	27.64	27.37
ERCOT			
On-peak	RPEWP00	9.77	8.49
Off-peak	RPEW000	20.30	18.99
MISO			
On-peak	RPMWP00	3.78	2.13
Off-peak	RPMW000	7.90	5.31
PJM			
On-peak	RPPWP00	0.56	1.12
Off-peak	RPPW000	0.68	0.90
NYISO			
On-peak	RPNWP00	1.95	1.41
Off-peak	RPNW000	2.90	1.84
ISO New England			
On-peak	RPIWP00	1.76	3.05
Off-peak	RPIW000	1.86	3.89

Hourly Penetration, Wind (%), Jul 31

Hour	Symbol	Cal ISO	Symbol	SPP	Symbol	ERCOT	Symbol	MISO	Symbol	PJM	Symbol	NYISO	Symbol	ISONE
1	RPCWC01	11.77	RPSWC01	25.87	RPEWC01	19.32	RPMWC01	7.42	RPPWC01	0.82	RPNWC01	4.22	RPIWC01	1.79
2	RPCWC02	11.56	RPSWC02	26.79	RPEWC02	19.84	RPMWC02	7.76	RPPWC02	0.76	RPNWC02	4.00	RPIWC02	1.96
3	RPCWC03	11.13	RPSWC03	29.37	RPEWC03	20.48	RPMWC03	7.98	RPPWC03	0.72	RPNWC03	4.05	RPIWC03	2.30
4	RPCWC04	11.38	RPSWC04	30.43	RPEWC04	20.42	RPMWC04	8.19	RPPWC04	0.76	RPNWC04	3.55	RPIWC04	2.11
5	RPCWC05	11.27	RPSWC05	30.00	RPEWC05	20.40	RPMWC05	7.80	RPPWC05	0.70	RPNWC05	3.07	RPIWC05	1.84
6	RPCWC06	11.50	RPSWC06	31.13	RPEWC06	19.49	RPMWC06	7.22	RPPWC06	0.57	RPNWC06	2.83	RPIWC06	1.78
7	RPCWC07	10.92	RPSWC07	32.05	RPEWC07	17.80	RPMWC07	6.51	RPPWC07	0.64	RPNWC07	2.99	RPIWC07	1.86
8	RPCWC08	8.48	RPSWC08	30.99	RPEWC08	15.09	RPMWC08	5.57	RPPWC08	0.70	RPNWC08	2.55	RPIWC08	1.47
9	RPCWC09	6.07	RPSWC09	28.71	RPEWC09	9.86	RPMWC09	4.39	RPPWC09	0.64	RPNWC09	1.56	RPIWC09	1.30
10	RPCWC10	4.35	RPSWC10	24.06	RPEWC10	8.78	RPMWC10	3.47	RPPWC10	0.59	RPNWC10	1.54	RPIWC10	1.17
11	RPCWC11	3.17	RPSWC11	18.67	RPEWC11	7.51	RPMWC11	3.09	RPPWC11	0.48	RPNWC11	2.63	RPIWC11	1.39
12	RPCWC12	2.92	RPSWC12	17.46	RPEWC12	5.11	RPMWC12	2.96	RPPWC12	0.59	RPNWC12	2.88	RPIWC12	1.97
13	RPCWC13	2.63	RPSWC13	17.26	RPEWC13	5.45	RPMWC13	2.81	RPPWC13	0.65	RPNWC13	3.03	RPIWC13	2.48
14	RPCWC14	2.65	RPSWC14	16.40	RPEWC14	6.05	RPMWC14	2.84	RPPWC14	0.59	RPNWC14	2.50	RPIWC14	2.42
15	RPCWC15	2.94	RPSWC15	16.04	RPEWC15	7.23	RPMWC15	2.76	RPPWC15	0.65	RPNWC15	2.51	RPIWC15	2.42
16	RPCWC16	3.05	RPSWC16	15.64	RPEWC16	7.93	RPMWC16	2.79	RPPWC16	0.67	RPNWC16	1.99	RPIWC16	2.65
17	RPCWC17	3.69	RPSWC17	15.21	RPEWC17	8.36	RPMWC17	2.74	RPPWC17	0.66	RPNWC17	1.81	RPIWC17	1.93
18	RPCWC18	4.56	RPSWC18	14.59	RPEWC18	8.87	RPMWC18	2.89	RPPWC18	0.56	RPNWC18	1.79	RPIWC18	1.76
19	RPCWC19	6.89	RPSWC19	14.19	RPEWC19	10.14	RPMWC19	3.17	RPPWC19	0.55	RPNWC19	1.13	RPIWC19	1.69
20	RPCWC20	8.39	RPSWC20	14.62	RPEWC20	11.31	RPMWC20	3.76	RPPWC20	0.39	RPNWC20	0.75	RPIWC20	1.09
21	RPCWC21	8.92	RPSWC21	16.32	RPEWC21	12.16	RPMWC21	4.64	RPPWC21	0.30	RPNWC21	0.66	RPIWC21	1.18
22	RPCWC22	9.32	RPSWC22	19.06	RPEWC22	14.70	RPMWC22	6.16	RPPWC22	0.35	RPNWC22	0.90	RPIWC22	1.35
23	RPCWC23	10.26	RPSWC23	22.13	RPEWC23	18.56	RPMWC23	7.93	RPPWC23	0.47	RPNWC23	0.91	RPIWC23	1.50
24	RPCWC24	10.81	RPSWC24	25.40	RPEWC24	23.91	RPMWC24	8.91	RPPWC24	0.67	RPNWC24	0.59	RPIWC24	1.61

Platts M2MS Forward Curve, Aug 1 (\$/MWh)

Prompt month: Sep 23

	On-peak	Off-peak
Northeast		
Mass Hub	33.95	26.55
N.Y. Zone G	36.00	26.15
N.Y. Zone J	38.15	27.30
N.Y. Zone A	32.85	22.85
Ontario*	28.28	20.80
*Ontario prices are in Canadian dollars		
PJM & MISO		
PJM West	39.90	25.20
AD Hub	39.45	25.05
NI Hub	34.35	19.75
Indiana Hub	45.35	29.10

Southeast & Central		
Southern Into	41.26	28.79
ERCOT North	63.70	34.65
ERCOT Houston	70.30	35.15
ERCOT West	60.90	34.22
ERCOT South	58.08	37.65
Western		
Mid-C	157.00	81.35
Palo Verde	157.00	82.80
Mead	164.75	87.15
NP15	92.60	67.50
SP15	100.05	67.75

ISO Day-Ahead LMP Breakdown for Aug 2 (\$/MWh)

Hub/Zone	Average	Cong	Loss	Change	Avg \$/Mo	Marginal heat rate
Northeast						
On-peak						
ISONE Internal Hub	28.66	-0.02	-0.03	-3.69	30.51	18196
ISONE Connecticut	27.86	-0.08	-0.78	-3.70	29.71	12408
ISONE NE Mass-Boston	29.26	0.03	0.52	-3.82	31.17	18575
NYISO Capital Zone	28.62	0.11	1.37	2.02	27.61	26626
NYISO Hudson Valley Zone	29.21	-0.09	1.76	1.86	28.28	13010
NYISO N.Y.C. Zone	29.78	-0.13	2.29	1.82	28.87	27701
NYISO West Zone	27.61	0.00	0.25	1.51	26.86	23200
PJM & MISO						
On-peak						
PJM AEP-Dayton Hub	32.59	1.93	0.32	-5.32	35.25	14882
PJM Dominion Hub	34.27	4.17	-0.24	-6.76	37.65	12694
PJM Eastern Hub	21.47	-8.59	-0.28	-1.65	22.30	19174
PJM Northern Illinois Hub	32.80	2.46	0.00	-5.22	35.41	14643
PJM Western Hub	32.21	2.25	-0.39	-5.52	34.97	28757
MISO Indiana Hub	38.89	-1.60	-0.25	1.74	38.02	17359
MISO Minnesota Hub	49.75	8.48	0.54	8.17	45.67	22666
MISO Louisiana Hub	38.59	-1.78	-0.37	0.05	38.57	16421
MISO Texas Hub	44.28	3.33	0.21	-3.67	46.12	19857
Southeast & Central						
On-peak						
SPP North Hub	42.45	-9.76	0.61	-1.36	43.13	19340
SPP South Hub	62.64	11.52	-0.48	7.86	58.71	29135
ERCOT Houston Hub	75.71	—	—	-1.70	76.56	33724
ERCOT North Hub	75.00	—	—	0.00	75.00	33631
ERCOT South Hub	71.12	—	—	-3.02	72.63	32925
ERCOT West Hub	73.73	—	—	-0.85	74.16	33362
Western						
On-peak						
CAISO NP15 Gen Hub	61.64	-12.94	-2.96	1.59	60.85	12158
CAISO SP15 Gen Hub	85.86	9.15	-0.84	-11.85	91.79	17776
CAISO ZP26 Gen Hub	61.79	-13.22	-2.55	4.56	59.51	12793

Off-Peak						
ISONE Internal Hub	22.23	-0.04	-0.05	-7.81	26.14	14111
ISONE Connecticut	21.35	-0.18	-0.78	-7.22	24.96	9510
ISONE NE Mass-Boston	22.72	0.07	0.34	-8.15	26.80	14428
NYISO Capital Zone	20.81	-0.18	0.96	1.24	20.19	19356
NYISO Hudson Valley Zone	20.86	-0.13	1.06	1.09	20.32	9293
NYISO N.Y.C. Zone	21.15	-0.14	1.35	1.15	20.58	19674
NYISO West Zone	19.63	-0.02	-0.06	0.29	19.49	16492
Off-Peak						
PJM AEP-Dayton Hub	17.54	0.93	0.20	-1.94	18.51	8007
PJM Dominion Hub	18.64	1.92	0.31	-1.94	19.61	6902
PJM Eastern Hub	12.16	-3.70	-0.55	-1.73	13.03	10858
PJM Northern Illinois Hub	17.02	0.70	-0.09	-1.93	17.99	7598
PJM Western Hub	17.09	0.90	-0.22	-2.07	18.13	15261
MISO Indiana Hub	21.77	-0.25	0.42	0.78	21.38	9718
MISO Minnesota Hub	21.75	1.07	-0.92	2.32	20.59	9907
MISO Louisiana Hub	21.75	-0.24	0.39	0.67	21.42	9253
MISO Texas Hub	21.75	-0.24	0.39	0.42	21.54	9753

Weekend bilateral indexes for Jul 29-30 (\$/MWh)

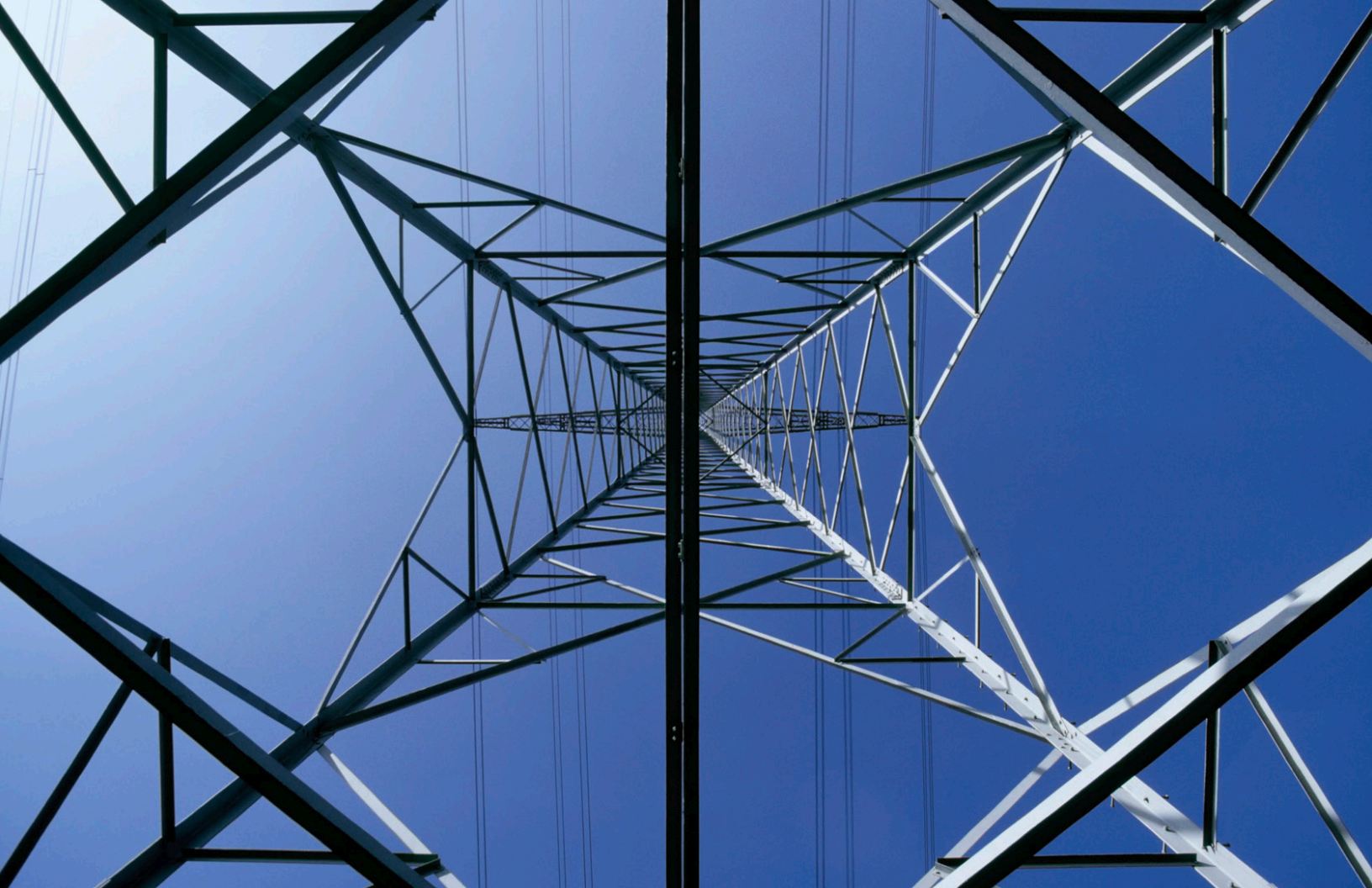
	Saturday Index	Sunday Index
Southeast On-peak		
VACAR	43.75	43.75
Southern, into	42.50	42.50
GTC, into	48.75	48.75
Florida	49.25	49.25
TVA, into	42.75	42.75
Southeast Off-Peak*		
VACAR	26.25	26.25
Southern, into	28.75	28.75
GTC, into	22.75	22.75
Florida	29.75	29.75
TVA, into	28.75	28.75
West On-peak**		
Mid-C	107.71	82.08
John Day	106.25	80.75
COB	110.00	91.75
NOB	119.30	91.00
Palo Verde	190.50	145.00
Westwing	189.25	143.75
Pinnacle Peak	190.75	145.25
Mead	197.82	150.00
Mona	170.50	150.00
Four Corners	192.50	142.50
West Off-Peak**		
Mid-C	62.70	58.25
John Day	60.25	55.75
COB	67.75	63.25
NOB	75.00	70.00
Palo Verde	108.00	87.00
Westwing	108.75	89.75
Pinnacle Peak	108.25	87.25
Mead	105.00	70.00
Mona	93.00	50.00
Four Corners	109.00	77.50

*Southeast off-peak prices are for a Saturday-Monday package.

**West Saturday prices are for a Friday-Saturday package and Sunday prices are for Sunday only.

Weekly bilateral indexes for week ending Jul 29 (\$/MWh)

	Index	Change	Low	High
Southeast On-peak				
VACAR	61.80	18.60	38.75	92.00
Southern, into	57.05	13.95	36.50	75.00
GTC, into	59.02	14.09	38.75	81.50
Florida	61.55	14.00	41.25	81.75
TVA, into	61.20	18.05	38.75	83.00
Southeast Off-Peak				
VACAR	24.00	2.25	21.25	32.00
Southern, into	23.46	1.00	21.25	28.00
GTC, into	24.86	1.62	21.50	30.25
Florida	28.04	1.25	25.25	33.00
TVA, into	23.46	1.00	21.25	28.00
West On-peak				
Mid-C	104.95	-17.22	90.00	116.00
John Day	103.54	-17.13	94.25	108.50
COB	111.67	-14.16	90.00	120.00
NOB	117.49	-14.93	107.50	140.00
Palo Verde	169.89	37.35	126.00	245.00
Westwing	168.88	30.96	127.00	231.50
Pinnacle Peak	170.17	37.34	128.50	233.00
Mead	178.70	37.29	134.00	255.75
Mona	167.50	30.15	135.00	245.00
Four Corners	175.50	33.92	135.00	237.50
West Off-Peak				
Mid-C	65.30	-2.35	58.00	75.00
John Day	63.00	-2.39	56.75	70.75
COB	70.93	0.89	67.25	78.25
NOB	75.54	-2.28	70.25	80.00
Palo Verde	100.41	17.11	85.00	115.00
Westwing	101.79	15.50	85.75	110.50
Pinnacle Peak	100.64	17.10	85.25	110.00
Mead	99.07	13.36	84.00	110.00
Mona	86.57	15.71	65.00	95.00
Four Corners	101.86	24.79	90.00	115.00



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