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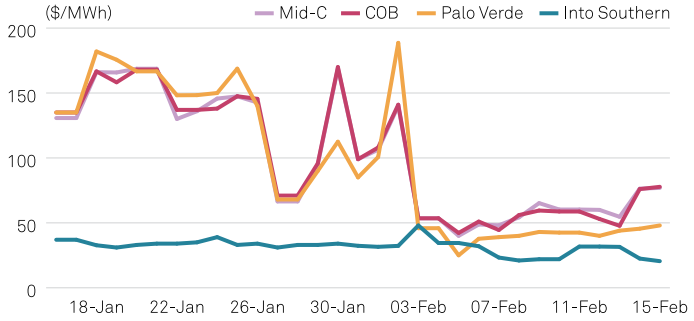
	Day-ahead peak prices			Regional weather trends		
	16-Feb	Daily chg	Prior 7-day avg	16-Feb	Daily chg	7-day forecast
Southeast Bilateral Indices						
Into Southern	21.00	0.50 ▲	26.00	65.7	0.2 ▲	59.2
Into GTC	22.00	-0.25 ▼	24.82	65.0	4.8 ▲	54.7
Florida	26.50	0.25 ▲	28.86	73.6	3.8 ▲	70.7
Into TVA	22.75	0.75 ▲	24.57	53.7	-13.2 ▼	49.6
VACAR	22.50	1.50 ▲	23.89	47.9	-0.2 ▼	53.3
West Bilateral Indices						
Mid-C Hourly	—	—	60.75	38.3	2.6 ▲	39.7
Mid-C Day-Ahead	81.82	4.89 ▲	63.99	38.3	2.6 ▲	39.7
John Day	69.50	5.00 ▲	61.00	38.3	2.6 ▲	39.7
COB	83.00	5.25 ▲	62.07	38.3	2.6 ▲	39.7
NOB	86.75	5.00 ▲	68.79	46.0	0.4 ▲	50.6
Palo Verde	73.25	25.25 ▲	43.64	47.9	-0.2 ▼	53.3
Mona	72.50	4.50 ▲	56.70	47.9	-0.2 ▼	53.3
Four Corners	82.50	27.50 ▲	49.43	47.9	-0.2 ▼	53.3
Pinnacle Peak	73.25	25.25 ▲	43.64	47.9	-0.2 ▼	53.3
Westwing	74.25	25.25 ▲	44.64	47.9	-0.2 ▼	53.3
Mead	72.00	18.75 ▲	47.54	47.9	-0.2 ▼	53.3
ISO Price Locations						
CAISO NP 15	77.39	19.00 ▲	55.20	49.7	-0.1 ▼	53.5
ERCOT North Hub	23.70	5.98 ▲	20.58	47.5	-13.6 ▼	58.1
ISONE Internal Hub	30.73	-2.20 ▼	33.36	50.9	7.8 ▲	37.0
MISO Indiana Hub	28.17	4.24 ▲	27.72	29.1	-13.0 ▼	32.0
NYISO Zone G	28.55	0.11 ▲	30.64	51.5	1.9 ▲	39.4
PJM West Hub	27.13	2.05 ▲	26.55	52.1	-3.1 ▼	41.1
SPP South Hub	24.15	3.60 ▲	22.83	30.1	-13.7 ▼	42.6

Source: S&P Global Platts

Platts bilateral day-ahead power indexes



Source: S&P Global Commodity Insights

Platts peak daily demand (GW)

ISO	07-Feb	08-Feb	09-Feb	10-Feb	11-Feb	12-Feb	13-Feb	14-Feb	Daily change Chg	Daily change % Chg	Season Min	Season Max	Season average 2023	Season average 2022	Season average Chg	Season average % Chg
BPA-Puget	8.01	8.62	8.53	7.76	7.84	8.14	8.39	9.08	0.69	8.22	6.97	10.67	8.24	8.56	-0.32	-3.75
IESO	18.73	18.39	18.76	18.35	17.74	17.85	18.20	17.34	-0.86	-4.73	14.35	21.39	18.90	19.50	-0.60	-3.08
CAISO	26.88	26.63	26.44	25.97	24.91	24.39	26.97	28.32	1.35	5.01	24.39	29.04	27.11	27.38	-0.27	-0.98
ERCOT	46.83	48.26	53.31	50.48	53.51	50.89	49.16	45.04	-4.12	-8.38	38.87	65.56	49.21	51.74	-2.53	-4.89
SPP	32.42	33.29	35.11	35.62	34.18	32.14	33.99	31.69	-2.30	-6.77	28.53	40.59	34.37	35.56	-1.19	-3.34
MISO	78.03	78.30	79.86	81.56	76.28	74.97	81.79	78.00	-3.79	-4.63	67.78	93.90	81.71	87.22	-5.52	-6.33
PJM	108.48	98.05	94.91	92.37	90.98	93.16	100.78	83.77	-17.01	-16.88	26.81	121.26	99.35	109.58	-10.23	-9.33
NYISO	20.09	19.20	19.32	18.38	18.05	17.92	18.63	18.34	-0.29	-1.56	14.92	23.37	19.36	20.69	-1.33	-6.45
NEISO	16.74	15.83	15.93	14.47	14.62	14.99	15.60	15.11	-0.49	-3.14	12.14	19.49	16.02	16.91	-0.90	-5.30
AESO	10.74	10.68	10.93	10.80	10.51	10.59	10.92	10.97	0.05	0.46	10.08	11.36	10.94	11.20	-0.26	-2.33

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

Source: S&P Global Platts

News

Southwest Power Pool eyes new multi-day economic commitment process

- Process would run parallel with reliability assessment
- MMU called for change to reduce self-commitment

Southwest Power Pool is considering developing a multi-day commitment process that would allow the grid operator to call on long-lead time resources before the day-ahead market for economic reasons, not just reliability purposes, a change that could boost market efficiency.

"Our goal for this enhancement is to expand the unit commitment process to include more of SPP's fleet," Jim Gonzalez, a market operations official at SPP, said at a meeting of SPP's Market Working Group.

The multi-day economic commitment, or MDEC, would allow the market to call on resources that have start up times or minimum down times longer than 24 hours, according to a presentation discussed at the meeting. Only long-lead resources would be committed through the MDEC, the presentation said.

Reliability process

The MDEC process would run in parallel with SPP's multi-day reliability assessment or MDRA, according to the presentation. SPP uses the MDRA to manually call on resources prior to the day-ahead market to ensure reliability during tight conditions or transmission outages. This process only allows SPP to do forward commitments for reliability, not for economic efficiency.

SPP almost always has one or two resource committed through the MDRA process to resolve some sort of local or temporary issue like an outage, Gonzalez said. If SPP creates an MDEC process, some unit commitments would likely move from the reliability process to the economic process, Gonzalez said at the Feb. 14 meeting.

There are several issues to consider in pursuing an MDEC process, the presentation said. For instance, SPP will need to decide how to address load uncertainty and how many days should be covered by the MDEC, the presentation said. And SPP may consider if flexible resources need some credit if long-lead commitments become uneconomic and displace flexible resources, the presentation said.

Self-commitments

The MDEC could also reduce the frequency that generators self-commit in the market, according to the presentation. In 2022 there were 21 resources with a total capacity of 5.3 GW that self-committed at least 25% of the time throughout the year, the presentation said.

Resources with long lead times or high start-up costs tend to be self-committed instead of market-committed, according to a 2019 report on the issue by the SPP market monitoring unit. Fuel contracts, and long minimum run times are also reasons generators self-commit, the MMU report said.

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The MMU has recommended that SPP and its stakeholders explore ways to reduce self-commitment, including considering adding an additional day to the optimization process. "Adding an additional day to the process will best balance forecast accuracy with the ability to commit long lead time and high start-up cost resources," the MMU said in its State of the Market 2021 report, its most recent annual report.

While the volume of dispatched megawatts from self-committed resources has declined over the last several years, it still accounts for nearly one-third of the total dispatch megawatt volumes, the MMU said in the annual report.

"By reducing self-commitment, prices and investment signals will likely be less distorted," the MMU said in its report on self-commitment.

— Kate Winston

US FERC member touts interregional transmission as top tool to help reliability

- Extreme events revealed problems with markets: Clements
- FERC is interested in the idea of boosting interregional capability

A smart, well-planned transmission buildout should be the number one tool to improve electric reliability, because extreme weather has proved importance of interregional transmission and the problems in various market designs, Federal Energy Regulatory Commission member Allison Clements said Feb. 15.

"Billions of dollars a year have been spent every year for the last 20 on transmission investment," Clements said at the American Clean Power Energy Storage Policy Forum in Washington. "The question is, can we direct that investment in a way that provides customers the biggest bang for the buck," she said.

Interconnected transmission lines between regions are what "saved us" during the February 2021 and December 2022 winter storms, Clements said. And if the entire US West is suffering under a heat wave, the solution is to make the interconnected system bigger than the weather pattern, she said.

"That is the choice. And is it hard? Yes. Is it expensive? Yes. But when you start to add up the cost of the lives lost and the economic activity lost ... it is worth the investment up front," she said.

Interregional transfer capability

There is a good amount of consensus around the idea of increasing interregional transfer capability, Clements noted. There are logistical questions about how to implement that kind of requirement and what the right amount might be, but "I think there is a real interest within the commission," she said.

Another top priority is to match power market design to today's resource mix, Clements said. But there is no perfect way to accomplish that, she said.

"Through the weather events we have seen over the last few years, we've seen every kind of market design, whether it be a vertically integrated market, whether it be an energy-only market, whether it be a capacity market regime, they have all had problems," she said.

But while there isn't one right answer to market design questions, there is growing consensus about principles to underpin market changes, Clements said. These principles include the idea that resources should get paid when they show up, resources should perform differently at different times of year, and demand-side resources have a big role to play, she said.

Market overhauls

There are times when changing regulations in an incremental fashion is the right way to go, Clements said. But markets may need to undergo big fixes to define the services that the system needs and pay resources when they show up to provide those services, she said. "I think we maybe need to take a larger step forward," she said.

Some stakeholders see energy storage as a way to address perceived shortcomings in market rules and transmission, said Jason Burwen, vice president of energy storage at the American Clean Power Association. "There's a lot of concern that transmission is not coming to save us," he said.

States are also wrestling with how to meet state clean energy goals within capacity markets that do not account for such attributes, Burwen said. "Do you see a path for state energy goals like 100% clean energy goals to be compatible with wholesale electricity markets, particularly multi-state markets, that don't have any such mandate or goal?" he asked Clements.

State clean energy goals and wholesale power markets have to work together because that is the regulatory framework that we have been handed, Clements said. "If we accept the reality that these resources are coming online, whatever their driver might be, we can make these markets work," she said.

FERC is also weighing interconnection reforms because FERC's current rules were not designed to handle the number of interconnection requests coming at transmission owners and grid operators, Clements said.

Clements floated her vision for an ideal interconnection process. "Can you imagine a perfect world where we have a per megawatt interconnection fee that is understood because the planning side is working so well that we can anticipate where resources are going to come on the system?" she said. "Wow, that's where we have got to get, but we are on our way there," she said.

— Kate Winston

Transmission line bringing hydropower from Québec to New York City on schedule

- Project expected in service mid-2026
- Hydro-Quebec expanding power production capacity

Hydro-Quebec is expanding its wind power capacity and refurbishing hydroelectric turbines to increase capacity to help ensure adequate power supplies will be available for export to

the Northeast US as regional power systems transition to winter peaking markets, an HQ executive said Feb. 15.

The 339-mile Champlain Hudson Power Express transmission line currently being built to carry 1,250-MW of hydropower from Quebec to New York City will provide enough power for 1 million homes while reducing urban air pollution, Serge Abergel, chief operating officer at Hydro-Quebec, said during a panel discussion hosted by non-profit Our Energy Policy in New York City.

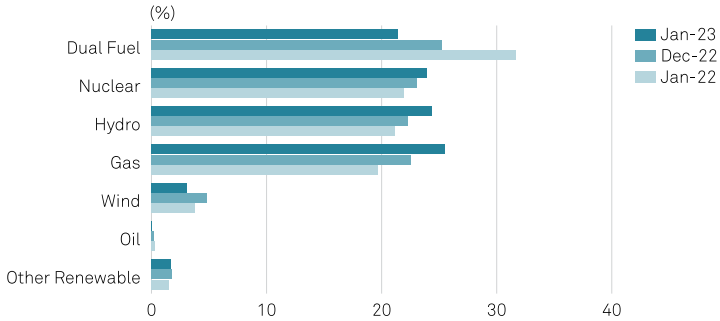
"Quebec, New York, New England, let's think about how we trade energy together," Abergel said. He suggested HQ could use its existing reservoir system like a battery that can help firm intermittent renewable energy being built in the US Northeast.

The CHPE project being built by Transmission Developers, which is majority-owned by investment firm Blackstone, began construction in November 2022 and is expected to go into service in 2026, Abergel confirmed during the discussion.

2023 will be a staging year for the project with equipment being brought in, and cables will begin being installed in 2024. The project is on schedule for an in-service date of mid-2026, he said.

Asked if the CHPE line will have enough capacity to serve New York in the winter once the state becomes a winter peaking market due to its electrification efforts that will increase electric heat pumps and cut fossil fuel home heating, Abergel said HQ is increasing its power generation capacity.

NYISO power generation fuel mix comparison



Source: NYISO

Average winter day power demand in Quebec is currently around 20,000 MW and the state-owned utility can produce around 37,000 MW, he said, adding that HQ is adding roughly 5,000 MW of incremental wind power capacity over the next seven to 10 years and refurbishments at existing hydropower facilities can increase capacity by 2,000 MW over the next 10 years.

"So, that's about 7,000 MW, some intermittent some baseload, and then there is the efficiency side of things," Abergel said. About 85% of Québec's population currently heats their homes with electric furnaces and baseboards and switching to heat pumps would be much more efficient, thus freeing up power on the supply side, he said.

Policy developments

New York's Climate Leadership and Community Protection Act legislation mandates an emissions-free power sector by 2040 along with numerous additional energy related goals. The CHPE project by itself will reduce overall greenhouse gas emissions in New York City by 4%, "which may not sound like a lot but from any single project that's a tremendous amount of emissions reduction," Anthony Fiore, chief program officer for the New York State Energy Research and Development Authority, said.

It is doing that by offsetting fossil fuel-fired generation in the city which was the "last bastion of residual fuel oil" for power generation in the state, he said. The state created a new class of renewable energy credits, Tier 4, that are eligible to large hydropower and additional resources not covered under the other tiers.

The two projects currently awarded under Tier 4, CHPE and Clean Path New York, are the largest transmission projects to be built in the state in the past 50 years he said. "Looking at those two projects, offshore wind that is already contracted for and the other land-based renewable generation the state is doing, that combined by 2030 will reduce fossil fuel-fired generation in New York City by 80%," Fiore said.

Dale Bryk, director of state and regional policies for Harvard University's environmental and energy law and senior fellow of the non-profit Regional Plan Association said there is now an all-electric mandate for new construction in New York City which sends a national signal. "Hopefully we'll get that at the state level this year," she said.

— Jared Anderson

Stakes on gas-electric coordination getting higher: NARUC panel

- Record high gas deliveries during winter storm
- Sharing of real-time operational data needed

With winter storms stressing the energy sector with more frequency, the need for the natural gas and power sectors to be on the same page is increasingly imperative, a panel of industry speakers agreed Feb. 13. However, discussion at the Washington, DC, conference made clear that there is a lot of work to do to better match the two markets' operations and scheduling challenges faced by gas-fired generators.

Among other related problems discussed at National Association of Regulatory Utility Commissioners (NARUC) winter meetings, panelists described challenges in scheduling gas deliveries for three-day weekends and gas-fired generators being pushed out of a traditional baseload role to intermittently backfill variable renewable generation.

"The gas industry is like zero-for-two on winter performance," said Clair Moeller, president and COO of the Midcontinent Independent System Operator, referencing problems that occurred during winter storms in February 2021 and over the 2022 Christmas holiday weekend.

Countering that view was Matthew Agen, chief regulatory counsel for the American Gas Association (AGA), which represents gas utilities. He said that the gas industry saw the largest gas demand day in the history of the United States during Winter Storm Elliott around Christmas, with 155 Bcf/d delivered.

"Elliott is really a success story," with gas deliveries well above those during previous severe storms for more than a week and gas storage assets playing a critical role in providing short-notice deliveries, Agen said.

In the midst of the storm on Dec. 23, for example, 40% of gas deliveries nationwide came from storage assets, supplementing pipeline and utility deliveries from production assets, Agen said.

Agen acknowledged that winterizing gas production equipment and increasing pipeline infrastructure could help the gas system meet peak demand needs.

But he also suggested that generators may need to pay for firm delivery contracts to get the levels of certainty they are seeking. That gets back to a long-running chicken-and-egg debate in which pipeline companies say they need more lucrative firm contracts to cover costs, and generators say they cannot afford firm contracts because they are dispatched sporadically.

Either way, AGA members need to know when grid operators will call upon generators on their systems, Agen said, noting that some generators are connected to gas distribution systems and others take service directly from interstate pipelines.

PJM Interconnection has pretty good visibility on generator operations on gas utility systems, but less so for those on pipelines, said Michael Bryson, senior vice president of operations at PJM.

Bryson acknowledged that PJM's load forecast was off by about 10% heading into Winter Storm Elliott and that the miss contributed to the problems experienced. However, the bulk of the problems with generator outages were tied to weatherization issues or equipment breaking, Bryson said.

PJM needs more visibility into what generators have gas available and scheduled in day-ahead and real-time markets and will work with the gas industry and gas-fired generation owners to increase transparency for all parties, Bryson said. With 70,000 MW of gas-fired generation across the PJM footprint, generators have all kinds of gas deliveries and scheduling changes based on load forecasts and power market operations, he said.

But even generators with no-notice scheduling on pipelines and firm transportation contracts, which Bryson dubbed "the golden ticket of capacity performance gas," were curtailed during Elliott, he said. In general, PJM had no transparency on gas industry operational problems, Bryson suggested.

Between MISO, PJM and the New York ISO, "we need to have strong operating agreements that mandate the sharing of operational data minute to minute through every operating day. And I think that's a good idea to have with the gas industry as well," so the two industries could work around any potential problems, he said.

Gas generation challenges

Moeller of MISO asserted that "we have a big problem we need to start working on today" and "there really isn't a very good place to talk about it except here" among state regulators and industry members. Power industry participants need more information on gas system operations, but "we don't even know who to talk to" because the gas industry is not vertically integrated, he said.

Moeller empathized with the gas industry because it is being asked to change scheduling protocols or provide resilience for gas-fired generators without adequate compensation from the power industry, which is using more renewable resources that fluctuate and make gas scheduling difficult.

"We're asking them to become intermittent resources. The reciprocal of the renewables, to fill all those holes and at the same time we're electrifying and taking their baseload away," Moeller said.

ISOs that call on gas-fired generators in a day-ahead market create a need for generators to line up gas supplies and transportation, but if those generators are not used, all ISO customers share the gas costs, and those have run into the millions of dollars during past extreme weather events, Bryson and Moeller pointed out. "People don't like that," Moeller said, but the scheduling woes persist and present challenges on long holiday weekends.

For a gas-fired generator during Winter Storm Elliott, "you'd have to nominate on a Friday for a Tuesday disaster that you didn't know was coming," Moeller said. "We lost about half of the gas generation that we lost because they simply ran out of fuel because the gas market wasn't flexible enough to renominate across that time period," he said.

Harmonizing the gas and power markets that have different functions will be difficult, but "if we're going to rely on each other we may have to do that," Moeller said.

When the Federal Energy Regulatory Commission tried to tackle these issues several years ago, it found little agreement between the sectors but did succeed in adding intraday pipeline nomination cycles to help mesh scheduling.

The North American Energy Standards Board has a gas-electric harmonization forum that has been meeting for about six months to hash out such issues and reach a consensus on recommendations, but it is clear from the NARUC discussion that not all parties in the two industries are following that effort. The forum meetings will continue for the first half of the year, with a report planned to be submitted to FERC and the North American Electric Reliability Corp., NAESB leaders told regulators at the NARUC meeting.

— Tom Tiernan

California regulators approve $31 million for two ZEV manufacturing projects

- Three-wheel solar ZEV to be available by mid-2023
- Encourage mass adoption of fuel cell electric vehicles

The California Energy Commission approved Feb. 15 nearly $31 million for two in-state projects for zero-emission transportation manufacturing as part of a program that will provide funds totaling $199.4 million to increase ZEV manufacturing.

The projects will increase in-state manufacturing of ZEVs, components and batteries, andvcharging or refueling equipment, "which will contribute to California's zero-emission goals," said Pilar Magaña, with the commission's fuels and transportation division.

One project involves production equipment for three-wheeled, two-passenger on-road vehicles, while the other will manufacture hydrogen fuel cell power systems and assemble fuel cell heavy-duty trucks.

California Energy Commission approved $30.9 million in zero-emission transportation manufacturing projects

Company	Amount ($ million)	Project	Outcome	Jobs
Aptera Motors	21.91	Install vehicle production equipment at two existing manufacturing facilities in Carlsbad and Vista	20,000 Aptera solar ZEVs annually by 2025.	444
Symbio North America	9.08	Expand facility in Poway, establish a new facility in Temecula to manufacture hydrogen fuel cell vehicle power systems and vehicle assembly	250 fuel cell electric vehicles and 250 to 300 heavy-duty fuel cell power systems annually	63

Source: California Energy Commission

Aptera Motors

Aptera Motors received $21,911,630 to install vehicle production equipment at two existing manufacturing facilities in Carlsbad and Vista to manufacture a three-wheeled, two-passenger on-road vehicle that will be available for commercial sale in California by mid-2023, Magaña said.

The company's goal is to create the speed and scale needed to produce an affordable solar ZEV that uses the sun to fuel up to a 40-mile daily commute, without the need for grid-connected charging, according to Aptera Motors.

Commission Chair David Hochschild said the vehicles "look like a Jetson's device" and wondered if they could go on a freeway.

The vehicles perform and behave like a regular vehicle on the road and have a top speed of 110 mph, but the three-wheel design makes them more efficient, said Pablo Ucar, Aptera's vice president of production and procurement. Four different models will be manufactured, spanning from a 250-mile range to a 1,000-mile range, with manufacturing starting with the 400-mile range option, Ucar added.

Aptera Motors will scale up manufacturing to 20,000 ZEVs annually by 2025, according to the company. The project will create 444 jobs, it added.

Symbio North America

Symbio North America received $9,076,445 to expand its facility in Poway and establish a new facility in Temecula to manufacture hydrogen fuel cell vehicle power systems and vehicle assembly. These facilities will assemble regional long-haul heavy-duty fuel cell class 8 trucks.

The goal is a combined annual total production capacity of 250 fuel cell electric vehicles and 250 to 300 heavy-duty fuel cell power systems. The project will create 63 permanent jobs. The company hopes the project will help stimulate and encourage the mass adoption of FCEVs by broadening the fuel cell vehicle applications, improving FCEV availability, and supporting the after-sales service and maintenance locally, according to Symbio North America.

In addition, Symbio North America's hydrogen fuel cell workforce training program will collaborate with universities to train 122 students and fleet operators over the project duration and continue to train 180 students and fleet operators annually after the project.

ZEV manufacturing

The state has a goal that 100% of in-state sales of new passenger cars and trucks will be zero-emissions by 2035.

"In order to achieve these goals, significant changes to the transportation industry need to be addressed in order for California to achieve its goals," according to Symbio North America.

Common barriers to wider ZEV adoption include inexperienced workforce, limited service and maintenance support, and lack of in-state manufacturing to help lower the high total cost of ownership, which is why ZEV manufacturing is needed to address challenging duty cycles and transition to 100% zero-emission heavy-duty vehicles and support California decarbonization goals, according to Symbio North America.

The commission will award a total of $199.4 million as part of a competitive grant solicitation for zero-emission transportation manufacturing, Magaña said. In addition to the two projects approved Feb. 15, four projects totaling $46 million were approved in January in what was called the biggest investment in the market across the US. Additional awards will be presented in future business meetings.

"This is a series of grants that we're making on ZEV manufacturing," Commissioner Patty Monahan said, adding that 70,000 jobs will be created through the 55 total grants involved competitive grant program. "We are the number one source of jobs in the ZEV manufacturing industry."

— Kassia Micek

White House sets EV charging standards that would open stations to competitors

- Consistent plug types, power levels
- Rules to smooth over inconsistencies

The Biden administration is establishing electric vehicle charging standards that will require manufacturers such as Tesla to open their stations to competitors to become eligible for federal funds.

The US departments of Energy and Transportation announced the new standards Feb. 15. The departments aim to ensure new stations funded by the 2021 bipartisan infrastructure law's $7.5 billion investment in EV charging will be available to all drivers.

"No matter what EV you drive, we want to make sure that you will be able to plug in, know the price that you're going to pay, and charge up with a predictable, user-friendly experience," Transportation Secretary Pete Buttigieg told reporters Feb. 14. "Just as when you are filling up with gas today, you know that the experience will be broadly consistent, regardless of your location."

Specifications

The standards will require federally funded charging stations to have consistent plug types and power levels with 97% uptime, according to a White House fact sheet. In addition, the station's location, price, and charger availability must be publicly available to prevent EV drivers from having to download multiple apps.

White House and Cabinet officials said the rules are intended to smooth over inconsistencies among EV charging stations, which until now were not subject to standards for installation, operation, and maintenance in the US. At present, stations can vary by plug types, payment methods, charging speed, and reliability, the administration noted.

In addition to unveiling the new policy, the Biden administration highlighted several announcements from private developers, including Tesla. According to the fact sheet, the EV manufacturer will open a portion of its US network, a minimum of 7,500 chargers, to all types of EVs for the first time by the end of 2024.

Manufacturing requirements

The new standards also include "Build America, Buy America" requirements for EV charger enclosures and housing made from iron and steel. The name refers to a domestic content procurement preference included in the bipartisan infrastructure law requiring that all iron, steel, manufactured products, and construction materials used in select infrastructure projects are produced in the US.

Under the latest standard, the manufacturing and final assembly of some EV charger components must be conducted in the US, effective immediately. The Federal Highway Administration plans to extend that rule through the next year by requiring that components equaling 55% of the cost of all iron and steel EV charger enclosures or housing components be domestically manufactured by July 2024.

S&P Global Commodity Insights reporters Siri Hedreen and Camellia Moors produce content for distribution on Capital IQ Pro.

— Siri Hedreen, Camellia Moors

BOEM releases EIS for Mass. offshore wind amid protests over whale impacts

- Potentially major adverse impacts
- BOEM mulling possible project modifications

A draft environmental impact statement released Feb. 13 by the Interior Department's Bureau of Ocean Energy Management shows that the 2.4 GW Southcoast Wind project offshore Massachusetts would pose potentially major adverse impacts for the fishing industry, marine mammals, cultural sites and environmental justice communities.

In consideration of these impacts, BOEM is mulling the possibility of ordering the facility's developers to reduce the overall size of the wind farm, as well as the number and placement of associated transmission lines to limit adverse effects.

But even with the reduction in the number of wind generators, there is no guarantee that the impacts of Southcoast Wind, formerly known as Mayflower Wind, would be remediated. BOEM's draft environmental impact statement shows that cultural heritage sites would continue to face major impacts even with the reduction in the number of wind turbines.

BOEM will make a final decision on what alternative planning it will require from developers Shell New Energies and Ocean Winds North America once it finalizes the environmental impact statement (EIS) sometime in the spring or summer. In the meantime, it will kick off a 45-day comment period on the draft EIS on Feb. 17, and hold a series of meetings with stakeholders throughout the month of March.

The project is a key piece in meeting the Biden administration's goal of deploying 30 GW of offshore wind by 2030. BOEM Director Elizabeth Klein said that in its review of Southcoast and other offshore wind projects, the agency has stood "committed to working collaboratively with our tribal, state, and local government partners as well as using the best available science to avoid or minimize conflict with existing users and marine life."

Nevertheless, these potential impediments to offshore wind could slow progress on achieving the administration's goals. Indeed, the impacts to fisheries cited by the draft EIS could reinvigorate the commercial fishing industry to pursue new legal challenges against BOEM, while also strengthening Capitol Hill Republicans' call for a much more comprehensive review of Atlantic Coast wind farms and their adverse effects on the region's ecology.

In recent weeks, House GOP members have called for a congressional investigation into the impacts of the Biden administration's offshore wind agenda given the increased number of whale strandings that have taken place from Maryland to Massachusetts.

Notably, the new draft EIS shows the potential for major impacts on marine mammal mortality during the construction phase of the project from vessel strikes and the intense noise generated by seismic surveys and pile driving of foundations into the seabed. However, this threat will dissipate after the wind farm foundations are in place, providing valuable marine structures that would benefit marine mammal habitat, according to the analysis.

Potential modifications

Nevertheless, BOEM in some of its alternative development scenarios has modeled eliminating some of the project's wind turbines, while cutting the number of transmission lines or rerouting their connections to the mainland in an effort to reduce harm to marine mammals.

The 147-turbine project's impacts would range from "negligible to major adverse impacts on marine mammals and could include potentially beneficial impacts," says the draft report. The major adverse impacts are expected to result primarily from underwater noise from the detonation of unexploded munitions dropped in the sea since World War II and the impact of pile driving, as well as potential vessel strikes, it says. "Beneficial impacts are expected to result from the presence of structures," it says.

Reducing the number of the project's turbines "may lessen the impacts on marine mammals by providing more area of open ocean nearest to Nantucket Shoals, which provides important foraging habitat for marine mammals," the report continued. This would also reduce adverse noise impacts, according to one of BOEM's alternative development scenarios. But because the scenario "only represents a reduction of up to six [wind turbines], impact levels would be the same as the Proposed Action," BOEM said.

The project could have more detrimental effects for the commercial fishing industry, BOEM suggested. "[S]ome fishing operations could experience long-term, major disruptions. However, it is estimated that most vessels would only have to adjust somewhat to account for disruptions due to impacts," says the EIS.

Similar to the marine mammal alternative finding, BOEM says the project could adjust its underwater cable transmission lines, or reduce the number of wind turbines to try and limit the impacts. But the changes would be small, resulting in the same minor to major impacts already identified for the project, the EIS says.

Furthermore, when combined with the effects of other offshore wind projects in the region, the impact on the fishing industry, including for-hire recreational fishing, would be "major" with no benefits identified by BOEM.

Likewise, there would also be major impacts on "cultural resources," comprising both heritage sites and the natural surroundings and waterways that are culturally significant to regional tribes that are protected by federal law, according to the draft.

The Southcoast Wind project "would have major impacts on cultural resources," it says. BOEM says it anticipates the project's developers will address National Historical Preservation Act requirements to identify historic sites to "reduce the significance of potential impacts on some historic properties… ." However, mitigation measures to avoid the adverse effects of both physical and visual impacts on historic properties "would still be needed."

Furthermore, BOEM suggests that the cultural impacts would dovetail with major impacts on some environmental justice communities, namely the indigenous tribes of the region.

"The proposed action may have major disproportionally high and adverse impacts on tribal nations due to potential impacts on ancient submerged landforms," the draft EIS says.

The project would also have minor beneficial impacts on these communities from the displacement of fossil fuel energy generation and increased employment opportunities, it continues.

— John Siciliano

Subscriber Notes

Platts modifies US Electricity Methodology and Specifications Guide

Platts, part of S&P Global Commodity Insights, has reviewed its US Electricity Methodology Guide and made some small edits.

The required information expected from price submitters was restated and it was specified that wind and solar power sources are reflected in our Renewable, Curtailment, Penetration and Capture price indices.

The changes were made to add clarity and will not affect published values.

Please send all comments, feedback, and questions to **electricityprice@spglobal.com** and **pricegroup@spglobal.com**.

For written comments, please provide a clear indication if comments are not intended for publication by Platts for public viewing. Platts will consider all comments received and will make comments not marked as confidential available upon request.

Presidents Day holiday North American power and gas trading schedule

Energy Trader and Megawatt Daily will not be published Feb. 20, in observance of the Presidents Day holiday. No price data will be collected that day.

Daily North American power and natural gas data are as follows:

West bilateral assessments performed Feb. 15 will include day-ahead on-peak and off-peak for Feb. 16-17 flow.

West bilateral assessments performed Feb. 16 will include day-ahead on-peak Feb. 18 flow, day-ahead off-peak for Feb. 18-19 flow, and weekend off-peak and on-peak for Feb. 19 flow.

West bilateral assessments performed Feb. 17 will include day-ahead on-peak and off-peak for Feb. 20-21 flow.

Southeast bilateral assessments performed Feb. 17 will include day-ahead on-peak for Feb. 21 flow, day-ahead off-peak for Feb. 18-21 flow, and weekend on-peak for Feb. 18-20 flow.

Natural gas assessments performed Feb. 17 will be for physical flow Feb. 18-21.

For power price data questions, please contact Daryna Kotenko at Daryna.kotenko@spglobal.com.

For natural gas price data questions, please contact Pam Libby at pam.libby@spglobal.com.

Emissions markets

Emissions Markets, Feb 09 (Current Year Vintage)

	Symbol	Close	Change
RGGI Current Month Strip ($/Allowance)	ARJAF00	13.050	0.170
RGGI Next Month Strip ($/Allowance)	ARJAG00	13.060	0.160
RGGI Next December Strip ($/Allowance)	ARECA04	13.600	0.150
CCA Current Month Strip ($/Allowance)	ARJAH00	28.170	0.270
CCA Next Month Strip ($/Allowance)	ARJAI00	28.250	0.250
CCA Next December Strip ($/Allowance)	ARECB04	29.610	0.230
CCO Current Month Strip ($/mt)	ARJAJ00	18.850	0.330
CCO Next Month Strip ($/mt)	ARJAK00	18.930	0.150
CCO Next December Strip ($/mt)	ARECC04	19.820	0.160

REC markets

Renewable Energy Certificate Markets, Feb 09 ($/MWh)

	Symbol	Close	Change
RECs Current Year Vintage*			
Connecticut REC Class 1	RECCTC1	36.200	0.200
Massachusetts REC Class 1	RECMAC1	36.350	0.100
Maine REC Class 1	ARFAQ00	33.000	0.100
New Hampshire REC Class 1	ARFAV00	36.250	0.150
Rhode Island REC Existing	ARGAB00	10.250	0.000
Rhode Island REC New	ARGAC00	35.900	0.100
Vermont REC Tier 1	ARGAG00	NA	NA
NEPOOL REC Dual Qualified Class 1	ARHAA00	36.400	0.000
Maryland REC Tier 1	RECMDT1	29.700	0.000
New Jersey REC Class 1	RECNJT1	30.050	-0.050
New Jersey REC Class 2	AREAW00	22.450	0.550
Pennsylvania AEC Tier 1	RECPAT1	29.820	0.170
Ohio non-Solar REC	RECOHI0	5.500	0.000
DC REC Tier 1	ARGAO00	12.950	0.300
Delaware REC Tier 1	ARGAS00	NA	NA
Virginia non-Solar REC	ARGAW00	15.250	2.375
PJM Tri-Qualified REC Tier 1	ARHAD00	30.000	0.000
Texas non-Solar Compliance REC	RECTX00	2.850	0.400
Texas Green-e Eligible Wind REC	ARFAI00	2.850	0.400
Michigan non-Solar REC	ARFAM00	2.750	0.000
New York REC Tier 1	ARGAK00	29.500	1.500
New York Wind REC	ARGAM00	17.250	0.000
M-RETS Compliance REC from CRS Listed Facilities FH	ARHAF00	3.000	0.750
M-RETS Compliance REC from CRS Listed Facilities BH	ARHAG00	3.000	0.200
NAR Any REC	ARHAI00	2.500	0.250
NAR Any Green-e Eligible REC	ARHAK00	2.500	0.250
NAR Green-e Eligible Wind REC	ARHAN00	2.500	0.250
California Bundled REC Bucket 1	RECCAB1	21.000	0.000
California Bundled REC Bucket 2	RECCAB2	18.000	0.000
California Bundled REC Bucket 3	RECCAB3	6.500	0.000
National Green-e Certified REC Any Technology	RECUSAV	3.200	-0.050
National Green-e Certified Wind	RECUSWV	3.200	-0.050
Solar RECs Current Year Vintage*			
Massachusetts SREC 1	RECMAS0	339.500	0.500
Massachusetts SREC 2	ARHAW00	283.100	0.000
Maryland SREC	RECMDS0	60.400	-0.850
New Jersey SREC	RECNJS0	225.000	0.000
Pennsylvania SAEC	RECPAS0	48.000	0.000
Ohio SREC	RECOHSI	5.750	0.000
DC SREC	ARIAL00	404.250	5.500
Delaware SREC Class 1	ARIAO00	NA	NA
Virginia In-State SREC \<1MW	ARIAX00	40.000	0.000
Texas SREC	ARIAR00	3.150	0.025
Texas Compliance SREC from CRS Listed Facilities	ARIAT00	3.150	0.025
New York SREC	ARIAE00	NA	NA
NAR SREC	ARJAA00	NA	NA
NAR SREC CRS Listed	ARJAC00	NA	NA

*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

	Brazil			Turkey		India		
	BRL/MWh	USD/MWh	Eur/MWh	Eur/MWh	USD/MWh	INR/MWh	USD/MWh	Eur/MWh
Hydro								
Previous Year	1.010	0.194	0.207	0.410	0.438	82.000	0.990	0.924
Current Year	1.010	0.194	0.207	0.510	0.544	82.000	0.990	0.924
Wind								
Previous Year	1.440	0.276	0.295	0.570	0.608			
Current Year	1.440	0.276	0.295	0.670	0.715			
Solar								
Previous Year	1.440	0.276	0.295	0.610	0.651			
Current Year	1.440	0.276	0.295	0.690	0.736			
Biomass								
Previous Year	0.920	0.176	0.188	0.370	0.395			
Current Year	0.920	0.176	0.188	0.470	0.502			

Global Bitcoin Quarq Spreads

Spot European, February 14 ($/MWh)

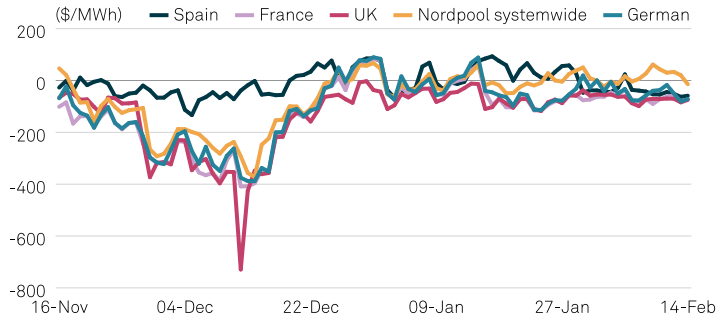
Nordics, Germany, France, Spain	Spread	Renewable-Hydro	Renewable-Wind	Renewable-Solar
NO1	-44.83	-50.99	-50.93	-50.93
NO2	-44.83	-50.99	-50.93	-50.93
NO3	43.94	37.78	37.84	37.84
NO4	69.36	63.20	63.26	63.26
NO5	-16.42	-22.58	-22.51	-22.51
SE1	43.94	37.78	37.84	37.84
SE2	43.94	37.78	37.84	37.84
SE3	-38.93	-45.10	-45.03	-45.03
SE4	-55.48	-61.64	-61.58	-61.58
FI	-42.14	-48.30	-48.24	-48.24
DK1	-71.17	-77.33	-77.27	-77.27
DK2	-71.17	-77.33	-77.27	-77.27
Systemwide	-14.35	-20.51	-20.45	-20.45
Germany	-71.17	-77.33	-77.27	-77.27
France	-72.73	-78.89	-78.82	-78.82
Spain	-58.75	-64.91	-64.85	-64.85

United Kingdom	Spread	Renewable-Non-Biomass	Renewable-Biomass
GB	-74.86	-82.82	-82.33

Spot North American, February 14 ($/MWh)

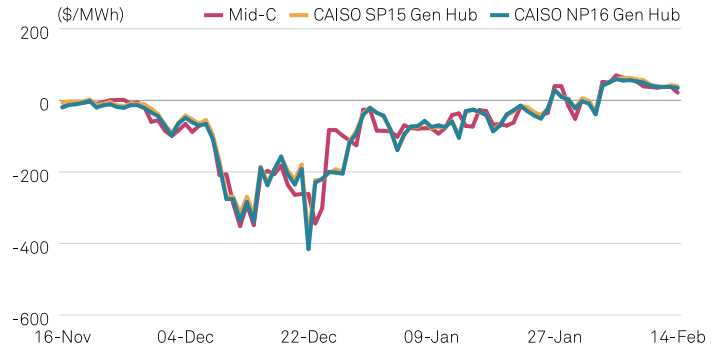
	Spread	Renewable-Any Tech	Renewable-Solar
Texas			
ERCOT AEN Zone	79.13	75.93	75.13
ERCOT Bus Average	82.91	79.71	78.91
ERCOT CPS Zone	79.44	76.24	75.44
ERCOT Houston Zone	80.75	77.55	76.75
ERCOT Hub Average	83.63	80.43	79.63
ERCOT LCRA Zone	80.27	77.07	76.27
ERCOT North Zone	82.76	79.56	78.76
ERCOT Rayburn Zone	82.39	79.19	78.39
ERCOT South Zone	81.97	78.77	77.97
ERCOT West Zone	88.57	85.37	84.57
Midwest			
SPP North Hub	91.35	88.15	87.35
SPP South Hub	82.58	79.38	78.58
Georgia			
Into GTC	68.79	65.59	64.79
Kentucky			
Into TVA	71.29	68.09	67.29
Indiana Hub	69.25	66.05	65.25
New York			
NYISO Zone A	74.21	71.01	70.21
NYISO Zone C	73.68	70.48	69.68
NYISO Zone D	76.95	73.75	72.95
NYISO Zone E	73.12	69.92	69.12
California			
CAISO NP16 Gen Hub	34.32	31.12	30.32
CAISO SP15 Gen Hub	39.29	36.09	35.29
Washington			
Mid-Columbia	21.12	17.92	17.12

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



Source: S&P Global Commodity Insights

Bitcoin Quarq spread CAISO vs Mid-C



Source: Source: S&P Global Commodity Insights

Renewable Capture Prices

Renewable Capture Price Indexes ($/MWh)

Date: 13-Feb*

Index	Symbol	Current	Previous
CAISO			
CAISO NP15 Gen Hub Solar	ACPIC00	41.38	34.03
CAISO NP15 Gen Hub Wind	ACPIA00	58.77	52.72
CAISO SP15 Gen Hub Solar	ACPID00	26.92	26.43
CAISO SP15 Gen Hub Wind	ACPIB00	53.11	54.55
CAISO ZP26 Gen Hub Solar	ACPIE00	19.39	25.84
ERCOT			
ERCOT North Hub Solar	ACPIL00	18.43	14.79
ERCOT North Zn Weighted Average LMP Wind	ACPII00	12.24	7.68
ERCOT South Hub Solar	ACPIN00	14.95	17.21
ERCOT South Zn Weighted Average LMP Wind	ACPIK00	-10.99	8.31
ERCOT West Hub Solar	ACPIM00	17.87	12.82
ERCOT West Zn Weighted Average LMP Wind	ACPIJ00	14.76	3.65
ISONE			
ISONE Internal Hub Solar	ACPXE00	31.61	26.09
ISONE Internal Hub Wind	ACPXD00	39.41	26.84
MISO			
MISO Indiana Hub Solar	ACPIT00	26.94	26.70
MISO Indiana Hub Wind	ACPIR00	29.67	26.17
MISO Louisiana Hub Solar	ACPIU00	25.26	24.50
MISO Minnesota Hub Solar	ACPIS00	15.43	23.31
MISO Minnesota Hub Wind	ACPIQ00	14.54	19.25
NYISO			
NYISO Hudson Valley Zone Wind	ACPXB00	31.91	23.92
NYISO West Zone Wind	ACPXC00	18.30	12.82
PJM*			
PJM Dominion Hub Solar	ACPXA00	28.47	25.79
PJM Dominion Hub Wind	ACPIX00	26.24	25.69
PJM Northern Illinois Hub Solar	ACPIZ00	24.92	22.41
PJM Northern Illinois Hub Wind	ACPIW00	22.94	22.14
PJM Western Hub Solar	ACPIY00	26.68	24.52
PJM Western Hub Wind	ACPIV00	25.08	24.17
SPP			
SPP North Hub Wind	ACPIO00	9.65	15.67
SPP South Hub Wind	ACPIP00	17.30	14.17

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

Source: S&P Global Platts

US capture prices vary despite increase in peakload demand

- Higher demand in balancing act with bearish weather, supply fundamentals
- ERCOT demand declines on day amid mild temperatures

Peakload electricity demand rose across almost all US Independent System Operators and Regional Transmission Organizations for Feb. 13 in spite of warmer weather as the workweek began.

Renewable capture prices were mixed across regions and hubs, however, as higher renewable generation balanced out bullish demand fundamentals.

CAISO

The California ISO footprint saw a 10.58%, or 2.58 GW, increase in peakload demand on Feb. 13 in spite of stable temperatures, ISO and CustomWeather data showed.

Wind and solar generation were both on the rise, increasing 33.46% and 28.43%, respectively. At the same time, solar curtailments increased by almost 800 MW during on-peak hours.

Capture prices rose 21.60% and 11.48% in the NP15 Solar and Wind Generation Hubs, respectively, but declined 2.64% and 24.96% in the SP15 Wind Hub and ZP26 Solar Hub, respectively.

Texas

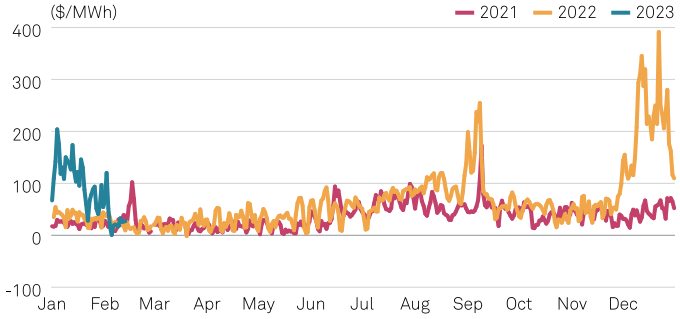
In the Electric Reliability Council of Texas footprint, on the other hand, peakload demand decreased 3.4% as the average daily temperature warmed 4.6 degrees Fahrenheit to reach 54.8 F.

Wind generation was steady on the day, declining only 4.8%, but solar generation dropped 40.1%, or 1.75 GW.

ERCOT capture prices also showed mixed trends, with the South Zone Wind Weighted Average Locational Marginal Price falling 232.25% to reach negative territory, while the West Zone Wind Weighted Average LMP wrose more than 304% to reach near $14.75/MWh.

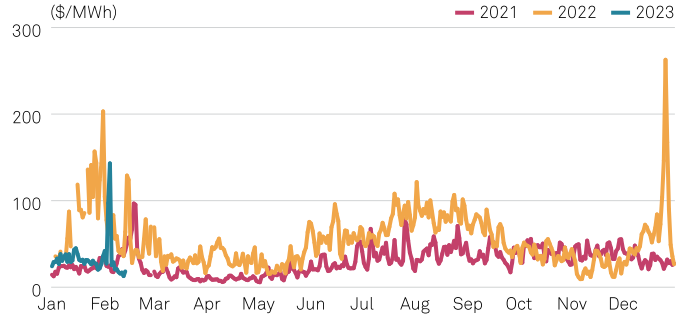
— Nicole Baquerizo

CAISO SP15 gen hub solar capture price



Source: S&P Global Commodity Insights

NYISO west zone wind capture price



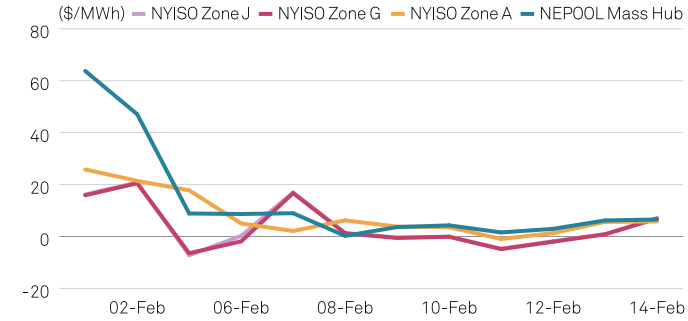
Source: S&P Global Commodity Insights

Northeast Power Markets

Northeast day ahead power prices ($/MWh)

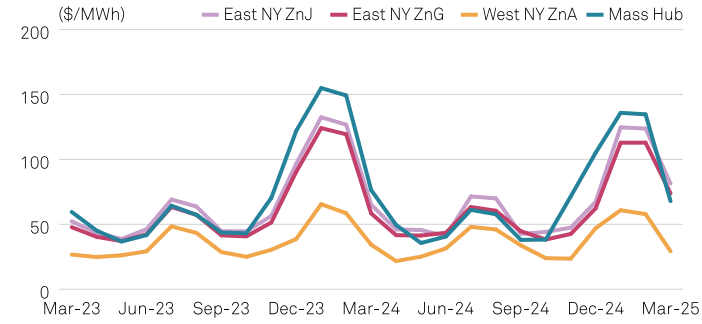
Hub/Index	Symbol	16-Feb	Marginal heat rate	Spark spread @7K	Spark spread @12K	Price change Chg	Price change % Chg	Prior 7-day Average	Month Min	Month Max	Yearly change Feb-23	Yearly change Feb-22	Yearly change Chg	Yearly change % Chg
On-Peak														
ISONE Internal Hub	IINIM00	30.73	14429	15.82	5.17	-2.20	-6.7	33.36	26.80	242.76	73.38	123.11	-49.73	-40.4
ISONE NE Mass-Boston	IINNM00	31.03	14566	16.12	5.47	-2.27	-6.8	33.74	27.08	241.42	73.50	125.20	-51.71	-41.3
ISONE Connecticut	IINCM00	30.05	12339	13.00	0.83	-2.18	-6.8	32.57	26.20	239.61	72.03	118.23	-46.20	-39.1
NYISO Zone G	INYHM00	28.55	11726	11.51	-0.67	0.11	0.4	30.64	28.44	237.52	65.83	94.52	-28.69	-30.4
NYISO Zone J	INYNM00	28.96	14163	14.65	4.42	0.22	0.8	31.02	28.74	236.26	66.32	99.02	-32.70	-33.0
NYISO Zone A	INYWM00	19.30	9236	4.67	-5.78	8.14	72.9	18.58	11.16	140.25	37.53	64.25	-26.72	-41.6
NYISO Zone F	INYCM00	31.76	15532	17.45	7.22	-2.15	-6.3	34.36	30.88	360.94	84.33	108.10	-23.77	-22.0
Off-Peak														
ISONE Internal Hub	IINIP00	21.99	10323	7.08	-3.57	-5.04	-18.6	26.46	21.03	265.43	64.87	105.00	-40.13	-38.2
ISONE NE Mass-Boston	IINNP00	22.04	10346	7.13	-3.52	-5.27	-19.3	26.60	20.97	261.08	64.60	106.43	-41.83	-39.3
ISONE Connecticut	IINCP00	21.65	8891	4.60	-7.57	-4.63	-17.6	25.88	20.74	256.86	63.27	101.05	-37.78	-37.4
NYISO Zone G	INYHP00	21.05	8645	4.01	-8.17	-1.41	-6.3	24.16	21.05	236.98	52.46	85.06	-32.60	-38.3
NYISO NYC Zone	INYNP00	21.30	10415	6.98	-3.24	-1.35	-6.0	24.44	21.30	228.47	52.33	85.83	-33.50	-39.0
NYISO West Zone	INYWP00	9.81	4694	-4.82	-15.27	1.31	15.4	14.39	8.50	197.04	31.64	59.98	-28.34	-47.2
NYISO Capital Zone	INYCP00	25.71	12573	11.40	1.17	-2.05	-7.4	28.01	25.71	357.06	67.72	96.37	-28.65	-29.7

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



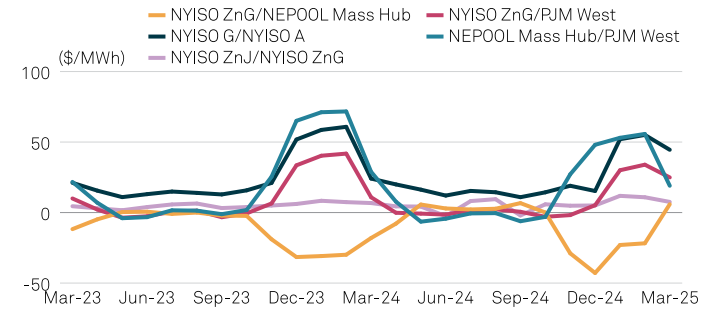
Sources: S&P Global Commodity Insights, NYISO, ISONE

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 vary as temperatures warm up

Mass Hub on-peak for next-day delivery traded about $3 higher on the Intercontinental Exchange near $30/MWh.

Meanwhile, the New York Independent System Operator on-peak prices rose, while off-peak prices were rangebound.

NYISO Zone J on-peak inched up about 25 cents on the day, while West Zone A jumped about $8 to price near $19.25/MWh. In off-peak, Zone J slid about $1.50 to $21/MWh, while Zone A was up about $1.50 near $9.75/MWh.

In power forwards, Mass Hub March on-peak saw a $2 increase on ICE, trading around $61/MWh. The corresponding April contract, however, edged about 25 cents lower to $45/MWh.

Temperatures, demand

US Northeast was expected to see higher temperatures over the rest of the workweek in the lower 60s F before dropping to the lower 40s F over the weekend, US National Weather Service data showed.

Moving alongside temperatures, ISO-NE Feb. 16 peakload demand was estimated to drop 3.9% on the day to 14.60 GW, and NYISO load could see a 1% drop to 17.69 GW, according to ISO data.

Gas prices

Natural gas prices also varied with mostly marginal changes in both directions, with Algonquin city-gates up about 3 cents from its prior Platts Index to $2.13/MMBtu, Transco Zone 6 NY adding 12 cents to 2.04/MMBtu, and Tennessee Zone 5 shedding 54 cents to $2.11/MMBtu for Feb. 16 flows.

Gas prices have been relatively low over the last week, repressing power prices in the region. Declines followed historic spikes early in the February when Iroquois Zone 2 spot price reached $136/MMBtu for next-day flows.

Platts is part of S&P Global Commodity Insights.

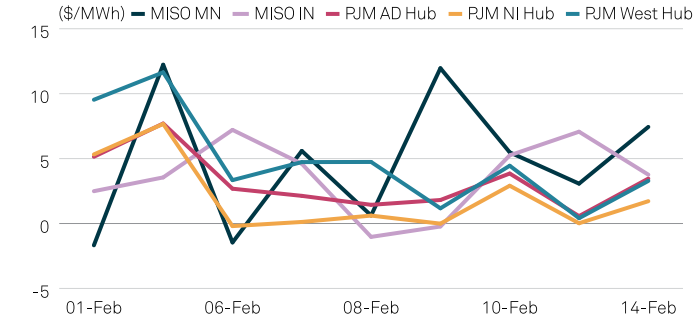
— Daryna Kotenko

PJM/MISO Power Markets

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

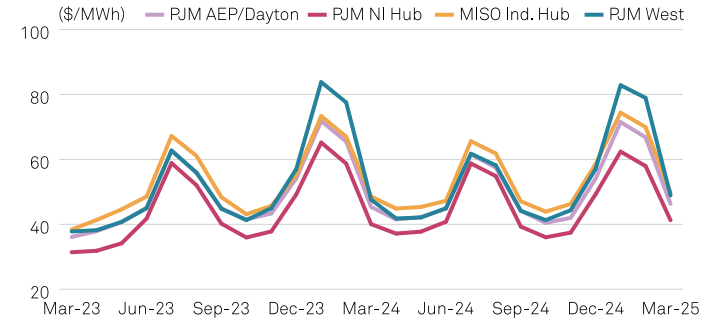
Hub/Index	Symbol	16-Feb	Marginal heat rate	Spark spread @7K	Spark spread @12K	Price change Chg	Price change % Chg	Prior 7-day Average	Month Min	Month Max	Yearly Change Feb-23	Yearly Change Feb-22	Yearly Change Chg	Yearly Change % Chg
On-Peak														
PJM AEP Dayton Hub	IPADM00	27.17	11206	10.20	-1.93	3.18	13.3	26.43	23.75	64.36	30.64	48.07	-17.43	-36.3
PJM Dominion Hub	IPDMM00	27.87	11834	11.38	-0.39	2.32	9.1	27.72	24.56	119.72	38.02	54.29	-16.27	-30.0
PJM Eastern Hub	IPEHM00	22.31	10885	7.96	-2.29	0.83	3.9	22.49	20.39	164.26	37.94	53.44	-15.50	-29.0
PJM Northern Illinois Hub	IPNIM00	26.19	10980	9.49	-2.43	4.93	23.2	24.48	20.61	56.61	27.46	41.66	-14.20	-34.1
PJM Western Hub	IPWHM00	27.13	13235	12.78	2.53	2.05	8.2	26.55	24.09	145.17	38.55	52.56	-14.01	-26.7
MISO Indiana Hub	IMIDM00	28.17	11813	11.48	-0.45	4.24	17.7	27.72	23.93	48.90	31.53	53.96	-22.43	-41.6
MISO Minnesota Hub	IMINM00	27.33	11533	10.74	-1.11	12.35	82.4	17.78	13.33	34.69	22.05	43.03	-20.98	-48.8
Off-Peak														
PJM AEP Dayton Hub	IPADP00	19.23	7929	2.25	-9.87	0.37	2.0	21.82	18.86	47.22	26.27	43.58	-17.31	-39.7
PJM Dominion Hub	IPDMP00	20.27	8609	3.79	-7.98	0.04	0.2	23.12	20.23	110.90	32.69	53.25	-20.56	-38.6
PJM Eastern Hub	IPEHP00	17.24	8408	2.89	-7.37	-1.58	-8.4	19.84	16.47	162.69	34.85	53.84	-18.99	-35.3
PJM Northern Illinois Hub	IPNIP00	18.04	7566	1.35	-10.57	5.41	42.8	19.11	12.63	33.76	21.63	33.05	-11.42	-34.6
PJM Western Hub	IPWHP00	19.91	9712	5.56	-4.69	0.09	0.5	22.29	19.82	88.51	30.75	48.62	-17.87	-36.8
MISO Indiana Hub	IMIDP00	21.86	9165	5.16	-6.76	3.58	19.6	23.50	18.28	38.19	26.42	44.74	-18.32	-40.9
MISO Minnesota Hub	IMINP00	18.25	7699	1.66	-10.20	14.67	409.8	12.10	3.58	30.70	15.69	33.85	-18.16	-53.7

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



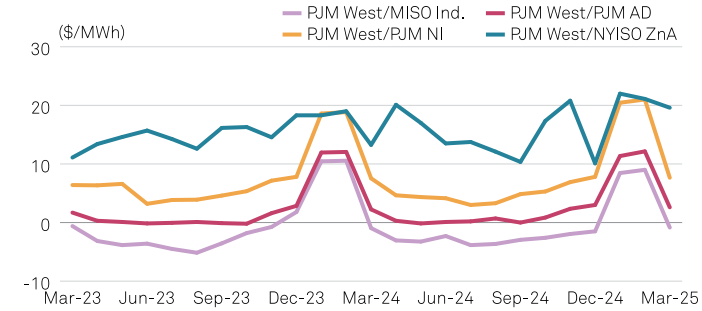
Sources: S&P Global Commodity Insights, PJM, MISO

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

PJM, MISO power dailies climb as temperatures set to drop

PJM spot power edged up during Feb. 15 trading on the Intercontinental Exchange on lower temperature expectations across the regional transmission organization.

CustomWeather predicted Pittsburgh highs down 8 degrees from the day before to 63 F Feb. 16. Cincinnati highs declined 13 degrees on the day to 64 F, and Chicago highs dipped 9 degrees to 41 F.

PJM West Hub day-ahead jumped $1.75 to about $26.75/MWh and the real-time peak contract rose about $3.75 to price around $27/MWh for Feb. 16 delivery.

AEP Dayton Hub day-ahead on-peak was valued about $3.25 higher to price near $27/MWh and North Illinois Hub day-ahead peak rallied some $6 to also price around $27/MWh.

On lower daily temperatures, PJM predicted a near 1% decrease in peakload demand from Feb. 15 to Feb. 16 levels of 91.9 GW.

PJM data showed month-to-date wind production averaged 5.1% of the fuel mix, up 0.5 percentage points from last year at the same time.

MISO rises

Prices in the Midcontinent Independent System Operator also saw rises, with Indiana Hub day-ahead on-peak up $3.25 to $28/MWh Feb. 16 on ICE.

Supporting prices, the ISO forecast a 3.8% jump in daily peakload demand for Feb. 16 to 80.8 GW as Indianapolis highs tumbled 13 degrees on the day to 52 F, per CustomWeather.

Temperatures would continue down as Feb. 17 highs were forecast to 36 F.

MISO also forecast a 22.4% reduction in average wind generation from Feb. 15 to trend at 17.1 GWh Feb. 16, pushing prices upward.

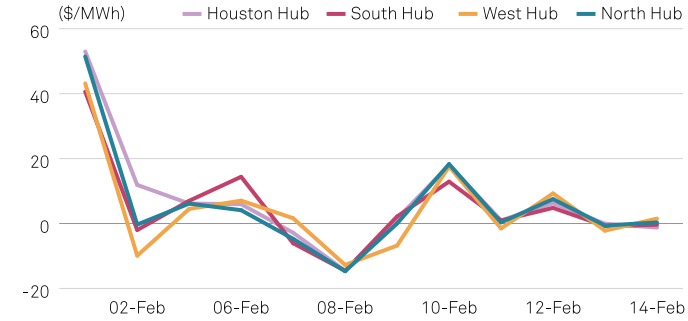
— Karen Rivera

Southeast Power Markets

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

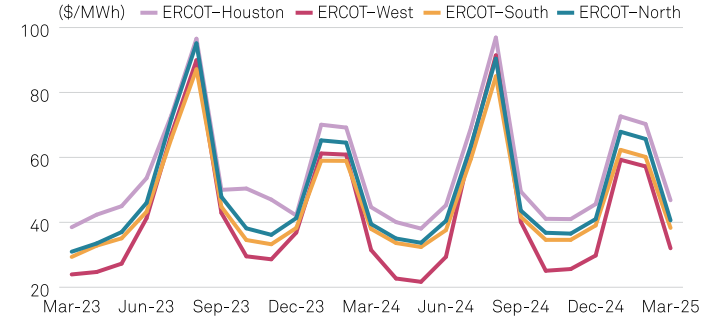
Hub/Index	Symbol	16-Feb	Marginal heat rate	Spark spread @7K	Spark spread @12K	Price change Chg	Price change % Chg	Prior 7-day Average	Month Min	Month Max	Yearly change Feb-23	Yearly change Feb-22	Yearly change Chg	Yearly change % Chg
On-Peak														
MISO Texas Hub	IMTXM00	26.69	11628	10.62	-0.85	2.84	11.9	24.67	22.35	34.40	26.21	42.71	-16.50	-38.6
MISO Louisiana	IMLAM00	26.67	11397	10.29	-1.41	2.77	11.6	24.82	22.61	35.12	26.52	43.10	-16.58	-38.5
SPP North Hub	ISNOM00	28.56	12052	11.97	0.12	19.37	210.8	16.30	3.75	35.17	19.81	31.46	-11.65	-37.0
SPP South Hub	ISSOM00	24.15	10876	8.61	-2.50	3.60	17.5	22.83	16.49	41.57	26.21	39.73	-13.52	-34.0
ERCOT Houston Hub	IERHM00	22.31	10451	7.37	-3.31	3.56	19.0	21.36	15.90	87.45	26.24	45.27	-19.03	-42.0
ERCOT North Hub	IERNM00	23.70	10328	7.64	-3.84	5.98	33.7	20.58	14.00	94.50	26.19	44.25	-18.06	-40.8
ERCOT South Hub	IERSM00	18.53	8368	3.03	-8.04	0.84	4.7	19.89	9.68	81.17	23.77	40.40	-16.63	-41.2
ERCOT West Hub	IERWM00	19.70	9336	4.93	-5.62	10.99	126.2	15.61	4.35	94.84	22.71	38.49	-15.78	-41.0
Off-Peak														
MISO Texas Hub	IMTXP00	18.63	8116	2.56	-8.92	0.44	2.4	20.49	17.37	25.45	21.06	37.69	-16.63	-44.1
MISO Louisiana	IMLAP00	19.09	8158	2.71	-8.99	0.83	4.5	20.82	17.59	27.15	21.49	37.87	-16.38	-43.2
SPP North Hub	ISNOP00	17.87	7542	1.28	-10.56	29.68	251.3	5.96	-11.81	23.45	10.48	15.35	-4.87	-31.7
SPP South Hub	ISSOP00	15.47	6970	-0.07	-11.16	3.98	34.6	12.45	-0.72	34.08	15.86	22.87	-7.01	-30.7
ERCOT Houston Hub	IERHP00	15.81	7406	0.87	-9.81	2.72	20.8	16.09	5.22	37.72	17.95	30.60	-12.65	-41.3
ERCOT North Hub	IERNP00	16.01	6974	-0.06	-11.54	3.03	23.3	15.96	5.39	40.74	18.12	29.67	-11.55	-38.9
ERCOT South Hub	IERSP00	14.71	6641	-0.80	-11.87	1.86	14.5	15.60	2.96	34.78	17.17	26.70	-9.53	-35.7
ERCOT West Hub	IERWP00	17.44	8267	2.67	-7.88	2.85	19.5	16.72	1.46	43.10	19.12	24.34	-5.22	-21.4

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



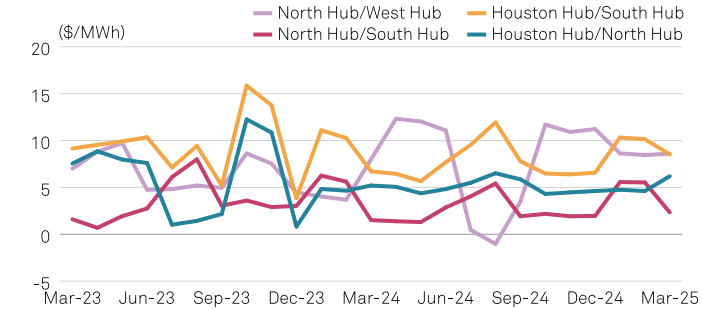
Sources: S&P Global Commodity Insights, ERCOT

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

ERCOT power continues to increase as demand rises on incoming temperature drop

Continuing the uptrend from the day before, ERCOT North Hub day-ahead on-peak was valued around $2.75 higher on the Intercontinental Exchange to price about $20.50/MWh for Feb. 16 delivery, and its corresponding off-peak contract strengthened by $5.50 to $17/MWh.

The balance-of-the-week Feb. 17 price also followed the uptrend, rising nearly $2.50 to price about $30/MWh as Dallas end-of-week temperatures were set to remain below normal in the low 50s Fahrenheit.

Natural gas prices also helped lift power, as Houston Ship Channel rose 4 cents on ICE to $2.14/MMBtu and Katy Hub moved up 2 cents to $2.22/MMBtu for next-day flows.

Demand rises

ERCOT predicted a 6.8% daily increase in its peakload demand for Feb. 16 to 50.9 GW, supporting higher power prices on a lower temperature forecast by the National Weather Service following a storm system set to impact much of the US.

CustomWeather showed Dallas temperature highs were due to fall 28 degrees from the day before to 50 Fahrenheit Feb. 16, and Houston temperature highs were expected to drop 20 degrees on the day to 61 F.

Average systemwide solar generation was forecast down 3.1% from the day-before average to 3.1 GWh on Feb. 16.

Southeast demand falls

Seeing slight changes on the day, Into Southern day-ahead on-peak priced at $20/MWh on ICE for Feb. 16 delivery, down 50 cents from the previous Platts assessment of $20.50/MWh.

Falling prices followed lower Southeast peakload demand, which was forecast down almost 3% from the day before to 83.6 GW Feb. 16.

Platts is part of S&P Global Commodity Insights.

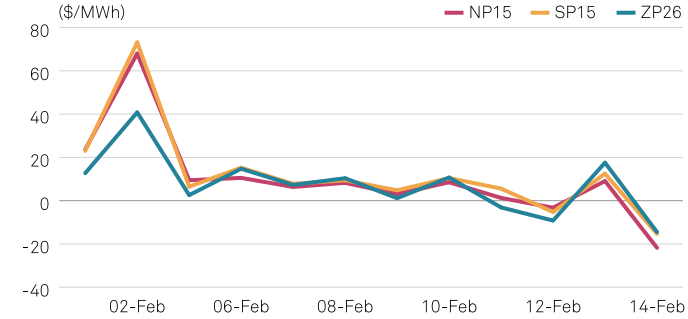
— Karen Rivera

West Power Markets

Western day-ahead power prices ($/MWh)

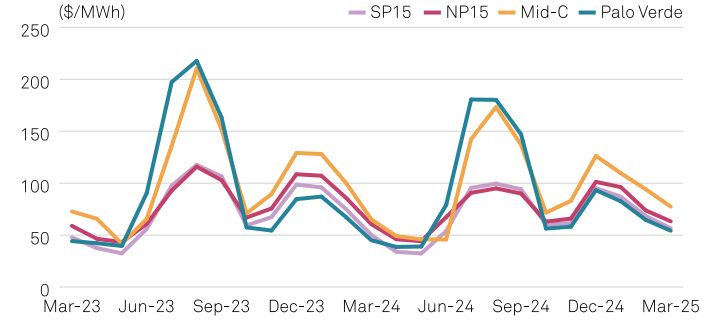
Hub/Index	Symbol	16-Feb	Marginal heat rate	Spark spread @7K	Spark spread @12K	Price change Chg	Price change % Chg	Prior 7-day Average	Month Min	Month Max	Yearly change Feb-23	Yearly change Feb-22	Yearly change Chg	Yearly change % Chg
On-Peak														
NP15	ICNGM00	77.39	10402	25.31	-11.89	19.00	32.5	55.20	49.14	148.88	66.03	46.68	19.35	41.5
SP15	ICSGM00	72.81	9846	21.05	-15.93	21.36	41.5	48.33	26.81	145.44	57.34	40.38	16.96	42.0
ZP26	ICZGM00	74.44	10066	22.67	-14.30	24.47	49.0	44.40	26.63	140.81	53.98	38.96	15.02	38.6
Off-Peak														
NP15	ICNGP00	81.08	10897	29.00	-8.21	22.69	38.9	58.20	49.92	142.02	66.60	49.54	17.06	34.4
SP15	ICSGP00	83.02	11227	31.26	-5.72	23.51	39.5	58.48	49.30	145.46	67.21	48.74	18.47	37.9
ZP26	ICZGP00	81.05	10960	29.28	-7.69	22.58	38.6	57.50	48.85	142.44	66.02	47.86	18.16	37.9

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



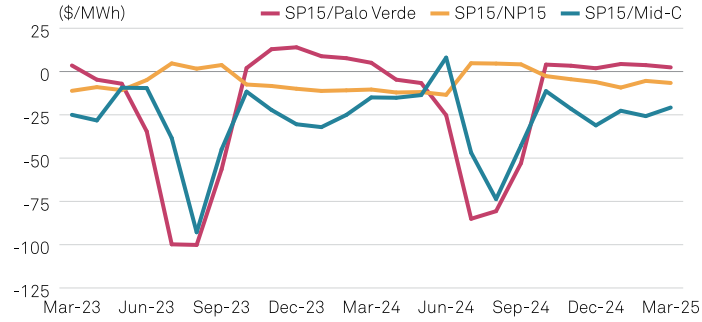
Sources: S&P Global Commodity Insights, CAISO

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 West power dailies climb on natural gas pricing, lingering storm system

SP15 on-peak for Feb. 16-17 delivery soared around $29.75 from its previous settlement to trade around $78.50/MWh, and the corresponding off-peak saw a $19 increase to $79/MWh on the Intercontinental Exchange.

Boosting spot power levels, SoCalGas city-gates was valued at $7.68/MMBtu, climbing $2.45 on the day, and PG&E was up $2.08 to $7.48/MMBtu for next-day flows.

Despite the uptick, the California Independent System Operator estimated its peakload demand to fall 0.4% to 27.58 GW Feb. 16 and 3.5% to 26.59 GW Feb. 17, ISO data indicated.

Snow showers and gusty winds continued to impact Southern California, keeping low temperatures at sub-freezing levels. Amid wintry conditions, freeze warnings and watches remained active in the area, according to the US National Weather Service.

Nearby locations

In the Northwest, Mid-Columbia day-ahead on-peak rose about $5.50 on the day to price around $82.50/MWh, and the off-peak added about 25 cents to trade near $80/MWh.

Lower supply in the Bonneville Power Administration Feb. 14 served to drive power prices higher. Total generation output saw an almost 8% day-on-day decline to 250.21 GWh following wind supply's over 54% plunge to 28.66 GWh, BPA data showed.

Mirroring surrounding regions, the Southwest's Palo Verde day-ahead on-peak leapt about $26.25 to trade around $74.25/MWh, and Mead 230 surged about $16.75 to $70/MWh. The corresponding off-peak packages also made double-digit gains to price near $70.50/MWh and $71.50/MWh, respectively.

The storm system began shifting away from Washington and Oregon, ushering in gradually warmer temperatures in the mid-30s to upper 40s Fahrenheit. Meanwhile, cooler, windier conditions moved into Nevada and Arizona, bringing low temperatures to the 30s F. Wind and winter weather advisories, as well as hard freeze warnings, lingered through Feb. 16, according to the weather service.

— Grace Parker

Bilaterals

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

Hub/Index	Symbol	16-Feb	Marginal heat rate	Spark spread @7K	Spark spread @12K	Price change Chg	Price change % Chg	Prior 7-day Average	Month Min	Month Max	Yearly change Feb-23	Yearly change Feb-22	Yearly change Chg	Yearly change % Chg
On-Peak														
Florida	AAMAV20	26.50	11325	10.12	-1.58	0.25	1.0	28.86	26.25	53.50	32.96	49.78	-16.82	-33.8
GTC, Into	WAMCJ20	22.00	9483	5.76	-5.84	-0.25	-1.1	24.82	22.00	49.75	29.06	50.25	-21.19	-42.2
Southern, Into	AAMBJ20	21.00	9052	4.76	-6.84	0.50	2.4	23.26	20.50	48.00	27.30	48.24	-20.94	-43.4
TVA, Into	WEBAB20	22.75	10089	6.97	-4.31	0.75	3.4	24.57	22.00	50.50	28.77	49.99	-21.22	-42.5
VACAR	AAMCI20	22.50	9554	6.01	-5.76	1.50	7.1	23.89	21.00	64.25	29.71	49.62	-19.91	-40.1
Off-Peak														
Florida	AAMAO20	21.25	9081	4.87	-6.83	0.00	0.0	25.21	21.25	50.75	31.17	43.05	-11.88	-27.6
GTC, Into	WAMCC20	20.75	8944	4.51	-7.09	0.00	0.0	27.00	20.75	52.00	32.55	46.82	-14.28	-30.5
Southern, Into	AAMBC20	17.13	7384	0.89	-10.71	-0.12	-0.7	18.93	17.13	45.00	25.29	44.20	-18.91	-42.8
TVA, Into	AAJER20	17.75	7871	1.96	-9.31	0.00	0.0	19.43	17.75	48.25	26.81	43.90	-17.09	-38.9
VACAR	AAMCB20	17.75	7537	1.26	-10.51	0.00	0.0	19.71	17.75	52.75	27.95	45.46	-17.51	-38.5

Western day-ahead bilateral indexes ($/MWh)

Hub/Index	Symbol	17-Feb	Marginal heat rate	Spark spread @7K	Spark spread @12K	Price change Chg	Price change % Chg	Prior 7-day Average	Month Min	Month Max	Yearly change Feb-23	Yearly change Feb-22	Yearly change Chg	Yearly change % Chg
On-Peak														
Mid-C	WEABF20	81.82	12804	37.09	5.14	4.89	6.4	63.99	48.14	140.08	70.79	39.76	31.03	78.0
John Day	WEAHF20	69.50	10876	24.77	-7.18	5.00	7.8	61.00	49.00	136.00	66.78	41.78	25.00	59.8
COB	WEABE20	83.00	12500	36.52	3.32	5.25	6.8	62.07	44.50	141.00	70.13	41.57	28.56	68.7
NOB	WEAIF20	86.75	13576	42.02	10.07	5.00	6.1	68.79	51.25	170.75	77.12	47.61	29.51	62.0
Palo Verde	WEACC20	73.25	9538	19.49	-18.91	25.25	52.6	43.64	37.75	188.64	60.66	39.28	21.38	54.4
Mona	AARLQ20	72.50	10387	23.64	-11.26	4.50	6.6	56.70	44.21	190.00	70.29	44.88	25.41	56.6
Four Corners	WEABI20	82.50	14641	43.06	14.88	27.50	50.0	49.43	45.50	195.00	67.70	44.10	23.60	53.5
Pinnacle Peak	WEAKF20	73.25	9538	19.49	-18.91	25.25	52.6	43.64	37.75	188.75	60.68	45.88	14.81	32.3
Westwing	WEAJF20	74.25	9668	20.49	-17.91	25.25	51.5	44.64	36.50	165.00	59.92	40.30	19.62	48.7
MEAD	AAMBW20	72.00	9375	18.24	-20.16	18.75	35.2	47.54	38.00	205.00	64.15	41.95	22.20	52.9
Off-Peak														
Mid-C	WEACL20	79.50	12441	34.77	2.82	-0.07	-0.1	63.68	40.33	140.82	67.24	35.05	32.19	91.9
John Day	WEAHL20	73.75	11541	29.02	-2.93	0.00	0.0	63.50	42.50	143.00	67.51	36.80	30.71	83.4
COB	WEACJ20	81.00	12199	34.52	1.32	0.00	0.0	57.00	37.00	125.00	61.85	36.62	25.23	68.9
NOB	WEAIL20	82.00	12833	37.27	5.32	0.00	0.0	66.04	51.25	151.75	72.65	44.23	28.42	64.3
Palo Verde	WEACT20	70.06	9122	16.30	-22.10	18.06	34.7	47.07	38.50	168.00	59.61	43.61	16.00	36.7
Mona	AARLO20	72.50	10387	23.64	-11.26	4.50	6.6	56.00	42.00	198.00	67.63	39.94	27.69	69.3
Four Corners	WEACR20	80.00	14197	40.56	12.38	21.50	36.8	50.57	38.50	186.50	64.91	43.13	21.79	50.5
Pinnacle Peak	WEAKL20	72.25	9408	18.49	-19.91	18.00	33.2	49.32	40.75	170.25	61.85	46.06	15.79	34.3
Westwing	WEAJL20	71.00	9245	17.24	-21.16	18.00	34.0	48.07	39.50	157.00	60.10	41.50	18.60	44.8
MEAD	AAMBQ20	71.00	9245	17.24	-21.16	15.00	26.8	50.00	37.00	170.00	62.00	42.34	19.66	46.4

Note: Western indices reflect Feb. 16-17 delivery.

Platts M2MS Balance-of-the-month, FEB 15, ($/MWh)

	Symbol	On-peak	Symbol	Off-peak
Northeast				
Mass Hub	EMHTB00	64.97	EMHUB00	50.27
N.Y. Zone G	ENGTB00	50.65	ENGUB00	42.63
N.Y. Zone J	ENJTB00	56.40	ENJUB00	45.03
N.Y. Zone A	ENATB00	18.30	ENAUB00	17.77
Ontario*	EONTB00	27.17	EONUB00	20.92
*Ontario prices are in Canadian dollars				
PJM & MISO				
PJM West	EPJTB00	32.55	EPJUB00	26.27
AD Hub	EECTB00	29.19	EECUB00	23.27
NI Hub	ECETB00	26.60	ECEUB00	19.27
Indiana Hub	ECITB00	29.55	ECIUB00	21.77

	Symbol	On-peak	Symbol	Off-peak
Southeast & Central				
Southern Into	ESTTB00	28.34	ESTUB00	21.81
ERCOT North	ETNTB00	23.65	ETNUB00	22.11
ERCOT Houston	ETSTB00	32.39	ETSUB00	31.11
ERCOT West	ETWTB00	19.65	ETWUB00	21.11
ERCOT South	ETHTB00	27.39	ETHUB00	26.11
Western				
Mid-C	EMCTB00	94.05	EMCUB00	85.05
Palo Verde	EPVTB00	60.05	EPVUB00	54.75
Mead	EMDTB00	63.24	EMDUB00	57.56
NP15	ENPTB00	77.00	ENPUB00	68.00
SP15	ESPTB00	67.05	ESPUB00	63.00

Hourly Indices

System-wide renewable generation curtailments (MW)

	Symbol	14-Feb	13-Feb
Cal ISO Solar			
		Local	
On-peak	CALSP00	483.47	344.47
Off-peak	CALSO00	0.00	0.00
		System	
On-peak	CASSP00	10.25	592.19
Off-peak	CASSO00	0.00	0.00
Cal ISO Wind			
		Local	
On-peak	CALWP00	0.00	0.00
Off-peak	CALWO00	0.00	0.00
		System	
On-peak	CASWP00	1.15	19.48
Off-peak	CASWO00	0.00	0.00
SPP Wind			
On-peak	SPPWP00	18854.80	14413.01
Off-peak	SPPWO00	13143.22	9222.46

Curtailment by hour (MW), Feb 14

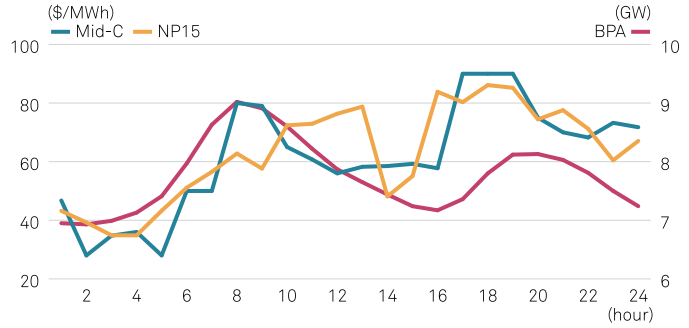
	Cal ISO Solar		Cal ISO Wind		SPP Wind
Hour	Local	System	Local	System	
1	0.00	0.00	0.00	0.00	2699.22
2	0.00	0.00	0.00	0.00	2274.50
3	0.00	0.00	0.00	0.00	2251.79
4	0.00	0.00	0.00	0.00	2080.18
5	0.00	0.00	0.00	0.00	1827.20
6	0.00	0.00	0.00	0.00	1857.84
7	0.00	0.00	0.00	1.15	2110.54
8	6.10	0.00	0.00	0.00	1927.05
9	30.74	0.41	0.00	0.00	2216.32
10	42.78	1.70	0.00	0.00	1829.94
11	36.88	0.00	0.00	0.00	1469.05
12	24.77	0.00	0.00	0.00	812.64
13	104.50	0.00	0.00	0.00	622.82
14	114.15	0.00	0.00	0.00	570.70
15	71.84	6.29	0.00	0.00	1131.21
16	51.71	1.85	0.00	0.00	1953.43
17	0.00	0.00	0.00	0.00	1776.72
18	0.00	0.00	0.00	0.00	1702.27
19	0.00	0.00	0.00	0.00	457.33
20	0.00	0.00	0.00	0.00	110.42
21	0.00	0.00	0.00	0.00	90.83
22	0.00	0.00	0.00	0.00	73.53
23	0.00	0.00	0.00	0.00	70.84
24	0.00	0.00	0.00	0.00	81.65

Mid-C hourly bilateral indexes ($/MWh)

	Symbol	14-Feb	Range	Deals	Volume (MW)
On-peak	MCRTP00	69.23	50.00-90.00	45	3350
Off-peak	MCRTO00	46.06	28.00-73.25	13	965

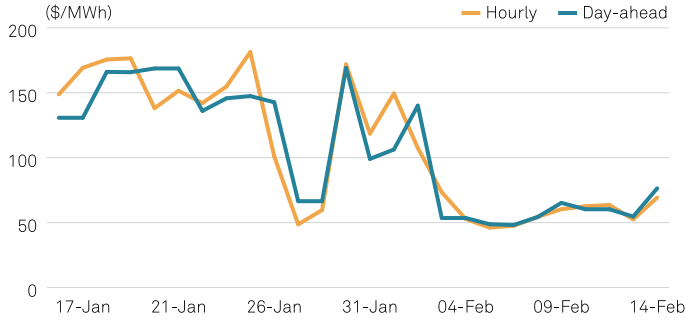
Hour ending	Symbol	14-Feb	Range	Deals	Volume (MW)	Feb-23
1	MCRTH01	46.75	46.75-46.75	2	85	61.82
2	MCRTH02	28.00	28.00-28.00	1	80	59.11
3	MCRTH03	34.75	28.00-45.00	2	100	58.07
4	MCRTH04	36.00	28.00-45.00	3	150	60.05
5	MCRTH05	28.00	28.00-28.00	1	30	63.27
6	MCRTH06	50.00	50.00-50.00	1	80	68.88
7	MCRTH07	50.00	50.00-50.00	1	50	73.63
8	MCRTH08	80.00	80.00-80.00	1	100	77.30
9	MCRTH09	79.00	79.00-79.00	2	150	74.11
10	MCRTH10	65.00	65.00-65.00	1	100	67.05
11	MCRTH11	60.75	40.00-65.00	3	180	62.63
12	MCRTH12	56.00	40.00-65.00	7	395	56.66
13	MCRTH13	58.25	50.00-65.00	6	430	59.91
14	MCRTH14	58.50	55.00-75.00	6	425	62.71
15	MCRTH15	59.25	55.00-75.00	6	445	62.16
16	MCRTH16	57.75	55.00-65.00	3	275	64.11
17	MCRTH17	90.00	90.00-90.00	1	100	73.23
18	MCRTH18	90.00	90.00-90.00	1	75	76.16
19	MCRTH19	90.00	90.00-90.00	1	25	71.43
20	MCRTH20	75.00	75.00-75.00	2	150	69.73
21	MCRTH21	70.00	60.00-75.00	3	300	62.79
22	MCRTH22	68.25	60.00-80.00	3	300	60.21
23	MCRTH23	73.25	65.00-85.00	3	300	59.66
24	MCRTH24	71.75	65.00-85.00	2	225	58.16

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	14-Feb	13-Feb
Cal ISO			
On-peak	RPCSP00	12.91	16.12
Off-peak	RPCSO00	0.00	0.00
SPP			
On-peak	RPSSP00	0.12	0.12
Off-peak	RPSSO00	0.00	0.00
ERCOT			
On-peak	RPESP00	5.45	5.30
Off-peak	RPESO00	0.00	0.00
MISO			
On-peak	RPMSP00	0.40	1.22
Off-peak	RPMSO00	0.00	0.00
PJM			
On-peak	RPPSP00	1.54	1.67
Off-peak	RPPSO00	0.00	0.00
NYISO			
On-peak	RPNSP00	1.43	1.44
Off-peak	RPNSO00	1.35	1.48
ISO New England			
On-peak	RPISP00	1.89	1.32
Off-peak	RPISO00	0.13	0.09

Hourly Penetration, Solar (%), Feb 14

Hour	Symbol	Cal ISO	Symbol	SPP	Symbol	ERCOT	Symbol	MISO	Symbol	PJM	Symbol	NYISO	Symbol	ISONE
1	RPCSC01	0.00	RPSSC01	0.00	RPESC01	0.00	RPMSC01	0.00	RPPSC01	0.00	RPNSC01	1.35	RPISC01	0.08
2	RPCSC02	0.00	RPSSC02	0.00	RPESC02	0.00	RPMSC02	0.00	RPPSC02	0.00	RPNSC02	1.41	RPISC02	0.09
3	RPCSC03	0.00	RPSSC03	0.00	RPESC03	0.00	RPMSC03	0.00	RPPSC03	0.00	RPNSC03	1.39	RPISC03	0.09
4	RPCSC04	0.00	RPSSC04	0.00	RPESC04	0.00	RPMSC04	0.00	RPPSC04	0.00	RPNSC04	1.38	RPISC04	0.09
5	RPCSC05	0.00	RPSSC05	0.00	RPESC05	0.00	RPMSC05	0.00	RPPSC05	0.00	RPNSC05	1.35	RPISC05	0.09
6	RPCSC06	0.00	RPSSC06	0.00	RPESC06	0.00	RPMSC06	0.00	RPPSC06	0.00	RPNSC06	1.28	RPISC06	0.08
7	RPCSC07	0.15	RPSSC07	0.00	RPESC07	0.00	RPMSC07	0.00	RPPSC07	0.00	RPNSC07	1.18	RPISC07	0.08
8	RPCSC08	6.16	RPSSC08	0.00	RPESC08	0.22	RPMSC08	0.04	RPPSC08	0.13	RPNSC08	1.12	RPISC08	0.32
9	RPCSC09	17.46	RPSSC09	0.00	RPESC09	3.53	RPMSC09	0.27	RPPSC09	1.74	RPNSC09	1.34	RPISC09	1.36
10	RPCSC10	23.18	RPSSC10	0.05	RPESC10	5.78	RPMSC10	0.60	RPPSC10	2.89	RPNSC10	1.58	RPISC10	2.96
11	RPCSC11	25.42	RPSSC11	0.18	RPESC11	8.66	RPMSC11	0.77	RPPSC11	3.25	RPNSC11	1.76	RPISC11	3.83
12	RPCSC12	26.82	RPSSC12	0.23	RPESC12	11.65	RPMSC12	0.88	RPPSC12	3.29	RPNSC12	1.80	RPISC12	4.43
13	RPCSC13	25.86	RPSSC13	0.22	RPESC13	13.08	RPMSC13	0.93	RPPSC13	3.14	RPNSC13	1.86	RPISC13	4.71
14	RPCSC14	26.14	RPSSC14	0.26	RPESC14	11.43	RPMSC14	0.92	RPPSC14	3.11	RPNSC14	1.90	RPISC14	4.51
15	RPCSC15	25.26	RPSSC15	0.25	RPESC15	10.04	RPMSC15	0.81	RPPSC15	3.01	RPNSC15	1.84	RPISC15	3.69
16	RPCSC16	20.18	RPSSC16	0.22	RPESC16	9.79	RPMSC16	0.62	RPPSC16	2.73	RPNSC16	1.60	RPISC16	2.56
17	RPCSC17	9.19	RPSSC17	0.13	RPESC17	8.67	RPMSC17	0.42	RPPSC17	1.29	RPNSC17	1.32	RPISC17	0.75
18	RPCSC18	0.67	RPSSC18	0.19	RPESC18	4.06	RPMSC18	0.18	RPPSC18	0.09	RPNSC18	1.14	RPISC18	0.22
19	RPCSC19	0.00	RPSSC19	0.11	RPESC19	0.22	RPMSC19	0.03	RPPSC19	0.00	RPNSC19	1.09	RPISC19	0.21
20	RPCSC20	0.00	RPSSC20	0.01	RPESC20	0.00	RPMSC20	0.00	RPPSC20	0.00	RPNSC20	1.09	RPISC20	0.21
21	RPCSC21	0.00	RPSSC21	0.00	RPESC21	0.00	RPMSC21	0.00	RPPSC21	0.00	RPNSC21	1.08	RPISC21	0.21
22	RPCSC22	0.00	RPSSC22	0.00	RPESC22	0.00	RPMSC22	0.00	RPPSC22	0.00	RPNSC22	1.14	RPISC22	0.22
23	RPCSC23	0.00	RPSSC23	0.00	RPESC23	0.00	RPMSC23	0.00	RPPSC23	0.00	RPNSC23	1.26	RPISC23	0.24
24	RPCSC24	0.00	RPSSC24	0.00	RPESC24	0.00	RPMSC24	0.00	RPPSC24	0.00	RPNSC24	1.38	RPISC24	0.24

Renewable Penetration, Wind

Penetration Indices, Wind (%)

	Symbol	14-Feb	13-Feb
Cal ISO			
On-peak	RPCWP00	11.44	8.81
Off-peak	RPCWO00	16.71	9.28
SPP			
On-peak	RPSWP00	37.43	26.64
Off-peak	RPSWO00	35.85	31.44
ERCOT			
On-peak	RPEWP00	42.96	31.14
Off-peak	RPEWO00	49.26	38.66
MISO			
On-peak	RPMWP00	26.46	16.20
Off-peak	RPMWO00	27.40	19.89
PJM			
On-peak	RPPWP00	7.71	4.72
Off-peak	RPPWO00	6.96	6.32
NYISO			
On-peak	RPNWP00	2.48	5.07
Off-peak	RPNWO00	7.65	3.90
ISO New England			
On-peak	RPIWP00	3.78	1.75
Off-peak	RPIWO00	2.28	1.94

Hourly Penetration, Wind (%), Feb 14

Hour	Symbol	Cal ISO	Symbol	SPP	Symbol	ERCOT	Symbol	MISO	Symbol	PJM	Symbol	NYISO	Symbol	ISONE
1	RPCWC01	15.53	RPSWC01	32.75	RPEWC01	50.23	RPMWC01	25.67	RPPWC01	4.23	RPNWC01	8.98	RPIWC01	1.81
2	RPCWC02	16.82	RPSWC02	33.65	RPEWC02	47.90	RPMWC02	25.91	RPPWC02	4.70	RPNWC02	8.31	RPIWC02	2.07
3	RPCWC03	18.42	RPSWC03	34.50	RPEWC03	47.28	RPMWC03	26.27	RPPWC03	5.84	RPNWC03	7.57	RPIWC03	2.58
4	RPCWC04	18.25	RPSWC04	36.45	RPEWC04	49.31	RPMWC04	26.27	RPPWC04	6.31	RPNWC04	7.31	RPIWC04	3.23
5	RPCWC05	17.19	RPSWC05	37.78	RPEWC05	52.99	RPMWC05	26.51	RPPWC05	6.75	RPNWC05	6.60	RPIWC05	3.12
6	RPCWC06	16.34	RPSWC06	37.80	RPEWC06	55.60	RPMWC06	26.25	RPPWC06	6.99	RPNWC06	5.84	RPIWC06	3.39
7	RPCWC07	14.31	RPSWC07	37.65	RPEWC07	54.14	RPMWC07	24.67	RPPWC07	6.82	RPNWC07	4.11	RPIWC07	3.21
8	RPCWC08	13.24	RPSWC08	37.75	RPEWC08	50.79	RPMWC08	23.79	RPPWC08	6.64	RPNWC08	3.58	RPIWC08	3.04
9	RPCWC09	10.57	RPSWC09	36.69	RPEWC09	47.87	RPMWC09	24.44	RPPWC09	7.09	RPNWC09	2.58	RPIWC09	3.82
10	RPCWC10	9.92	RPSWC10	37.22	RPEWC10	44.97	RPMWC10	24.91	RPPWC10	7.56	RPNWC10	2.20	RPIWC10	4.65
11	RPCWC11	9.89	RPSWC11	37.75	RPEWC11	43.80	RPMWC11	25.73	RPPWC11	7.39	RPNWC11	1.93	RPIWC11	5.11
12	RPCWC12	9.45	RPSWC12	38.31	RPEWC12	42.24	RPMWC12	26.57	RPPWC12	7.06	RPNWC12	1.73	RPIWC12	5.06
13	RPCWC13	10.46	RPSWC13	37.83	RPEWC13	40.16	RPMWC13	26.98	RPPWC13	6.68	RPNWC13	1.67	RPIWC13	6.16
14	RPCWC14	10.67	RPSWC14	36.93	RPEWC14	40.26	RPMWC14	27.38	RPPWC14	6.87	RPNWC14	1.72	RPIWC14	5.95
15	RPCWC15	10.50	RPSWC15	36.53	RPEWC15	40.62	RPMWC15	28.04	RPPWC15	7.44	RPNWC15	1.40	RPIWC15	5.39
16	RPCWC16	12.04	RPSWC16	34.65	RPEWC16	40.36	RPMWC16	28.15	RPPWC16	7.71	RPNWC16	1.26	RPIWC16	4.75
17	RPCWC17	13.21	RPSWC17	36.35	RPEWC17	39.05	RPMWC17	27.64	RPPWC17	8.18	RPNWC17	1.23	RPIWC17	2.96
18	RPCWC18	12.13	RPSWC18	37.04	RPEWC18	39.12	RPMWC18	26.68	RPPWC18	8.39	RPNWC18	1.03	RPIWC18	2.10
19	RPCWC19	10.18	RPSWC19	39.65	RPEWC19	38.85	RPMWC19	25.53	RPPWC19	8.17	RPNWC19	1.71	RPIWC19	1.87
20	RPCWC20	11.14	RPSWC20	39.84	RPEWC20	39.65	RPMWC20	25.93	RPPWC20	8.55	RPNWC20	3.21	RPIWC20	2.71
21	RPCWC21	11.63	RPSWC21	37.93	RPEWC21	41.54	RPMWC21	27.50	RPPWC21	9.00	RPNWC21	4.50	RPIWC21	2.42
22	RPCWC22	13.75	RPSWC22	36.79	RPEWC22	43.90	RPMWC22	29.46	RPPWC22	9.77	RPNWC22	5.85	RPIWC22	1.27
23	RPCWC23	15.69	RPSWC23	36.39	RPEWC23	44.95	RPMWC23	30.94	RPPWC23	10.24	RPNWC23	7.90	RPIWC23	1.07
24	RPCWC24	15.43	RPSWC24	37.49	RPEWC24	45.85	RPMWC24	31.38	RPPWC24	10.63	RPNWC24	8.68	RPIWC24	0.99

Platts M2MS Forward Curve, Feb 15 ($/MWh)

Prompt month: Mar 23

	On-peak	Off-peak
Northeast		
Mass Hub	59.55	52.25
N.Y. Zone G	47.80	41.45
N.Y. Zone J	52.30	43.05
N.Y. Zone A	26.70	20.20
Ontario*	25.39	19.85
*Ontario prices are in Canadian dollars		
PJM & MISO		
PJM West	37.80	34.10
AD Hub	36.10	32.85
NI Hub	31.40	25.40
Indiana Hub	38.40	34.65
Southeast & Central		
Southern Into	35.42	34.09
ERCOT North	30.95	21.80
ERCOT Houston	38.50	23.46
ERCOT West	23.95	18.60
ERCOT South	29.35	20.70
Western		
Mid-C	72.75	68.95
Palo Verde	44.25	51.75
Mead	46.70	54.39
NP15	58.90	63.25
SP15	47.75	55.30

ISO Day-Ahead LMP Breakdown for Feb 16 ($/MWh)

Hub/Zone	Average	Cong	Loss	Change	Avg $/Mo	Marginal heat rate
Northeast						
On-peak						
ISONE Internal Hub	30.73	0.01	0.11	-2.20	73.38	14429
ISONE Connecticut	30.05	0.01	-0.58	-2.18	72.03	12339
ISONE NE Mass-Boston	31.03	0.01	0.40	-2.27	73.50	14566
NYISO Capital Zone	31.76	-13.57	1.10	-2.15	84.33	15532
NYISO Hudson Valley Zone	28.55	-10.08	1.39	0.11	65.83	11726
NYISO N.Y.C. Zone	28.96	-10.18	1.69	0.22	66.32	14163
NYISO West Zone	19.30	-2.13	0.08	8.14	37.53	9236
Off-Peak						
ISONE Internal Hub	21.99	0.03	0.13	-5.04	64.87	10323
ISONE Connecticut	21.65	0.03	-0.21	-4.63	63.27	8891
ISONE NE Mass-Boston	22.04	0.03	0.18	-5.27	64.60	10346
NYISO Capital Zone	25.71	-18.54	0.38	-2.05	67.72	12573
NYISO Hudson Valley Zone	21.05	-13.74	0.51	-1.41	52.46	8645
NYISO N.Y.C. Zone	21.30	-13.87	0.63	-1.35	52.33	10415
NYISO West Zone	9.81	-2.91	0.11	1.31	31.64	4694
PJM & MISO						
On-peak						
PJM AEP-Dayton Hub	27.17	0.66	0.11	3.18	30.64	11206
PJM Dominion Hub	27.87	1.39	0.08	2.32	38.02	11834
PJM Eastern Hub	22.31	-4.09	0.00	0.83	37.94	10885
PJM Northern Illinois Hub	26.19	0.46	-0.68	4.93	27.46	10980
PJM Western Hub	27.13	0.97	-0.24	2.05	38.55	13235
MISO Indiana Hub	28.17	0.03	1.06	4.24	31.53	11813
MISO Minnesota Hub	27.33	1.38	-1.13	12.35	22.05	11533
MISO Louisiana Hub	26.67	-0.35	-0.06	2.77	26.52	11397
MISO Texas Hub	26.69	-0.05	-0.35	2.84	26.21	11628
Off-Peak						
PJM AEP-Dayton Hub	19.23	0.32	-0.21	0.37	26.27	7929
PJM Dominion Hub	20.27	0.82	0.33	0.04	32.69	8609
PJM Eastern Hub	17.24	-2.26	0.38	-1.58	34.85	8408
PJM Northern Illinois Hub	18.04	-0.10	-0.98	5.41	21.63	7566
PJM Western Hub	19.91	0.62	0.18	0.09	30.75	9712
MISO Indiana Hub	21.86	1.11	1.00	3.58	26.42	9165
MISO Minnesota Hub	18.25	-0.54	-0.96	14.67	15.69	7699
MISO Louisiana Hub	19.09	-0.69	0.03	0.83	21.49	8158
MISO Texas Hub	18.63	-0.74	-0.38	0.44	21.06	8116
Southeast & Central						
On-peak						
SPP North Hub	28.56	1.01	0.77	19.37	19.81	12052
SPP South Hub	24.15	-1.80	-0.83	3.60	26.21	10876
ERCOT Houston Hub	22.31	—	—	3.56	26.24	10451
ERCOT North Hub	23.70	—	—	5.98	26.19	10328
ERCOT South Hub	18.53	—	—	0.84	23.77	8368
ERCOT West Hub	19.70	—	—	10.99	22.71	9336
Off-Peak						
SPP North Hub	17.87	-2.08	-0.27	29.68	10.48	7542
SPP South Hub	15.47	-4.21	-0.54	3.98	15.86	6970
ERCOT Houston Hub	15.81	—	—	2.72	17.95	7406
ERCOT North Hub	16.01	—	—	3.03	18.12	6974
ERCOT South Hub	14.71	—	—	1.86	17.17	6641
ERCOT West Hub	17.44	—	—	2.85	19.12	8267
Western						
On-peak						
CAISO NP15 Gen Hub	77.39	0.26	-1.79	19.00	66.03	10402
CAISO SP15 Gen Hub	72.81	-2.53	-3.58	21.36	57.34	9846
CAISO ZP26 Gen Hub	74.44	-0.44	-4.04	24.47	53.98	10066
Off-Peak						
CAISO NP15 Gen Hub	81.08	0.00	-3.45	22.69	66.60	10897
CAISO SP15 Gen Hub	83.02	0.00	-1.50	23.51	67.21	11227
CAISO ZP26 Gen Hub	81.05	0.00	-3.47	22.58	66.02	10960

Weekend bilateral indexes for Feb 11-12 ($/MWh)

	Saturday Index	Sunday Index
Southeast On-peak		
VACAR	30.50	30.50
Southern, into	31.75	31.75
GTC, into	33.50	33.50
Florida	37.50	37.50
TVA, into	30.50	30.50
Southeast Off-Peak*		
VACAR	20.75	20.75
Southern, into	20.00	20.00
GTC, into	30.50	30.50
Florida	27.50	27.50
TVA, into	20.50	20.50
West On-peak**		
Mid-C	60.27	60.00
John Day	61.00	60.75
COB	58.75	53.00
NOB	65.00	64.75
Palo Verde	42.50	40.00
Westwing	43.50	41.00
Pinnacle Peak	42.50	40.00
Mead	45.00	40.50
Mona	55.00	48.00
Four Corners	48.00	42.00
West Off-Peak**		
Mid-C	61.18	60.00
John Day	63.25	60.75
COB	52.25	53.00
NOB	63.50	64.75
Palo Verde	48.00	37.00
Westwing	49.00	38.00
Pinnacle Peak	50.25	40.00
Mead	50.00	40.50
Mona	55.00	48.00
Four Corners	50.00	42.00

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

Weekly bilateral indexes for week ending Feb 11 ($/MWh)

	Index	Change	Low	High
Southeast On-peak				
VACAR	24.95	-16.10	22.25	32.25
Southern, into	24.06	-11.57	21.00	32.00
GTC, into	26.00	-11.60	22.00	36.00
Florida	29.80	-11.40	26.25	38.75
TVA, into	25.40	-12.80	23.00	32.00
Southeast Off-Peak				
VACAR	33.71	6.50	18.25	52.75
Southern, into	29.78	4.92	17.00	45.00
GTC, into	36.79	4.93	24.50	52.00
Florida	35.54	4.93	23.25	50.75
TVA, into	31.43	4.75	18.00	48.25
West On-peak				
Mid-C	56.14	-47.46	45.00	67.00
John Day	56.92	-43.33	49.00	66.00
COB	54.75	-49.42	44.50	59.50
NOB	60.54	-53.21	51.25	70.00
Palo Verde	40.79	-55.64	37.25	43.00
Westwing	41.54	-51.79	36.50	44.00
Pinnacle Peak	40.79	-55.71	37.75	43.00
Mead	43.46	-59.24	38.00	48.00
Mona	51.11	-68.36	42.00	62.00
Four Corners	47.42	-60.33	45.50	50.00
West Off-Peak				
Mid-C	52.08	-46.57	40.00	65.00
John Day	54.18	-46.64	42.50	63.50
COB	46.86	-47.57	37.00	57.00
NOB	56.86	-52.71	51.25	63.75
Palo Verde	45.33	-43.88	39.00	52.00
Westwing	46.25	-42.18	42.00	52.00
Pinnacle Peak	47.57	-43.89	41.25	53.50
Mead	45.50	-51.21	37.00	52.00
Mona	49.14	-63.12	42.00	55.00
Four Corners	46.36	-53.14	38.50	53.50