

Methodology and Specifications Guide

US Electricity

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INTRODUCTION

S&P Global Platts methodologies are designed to produce price assessments that are representative of market value, and of the particular markets to which they relate. Methodology documents describe the specifications for various products reflected by Platts assessments and indices, the processes and standards Platts adheres to in collecting data, and the methods by which Platts arrives at final assessment values for publication. These guides are freely available on Platts website for public review.

Platts discloses publicly the days of publication for its price assessments and indices, and the times during each trading day in which Platts considers transactions in determining its assessments and index levels. This schedule of publication is available on Platts website, at the following link: <https://www.spglobal.com/platts/en/our-methodology/holiday>.

The dates of publication and the assessment periods are subject to change in the event of outside circumstances that affect Platts ability to adhere to its normal publication schedule. Such circumstances include network outages, power failures, acts of terrorism and other situations that result in an interruption in Platts operations at one or more of its worldwide offices. In the event that any such circumstance occurs, Platts will endeavor, whenever feasible, to communicate publicly any changes to its publication schedule and assessment periods, with as much advance notice as possible.

Platts methodologies have evolved to reflect changing market conditions through time, and will continue to evolve as markets change. A revision history, a cumulative summary of changes to this and previous updates, is included at the end of methodology and specification documents. Methodology is reviewed regularly to ensure it reflects current market reality.

Such reviews are carried out by Platts reporters and their managers, supplemented and supported by price methodology specialists who operate separately from the reporting teams.

Platts follows a clearly defined process for public consultation on material changes to its methodologies. This process is based on full transparency and communication with industry stakeholders aimed at gaining market acceptance for any proposed introduction or changes to methodology. For more information on the review and approval procedures, please visit <https://www.spglobal.com/platts/en/our-methodology/methodology-review-change>

All Platts methodologies reflect Platts commitment to maintaining best practices in price reporting.

How this methodology statement is organized

- This description of methodology for assessments and indices is divided into seven major parts (I-VII) that parallel the entire process of producing the end-of-day assessments and indices.
- Part I describes what goes into Platts assessments and indices, including details on what data market participants are expected to submit, the process for submitting data and criteria for timeliness of market data submissions.
- Part II describes any security and confidentiality practices that Platts uses in handling and treating data, including the separation between Platts price reporting and its news reporting.
- Part III is a detailed account of how Platts collects bids, offers, trades and other market data, and what Platts does with the data to formulate its assessments and indices. It includes descriptions of the methods that Platts uses for reviewing data, and the methods used to convert raw data into assessments and indices, including the procedures used to identify anomalous data. This section describes how and when judgment is applied in this process, the basis upon which transaction data may be excluded from a price assessment, and the relative importance assigned to each criterion used

in forming the price assessment. This section describes the criteria for determining which values are indices, and which are assessments, based on reported transactions and other market information. Finally, this section describes how Platts addresses assessment periods where one or more reporting entities submit market data that constitute a significant proportion of the total data upon which the assessment is based.

- Part IV explains the process for verifying that published prices comply with Platts standards.
- Part V lays out the verification and correction process for revising published prices and the criteria Platts uses to determine when it publishes a correction.
- Part VI explains how users of Platts assessments and indices can contact Platts for clarification of data that has been published, or to register a complaint. It also describes how to find out more about Platts complaint policies.
- Part VII is a list of detailed specifications for the trading locations and products for which Platts publishes assessments and indices in this commodity. This section describes what specific units of measurement are used, and what conversion factors are used to move between units of measurement, where relevant.

PART I: DATA QUALITY AND DATA SUBMISSION

Platts objective is to ensure that the submission of transactional information and other data inputs that editors use as the basis for their price assessments is of the highest quality. Ensuring that data used in Platts assessments is of high quality is crucial to maintaining the integrity of Platts various price assessment processes.

Platts encourages entities that submit any market data for consideration in its assessment processes to submit all transaction data that they have which may be relevant to the assessment being made. Under price reporting guidelines issued by the US Federal Energy Regulatory Commission in 2003, which apply to US electricity markets, companies should report each bilateral, arm's-length transaction between non-affiliated companies in the physical markets at all trading locations. Platts expects reported data to include all transactions done by the entity at all locations reported by Platts, not a selective subset of those locations.

To that end, Platts requires formalized reporting relationships with market participants in which data is submitted from a central point in the mid- or back-office. If the reporting entity chooses, Platts will sign a standard confidentiality agreement protecting the submitted data. A copy of the standard agreement is available upon request. The data provider must certify that it is making a good-faith effort to report completely and accurately, and will have staff assigned to respond to questions concerning data submittals. In addition, reporting entities, in cases of error or omission, have an obligation to make reasonable efforts to inform Platts and, as necessary, modify their internal processes to eliminate or minimize the likelihood of future errors or omissions in their data submissions.

Data submitted to Platts must be detailed, transaction-level data. Below is a summary of what should be reported.

What to report

- For day-ahead indices, report each business day all fixed-price physical and financial deals for next-day and weekend delivery in North America. Trading schedules may vary in the case of holidays.
- Report the price at which the two parties agreed to transact. Do not add estimated transmission cost to make the transaction fit one of Platts delivery location definitions.

- Label deals for delivery at locations not defined or reported by Platts using the name of the control area, tie point or hub or zone. Although Platts may not currently assess all locations reported, if sufficient trading develops at a location and is sustained, Platts would be able to add that pricing point to its daily indices. (Definitions for the locations for which indices and assessments are currently published are in Part VII of this methodology guide.) In addition, information on deals at those points adds to Platts understanding of the market and aids Platts in assessing thinly traded points in that geographic area.
- List all transactions individually and with the following information: location, trade time and date, start flow date, end flow date, shape (peak or off-peak), deal type (physical or financial), firm or non-firm, price (\$/MWh), volume (MW), side of transaction (buy or sell), counterparty name, and intermediary name (broker or trading platform).
- Platts firmly believes that counterparty information is the best single way to verify transactions and encourages all market participants to report counterparty information.
- Deals should be reported only for transactions done that day. The cutoff for all transactions is 2:30 p.m. Eastern Prevailing Time. The cutoff time applies to the time a trade was transacted, not the time the trade is entered into the company's system. Do not include "early" daily deals done after the cutoff on the previous day. Platts considers these transactions to be non-standard deals done before the opening of the market.
- Platts does include deals done after options expiration in its daily assessments and indices, as long as those deals are priced within the range of the bulk of the day's trading.

How to report

- Reports of each day's deals should be compiled and sent to Platts by a non-commercial department of the company.

Generally, the reporting function is the responsibility of the mid or back office. Even in the case of small entities, the FERC policy statement requires that prices should be provided by individuals separate from trading activities, such as accounting or bookkeeping staff.

- Platts should be provided with at least two contacts (with phone numbers and e-mail addresses for both) who are responsible for submissions and can answer questions about transactions reported to Platts.
- Reports should be sent electronically in either Excel or CSV (comma separated values) format. Platts can provide reporting entities with a sample Excel sheet showing the preferred format and the information needed for each transaction.
- Reports should be sent to electricityprice@spglobal.com and electricityprice2@spglobal.com each day by 4:30 p.m. EPT.
- If a reporting entity is unable to compile the needed information by the deadline set by Platts on a given day, it should notify Platts editors of the delay and the length of the delay by either e-mail or phone. This will help Platts editors decide whether to wait for the submission.

PART II: SECURITY AND CONFIDENTIALITY

In the North American electricity market, where market participants are expected to submit all fixed-price physical and financial transactions for next-day delivery, Platts will sign confidentiality agreements providing for non-disclosure of submitted data except in circumstances where it is legally required to disclose the data.

- Price data is e-mailed to specific Platts e-mail addresses and enters a secure network protected by firewalls and is accessible only by market editors. Encryption is available upon request of the reporting company.

- The data is then entered into a proprietary software system designed specifically to store and analyze trade data.
- Data is stored in a secure network, in accordance with Platts' policies and procedures.
- Price data is used only for constructing assessments and indices. Platts has a strict internal policy, reflected in its confidentiality agreements, of never using individual price data for news reporting purposes. Nor do Platts news reporters have access to individual entities' transaction reports. Data aggregated from all reporting sources – e.g., changes in prices and trading volumes over time – may be used as the basis for news stories.

PART III: CALCULATING INDICES AND MAKING ASSESSMENTS

The following section describes how Platts uses reported transactions and any other market information it has collected, in the manner described in Part I, to formulate its price and volumetric indices or assessments.

Assessment and index guidelines

As a publisher, S&P Global Platts places independence and impartiality at the heart of its price assessments. Platts has no financial interest in the price of the products or commodities on which it reports. Platts' overall objective is to reflect the transactable value of the commodity assessed.

Platts editors produce price indices for daily (next day), intraday, markets, and a volumetric renewable energy curtailment index.

Daily and Intraday: For daily trading hubs where there is sufficient liquidity, market editors use volume-weighted averages to calculate an index value Platts publishes the index price, the change from the previous day, the low, the high, the

volume, the number of transactions the index is based on, and the running average for the index price for the month. Index prices, lows, and highs are expressed in \$/MWh. The daily change is expressed in dollars. The volume is expressed in megawatts (MW) across the on-peak or off-peak period, rather than in megawatt hours. For instance, if ten 50-MW on-peak deals are reported, the volume would be expressed as 500 MW, rather than the equivalent value of 8,000 MWh (ten 50-MW deals multiplied by 16 hours).

In order to identify potential anomalous data, which may be excluded from formulating an index, Platts analyses reported transactions using, but not limited to, standard deviation, volume, and gaps in trade data. Platts editors will contact the reporting party for more specifics on the potential anomalous transaction.

Daily Gaps and Low Liquidity

Gaps for the daily reported trades in the market are not in themselves anomalous. They warrant closer analysis, and might not be reflected in our final published assessments and/or indices, depending on the outcome of that further analysis. Examples of potentially anomalous data could include trades that differ in price from the bulk of reported transactions, transactional data containing nonstandard contractual terms, information that is incomplete (lacking full confirmation, or important details), and/or information that otherwise deviates from our methodology.

Low-liquidity For trading locations with less liquidity, Platts will examine reported, transactional-level information to gauge whether it is representative of the day's trading activity and decide whether to publish a volume-weighted index. If Platts deems information is not representative of that day's trading activity, Platts will assess a price and not publish any volume. Platts assesses such illiquid points using, but not limited to, reported transactions, locational spreads and other market data, such as bids and offers, and relevant grid operator information.

Platts clearly indicates when it assesses a price rather than calculating a volume-weighted average index by not publishing a volume or deal count for the day. Power assessed by Platts is firm with liquidated damages, or firm LD. Platts does not assess non-firm power.

Intraday Gaps and Low Liquidity

Gaps for the hourly reported trades in the market are not in themselves anomalous. They warrant closer analysis, Platts considers the market demand to calculate a proxy index that is evaluated to ensure that it reflects market price trend and it is published as an assessments in our final published indices. Examples of potentially anomalous data could include trades that differ in price from the bulk of reported transactions, transactional data containing nonstandard contractual terms, information that is incomplete (lacking full confirmation, or important details), and/or information that otherwise deviates from our methodology.

Low-Liquidity- For intraday(hourly) trading activity with less liquidity, Platts will examine reported, transactional-level information to gauge whether it is representative of the day's trading activity for each hour andhour's trading activity and decide whether to publish a volume-weighted index. If Platts deems information is not representative of that day'shour's trading activity, Platts will assess an assessed hourly price and not publish any volume. Platts assesses such illiquid hours using, but not limited to, calculated proxy price based on the hourly change in Bonneville Power Association (BPA) demand, reported transactions, locational spreads and other market data, such as bids and offers, and relevant grid operator information. Platts clearly indicates when it assesses a price rather than calculating a volume-weighted average index by not publishing a volume or deal count for the day. Power assessed by Platts is firm with liquidated damages, or firm LD. Platts does not assess non-firm power.

Renewable Curtailment Indices

The renewable curtailment indices are calculated based on a Platts proprietary model that has the following inputs 1. California ISO daily renewable curtailments 2. Historical System and local generation volumes 3. Daily generation data for the prior calendar day. Data is in megawatts by hour and generation type – either solar or wind. Platts calculates Curtailment index for a given day by weighting against historical generation data from the same month during the prior year.

Low-liquidity daily markets

For trading locations with less liquidity, Platts will examine reported, transactional-level information to gauge whether it is representative of the day's trading activity and decide whether to publish a volume-weighted index. If Platts deems information is not representative of that day's trading activity, Platts will assess a price and not publish any volume. Platts assesses such illiquid points using, but not limited to, reported transactions, locational spreads and other market data, such as bids and offers, and relevant grid operator information. Platts clearly indicates when it assesses a price rather than calculating a volume-weighted average index by not publishing a volume or deal count for the day. Power assessed by Platts is firm with liquidated damages, or firm LD. Platts does not assess non-firm power.

PART IV: PLATTS EDITORIAL STANDARDS

All Platts employees must adhere to the S&P Global Code of Business Ethics (COBE), which has to be signed annually. The

COBE reflects S&P Global's commitment to integrity, honesty and acting in good faith in all its dealings. In addition, Platts requires that all employees attest annually that they do not have any personal relationships or personal financial interests that may influence or be perceived to influence or interfere with their ability to perform their jobs in an objective, impartial and effective manner.

Market reporters and editors are mandated to ensure adherence to published methodologies as well as internal standards that require accurate records are kept in order to document their work.

Platts has a Compliance function that is independent of the editorial group. Compliance is responsible for ensuring the quality and adherence to Platts policies, standards, processes and procedures. The Compliance team conducts regular assessments of editorial operations, including checks for adherence to published methodologies.

S&P Global's internal auditor, an independent group that reports directly to the parent company's board of directors, reviews the Platts risk assessment programs.

PART V: CORRECTIONS

Platts is committed to promptly correcting any material errors. When corrections are made, they are limited to corrections to data that was available when the assessment or index was calculated.

Errors that data providers should report to Platts are limited to inaccuracies in the attributes (price, volume, location, etc.) at the time the transaction was done and reported to Platts, and do not include operationally driven, after-the-fact changes in the nature of the transaction.

If Platts is notified of an error in a submission after a price is calculated and published, it will assess the impact of the error.

PART VI: REQUESTS FOR CLARIFICATIONS OF DATA AND COMPLAINTS

Platts strives to provide critical information of the highest standards, to facilitate greater transparency and efficiency in physical commodity markets.

Platts customers raise questions about its methodologies and the approach taken in price assessments, proposed methodology changes and other editorial decisions in relation to Platts price assessments. Platts strongly values these interactions and encourages dialogue concerning any questions a customer or market stakeholder may have.

However, Platts recognizes that occasionally customers may not be satisfied with responses received or the services provided by Platts and wish to escalate matters. Full information about how to contact Platts to request clarification around an assessment, or make a complaint, is available on the Platts website, at: <https://www.spglobal.com/platts/en/contact/complaints>.

PART VII: DEFINITIONS OF THE TRADING LOCATIONS FOR WHICH PLATTS PUBLISHES DAILY, INTRADAY, AND RENEWABLE CURTAILMENT INDICES OR ASSESSMENTS

The renewable curtailment indices are volumetric in megawatts representing both California ISO and Southwest Power Pool. For California ISO, solar local, solar system, wind local, and wind system will be represented in a sum of weighted indices of curtailment volumes during on-peak hours (Hour-ending 7 through 22) and off-peak hours (Hour-ending 1 through 6 and 23 through 24). For SPP, wind will be represented in a sum of weighted indices of curtailment during on-peak hours and off-peak hours.

The markets have no formal market design, grid operators are individual utilities, products are physical power energy only (no capacity), daily indices or assessments are published based on on-peak hours (Hour-ending 7 through 22) and off-peak hours (Hour-ending 1 through 6 and 23 through 24), the intraday indices or assessments are published based on hourly (Hour-ending 1 through 24).

The renewable energy Californian ISO curtailment indices are volumetric in megawatts representing individually solar, wind and combined (solar and wind) sum of weighted indices of curtailment volumes during on-peak hours (Hour-ending 7 through 22), off-peak (Hour-ending 1 through 6 and 23 through 24), and 24 hour (Hour-ending 1 through 24).

For the Platts symbols are listed for the common range (high (h), low (l) , index (i) , volume (w)), ; .

This methodology is current at the time of publication. Platts may issue further updates and enhancements to this methodology and will announce these to subscribers through its usual publications of record. Such updates will be included in the next version of the methodology. Platts editorial staff and managers will be ready to provide guidance when assessment issues require clarification.

A revision history, a cumulative summary of changes is included at the end of this section.

EASTERN MARKETS

Assessment	Trade On-peak Daily l,h,u,w	Trade On-peak Wknd l,h,u,w	Trade Off-peak Daily l,h,u,w	Trade Off-peak Wknd l,h,u,w	Flow On-peak Daily l,h,u,w	Flow On-peak Wknd l,h,u,w	Flow On-peak Wkly Avg l,h,u,w	Flow Off-peak Daily l,h,u,w	Flow Off-peak Wknd l,h,u,w	Flow Off-peak Wkly Avg l,h,u,w
Florida	AAMAV00	AAMAV28	AAMA000	AAMA028	AAMAV20	AAMAV21	AAMAZ00	AAMA020	AAMA021	AAMAS00
GTC, into	WAMCJ00	WAMCJ28	WAMCC00		WAMCJ20	WAMCJ21	AAMUN00	WAMCC20		AAMDA00
Southern, into	AAMBJ00	AAMBJ28	AAMBC00	AAMBC28	AAMBJ20	AAMBJ21	AAMBN00	AAMBC20	AAMBC21	AAMBG00
TVA, into	WEBAB00	WEBAB28	AAJER00	AAJER28	WEBAB20	WEBAB21	WEBAK04	AAJER20	AAJER21	AAJEU00
VACAR	AAMCI00	AAMCI28	AAMCB00	AAMCB28	AAMCI20	AAMCI21	AAMCM00	AAMCB20	AAMCB21	AAMCF00

Eastern markets

Florida (Florida instate) (daily market only)

The Florida instate pricing area comprises control areas within the State of Florida or the Florida Reliability Coordination Council (FRPCC), excluding Gulf Power, which is part of the Southern Company control area. Florida control areas include: Progress Energy Florida, Florida Power & Light Company, Tampa Electric Company, Florida Municipal Power Agency, Gainesville Regional Utilities, JEA, City of Lakeland, Orlando Utilities Commission, City of Tallahassee and Seminole Electric Cooperative.

Into GTC (Georgia Transmission Corporation) (daily market only)

GTC comprises power delivered into the GTC transmission system, which includes 38 electric membership corporations that serves nearly all of Georgia.

Into Southern (Into SoCo) (daily market only)

Into Southern comprises power delivered to an interface with or a delivery point within the Southern Company control area, which spans a swath of the Southeastern Electric Reliability Council (SERC) region from Georgia to Mississippi including a portion of the Florida panhandle. Into TVA - (daily market only)

Into TVA comprises power delivered to an interface with or a delivery point within the control area of the Tennessee Valley Authority, which includes Tennessee and the northern portion of Alabama. (Control area for purposes of this location description is defined to exclude any other entity's system for which TVA acts as the balancing authority.)

VACAR (daily market only)

VACAR comprises the control areas in the Virginia and Carolinas subregion of the (SERC) , including: Progress Energy's Carolina Power and Light east and west, Duke, South Carolina Electric and Gas, Santee Cooper, Southeastern Power Administration and APGI Yadkin Division. Dominion's Virginia Power control area has been excluded since it joined the PJM interconnection on May 1, 2005.

WESTERN MARKETS

Assessment	Trade On-peak Daily l,h,u,w	Trade On-peak Wknd l,h,u,w	Trade Off-peak Daily l,h,u,w	Trade Off-peak Wknd l,h,u,w	Flow On-peak Daily l,h,u,w	Flow On-peak Wknd l,h,u,w	Flow On-peak Wkly Avg l,h,u,w	Flow Off-peak Daily l,h,u,w	Flow Off-peak Wknd l,h,u,w	Flow Off-peak Wkly Avg l,h,u,w
COB	WEABE00	WEABE28	WEACJ05	WEACJ28	WEABE20	WEABE21	WEAAB00	WEACJ20	WEACJ21	WEAAQ00
Four Corners	WEABI00	WEABI28	WEACR05	WEACR28	WEABI20	WEABI21	WEAAJ00	WEACR20	WEACR21	WEAAU00
John Day	WEAHF00	WEAHF28	WEAHL05	WEAHL28	WEAHF20	WEAHF21	WEAHA00	WEAHL20	WEAHL21	WEAHR00
Mead	AAMBW00	AAMBW28	AAMBQ00	AAMBQ28	AAMBW20	AAMBW21	AAMBZ00	AAMBQ20	AAMBQ21	AAMBT00
Mid-Columbia	WEABF00	WEABF28	WEACL05	WEACL28	WEABF20	WEABF21	WEAAA00	WEACL20	WEACL21	WEAAR00
Mona	AARLQ00	AARLQ28	AARLO00	AARLO28	AARLQ20	AARLQ21	AARLR00	AARLO20	AARLO21	AARLP00
NOB	WEAIF00	WEAIF28	WEAIL05	WEAIL28	WEAIF20	WEAIF21	WEAIA00	WEAIL20	WEAIL21	WEAIR00
Palo Verde	WEACC00	WEACC28	WEACT05	WEACT28	WEACC20	WEACC21	WEAAC00	WEACT20	WEACT21	WEAAV00
Pinnacle Peak	WEAKF00	WEAKF28	WEAKL05	WEAKL28	WEAKF20	WEAKF21	WEAKA00	WEAKL20	WEAKL21	WEAKR00
Westwing	WEAJF00	WEAJF28	WEAJL05	WEAJL28	WEAJF20	WEAJF21	WEAJA00	WEAJL20	WEAJL21	WEAJR00

Western

California-Oregon Border (COB) (daily market only)

COB comprises the Captain Jack and Malin substations on the AC transmission system between Oregon and California.

Four Corners (daily market only)

Four Corners comprises the switchyard of the coal-fired Four Corners power plant in Fruitland, New Mexico, located in the northwestern corner of the state where Arizona, Colorado, New Mexico and Utah meet.

John Day (daily market only)

John Day comprises the John Day Dam on the Columbia River along with John Day substations in Oregon.

Mead (daily market only)

Mead comprises the switchyard at the Hoover Dam on the

Colorado River, forming Lake Mead near Las Vegas, Nevada.

Mid-Columbia (Mid-C) (daily and intraday)

Mid-C is a trading hub for the Northwest U.S. comprising the control areas of three public utility districts in Washington that run hydroelectric projects on the Columbia River. The three PUDs are Grant, Douglas and Chelan. Hydro projects include Wells, Rocky Reach, Rock Island, Wanapum and Priest Rapids dams.

Mona (daily market only)

Mona comprises the Mona substation in central Utah, directly south of Salt Lake City and linked to major generating units in the region.

Nevada-Oregon Border (NOB) (daily market only)

NOB is part of the Pacific DC Intertie that connects the Pacific Northwest directly with Southern California. The DC Intertie connects the Celio DC Converter station near The Dalles, Oregon with the Sylmar substation north of Los Angeles, California.

Palo Verde (PV or Palo) (daily market only)

Palo Verde comprises the switchyard at the Palo Verde nuclear power station west of Phoenix, Arizona.

Pinnacle Peak (daily market only)

Pinnacle Peak comprises three substations northeast of Phoenix, Arizona and west of Scottsdale Arizona. The three substations are operated individually by Arizona Public Service, US Bureau of Reclamation Lower Colorado Region and Salt River Project.

Westwing (daily market only)

Westwing comprises a substation northwest of Phoenix, Arizona operated by Arizona Public Service.

PLATTS DAY-AHEAD LMP MARGINAL HEAT RATES AND SPARK SPREADS

Power Hub	Power/Gas Hub Pairs		On-Peak			Off-Peak		
	Gas Hub 1	Gas Hub 2	Mrg Heat Rate Symbol	7K Spark Symbol	12K Spark Symbol	Mrg Heat Rate Symbol	7K Spark Symbol	12K Spark Symbol
CAISO NP15	PG&E CG		ICNGR00	SCBLP07	SCBLP12	ICNGT00	SCBL007	SCBL012
CAISO SP15	SoCal Gas	PG&E South	ICSGR00	SCCLP07	SCCLP12	ICSGT00	SCDL007	SCDL012
CAISO ZP26	SoCal Gas	PG&E South	ICZGR00	SCELP07	SCELP12	ICZGT00	SCFL007	SCFL012
ERCOT AEN	Waha	Transwestn Perm	IERAR00	SCGLP07	SCGLP12	IERAT00	SCHL007	SCHL012
ERCOT Bus Average	Waha	Transwestn Perm	IERBR00	SCILP07	SCILP12	IERBT00	SCJL007	SCJL012
ERCOT CPS Zone	Tenn Zn0 Fdt	Tx. Eastern, STX	IERDR00	SCKLP07	SCKLP12	IERDT00	SCLL007	SCLL012
ERCOT Houston Hub	Houston ShipChl	Katy	IERHR00	SCMLP07	SCMLP12	IERHT00	SCNL007	SCNL012
ERCOT Houston Zone	Houston ShipChl	Katy	IERZR00	SCOLP07	SCOLP12	IERZT00	SCPL007	SCPL012
ERCOT Hub Average	Waha	Transwestn Perm	IERRR00	SCQLP07	SCQLP12	IERRT00	SCRLO07	SCRLO12
ERCOT LCRA Zone	Tenn Zn0 Fdt	Tx. Eastern, STX	IERLR00	SCSLP07	SCSLP12	IERLT00	SCTLO07	SCTLO12
ERCOT North Hub	NGPL Texok Zn	Tx. Eastern, ETX	IERNR00	SCULP07	SCULP12	IERNT00	SCVL007	SCVL012
ERCOT North Zone	NGPL Texok Zn	Tx. Eastern, ETX	IERTR00	SCWLP07	SCWLP12	IERTT00	SCXL007	SCXL012
ERCOT Rayburn Zone	Carthage Hub	Tx. Eastern, ETX	IERUR00	SCYLP07	SCYLP12	IERUT00	SCZL007	SCZL012
ERCOT South Hub	Tenn Zn0 Fdt	Agua Dulce Hub	IERSR00	SDALP07	SDALP12	IERST00	SDBL007	SDBL012
ERCOT South Zone	Tenn Zn0 Fdt	Agua Dulce Hub	IERVR00	SDCLP07	SDCLP12	IERVT00	SDDL007	SDDL012
ERCOT West Hub	Waha	Transwestn Perm	IERWR00	SDEL07	SDEL12	IERWT00	SDFL007	SDFL012
ERCOT West Zone	Waha	Transwestn Perm	IERER00	SDGLP07	SDGLP12	IERET00	SDHL007	SDHL012
ISONE Connecticut Zone	Iroquois Zn2	Tenn Zn6 Dlvd	IINCR00	SDILP07	SDILP12	IINCT00	SDJL007	SDJL012
ISONE Internal Hub	Algonquin CG	Tenn Zn6 Dlvd	IINIR00	SDKLP07	SDKLP12	IINIT00	SDLL007	SDLL012
ISONE Maine Zone	Algonquin CG	Iroquois Recpts	IINMR00	SDMLP07	SDMLP12	IINMT00	SDNL007	SDNL012
ISONE NE Mass-Boston Zone	Algonquin CG	Iroquois Recpts	IINNR00	SDOLP07	SDOLP12	IINNT00	SDPL007	SDPL012
ISONE New Hampshire Zone	Algonquin CG	Iroquois Recpts	IINHR00	SDQLP07	SDQLP12	IINH00	SDRL007	SDRL012
ISONE Rhode Island Zone	Algonquin CG	Tenn Zn6 Dlvd	IINRR00	SDSLP07	SDSLP12	IINRT00	SDTL007	SDTL012
ISONE SE Mass Zone	Algonquin CG	Tenn Zn6 Dlvd	IINSR00	SDULP07	SDULP12	IINST00	SDVL007	SDVL012
ISONE Vermont Zone	Algonquin CG	Iroquois Recpts	IINVR00	SDWLP07	SDWLP12	IINVT00	SDXL007	SDXL012
ISONE West-Central Mass Zone	Algonquin CG	Tenn Zn6 Dlvd	IINWR00	SDYLP07	SDYLP12	IINWT00	SDZL007	SDZL012
MISO Arkansas Hub	Enable Gas Transmission	Trunkline Zn 1A	IMARR00	SIDL07	SIDL12	IMART00	SICL007	SICL12
MISO Illinois Hub	Chicago CG	Alliance Interstates	IMILR00	SEBL07	SEBL12	IMILT00	SECL007	SECL12
MISO Indiana Hub	Chicago CG	Lebanon Hub-Ohio	IMIDR00	SEDLP07	SEDLP12	IMIDT00	SEEL007	SEEL12
MISO Louisiana Hub	Col Gulf LA	TX Eastern W LA	IMLAR00	SIBLP07	SIBLP12	IMLAT00	SIALP07	SIAL12
MISO Michigan Hub	Mich Con CG	Cons Energy CG	IMIMR00	SEGL07	SEGL12	IMIMT00	SEHL007	SEHL12
MISO Minnesota Hub	Nrthrn Ventura	Emerson Viking	IMINR00	SEILP07	SEILP12	IMINT00	SEJL007	SEJL12
MISO Texas Hub	NGPL Texok Zn		IMTXR00	SHYLP07	SHYLP12	IMTX00	SHYLP07	SHYLP12
NYISO Capital Zone	Transco Zn6 NY	Millennium East receipts	INYCR00	SELLP07	SELLP12	INYCT00	SEML007	SEML012
NYISO Central Zone	Niagara	Dominion S Pt	INYRR00	SENL07	SENL12	INYRT00	SEOL007	SEOL012
NYISO Dunwood Zone	Iroquois Zn2	Transco Zn6 NY	INYDR00	SEPL07	SEPL12	INYDT00	SEQL007	SEQL012
NYISO Genesee Zone	Niagara	Dominion S Pt	INYGR00	SERLP07	SERLP12	INYGT00	SESL007	SESL012

PLATTS DAY-AHEAD LMP MARGINAL HEAT RATES AND SPARK SPREADS

Power Hub	Power/Gas Hub Pairs		On-Peak			Off-Peak		
	Gas Hub 1	Gas Hub 2	Mrg Heat Rate Symbol	7K Spark Symbol	12K Spark Symbol	Mrg Heat Rate Symbol	7K Spark Symbol	12K Spark Symbol
NYISO Hudson Valley Zone	Iroquois Zn2	Transco Zn6 NY	INYHR00	SETLP07	SETLP12	INYHT00	SEUL007	SEUL012
NYISO Long Island Zone	Transco Zn6 NY	Iroquois Zn2	INYL00	SEVLP07	SEVLP12	INYL00	SEWL007	SEWL012
NYISO Millwood Zone	Iroquois Zn2	Transco Zn6 NY	INYMR00	SEXLP07	SEXLP12	INYMT00	SEYL007	SEYL012
NYISO Mohawk Valley Zone	Transco Zn6 NY	Millennium East receipts	INYVR00	SEZLP07	SEZLP12	INYVT00	SFAL007	SFAL012
NYISO NYC Zone	Iroquois Recpts		INYNR00	SFBLP07	SFBLP12	INYNT00	SFCL007	SFCL012
NYISO North Zone	Transco Zn6 NY	Iroquois Zn2	INYOR00	SFDLP07	SFDLP12	INYOT00	SFEL007	SFEL012
NYISO West Zone	Niagara	Dominion S Pt	INYWR00	SFFLP07	SFFLP12	INYWT00	SFGL007	SFGL012
PJM AEP Gen Hub	Dominion S Pt	Texas Eastern zone M-2 receipts	IPAGR00	SFILP07	SFILP12	IPAGT00	SFJL007	SFJL012
PJM AEP Zone	Dominion S Pt	Texas Eastern zone M-2 receipts	IPAZR00	SFKLP07	SFKLP12	IPAZT00	SFLL007	SFLL012
PJM AEP-Dayton Hub	Mich Con CG		IPADR00	SFMLP07	SFMLP12	IPADT00	SFNL007	SFNL012
PJM Allegheny Power Zone	Col Gas Appal	Dominion S Pt	IPAPR00	SFOLP07	SFOLP12	IPAPT00	SFPL007	SFPL012
PJM Atlantic Electric Zone	Transco Zn6 non-N.Y	TX Eastern M-3	IPAER00	SFQLP07	SFQLP12	IPAET00	SFRL007	SFRL012
PJM ATSI Gen Hub	Dominion S Pt	Col Gas Appal	IPATR00	SFSLP07	SFSLP12	IPATT00	SFTL007	SFTL012
PJM ATSI Zone	Dominion S Pt	Col Gas Appal	IPASR00	SFULP07	SFULP12	IPAST00	SFVL007	SFVL012
PJM BG&E Zone	TX Eastern M-3	Dominion S Pt	IPBER00	SFWLP07	SFWLP12	IPBET00	SFXL007	SFXL012
PJM Chicago Gen Hub	Chicago CG		IPCGR00	SFYL07	SFYL12	IPCGT00	SFZL007	SFZL012
PJM Chicao Hub	Chicago CG		IPCHR00	SGALP07	SGALP12	IPCHT00	SGBL007	SGBL012
PJM ComEd Zone	Chicago CG		IPCER00	SGCLP07	SGCLP12	IPCET00	SGDL007	SGDL012
PJM Dayton Power and Light Zone	TX Eastern M-3	Lebanon Hub-Ohio	IPDPR00	SGELP07	SGELP12	IPDPT00	SGFL007	SGFL012
PJM Delmarva Power and Light Zone	Transco Zn6 non-N.Y	TX Eastern M-3	IPEPR00	SGGLP07	SGGLP12	IPEPT00	SGHL007	SGHL012
PJM Dominion Hub	Transco Zn5 Dlv	Col Gas Appal	IPDMR00	SGILP07	SGILP12	IPDMT00	SGJL007	SGJL012
PJM Dominion Zone	Transco Zn5 Dlv	Col Gas Appal	IPDZR00	SGKLP07	SGKLP12	IPDZT00	SGLL007	SGLL012
PJM Duke Zone	Dominion S Pt	Texas Eastern zone M-2 receipts	IPDKR00	SGMLP07	SGMLP12	IPDKT00	SGNL007	SGNL012
PJM Duquesne Light Zone	Dominion S Pt	Col Gas Appal	IPDLR00	SGOLP07	SGOLP12	IPDLT00	SGPL007	SGPL012
PJM Eastern Hub	TX Eastern M-3	Transco Zn6 non-N.Y	IPEHR00	SGQLP07	SGQLP12	IPEHT00	SGRL007	SGRL012
PJM EKPC Zone	Texas Eastern zone M-2 receipts	Lebanon Hub-Ohio	IPEKR00	SAZLP07	SAZLP12	IPEKT00	SAZL007	SAZL012
PJM JCPL Zone	Transco Zn6 non-N.Y	Transco Leidy Line receipts	IPJCR00	SGTLP07	SGTLP12	IPJCT00	SGUL007	SGUL012
PJM MetEd Zone	TX Eastern M-3	Transco Zn6 non-N.Y	IPMER00	SGVLP07	SGVLP12	IPMET00	SGWL007	SGWL012
PJM New Jersey Hub	TX Eastern M-3	Transco Zn6 non-N.Y	IPNJR00	SGYLP07	SGYLP12	IPNJT00	SGZL007	SGZL012
PJM Northern Illinois Hub	Chicago CG		IPNIR00	SGZLP07	SGZLP12	IPNIT00	SHAL007	SHAL012
PJM Ohio Hub	Dominion S	Texas Eastern zone M-2 receipts	IPOHR00	SHBLP07	SHBLP12	IPOHT00	SHCL007	SHCL012
PJM PECO Zone	TX Eastern M-3	Transco Zn6 non-N.Y	IPPCR00	SHDLP07	SHDLP12	IPPCT00	SHEL007	SHEL012
PJM Pennsylvania Electric Zone	Transco Leidy Line receipts	Dominion S Pt	IPPAR00	SHFLP07	SHFLP12	IPPAT00	SHGL007	SHGL012
PJM PEPCO Zone	Transco Zn5 Dlv	Dominion S Pt	IPPZR00	SHHLP07	SHHLP12	IPPZT00	SHIL007	SHIL012
PJM PPL Zone	Transco Leidy Line receipts	Transco Zn6 non-N.Y	IPPLR00	SHJLP07	SHJLP12	IPPLT00	SHKL007	SHKL012
PJM PSEG Zone	TX Eastern M-3	Transco Zn6 non-N.Y	IPSGR00	SHLLP07	SHLLP12	IPSGT00	SHML007	SHML012
PJM Rockland Electric Zone	Transco Zn6 non-N.Y	TX Eastern M-3	IPRRR00	SHNLP07	SHNLP12	IPRET00	SHOL007	SHOL012

PLATTS DAY-AHEAD LMP MARGINAL HEAT RATES AND SPARK SPREADS

Power Hub	Power/Gas Hub Pairs		On-Peak			Off-Peak		
	Gas Hub 1	Gas Hub 2	Mrg Heat Rate Symbol	7K Spark Symbol	12K Spark Symbol	Mrg Heat Rate Symbol	7K Spark Symbol	12K Spark Symbol
PJM West Interface Hub	Col Gas Appal	Texas Eastern zone M-2 receipts	IPWIR00	SHPLP07	SHPLP12	IPWIT00	SHQL007	SHQL012
PJM Western Hub	TX Eastern M-3	Dominion S Pt	IPWHR00	SHRLP07	SHRLP12	IPWHT00	SHSL007	SHSL012
SPP North Hub	Nrthrn Ventura	Northern Demarc	ISNOR00	SHTLP07	SHTLP12	ISNOT00	SHUL007	SHUL012
SPP South Hub	Panhandle TX-OK	Oneok OK	ISSOR00	SHVLP07	SHVLP12	ISSOT00	SHWL007	SHWL012

PLATTS REAL-TIME LMP MARGINAL HEAT RATES AND SPARK SPREADS

Power Hub	Power/Gas Hub Pairs		On-Peak			Off-Peak		
	Gas Hub 1	Gas Hub 2	Mrg Heat Rate Symbol	7K Spark Symbol	12K Spark Symbol	Mrg Heat Rate Symbol	7K Spark Symbol	12K Spark Symbol
Alberta	TC Alb AECCO-C		LALBR01	SCALP07	SCALP12	LALBT01	SCAL007	SCAL012
CAISO NP15	PG&E CG		ICNGR01	SHXLP07	SHXLP12	ICNGT01	SCCL007	SCCL012
CAISO SP15	SoCal Gas	PG&E South	ICSGR01	SCDLP07	SCDLP12	ICSGT01	SCEL007	SCEL012
CAISO ZP26	SoCal Gas	PG&E South	ICZGR01	SCFLP07	SCFLP12	ICZGT01	SCGL007	SCGL012
ERCOT AEN	Waha	Transwestn Perm	IERAR01	SCHLP07	SCHLP12	IERAT01	SCIL007	SCIL012
ERCOT Bus Average	Waha	Transwestn Perm	IERBR01	SCJLP07	SCJLP12	IERBT01	SCKL007	SCKL012
ERCOT CPS Zone	Tenn Zn0 Fdt	Tx. Eastern, STX	IERDR01	SCLLP07	SCLLP12	IERDT01	SCML007	SCML012
ERCOT Houston Hub	Houston ShipChl	Katy	IERHR01	SCNLP07	SCNLP12	IERHT01	SCOL007	SCOL012
ERCOT Houston Zone	Houston ShipChl	Katy	IERZR01	SCPLP07	SCPLP12	IERZT01	SCQL007	SCQL012
ERCOT Hub Average	Waha	Transwestn Perm	IERRR01	SCRLP07	SCRLP12	IERRT01	SCSL007	SCSL012
ERCOT LCRA Zone	Tenn Zn0 Fdt	Tx. Eastern, STX	IERLR01	SCTLP07	SCTLP12	IERLT01	SCUL007	SCUL012
ERCOT North Hub	NGPL Texok Zn	Tx. Eastern, ETX	IERNR01	SCVLP07	SCVLP12	IERNT01	SCWL007	SCWL012
ERCOT North Zone	NGPL Texok Zn	Tx. Eastern, ETX	IERTR01	SCXLP07	SCXLP12	IERTT01	SCYL007	SCYL012
ERCOT Rayburn Zone	Carthage Hub	Tx. Eastern, ETX	IERUR01	SCZLP07	SCZLP12	IERUT01	SDAL007	SDAL012
ERCOT South Hub	Tenn Zn0 Fdt	Agua Dulce Hub	IERSR01	SDBLP07	SDBLP12	IERST01	SDCL007	SDCL012
ERCOT South Zone	Tenn Zn0 Fdt	Agua Dulce Hub	IERVR01	SDDL07	SDDL12	IERVT01	SDEL007	SDEL012
ERCOT West Hub	Waha	Transwestn Perm	IERWR01	SDFLP07	SDFLP12	IERWT01	SDGL007	SDGL012
ERCOT West Zone	Waha	Transwestn Perm	IERER01	SDHLP07	SDHLP12	IERET01	SDIL007	SDIL012
ISONE Connecticut Zone	Iroquois Zn2	Tenn Zn6 Dlv	IINCR01	SDJLP07	SDJLP12	IINCT01	SDKL007	SDKL012
ISONE Internal Hub	Algonquin CG	Tenn Zn6 Dlv	IINIR01	SDLLP07	SDLLP12	IINIT01	SDML007	SDML012
ISONE Maine Zone	Algonquin CG	Iroquois Recpts	IINMR01	SDNLP07	SDNLP12	IINMT01	SDOL007	SDOL012
ISONE NE Mass-Boston Zone	Algonquin CG	Iroquois Recpts	IINNR01	SDPLP07	SDPLP12	IINNT01	SDQL007	SDQL012
ISONE New Hampshire Zone	Algonquin CG	Iroquois Recpts	IINHR01	SDRLP07	SDRLP12	IINHNT01	SDSL007	SDSL012
ISONE Rhode Island Zone	Algonquin CG	Tenn Zn6 Dlv	IINRR01	SDTLP07	SDTLP12	IINRT01	SDUL007	SDUL012
ISONE SE Mass Zone	Algonquin CG	Tenn Zn6 Dlv	IINSR01	SDVLP07	SDVLP12	IINST01	SDWL007	SDWL012
ISONE Vermont Zone	Algonquin CG	Iroquois Recpts	IINVR01	SDXLP07	SDXLP12	IINVT01	SDYL007	SDYL012
ISONE West-Central Mass Zone	Algonquin CG	Tenn Zn6 Dlv	IINWR01	SDZLP07	SDZLP12	IINWT01	SEAL007	SEAL012
MISO Arkansas Hub	Enable Gas Transmission	Trunkline Zn 1A	IMARR01	SEALP07	SEALP12	IMART01	SEBL007	SEBL012
MISO Illinois Hub	Chicago CG	Alliance Interstates	IMILR01	SECLP07	SECLP12	IMILT01	SEDL007	SEDL012

PLATTS REAL-TIME LMP MARGINAL HEAT RATES AND SPARK SPREADS

Power Hub	Power/Gas Hub Pairs		On-Peak			Off-Peak		
	Gas Hub 1	Gas Hub 2	Mrg Heat Rate Symbol	7K Spark Symbol	12K Spark Symbol	Mrg Heat Rate Symbol	7K Spark Symbol	12K Spark Symbol
MISO Indiana Hub	Chicago CG	Lebanon Hub-Ohio	IMIDR01	SEELP07	SEELP12	IMIDT01	SEFL007	SEFL012
MISO Louisiana Hub	Col Gulf LA	TX Eastern W LA	IMLAR01	SEFLP07	SEFLP12	IMLAT01	SEGL007	SEGL012
MISO Michigan Hub	Mich Con CG	Cons Energy CG	IMIMR01	SEHLP07	SEHLP12	IMINT01	SEIL007	SEIL012
MISO Minnesota Hub	Nrthrn Ventura	Emerson Viking	IMINR01	SEJLP07	SEJLP12	IMINT01	SEKL007	SEKL012
MISO Texas Hub	NGPL Texok Zn		IMTXR01	SEKLP07	SEKLP12	IMTXT01	SELL007	SELL012
NYISO Capital Zone	Transco Zn6 NY	Millennium East receipts	INYCR01	SEMLP07	SEMLP12	INYCT01	SENL007	SENL012
NYISO Central Zone	Niagara	Dominion S Pt	INYRR01	SEOLP07	SEOLP12	INYRT01	SEPL007	SEPL012
NYISO Dunwood Zone	Iroquois Zn2	Transco Zn6 NY	INYDR01	SEQLP07	SEQLP12	INYDT01	SERL007	SERL012
NYISO Genesee Zone	Niagara	Dominion S Pt	INYGR01	SESLP07	SESLP12	INYGT01	SETL007	SETL012
NYISO Hudson Valley Zone	Iroquois Zn2	Transco Zn6 NY	INYHR01	SEULP07	SEULP12	INYHT01	SEVL007	SEVL012
NYISO Long Island Zone	Transco Zn6 NY	Iroquois Zn2	INYLR01	SEWLP07	SEWLP12	INYLT01	SEXL007	SEXL012
NYISO Millwood Zone	Iroquois Zn2	Transco Zn6 NY	INYMR01	SEYLP07	SEYLP12	INYMT01	SEZL007	SEZL012
NYISO Mohawk Valley Zone	Transco Zn6 NY	Millennium East receipts	INYVR01	SFALP07	SFALP12	INYVT01	SFBL007	SFBL012
NYISO NYC Zone	Iroquois Recpts		INYNR01	SFCLP07	SFCLP12	INYNT01	SFDL007	SFDL012
NYISO North Zone	Transco Zn6 NY	Iroquois Zn2	INYOR01	SFELP07	SFELP12	INYOT01	SFFL007	SFFL012
NYISO West Zone	Niagara	Dominion S Pt	INYWR01	SFGLP07	SFGLP12	INYWT01	SFHL007	SFHL012
Ontario	Dawn Ontario	Mich Con CG	LOTCR01	SFHL07	SFHL012	LOTCT01	SFIL007	SFIL012
PJM AEP Gen Hub	Dominion S Pt	Texas Eastern zone M-2 receipts	IPAGR01	SFJLP07	SFJLP12	IPAGT01	SFKL007	SFKL012
PJM AEP Zone	Dominion S Pt	Texas Eastern zone M-2 receipts	IPAZR01	SFLLP07	SFLLP12	IPAZT01	SFML007	SFML012
PJM AEP-Dayton Hub	Mich Con CG		IPADR01	SFNL07	SFNL012	IPADT01	SFOL007	SFOL012
PJM Allegheny Power Zone	Col Gas Appal	Dominion S Pt	IPAPR01	SFPLP07	SFPLP12	IPAPT01	SFQL007	SFQL012
PJM Atlantic Electric Zone	Transco Zn6 non-N.Y	TX Eastern M-3	IPAER01	SFRLP07	SFRLP12	IPAET01	SFSL007	SFSL012
PJM ATSI Gen Hub	Dominion S Pt	Col Gas Appal	IPATR01	SFTLP07	SFTLP12	IPATT01	SFUL007	SFUL012
PJM ATSI Zone	Dominion S Pt	Col Gas Appal	IPASR01	SFVLP07	SFVLP12	IPAST01	SFWL007	SFWL012
PJM BG&E Zone	TX Eastern M-3	Dominion S Pt	IPBER01	SFXLP07	SFXLP12	IPBET01	SFYL007	SFYL012
PJM Chicago Gen Hub	Chicago CG		IPCGR01	SFZLP07	SFZLP12	IPCGT01	SGAL007	SGAL012
PJM Chicao Hub	Chicago CG		IPCHR01	SGBLP07	SGBLP12	IPCHT01	SGCL007	SGCL012
PJM ComEd Zone	Chicago CG		IPCER01	SGDLP07	SGDLP12	IPCET01	SGEL007	SGEL012
PJM Dayton Power and Light Zone	TX Eastern M-3	Lebanon Hub-Ohio	IPDPR01	SGFLP07	SGFLP12	IPDPT01	SGGL007	SGGL012
PJM Delmarva Power and Light Zone	Transco Zn6 non-N.Y	TX Eastern M-3	IPEPR01	SGHLP07	SGHLP12	IPEPT01	SGIL007	SGIL012
PJM Dominion Hub	Transco Zn5 Dlv	Col Gas Appal	IPDMR01	SGJLP07	SGJLP12	IPDMT01	SGKL007	SGKL012
PJM Dominion Zone	Transco Zn5 Dlv	Col Gas Appal	IPDZR01	SGLLP07	SGLLP12	IPDZT01	SGML007	SGML012
PJM Duke Zone	Dominion S Pt	Texas Eastern zone M-2 receipts	IPDKR01	SGNLP07	SGNLP12	IPDKT01	SGOL007	SGOL012
PJM Duquesne Light Zone	Dominion S Pt	Col Gas Appal	IPDLR01	SGPLP07	SGPLP12	IPDLT01	SGQL007	SGQL012
PJM Eastern Hub	TX Eastern M-3	Transco Zn6 non-N.Y	IPEHR01	SGRLP07	SGRLP12	IPEHT01	SGSL007	SGSL012
PJM EKPC Zone	Texas Eastern zone M-2 receipts	Lebanon Hub-Ohio	IPEKR01	SGSLP07	SGSLP12	IPEKT01	SGTL007	SGTL012

PLATTS REAL-TIME LMP MARGINAL HEAT RATES AND SPARK SPREADS

Power/Gas Hub Pairs			On-Peak			Off-Peak		
Power Hub	Gas Hub 1	Gas Hub 2	Mrg Heat Rate Symbol	7K Spark Symbol	12K Spark Symbol	Mrg Heat Rate Symbol	7K Spark Symbol	12K Spark Symbol
PJM JCPL Zone	Transco Zn6 non-N.Y	Transco Leidy Line receipts	IPJCR01	SGULP07	SGULP12	IPJCT01	SGVL007	SGVL012
PJM MetEd Zone	TX Eastern M-3	Transco Zn6 non-N.Y	IPMER01	SGWLP07	SGWLP12	IPMET01	SGXL007	SGXL012
PJM New Jersey Hub	TX Eastern M-3	Transco Zn6 non-N.Y	IPNJR01	SGXLP07	SGXLP12	IPNJT01	SGYL007	SGYL012
PJM Northern Illinois Hub	Chicago CG		IPNIR01	SHALP07	SHALP12	IPNIT01	SHBL007	SHBL012
PJM Ohio Hub	Dominion S	Texas Eastern zone M-2 receipts	IPOHR01	SHCLP07	SHCLP12	IPOHT01	SHDL007	SHDL012
PJM PECO Zone	TX Eastern M-3	Transco Zn6 non-N.Y	IPPCR01	SHELP07	SHELP12	IPPCT01	SHFL007	SHFL012
PJM Pennsylvania Electric Zone	Transco Leidy Line receipts	Dominion S Pt	IPPAR01	SHGLP07	SHGLP12	IPPAT01	SHHL007	SHHL012
PJM PEPCO Zone	Transco Zn5 Dlv	Dominion S Pt	IPPZR01	SHILP07	SHILP12	IPPZT01	SHJL007	SHJL012
PJM PPL Zone	Transco Leidy Line receipts	Transco Zn6 non-N.Y	IPPLR01	SHKLP07	SHKLP12	IPPLT01	SHLL007	SHLL012
PJM PSEG Zone	TX Eastern M-3	Transco Zn6 non-N.Y	IPSGR01	SHMLP07	SHMLP12	IPSGT01	SHNL007	SHNL012
PJM Rockland Electric Zone	Transco Zn6 non-N.Y	TX Eastern M-3	IPRER01	SHOLP07	SHOLP12	IPRET01	SHPL007	SHPL012
PJM West Interface Hub	Col Gas Appal	Texas Eastern zone M-2 receipts	IPWIR01	SHQLP07	SHQLP12	IPWIT01	SHRL007	SHRL012
PJM Western Hub	TX Eastern M-3	Dominion S Pt	IPWHR01	SHSLP07	SHSLP12	IPWHT01	SHTL007	SHTL012
SPP North Hub	Nrthrn Ventura	Northern Demarc	ISNOR01	SHULP07	SHULP12	ISNOT01	SHVL007	SHVL012
SPP South Hub	Panhandle TX-OK	Oneok OK	ISSOR01	SHWLP07	SHWLP12	ISSOT01	SHXL007	SHXL012

PLATTS DAY-AHEAD BILATERAL MARGINAL HEAT RATES AND SPARK SPREADS

Power/Gas Hub Pairs			On-Peak					Off-Peak					
Power Hub	Gas Hub	Mrg Heat Rate	7K Spark Symbol	8K Spark Symbol	10K Spark Symbol	12K Spark Symbol	15K Spark Symbol	Mrg Heat Rate	7K Spark Symbol	8K Spark Symbol	10K Spark Symbol	12K Spark Symbol	15K Spark Symbol
COB	PG&E Malin	SAANP00	SAANP07	SAANP08	SAANP10	SAANP12	SAANP15	SAANO00	SAANO07	SAANO08	SAANO10	SAANO12	SAANO15
Florida	FL Gas Zn3	SAINP00	SAINP07	SAINP08	SAINP10	SAINP12	SAINP15	SAINO00	SAINO07	SAINO08	SAINO10	SAINO12	SAINO15
Four Corners	El Paso SanJuan	SAJNP00	SAJNP07	SAJNP08	SAJNP10	SAJNP12	SAJNP15	SAJNO00	SAJNO07	SAJNO08	SAJNO10	SAJNO12	SAJNO15
Into GTC	Transco Zn4	SANNR00	SANNR07	SANNR08	SANNR10	SANNR12	SANNR15	SANNQ00	SANNQ07	SANNQ08	SANNQ10	SANNQ12	SANNQ15
Into Southern	Transco Zn4	SANNP00	SANNP07	SANNP08	SANNP10	SANNP12	SANNP15	SANNO00	SANNO07	SANNO08	SANNO10	SANNO12	SANNO15
Into TVA	Texas Gas Zn 1	SAONP00	SAONP07	SAONP08	SAONP10	SAONP12	SAONP15	SAONO00	SAONO07	SAONO08	SAONO10	SAONO12	SAONO15
John Day	NW Can Bd Sumas	SAPOP00	SAPOP07	SAPOP08	SAPOP10	SAPOP12	SAPOP15	SAPOO00	SAPOO07	SAPOO08	SAPOO10	SAPOO12	SAPOO15
Mead	SoCal Gas CG	SBENP00	SBENP07	SBENP08	SBENP10	SBENP12	SBENP15	SBENO00	SBENO07	SBENO08	SBENO10	SBENO12	SBENO15
Mid-Columbia	NW Can Bd Sumas	SAPNP00	SAPNP07	SAPNP08	SAPNP10	SAPNP12	SAPNP15	SAPNO00	SAPNO07	SAPNO08	SAPNO10	SAPNO12	SAPNO15
Mona	Kern Rvr Opal	SBMNP00	SBMNP07	SBMNP08	SBMNP10	SBMNP12	SBMNP15	SBMNO00	SBMNO07	SBMNO08	SBMNO10	SBMNO12	SBMNO15
NOB	NW Can Bd Sumas	SAPPP00	SAPPP07	SAPPP08	SAPPP10	SAPPP12	SAPPP15	SAPPO00	SAPPO07	SAPPO08	SAPPO10	SAPPO12	SAPPO15
Palo Verde	SoCal Gas CG	SAYNP00	SAYNP07	SAYNP08	SAYNP10	SAYNP12	SAYNP15	SAYNO00	SAYNO07	SAYNO08	SAYNO10	SAYNO12	SAYNO15
Pinnacle	SoCal Gas CG	SAPRP00	SAPRP07	SAPRP08	SAPRP10	SAPRP12	SAPRP15	SAPRO00	SAPRO07	SAPRO08	SAPRO10	SAPRO12	SAPRO15
VACAR	Transco Zn5 Dlv	SBCNP00	SBCNP07	SBCNP08	SBCNP10	SBCNP12	SBCNP15	SBCNO00	SBCNO07	SBCNO08	SBCNO10	SBCNO12	SBCNO15
Westwing	SoCal Gas CG	SAPQP00	SAPQP07	SAPQP08	SAPQP10	SAPQP12	SAPQP15	SAPQO00	SAPQO07	SAPQO08	SAPQO10	SAPQO12	SAPQO15

HOURLY BILATERAL

Mid-C Hourly	Symbol
Hour 1	MCRTH01
Hour 2	MCRTH02
Hour 3	MCRTH03
Hour 4	MCRTH04
Hour 5	MCRTH05
Hour 6	MCRTH06
Hour 7	MCRTH07
Hour 8	MCRTH08
Hour 9	MCRTH09
Hour 10	MCRTH10
Hour 11	MCRTH11
Hour 12	MCRTH12
Hour 13	MCRTH13
Hour 14	MCRTH14
Hour 15	MCRTH15
Hour 16	MCRTH16
Hour 17	MCRTH17
Hour 18	MCRTH18
Hour 19	MCRTH19
Hour 20	MCRTH20
Hour 21	MCRTH21
Hour 22	MCRTH22
Hour 23	MCRTH23
Hour 24	MCRTH24
Daily on-peak	MCRTP00
Daily off-peak	MCRTO00
Weekly on-peak	MCRTP04
Weekly off-peak	MCRTO04

Marginal Heat Rates

Platts marginal heat rates are derived as a ratio of the electricity price and natural gas price for a particular delivery period.

Each electricity location is paired with one or two corresponding regional natural gas locations. On most days, the gas location in the first position will be used to calculate the marginal heat rate. If on a given day prices are not published for the primary natural gas location – for example because of no reported trades or transparent market activity – Platts will use the natural gas location in the second position to calculate the marginal heat rate.

The electricity prices for each location represent day ahead or real time locational marginal prices from grid operators and independent system operators, as well as Platts bilateral assessments.

The natural gas prices represent Platts daily price assessments on regional pipelines with physical delivery in close proximity to the electricity location.

For details on the assessment processes for natural gas, including price reporting criteria, see the Methodology and Reference section on Platts.com. The formula for marginal heat rates is power price/gas price.

Spark Spreads

Platts spark spreads represent the difference between the wholesale electricity price and equivalent natural gas price.

The electricity prices for each location represent day ahead or real time locational marginal prices from grid operators and independent system operators, as well as Platts bilateral assessments.

The natural gas prices represent Platts daily price assessments on regional pipelines with physical delivery in close proximity to the electricity location.

For details on the assessment processes for natural gas, including price reporting criteria, see the Methodology and Reference section on Platts.com.

Calculations are expressed in \$/MWh.

The formula for spark spreads is electricity price (USD/MWh) – [natural gas price (USD/mmBtu)*heat rate (mmBtu/MWh)].

Specifics on power and gas pairings for each location, as well as marginal heat rate and spark spread symbols, are listed in preceding tables.

CALIFORNIA ISO CURTAILMENT HOURLY WEIGHTINGS

Mid-C Hourly	Symbol
California ISO System-Wide Solar Weighting Curtailment- HE 1	CAISW01
California ISO System-Wide Solar Weighting Curtailment- HE 2	CAISW02
California ISO System-Wide Solar Weighting Curtailment- HE 3	CAISW03
California ISO System-Wide Solar Weighting Curtailment- HE 4	CAISW04
California ISO System-Wide Solar Weighting Curtailment- HE 5	CAISW05
California ISO System-Wide Solar Weighting Curtailment- HE 6	CAISW06
California ISO System-Wide Solar Weighting Curtailment- HE 7	CAISW07
California ISO System-Wide Solar Weighting Curtailment- HE 8	CAISW08
California ISO System-Wide Solar Weighting Curtailment- HE 9	CAISW09
California ISO System-Wide Solar Weighting Curtailment- HE 10	CAISW10
California ISO System-Wide Solar Weighting Curtailment- HE 11	CAISW11
California ISO System-Wide Solar Weighting Curtailment- HE 12	CAISW12
California ISO System-Wide Solar Weighting Curtailment- HE 13	CAISW13
California ISO System-Wide Solar Weighting Curtailment- HE 14	CAISW14
California ISO System-Wide Solar Weighting Curtailment- HE 15	CAISW15
California ISO System-Wide Solar Weighting Curtailment- HE 16	CAISW16
California ISO System-Wide Solar Weighting Curtailment- HE 17	CAISW17
California ISO System-Wide Solar Weighting Curtailment- HE 18	CAISW18
California ISO System-Wide Solar Weighting Curtailment- HE 19	CAISW19
California ISO System-Wide Solar Weighting Curtailment- HE 20	CAISW20
California ISO System-Wide Solar Weighting Curtailment- HE 21	CAISW21
California ISO System-Wide Solar Weighting Curtailment- HE 22	CAISW22
California ISO System-Wide Solar Weighting Curtailment- HE 23	CAISW23
California ISO System-Wide Solar Weighting Curtailment- HE 24	CAISW24
California ISO System-Wide Wind Weighting Curtailment- HE 1	CAIWW01
California ISO System-Wide Wind Weighting Curtailment- HE 2	CAIWW02
California ISO System-Wide Wind Weighting Curtailment- HE 3	CAIWW03
California ISO System-Wide Wind Weighting Curtailment- HE 4	CAIWW04
California ISO System-Wide Wind Weighting Curtailment- HE 5	CAIWW05
California ISO System-Wide Wind Weighting Curtailment- HE 6	CAIWW06

CALIFORNIA ISO CURTAILMENT HOURLY WEIGHTINGS

Mid-C Hourly	Symbol
California ISO System-Wide Wind Weighting Curtailment- HE 7	CAIWW07
California ISO System-Wide Wind Weighting Curtailment- HE 8	CAIWW08
California ISO System-Wide Wind Weighting Curtailment- HE 9	CAIWW09
California ISO System-Wide Wind Weighting Curtailment- HE 10	CAIWW10
California ISO System-Wide Wind Weighting Curtailment- HE 11	CAIWW11
California ISO System-Wide Wind Weighting Curtailment- HE 12	CAIWW12
California ISO System-Wide Wind Weighting Curtailment- HE 13	CAIWW13
California ISO System-Wide Wind Weighting Curtailment- HE 14	CAIWW14
California ISO System-Wide Wind Weighting Curtailment- HE 15	CAIWW15
California ISO System-Wide Wind Weighting Curtailment- HE 16	CAIWW16
California ISO System-Wide Wind Weighting Curtailment- HE 17	CAIWW17
California ISO System-Wide Wind Weighting Curtailment- HE 18	CAIWW18
California ISO System-Wide Wind Weighting Curtailment- HE 19	CAIWW19
California ISO System-Wide Wind Weighting Curtailment- HE 20	CAIWW20
California ISO System-Wide Wind Weighting Curtailment- HE 21	CAIWW21
California ISO System-Wide Wind Weighting Curtailment- HE 22	CAIWW22
California ISO System-Wide Wind Weighting Curtailment- HE 23	CAIWW23
California ISO System-Wide Wind Weighting Curtailment- HE 24	CAIWW24
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 1	CAITW01
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 2	CAITW02
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 3	CAITW03
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 4	CAITW04
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 5	CAITW05
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 6	CAITW06
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 7	CAITW07

CALIFORNIA ISO CURTAILMENT HOURLY WEIGHTINGS

Mid-C Hourly	Symbol
California ISO System-Wide Solar and Wind Total Weighting Curtailment HE 8	CAITW08
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 9	CAITW09
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 10	CAITW10
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 11	CAITW11
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 12	CAITW12
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 13	CAITW13
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 14	CAITW14
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 15	CAITW15
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 16	CAITW16
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 17	CAITW17
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 18	CAITW18
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 19	CAITW19
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 20	CAITW20
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 21	CAITW21
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 22	CAITW22
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 23	CAITW23
California ISO System-Wide Solar and Wind Total Weighting Curtailment- HE 24	CAITW24

CALIFORNIA ISO CURTAILMENT HOURLY CURTAILMENT

Mid-C Hourly	Symbol
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 1	CAISC01
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 2	CAISC02
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 3	CAISC03
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 4	CAISC04
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 5	CAISC05
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 6	CAISC06
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 7	CAISC07
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 8	CAISC08
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 9	CAISC09
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 10	CAISC10
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 11	CAISC11
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 12	CAISC12
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 13	CAISC13
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 14	CAISC14
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 15	CAISC15
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 16	CAISC16
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 17	CAISC17
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 18	CAISC18
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 19	CAISC19
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 20	CAISC20

CALIFORNIA ISO CURTAILMENT HOURLY CURTAILMENT

Mid-C Hourly	Symbol
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 21	CAISC21
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 22	CAISC22
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 23	CAISC23
California ISO System-Wide Solar Calculated Weighting Curtailment- HE 24	CAISC24
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 1	CAIWC01
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 2	CAIWC02
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 3	CAIWC03
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 4	CAIWC04
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 5	CAIWC05
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 6	CAIWC06
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 7	CAIWC07
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 8	CAIWC08
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 9	CAIWC09
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 10	CAIWC10
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 11	CAIWC11
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 12	CAIWC12
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 13	CAIWC13
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 14	CAIWC14
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 15	CAIWC15
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 16	CAIWC16

CALIFORNIA ISO CURTAILMENT HOURLY CURTAILMENT

Mid-C Hourly	Symbol
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 17	CAIWC17
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 18	CAIWC18
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 19	CAIWC19
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 20	CAIWC20
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 21	CAIWC21
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 22	CAIWC22
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 23	CAIWC23
California ISO System-Wide Wind Calculated Weighting Curtailment- HE 24	CAIWC24
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment – HE 1	CAITC01
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 2	CAITC02
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 3	CAITC03
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 4	CAITC04
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 5	CAITC05
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 6	CAITC06
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 7	CAITC07
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 8	CAITC08
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 9	CAITC09
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 10	CAITC10
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 11	CAITC11
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 12	CAITC12

CALIFORNIA ISO CURTAILMENT HOURLY CURTAILMENT

Mid-C Hourly	Symbol
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 13	CAITC13
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 14	CAITC14
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 15	CAITC15
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 16	CAITC16

CALIFORNIA ISO CURTAILMENT HOURLY CURTAILMENT

Mid-C Hourly	Symbol
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 17	CAITC17
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 18	CAITC18
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 19	CAITC19
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 20	CAITC20

CALIFORNIA ISO CURTAILMENT HOURLY CURTAILMENT

Mid-C Hourly	Symbol
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 21	CAITC21
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 22	CAITC22
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 23	CAITC23
California ISO System-Wide Solar and Wind Total Calculated Weighting Curtailment- HE 24	CAITC24

Renewable Energy California ISO Curtailment Indices**Historical Generation Weightings**

The California ISO reports curtailment data each day for the prior calendar day. Data is in megawatts (MW) by hour and generation type – either solar or wind. Platts uses the ISO curtailments that are reported at both the local and system levels. Curtailment data for a given day is weighted against historical generation data from the same month during the prior year.

For example, daily curtailment data during the month of January 2020 would be based on weightings from generation data from January 2019. Generation data is reported by the California ISO in five-minute increments. Platts calculates an average for solar generation, wind generation and total generation for each hour across the entire month. For hour ending 1, for example, Platts will calculate the average solar generation during that hour throughout a given month. For each hour, the calculated average solar generation across the month is divided by the average total generation for the same hour to determine the hourly solar weighting. For wind generation, the calculated average wind generation for the hour is divided by the average total generation for the same hour to generate the wind weighting.

To generate the combined solar and wind hourly weighting, the average hourly solar generation is added to the average hourly wind generation, and the sum is divided by the average total generation for the hour. The same hourly weightings are used for the whole of the current month and updated when a new month begins.

Platts publishes the hourly weightings after a month closes when the ISO makes the monthly generation data available,

Daily Weighted curtailment

The weighted curtailment for each hour is determined on a daily basis by multiplying hourly curtailment reported by the California ISO by the corresponding hourly weighting.

For example, the weighted solar curtailment for hour ending 1 is calculated by multiplying the reported megawatts of solar generation curtailed for that hour by the historical weighting for solar generation for the same hour. Similarly, weighted wind curtailment is calculated by multiplying the reported wind curtailment for a specific hour by the corresponding hourly weighting. For combined wind and solar, the sum of wind and solar curtailment for a given hour is multiplied by the historical wind and solar weighting for the same hour.

CALIFORNIA ISO CURTAILMENT INDICES

Solar on-peak index	CAICA00
Solar off-peak index	CAICB00
Solar 24-hour index	CAICC00
Wind on-peak index	CAICD00
Wind off-peak index	CAICE00
Wind 24-hour index	CAICF00
Combined solar and wind on-peak index	CAICG00
Combined solar and wind off-peak index	CAICH00
Combined solar and wind 24-hour index	CAICI00

During some hours of the day, no wind or solar curtailment occurs. For those hours, hourly curtailment is calculated as a zero.

Renewable energy curtailment indices

The sum of the hourly weighted curtailment for hours ending 7 through 22 is calculated to generate the on-peak indices for solar, wind and combined solar and wind. Off-peak indices are derived from the sum of the hourly weighted curtailment for hours ending 1 through 6, and 23 through 24. The 24-hour curtailment indices are calculated from the sum of the hourly weighted curtailment from all 24 hours in a given day.

RENEWABLE CURTAILMENT HOURLY

CALISO Description	Symbol
California ISO Local Solar Curtailment Hr 1	CNLSP01
California ISO Local Solar Curtailment Hr 2	CNLSP02
California ISO Local Solar Curtailment Hr 3	CNLSP03
California ISO Local Solar Curtailment Hr 4	CNLSP04
California ISO Local Solar Curtailment Hr 5	CNLSP05
California ISO Local Solar Curtailment Hr 6	CNLSP06
California ISO Local Solar Curtailment Hr 7	CNLSP07
California ISO Local Solar Curtailment Hr 8	CNLSP08
California ISO Local Solar Curtailment Hr 9	CNLSP09
California ISO Local Solar Curtailment Hr 10	CNLSP10
California ISO Local Solar Curtailment Hr 11	CNLSP11
California ISO Local Solar Curtailment Hr 12	CNLSP12
California ISO Local Solar Curtailment Hr 13	CNLSP13
California ISO Local Solar Curtailment Hr 14	CNLSP14
California ISO Local Solar Curtailment Hr 15	CNLSP15
California ISO Local Solar Curtailment Hr 16	CNLSP16
California ISO Local Solar Curtailment Hr 17	CNLSP17
California ISO Local Solar Curtailment Hr 18	CNLSP18
California ISO Local Solar Curtailment Hr 19	CNLSP19
California ISO Local Solar Curtailment Hr 20	CNLSP20
California ISO Local Solar Curtailment Hr 21	CNLSP21
California ISO Local Solar Curtailment Hr 22	CNLSP22
California ISO Local Solar Curtailment Hr 23	CNLSP23
California ISO Local Solar Curtailment Hr 24	CNLSP24
California ISO Local Wind Curtailment Hr 1	CNLWP01
California ISO Local Wind Curtailment Hr 2	CNLWP02
California ISO Local Wind Curtailment Hr 3	CNLWP03
California ISO Local Wind Curtailment Hr 4	CNLWP04
California ISO Local Wind Curtailment Hr 5	CNLWP05
California ISO Local Wind Curtailment Hr 6	CNLWP06
California ISO Local Wind Curtailment Hr 7	CNLWP07
California ISO Local Wind Curtailment Hr 8	CNLWP08

RENEWABLE CURTAILMENT HOURLY

CALISO Description	Symbol
California ISO Local Wind Curtailment Hr 9	CNLWP09
California ISO Local Wind Curtailment Hr 10	CNLWP10
California ISO Local Wind Curtailment Hr 11	CNLWP11
California ISO Local Wind Curtailment Hr 12	CNLWP12
California ISO Local Wind Curtailment Hr 13	CNLWP13
California ISO Local Wind Curtailment Hr 14	CNLWP14
California ISO Local Wind Curtailment Hr 15	CNLWP15
California ISO Local Wind Curtailment Hr 16	CNLWP16
California ISO Local Wind Curtailment Hr 17	CNLWP17
California ISO Local Wind Curtailment Hr 18	CNLWP18
California ISO Local Wind Curtailment Hr 19	CNLWP19
California ISO Local Wind Curtailment Hr 20	CNLWP20
California ISO Local Wind Curtailment Hr 21	CNLWP21
California ISO Local Wind Curtailment Hr 22	CNLWP22
California ISO Local Wind Curtailment Hr 23	CNLWP23
California ISO Local Wind Curtailment Hr 24	CNLWP24
California ISO System Solar Curtailment Hr 1	CNSSP01
California ISO System Solar Curtailment Hr 2	CNSSP02
California ISO System Solar Curtailment Hr 3	CNSSP03
California ISO System Solar Curtailment Hr 4	CNSSP04
California ISO System Solar Curtailment Hr 5	CNSSP05
California ISO System Solar Curtailment Hr 6	CNSSP06
California ISO System Solar Curtailment Hr 7	CNSSP07
California ISO System Solar Curtailment Hr 8	CNSSP08
California ISO System Solar Curtailment Hr 9	CNSSP09
California ISO System Solar Curtailment Hr 10	CNSSP10
California ISO System Solar Curtailment Hr 11	CNSSP11
California ISO System Solar Curtailment Hr 12	CNSSP12
California ISO System Solar Curtailment Hr 13	CNSSP13
California ISO System Solar Curtailment Hr 14	CNSSP14
California ISO System Solar Curtailment Hr 15	CNSSP15
California ISO System Solar Curtailment Hr 16	CNSSP16

RENEWABLE CURTAILMENT HOURLY

CALISO Description	Symbol
California ISO System Solar Curtailment Hr 17	CNSSP17
California ISO System Solar Curtailment Hr 18	CNSSP18
California ISO System Solar Curtailment Hr 19	CNSSP19
California ISO System Solar Curtailment Hr 20	CNSSP20
California ISO System Solar Curtailment Hr 21	CNSSP21
California ISO System Solar Curtailment Hr 22	CNSSP22
California ISO System Solar Curtailment Hr 23	CNSSP23
California ISO System Solar Curtailment Hr 24	CNSSP24
California ISO System Wind Curtailment Hr 1	CNSWP01
California ISO System Wind Curtailment Hr 2	CNSWP02
California ISO System Wind Curtailment Hr 3	CNSWP03
California ISO System Wind Curtailment Hr 4	CNSWP04
California ISO System Wind Curtailment Hr 5	CNSWP05
California ISO System Wind Curtailment Hr 6	CNSWP06
California ISO System Wind Curtailment Hr 7	CNSWP07
California ISO System Wind Curtailment Hr 8	CNSWP08
California ISO System Wind Curtailment Hr 9	CNSWP09
California ISO System Wind Curtailment Hr 10	CNSWP10
California ISO System Wind Curtailment Hr 11	CNSWP11
California ISO System Wind Curtailment Hr 12	CNSWP12
California ISO System Wind Curtailment Hr 13	CNSWP13
California ISO System Wind Curtailment Hr 14	CNSWP14
California ISO System Wind Curtailment Hr 15	CNSWP15
California ISO System Wind Curtailment Hr 16	CNSWP16
California ISO System Wind Curtailment Hr 17	CNSWP17
California ISO System Wind Curtailment Hr 18	CNSWP18
California ISO System Wind Curtailment Hr 19	CNSWP19
California ISO System Wind Curtailment Hr 20	CNSWP20
California ISO System Wind Curtailment Hr 21	CNSWP21
California ISO System Wind Curtailment Hr 22	CNSWP22
California ISO System Wind Curtailment Hr 23	CNSWP23
California ISO System Wind Curtailment Hr 24	CNSWP24

RENEWABLE CURTAILMENT HOURLY

SPP Description	Symbol
Southwest Power Pool Wind Curtailment Hr 1	SPPWP01
Southwest Power Pool Wind Curtailment Hr 2	SPPWP02
Southwest Power Pool Wind Curtailment Hr 3	SPPWP03
Southwest Power Pool Wind Curtailment Hr 4	SPPWP04
Southwest Power Pool Wind Curtailment Hr 5	SPPWP05
Southwest Power Pool Wind Curtailment Hr 6	SPPWP06
Southwest Power Pool Wind Curtailment Hr 7	SPPWP07
Southwest Power Pool Wind Curtailment Hr 8	SPPWP08

RENEWABLE CURTAILMENT HOURLY

SPP Description	Symbol
Southwest Power Pool Wind Curtailment Hr 9	SPPWP09
Southwest Power Pool Wind Curtailment Hr 10	SPPWP10
Southwest Power Pool Wind Curtailment Hr 11	SPPWP11
Southwest Power Pool Wind Curtailment Hr 12	SPPWP12
Southwest Power Pool Wind Curtailment Hr 13	SPPWP13
Southwest Power Pool Wind Curtailment Hr 14	SPPWP14
Southwest Power Pool Wind Curtailment Hr 15	SPPWP15
Southwest Power Pool Wind Curtailment Hr 16	SPPWP16

RENEWABLE CURTAILMENT HOURLY

SPP Description	Symbol
Southwest Power Pool Wind Curtailment Hr 17	SPPWP17
Southwest Power Pool Wind Curtailment Hr 18	SPPWP18
Southwest Power Pool Wind Curtailment Hr 19	SPPWP19
Southwest Power Pool Wind Curtailment Hr 20	SPPWP20
Southwest Power Pool Wind Curtailment Hr 21	SPPWP21
Southwest Power Pool Wind Curtailment Hr 22	SPPWP22
Southwest Power Pool Wind Curtailment Hr 23	SPPWP23
Southwest Power Pool Wind Curtailment Hr 24	SPPWP24

Renewable Curtailment Indices (RCI)**Real-time Generation Weightings**

The California ISO and Southwest Power Pool report curtailment data each day for the prior calendar day. Data is in megawatts (MW) by hour and generation type – either solar or wind. For California ISO, Platts uses the ISO curtailments that are reported at both the local and system levels, separating the two in order to differentiate between curtailment due to nodal congestion or oversupply. For Southwest Power Pool, Platts uses the curtailments provided for wind power specifically.

Curtailment data for a given day is weighted against real-time generation data from that same day in the respective regions. For example, daily curtailment index for January 9, 2020 would be based on weightings from generation data on January 9, 2020. Generation data is reported by both the California ISO and Southwest Power Pool in five-minute increments. Platts calculates an average for solar generation and wind generation for each hour in the day. For hour ending 1, for example, Platts will calculate the average solar generation during that hour for that day only. For each hour, the calculated average solar generation is divided by the average total generation for solar power to determine the hourly solar weighting. For wind

generation, the calculated average wind generation per hour is divided by the average total generation for wind power to determine the hourly wind weighting. This process happens in both California ISO and Southwest Power Pool. For California ISO, both local and solar curtailments of the same fuel type will share the same weight. New hourly weightings are generated on a daily basis to correspond with the curtailment data for that day.

Daily Weighted curtailment

The weighted curtailment for each hour is determined on a daily basis by multiplying hourly curtailment reported by California ISO and Southwest Power Pool by the corresponding hourly weighting.

For example, the California ISO weighted local solar curtailment for hour ending 1 is calculated by multiplying the reported megawatts of local solar generation curtailed for that hour by the corresponding weighting for solar generation for the same hour (calculation method described in paragraph above).

During some hours of the day, no wind or solar curtailment occurs. For those hours, hourly curtailment is calculated as a zero.

RENEWABLE CURTAILMENT INDICES

California ISO Local Solar Curtailment Peak	CALSP00
California ISO Local Solar Curtailment Off-Peak	CALS000
California ISO Local Wind Curtailment Peak	CALWP00
California ISO Local Wind Curtailment Off-Peak	CALW000
California ISO System Solar Curtailment Peak	CASSP00
California ISO System Solar Curtailment Off-Peak	CASS000
California ISO System Wind Curtailment Peak	CASWP00
California ISO System Wind Curtailment Off-Peak	CASW000
Southwest Power Pool Wind Curtailment Peak	SPPWP00
Southwest Power Pool Wind Curtailment Off-Peak	SPPW000

Renewable curtailment indices

The sum of the hourly weighted curtailment for hours ending 7 through 22 is calculated to generate the on-peak indices. The on-peak indices produced for California ISO are: local solar, system solar, local wind, and system wind. Southwest Power Pool produces on-peak indices for wind. Off-peak indices are derived from the sum of the hourly weighted curtailment for hours ending 1 through 6, and 23 through 24. The indices produced for California ISO are: local solar, system solar, local wind, and system wind. Southwest Power Pool produces off-peak indices for wind.

RENEWABLE PENETRATION INDICES

Calculated values	Symbol
California ISO RPI Solar Peak	RPCSP00
California ISO RPI Solar Off Peak	RPCS000
California ISO RPI Wind Peak	RPCWP00
California ISO RPI Wind Off Peak	RPCW000
Southwest Power Pool RPI Solar Peak	RPSSP00
Southwest Power Pool RPI Solar Off Peak	RPSO000
Southwest Power Pool RPI Wind Peak	RPSWP00
Southwest Power Pool RPI Wind Off Peak	RPSW000
ERCOT RPI Solar Peak	RPESP00
ERCOT RPI Solar Off Peak	RPEO000
ERCOT RPI Wind Peak	RPEWP00
ERCOT RPI Wind Off Peak	RPEW000
MISO RPI Solar Peak	RPMSP00
MISO RPI Solar Off Peak	RPMSO00
MISO RPI Wind Peak	RPMPW00
MISO RPI Wind Off Peak	RPMW000
PJM Interconnection RPI Solar Peak	RPPSP00
PJM Interconnection RPI Solar Off Peak	RPPSO00
PJM Interconnection RPI Wind Peak	RPPWP00
PJM Interconnection RPI Wind Off Peak	RPPW000
NYISO RPI Solar Peak	RPNSP00
NYISO RPI Solar Off Peak	RPNSO00
NYISO RPI Wind Peak	RPNWP00
NYISO RPI Wind Off Peak	RPNW000

RENEWABLE PENETRATION INDICES

Hourly solar	Symbol
California ISO RPI Solar Hr 1	RPCSA01
California ISO RPI Solar Hr 2	RPCSA02
California ISO RPI Solar Hr 3	RPCSA03
California ISO RPI Solar Hr 4	RPCSA04
California ISO RPI Solar Hr 5	RPCSA05
California ISO RPI Solar Hr 6	RPCSA06
California ISO RPI Solar Hr 7	RPCSA07
California ISO RPI Solar Hr 8	RPCSA08
California ISO RPI Solar Hr 9	RPCSA09
California ISO RPI Solar Hr 10	RPCSA10
California ISO RPI Solar Hr 11	RPCSA11
California ISO RPI Solar Hr 12	RPCSA12
California ISO RPI Solar Hr 13	RPCSA13
California ISO RPI Solar Hr 14	RPCSA14
California ISO RPI Solar Hr 15	RPCSA15
California ISO RPI Solar Hr 16	RPCSA16
California ISO RPI Solar Hr 17	RPCSA17
California ISO RPI Solar Hr 18	RPCSA18
California ISO RPI Solar Hr 19	RPCSA19
California ISO RPI Solar Hr 20	RPCSA20
California ISO RPI Solar Hr 21	RPCSA21
California ISO RPI Solar Hr 22	RPCSA22
California ISO RPI Solar Hr 23	RPCSA23
California ISO RPI Solar Hr 24	RPCSA24
Southwest Power Pool RPI Solar Hr 1	RPSSA01
Southwest Power Pool RPI Solar Hr 2	RPSSA02
Southwest Power Pool RPI Solar Hr 3	RPSSA03
Southwest Power Pool RPI Solar Hr 4	RPSSA04
Southwest Power Pool RPI Solar Hr 5	RPSSA05
Southwest Power Pool RPI Solar Hr 6	RPSSA06
Southwest Power Pool RPI Solar Hr 7	RPSSA07
Southwest Power Pool RPI Solar Hr 8	RPSSA08
Southwest Power Pool RPI Solar Hr 9	RPSSA09
Southwest Power Pool RPI Solar Hr 10	RPSSA10
Southwest Power Pool RPI Solar Hr 11	RPSSA11
Southwest Power Pool RPI Solar Hr 12	RPSSA12

RENEWABLE PENETRATION INDICES

Hourly solar	Symbol
Southwest Power Pool RPI Solar Hr 13	RPSSA13
Southwest Power Pool RPI Solar Hr 14	RPSSA14
Southwest Power Pool RPI Solar Hr 15	RPSSA15
Southwest Power Pool RPI Solar Hr 16	RPSSA16
Southwest Power Pool RPI Solar Hr 17	RPSSA17
Southwest Power Pool RPI Solar Hr 18	RPSSA18
Southwest Power Pool RPI Solar Hr 19	RPSSA19
Southwest Power Pool RPI Solar Hr 20	RPSSA20
Southwest Power Pool RPI Solar Hr 21	RPSSA21
Southwest Power Pool RPI Solar Hr 22	RPSSA22
Southwest Power Pool RPI Solar Hr 23	RPSSA23
Southwest Power Pool RPI Solar Hr 24	RPSSA24
ERCOT RPI Solar Hr 1	RPESA01
ERCOT RPI Solar Hr 2	RPESA02
ERCOT RPI Solar Hr 3	RPESA03
ERCOT RPI Solar Hr 4	RPESA04
ERCOT RPI Solar Hr 5	RPESA05
ERCOT RPI Solar Hr 6	RPESA06
ERCOT RPI Solar Hr 7	RPESA07
ERCOT RPI Solar Hr 8	RPESA08
ERCOT RPI Solar Hr 9	RPESA09
ERCOT RPI Solar Hr 10	RPESA10
ERCOT RPI Solar Hr 11	RPESA11
ERCOT RPI Solar Hr 12	RPESA12
ERCOT RPI Solar Hr 13	RPESA13
ERCOT RPI Solar Hr 14	RPESA14
ERCOT RPI Solar Hr 15	RPESA15
ERCOT RPI Solar Hr 16	RPESA16
ERCOT RPI Solar Hr 17	RPESA17
ERCOT RPI Solar Hr 18	RPESA18
ERCOT RPI Solar Hr 19	RPESA19
ERCOT RPI Solar Hr 20	RPESA20
ERCOT RPI Solar Hr 21	RPESA21
ERCOT RPI Solar Hr 22	RPESA22
ERCOT RPI Solar Hr 23	RPESA23
ERCOT RPI Solar Hr 24	RPESA24

RENEWABLE PENETRATION INDICES

Hourly solar	Symbol
MISO RPI Solar Hr 1	RPMSA01
MISO RPI Solar Hr 2	RPMSA02
MISO RPI Solar Hr 3	RPMSA03
MISO RPI Solar Hr 4	RPMSA04
MISO RPI Solar Hr 5	RPMSA05
MISO RPI Solar Hr 6	RPMSA06
MISO RPI Solar Hr 7	RPMSA07
MISO RPI Solar Hr 8	RPMSA08
MISO RPI Solar Hr 9	RPMSA09
MISO RPI Solar Hr 10	RPMSA10
MISO RPI Solar Hr 11	RPMSA11
MISO RPI Solar Hr 12	RPMSA12
MISO RPI Solar Hr 13	RPMSA13
MISO RPI Solar Hr 14	RPMSA14
MISO RPI Solar Hr 15	RPMSA15
MISO RPI Solar Hr 16	RPMSA16
MISO RPI Solar Hr 17	RPMSA17
MISO RPI Solar Hr 18	RPMSA18
MISO RPI Solar Hr 19	RPMSA19
MISO RPI Solar Hr 20	RPMSA20
MISO RPI Solar Hr 21	RPMSA21
MISO RPI Solar Hr 22	RPMSA22
MISO RPI Solar Hr 23	RPMSA23
MISO RPI Solar Hr 24	RPMSA24
PJM Interconnection RPI Solar Hr 1	RPPSA01
PJM Interconnection RPI Solar Hr 2	RPPSA02
PJM Interconnection RPI Solar Hr 3	RPPSA03
PJM Interconnection RPI Solar Hr 4	RPPSA04
PJM Interconnection RPI Solar Hr 5	RPPSA05
PJM Interconnection RPI Solar Hr 6	RPPSA06
PJM Interconnection RPI Solar Hr 7	RPPSA07
PJM Interconnection RPI Solar Hr 8	RPPSA08
PJM Interconnection RPI Solar Hr 9	RPPSA09
PJM Interconnection RPI Solar Hr 10	RPPSA10
PJM Interconnection RPI Solar Hr 11	RPPSA11
PJM Interconnection RPI Solar Hr 12	RPPSA12
PJM Interconnection RPI Solar Hr 13	RPPSA13

RENEWABLE PENETRATION INDICES

Hourly solar	Symbol
PJM Interconnection RPI Solar Hr 14	RPPSA14
PJM Interconnection RPI Solar Hr 15	RPPSA15
PJM Interconnection RPI Solar Hr 16	RPPSA16
PJM Interconnection RPI Solar Hr 17	RPPSA17
PJM Interconnection RPI Solar Hr 18	RPPSA18
PJM Interconnection RPI Solar Hr 19	RPPSA19
PJM Interconnection RPI Solar Hr 20	RPPSA20
PJM Interconnection RPI Solar Hr 21	RPPSA21
PJM Interconnection RPI Solar Hr 22	RPPSA22
PJM Interconnection RPI Solar Hr 23	RPPSA23
PJM Interconnection RPI Solar Hr 24	RPPSA24
NYISO RPI Solar Hr 1	RPNSA01
NYISO RPI Solar Hr 2	RPNSA02
NYISO RPI Solar Hr 3	RPNSA03
NYISO RPI Solar Hr 4	RPNSA04
NYISO RPI Solar Hr 5	RPNSA05
NYISO RPI Solar Hr 6	RPNSA06
NYISO RPI Solar Hr 7	RPNSA07
NYISO RPI Solar Hr 8	RPNSA08
NYISO RPI Solar Hr 9	RPNSA09
NYISO RPI Solar Hr 10	RPNSA10
NYISO RPI Solar Hr 11	RPNSA11
NYISO RPI Solar Hr 12	RPNSA12
NYISO RPI Solar Hr 13	RPNSA13
NYISO RPI Solar Hr 14	RPNSA14
NYISO RPI Solar Hr 15	RPNSA15
NYISO RPI Solar Hr 16	RPNSA16
NYISO RPI Solar Hr 17	RPNSA17
NYISO RPI Solar Hr 18	RPNSA18
NYISO RPI Solar Hr 19	RPNSA19
NYISO RPI Solar Hr 20	RPNSA20
NYISO RPI Solar Hr 21	RPNSA21
NYISO RPI Solar Hr 22	RPNSA22
NYISO RPI Solar Hr 23	RPNSA23
NYISO RPI Solar Hr 24	RPNSA24
California ISO RPI Wind Hr 1	RPCWA01

RENEWABLE PENETRATION INDICES

Hourly wind	Symbol
California ISO RPI Wind Hr 2	RPCWA02
California ISO RPI Wind Hr 3	RPCWA03
California ISO RPI Wind Hr 4	RPCWA04
California ISO RPI Wind Hr 5	RPCWA05
California ISO RPI Wind Hr 6	RPCWA06
California ISO RPI Wind Hr 7	RPCWA07
California ISO RPI Wind Hr 8	RPCWA08
California ISO RPI Wind Hr 9	RPCWA09
California ISO RPI Wind Hr 10	RPCWA10
California ISO RPI Wind Hr 11	RPCWA11
California ISO RPI Wind Hr 12	RPCWA12
California ISO RPI Wind Hr 13	RPCWA13
California ISO RPI Wind Hr 14	RPCWA14
California ISO RPI Wind Hr 15	RPCWA15
California ISO RPI Wind Hr 16	RPCWA16
California ISO RPI Wind Hr 17	RPCWA17
California ISO RPI Wind Hr 18	RPCWA18
California ISO RPI Wind Hr 19	RPCWA19
California ISO RPI Wind Hr 20	RPCWA20
California ISO RPI Wind Hr 21	RPCWA21
California ISO RPI Wind Hr 22	RPCWA22
California ISO RPI Wind Hr 23	RPCWA23
California ISO RPI Wind Hr 24	RPCWA24
Southwest Power Pool RPI Wind Hr 1	RPSWA01
Southwest Power Pool RPI Wind Hr 2	RPSWA02
Southwest Power Pool RPI Wind Hr 3	RPSWA03
Southwest Power Pool RPI Wind Hr 4	RPSWA04
Southwest Power Pool RPI Wind Hr 5	RPSWA05
Southwest Power Pool RPI Wind Hr 6	RPSWA06
Southwest Power Pool RPI Wind Hr 7	RPSWA07
Southwest Power Pool RPI Wind Hr 8	RPSWA08
Southwest Power Pool RPI Wind Hr 9	RPSWA09
Southwest Power Pool RPI Wind Hr 10	RPSWA10
Southwest Power Pool RPI Wind Hr 11	RPSWA11
Southwest Power Pool RPI Wind Hr 12	RPSWA12
Southwest Power Pool RPI Wind Hr 13	RPSWA13
Southwest Power Pool RPI Wind Hr 14	RPSWA14

RENEWABLE PENETRATION INDICES

Hourly wind	Symbol
Southwest Power Pool RPI Wind Hr 15	RPSWA15
Southwest Power Pool RPI Wind Hr 16	RPSWA16
Southwest Power Pool RPI Wind Hr 17	RPSWA17
Southwest Power Pool RPI Wind Hr 18	RPSWA18
Southwest Power Pool RPI Wind Hr 19	RPSWA19
Southwest Power Pool RPI Wind Hr 20	RPSWA20
Southwest Power Pool RPI Wind Hr 21	RPSWA21
Southwest Power Pool RPI Wind Hr 22	RPSWA22
Southwest Power Pool RPI Wind Hr 23	RPSWA23
Southwest Power Pool RPI Wind Hr 24	RPSWA24
ERCOT RPI Wind Hr 1	RPEWA01
ERCOT RPI Wind Hr 2	RPEWA02
ERCOT RPI Wind Hr 3	RPEWA03
ERCOT RPI Wind Hr 4	RPEWA04
ERCOT RPI Wind Hr 5	RPEWA05
ERCOT RPI Wind Hr 6	RPEWA06
ERCOT RPI Wind Hr 7	RPEWA07
ERCOT RPI Wind Hr 8	RPEWA08
ERCOT RPI Wind Hr 9	RPEWA09
ERCOT RPI Wind Hr 10	RPEWA10
ERCOT RPI Wind Hr 11	RPEWA11
ERCOT RPI Wind Hr 12	RPEWA12
ERCOT RPI Wind Hr 13	RPEWA13
ERCOT RPI Wind Hr 14	RPEWA14
ERCOT RPI Wind Hr 15	RPEWA15
ERCOT RPI Wind Hr 16	RPEWA16
ERCOT RPI Wind Hr 17	RPEWA17
ERCOT RPI Wind Hr 18	RPEWA18
ERCOT RPI Wind Hr 19	RPEWA19
ERCOT RPI Wind Hr 20	RPEWA20
ERCOT RPI Wind Hr 21	RPEWA21
ERCOT RPI Wind Hr 22	RPEWA22
ERCOT RPI Wind Hr 23	RPEWA23
ERCOT RPI Wind Hr 24	RPEWA24
MISO RPI Wind Hr 1	RPMWA01
MISO RPI Wind Hr 2	RPMWA02

RENEWABLE PENETRATION INDICES

Hourly wind	Symbol
MISO RPI Wind Hr 3	RPMWA03
MISO RPI Wind Hr 4	RPMWA04
MISO RPI Wind Hr 5	RPMWA05
MISO RPI Wind Hr 6	RPMWA06
MISO RPI Wind Hr 7	RPMWA07
MISO RPI Wind Hr 8	RPMWA08
MISO RPI Wind Hr 9	RPMWA09
MISO RPI Wind Hr 10	RPMWA10
MISO RPI Wind Hr 11	RPMWA11
MISO RPI Wind Hr 12	RPMWA12
MISO RPI Wind Hr 13	RPMWA13
MISO RPI Wind Hr 14	RPMWA14
MISO RPI Wind Hr 15	RPMWA15
MISO RPI Wind Hr 16	RPMWA16
MISO RPI Wind Hr 17	RPMWA17
MISO RPI Wind Hr 18	RPMWA18
MISO RPI Wind Hr 19	RPMWA19
MISO RPI Wind Hr 20	RPMWA20
MISO RPI Wind Hr 21	RPMWA21
MISO RPI Wind Hr 22	RPMWA22
MISO RPI Wind Hr 23	RPMWA23
MISO RPI Wind Hr 24	RPMWA24
PJM Interconnection RPI Wind Hr 1	RPPWA01
PJM Interconnection RPI Wind Hr 2	RPPWA02
PJM Interconnection RPI Wind Hr 3	RPPWA03
PJM Interconnection RPI Wind Hr 4	RPPWA04
PJM Interconnection RPI Wind Hr 5	RPPWA05
PJM Interconnection RPI Wind Hr 6	RPPWA06
PJM Interconnection RPI Wind Hr 7	RPPWA07
PJM Interconnection RPI Wind Hr 8	RPPWA08
PJM Interconnection RPI Wind Hr 9	RPPWA09
PJM Interconnection RPI Wind Hr 10	RPPWA10
PJM Interconnection RPI Wind Hr 11	RPPWA11
PJM Interconnection RPI Wind Hr 12	RPPWA12
PJM Interconnection RPI Wind Hr 13	RPPWA13
PJM Interconnection RPI Wind Hr 14	RPPWA14

RENEWABLE PENETRATION INDICES

Hourly wind	Symbol
PJM Interconnection RPI Wind Hr 15	RPPWA15
PJM Interconnection RPI Wind Hr 16	RPPWA16
PJM Interconnection RPI Wind Hr 17	RPPWA17
PJM Interconnection RPI Wind Hr 18	RPPWA18
PJM Interconnection RPI Wind Hr 19	RPPWA19
PJM Interconnection RPI Wind Hr 20	RPPWA20
PJM Interconnection RPI Wind Hr 21	RPPWA21
PJM Interconnection RPI Wind Hr 22	RPPWA22
PJM Interconnection RPI Wind Hr 23	RPPWA23
PJM Interconnection RPI Wind Hr 24	RPPWA24
NYISO RPI Wind Hr 1	RPNWA01
NYISO RPI Wind Hr 2	RPNWA02
NYISO RPI Wind Hr 3	RPNWA03
NYISO RPI Wind Hr 4	RPNWA04
NYISO RPI Wind Hr 5	RPNWA05
NYISO RPI Wind Hr 6	RPNWA06
NYISO RPI Wind Hr 7	RPNWA07
NYISO RPI Wind Hr 8	RPNWA08
NYISO RPI Wind Hr 9	RPNWA09
NYISO RPI Wind Hr 10	RPNWA10
NYISO RPI Wind Hr 11	RPNWA11
NYISO RPI Wind Hr 12	RPNWA12
NYISO RPI Wind Hr 13	RPNWA13
NYISO RPI Wind Hr 14	RPNWA14
NYISO RPI Wind Hr 15	RPNWA15
NYISO RPI Wind Hr 16	RPNWA16
NYISO RPI Wind Hr 17	RPNWA17
NYISO RPI Wind Hr 18	RPNWA18
NYISO RPI Wind Hr 19	RPNWA19
NYISO RPI Wind Hr 20	RPNWA20
NYISO RPI Wind Hr 21	RPNWA21
NYISO RPI Wind Hr 22	RPNWA22
NYISO RPI Wind Hr 23	RPNWA23
NYISO RPI Wind Hr 24	RPNWA24

Renewable Penetration Indices (RPI)

Renewable Penetration Indices track the penetration of solar and wind energy into the overall generation stack on an hourly basis, as well as averaged on-peak and off-peak indices. The RPIs are applied to the following regions: California Independent System Operator (Cal-ISO), Southwest Power Pool (SPP), Electric Reliability Council of Texas (ERCOT), Midcontinent Independent System Operator (MISO), PJM Interconnection (PJM) and New York Independent System Operator (NYISO).

The published indices for all ISO's will include: on-peak and off-peak calculated values, 24 hour solar and 24 hour wind indices. The calculated on-peak indices will reflect averages for hours ending 7 through 22. Off-peak indices are derived from the averages for hours ending 1 through 6, and 23 through 24. The indices will be calculated for each hour, each day of the week, in percentages.

The Renewable Penetration Indices will be shown as percentages of solar and wind energy in the overall generation

stack on an hourly basis. The numerator represents the amount of solar or wind generation per hour, removing negative values and subtracting the curtailed amount, as required. The denominator represents total hourly generation. For example, for the hour ending 1 solar RPI, Platts will calculate the solar generation for that hour, remove negatives, subtract curtailments, if applicable, and divide that amount by the total ISO generation for the hour. The indices that will have curtailments subtracted are Cal-ISO solar and wind and SPP wind. The indices, in which solar and wind generation will include curtailments, if any, are: SPP solar, ERCOT solar and wind, MISO solar and wind, PJM solar and wind and NYISO solar and wind. The data represents actual generation reported by each ISO. In case of missing data, Platts will be utilizing the previously available data for the corresponding ISO. For example, for the hour ending 1 solar RPI, the index will represent the most recent available data for that hour.

Solar indices for MISO and NYISO may contain small fractions of other non-wind renewable sources.

REVISION HISTORY

December 2020: Platts added solar and wind Renewable Penetration Indices for Cal-ISO, SPP, ERCOT, MISO, PJM, and NYISO.

September 2020: Platts added Renewable Curtailment Indices section and hourly curtailment symbols.

April 2020: Platts completed an annual update to the US Electricity Methodology Guide in April 2020. In this update, Platts reviewed all content and made layout-format and a few edits throughout.

February 2020: Platts added California ISO Curtailment hourly weightings and hourly curtailment symbols. Additionally, Platts added Northeast and California carbon assessments symbols.

December 2019: Platts added Mid-C Intraday (Hourly Bilateral) Indices and Renewable Energy California ISO Curtailment Indices sections.

April 2019: Platts completed an annual update to the North American Electricity Methodology Guide in April 2019. In this update, Platts reviewed all content and made minor edits throughout.

January 2019: Platts eliminated deal count, volume thresholds, limit on trade size for North American power indexes on January 31.

October 2018: Platts discontinued non-firm daily assessments at all Western locations on July 31.

May 2018: Platts discontinued and removed references to near-term power assessments in North American markets on April 30, 2018.

Mar 2018: Platts completed an annual update to the North American Electricity Methodology Guide in March 2018. In this update, Platts reviewed all content and made minor edits throughout.

June 2017: Platts updated gas and power pairing used to calculate marginal heat rates and spark spread data.

March 2017: Platts completed an annual update to the North American Electricity Methodology Guide in March 2017. In this update, Platts reviewed all content.

March 2016: Platts completed an annual update to the North American Electricity Methodology Guide in February 2016. In this update, Platts reviewed all content. Platts updated guidance

around how to report information.

December 2014: Deleted on-peak and off-peak bilateral daily assessments for markets served by independent system operators. Also, added on-peak and off-peak bilateral daily assessments for Into GTC, John Day, NOB, Pinnacle Peak and Westwing.

January 2014: Deleted references to daily forward assessments to reflect that daily market-on-close assessments of North American forward power markets, known as the Platts-ICE Forward Curve –Electricity (PFC Electricity), are no longer produced by Platts editorial. Under the new methodology, PFC Electricity is derived by the Platts quantitative team. See separate methodology and specifications guides for Platts-ICE Forward Curve – Electricity (North American) and M2MS Power.

September 2013: Added non-firm daily assessments at all Western locations; added Sunday peak and off-peak for all Western locations.

January 2012: Replacement of the Cinergy Hub with the Indiana Hub, effective January 1, 2012.