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ARGUS NORTH AMERICAN ELECTRICITY FORWARD CURVES

Contents:

Introduction	2
Methodology	2
Code of Conduct and Compliance	3
Definition of Standard Forward Contracts	3
List of Electricity Markets/Locations in Argus Electricity Forward Curves	4
Heat Rate Curves	4
Contact Information	4
Trading Locations for Argus North American Electricity Forward Price Curves	5

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The most up-to-date Argus North American Electricity Forward Curves methodology is available on www.argusmedia.com

Introduction

Argus is a price reporting organization that is recognized throughout the world for its impartial, reliable and accurate coverage of key energy commodity markets. Argus price indexes are used extensively in natural gas and electricity markets in Europe and globally for crude oil, refined products, coal and environmental markets such as emissions credits. Argus publishes prices that report and reflect prevailing levels for open-market arm's length transactions (please see the Argus Global Compliance Policy for a detailed definition of arm's length).

Electricity forward prices represent the market's current valuation for the supply of a standard volume of electricity delivered over a predetermined interval of days (e.g. a month, quarter, calendar, etc.) for a specified interval of time (e.g. peak hours, off-peak hours, and/or a combination of peak and off-peak hours). Forward prices are not intended to be "predictive" and do not necessarily represent a forecast of what electricity will be worth in the future physical "cash" markets.

Argus North American Electricity Forward Curves provide an assessment of forward values for all major power markets across North America, including those markets and/or tenors where minimal liquidity exists on a given trading day. In this way, Argus aims to provide energy companies with an impartial third-party curve validation tool.

Argus Forward Curves can be a useful tool for all parts of an organization, including the front, mid and back office, in important applications such as validating internal price curves used in market-accounting processes. Forward curves can also be used for numerous analytical applications such as value-at-risk, potential future exposure, regressions, scenario analyses, etc.

Argus North American Electricity Forward Curves currently include daily assessments at 28 locations for time periods extending through calendar year 2018 and provide a minimum of seven years forward pricing, containing monthly price granularity, as well as calendar, seasonal and quarterly block pricing.

Methodology

Liquid Forward Markets

Argus North American Electricity Forward Curves reflect market value as of 2:30 pm EST – the close of the CME's Henry Hub natural gas futures primary trading session. This is done due to the strong correlation that exists between electricity and natural gas prices, and so that there is consistency in knowing that Argus' Electricity Forward Curves will always correspond to the CME closing prices for any given trading day.

Argus uses transactions, bids and offers, locational spreads and time spreads to derive its final forward curve assessment. Argus gathers information on forward markets from numerous sources, including brokers, traders and through the mid- and back offices of energy companies.

Market information is cross-checked and validated to ensure the accuracy of the data. Information that Argus cannot validate may be excluded from the assessment process. Transactions done after 2:30 pm EST are not considered for that trading day's forward curve assessments.

Executed transactions are typically used as the final forward curve value in the absence of additional information. For markets and terms where end of day bids and/or offers are available, the last executed transaction may be ignored if it falls outside the prevailing bid/offer range. In the event there is only a bid or offer available, the transaction price must be either lower than the offer price or greater than the bid price. In situations where both a bid and offer are available, but no transactions, Argus determines value as being at the midpoint of the bid/offer spread. If the bid/offer spread is considered to be unusually wide, Argus will value the curve within the bid/offer spread but not necessarily at the midpoint. Argus derives a "normal" bid/offer spread through analysis of historical averages of bid/offer spreads by market location and term. Each market and term has a different "normal" bid/offer spread, as each market and term contain different levels of market liquidity.

Argus produces Electricity Forward Curves on every trading day that the CME's Henry Hub Natural Gas Futures market is open for trading during normal business hours. Argus does not produce Electricity Forward Curves on CME holidays.

Illiquid Forward Markets

For illiquid markets and terms, as well as in the absence of any market information for a particular location and/or term on a given day, Argus will infer a value based on a location's relationship to other, more liquid, markets. At times, Argus may use proprietary curve valuation models that utilize advanced statistical analyses to formulate price curves in cases in which no market information is available for a particular market location and/or term.

For each illiquid location and term, Argus has identified at least one liquid reference spread location/term that has exhibited a strong historical correlation. For each reference location/term that Argus utilizes in producing its forward curves, historical correlations are over 90%, calculated on a daily logarithmic return basis.

Once reference locations/terms have been identified, Argus conducts historical regression analyses that are updated at least every two weeks. Argus will only utilize regression results that yield an R^2 of at least 90%. The resulting regression coefficients are then used to calculate daily price curves for illiquid markets and terms. However, Argus does not automatically apply the regression formula results as its final curve value. The regression results will be checked to make sure that the daily price change that would result if the regression curve were applied is aligned with other markets/terms, as calculated on an absolute price change basis as well as on a heat-rate basis. If after making such comparisons it appears the regression curve is unaligned, Argus will typically produce a price curve for illiquid markets and terms that uses the daily heat-rate change for the reference power market/term and applies these heat-rate changes to the illiquid power market/term.

Code of Conduct and Compliance

Argus operates a rigorous and transparent controls framework to govern its price reporting activities. This is underpinned by its global compliance policy, which includes an ethics policy and a business continuity plan. The compliance policy can be found on Argus' website at www.argusmedia.com. Included in this policy are restrictions against Argus employees trading in any energy commodities, including the equities of energy industry participants, and guidelines for the acceptance of gifts from non-Argus individuals and entities. Argus also has strict policies regarding the archiving of email and instant messenger communications, maintenance and archiving of notes and for the archiving of spreadsheets and deal lists used in the price index formation process.

The company's Global Compliance Officer oversees the compliance framework, including a rolling program of internal audits to ensure compliance with stated methodologies and policies.

Definition of Standard Forward Contracts

Argus provides Electricity Forward Curves for peak, off-peak and round-the-clock ("RTC") forward contracts.

Fixed Price Electricity Forward Curves are quoted in \$/MWh.

Peak

Peak forward contracts in Eastern and Central markets (ERCOT, PJM, ISO-NE, MISO, NYISO, SPP, etc.) are for power deliveries Monday to Friday (excluding NERC-established holidays) of every month for 16 hours of every such day. These peak delivery requirements are commonly referred to as "5x16". With the exception of ERCOT, peak hours are for the period commonly referred to as "hours ending 8-23". This is the time period of 7:00 am to 11:00 pm, based on the prevailing time zone of a particular power market. For ERCOT, peak hours are "hours ending 7-22," which is 6:00 am to 10:00 pm for the prevailing time zone of a particular ERCOT power market.

In Western markets, peak forward contracts are for power deliveries Monday to Saturday (excluding NERC-established holidays) of every month for 16 hours of every such day. These peak delivery requirements are commonly referred to as "6x16". Peak hours are for the period commonly referred to as "hours ending 7-22". This is the time period of 6:00 am-10:00 pm, based on the prevailing time zone of a particular Western power market.

Off-peak

Off-peak forward contracts in Eastern and Central markets (ERCOT, PJM, ISO-NE, MISO, NYISO, SPP, etc.) are for power deliveries on a 5x8 plus 2x24 basis. That is for eight hours on Monday to Friday and for all 24 hours of all weekend days.

NERC-established holidays are also off-peak, with all 24 hours of all such NERC holidays considered off-peak. With the exception of ERCOT, off-peak hours on Monday to Friday are 12:00 am-7:00 am and 11:00 pm-12:00 am. For ERCOT, off-peak hours are Monday to Friday from 12:00 am-6:00 am and 10:00 pm-12:00 am, according to the prevailing time zone of a particular market.

In Western markets, off-peak forward contracts are for eight hours on Monday to Saturday and for all 24 hours on Sunday. These delivery requirements are commonly referred to as 6x8 plus 1x24. NERC holidays are also off-peak, with all 24 hours of such holidays considered off-peak. Off-peak hours on Monday to Saturday are 12:00 am-6:00 am and 10:00 pm-12:00 am, according to the prevailing time zone.

Round-the-Clock

Standard RTC contracts in all markets are for power deliveries on a 7x24 basis; in other words, all hours of every day of every month.

Calendar/Seasonal/Quarterly Blocks

- Calendar Block prices are prices for January to December of the relevant Calendar time period for peak, off-peak and RTC. The Calendar Block price is the peak/off-peak hourly-weighted price for the individual months that make up the relevant Calendar Block. Hence, the Calendar Block price will be different than the simple arithmetic average of the 12 months that make up the Calendar Block.
- Seasonal Blocks are Winter, Spring and Summer. Winter is January to February; Spring is March to April, and Summer is July to August. Seasonal Blocks are listed for peak, off-peak and RTC. The Seasonal Block price is the peak/off-peak hourly weighted price for the individual months that make up the relevant Seasonal Block. Hence, the Seasonal Block price will be different than the simple arithmetic average of the two months that make up the relevant Seasonal Block.
- Quarterly Blocks are Q1, Q2, Q3 and Q4. Q1 is January to March; Q2 is April to June; Q3 is July to September, and Q4 is October to December. Quarterly Blocks are listed for peak, off-peak and RTC. The Quarterly Block price is the peak/off-peak hourly weighted price for the individual months that make up the relevant Quarterly Block. Hence, the Quarterly Block price will be different than the simple arithmetic average of the three months that make up the relevant Quarterly Block. For example, Jan 2013 and Feb 2013 each contain a different quantity of Peak and Off-Peak hours. The Winter 2013 Peak block price is the volumetric-weighted average (of the Peak hours) for Jan 2013 and Feb 2013. In this example, Jan 2013 contains more Peak hours than Feb 2013, so the Winter 2013 Peak block price will be higher than the simple average (i.e. non-volumetric weighted average) of Jan 2013 and Feb 2013 individual monthly prices, assuming that the Jan 2013 Peak curve is at a premium to the Feb 2013 Peak curve.

List of Electricity Markets/Locations in Argus Electricity Forward Curves

ERCOT

- North Zone
- Houston Zone
- South Zone
- West Zone

PJM

- West Hub
- East Hub
- PEPCO Zone
- BGE Zone
- PSEG Zone
- JCPL Zone
- PPL Zone
- ComEdZone
- Meted Zone
- NI Hub
- AD Hub

NEPOOL

- Massachusetts Hub
- Connecticut Zone

MISO

- Cinergy Hub
- Illinois Zone

NYISO

- Zone J
- Zone G
- Zone A

WSPP

- Mid-C
- NP 15
- SP 15
- Palo Verde
- Mead

SPP

- Entergy

Natural Gas Markets used in non-NYMEX Heat Rate Curves

Power Market

ERCOT - North Zone
 ERCOT - Houston Zone
 ERCOT - South Zone
 ERCOT - West Zone
 PJM - West Hub
 PJM - East Hub
 PJM - PEPCO Zone
 PJM - BGE Zone
 PJM - PSEG Zone
 PJM - JCPL Zone
 PJM - PPL Zone
 PJM - ComEdZone
 PJM - Meted Zone
 PJM - NI Hub
 PJM - AD Hub
 NEPOOL - Mass Hub
 NEPOOL - Connecticut Zone
 Cinergy
 Illinois Zone
 NYISO - Zone J
 NYISO - Zone G
 NYISO - Zone A
 WSPP - Mid-C
 CAISO - NP 15
 CAISO - SP 15
 WSPP - Palo Verde
 WSPP - Mead
 Entergy

Natural Gas Market

Waha
 Houston Ship Channel
 Katy Hub
 Waha
 TETCO – M3
 Transco zone 6 (non-NY)
 Transco zone 6 (non-NY)
 Transco zone 6 (non-NY)
 Transco zone 6 (non-NY)
 Transco zone 6 (non-NY)
 TETCO – M3
 Chicago Citygates
 Transco zone 6 (non-NY)
 Chicago Citygates
 Columbia Gas Appalachia (TCO)
 Algonquin Citygates
 Algonquin Citygates
 Columbia Gas Appalachia (TCO)
 Chicago Citygates
 Transco zone 6 (NY)
 Algonquin Citygates
 Niagara
 Malin
 PG&E Citygates
 Social Border
 El Paso, Permian Basin
 El Paso, Permian Basin
 Centerpoint

Heat Rate Curves

In addition to producing fixed price Electricity Forward Curves, Argus also produces Heat Rate Curves for all of the same locations and tenors. Heat Rates provide the power industry with another way to establish the value of power generation. While most power markets trade power on a fixed price basis, many power markets trade as a heat rate as well as on a fixed price basis. The unit for Heat Rate Curves is mmBtu/MWh.

Argus produces two types of Heat Rates Curves. Argus produces Heat Rate Curves vs. CME Henry Hub Natural Gas Futures and Argus also produces Heat Rate Curves vs. the natural gas market that could be used to supply a natural gas-fired power generation station in a given power market. See the table below for a list of the natural gas markets that correspond to the appropriate electricity market location used in deriving non-NYMEX based Heat Rate Curves.

Contact Information

For methodological questions about Argus Electricity Forward Curves, please contact Al Pollard, Vice President of Risk Management Products, at 713-429-6338; al.pollard@argusmedia.com.

For questions about how you can begin receiving Argus Electricity Forward Curves, please contact the Argus sales team at 713-968-0000; sales@argusmedia.com.

Trading Locations for Argus North American Electricity Forward Price Curves

East Markets

NYISO Zone G

Other IDs: Hudson Valley

Details: New York ISO Zone-G hub consists of four sub-regions where power is delivered into New York's lower Hudson Valley.

Grid operator: New York ISO

Market structure: Nodal LMP

Product(s) assessed: Financial swap settled against NYISO day-ahead market clearing price.

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: Hours ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

NYISO Zone J

Other IDs: NYC

Details: New York ISO Zone-J hub consists of four sub-regions where power is delivered into New York City.

Grid operator: New York ISO

Market structure: Nodal LMP

Product(s) assessed: Financial swap settled against NYISO day-ahead market clearing price.

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: Hours ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

NYISO Zone A

Other IDs: West

Details: New York ISO Zone-A hub consists of four sub-regions where power is delivered into western NY state.

Grid operator: New York ISO

Market structure: Nodal LMP

Product(s) assessed: Financial swap settled against NYISO day-ahead market clearing price.

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: Hours ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

PJM West Hub

Other IDs: PJM Western Hub, PJM-W, West Hub

Details: The PJM Western hub pricing point comprises a basket of 115 nodes stretching from Erie, Pennsylvania, to Washington, D.C.

Grid operator: PJM Interconnection

Market structure: Nodal LMP

Product(s) assessed: Firm physical power with liquidated damages

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

PJM East Hub

Other IDs: East Hub, PJM East

Details: The PJM East Hub comprises the basket of nodes east of PJM West Hub

Grid operator: PJM Interconnection

Market structure: Nodal LMP

Product(s) assessed: Financial day-ahead power, financially settled against PJM's East Hub day-ahead LMP

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

PJM PEPCO Zone

Other IDs: PEPCO

Details: PJM PEPCO Zone located within PJM's East Hub territory

Grid operator: PJM Interconnection

Market structure: Nodal LMP

Product(s) assessed: Financial day-ahead power, financially settled against PJM's PEPCO Zone day-ahead LMP

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

PJM PSEG Zone

Other IDs: PSEG

Details: PJM PSEG Zone located within PJM's East Hub territory

Grid operator: PJM Interconnection

Market structure: Nodal LMP

Product(s) assessed: Financial day-ahead power, financially settled against PJM's PSEG Zone day-ahead LMP

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

PJM BGE Zone

Other IDs: BGE

Details: PJM BGE Zone located within PJM's East Hub territory

Grid operator: PJM Interconnection

Market structure: Nodal LMP

Product(s) assessed: Financial day-ahead power, financially settled against PJM's BGE Zone day-ahead LMP

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

PJM JCPL Zone

Other IDs: JCPL

Details: PJM JCPL Zone located within PJM's East Hub territory

Grid operator: PJM Interconnection

Market structure: Nodal LMP

Product(s) assessed: Financial day-ahead power, financially settled against PJM's JCPL Zone day-ahead LMP

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

PJM PPL Zone

Other IDs: PPL

Details: PJM PPL Zone located within PJM's East Hub territory

Grid operator: PJM Interconnection

Market structure: Nodal LMP

Product(s) assessed: Financial day-ahead power, financially settled against PJM's PPL Zone day-ahead LMP

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

PJM PECO Zone

Other IDs: PECO

Details: PJM PECO Zone located within PJM's East Hub territory

Grid operator: PJM Interconnection

Market structure: Nodal LMP

Product(s) assessed: Financial day-ahead power, financially settled against PJM's PECO Zone day-ahead LMP

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

PJM METED Zone

Other IDs: METED

Details: PJM METED Zone located within PJM's East Hub territory

Grid operator: PJM Interconnection

Market structure: Nodal LMP

Product(s) assessed: Financial day-ahead power, financially settled against PJM's METED Zone day-ahead LMP

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

NEPOOL

Other IDs: Massachusetts Hub, Mass Hub, ISO New England Internal Hub, Internal Hub

Details: The NE Pool hub pricing point comprises about 30 nodes located in central Massachusetts that represent much of the bilateral power trading that occurs within the six-state New England region.

Grid operator: ISO New England

Market structure: Nodal LMP

Product(s) assessed: Firm physical power with liquidated damages

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

NEPOOL Connecticut Zone

Other IDs: Connecticut

Details: Connecticut Zone located within NEPOOL

Grid operator: ISO New England

Market structure: Nodal LMP

Product(s) assessed: Financial real-time power, financially settled against NEPOOL's Connecticut Zone real-time LMP

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

Entergy

Other IDs: Into Entergy

Details: The Entergy pricing hub represents power delivered into the Entergy control area, which covers parts of Arkansas, Louisiana and Mississippi, as well as a portion of eastern Texas not overseen by ERCOT.

Grid operator: Entergy Corp.

Market structure: No organized market

Product(s) assessed: Firm physical power with liquidated damages.

Peak hours: Hours ending 7 through 22, Mon-Fri (excluding all NERC holidays)

Off-peak hours: Hours ending 1 through 6 and 23 through 24, Mon-Fri, plus all hours of weekends and NERC holidays

Central Markets

Cinergy

Other IDs: Cinergy Hub, Cinergy, Cin

Details: The Cinergy pricing hub comprises 337 nodes within the portion of the Midwest ISO grid that covers areas of Indiana, northwestern Kentucky, and southwestern Ohio.

Grid operator: Midwest Independent System Operator (MISO)

Market structure: Nodal LMP

Product(s) assessed: Firm physical power with liquidated damages

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

Northern Illinois

Other IDs: NI Hub

Details: The PJM Northern Illinois pricing hub comprises 232 nodes located in the Commonwealth Edison control area in northern Illinois.

Grid operator: PJM Interconnection

Market structure: Nodal LMP

Product(s) assessed: Firm physical power with liquidated damages

Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)

Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

AEP Dayton

Other IDs: AD Hub, PJM AD, AD
 Details: The PJM AEP Dayton pricing hub comprises 1,161 nodes found in the American Electric Power and Dayton Power and Light control areas in Ohio and Michigan.
 Grid operator: PJM Interconnection
 Market structure: Nodal LMP
 Product(s) assessed: Firm physical power with liquidated damages
 Peak hours: Hours ending 8 through 23, Mon-Fri (excluding all NERC holidays)
 Off-peak hours: ending 1 through 7 and 24, Mon-Fri, plus all hours of weekends and NERC holidays

ERCOT Houston Zone

Other IDs: Houston
 Details: Represents transactions within ERCOT's Houston Generation Zone.
 Grid operator: Electric Reliability Council of Texas (ERCOT)
 Market structure: Zonal
 Product(s) assessed: Firm physical power with liquidated damages
 Peak hours: Hours ending 7 through 22, Mon-Fri (excluding all NERC holidays)

Off-peak hours: Hours ending 1 through 6 and 23 through 24, Mon-Fri, plus all hours of weekends and NERC holidays

ERCOT North Zone

Other IDs: North
 Details: Represents transactions within ERCOT's North Generation Zone.
 Grid operator: Electric Reliability Council of Texas (ERCOT)
 Market structure: Zonal
 Product(s) assessed: Firm physical power with liquidated damages
 Peak hours: Hours ending 7 through 22, Mon-Fri (excluding all NERC holidays)
 Off-peak hours: Hours ending 1 through 6 and 23 through 24, Mon-Fri, plus all hours of weekends and NERC holidays

ERCOT South Zone

Other IDs: South
 Details: Represents transactions within ERCOT's South Generation Zone.
 Grid operator: Electric Reliability Council of Texas (ERCOT)
 Market structure: Zonal
 Product(s) covered: Firm physical power with liquidated damages
 Peak hours: Hours ending 7 through 22, Mon-Fri (excluding all NERC holidays)
 Off-peak hours: Hours ending 1 through 6 and 23 through 24, Mon-Fri, plus all hours of weekends and NERC holidays

ERCOT West Zone

Other IDs: West
 Details: Represents transactions within ERCOT's West Generation Zone

Grid operator: Electric Reliability Council of Texas (ERCOT)
 Market structure: Zonal
 Product(s) covered: Firm physical power with liquidated damages
 Peak hours: Hours ending 7 through 22, Mon-Fri (excluding all NERC holidays)
 Off-peak hours: Hours ending 1 through 6 and 23 through 24, Mon-Fri, plus all hours of weekends and NERC holidays

West Markets

COB

Other IDs: California-Oregon Border
 Details: The COB hub pricing point consists of the Captain Jack and Malin substations on the California-Oregon Intertie, an AC transmission line linking power generation in the Pacific Northwest with the large load centers in California.
 Grid operator: Various utilities in the region act as balancing authorities
 Market structure: No organized market
 Product(s) assessed: Firm physical power with liquidated damages
 Peak hours: Hours ending 7 through 22, Mon-Sat (excluding all NERC holidays)
 Off-peak hours: Hours ending 1 through 6 and 23 through 24, Mon-Sat, plus all hours of Sundays and NERC holidays

Mead

Other IDs: none
 Details: The Mead hub pricing point consists of the switchyard for Hoover Dam, located outside Las Vegas, Nevada.
 Grid operator: Various utilities in the region act as balancing authorities
 Market structure: No organized market
 Product(s) assessed: Firm physical power with liquidated damages
 Peak hours: Hours ending 7 through 22, Mon-Sat (excluding all NERC holidays)
 Off-peak hours: Hours ending 1 through 6 and 23 through 24, Mon-Sat, plus all hours of Sundays and NERC holidays

Mid-Columbia

Other IDs: Mid-C
 Details: Mid-Columbia is a general reference to power trading at five hydroelectric dams along a 118-mile stretch of the Columbia River in the Pacific Northwest. The five dams are operated by the PUDs for Chelan, Douglas, and Grant counties in Washington state.
 Grid operator: Various utilities in the region act as balancing authorities
 Market structure: No organized market
 Product(s) assessed: Firm physical power with liquidated damages
 Peak hours: Hours ending 7 through 22, Mon-Sat (excluding all NERC holidays)
 Off-peak hours: Hours ending 1 through 6 and 23 through 24, Mon-Sat, plus all hours of Sundays and NERC holidays

NP-15

Other IDs: North of Path 15, North Path, NP

Details: The NP-15 hub pricing point comprises nodes within CAISO's former northern congestion zone, the area north of the Path 15 AC transmission line.

Grid Operator: California Independent System Operator (CAISO)

Market structure: Nodal LMP

Product(s) assessed: Firm physical power with liquidated damages

Peak hours: Hours ending 7 through 22, Mon-Sat (excluding all NERC holidays)

Off-peak hours: Hours ending 1 through 6 and 23 through 24, Mon-Sat, plus all hours of Sundays and NERC holidays

Palo Verde

Other IDs: PV, Palo

Grid operator: Various utilities in the region act as balancing authorities

Market structure: No organized market

Product(s) assessed: Firm physical power with liquidated damages

Peak hours: Hours ending 7 through 22, Mon-Sat (excluding all NERC holidays)

Off-peak hours: Hours ending 1 through 6 and 23 through 24, Mon-Sat, plus all hours of Sundays and NERC holidays

SP-15

Other IDs: South-of-Path 15, South Path, SP

Details: The SP-15 hub pricing point comprises nodes within CAISO's former southern congestion zone, the area south of the Path 15 AC transmission line.

Grid operator: Independent System Operator (CAISO)

Market structure: Nodal LMP

Product(s) assessed: Firm physical power with liquidated damages

Peak hours: Hours ending 7 through 22, Mon-Sat (excluding all NERC holidays)

Off-peak hours: Hours ending 1 through 6 and 23 through 24, Mon-Sat, plus all hours of Sundays and NERC holidays