

E&AS Revenue Offset Methodology Update

MIC Special Session – Reserve Price
Formation Order

June 30, 2020

“Therefore, we order PJM to make a compliance filing within 45 days of the date of this order proposing modifications to its Tariff to implement a forward-looking E&AS Offset that reasonably estimates expected future energy and ancillary services revenues for all Tariff provisions that rely on a determination of the E&AS Offset (e.g., Net CONE).”

- Focus on future value rather than historical
- Interest in how forward prices are derived
- Desire to use historical DA prices, rather than RT, to shape forwards
- Concern with dispatch methodology: current peak hour vs proposed optimal, and resulting revenue estimates
- Using cost-based offers plus 10% adder in lieu of price-based
- Debate over importance of liquidity of forwards

- Request for additional 30 days to August 5
- Time needed to further investigate and develop forward dispatch methodology that can be applied to individual units in addition to the reference unit
- Develop a more thorough proposal, in order to achieve FERC approval sooner than if we file a less robust proposal by the current deadline
- Need not delay BRA schedule

- Based on (Manual 15, Long Term Method 12.5.1 – 12.5.5)
 - RT monthly LMP forwards for delivery year (calendar year)
 - Average of 30 consecutive trade days
 - End date 5 months prior to BRA date
 - Power – Western Hub, with 3-yr historical hourly basis to other hubs
 - Gas – Henry Hub, with 3-yr historical daily basis to other hubs
 - Shaped with historical DA LMPs from most recent 3 years
 - Conducted for each of 3 years individually
 - Adjusted for days of the week

- PJM Forward Dispatch
 - Employ Plexos model for energy market dispatch
 - Use cost-based offers with 10% adder
 - May dispatch in any hour
 - Currently benchmarking against IMM GAMS model
 - Develop data interface to enable modeling of any unit specific requests, as needed

Decision Matrix – Price Development

Decision Item	Choices	Decision	Reasoning
Price method	<ul style="list-style-type: none"> Heat Rate Output Scalar Forward Input Scalar 	Forward Input Scalar	Use of forward prices scaled for historical shape. Method approved, in Manual 15
Forward sample	<ul style="list-style-type: none"> Single day Multiple days 	30 day average	Provides a large sample to address anomalous data, but not too historic
Power hub	<ul style="list-style-type: none"> Western hub Local hub 	Western hub	Most liquid. Historical basis provides reasonable expectation of future local price
Gas hub	<ul style="list-style-type: none"> Henry hub Local hub 	Henry hub	Most liquid. Historical basis provides reasonable expectation of future local price
Basis method	<ul style="list-style-type: none"> Historical FTR 	Historical	Most liquid.
Day of Week Adjustment	<ul style="list-style-type: none"> Adjust Do not adjust 	?	Conducting analysis on impacts
Market for scalar	<ul style="list-style-type: none"> Real-time Day-ahead 	Day-ahead	Majority of units committed in day-ahead, thus volatility shape more applicable
Scalar sample	<ul style="list-style-type: none"> One-year Three-year 	Three year	Provides a large sample to address anomalous data, but not too historic

Decision Item	Choices	Decision	Reasoning
Dispatch method	<ul style="list-style-type: none"> Peak-hour based Optimal based 	Optimal based	Removes peak hour limitations. More applicable to dispatchable unit operations
Offers modeled	<ul style="list-style-type: none"> Cost Cost-based plus 10% Price-based 	Cost-based plus 10%	Simple, transparent and reasonable. Use of 10% adder approved as part of quadrennial review.
Planned Outages	<ul style="list-style-type: none"> Two-weeks in October Availability factor 	Availability factor	Removes possibility of missing two material weeks
Forced Outages	<ul style="list-style-type: none"> Account for in EFORd 	EFORd	Adjusts revenues based on EFORd
Commitment Look Ahead	<ul style="list-style-type: none"> 24-hour look ahead None 	24-hour look ahead	More closely matches bidding behavior
Daily start limitations	<ul style="list-style-type: none"> Yes No 	No	Allows for economic operation
Emissions adders	<ul style="list-style-type: none"> Yes No 	Yes	Included for units in allowance trading programs (NOx, SO2, CO2)
Gas mapping	<ul style="list-style-type: none"> PJM IMM 	PJM	Matches decisions agreed to in Quadrennial Review

Parameter		Value	Notes
Min. run time		Two-hour	Same as PLS for Frame CT Units
Min. down time		One-hour	PLS for Frame CT is 1.25 hours however it is better in the simulation to have whole hours simulated.
Start cost		491 MMBtu plus \$6.93/MWh VOM	Average fuel use of CONE Area units VOM = \$5.83 MM + \$1.10 consumables
Heat rate		9.134 MMBtu/MWh	Average heat rate of CONE Area units at ISO conditions (59°F, 14.7 psia)
Unit capacity		367 MW	Average capacity of CONE Area units at ISO conditions (59°F, 14.7 psia)

** this is for the Reference CT, additional information and parameters need to be developed for other resource types

- The price forwards and virtual dispatch will be used for CTs, CCs, coal and storage resource
- Units that are not dispatched: solar, wind and nuclear will use the methodology proposed in the March 18 filing
- Parameters subject to Parameter Limited Schedule (PLS) limitations: use PLS values
- Parameters not subject to PLS limitations: use what resource has offered previously
 - Will need to develop a statistic (mean, median, etc.) given many of these parameters can vary seasonally, daily or hourly
- Assume DR revenues are zero

