Energy Offer Verification Education Session

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Tech Change Forum
September 27, 2017
• Energy Offer Verification Overview
• Energy Offer Verification Example Scenario
• Offer Entry and Validation Timelines
• Demand Response Resources
To comply with FERC Order 831, PJM is implementing a verification process for cost-based incremental offers above $1,000/megawatt-hour, effective November 1, 2017 (pending FERC approval).

Order 831 Requires:
- Offers above $1,000 need to be verified before being used to calculate LMPs
  - Until they are verified, offers will be capped at $1,000
- Hard Cap at $2,000 for setting LMP
Member Education
August 7, 2017 and September 27, 2017

Offer Verification Exercise
October 5, 2017

Implementation
November 1, 2017
(pending FERC approval)
Submit Offer and Template to PJM for Verification

Submit offer > $1,000/MWh

Markets Gateway

Screening Process

Passed Segments
Eligible to set LMP

Offer Fails/Partially Fails
- Offer capped at the higher of $1,000 or highest verified segment
- Market seller to request exception, upload template & documentation to PJM

Exception Request

Offer Fully Verified
Eligible to set LMP

*Offer Partially Verified offer is capped at the highest verified segment

*Offer Fails Exception no segments verified; offer is capped at $1,000

*Unverified Segments may indicate non-compliance with approved Fuel Cost Policies
Enter Cost Offer Information into COA Prior to Oct. 01

COA User Guide:
Step 1 – Submission of offer > $1,000 prior to March 2018

- Market seller attempts to submit an offer into Markets Gateway with one or more segments >$1,000.

  - Markets Gateway: Notification window pops up stating offer cannot exceed $1,000.
  - XML File: Upload will be rejected

- Market seller submits desired offer curve to energy offer verification team using template on pjm.com (filling out only the energy offer tab).

- Yes

- Market seller resubmits offer so that no segment(s) are >$1,000 and checks the 'switch to cost' flag in Markets Gateway.

- No

- Offer will be defaulted to 'daily offer' or last successfully submitted offer.
November 2017 to March 2018

• A Market Seller enters the following offer directly into Markets Gateway or through an XML upload:
$1,000+ offer segments will not be accepted…

• Once you enter this offer curve, a message will pop up advising you that no segments greater than $1,000 will be accepted.

• If the offer was submitted via XML, an error message like the one below will be generated.
…and must be set to $1,000 prior to submitting the offer

- If the Market Seller wishes to submit their original desired offer, in Markets Gateway, they must set all segments that are currently greater than $1,000 to be equal to $1,000.

- Likewise, via XML, the entire file must be resubmitted with all segments that are desired to be greater than $1,000 set to be equal to $1,000.
• To have $1,000+ offer segments eligible to set LMP, Market Sellers must submit to PJM, via SharePoint, the Offer Verification Template having filled in the first tab (“Energy Offer”) with their desired offer.

• If the user does not set segments to $1,000 in Markets Gateway or in their XML file and then proceed with the offer verification process, the offer will revert to the most recently accepted offer.
The Offer Verification Template can be found on the Offer Verification Information page, located here:


The Offer Verification Template can also be found on the Offer Verification SharePoint site, located here:

Offer Verification Share Point

• Scroll to the bottom of the page and click on Add new item
- Enter the required information
- Attach your template
- Click Save
• Market Seller must fill in all contact information.
• Please be sure that the contact information is a direct line and not a general corporate number or hotline.
• Enter offer information with desired MW/Price pairs.
• MW values must match those that were entered into Markets Gateway.
• There is room in the template for four different time periods during the day. If more granularity is needed for a particular date, please submit additional templates.

• Note that the template is good for only one date.
Summary – Step 1 (November 2017 through March 2018)

• Market Seller must submit data to COA in MIRA before Oct 01.
• For offer segments that are desired to be priced greater than $1,000/MWh, the Market Seller is responsible for submitting into Markets Gateway offer segments that are equal to $1,000/MWh.
• Market Seller is responsible for submitting to PJM, using the offer verification template and sent through SharePoint, their desired >$1,000/MWh offer curve and any other information requested in the first two sections of the Energy Offer tab.
• PJM will send to the Market Seller notification of receipt of the >$1,000/MWh offer curve via SharePoint.
Step 1 – Submission of offer > $1,000 after March 2018

Market seller attempts to submit an offer into Markets Gateway with one or more segments >$1,000.
• Market seller enters into Markets Gateway their desired 
  >$1,000/MWh offer. This offer will be reflected in the Markets 
  Gateway screen.
Update: Until March 2018, Market Seller must enter verified offer into Markets Gateway.
• In this example, segments 2 and 3 were verified through the screening, however, segments 4 and 5 were not verified.

• Segments 4 and 5 must move on to the exception process to be verified using information in the Market Seller’s fuel cost policy.

<table>
<thead>
<tr>
<th>Segment</th>
<th>MW</th>
<th>Offer ($/MWh)</th>
<th>Verified?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>$ 990.00</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>200</td>
<td>$ 1,100.00</td>
<td>Y</td>
</tr>
<tr>
<td>3</td>
<td>300</td>
<td>$ 1,200.00</td>
<td>Y</td>
</tr>
<tr>
<td>4</td>
<td>400</td>
<td>$ 1,300.00</td>
<td>N</td>
</tr>
<tr>
<td>5</td>
<td>500</td>
<td>$ 1,400.00</td>
<td>N</td>
</tr>
</tbody>
</table>
At this point, PJM notifies the Market Seller that their offer is capped at the highest verified segment and request that they update their offer in Markets Gateway and fill in the remainder of the Offer Verification Template.

<table>
<thead>
<tr>
<th>Segment</th>
<th>MW</th>
<th>Offer $</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>$990</td>
</tr>
<tr>
<td>2</td>
<td>200</td>
<td>$1100</td>
</tr>
<tr>
<td>3</td>
<td>300</td>
<td>$1200</td>
</tr>
<tr>
<td>4</td>
<td>400</td>
<td>$1200</td>
</tr>
<tr>
<td>5</td>
<td>500</td>
<td>$1200</td>
</tr>
</tbody>
</table>
• PJM screens offer segments over $1,000/MWh
• PJM notifies Market Seller of segments that pass the screen.
• PJM notifies Market Seller of any segments that do not pass the screen and will request further information in order to proceed to the Exception Process.
• PJM will update Markets Gateway to enable it to accept the highest verified segment.
• The Market Seller returns to Markets Gateway to update their offer.
Step 3 – Exception Process

Update: Until March 2018, Market Seller must enter verified offer into Markets Gateway.
• If any segments do not pass the initial screen, PJM will request that the Market Seller provide additional information in the Offer Verification template.

• In the Commodity Pricing section, the Market Seller provides:
  – The estimated fuel price, for which documentation must be provided
• The fuel price entered should not include any adders.
• All fuel-related adders will be pulled from COA.
Commodity pricing, absent of any adders, can be entered here

OR, If multiple hubs or contracts are used, enter each individually here
Here it can be seen that segment 4 passes, but segment 5 does not. Thus, the offer is capped at $1,300.

<table>
<thead>
<tr>
<th>Segment</th>
<th>MW</th>
<th>Desired Incremental Offer ($/MWh)</th>
<th>Incremental Heat (mmBTU)</th>
<th>Emissions CO2 ($/MWh)</th>
<th>Emissions NOx ($/MWh)</th>
<th>Emissions SOx ($/MWh)</th>
<th>Offer w/ Cost Adder ($/MWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>$990.00</td>
<td>8,000.00</td>
<td>$0.025</td>
<td>$0.500</td>
<td>$0.035</td>
<td>$1,105.54</td>
</tr>
<tr>
<td>2</td>
<td>200</td>
<td>$1,100.00</td>
<td>8,000.00</td>
<td>$0.025</td>
<td>$0.500</td>
<td>$0.035</td>
<td>$1,105.54</td>
</tr>
<tr>
<td>3</td>
<td>300</td>
<td>$1,200.00</td>
<td>9,000.00</td>
<td>$0.025</td>
<td>$0.500</td>
<td>$0.035</td>
<td>$1,243.66</td>
</tr>
<tr>
<td>4</td>
<td>400</td>
<td>$1,300.00</td>
<td>10,000.00</td>
<td>$0.025</td>
<td>$0.500</td>
<td>$0.035</td>
<td>$1,381.78</td>
</tr>
<tr>
<td>5</td>
<td>500</td>
<td>$1,400.00</td>
<td>10,000.00</td>
<td>$0.025</td>
<td>$0.500</td>
<td>$0.035</td>
<td>$1,381.78</td>
</tr>
</tbody>
</table>

If the Market Seller cannot provide sufficient documentation for why their offer is higher than what PJM calculates it to be using the information in their fuel cost policy, then they may be eligible for a penalty.
Result of the Exception Process

<table>
<thead>
<tr>
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<th>MW</th>
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<tr>
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<td>400</td>
<td>$1300</td>
</tr>
<tr>
<td>5</td>
<td>500</td>
<td>$1300</td>
</tr>
</tbody>
</table>

The unverified segment is set to the value of the highest verified segment.

- If the Market Seller is able to submit additional documentation so that PJM can verify their offer after the market closes, then they may be made whole through settlements after the fact.
Summary – Step 3

- Market Seller completes and submits the Commodity Pricing section of the Offer Verification template.
- PJM confirms receipt of information.
- PJM uses the submitted information, along with the fuel cost policy, to attempt to confirm the unverified segments.
- PJM notifies the Market Seller of the final verified offer.
- PJM will update Markets Gateway to enable it to accept the highest verified segment.
- The Market Seller returns to Markets Gateway to update their offer.
Offer Verification Requests

• Market Sellers **MUST** submit exception templates through the designated SharePoint site
• Templates submitted via email will not be accepted
• Offer Verification Templates will be processed in the order that they are received
• Requests with incomplete templates or lack of documentation will be placed aside until all required information is received
• Offers that pass the screen, or are verified through the exception process, will be communicated via the original request in SharePoint
• What if I submit an offer over $1,000 and have it verified and then I want to change my offer so that is still over $1,000 but lower than my original offer? Do I need to be re-verified?
  – YES. All offers over $1,000 need to be verified and a new template will need to be submitted.

• What if I don’t change my offer curve but do change my no-load cost? Do I need to be re-verified?
  – YES. All offers over $1,000 need to be verified and a new template will need to be submitted.
Offer Verification Exercise

• In order to participate you must:
  – Have entered data into the IMM’s MIRA Cost Offer Assumptions (COA) module by October 1, 2017
  – Have access to the Markets Gateway Training environment*
    • [https://ssotrain.pjm.com](https://ssotrain.pjm.com)
  – Have Generation Read/Write credentials in Markets Gateway Training environment
  – Have access to the Offer Verification SharePoint site

* This exercise will take place in the IDO training environment. Having access to the standard training environment should grant you access to the IDO training environment with the same roles and permissions. Roles and permissions in the training environment are not linked or related to roles in the production environment.
Day-Ahead Market Timing

- Offer Verification Template should be submitted at least 1 hour* prior to the close of the Day-Ahead Market (10:30) to allow time for verification.
- Market Seller must update offer in Markets Gateway to reflect the approved offer curve in order to be eligible to set Day-Ahead LMP.
- Offer Verification Templates that are submitted prior to the close of the Day-Ahead Market, but not verified in time to set Day-Ahead LMP may be eligible to receive Day-Ahead Operating Reserve credits by following Manual 11, Attachment D.

*2 hours is recommended
• Market Sellers are encouraged to submit the Offer Verification Template at least 2 hours* prior to the operating hour to allow time for verification
• Offer Verification Templates that are submitted greater than 65 minutes prior to the operating hour, but not verified in time may be eligible for Balancing Operating Reserve credits by following Manual 11, Attachment D

*Verification timing will vary based on volume of requests
Market Sellers will be required* to follow Manual 11, Attachment D for Offers > $1,000 when:

- Offer is not verified in time to set LMP
- Offer is verified after the Effective Start Time
  - Only for hours that offer was not eligible to set LMP
- Offers greater than $2,000

*Requirement is for Market Sellers seeking make-whole
Market Seller must follow Manual 11, Attachment D for make-whole

Offer eligible to set LMP

Offer >$1,000 submitted Intra-day with an effective time of 04:00 – 10:00
Next Steps

• Offer Verification Exercise
  – October 5, 2017

• Process Implementation
  – November 1, 2017 (pending FERC Approval)
If you have any questions about today’s education session, about offer verification in general, or if you would like to be involved in the simulation taking place this fall, please reach us here:

EnergyOfferVerification@pjm.com

Additional information about offer verification can be found here: