Synchronized Reserve Market Design Options

EPFSTF
June 8, 2018

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Reserve Locations

**PJM**
- RTO Zone
- Single predefined subzone
- Subzones published quarterly and posted in real time

**IMM**
- RTO Zone
- Any subzone area for which a transmission constraint prevents the use of RTO reserves, for the loss of a generator.
- Subzones published quarterly and posted in real time.
Synchronized Reserve Eligibility

**PJM**
- electrically located in PJM
- synchronized to the grid
- 10 min. response
- not emergency capacity
- sustain for 30 minutes
- available to provide reserves (ex: not testing)

**IMM**
- electrically located in PJM (not pseudo tied)
- synchronized to the grid
- 10 min. response
- not emergency capacity
- sustain for 30 minutes
- available to provide reserves (ex: not testing)
Tier 1 and Tier 2

PJM
• Consolidate Tier 1 and 2
• Pay all cleared reserves the market price
• Impose the same obligation and penalties on all cleared reserves

IMM
• Consolidate Tier 1 and 2
• Pay all cleared reserves the market price
• Impose the same obligation and penalties on all cleared reserves
Adjustments to Available Reserve MW Estimates

**PJM**
- Deselection by unit class
- Continue to adjust offer MW by the Degree of Generator Performance (DGP) in the last 30 minutes
- Eliminate Tier 1 bias

**IMM**
- Deselection only by defined unit class, no unit specific deselection
- Eliminate DGP adjustments
- Eliminate Tier 1 bias
### Synchronized Reserve Max Output

<table>
<thead>
<tr>
<th></th>
<th>PJM</th>
<th>IMM</th>
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<tbody>
<tr>
<td></td>
<td>• Less than or equal to Eco. Max</td>
<td>• Less than or equal to Eco. Max</td>
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<td></td>
<td>• Used only with prior PJM approval for physical operating reason</td>
<td>• Used only with prior PJM approval for physical operating reason</td>
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<td>• Must exceed 0 MW</td>
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Synchronized Reserve Ramp Rate

**PJM**
- Remove reserve ramp rates
- Use energy ramp rates

**IMM**
- Remove reserve ramp rates
- Use energy ramp rates
- Allow for hourly ramp rates with real-time updates
- Create tariff requirement that Market Sellers must submit based on physical operating capability only
Synchronized Reserve Availability

PJM
- Online, PJM scheduled capacity resources
- Resources without capacity commitment default to availability, may opt out

IMM
- All resources available for energy are available for reserves.
Synchronized Reserve Offer Price

**PJM**
- Offer price up to an established margin, plus condensing costs
- Margin currently $7.50/MW
- Remove VOM from offer

**IMM**
- Offer price up to an established margin, plus condensing costs
- Revise margin to reflect market behavior
- Remove VOM from offer
Synchronized Reserve Nonperformance Penalty

**PJM**
- SRMCP x shortfall MW
- For all hours of SR over the past 19 days or since the resource last failed to respond to SR event

**IMM**
- SRMCP x shortfall MW
- For all hours of SR over the past 19 days or since the resource last failed to respond to SR event
- Adjust shortfall MW so that penalty equals past SR revenues