BAA-level mitigation in the WEIM

Price Formation Enhancements

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BAA-Level Mitigation Refresher

• When WEIM Transfers into a BAA are constrained, the BAA is tested for competitiveness
  – Using three pivotal supplier test
  – EIM BPM Section 11.3.5.2

• If assessment identifies non-competitive conditions, all bids in that BAA are subject to mitigation
  – BAAs almost always determined non-competitive when tested
    • Due to structure of most WEIM BAAs
    – Bids are only mitigated if they are higher than both the resource’s default energy bid and competitive LMP

• WEIM resources are also subject to local market power mitigation (based on flow-based constraints)
  – However most instances of mitigation of WEIM resources is due to the triggering of BAA-level mitigation
Bids and mitigation examples: inputs

![Graph showing bids and mitigation examples](image)
Bids and mitigation examples: mitigated bid

The diagram illustrates the relationship between output level (MW) and dollars per MWh for different bids and mitigation examples.

- **Bid**
- **DEB**
- **LMP Competitive**
- **Final Bid**

The graph shows how the pricing varies with output level, highlighting the impact of mitigation on the final bid price.
**Data details**

- **Regions**

<table>
<thead>
<tr>
<th>Mountain Northwest</th>
<th>Desert Southwest</th>
<th>Pacific Northwest</th>
<th>California</th>
</tr>
</thead>
<tbody>
<tr>
<td>PacifiCorp East</td>
<td>Arizona Public Service</td>
<td>PacifiCorp West</td>
<td>Turlock Irrigation District</td>
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<tr>
<td>Idaho Power</td>
<td>NV Energy</td>
<td>Seattle City Light</td>
<td>Balancing Area of Northern California</td>
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<td>NorthWestern Energy</td>
<td>WAPA Desert Southwest</td>
<td>Bonneville Power Authority</td>
<td>Los Angeles Dept of Water and Power</td>
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<td>Avista</td>
<td>Tucson Electric</td>
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<td></td>
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<td>Puget Sound</td>
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<td></td>
<td></td>
<td>Tacoma Power</td>
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</tr>
</tbody>
</table>

**Timeframe:** January – October, 2023
Mitigation terminology

• Interval subject to BAA-level mitigation
  – Interval where BAA is import constrained
  – And BAA is found to be structurally uncompetitive
    • BAAs in WEIM almost always fail this test (3 pivotal supplier)
• % of MW subject to mitigation (when BAA-level mitigation is triggered)
  – BAA-level mitigation is triggered
  – Resource(s) in BAA bid high enough to be mitigated
    • Bids only mitigated when higher than both DEB and competitive LMP

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Average DEB</th>
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</thead>
<tbody>
<tr>
<td>Gas (combined cycle)</td>
<td>$55</td>
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<tr>
<td>Gas (gas turbine)</td>
<td>$70</td>
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<tr>
<td>Hydro DEB</td>
<td>$197</td>
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</table>
Frequency and magnitude of BAA-level mitigation

**RTPD**
- Average % intervals BAA subject to mitigation (BAA is import constrained)
- Average % subjected MWs that were mitigated (bid was lowered)

**RTD**
- Average % intervals BAA subject to mitigation (BAA is import constrained)
- Average % subjected MWs that were mitigated (bid was lowered)
Frequency and magnitude of BAA – level mitigation
Pacific Northwest BAAs (in RTPD)

Average % intervals BAA subject to mitigation (BAA is import constrained)
Average % subjected MWs that were mitigated (bid was lowered)

- BAA 1
- BAA 2
- BAA 3
- BAA 4
- BAA 5
- BAA 6
- BAA 7
- BAA 8
Frequency and magnitude of BAA – level mitigation

Desert Southwest BAAs (in RTPD)

- Average % intervals BAA subject to mitigation (BAA is import constrained)
- Average % subjected MWs that were mitigated (bid was lowered)
Frequency and magnitude of BAA – level mitigation
Mountain Northwest BAAs (in RTPD)

- Average % intervals BAA subject to mitigation (BAA is import constrained)
- Average % subjected MWs that were mitigated (bid was lowered)

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- BAA 1
- BAA 2
- BAA 3
- BAA 4
Frequency and magnitude of BAA – level mitigation
California BAAs (in RTPD)

- Average % intervals BAA subject to mitigation (BAA is import constrained)
- Average % subjected MWs that were mitigated (bid was lowered)

<table>
<thead>
<tr>
<th>BAA</th>
<th>Subjected MWs (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAA 1</td>
<td>2%</td>
</tr>
<tr>
<td>BAA 2</td>
<td>4%</td>
</tr>
<tr>
<td>BAA 3</td>
<td>8%</td>
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</tbody>
</table>
Frequency of areas subject to mitigation – by hour

**RTPD**

- California
- Desert Southwest
- Mountain Northwest
- Pacific Northwest*

**RTD**

- California
- Desert Southwest
- Mountain Northwest
- Pacific Northwest*

Average percent of intervals subject to mitigation

Hour

- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
Frequency of areas subject to mitigation – by month

RTPD

- California
- Desert Southwest
- Mountain Northwest
- Pacific Northwest*

RTD

- California
- Desert Southwest
- Mountain Northwest
- Pacific Northwest*

Average percent of intervals subject to mitigation

ISO PUBLIC
Mitigation terminology

• **MW subject to mitigation**
  – BAA is import constrained
    • And BAA failed the structural test (3 pivotal supplier test)

• **MW mitigated**
  – Bids were changed/lowered because bid was higher than both competitive LMP and default energy bid

• **Potential increase in MW due to mitigation**
  – Bid was lowered enough to potentially cause additional dispatch from that resource
Average monthly mitigation in WEIM

Average Incremental Energy Mitigation (WEIM)

- MW subject to mitigation
- MW mitigated
- Potential increase in MW due to mitigation

Around 87,000 MW of participating capacity

ISO PUBLIC
Average monthly mitigation in WEIM

Around 87,000 MW of participating capacity