Briefing on Energy Imbalance Market - Update on EIM Operations

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EIM Transitional Committee Meeting
General Session
April 30, 2015
EIM Operations Update

• Benefits assessment for 2015-Q1 issued.
  – 2015-Q1 assessment expanded to include flexibility
  – 2015-Q2 will expand to include 5-minute

• Pricing discovery waiver update
  – FERC held technical conference on pricing
  – ISO filed proposal to automate recognition of capability available to EIM Entity
  – Infeasibilities improved in PACW but continue in PACE

• Transfers continue to reflect seasonal conditions
• Frequency of infeasibilities decrease in March and April
Summary of EIM gross benefits for the 1st Quarter 2015

<table>
<thead>
<tr>
<th>BAA</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO</td>
<td>$0.48</td>
<td>$0.49</td>
<td>$0.48</td>
<td>$1.44</td>
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<tr>
<td>PACE</td>
<td>$0.88</td>
<td>$0.83</td>
<td>$0.91</td>
<td>$2.63</td>
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<td>PACW</td>
<td>$0.42</td>
<td>$0.49</td>
<td>$0.28</td>
<td>$1.19</td>
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<tr>
<td>Total</td>
<td>$1.78</td>
<td>$1.81</td>
<td>$1.67</td>
<td>$5.26</td>
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</tbody>
</table>

Benefits reflect:
- More efficient dispatch, both inter- and intra-regional
- Reduced renewable energy curtailment
- Reduced flexibility reserves needed in PacifiCorp BAAs

This report contains enhancements over the 2014 Q4 report:
- Benefit calculations include all fifteen minute market intervals
- Calculations used relevant prices including any corrections
- Calculations of avoided renewable curtailment
Summary of EIM gross benefits for the 1st Quarter 2015

Highest levels of transfers in the 15-minute intervals:

- 421 MW PACW to ISO
- 321 MW ISO to PACW
- 200 MW PACE to PACW
15-Minute price frequency in PACE and PACW

15-minute PACE Aggregate Price

- Waiver requested
- Waiver approved and implemented

15-minute PACW Aggregate Price

- Waiver requested
- Waiver approved and implemented

Legend:
- Lower -$155
- [-155,0]
- [0,50]
- [50,100]
- [100,250]
- [250,500]
- [500,1000]
- Higher $1000
5-Minute price frequency in PACE and PACW

5-minute PACE Aggregate Price

5-minute PACW Aggregate Price

Waiver requested

Waiver approved and implemented

Frequency of five-minute prices by range

Frequency of five-minute prices by range
Pricing performance improves in March and April

15-minute PACE Aggregate Price

15-minute PACW Aggregate Price
Pricing performance improves in March and April

5-minute PACE Aggregate Price

Pre waiver

Waiver effective

5-minute PACW Aggregate Price

Pre Waiver

Waiver effective

Daily Average Price ($/MWh)

Prices without waiver

Current Prices

California ISO
Hourly average transfer from PacifiCorp and ISO

(+) PacifiCorp to ISO / (-) ISO to PacifiCorp
Hourly average transfers between PACE and PACW decreased in February

(+) PacifiCorp East to PacifiCorp West
Frequency of 5’ and 15’ intervals with MW undersupply infeasibilities
Questions