Netting Action Items

EMUSTF
February 25, 2015
Units Not Following Dispatch

• Terminology
  • **Ramp Limited Desired MW** – achievable MW based on UDS requested ramp rate
  • **% Off Dispatch** – percentage off dispatch using the lesser of the difference between the actual output and the UDS basepoint or the actual output and Ramp Limited Desired MW
  • **MW Off Dispatch** – MW off dispatch using the lesser of the difference between the actual output and the UDS basepoint or the actual output and Ramp Limited Desired MW
  • **UDS LMP Desired MWh** - calculated by comparing the hourly integrated UDS LMP to the unit’s bid curve to determine a corresponding MW value. This value is not ramp-limited.
  • All values are time-weighted over an hour

  – If a unit’s actual output is between its Ramp Limited Desired MW and its UDS Basepoint, it will be considered following dispatch
• Pool-scheduled or dispatchable self-scheduled units
  – If actual output between Ramp Limited Desired MWh and UDS Basepoint MWh, then unit is following dispatch
    • If not and % off dispatch > 10%:
      • RT MWh – Ramp Limited Desired MWh
    • If not and % off dispatch > 20%:
      • RT MWh – UDS LMP Desired MWh
• If unit trips or is scheduled Day-ahead and does not run in RT:
  • RT MWh – Day-ahead Scheduled MWh
• If unit is dispatchable Day-ahead, but is Fixed Gen in RT:
  • RT MWh – UDS LMP Desired MWh
• If unit is not dispatchable in both Day-ahead and RT:
  • RT MWh – Day-ahead Scheduled MWh
• Self-scheduled unit with Eco Max ≤ 110% of Eco Min
  OR
  not dispatched by PJM above its Eco Min:
    • RT MWh – Day-ahead Scheduled MWh
  • Unit with RT Eco Min > Day-ahead Eco Min by greater of 5% or 5 MW
    OR
    RT Eco Max < Day-ahead Eco Max by lesser of 5% or 5 MW
    AND
    UDS LMP Desired is either below RT Eco Min or above RT Eco Max
      • RT MWh – UDS LMP Desired MWh
Units are absolved of deviations if:

- the absolute value of the hourly deviation MWh < 5 MWh
- OR
- the absolute value of ratio of hourly deviation MWh to Day-ahead Scheduled MWh or Desired MWh <= 5%
Separately in Day-Ahead and in RT, each participant will have a net position on a system-wide and nodal basis. Deviations between the net position on a system-wide and nodal basis will be allocated a power balance and transmission uplift charge, respectively.

System-wide (RTO) deviations for power balance and nodal deviations for transmission uplift would replace the current zone, hub, and interface components used in the current injection and withdrawal buckets.

DAOR charges remain allocated to all DA withdrawals.
### Power Balance

<table>
<thead>
<tr>
<th>DA</th>
<th>RT</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 MW Dec @ Bus 7</td>
<td>220 MW Gen @ Bus 5A</td>
</tr>
<tr>
<td>200 MW Gen @ Bus 5A</td>
<td>50 MW Inc @ Bus 6C</td>
</tr>
<tr>
<td>200 MW Demand @ Bus 7</td>
<td>210 MW Demand @ Bus 7</td>
</tr>
<tr>
<td>40 MW Import @ Hub C</td>
<td>35 MW Import @ Hub C</td>
</tr>
</tbody>
</table>

**DAOR charges apply to:**
- 200 MW Demand
- 100 MW Dec
- **300 MW Total**

<table>
<thead>
<tr>
<th>Power Balance</th>
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</tr>
</thead>
<tbody>
<tr>
<td>290 MW Injection</td>
<td>255 MW Injection</td>
</tr>
<tr>
<td>300 MW Withdrawal</td>
<td>210 MW Withdrawal</td>
</tr>
<tr>
<td>Nets to 10 MW Withdrawal</td>
<td>Nets to 45 MW Injection</td>
</tr>
</tbody>
</table>

**55 MW deviation between DA and RT for Power Balance**
Transmission Uplift – Nodal deviations for Bus 7

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<tbody>
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<td>100 MW Dec @ Bus 7</td>
<td></td>
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<td>210 MW Demand @ Bus 7</td>
</tr>
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<td>300 MW Withdrawal</td>
<td>210 MW Withdrawal</td>
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</tbody>
</table>

*90 MW deviation between DA and RT for Transmission Uplift at Bus 7*
• Status quo + alter generator deviation netting logic to include netting of deviations between Day-ahead and RT where a resource replacing another is following dispatch and incurring no deviations.

• Generators must be electrically equivalent by injecting at the same bus
• Generators A, B, and C located at same bus.
• A and B committed DA at 20 MW. C not committed DA.
• Prior to RT, Generator A trips.
• In RT, B and C run at 20 MW.
• Generator C follows PJM dispatch and incurs no deviations.
• New rules would allow Generator C to replace Generator A to net the deviation between DA and RT to 0.
• Mechanism would need to be developed to inform PJM of generator replacement.