Key Assumptions and Policy Issues

RAAC Steering Committee
November 17, 2014
Portland, Oregon

Assumptions and Issues

1. Out-of-Region Imports
2. In-Region Market (IPPs)
3. Market Friction
4. Intertie Capability
5. Standby Resources
6. Counting Resources
7. Gas Supply Limitations
8. Within-hour Balancing
9. Capacity and Energy Values for Wind/Solar
10. Special Scenarios
1. Out-of-Region Imports

- Current Assumptions
  - **Spot Market**: purchase during hour of need
    - Winter: 2,500 MW HLH only
    - Summer: zero MW all hours
  - **Purchase Ahead**: 3,000 MW all LLHs
  - No southern Idaho imports

- Options
  - Make winter spot market available all hours
  - Review max import assumptions (via contract?)
  - Make imports a random variable
  - Add Southern Idaho imports for 3-node analysis

2. In-region Market

- Independent Power Producers
- Current assumptions
  - Winter: full availability ~ 3,200 MW
  - Summer: 1,000 MW max

- Options
  - Add adjustment for market friction (see next slide)
  - Revisit winter and summer values
3. Market Friction

- Current Assumption – not modeled

- Options
  - Out-of-region imports: apply more severe limits to max available
  - In-region: Reduce availability of IPPs
  - Apply reduction as a function of severity of potential shortfall

4. Intertie Capability

- Current Assumptions
  - Fixed south-to-north 3,400 MW
  - No forced outages
  - Model will counter-schedule

- Options
  - Seasonal fixed values
  - Add intertie outage as random variable
5. Standby Resources

• Current Assumptions
  • New DR (DR not in actual load records)
  • Emergency generators that are not modeled explicitly but are available
  • Banks Lake (hydro capacity only)
  • Backup generators are NOT included

• Options
  • Include all DR (not just new DR)
  • Reasoning: little effect on load forecast

6. Counting Resources

• Current Assumptions
  • Thermal: must be sited and licensed
  • Wind/solar: must be sited and licensed
  • EE: use 6th plan targets

• Options
  • Thermal, wind and solar:
    Sited, licensed & under construction/contract
  • Use RPS targets for wind and solar
7. Gas Supply Limitations

- Current Assumption: no gas limitation

- Options
  - Reduce gas availability (gas-fired generation) by fixed amount when NW temperatures are extreme
  - Make gas-fired generation availability a function of NW temperature

8. Within-hour Balancing

- Current Assumptions
  - For BPA BA only
  - Carried by federal hydro

- Options
  - Extrapolate BPA need to entire region
  - Incorporate INC/DEC requirement directly into assessment of peaking capability
  - Develop method to use thermal resources to carry remaining balancing reserves
9. Capacity/Energy Values for Wind and Solar

- Current Assumptions
  - Wind Energy = 30%
  - Wind Capacity = 5%

- Options
  - Calculate Energy ELCC for wind
  - Calculate Capacity ELCC for wind
  - Use “critical wind year” for energy value
  - Use zero for capacity value
  - Do the same for solar (if data is available)

10. Special Scenarios

- Additional coal retirement
- High wind/solar penetration future
- Different EE acquisition future
Additional Slides
Summary Tables

• New and Standby Resources
• Market Supplies
• Within-hour Balancing Reserves

New and Standby Resources

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>2017</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal</td>
<td>Sited and licensed</td>
<td>Sited and licensed</td>
</tr>
<tr>
<td>Wind</td>
<td>Sited and licensed (e.g. not RPS)</td>
<td>Sited and licensed (e.g. not RPS)</td>
</tr>
<tr>
<td>Existing demand response</td>
<td>In load forecast</td>
<td>In load forecast</td>
</tr>
<tr>
<td>New demand response</td>
<td>In standby resources</td>
<td>In standby resources</td>
</tr>
<tr>
<td>Standby resources energy</td>
<td>83,000 MW-hours</td>
<td>40,800 MW-hours</td>
</tr>
<tr>
<td>Standby resources capacity</td>
<td>660/720 MW winter/summer, where winter = Oct-Mar, summer = Apr-Sep</td>
<td>623/833 winter/summer, where winter = Oct-Mar, summer = Apr-Sep</td>
</tr>
<tr>
<td>Energy Efficiency magnitude</td>
<td>Council 6th plan targets</td>
<td>Council 6th plan targets</td>
</tr>
<tr>
<td>Energy Efficiency shape</td>
<td>Same as load</td>
<td>Same as load</td>
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## Market Supplies

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>2017</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW market winter, where winter = Nov-May</td>
<td>3,451 MW (full IPP)</td>
<td>3,467 MW (full IPP)</td>
</tr>
<tr>
<td>NW market summer, where summer = Jun-Oct</td>
<td>1,000 MW</td>
<td>1,000 MW</td>
</tr>
<tr>
<td>BC market</td>
<td>0 MW</td>
<td>0 MW</td>
</tr>
<tr>
<td>Southern Idaho market</td>
<td>0 MW</td>
<td>0 MW</td>
</tr>
<tr>
<td>SW market winter on-peak</td>
<td>1,700 MW</td>
<td>2,500 MW</td>
</tr>
<tr>
<td>SW market winter off-peak</td>
<td>3,000 MW (purchase ahead)</td>
<td>3,000 MW (purchase ahead)</td>
</tr>
<tr>
<td>SW market summer on-peak</td>
<td>0 MW</td>
<td>0 MW</td>
</tr>
<tr>
<td>SW market summer off-peak</td>
<td>3,000 MW (purchase ahead)</td>
<td>3,000 MW (purchase ahead)</td>
</tr>
<tr>
<td>Maximum SW import limit</td>
<td>3,200 MW</td>
<td>3,400 MW</td>
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</tbody>
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## Within-hour Balancing Reserves

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>2017</th>
<th>2019</th>
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</thead>
<tbody>
<tr>
<td>Fed Hydro balancing reserves</td>
<td>900 MW INC</td>
<td>900 MW INC</td>
</tr>
<tr>
<td></td>
<td>1100 MW DEC</td>
<td>1100 MW DEC</td>
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<tr>
<td>Non-Fed Hydro reserves</td>
<td>Not modeled</td>
<td>Not modeled</td>
</tr>
<tr>
<td>Non-hydro balancing reserves</td>
<td>Not modeled</td>
<td>Not modeled</td>
</tr>
<tr>
<td>New balancing reserves</td>
<td>Not modeled</td>
<td>Not modeled</td>
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<tr>
<td>Energy Imbalance Market</td>
<td>Not modeled</td>
<td>Not modeled</td>
</tr>
<tr>
<td>Borrowed hydro</td>
<td>1000 MW-periods</td>
<td>1000 MW-periods</td>
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