Resource Adequacy Advisory Committee

Preliminary Assessment for 2019

Technical Committee Meeting
March 21, 2014
Outline

1. Data updates between 2017 and 2019
2. Modeling changes
3. Preliminary results for 2019
Data updates – Hourly Loads

• Temperature – 84 years available
  Oct 1928 through Sep 2012

• Wind – 77 years (temperature correlated)
  Oct 1929 through Sept 2005

• Load – 77 years used to match wind data

• Load growth from 2017 to 2019 = 260 MWa
  (about a 0.6% annual rate)
Data updates for 2019

- Hourly loads averaged by month across all load years, the differences range from 130 to 400 MWa
Data updates for 2019

- Peak Hourly Loads:
  Individual load years do have some large increases in peaks in the month of January (1937 temps)
Data updates
Resources and Contracts

• **Major resource additions:**
  • Carty Generating Station (440 MW)
  • Port Westward 2 (220 MW)
  • Minor updates reflect retirements and adjustments to data
  • Net increase is 667 MW

• **Wind additions:**
  • From 4265.6 MW to 4532.4 MW
  • Net increase 266.8 MW

• Contracts (imports, exports, intra-regional transfers) updated from 2013 White Book
Data updates
Standby Resources

• **2017:**
  • Annual energy = 83,000 MW-hr
  • Oct-Mar peak = 660 MW
  • Apr-Sep peak = 720 MW

• **2019:**
  • Annual energy = 41,650 MW-hr
  • Oct-Mar peak = 673 MW
  • Apr-Sep peak = 733 MW
Data updates
Hydro Regulation

• **2017:**
  - Initial 2017 assessment (reported in 2012) used the initial 2017 hydro regulation
  - Revised 2017 assessment (redone this year) used the final 2017 hydro regulation

• **2019:**
  - Used the final 2019 hydro regulation

• Sustained peaking data for 2019 based off of the final 2019 hydro regulation
Modeling Changes for 2019

• **12 period to 14 period**
  • April and August periods are now split-month
  • Initial 2017 assessment modeled April and August as single periods

• **Nodal allocation of resources**
  • Hydro resource node allocation revised to line up with nodal allocation used in Aurora (3 nodes)
  • 2019 assessment was run in 2-node configuration

• **Multiple wind year sets**
  • 2017 assessment used a single set of temperature-correlated wind capacity factors per year
  • 2019 assessment incorporates a random draw from 20 wind sets per year
Modeling Changes - In Progress

• Testing 3-node configuration (splitting out southern Idaho)

• Explicit load forecasts for each node

• Nodal peak vs. nodal energy for hourly hydro dispatch

• Weekly hydro generation shaping
Preliminary Results for 2019

• **Reference case assumptions**
  - Council’s medium load forecast
  - SW winter peak import max is 1700 MW on peak (same as for the 2017 assessment)
  - Off-peak SW import max is 3000 MW year round

• **Variations for sensitivity analysis**
  - Loads: -2.5%, -1.5%, +1.5%, +2.5%
  - SW winter peak imports: 0 MW, 900 MW, 1700 MW, 2400 MW, 3200 MW and 4000 MW
  - South to North tie capacity may not be as high as 4000 MW in every month
South to North Tie Limits

<table>
<thead>
<tr>
<th></th>
<th>AC+DC Scheduling Limits (5-Year Average) for South to North Flows</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>3,968</td>
</tr>
<tr>
<td>February</td>
<td>3,715</td>
</tr>
<tr>
<td>March</td>
<td>3,624</td>
</tr>
<tr>
<td>April</td>
<td>3,698</td>
</tr>
<tr>
<td>May</td>
<td>3,668</td>
</tr>
<tr>
<td>June</td>
<td>3,670</td>
</tr>
<tr>
<td>July</td>
<td>3,638</td>
</tr>
<tr>
<td>August</td>
<td>3,721</td>
</tr>
<tr>
<td>September</td>
<td>3,104</td>
</tr>
<tr>
<td>October</td>
<td>2,938</td>
</tr>
<tr>
<td>November</td>
<td>3,625</td>
</tr>
<tr>
<td>December</td>
<td>3,768</td>
</tr>
</tbody>
</table>
## Preliminary results

<table>
<thead>
<tr>
<th>Market (MW)</th>
<th>Load</th>
<th>-2.5%</th>
<th>-1.5%</th>
<th>0% (Ref)</th>
<th>+1.5%</th>
<th>+2.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6.95%</td>
<td>8.04%</td>
<td>9.63%</td>
<td>12.27%</td>
<td>14.14%</td>
<td></td>
</tr>
<tr>
<td>900</td>
<td>5.37%</td>
<td>5.97%</td>
<td>7.32%</td>
<td>9.17%</td>
<td>10.88%</td>
<td></td>
</tr>
<tr>
<td>1700 (Ref)</td>
<td>4.14%</td>
<td>4.98%</td>
<td>5.93%</td>
<td>7.82%</td>
<td>8.72%</td>
<td></td>
</tr>
<tr>
<td>2400</td>
<td>3.69%</td>
<td>4.32%</td>
<td>5.11%</td>
<td>6.67%</td>
<td>7.48%</td>
<td></td>
</tr>
<tr>
<td>3200</td>
<td>3.38%</td>
<td>3.98%</td>
<td>4.64%</td>
<td>5.91%</td>
<td>7.03%</td>
<td></td>
</tr>
<tr>
<td>4000</td>
<td>3.10%</td>
<td>3.80%</td>
<td>4.37%</td>
<td>5.42%</td>
<td>6.53%</td>
<td></td>
</tr>
</tbody>
</table>

- Reference case LOLP ~ 5.9%
- Low market and high load case LOLP ~ 14.1%
- High market and low load case LOLP ~ 3.4%
Preliminary Observations

- Energy GPS analysis of SW import availability shows high values for Oct-Jun
  - Upper end values likely limited by tie capacity
  - Low end values unrealistic
  - Reconsider the reference case value of 1700 MW

- **500 MW** of additional new resource brings the ref case LOLP down to 5%

- **455 to 535 MW** of additional standby resources brings the ref case LOLP down to 5%