The 2019 Plan

The 2019 Electricity Supply Resource Procurement Plan…

…is a comprehensive analysis of possible ways to meet our customers’ current and future needs.
…considers a wide range of future conditions, resource types and resource combinations.
…is based on current estimates, forecasts, and assumptions (technologies, future prices, etc.).
…uses proxy resource characteristics and costs.
…is a snapshot in time (1st quarter 2019) and is updated on a regular basis (2/3 years).
…uses proxy resource characteristics and costs.

Key Take-Away: NorthWestern is **short on capacity** and **so is the region**.
NorthWestern Energy 2015 Resource Plan – Capacity Need

The graph shows the projected capacity needs from 2016 to 2034. The capacity requirements are projected to increase from approximately 800 MW in 2016 to over 1600 MW by 2034. The lines and bars represent various sources of energy, including Current Wind, CELP, Physical Instrument, Basin Creek, Colstrip 4, Colstrip 3, YELP, David Gates Generating Station, and Hydro - Avg capacity.

Key points:
- Winter Peak + 15% is projected to rise significantly over the years.
- The graph indicates a steady increase in capacity needs, with a notable rise in the latter years.
NorthWestern Energy’s Current Capacity Deficit

Winter Peak Loads and Capacity Contributions of Existing and Needed Resources

- Peak Load Forecast
- Peak Load Forecast plus 16% Reserve Margin
- Existing Resource (Peak Capability)

MW

Existing Resources
Winter Peak Plus 16%
Retail Winter Peak

2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039

645 MW
The market is changing - NWPCC

Table 6 - 5: Announced Planned Coal Retirements in the Pacific Northwest*

<table>
<thead>
<tr>
<th>Plant</th>
<th>Retirement Date</th>
<th>Capacity &amp; Operating Year</th>
<th>Location</th>
<th>Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.E. Corette</td>
<td>2015</td>
<td>173 MW (1968)</td>
<td>MT</td>
<td>PPL Montana</td>
</tr>
<tr>
<td>Hardin</td>
<td>2018</td>
<td>116 MW (2006)</td>
<td>MT</td>
<td>Rocky Mountain Power¹</td>
</tr>
<tr>
<td>North Valmy 1</td>
<td>2019²</td>
<td>254 MW (1981)</td>
<td>NV</td>
<td>Idaho Power, Sierra Pacific Power (50/50)</td>
</tr>
<tr>
<td>North Valmy 2</td>
<td>2025</td>
<td>268 MW (1985)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boardman</td>
<td>2020</td>
<td>600 MW (1980)</td>
<td>OR</td>
<td>Portland General Electric, Idaho Power (90/10)</td>
</tr>
<tr>
<td>Centralia 1</td>
<td>2020</td>
<td>670 MW (1971)</td>
<td>WA</td>
<td>TransAlta</td>
</tr>
<tr>
<td>Centralia 2</td>
<td>2025</td>
<td>670 MW (1971)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colstrip 1</td>
<td>2022</td>
<td>360 MW (1975)</td>
<td>MT</td>
<td>Puget Sound Energy, Talen Energy (50/50)</td>
</tr>
<tr>
<td>Colstrip 2</td>
<td></td>
<td>360 MW (1976)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jim Bridger 1</td>
<td>2028</td>
<td>578 MW (1974)</td>
<td>WY</td>
<td>PacifiCorp (2/3)¹, Idaho Power (1/3)</td>
</tr>
<tr>
<td>Jim Bridger 2³</td>
<td>2032</td>
<td>578 MW (1975)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Regional Utility Total</strong></td>
<td><strong>1,899 MW</strong></td>
<td><strong>Regional Total (incl. IPPs)</strong></td>
<td><strong>3,772 MW</strong></td>
<td></td>
</tr>
</tbody>
</table>

¹ Not related to PacifiCorp  
² Uncertainty remains regarding North Valmy unit 1 retirement date of 2019 or 2025  
³ Per PacifiCorp’s 2017 IRP Update  
⁴ Regional total includes only PacifiCorp’s load to the region (38%)

* For detailed project information, please see the Council’s generating resources project database
John Fazio is the Senior Power Systems Analyst for the Northwest Power and Conservation Council, located in Portland OR. The Council is an interstate compact agency made of the four northwestern states encompassing the Columbia River drainage (WA/OR/ID/MT). MT’s governor appoints two members to the Council (currently Jennifer Anders and Bo Downen – they are Cabinet level appointments). John leads an annual adequacy assessment (a 5-yr look forward for the region) for the Council, and is considered to be a world-class expert on the subject of resource adequacy.

Link to John Fazio video: https://vimeo.com/354085917
The market is changing - NWPCC

Additions and Retirements since the Seventh Power Plan
(incl. announced planned retirements)

- Solar
- Natural gas
- Petroleum
- Wind
- Hydro
- Energy Storage
- Coal (retirement)
- Biomass (retirement)
- Hydro (retirement)
- Natural gas (retirement)

Installed Nameplate Capacity (MW)


- Klamath Hydro
- Hardin
- Colstrip 1, 2
- North Valmy 1
- Jim Bridger 1
- Jim Bridger 2
- Boardman
- Centralia 1
- Centralia 2
- North Valmy 2
We rely heavily on the regional market.
NorthWestern Energy’s Current Capacity Deficit

Winter Peak Loads and Capacity Contributions of Existing and Needed Resources

- Peak Load Forecast
- Peak Load Forecast plus 16% Reserve Margin
- Existing Resource (Peak Capability)
- 645 MW
NorthWestern Energy’s Current Capacity Deficit

Winter Peak Loads and Capacity Contributions of Existing and Needed Resources

- Peak Load Forecast plus 16% Reserve Margin
- Peak Load Forecast
- Targeted Resource Additions to Fill Need (Peak Capability)
- Existing Resource (Peak Capability)

MW

Existing Resources | Needed Resources | Winter Peak Plus 16% | Retail Winter Peak

2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039
• **Competitive Solicitation (RFP)**

- Actual resource decisions will be based on specific proposals, site characteristics, and actual costs and designs submitted by bidders.
- The process will include monitoring by the Public Service Commission, Montana Consumer Counsel, and independent third-party observers and evaluators.
Thank You