Regional Adequacy – On the Minds of Regional Energy Leaders

October 2\textsuperscript{nd} Northwest Pool Symposium:

- It’s a shared regional challenge.
- There is urgency.
Analysts Show Varying Results, But All Agree: PNW Faces a Significant Capacity Gap

- E3 estimates a **gap of 8 GW** by 2030.
- The Northwest Power and Conservation Council estimates a **Loss of Load Probability of 33% by 2024** (5% is the standard).

### 2021-24 Resource Adequacy Assessments

- **2021 LOP = 7 to 8%**
  - 1,680 MW Retired Capacity (Hardin, Colstrip 1 and 2, Boardman, Centralia 1)
- **2022 LOP = 7 to 8%**
  - 127 MW Retired Capacity (N Valmy 1)
- **2023 LOP = 7 to 8%**
  - No coal retirements
- **2024 LOP = 8.2%** - with mostly winter shortfalls
  - No coal retirements in reference case
- **2024 LOP = 33%** - with both winter and summer shortfalls
  - 1,853 MW Early retirement case (Centralia 2, Bridger 1 and 2, N Valmy 2)
And Utilities are Building New Resource Types into their Plans

- Multiple tools, including “distributed flexibility”, are being used to fill the gap.

- For example, PGE is aggressively acquiring DR in their IRP over the next five years, while Pacificorp is adding more DR and storage (mostly paired) to their mix.

2019 IRP Action Plan
1.A. Acquire all cost-effective energy efficiency (157 MWa by 2025)
1.B. Acquire all cost-effective & reasonable distributed flexibility (values by 2025):
   - 14 MW (Low: 73 MW, High: 297 MW) winter demand response
   - 211 MW (Low: 168 MW, High: 383 MW) summer demand response
   - 137 MW DSG
   - 4.5 MW (Low: 2.2 MW, High: 11.2 MW) dispatchable customer storage
   *Values are cumulative and at the meter
2. Conduct Renewables RFP in 2020
   (~150 MWa RPS-eligible resources, online by end of 2023)
   - Timing allows PGE to capture 100% PTC for customers
   - Propose cost containment screen similar to the 2018 Renewables RFP
   - Propose to return value of RPSs generated prior to 2020 to customers
3. Pursue staged procurement process to secure capacity to maintain resource adequacy, while considering the impact of uncertainties
   3.A. Pursue cost-competitive existing capacity in the region as RPS regulations
   3.B. Update the OUPC and stakeholders on PGE’s resource needs in 2020
   3.C. Conduct a Non-Emitting Capacity RFP in 2021 for capacity needs remaining after above actions
2018 Potential Study Found 2,000+ MW of Achievable DR in BPA’s Public Service Territory

- 19 products were modeled along a cost curve (20 year levelized).
- Quantity of achievable DR was estimated using regional data and national benchmarks for reasonable penetration.

<table>
<thead>
<tr>
<th>Product</th>
<th>Summer Achievable Potential (MW)</th>
<th>Percent of Area System Peak—Summer</th>
<th>Levelized Cost ($/kW-year) Summer</th>
<th>Winter Achievable Potential (MW)</th>
<th>Percent of Area System Peak—Winter</th>
<th>Levelized Cost ($/kW-year) Winter</th>
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<tbody>
<tr>
<td>Residential DLC—Space Heating</td>
<td>0</td>
<td>0.0%</td>
<td>N/A</td>
<td>214</td>
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<td>$52</td>
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<td>Residential DLC—Water Heating*</td>
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<td>Residential Water Heater Timers*</td>
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<td>C&amp;I Interruptible Tariff</td>
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<td>2,363</td>
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</table>

Batteries Will Play a Role on the Grid

- Batteries **prices continue to fall** (30-50% more in the next 10 years), and deployment expected to rise 3x by 2020.

- BPA has a battery focused initiative (2017-present), and appreciates the partnership with utilities to explore battery uses.

What’s Next for BPA and DER

- Continue the dialogue with customer utilities on innovative programs and DER learnings.
- Work with the BPA Resource Program (2020 Program) on how DERs may fit into future capacity needs.
- Work with the Power Council (and the Demand Response Advisory Committee) on assumptions for the coming 2021 Power Plan.
- Evaluate opportunities for new types of grid assets, e.g. utility scale batteries, to provide cost effective solutions for BPA Power and Transmission (e.g. Non-Wires Alternatives)
- Questions? Use DER@bpa.gov or contact Lee Hall: ljhall@bpa.gov