BPA and Clean Energy Resources

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Overview of BPA

- Federal power marketing administration, US Department of Energy.
- Own & operate 15K miles of high voltage transmission line.
- Markets power from 31 Federal dams, Columbia Generating Station, and non-Federal generators.
- Funds regional efforts to protect and rebuild fish and wildlife affected by hydropower development.
- Energy Efficiency is BPA’s primary resource acquisition.
FCRPS Annual Operating Cycle

- **July – August**: Draft the system to augment flows supporting the downstream migration of juvenile fish
- **September – October**: Operate the system to prepare for Fall fisheries operations at Lake Roosevelt, Vernita Bar, and downstream of Bonneville
- **November – December**: Provide hydraulic conditions for Chum, Fall Chinook, and Kokanee spawning. Meet Winter flood control requirements at headwater projects
- **January – April**: Draft the system for flood control while supporting protection elevations for Chum and Fall Chinook
- **May – June**: Refill the system on the Spring freshet
# BPA’s Resources & Carbon Profile

## BPA Resource Mix

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>2010</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydropower</td>
<td>76%</td>
<td>85%</td>
</tr>
<tr>
<td>Nuclear</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>Market Purchases</td>
<td>12%</td>
<td>3%</td>
</tr>
<tr>
<td>Other (e.g., wind, solar)</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Emissions Factor</strong></td>
<td>188.7 lbs CO₂ per MWh</td>
<td>26.5 lbs CO₂ per MWh</td>
</tr>
</tbody>
</table>

## Average Emissions Factors – 2016

<table>
<thead>
<tr>
<th>Source</th>
<th>CO₂ per MWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPA</td>
<td>26.5 lbs</td>
</tr>
<tr>
<td>Northwest Power Pool</td>
<td>651.2 lbs</td>
</tr>
<tr>
<td>National</td>
<td>998.4 lbs</td>
</tr>
</tbody>
</table>

*Source: 2016 EPA Emissions & Generation Resource Integrated Database (eGrid)*
BPA Customers

- Power Preference Customers
  - Publically-owned utilities, Tribal Governments, Federal Agencies, Direct Service Industries,
- Other Customers
  - Investor-Owned Utilities, Power Marketers, Resource Developers

BPA also sells or exchanges power with entities in Canada, California, and other parts of the Western US
Delivering on our public responsibilities through a commercially successful business

BPA 2018–2023 Strategic Plan
BPA 2018–2023 Strategic Goals

Delivering on our public responsibilities through a commercially successful business.

#1 STRENGTHEN FINANCIAL HEALTH

#2 MODERNIZE ASSETS & SYSTEM OPERATIONS

#3 PROVIDE COMPETITIVE PRODUCTS & SERVICES

#4 MEET CUSTOMER NEEDS EFFICIENTLY & RESPONSIVELY
Priority Firm Power Rates 2010–2020

FY 2018–19 market estimated with BP-18 Rate Case market price forecast.
#2 MODERNIZE ASSETS & SYSTEM OPERATIONS
Grid Modernization

- Maximize capacity and improve grid efficiency
- Improve Power and Transmission revenues

Diagram showing the following:
- Automation
- Improved Accuracy
- Enhanced Visibility
#3 PROVIDE COMPETITIVE POWER PRODUCTS & SERVICES
## Surplus Marketing Focus

<table>
<thead>
<tr>
<th>Low Value</th>
<th>High Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Green Preference and Capacity</td>
<td>Green Preference and Capacity</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>No Green Preference and No Capacity</td>
<td>Green Preference and No Capacity</td>
</tr>
</tbody>
</table>

The table above categorizes marketing strategies based on green preference and capacity. The low value strategies include scenarios without green preference or capacity, while the high value strategies involve scenarios with both green preference and capacity.
Thank you!
Additional Slides
Aligning EE to Meet Business Needs

- BPA’s 2018 Resource Program identified both energy efficiency and demand response as cost-effective solutions to meet long-term power needs.

- Demand response helps meet system capacity needs in the summer.

- Energy efficiency helps meet system energy needs in the winter.

Winter energy need (in megawatts) under critical conditions

- Energy needs
- Energy efficiency

Market purchases

Market sales
Lower Snake River Dams

80 Year Average Generation and Sustainable Capacity

- **Average Sustainable 120Hr Capacity**
- **Average Generation (Energy)**