Markets in the West
Western Power Players
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Western Area Power Administration
About WAPA

• Serve 40 million Americans
• 15-state footprint
• 1.4 million square miles
• 49 offices
• ~700 wholesale customers
  • Municipalities
  • Native American Tribes
  • Rural electric cooperatives
  • Irrigation districts
  • Public utility districts
  • Federal and state agencies
Three lines of business

- **Federal Hydropower**
  - Market 10,002 MW of power from 57 plants
  - Buy and sell power to provide firm electric service

- **Transmission System & Service**
  - 17,000+ miles of transmission lines
  - Operate 3 balancing areas
  - 15-state operating region

- **Transmission Infrastructure Program**
  - Independent $3.25 B borrowing authority
  - Projects must facilitate renewables
  - Projects must have a nexus in WAPA’s footprint
What we manage

• $6.1 billion in assets
• 112,515 structures
• 17,272 miles of transmission line
• 350 substations
• 293 transformers
• 658 buildings
• 489 communication sites
Market strategy and vision

Value Statement
• Ensure WAPA's ability to meet our mission, serve our customers and operate in a changing environment.

Objectives
• Protect and reinforce the importance of federal hydropower and WAPA's transmission system.
• Maintain and ensure reliability.
• Determine and manage outcomes supporting the viability of WAPA's mission.
• Ensure market participation optimizes value for WAPA's customers.
• Balance lowest possible cost with sound business principles.
• Accommodate resource diversity for WAPA's customers.

One size does not fit all.
History in market efforts

• UGP-East joined SPP RTO in 2015.

• UGP-West, RM and CRSP joined SPP WEIS in February 2021.

• SN joined CAISO Western EIM in March 2021.

• Participation in numerous proposals, initiatives & groups in the West.
# Real-time market benefits

<table>
<thead>
<tr>
<th>CAISO Western EIM</th>
<th>SPP WEIS</th>
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<tbody>
<tr>
<td>As of April 2022, net benefit of <strong>$591,759.</strong></td>
<td>More than doubled renewable generation in BA.</td>
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<td>Hydro responsiveness capable of leveraging 5-minute pricing.</td>
<td>Maximizing transfers between our BAs.</td>
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<td>Use EIM to aid in maintaining the necessary reservoir levels.</td>
<td>Reduced reliance on bilateral market.</td>
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Current day activities

• DSW joining CAISO Western EIM in April 2023.
• Evaluating day-ahead market proposals.
• Exploring participation in Western Resource Adequacy Program.
• Participating in SPP RTO-West initiative.
• Joined Western Markets Exploratory Group in June.
# Day-ahead markets: Benefits, opportunities & considerations

<table>
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<tr>
<th>Benefits/Opportunities</th>
<th>Considerations</th>
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<tr>
<td>Resource diversity and renewable integration.</td>
<td>Governance</td>
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<td>Net power cost savings.</td>
<td>Transmission</td>
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<td>Assure system operators have adequate resources available in real time.</td>
<td>Resource Sufficiency</td>
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<td>• Greater planning horizon.</td>
<td></td>
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<td>• Better modeling of generation.</td>
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<td>Greenhouse Gas Accounting</td>
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Key points on markets

• Energy imbalance, day-ahead markets and RTOs are all mechanisms to support the ongoing reliability and economic performance of the electricity system in the West.

• Reliability is much more challenging to quantify than economics, but equally if not more critical.

• Each advancement in market type increases benefits and complexity.

• For day-ahead markets without RTO, transmission use and compensation are particularly tricky.

• Governance is always a challenge.

• Each utility will need to be the best choice for their consumers and stakeholders based on their needs.