What is WAPA?

- One of four PMAs under the DOE
- Wholesale electricity supplier
- Around 700 customers
- Customers, in turn, serve 40 million Americans in the West
Colorado River Storage Project (CRSP) Management Center

Projects
- Salt Lake City Area/Integrated Projects (SLCA/IP)
  - Colorado River Storage
  - Collbran
  - Dolores
  - Rio Grande
  - Seedskadee
- Provo River
- Falcon-Amistad
- Olmsted

Glen Canyon Dam, BOR
CRSP Customers in the West

COLORADO RIVER ENERGY DISTRIBUTORS ASSOCIATION
MEMBERS AND PREFERENCE CUSTOMERS

[Map showing CRSP Customers in the West]
Drought in the Upper Colorado River Basin

• Extreme drought affecting multiple projects across WAPA.
• In some areas, causing pressure on rates and purchase power and wheeling reserves.
• Collaborating with customers and generating agencies on solutions and mitigation.
Latest Hydrology Report

• 20+ years of prolonged drought in Colorado River and exceptional bad water year in 2021.

• Lake Powell inflow 26% of average; storage for SLCA/IP at 39% of capacity (down from 49% one year ago).

• Emergency water shortage declared in August, which will limit releases from Lake Mead and reduce water deliveries.

• WAPA's Monthly Hydropower Conditions report.

What this means for hydropower

• 1-in-3 chance Glen Canyon Dam may be at minimum power pool in 2023 without drought response operations.

• Reduced output at Hoover Dam. Less effect at Parker & Davis dams.
Lake Powell Elevation Continues to Drop

At 3500 ft we generate about 35% less energy than we would releasing the same volume of water at 3700 ft.

<table>
<thead>
<tr>
<th>Elevation (feet)</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>3700</td>
<td>100%</td>
</tr>
<tr>
<td>3600</td>
<td>82.6%</td>
</tr>
<tr>
<td>3530</td>
<td>70.4%</td>
</tr>
<tr>
<td>3500</td>
<td>65.2%</td>
</tr>
<tr>
<td>Below 3490</td>
<td>0%</td>
</tr>
</tbody>
</table>

3490’ minimum power pool

Hydraulic head dropping reducing efficiency of generators
Projected Lake Powell end-of-month elevations from the latest CRMMS-ESP and 24-Month Study inflow scenarios.
Projected Lake Powell end-of-month elevations from the latest CRMMS-ESP and 24-Month Study inflow scenarios.
**Chance of Reaching Critical Reservoir Elevations, Stress Test Hydrology**

<table>
<thead>
<tr>
<th>Run</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lake Mead less than 1,025 feet</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 2021</td>
<td>0%</td>
<td>17%</td>
<td>44%</td>
<td>58%</td>
<td>63%</td>
</tr>
<tr>
<td>August 2021 Corrected</td>
<td>0%</td>
<td>25%</td>
<td>44%</td>
<td>59%</td>
<td>63%</td>
</tr>
<tr>
<td>Difference</td>
<td>0%</td>
<td>+8%</td>
<td>0%</td>
<td>+1%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Lake Mead less than 1,000 feet</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 2021</td>
<td>0%</td>
<td>0%</td>
<td>9%</td>
<td>21%</td>
<td>23%</td>
</tr>
<tr>
<td>August 2021 Corrected</td>
<td>0%</td>
<td>0%</td>
<td>13%</td>
<td>19%</td>
<td>22%</td>
</tr>
<tr>
<td>Difference</td>
<td>0%</td>
<td>0%</td>
<td>+4%</td>
<td>-2%</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Lake Powell less than 3,525 feet</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 2021</td>
<td>79%</td>
<td>30%</td>
<td>25%</td>
<td>30%</td>
<td>34%</td>
</tr>
<tr>
<td>August 2021 Corrected</td>
<td>88%</td>
<td>53%</td>
<td>41%</td>
<td>44%</td>
<td>41%</td>
</tr>
<tr>
<td>Difference</td>
<td>+9%</td>
<td>+23%</td>
<td>+16%</td>
<td>+6%</td>
<td>+7%</td>
</tr>
<tr>
<td><strong>Lake Powell less than 3,490 feet</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 2021</td>
<td>0%</td>
<td>5%</td>
<td>17%</td>
<td>16%</td>
<td>22%</td>
</tr>
<tr>
<td>August 2021 Corrected</td>
<td>3%</td>
<td>34%</td>
<td>25%</td>
<td>28%</td>
<td>34%</td>
</tr>
<tr>
<td>Difference</td>
<td>+3%</td>
<td>+29%</td>
<td>+8%</td>
<td>+12%</td>
<td>+12%</td>
</tr>
</tbody>
</table>

All results computed as the chance of falling below the threshold in any month in the calendar (water) year for Lake Mead (Lake Powell).
Drought Response Operations Agreement (DROA)

- Intent is to prevent Lake Powell from dropping below 3,525 ft of elevation.
- Reclamation and the Basin States began drafting a plan after the June 24-month study forecasted Lake Powell dropping below 3,525 ft. CRSP
  - Reclamation also consulting with WAPA and other Federal partners
- A public webinar will be held to brief interested parties on the draft plan.
- Plan will be finalized by April.
- Reclamation made emergency releases from Flaming Gorge, Aspinall, and Navajo in July – December 2021.
Additional DROA Emergency Releases WY 2021

- **Acre-feet**
  - July: 13,000
  - August: 42,000
  - September: 43,000
  - October: 27,000
  - November: 10,000
  - December: 10,000
  - Total: 125,000

- **Breakdown by Reservoir**
  - Flaming Gorge
  - Blue Mesa
  - Navajo

- **Legend**
  - Flaming Gorge
  - Blue Mesa
  - Navajo
Mitigation

- Cost Reduction/Deferment
  - O&M
  - Capital
- New Rate Effective Dec 1
  - One year after last rate
- Non-Reimbursable Expenses
  - Anticipating no transfer to Reclamation ($21.4M) for environmental programs (Constructive Return) in FY2022
- Experiments

Considerations:
- Safety
- Reliability
- Incremental future costs
Purchase Power and Wheeling

• Source of funds to purchase power when hydropower cannot meet contractual power commitments.
• Use varies each year based on multiple factors.
• Receipts can be used for reserves up to amount specified by Congress in budget process.
• Constrained due to budget process decisions, high PPW costs and other reasons.
• Exploring short- and long-term alternatives.
Responsibilities

- Owns and operates the transmission system infrastructure
- Markets, schedules and delivers energy to long term firm electric service customers
- Dispatches generation from the powerplants at the dams for electrical regulation and emergencies
- Rate setting and repayment of project debt to U.S. Treasury from revenue
- Owns, operates, and maintains dams and power plants
- Water management (reservoir management, irrigation, flood control, and water compact deliveries)
- Generates power which is delivered to WAPA at the plant transformers
Basin Fund cash flow

Revenue comes in over time

- Power Rates
- Power Revenues
- Direct Appropriations

CRSP Basin Fund

Cash outlays are immediate

- BOR & WAPA O&M Funding
- Replacement s and Additions (RRADs)
- Purchase Power for Firm Contracts
- Non-reimbursable activities
- Constructive Return

Principal & interest return of investment to the U.S. Treasury

Revenue comes in over time

Cash outlays are immediate

- BOR & WAPA O&M Funding
- Replacement s and Additions (RRADs)
- Purchase Power for Firm Contracts
- Non-reimbursable activities
- Constructive Return

Principal & interest return of investment to the U.S. Treasury
Basin Fund Obligations

• Manage the financial requirements of the CRSP Act
  • Glen Canyon, Aspinall, Flaming Gorge
  • Several additional units that include dams, reservoirs, powerplants, transmission facilities and other related works

• Reclamation operations are funded by periodic transfers from the CRSP Basin Fund to a Reclamation subaccount
  • Allows Reclamation to maintain programmatic oversight of their facilities
  • Funds are transferred approximately on a monthly basis and only the amount they need to operate for the fiscal year
What We Are Doing

• Internal meetings discussing PPW, rates and contract challenges due to adverse conditions.

• Rate process adjusts how we will manage purchase power costs.
  • Removes purchase power and wheeling expenses from rate to allow customers more flexibility.
  • Can still purchase power through WAPA on a monthly pass-through-cost basis.
  • WAPA and BOR are deferring O&M where prudent.
  • Rate was approved and will be in effect for 2 years starting December 1, 2021.
CRSP Upcoming Challenges

• Drought conditions

• Costs/Rates

• Basin Fund Cashflow

• Markets
Contact/Follow Us

Tim Vigil
970-252-3005
tvigil@wapa.gov

wapa.gov
@westernareapowr
western-area-power-administration
WesternAreaPower1
westernareapower
wapa.gov