Central Valley Project (CVP)
Reclamation’s Water & Power Operations Outlook for Summer 2022

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Central Valley Operations Office
California-Great Basin Interior Region 10
U.S. Bureau of Reclamation
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Agenda

• Background on CVP, CVO and Kristin White
• 2022 CVP Water
• 2022 CVP Hydropower
The Central Valley Project (CVP)

- 20 dams & reservoirs
- 500 miles of canals
- 11 powerplants
- 10 pumping plants
- Average annual production
  - About 5 million acre-feet ag delivery (approx. 3 mil acres of farm land)
  - About 600,000 acre-feet M&I supply (about 2 million people)
  - About 4,500 gigawatt hours hydroelectric energy (approximately a quarter is first delivered to Project Use Energy loads)
- Central Valley Operations Office
  - Line authority for directing and integrating CVP water and power operations.
CVP WY22 Conditions Overview

- Navigating a third dry year with goals of public health and safety, and storage conservation
- On the heels of a dry 2020 and 2021
- Shasta storage currently around 1.8 MAF (47% of avg)
- WY22 meteorology and hydrology whiplash
- Bracing for unprecedented summer/fall Shasta operations
Northern Sierra 8-Station
Precipitation Index for Water Year 2022 – Updated on May 13, 2022 08:35 AM

Note: Monthly totals may not add up to seasonal total because of rounding.
Water Year Monthly totals are calculated based on Daily precipitation data from 12am to 12am PST.

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<tr>
<th>Water Year</th>
<th>Average</th>
<th>WY 2022</th>
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Trinity Lake Storage Levels

Total Reservoir Capacity: 2,447,650 AF

—  2020–2021  —  2021–2022 (current)
Lake Shasta Storage Levels

Total Reservoir Capacity: 4,552,000 AF

Historical Average
Total Reservoir Capacity
TOC
1976-1977 (dry)
1982-1983 (wet)
2013-2014
2014-2015
2020-2021
2021-2022 (current)
Folsom Lake Storage Levels

Total Reservoir Capacity: 977,000 AF

Historical Average

- TOC
- 1976-1977 (dry)
- 1982-1983 (wet)
- 2013-2014
- 2014-2015
- 2020-2021
- 2021-2022 (current)

Water Year (October 1 - September 30)

Folsom Lake Storage (AF)

Oct 1      Nov 1      Dec 1      Jan 1      Feb 1      Mar 1      Apr 1      May 1      Jun 1      Jul 1      Aug 1      Sep 1

820,351 AF
WY22 Drought Actions

- Delta:
  - Requested and received relaxations for delta requirements April 1 – June 30 to limit how much stored water needs to be released for delta needs
  - Backfill West False River Drought Barrier notch to help with summer salinity

- Upstream Operations
  - Shasta Temperature Management plan and reduced releases
  - Trinity storage conservation (reduced imports) and temperature management
  - Rely heavily on Folsom and Oroville to maintain delta operations in the summer

- Allocations:
  - SWP: Reduced from 15% to 5%, which is primarily meeting public health and safety
  - CVP: 0% agricultural and all M&I reduced to only public health and safety

- Settlement Contractors:
  - Feather River: 50% reduction to deliveries
  - Sacramento River: 18% based on availability from Shasta
  - No north-to-south SRSC transfers expected this water year
  - San Joaquin River Exchange Contractors: 75% based primarily on availability from the upper San Joaquin
WY22 Shasta Temperature Mgmt Plan

• Keswick releases set through Interim Operation Plan process
  • Max monthly average releases May through August = 4,500 cfs

• Strategy:
  • Shape available cold water to achieve maximum benefit given shutter capabilities
  • Conserve coldwater for the fall to ensure operations of Livingston Stone National Fish Hatchery

• Process:
  • Plan Approval received in early May
  • Adjust and revise if necessary once Shasta Reservoir stratifies

• Areas of Uncertainty Unique to 2022
  • Flow range below historical lowest summer flows
  • Temperature models not calibrated for this low flow range
  • Downstream public health and safety demands that can not be met from other sources
  • Infrastructure limitations
  • Trinity River imports and Trinity River Temperature Management
Hydropower Operations Update

- Generation (Base Resource)
  - 3,438 GWh: Average over last 20 years
  - 1,211 GWh: 90% Forecast for next 12 months (April report)

- FY 22 Generation Totals To Date
  - 1023 GWh: Total DA Scheduled Generation
    - $65.9M: Value of Total DA Generation as Scheduled
    - $64.40/MWh

  - 332 GWh: Total DA Scheduled Base Resource
    - $24.6M: Value of DA Base Resource as Scheduled
    - $74.22/MWh

Reference: Avg. FY 22 LMP $57.86/MWh
Avg. FY 21 LMP $46.48/MWh
Hydropower Operations Update cont.

• Minimum Power Pool & Low Reservoir Operations
  • None of the CVP’s reservoirs are forecasted to reach minimum powerpool; however, some operations may approach it closer than previously experienced.
  • Reclamation therefore will be monitoring low reservoir turbine operations for roughness to avoid or mitigate potentially harmful cavitation damage.
  • NCAO has prepared to inject air into the Trinity turbine to smooth operations at low elevations.

• Outages minimized for summer operations
  • Lengthy outages are being minimized and coordinated with WAPA.
  • Trinity Unit 2 is the only CVP unit out for the summer due to the turbine runner in progress of being replaced.

• Forecasted energy: CVP generation to be net producer over the summer months after satisfying Project Use Energy loads.
## United States Bureau of Reclamation - Mid Pacific Region, Central Valley Operations Office

### Forecast of CVP Generation

**Based on USBR 90 Pct Forecast - B2, Dated 4/26/2022**

**Capacity Based on Estimated Gross Head (All values in MW)**

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<thead>
<tr>
<th>Month</th>
<th>Trinity</th>
<th>JF Carr</th>
<th>Spring Creek</th>
<th>Shasta</th>
<th>Folsom</th>
<th>New Melones</th>
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* Trinity - 2 units available starting in November, due to runner replacement, and contingent on contractor schedule.
* Spring Creek - Only 1 unit available starting in October, due to runner replacement, and contingent on contractor schedule.
Updating Aging Infrastructure

• CVP powerplants
  • Constructed 1940s through 1979

• Life extension and capital improvements
  • Turbine runner replacements
  • Generator rewinds
  • Transformer replacements
  • Excitation replacements
  • Breaker replacements

• SMUD and preference customers have been instrumental towards Reclamation’s progress through advanced customer funding and through committee discussions on Reclamation’s planning of major projects.
Contact
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