

# RECLAMATION

*Managing Water in the West*

## **Central Valley Project Cost Allocation Study Update**

**Public Meeting  
November 16, 2012**



U.S. Department of the Interior  
Bureau of Reclamation

# CVP-CAS

## *Central Valley Project Cost Allocation Study*

### Meeting Purpose

- Power Analysis Approach and Assumptions
- PLEXOS Model Presentation



RECLAMATION

# CVP-CAS

## Central Valley Project Cost Allocation Study

### Background

- Cost Allocation Study Purpose and Process
  - [www.usbr.gov/mp/cvp/cvp-cas/index.html](http://www.usbr.gov/mp/cvp/cvp-cas/index.html)
- Summary of 6/29/12 Meeting
  - Review Assumptions to Date
  - Overview of the Allocation Analysis Approach for Project Purposes



# **CVP-CAS** *Central Valley Project Cost Allocation Study*

## **Announcements and Feedback**

- Reclamation's Process to Respond to Public Comments



**RECLAMATION**

# RECLAMATION

*Managing Water in the West*

## **Central Valley Project Cost Allocation Study – Power Function**

**Public Meeting  
November 16, 2012**



U.S. Department of the Interior  
Bureau of Reclamation

# CVP-CAS

## Description of CVP Power Resource

CVP Power Plant Capacities (at unity power factor)		
Power plants	Reservoir Storage Per 1000 Acre Feet (TAF)	Capacity (MW)
Folsom	1,000	215
Nimbus	8.8	17
New Melones	2,400	383
San Luis	900	202
O'Neill	Forebay	14
Shasta	4,500	710
Keswick	24	117
Trinity	2,400	140
Spring Creek	Tunnel, Clear Cr.	180
Judge Francis Carr	Tunnel, Lewiston	171
<b>Total</b>	<b>11,200</b>	<b>2,149</b>

- ❑ The average annual net generation (less station service) for CY2005 to CY2010 was 4,560 GWH
- ❑ 40 - 60 MW regulation (up and down) provided to Balancing Authority of Northern California (BANC)

# CVP-CAS

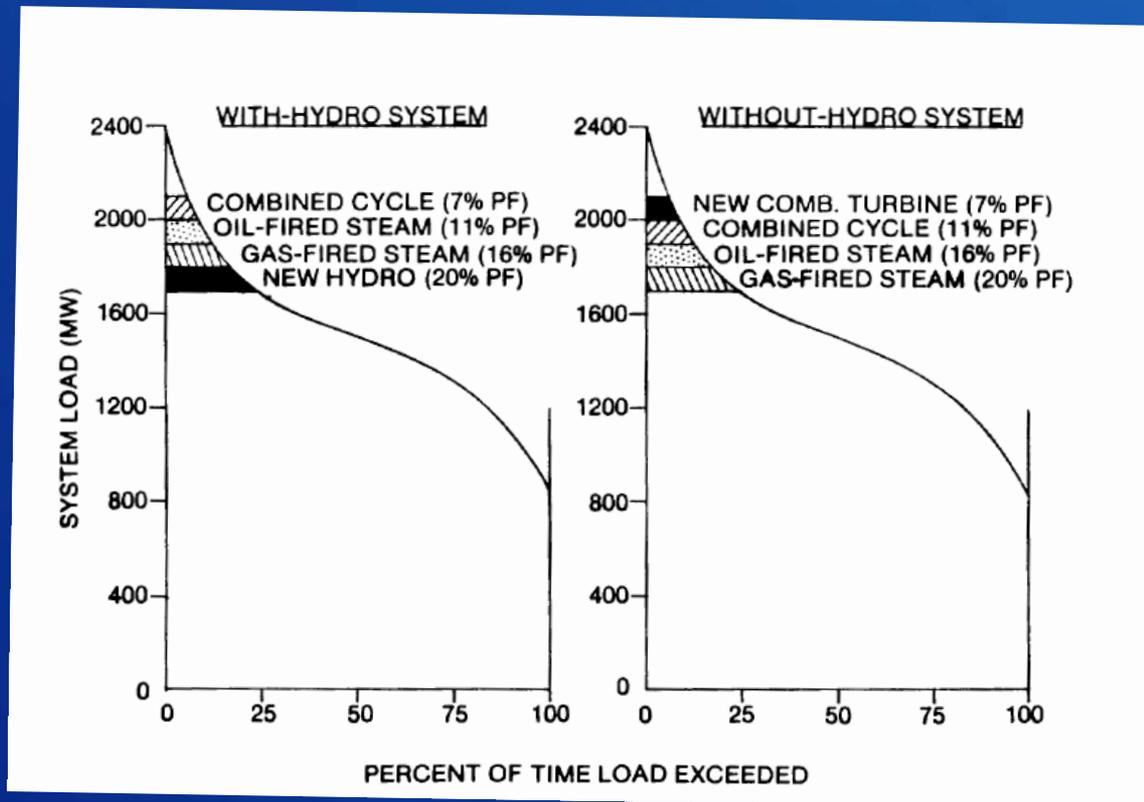
## CVP Cost Allocation Study: Methodology for Benefits Analyses

- Streamlined Methodology for all Functions
  - Evaluate Future Benefits
  - If Future Benefits > Cost of Single Purpose Alternative (SPA), then no need to evaluate Past Benefits
- National or Regional Perspective
  - P&Gs and Reclamation Manual require economic analyses to measure benefits to society
  - CVP Power Benefits evaluated in terms of value to Western Interconnection or California power grid
  - Power Benefits in Federal feasibility studies, cost allocations, etc. have been consistently valued in this way since, at least, 1970s

# CVP-CAS

## Power Benefits: Historical Methods

- Reclamation Instructions spelled out Methods
- Load Duration Curves
- Rudimentary Production Cost Models: OEP, SAGE
- Economic Benefit is Alternative Cost of Power Facility Producing Comparable Benefits



# CVP-CAS

## Power Benefits: Current Methods

- Current Computerized Tools Allow for
  - Western Interconnection-wide Dispatch of Generation to meet Load and Reserve Requirements
  - Optimal Power Flow (OPF) Models are constrained by transmission limits
  - Thermal and Hydro Plants dynamically Dispatched
  - Monthly, Weekly, Daily, Hourly and Sub-hourly Time-steps Possible
  - Western Electricity Coordinating Council's (WECC) Transmission Expansion Planning Policy Committee (TEPPC) has developed a portable Data Base
  - CPUC Long-term Procurement Plan (LTPP) is well-vetted data base

# CVP-CAS

## Power Benefits Analysis

- CVP Power Benefit measured as “Avoided Costs”
  - Capacity
  - Energy
  - Ancillary Services
  - Renewable Energy Credits
- Modeling tool: PLEXOS
  - Assumption that one or more natural gas-fired combined cycle power plants, or combustion turbines are the most likely mix of thermal power plants to be built absent CVP
  - CVP Operational constraints (BIOP, D-1641, etc) simulated in CALSIM
  - Monthly output from CALSIM is Input to PLEXOS→hourly, daily, weekly constraints reflected in PLEXOS runs

# CVP-CAS

## Power Benefits Analysis

- NCPA Comments suggest use of Market Price Forecast to value Benefits
- PLEXOS Simulates Changing Market Prices
  - 33% Renewable Portfolio Standard by 2020
  - Mandate to modify/retire power plants using once-through-cooling
  - Mandate to reduce Greenhouse Gas (GHG) Emissions
- Uncertainties
  - New Federal Mandates (BIOPs), new State Regulation (Delta Plan Update)
  - Increase in Project Use Requirements (San Luis Drain Solution)

# CVP-CAS

## Single Purpose Alternative (SPA)

- Proposed SPA: Hydropower facilities providing identical benefits as the existing Federal CVP facilities currently generating power
  - Include Cost of CVP Transmission to Load Center
  - Sub-allocate to Project Use and Commercial Power
  - Federal Financing
- NCPA Comments suggest Thermal Power Facilities might be Least-Cost SPA
  - Lower Capital Costs
  - Need to account for GHG Costs
  - Shorter Project Life than Hydro
- Reclamation currently considering evaluation of both Hydro and Thermal SPA and selecting Least Cost SPA

RECLAMATION

# CVP-CAS *Next Steps*

- Document Comments and Responses
- Refinement of Process and Schedule
- Upcoming Public Meeting
  - January 18, 2013



# CVP-CAS *Next Steps: Process, Budget & Schedule*



RECLAMATION



# CVP-CAS

[www.usbr.gov/mp/cvp/cvp-cas/index.html](http://www.usbr.gov/mp/cvp/cvp-cas/index.html)

**Traci Michel, Project Manager**  
tmichel@usbr.gov

RECLAMATION