

## PROGRESS REPORT

# Central Valley Project Hydropower Production

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### HERE'S THE ISSUE

Reclamation's Mid-Pacific Region has eleven hydroelectric powerplants in the Central Valley Project (CVP) with a maximum operation capability of 2,084 megawatts (MW) when all reservoirs are at their fullest. The power generated from these plants helps California meet its energy needs and assists the economy.

#### CVP Powerplants and Capacities:

##### *Northern California Area Office (NCAO) Region*

Shasta Dam	676 MW
Trinity Dam	140 MW
Judge Francis Carr	154 MW
Spring Creek	180 MW
Keswick Dam	105 MW
Lewiston Dam	350 kilowatts (KW)

##### *Central California Area Office (CCAO) Region*

Folsom Dam	207 MW
Nimbus Dam	17 MW
New Melones Dam	383 MW

##### *South-Central California Area Office (SCCAO)*

O'Neill	14.4 MW
San Luis	202 MW

#### *What's a kilowatt?*

When you use electricity to cook a pot of rice for 1 hour, you use 1,000 watt-hours of electricity! One thousand watt-hours equals 1 kilowatt-hour, or 1 kWh. Your utility bill usually shows what you are charged for the kilowatt-hours you use. The average residential rate is 8.3 cents per kWh. A typical U.S. household consumes about 11,000 kWh per year, costing an average of \$900 annually.

Source: Consumer Guide to Home Energy Savings, 8<sup>th</sup> Edition. 2003. Washington, D.C.: ACEEE; [www.aceee.org](http://www.aceee.org).

**A megawatt (MW) is 1,000 kilowatts**

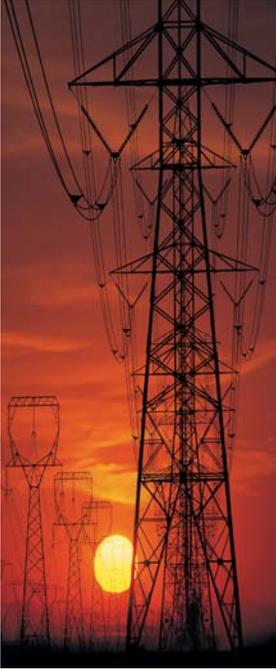
### WHAT RECLAMATION IS DOING

In 2005, CVP power generation produced 4,611,901 megawatt hours (MWh). This year, because of the wet winter and higher reservoir levels, by the end of July the CVP had already produced 4,511,204 MWh – almost as much as the total amount for 2005 yet only halfway through the year. And, there is more to come since generally power generation remains high in August and then production begins to taper off in September.

### WHAT IT TAKES TO GET THE JOB DONE

Producing CVP hydropower takes a team effort. The powerplants are operated 24 hours a day, 365 days a year. Facilities staff implement a comprehensive preventative maintenance program to ensure everything remains running, coordinating outage scheduling for optimization of water and power and accomplishing facility and equipment improvements. In addition, each generator is taken out of service in the fall or early winter for approximately 2-3 weeks for extended maintenance, repairs, and minor improvements.





At NCAO facilities, many upgrades and improvements have recently taken place. At CCAO, both Folsom and Nimbus powerplants are due for major overhauls between 2007 and 2014. With this strategic blend of preventative maintenance and facility enhancements, hydropower production and reliability is increased, but remains very economical.

NCAO has 75 craftsmen, as well as managers, engineers, and other support staff who together keep the power flowing. CCAO has a centralized Operations and Maintenance (O&M) staff consisting of about 30 craftsmen and 6 engineers.

### **RECLAMATION PARTNERS**

From a power perspective, Reclamation's customers are both water and power users; both value the products produced by the CVP. To ensure reliability and dependability of the energy generated by CVP powerplants, Reclamation's power customers began advance financing of the power O&M portion of the CVP budget in 1998. Another power partner, the Western Area Power Administration (WAPA), markets and transmits the energy the CVP produces. WAPA follows a formal procedure for allocating CVP energy to "preference" customers. Those customers have 20-year contracts (that expire in 2024) for their share of the CVP energy that is in excess of Reclamation's water pumping needs.

### **HOW CVP HYDROPOWER CONTRIBUTES TO THE ECONOMY**

CVP energy is sold "at cost" to our customers. This cost is approximately \$30 per MWh to CVP preference customers and is based on specific capital costs due to construction of the CVP plus annual O&M costs allocated to power. This is a good deal for Reclamation customers. For example, during the summer 2006 heatwave, power prices in California's spot energy market peaked at \$400 per MWh but averaged out to \$230 per MWh on July 25. (The spot energy market refers to the purchase of energy by utilities during high usage periods when additional energy is needed to meet demands.) If the 26,000 MWh produced by the CVP on that day had not been available, the needed energy would have been purchased at that time for a much higher price costing California's economy an additional \$5.2 million for that one day, rather than \$780,000. That was a huge savings to California's economy.

### **CVP HYDROPOWER MAKES A DIFFERENCE DURING HEAT WAVES**

CVP power generation is "shaped" so that maximum production is predominantly available during the peak hours of noon to 6 p.m. Releases from Reclamation's regulating reservoirs – Natomas, Keswick, and Lewiston – are held constant during a 24-hour period so they are at their lowest levels by early morning as upstream generators do not generate during that time (off-peak periods). Then, these same upstream generators can be loaded heavily during higher peak demand times, thus filling the regulating reservoirs by early evening. On July 25, CVP hydroelectric powerplants produced about 1,600 MW of the 59,000 MW Californians needed at the peak of electrical usage. At a time of critical power usage, Reclamation's CVP hydropower helped Californians get through the tough times.

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