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May 15, 2015

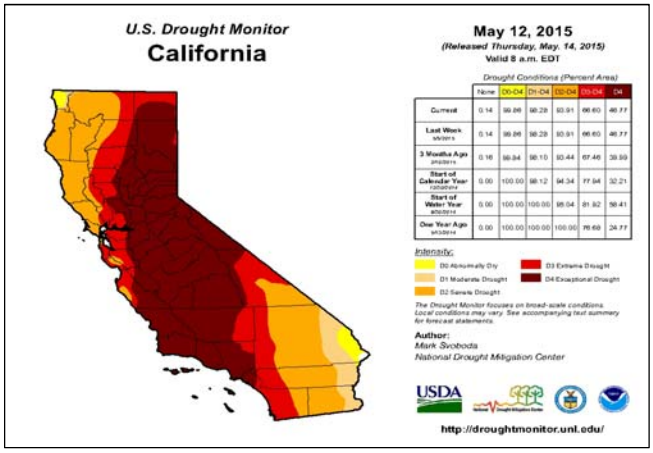
California Drought: Water Supply and Conveyance Issues

Overview

More than 94% of the state of California is experiencing *severe* drought, with 67% experiencing *extreme* drought and 47% *exceptional* drought—the most severe drought classification (see **Figure 1**). Although winter months brought some precipitation, recent snowpack data indicate that the winter of 2015 was the driest since recordkeeping began in the 1950s. The 2014 water year ended September 30, 2014, and was the third-driest year on record in terms of precipitation. Prior to 2014, precipitation during winter and spring 2013 was the lowest on record, leaving water storage reservoirs unusually low. With California now in its fourth year of drought, water deliveries to districts receiving water from federal and state facilities have continued to be curtailed. Some areas have seen wells go dry.

Following the record-low snow water content survey, California Governor Jerry Brown on April 1, 2015, mandated a 25% reduction in water use for nonagricultural users. A drought declaration made by the governor on January 17, 2014, also remains in effect.

Figure 1. California Drought Conditions



Source: U.S. Drought Monitor at http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?CA.

The U.S. Department of Agriculture has announced disaster declarations for most California counties. Such federal declarations make available emergency loans designed to partially compensate for losses producers who cannot obtain commercial credit.

Meanwhile, the Bureau of Reclamation (part of the Department of the Interior) announced cutbacks to Central Valley Project (CVP) water users for 2015. The CVP supplies water to hundreds of thousands of acres throughout the state, as well as to some wildlife refuges and municipal and industrial (M&I) water users. The State Water Project (SWP) announced a slight increase in water deliveries for 2015 over 2014, but deliveries remain very low. The SWP primarily provides water to M&I users and some agricultural users. Major CVP and SWP pumps that supply water for Central and Southern California are located at the southern portion of the Sacramento and San Joaquin Rivers' Delta confluence with the San Francisco Bay (Bay-Delta). Approximately 22 million people receive water from the Bay-Delta annually.

What's at Stake?

The widespread nature of drought conditions, coupled with low water supplies in the state's major reservoirs and regulatory restrictions on CVP and SWP operations to protect water quality, fish, and wildlife, have affected many sectors and areas. Many cities and counties have instituted water rationing, species populations have declined, and a mandatory 25% cutback in nonagricultural water use has been put in place. Controversy has ensued over limiting the cutback to nonagricultural users; however, the governor has noted that water supplies already have been curtailed for some of the largest agricultural users. For example, for 2015 the projected water deliveries for CVP junior water rights contractors have been cut by 100% (i.e., they will receive no water from the CVP unless conditions improve). Senior water rights contractors have had their CVP supplies reduced by 25%. Similar reductions have occurred for SWP supplies. Some contractors have pumped groundwater or purchased water through water transfers or other means to offset reductions.

> Congress funds and oversees the Central Valley Project, which in a normal water year delivers, on average, approximately 7 million acre-feet of water annually. CVP 2015 water deliveries are severely curtailed due to drought and other factors.

Although a much smaller percentage of the California economy than historically, California agriculture is still the nation's largest producer in terms of cash farm receipts—accounting for 11% (nearly $45 billion) of the U.S. total in 2012, the last year for which data are available (see http://www.cdfa.ca.gov/statistics/). The drought has affected crop and rangeland conditions and required livestock producers to use supplemental hay and grain. Hundreds of thousands of acres have been fallowed because sufficient water was not available. However, fruit and nut orchards continue to need irrigation during drought or the trees will die. The effects of drought on California agriculture could have ramifications beyond the state, with reduced supplies and higher product prices for some

commodities—particularly those for which California is the primary producer (e.g., almonds). For example, California produces 65% of the nation's non-citrus fruit and nuts. However, where substitutions exist for some crops, prices may not be affected immediately.

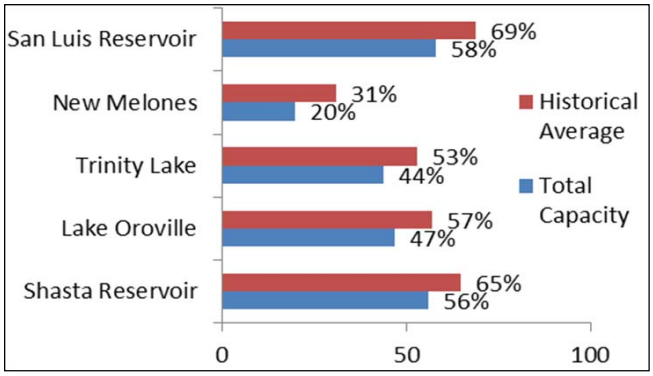
Availability of other water supplies (e.g., groundwater or transferred surface water) may help some users adjust to dry conditions, but with most of the state categorized as a drought disaster area it is not certain that other supplies will remain available. Some areas already are experiencing low groundwater levels and subsidence due to increased groundwater pumping. Further, depending on the duration of the drought, groundwater supplies may be limited or become too expensive. California recently enacted a statewide groundwater law that will increase groundwater planning and monitoring; however, implementation will take many years.

In-state hydropower production, recreation, air quality, and fish and wildlife also may be affected. California hosts many recreational reservoirs, river-rafting opportunities, and recreational and commercial fisheries potentially at risk, as well as many threatened and endangered species. It also provides significant habitat along the Pacific Flyway that is critical to migrating birds. Certain water levels (and temperatures) are needed in waterways and lakes to maintain aquatic ecosystems and species viability. Some salmon runs have experienced a 95% loss of eggs laid, and recent surveys of Delta Smelt found fewer than five fish.

Current Hydrologic Status

Water levels at California's largest reservoirs are well below their historic averages for May.

Figure 2. Water Levels at Five Largest Reservoirs
(May 14, 2015)



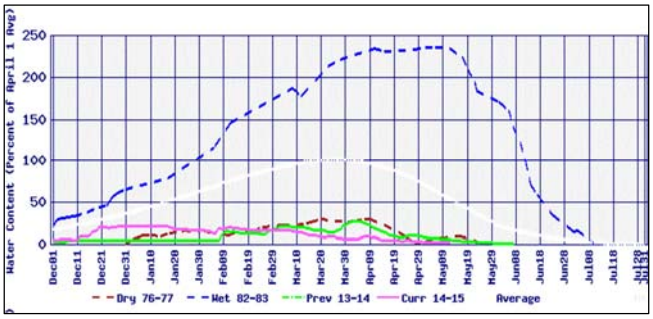
Source: CRS with data from http://cdec.water.ca.gov/reservoir.html. (See Major Reservoirs Daily Graphs–Interactive Water Supply).

Additionally, as of May 15, 2015, water content in snow in the Sierra Nevada Mountains is just 2% of average. (See **Figure 3**.) Snowpack is a major part of water storage for the state. Runoff from snowpack supplies reservoirs; if there is no snowpack or it has low water content, reservoirs already low from previous years will not refill.

Regulatory Factors

Complicating the hydrologic situation is a complex web of federal and state regulatory requirements on CVP and SWP operations. These requirements affect how much water is delivered from the projects. Such requirements include releases of water from reservoirs and limits on pumping from the Bay-Delta to protect threatened and endangered species, as well as water quality. State water rights priorities and Bureau of Reclamation contracts also affect water allocation. Some water users have called for modifying regulations; other stakeholders, including some fishermen and environmental groups, believe such changes may risk irreversible harm to species. Due to overlapping state and federal restrictions, it is unclear how much water would be available absent such restrictions. Reclamation estimates that restrictions stemming from the Endangered Species Act (P.L. 93-205) accounted for approximately 2% of total CVP water reductions in 2014; however, such figures are not readily available for regulatory restrictions.

Figure 3. Northern California Snow Water Content
(May 13, 2015)



Source: California Data Exchange Center (http://cdec.water.ca.gov/cgi-progs/snow/PLOT_SWC).

Federal Response

Although much drought planning and response happens locally, the federal government historically has helped farmers in times of drought. (See CRS Report RS21212, *Agricultural Disaster Assistance*.) Additionally, the Administration in November 2013 announced a National Drought Resilience Partnership to help prepare for and reduce drought impacts. However, there is no overarching federal drought policy or program.

Congress plays a role in CVP water management and has addressed the drought by facilitating water banking, water transfers, and new storage. Congress also extended authorization for the Emergency Reclamation States Drought Relief Act. Other legislation considered but not enacted in the 113th Congress (e.g., H.R. 3964, H.R. 5781, and S. 2198) would have addressed SWP and CVP drought operations.

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