

Progress on Incorporating Climate Change into Management of California's Water Resources



July 2006
Technical Memorandum Report
California Department of Water Resources

Excerpt from

Progress on Incorporating Climate Change Into Management of California's Water Resources, DWR, 2006

4.6.1 Shortages

To discuss CalSim-II shortages, we must first discuss water use priorities. There are many competing demands for the water that flows into the Central Valley. They include farm irrigation, urban and industrial use, ecosystem protection and restoration, and reservoir storage for hydropower production, recreation or for later use in the next inevitable drought. In CalSim-II, distribution of water is prioritized as listed in Table 4.12.

Table 4.12 CalSim-II Water Use Prioritization

First Priority	prior right water users, minimum in-stream flow requirements, WQCP requirements
Second Priority	SWP Table A contractors, CVP contractors
Third Priority	reservoir storage for the next year (carryover)
Fourth Priority	SWP Article 21 deliveries

While CVP and SWP contractor deliveries take precedence over next year's storage, a balance between the two is struck in the allocation decision. During the winter and spring, the SWP and CVP decide how much of contractor demand can be met for the year based on available storage and forecasted runoff. Part of the allocation decision is to ensure that enough water is left in storage at the end of the year in case of impending drought. Once the allocation decision is made though, deliveries to meet that allocation take priority over maintaining the storage carryover target.

Given this simple explanation of prioritization, there are two types of shortages in CalSim-II. One is an acceptable, though not desirable, result of making water allocations based on imperfect forecasts. In wetter years, the SWP and CVP sometimes allocate more south-of-Delta (SOD) deliveries than can be delivered through the pumps due to various export constraints. For the base and four climate change scenarios, this type of shortage is infrequent and, compared to total annual deliveries, insignificant. This type of shortage is also implicitly included in the delivery analysis; if it's not delivered, we don't count it.

The other type of shortage is usually unacceptable. This is when the first priority obligations – prior right contracts, minimum in-stream flow requirements, Delta requirements – are not met. The only way for this shortage to occur in CalSim-II is for one or more North-of-Delta reservoirs to be drawn down to dead storage. At this point, the model has lost control of meeting the watershed's most basic needs not to mention the lawful obligations of the CVP and SWP. Such