

Drought could be our next crisis

Population growth threatens water supply

Glen Martin / Chronicle 22jul01

Despite seven years of mostly ample Sierra Nevada snowpack, California is teetering on the edge of a profound water shortfall that experts say could rival this year's power shortages for economic and social disruption.

Californians should always be able to get a drink of water, no matter how dire the shortage. But their lawns may die, and they might not be able to wash their cars or fill their swimming pools. In addition, water may be severely rationed, and what water they do get could be horrendously expensive.

Although some progress has been made in developing new water sources, the state's economic success and ballooning population -- concentrated in the hotter, inland valleys where water consumption is highest -- are far outpacing growth in water supply.

As a result, the vulnerability to shortages may be greater now than it was during the drought of 1977, the worst drought year in the state's history, when low supplies of water affected everything from agriculture to fisheries to home landscaping.

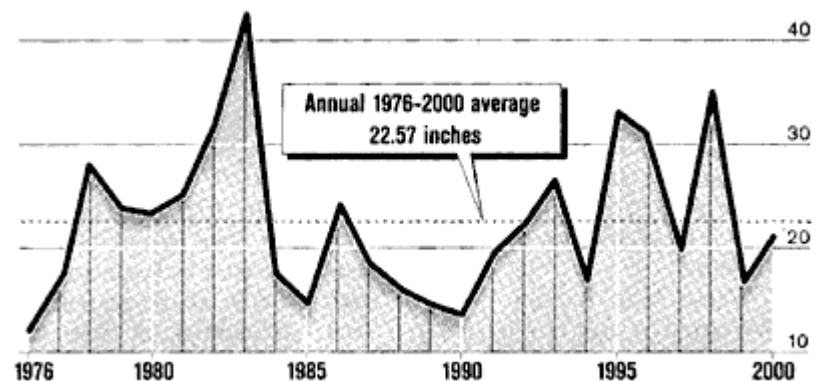
This year is only the first below-average water year since 1995, but state water officials say one more year like it could push the state into crisis.

"This could be considered a dry year, but it's by no means a critically dry year," said Maurice Roos, chief hydrologist for the California Department of Water Resources. "Still, our situation could be very serious if we have a dry season next year. We simply don't have the storage capacity to carry us through two dry years anymore."

Troubling incidents already have occurred. In the Klamath Basin on the Oregon border,

Precipitation since 1976

Annual precipitation figures for the past 25 years in California show droughts in the mid 1970s and the late 1980s-early 1990s. Another dry year in California could cause a severe water shortfall.



source: National Oceanic and Atmospheric Administration

federal regulators have curbed agricultural water supplies to protect endangered fish in Upper Klamath Lake and the Klamath River. Farmers responded by opening irrigation gates, at least temporarily, to release water.

In the western San Joaquin Valley, some farmers' water deliveries have been cut by 45 percent.

At the root of the problem is California's economic success. Development is exploding. Agriculture, which uses 80 percent of developed water in the state, remains a thirsty consumer. Ten million more people live in California now than lived here in 1977, and since 1992, the end of the last drought, the population has grown by 6 million.

And water consumption has increased on a per capita basis. Each state resident accounted for about 200 gallons of water a day in 1992; today, per capita consumption is roughly 229 gallons a day.

"We anticipate the urban demand for water will rise from the 1995 figure of 8.8 million acre-feet to 12 million acre-feet by 2020," Roos said. An acre-foot is 326,000 gallons, or about enough water to support a five-person household for one year.

There are also new demands for water that didn't exist in 1977. Both computer technology and biotechnology require large quantities of high-quality water. And environmentalists have secured commitments for hundreds of thousands of acre-feet of water to revive threatened salmon fisheries and restore wetlands.

The state's energy crisis may be solvable through construction of new power plants -- but California is locked into a few basic water sources: snowpack from the Sierra and the northern Coastal Range, groundwater and the Colorado River. Recycled water is a minor, but increasingly important, source.

During typical years, California uses about 80 million acre-feet of water from its various sources. During dry years, that figure drops to about 65 million acre-feet.

Meanwhile, significant alternatives have been difficult to find. Desalinization of saltwater, for example, is horrendously expensive and produces large quantities of brine, which can be difficult to dispose of in an environmentally sound fashion.

Other ideas -- from the ambitious to the harebrained -- have been suggested, including towing icebergs from Antarctica or diverting Alaskan rivers to empty into the California aqueduct.

But no action is expected to be taken on those suggestions anytime soon. And in the meantime, the state's water supply is only going to get tighter.

From 1995 through 2000, drainage of the Sacramento River, the state's main water

source, yielded an annual average of 18.1 million acre-feet of water. The Sacramento system is expected to top out at 9.7 million acre-feet for the current hydrologic year, which ends in September.

Exacerbating the situation are some recent changes in water law and allotments. California will have to give up access to Colorado River water during the next 15 years as other states exercise their allotments, which means a loss of 800,000 acre-feet annually.

Still, there are some signs that Californians learned something from 1977, when lawns withered, bricks were put in toilets to reduce water consumption, people watered vegetable gardens with dishwater, and fisheries diminished in state rivers and deltas.

"In many ways, 1977 was a wake-up call," said Jeanine Jones, drought preparedness manager for the California Department of Water Resources. "The agencies are much better prepared today than they were 25 years ago."

Residents' concerns regarding drought were apparent with last year's passage of Proposition 13, an almost \$2 billion bond measure that funded water infrastructure rehabilitation, conservation efforts and environmental restoration projects.

But perhaps the most significant development has been the 1994 creation of CalFed, a joint federal and state agency intended to quell California's water wars.

CalFed proposed Solomon-like quotas for cities, farms, fisheries and wildlife in the Sacramento River and San Joaquin River drainages. Nobody got everything they wanted - but everyone got something.

Supported by generous government funding, CalFed is also promoting new water storage projects, including off-stream reservoirs, increasing the height of Shasta Dam on the Sacramento River and storing water on islands in the Sacramento-San Joaquin River Delta.

Such projects, say some experts, will store water during California's wet years to be meted out when precipitation is scant.

But can Californians be assured the wet cycles will be wet enough, and of long-enough duration? Not necessarily.

"Throughout the West, people are flocking to water-poor, hot, dry areas," said Mark Svoboda, a climatologist with the University of Nebraska's National Drought Mitigation Center in Lincoln.

"No matter what you do with conservation, it won't be enough. There's too much demand. These days, a relatively mild drought can cause more damage than a severe drought did several years ago."

If next winter is dry, he said, "there could be a real crunch across the whole West. And if the supplies aren't there in other states, they can't be shipped to California (through the Colorado River)."

While California's water woes are bad and could certainly get worse, say experts, they are nothing new. Much of the West is desert. Water has always been scarce.

"It's always been said in the West that whiskey is for drinking and water is for fighting over," said Svoboda. "That's as true today as it was a hundred years ago, and I doubt it will ever change."

Drier days could reignite water wars / CalFed projects remain contentious Few of the stakeholders involved in CalFed -- Central Valley farmers and irrigation districts, municipal water districts, environmentalists, sport anglers and commercial fishing advocates -- are genuinely happy with the agency. Indeed, it has been marked by acrimony and grumbling since its inception.

Two projects in particular anger environmentalists: raising Shasta Dam and the construction of Sites Reservoir.

Increasing the height of the dam, they say, would flood a pristine portion of the McCloud River.

And they claim the Sites project -- a large off-stream storage facility proposed for an area west of the Sacramento Valley town of Maxwell -- would drown valuable wildlife habitat.

But agricultural interests say these projects are essential to making CalFed work and providing some wiggle room for the state in the next drought.

"We did an analysis of what would happen in the next big drought," said Steve Hall, the executive director of the Association of California Water Agencies, a group that represents the interests of state irrigators.

"There would be severe shortages south of the (Sacramento-San Joaquin River) Delta, and zero water deliveries for three years for large areas of the west side of the San Joaquin Valley," Hall said. "Small and medium-size farmers would go out of business."

To avoid that, he said, "We need at least one more good reservoir upstream of the Delta (like Sites) and we need to raise Shasta. California is characterized by alternating wet and dry cycles -- so when it's wet, we have to take advantage of it for the dry years."

People are sticking with CalFed despite the squabbles, apparently because the alternative -- paralyzing litigation and a withdrawal of federal funding --

is wholly unpalatable for all concerned.

"CalFed was a compromise," said Hamilton Candee, a senior attorney with the Natural Resources Defense Council. "It isn't perfect from any perspective, but it's the best chance of obtaining major state and federal funding for a comprehensive solution."

Like most environmental groups, the Natural Resources Defense Council is unhappy with CalFed's proposals to raise Shasta Dam and build Sites Reservoir.

Periodically, efforts have been introduced in Congress to amend CalFed, usually for the benefit of Central Valley agriculture.

Two complementary federal bills are pending -- one sponsored by Sen. Dianne Feinstein, D-Calif., and the other by Rep. Ken Calvert, R-Riverside. Both would amend CalFed by giving water delivery priority to certain farmers on the west side of the San Joaquin Valley.

On Friday, a coalition of water industry and high-tech industry leaders called for passage of the Feinstein bill.

"While California's economic resources are enormous, the state's contribution to the national economy is increasingly held hostage by an unstable water supply," Hall said.

But environmentalists caution the Feinstein bill would reignite the water wars.

"That would just start the conflict all over again," Candee said.

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