Colorado River crisis looming, report says

by Mike Lee and Michael Gardner

SAN DIEGO - Colorado River reservoirs that serve 20 million people in the Southwest could essentially run out of water in 13 years based on current climate and water-use trends, researchers at Scripps Institution of Oceanography said Tuesday. Several million people across the Southwest also get hydroelectric power from the reservoir's dams, which the scientists said may suffer an "abrupt drop" in production in about 10 years if reservoir levels continue to fall.

Major industries - from tourism to biotech - would be affected by such a shortage, which already is starting to force changes. A large marina on Lake Mead recently was forced to move its floating docks to deeper water.

This latest warning could escalate pressure for more conservation, either voluntary or mandatory, several water experts suggest.

The report is the first in a peer-reviewed journal to pin a date on when the river's water level would drop so low that reservoir water could no longer be drawn by gravity, said authors Tim Barnett and David Pierce, scientists at Scripps, which is part of the University of California San Diego. The paper was accepted for publication by the American Geophysical Union, an international society of Earth and space scientists.

"We were stunned at the magnitude of the problem and how fast it was coming at us," Barnett said. "Make no mistake, this water problem is not a scientific abstraction, but rather one that will impact each and every one of us that live in the Southwest."

Several other reports in recent years agree that the Colorado River is heading for a crisis, in part because climate change appears to mean less precipitation in the river basin.

"Based on the assumptions that (Barnett and Pierce) made, I certainly don't disagree with this conclusion," said Terry Fulp, operations manager of the Lower Colorado River for the U.S. Bureau of Reclamation.

Fulp added a caveat: Long-term changes in river flows can't be predicted precisely, so the Scripps calculation could be off by several years.

The Lake Mead-Lake Powell system includes the stretch of the Colorado River in northern Arizona. Aqueducts carry the water from the river to cities such as Las Vegas, Los Angeles and San Diego. The system is at about half-capacity because of a recent string of dry years.

"It's pretty dramatic. ... From month to month, there is a noticeably bigger white band (of rock and sand) and you can see more islands popping out of the water," said Krystyna Stave, an environmental studies professor at the University of Nevada Las Vegas.

On a positive note, snowfall along the river system has been recorded at 128 percent of normal this year, which will add 3.5 million acre-feet to Lake Powell and Lake Mead if the rest of the season stays bountiful, said Roger Patterson, who tracks Colorado River issues for the Metropolitan Water District.

Pierce and Barnett approached future river flows based on probability of certain events. They gave a 10 percent chance that functional storage in Mead and Powell reservoirs will be gone by 2013 and a 50 percent chance that it will disappear by 2021. They said there's a 50 percent chance that the minimum power-production levels in both lakes will be reached in 2017, based on current trends.

Martin Hoerling, a meteorologist for the National Oceanic and Atmospheric Administration in Boulder, Colo., said the Scripps report offered the most specific projection that he has seen about the river's looming crisis. He also emphasized the inherent uncertainties in predicting precipitation, but said "the science is unanimous" that Colorado River flows will shrink in coming decades.

The Scripps report "should catch attention because climate change is real and it needs to be part of the dialogue about how we manage the water resources," Hoerling said.

Barnett and Pierce touched on possible solutions, many of which already are being tried across the region. Those include increased calls for conservation, new guidelines for managing river water and numerous attempts to tap potential supplies such as the Pacific Ocean and aquifers.

"We are all planning to deal with less water from the Colorado River," said Ken Weinberg, a top official at the San Diego County Water Authority.

Concerns on the Colorado River have been heightened by legal complications to moving water from Southern California's other major water source, the Sacramento-San Joaquin River Delta. This year, the region's farmers have had supplies cut by 30 percent.

Despite problems, numbers released Tuesday by the San Diego County Water Authority show that the county set a record high for water use in 2007.

While per-capita use has remained relatively flat over the past two decades, the growing population keeps nudging the total demand up.

Several water managers in San Diego County said the region's conservation push in recent months doesn't appear to be saving the targeted amount of water - about 10 percent.

"The public isn't believing that we have as much of a constraint as we really do. ... They turn on the tap and there is plenty there," said Bud Irvin, board president of the Santa Fe Irrigation District in north San Diego County.

The county water authority mainly has relied on stories in local media and word of mouth to spread the conservation message. But it's working on a plan that's likely to include a big increase in paid advertising. No budget has been proposed.

Jim Barrett, director of public utilities for the city of San Diego, is among the many local water managers convinced that mandatory rationing is unnecessary.

"We don't want to excite people needlessly in anticipation there might be a problem later," Barrett said.

Rationing would be difficult to fairly impose, he said, because an across-the-board reduction would punish households and businesses that have already started to save.

"There are folks who aren't paying attention to water conservation," Barrett said. "They're trying to replicate an Amazon rain forest in their backyard."

But with snowfall unreliable, reservoir levels dropping and environmental problems tightening deliveries through the Sacramento Delta, water managers are under increasing pressure to conserve more even as California continues to grow.

Gary Bobker, program director for the Bay Institute of San Francisco, an environmental advocacy group, said the state must explore rationing as climate change threatens to reduce snowpack.

"All over the state, we should be moving toward mandatory conservation because it's the right thing to do. Water is a finite resource," he said.

Bobker suggests that the large water sellers, such as the San Diego County Water Authority, establish mandatory reduction targets and then allow their customers to decide how to best achieve those savings.

"We need to start preparing now," he said. "We have some time, but we're going to run out of time."

Ronnie Cohen, senior policy analyst with the Natural Resources Defense Council, said "it's time for a new approach" - including pushing the Department of Water Resources to set statewide savings goals.

"As a state, we need to figure out what level of water use is sustainable and then develop a plan to get there," she said.

In another attempt to manage potential shortages, the Metropolitan Water District yesterday approved a controversial rationing plan for most of Southern California during dry years.

However, Metropolitan may be able to avoid using it this year because of healthy winter storms. A decision on whether to impose rationing won't be made until May.

The strategy calls for an across-the-board cut for all of Metropolitan's member-agencies, depending on water conditions.

The San Diego County Water Authority would lose anywhere from 65,000 acre-feet to nearly 190,000 acre-feet, based on a complex set of factors. An acre-foot is 326,000 gallons, or enough to serve two average households for a year.

"We're trying to work the best possible solution for the region," said Barrett, San Diego's water director.

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