

Testimony of Michael Cohen
Senior Associate, Pacific Institute

“Colorado River Drought Conditions and Response Measures”
U.S. House of Representatives Committee on Natural Resources
Subcommittee on Water, Oceans, and Wildlife
October 20, 2021

Chairman Huffman, Ranking Member Bentz, and members of the Subcommittee:

Thank you for holding this hearing and for the opportunity to submit this written testimony. In the following I offer brief comments on:

1. The drying of the West
2. The exemplary efforts of many Colorado River water users to adapt to these conditions
3. The compelling need to reduce greenhouse gas emissions, because adaptation will not be sufficient.

The Pacific Institute, a California-based non-profit, has investigated and proposed solutions to Colorado River challenges for thirty years. In 1993, Institute researchers produced *Colorado river basin and climatic change. The sensitivity of streamflow and water supply to variations in temperature and precipitation* for the U.S. EPA (EPA230-R-93-009). We also participated in the development of Colorado River surplus and shortage criteria and in the 2012 Basin Study.

The Drying of the West

Colorado River flows have decreased significantly over the past 100 years, from the 1922 Compact assumption that the river yielded more than 16.5 million acre-feet (MAF) per year, to the 20th century annual average of 15.2 MAF, to the Millennium drought average of less than 12.4 MAF. Yet we should not assume that runoff has now stabilized at this dangerously low rate. Rather, in the face of continuing anthropogenic climate change, we can expect to see Colorado River runoff continue to decline, rapidly exhausting system storage and imposing harsh and inequitable impacts on the people, environment, and economies of the West.

The rate of the river’s decline has exceeded climate scientists’ disturbing runoff projections. More than forty years ago, Stockton and Boggess¹ projected that a 2°C temperature increase and a 10% decrease in precipitation could reduce annual upper basin runoff by a third, to 9.75 MAF. In fact, this estimate is slightly higher than the average annual natural Colorado River flow for the years 2000-2004 and the estimated runoff in 2020 and 2021.

¹ CW Stockton and WR Boggess, 1979, Geohydrological implications of climate change on water resource development, Fort Belvoir, VA: US Army Coastal Engineering Research Center.

To its credit, the Bureau of Reclamation has recognized this alarming trend and has updated and improved its modeling assumptions to reflect the more recent dry period. Reclamation now projects that both Lake Powell and Lake Mead could fall to critically low elevations in the next several years – well before the current Interim Shortage Guidelines expire.

The challenges confronting the Colorado River Basin extend throughout the West. California just suffered its driest water year in a century. In July, the Great Salt Lake fell to its lowest level in 60 years, likely reducing lake-effect snowfall on the ski resorts along the Wasatch Front. The Salton Sea is now 43 square miles smaller than it was when the Quantification Settlement Agreement was signed in 2003, and 10.5 feet lower. Devastating forest fires have burned millions of acres, sterilizing soils and generating smoke that impairs air quality across the nation. Farms and ranches that have been in families for generations have folded in the absence of water. River rafters and fly fishers have seen their seasons curtailed due to insufficient instream flows. Hydropower generation has declined with falling reservoir elevations. The West is drying.

Collaboration and Adaptation

Colorado River water users have taken dramatic and exemplary steps to adapt to the drying West. Major cities have successfully decoupled their water use from economic and population growth: Albuquerque and Denver and Las Vegas and Los Angeles and Phoenix have added hundreds of thousands of people and seen significant economic expansion yet use less water than they did twenty and even thirty years ago. In 2020, the Imperial Irrigation District – the largest single user of Colorado River water – consumed 20% less water than it did in 2002 while still irrigating 98% of the land, using 0.66 MAF less water overall. This conservation and efficiency helps to maintain agricultural productivity while providing resilience for southern California cities during the state’s punishing drought and reduces demand on the river.

In the most recent five-year period (2016-2020), annual Colorado River consumptive use by the lower basin states averaged 6.89 MAF, well below their annual 7.5 MAF compact entitlement. Lower Basin consumptive use of Colorado River water declined by more than 1.6 MAF from its high point in 2002 to 2020. Lower Basin users and the Republic of Mexico have “stored” some 4 MAF of water in Lake Mead, delaying the shortage declaration until this year and enabling users to better prepare for a drier future. Water agencies in the U.S. are now investing in water conservation and efficiency projects in Mexico – in a foreign country! – and agencies in Arizona and Nevada are in discussions to invest in a water recycling project in California. One of the basin’s four endangered fish species – the humpback chub (*Gila cypha*) – was just downlisted to threatened earlier this week, and another may be downlisted in the near future, reflecting the success of upper basin fish recovery programs. California has invested hundreds of millions of dollars in Salton Sea projects and, with additional federal financial and technical support, can

begin to make real progress to protect ecological and human health and ensure the long-term viability of the nation's largest agriculture-to-urban water transfer.

An amazing level of cooperation, trust, financial investments, and measurable actions by stakeholders have generated these remarkable achievements. The basin is a model, studied internationally, for its ability to set aside the traditional tools of litigation in favor of collaborative investments in conservation and efficiency. Credible science and modeling have supported these efforts, improving water users' understanding of the river system and the potential impacts of proposed actions. A network of bold and innovative thinkers from a variety of sectors, a willingness to (slowly) enlarge the negotiating table, and many, many years of discussions and outreach and hard work made this progress possible.

Adaptation is not sufficient

The basin's extraordinary collaboration and cooperation and dramatic reductions in total consumptive water use over the past twenty years postponed the declaration of a shortage for the Lower Basin by several years, building a bridge toward water supply security and certainty. But the climate change-generated chasm separating us from that security and certainty grows ever wider. Simply put, if we fail to address the root cause of the worsening crisis in the West and slow the rate of climate change, we will never complete that bridge.

Climate change is occurring faster than projected. Its impacts have been more severe. In the Colorado River basin, the rate at which runoff has declined has exceeded even the extraordinary efforts by water users to conserve. The elevation of Lake Mead could fall another forty-four feet in two years.

Water touches all of the West. Ranchers, farmers, tribes, fishing and whitewater enthusiasts all depend on it. It supports growing cities that have held their water demands flat (or have actually seen them decline). We need to sustain the western way of life and take aggressive actions to diminish the rate at which western water supplies are crashing.

Adaptation measures are not enough. Emergency drought responses are not enough. Alleviating the symptoms is not enough. It's time to confront the clear cause of the long-term and intensifying drying of the American West. Privileging and protecting a narrow set of extractive industries at the expense of the western way of life should no longer be tolerated.

Congress needs to enact aggressive climate mitigation legislation to reduce greenhouse gas emissions, while continuing to support the impressive and innovative adaptation efforts that have enabled many in the West to postpone the worst impacts of the accelerating crisis.