



Drought and Equity in California

Laura Feinstein, Rapichan Phurisamban, Amanda Ford,
Christine Tyler, Ayana Crawford



The Environmental Justice Coalition for Water
Water Justice for All

January 2017

Drought and Equity in California

January 2017

Lead Authors

Laura Feinstein, *Senior Research Associate, Pacific Institute*

Rapichan Phurisamban, *Research Associate, Pacific Institute*

Amanda Ford, *Coalition Coordinator, Environmental Justice Coalition for Water*

Christine Tyler, *Water Policy Leadership Intern, Pacific Institute*

Ayana Crawford, *Water Policy Leadership Intern, Pacific Institute*

Drought and Equity Advisory Committee and Contributing Authors

The Drought and Equity Advisory Committee members acted as contributing authors, but all final editorial decisions were made by lead authors.

Sara Aminzadeh, *Executive Director, California Coastkeeper Alliance*

Colin Bailey, *Executive Director, Environmental Justice Coalition for Water*

Carolina Balazs, *Visiting Scholar, University of California, Berkeley*

Wendy Broley, *Staff Engineer, California Urban Water Agencies*

Amanda Fencl, *PhD Student, University of California, Davis Center for Environmental Policy and Behavior*

Kelsey Hinton, *Program Associate, Community Water Center*

Gita Kapahi, *Director, Office of Public Participation, State Water Resources Control Board*

Brittani Orona, *Environmental Justice and Tribal Affairs Specialist and Native American Studies Doctoral Student, University of California, Davis*

Brian Pompeii, *Lecturer, California Polytechnic State University, San Luis Obispo*

Tim Sloane, *Executive Director, Institute for Fisheries Resources*

ISBN-978-1-893790-76-6

© 2017 Pacific Institute. All rights reserved.

Pacific Institute

654 13th Street, Preservation Park

Oakland, California 94612

Phone: 510.251.1600 | Facsimile: 510.251.2203

www.pacinst.org



The Environmental Justice Coalition for Water

Water Justice for All

Cover Photos: Clockwise from top left: NNehring, Debargh, Yykkaa, Marilyn Nieves

Designer: Bryan Kring, Kring Design Studio

EXECUTIVE SUMMARY

WATER IS ESSENTIAL FOR LIFE, yet not everyone in California has access to safe, affordable water. Five years of drought has highlighted these inequities. Recent reviews of the impact of the ongoing drought found that cities and farms, despite feeling the effects of curtailed water supplies, demonstrated great resilience overall ([Cooley et al. 2015](#); [Hanak et al. 2015](#)). Small water suppliers and natural systems have not fared as well. Some small systems struggled to provide safe water to their customers, thousands of household wells ran dry, and endangered fish reached the brink of extinction ([Braxton Little 2016](#); [Moyle 2014](#); [State of California 2016](#)). Across California, those on low or fixed incomes have struggled with the rising cost of water ([Cooley et al. 2016](#)).

In this report, we examine three major impacts of the ongoing California drought. The first two, supply shortages and rising costs, affected people's access to safe, affordable water in their homes. We also investigated the impacts of the drought on salmon and, by extension, commercial and tribal fishermen reliant on salmon for income, food, and cultural traditions. We found that low-income households, people of color, and communities already burdened with environmental pollution suffered the most severe impacts. The good news is that there are solutions to these problems, some of which are already being implemented. We

During the drought, some small systems struggled to provide safe water to their customers, thousands of household wells ran dry, and endangered fish reached the brink of extinction.

conclude with a set of policy recommendations to improve our ability to cope with drought and minimize its inequitable consequences in the future.

DOMESTIC WATER SHORTAGES

Despite a great deal of public attention on drinking water shortages since the drought began in 2012, this is the first statewide summary of reported water supply vulnerabilities. Using information collected by state and local agencies, we classified water systems as "drought-impacted" if they reported actual or near shortages, received emergency drought funding, or, in the case of tribal water systems, were identified by United States Indian Health Services (IHS) as "high risk." We examined water systems serving more than 25 people year round or at least 15 connections (referred to as public water systems) and those serving fewer than 25 people year round, such as private wells (referred to as non-public water systems). We found that:

1. Most (76 percent) of the 149 drought-impacted public water systems were small, serving 1,000 connections or fewer. This is similar to the overall percentage of small water systems in California. Drought-impacted public water systems served an estimated 480,000 people—approximately equivalent to the population of Sacramento.
2. Drought-impacted public water systems were widespread, with at least one found in 39 of the state’s 58 counties, but were concentrated in the San Joaquin Valley, the North Coast, and the Central Coast. There were no reports of drought-impacted systems in the easternmost portions of the state or in the San Francisco Bay Area.
3. From January 2014 through early August 2016, the state received nearly 4,000 reports of shortages from households served by small, non-public water systems. Household shortages were reported in 38 of 58 counties across the state but were concentrated in the southern San Joaquin Valley. Tulare County accounted for 42 percent of reported household water shortages.
4. A large proportion of drought-impacted public water systems and household outages were in Disadvantaged and Cumulatively Burdened Communities.¹ Of the 92 drought-impacted public water systems for which we know the location, two-thirds served a disadvantaged community, and nearly one-third served a cumulatively burdened community. Similarly, of the household shortages reported in Tulare County, two-thirds were in a disadvantaged community, and nearly 90 percent were in a cumulatively burdened community.

¹ Disadvantaged Communities have a median household income of less than 80 percent of the state median. Cumulatively Burdened Communities are those that rank in the top quarter of census tracts in the state for environmental burdens and socioeconomic vulnerability.



To improve the drought resilience of domestic water supplies, we recommend that state and local agencies enact the following measures:

1. Establish a statewide, quantitative metric for measuring water supply reliability for public water systems;
2. Require water shortage contingency plans for all public water systems and establish regional plans for non-public systems;
3. Increase oversight of new private wells;
4. Systematically collect information on water shortages for public and non-public water systems;
5. Identify areas where private wells and other non-public water systems are likely to run dry in future droughts;
6. Identify areas where water system consolidation can resolve supply problems.


DROUGHT CHARGES AND WATER AFFORDABILITY

The cost of water can go up during a drought if, for example, the water utility must purchase more expensive supplies, increase treatment for lower quality water, or pump groundwater from greater depths. Moreover, as water use declines due to mandatory or voluntary restrictions, water utilities may implement a temporary drought charge to cover their costs, most of which are fixed. Such price increases can exacerbate affordability concerns for low-income households. In examining the impact of drought charges on low-income households in 2015, we found that:

1. More than half of the utilities analyzed increased the price of water regardless of the amount a household used, resulting in price increases for all single-family households.
2. About one-fifth of the utilities levied drought charges by increasing the price of water used

in excess of some threshold. While the intent was to avoid increasing prices for basic water use, even relatively efficient households with many members still experienced an increase in the price of water.

3. Approximately one-fifth of the utilities only added drought charges if a household exceeded a customized water budget based on household size, raising the price of water only for wasteful use.
4. Drought charges exacerbated affordability concerns for low-income households. Single-family households earning less than \$25,000 a year paid an average of 1.8 percent of their household income for basic water service without drought charges. This amount increased to 2.1 percent with drought charges, exceeding State of California and United States Environmental Protection Agency affordability thresholds. The effect was even more extreme for households earning less than \$10,000, raising costs from 4.4 to 5.3 percent of income. These households have little or no disposable income, so any increase in water costs poses a major problem.

 **To reduce the inequitable impact of drought charges on low-income households, we recommend the following:**

1. Ensure drought surcharges are not applied to basic water use, preferably by calculating household water budgets based on the number of people in a residence;
2. Provide technical and financial assistance to water utilities, especially the smallest ones, to implement drought charges that do not unfairly burden low-income households;
3. Target water conservation and efficiency programs to low-income households by offering, for example, point-of-sale coupons, targeted education and outreach, and direct-install programs;



Source: Photographereddie

4. Develop low-income rate assistance programs within current legal constraints and reform Proposition 218 to allow greater latitude in funding such programs;
5. Wherever possible, require meters and sub-meters to allow for more equitable drought charges based on volumetric water use;
6. Develop approaches that effectively target hard-to-reach customers, such as renters and residents of multi-unit buildings, for rate assistance and conservation programs.

DROUGHT IMPACTS ON SALMON FISHERIES

Water disputes in California are sometimes framed as “fish versus people,” but this perspective overlooks those who rely on fishing for their livelihoods and traditions. While the link between drought and the collapse of endangered fish stocks has been extensively documented ([Hanak et al. 2015](#)), surprisingly little research has traced

the relationship between drought, low river flows, and the health of commercial and tribal fisheries in California. Salmon populations decline during droughts because of reduced stream flows and higher water temperatures, which lead to disease outbreaks, more competition from invasive fish species, and higher risk of predation. Habitat loss from human activity has compromised their capacity to survive and rebound from droughts. There are many factors contributing to the decline of salmon, of which drought is just one.

We examined the available data and information on trends in commercial and tribal fishing over time. We found that:

1. The commercial salmon fishing fleet has declined dramatically over the last three decades, from 6,000 vessels in 1982 to just over 1,000 vessels in 2014. Many factors have contributed to the decline, including fewer salmon, income insecurity brought about by events such as the fishery closure of 2008-2009, rising costs of fishing, and loss of support infrastructure (such as fuel docks).
2. From 2014 to 2015, Sacramento winter-run Chinook salmon had the poorest survival for juvenile fish on record due to drought conditions and water diversions from the Sacramento River, resulting in an abbreviated 2016 fishing season for much of the state.
3. Extremely low flows in the Klamath River, caused by drought and water diversions for irrigation, contributed to an outbreak of fungal infections in salmon in 2014 and 2015. The subsequent poor reproduction will impact fishermen two to five years later, when eggs hatched in 2014 and 2015 return from the ocean as mature adults.
4. Declines in salmon populations, made worse by drought, have meant that tribes cannot obtain the fish that are an essential part of their diet and an integral part of their spiritual and cultural traditions.



To reduce the impact of drought on salmon fishermen, we recommend the following:

1. Expand the goal of emergency drought responses beyond preserving endangered species to include protection of commercially-fished salmon species.
2. Manage stream flows to better serve the needs of fish.
3. Restore habitat to improve salmon resilience to drought.
4. Provide income assistance and insurance protection for fishing communities during drought emergencies.
5. Create mechanisms for meaningful and timely tribal engagement with local, regional, state, and federal agencies.
6. Evaluate ways to re-operate California hatcheries to achieve parallel goals of sustaining commercial fisheries and assisting in the recovery of naturally-spawned salmon runs.
7. Assess the use and effectiveness of instream flow regulations to protect salmon populations.
8. Develop integrated, comprehensive datasets tracking salmon populations and their environment throughout the state.

Inequities in access to water in California existed before the drought began in 2012, but lack of water made the outcome of these inequities more severe. Low-income families, those who are disproportionately burdened by multiple sources of pollution, and those who depend on aquatic ecosystems for their livelihood and traditions

are highly vulnerable to problems of supply shortages, rising unaffordability, and insufficient streamflows. Unless we act, drought's impacts on these communities will become more severe as climate change progresses, given that scientists predict longer, more severe, and more frequent droughts. We offer the Drought and Equity report and the recommendations within as a tool for community members and decision-makers to improve the resilience of all Californians, including the most vulnerable, to future droughts.

References

- Braxton Little, Jane. 2016. "Northern California Towns Are Running Out of Water." *Water Deeply*, August 16. Accessed December 6, 2016. <https://www.newsdeeply.com/water/articles/2016/08/16/northern-california-towns-are-running-out-of-water>.
- Cooley, Heather, Kristina Donnelly, Rapichan Phurisamban, and Madhyama Subramanian. 2015. "Impacts of California's Ongoing Drought: Agriculture." Pacific Institute. <http://pacinst.org/publication/impacts-of-californias-ongoing-drought-agriculture/>.
- Cooley, Heather, Kristina Donnelly, Salote Soqo, and Colin Bailey. 2016. "Drought and Equity in the San Francisco Bay Area." Pacific Institute. <http://pacinst.org/publication/drought-equity-san-francisco-bay-area/>.
- Hanak, Ellen, Jeffrey Mount, Caitrin Chappelle, Jay Lund, Josué Medellín-Azuara, Peter Moyle, and Nathaniel Seavy. 2015. "What If California's Drought Continues?" Public Policy Institute of California, August. http://www.ppic.org/content/pubs/report/R_815EHR.pdf.
- Moyle, Peter B. 2014. "Saving California's Salmon During a Severe Drought." *California WaterBlog*, February 17. <https://californiawaterblog.com/2014/02/17/why-and-how-to-save-native-salmon-during-a-severe-drought/>.
- State of California. 2016. "California Household Water Shortage Data." Accessed December 19. <https://mydrywatersupply.water.ca.gov/report/publicpage>.



The Environmental Justice Coalition for Water
Water Justice for All

The Environmental Justice Coalition for Water
PO Box 188911, Sacramento, CA 95818-8911
909 12th Street, Suite 200, Sacramento, CA 95814
916-432-EJCW (3529) | info@ejcw.org | ejcw.org



Pacific Institute
654 13th Street, Preservation Park, Oakland, CA 94612
510-251-1600 | info@pacinst.org | pacinst.org

ISBN-13: 978-1-893790-76-6

© 2017 Pacific Institute. All rights reserved.