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THE WATER WE DRINK, PART II: WHAT IS CALIFORNIA DOING TO ENSURE SAFE WATER IS AFFORDABLE AND ACCESSIBLE?



In 2012, California became the first state to affirm the right of every person to safe, clean, affordable, and accessible drinking water when it adopted the Human Right to Water Law.¹ Ensuring that all Californians receive safe drinking water is a difficult task that has not yet been accomplished.

This is the second of two installments prepared by the Senate Office of Research (SOR) on drinking water. The first installment, published in February 2015, updated a 2011 SOR report originally written by Michelle Baass on what California does to ensure its drinking water is safe. This second installment focuses on the challenges to providing safe and clean drinking water that is affordable to disadvantaged communities; it also includes portions of the original 2011 report.

California's 7,462 public water systems vary in size, location, and fiscal condition. Providing safe and clean drinking water that is affordable is a challenge, especially in California's "disadvantaged communities." A disadvantaged community is defined by the State Water Resources Control Board (SWRCB) as any community where the median household income is below 80 percent of the statewide median household income (SMHI). The SMHI for 2013 is \$61,094. Data on the number of people living within the boundaries of public water systems that serve disadvantaged communities is not available, but this population is estimated to be between 6 million and more than 12 million people.

Most water contamination problems exist within small water systems that have fewer than 1,000 connections, and a majority of the systems with problems serve disadvantaged communities. When larger systems exceed maximum contaminant levels, those problems usually are corrected promptly. According to the Public Policy Institute of California report "Paying for Water in California," roughly 1 percent of California's population, or 380,000 people, receive water from a small system regulated by the Safe Drinking Water Act.²

Out of the 37.7 million people who receive drinking water from water systems regulated by the state, more than 275,000 people receive water from systems that serve, or recently have served, contaminated water. It is difficult to assess how ongoing these water contamination problems are. For some systems, these were one-time bacterial violations that were quickly corrected. Other systems are in the process of coming into compliance.

Schools and day care facilities have come to the attention of the SWRCB's Division of Drinking Water (DDW) because of the chronic exposure of vulnerable populations to contaminated water. In 2014, 68 schools or day care facilities with their own water systems served contaminated water to more than 24,000 people.

Table 1 (page 3) shows the 2014 violation data for systems with up to 3,300 connections and schools and day care facilities. Total coliform rule (TCR) violations are indicative of possible contamination from pathogenic organisms; three-quarters of systems with TCR

violations had one violation in 2014, which was corrected before the next testing period. Typical ways TCR violations are corrected include disinfecting facilities, flushing pipelines, and making repairs to facilities and pipelines. The most common non-TCR violation contaminates are arsenic, nitrate, and uranium. These contaminates take longer to correct and can be ongoing issues. Little data exists on the systems that likely will be out of compliance for long periods. However, the DDW believes systems with ongoing issues are located predominantly in disadvantaged communities and are served by small water systems (fewer than 1,000 connections).

TABLE 1
Public Water Systems:
2014 Small Water Systems Out of Compliance

Number of Connections Served	Population Served by Public Water Systems With Water Quality Violations (Number of Systems)	
	All Violations	Without TCR Violations
15 to 199 (includes schools)*	76,736 (408)	47,667 (294)
200 to 999	92,252 (46)	59,075 (34)
15 to 999 (includes schools)	168,988 (454)	106,742 (328)
1,000 to 3,300	106,397 (18)	77,386 (13)
15 to 3,300 (includes schools)	275,385 (472)	184,128 (341)

* Includes Transient and Non-Transient Non-Community water systems for nitrate violations since it is an acute contaminant.

Source: The State Water Resources Control Board’s Division of Drinking Water

The data just presented does not provide information on the degree of impact on disadvantaged populations. An older survey offers more insight. In 2012, the Department of Public Health’s (DPH) Drinking Water Program (DWP)³ identified 183 public water systems with 15 to 999 service connections that provide drinking water to 58,588 people as having ongoing water contamination issues.

- One hundred twenty-seven (69 percent) of these systems were identified as serving disadvantaged or severely disadvantaged communities.

- Seventy-five percent of the water systems with problems are mutual water companies or private systems (see Table 2 below for ownership type breakdown).
- Only nine of the 95 private water systems identified are being regulated by the California Public Utilities Commission (CPUC).
- Overwhelmingly, these systems get their water from groundwater, with some using surface water to blend their water to meet drinking water standards.

According to the DWP, “These water systems with compliance issues typically cannot charge rates sufficient for maintenance and operation, or to undertake infrastructure repairs and upgrades.”⁴ The majority of the 183 systems fall under the CPUC’s jurisdiction. Yet it is unclear what benefit small systems (fewer than 200 connections) or their consumers receive from the CPUC regulating their water systems. These systems do not have the rate base for necessary infrastructure investments and many, while subject to CPUC regulation, are not regulated by the CPUC.

TABLE 2
Public Water Systems:
Ownership Type for Small Water Systems Out of Compliance

System Type	Number	Percentage of Systems That are Out of Compliance
Mutual Water Company	42	23
Private Water Systems or Public Water Utilities	95	52
Local Agencies	44	24
Other Nonprofit	2	1
TOTAL	183	100

Source: SWRCB

Prior to the transfer of the state’s water program from the DPH to the SWRCB, the DPH’s DWP established a Small Water System Program Goal that targeted the 183 community water systems identified as having significant problems. At the beginning of 2012, the SWRCB was actively attempting to bring 63 of these systems back into compliance. The SWRCB’s DDW is continuing work to achieve that program

goal in ways that have the least impact on rates and affordability of the water. As of May 2013, eight water systems serving 762 people had been returned to compliance, and the number of systems without active funding applications with DDW to correct contamination issues was reduced by 20 percent. One of the recommendations in SWRCB's June 2015 Safe Drinking Water Plan for California was to "expand the goal of the Small Water System Plan" to bring more systems into compliance.⁵

Small water systems that have trouble providing clean water also have trouble providing affordable water. According to the SWRCB, "On average, customers of small water systems (public water systems serving fewer than 200 service connections) pay approximately 20 percent more for water than those customers served by larger systems."⁶ However, there is very limited data about the affordability of water provided by these smaller water systems. In addition, there is little oversight or accountability regarding water affordability for mutual water companies or private water systems that are not regulated by the CPUC. (See the section on affordability on page 7 for more information.)

Approximately 2 million Californians receive water from a domestic well or water system with fewer than 15 connections, according to the SWRCB. Those systems are not regulated by the SWRCB's drinking water program, and little is known about them. Some counties and special districts are either cataloging or actively regulating water systems that serve fewer than 15 connections in disadvantaged communities, and many have water quality problems. According to the Public Policy Institute of California, if water systems with fewer than 15 connections are included, "Taken together, perhaps 80,000 to 160,000 Californians (0.2 percent to 0.4 percent of the state's population) live in small, disadvantaged communities that have difficulties providing safe drinking water."⁷

How has the Drought Impacted California's Drinking Water?

During the last four years, California has faced a historic drought. On January 17, 2014, Governor Brown declared a drought state of emergency. On April 1, 2015, the Governor announced an executive order mandating a 25 percent reduction in water usage throughout the state. The executive order includes directives for programs directed by the SWRCB and other state agencies. The SWRCB approved regulations that went into effect June 1, 2015. The Governor also has signed legislation regulating groundwater supplies and authorizing the state to mandate consolidation of water systems.

The main impact of the drought on disadvantaged communities is its diminishment of the water supply. However, there also is an impact on water quality. When assessing California's ability to provide clean drinking water to its residents, it is important to understand that water quality, affordability, and availability are connected.

Small water systems serving disadvantaged communities face many barriers to providing clean drinking water, and the drought is an additional one. Drought conditions reduce the availability of surface water that small water systems use to blend with contaminated groundwater to meet state and federal drinking water standards. In addition, the drought has caused many groundwater wells to go dry. Often, small water systems depend on certain wells that can meet federal and state standards versus other area wells that may have more significant contamination problems. As wells go dry, water systems have fewer available supply options. The drought also imposes another barrier to consolidation of water systems because with less supply, larger water systems are less likely to want to take on additional connections.

The SWRCB reports that as of July 2015, some water systems are at extreme risk for drinking water shortages. It emphasized that it was working with drinking water systems throughout the state to find solutions to water shortages for vulnerable communities. Under the 2015 executive order, the state's priorities are to save water, increase enforcement against water waste, invest in new technologies, and streamline government response. Potential solutions include strict conservation measures, treatment of water that does not meet drinking water standards, interconnections with other water systems, expansion of existing sources, and development of new sources. Many solutions to water shortages also can provide water quality improvements, but drought conditions can make those solutions more difficult and costly. For example, groundwater monitoring can help prevent water pollution by detecting potential contaminants and pollutants. Similarly, the SWRCB has noted that consolidating water districts provides smaller water systems with greater financial, technical, and managerial expertise to treat contaminants such as nitrate or arsenic.

SAFE DRINKING WATER FOR DISADVANTAGED COMMUNITIES: AFFORDABILITY

The international standards of the United Nations’ human right to water lay out the definition of the factors required to ensure universal access to acceptable water for domestic uses, including affordability. According to the United Nations, “affordability requires that direct and indirect costs related to water and sanitation should not prevent a person from accessing safe drinking water and should not compromise his or her ability to enjoy other rights, such as the right to food, housing, health and education. These costs include both connection and delivery costs.”⁸

Several measures of affordability are used throughout the state of California, but the most common measure of affordability is as a percent of median household income (MHI), or:

$$\text{Affordability} = 100 * (\text{Monthly bill for average water use} * 12) / (\text{MHI of water system})$$

State, federal, and international organizations set the acceptable threshold of this affordability at different levels, ranging from 1.5 percent to 3 percent of MHI (Table 3).

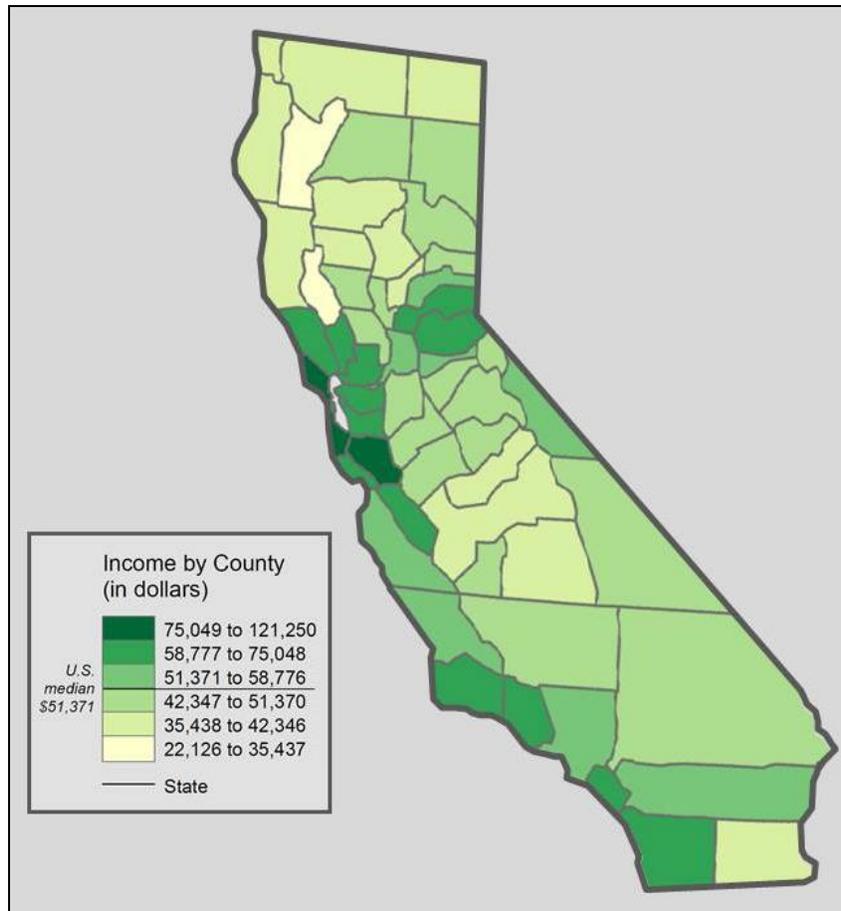
TABLE 3
Various Agency Affordability Thresholds⁹

Affordability Threshold	Organization
1.5% of MHI	State Water Board Division of Financial Assistance
2.5% of MHI	U.S. Environmental Protection Agency
3% of MHI	United Nations Development Program

A disadvantaged community (DAC) is defined by the SWRCB as any community where the MHI is below 80 percent of the statewide median household income (SMHI). A severely disadvantaged community (SDAC) is a community with an MHI below 60 percent of the SMHI. In 2013, the SMHI in California was \$61,094; DACs had MHIs below \$48,875, and SDACs had MHIs below \$36,656. Figure 1 (page 8) shows the range

of MHIs found in California by county, showing that many county-wide MHIs in California are at or below the DAC income definition.

FIGURE 1
Median Household Income by County, 2012



Source: U.S. Census Bureau, Small Area Income and Poverty Estimates (SAIPE) Program, December 2013

Affordability thresholds are set by various agencies, and when reached, qualify small disadvantaged communities for grant funding for water infrastructure capital cost improvements so as to not burden these communities with additional costs. The thresholds for households in a DAC are \$733.13 per year (\$61.09 per month), according to the SRWCB, or \$1,221.88 per year (\$101.82 per month) according to the U.S. Environmental Protection Agency (U.S. EPA). These numbers should be even lower in SDACs, only \$549.84 per year, according to the SRWCB, or \$916.40 per year, according

to the U.S. EPA. Some small water systems serve communities where the MHIs fall well below these upper limits defining DACs. In a community with an MHI hovering around \$16,000, for example, the affordability threshold set by the SWRCB would be only \$240 per year, or \$20 per month.

While the water affordability measure takes into account the average monthly bill for water, it does not consider the “replacement cost” for water, or the price a household pays each month to purchase non-contaminated water supplies (generally bottled water or vended water). According to research on water costs in 2011 in Tulare County,¹⁰ to avoid consuming nitrate-contaminated drinking water, households spent, on average, \$28.91 per month for replacement water supplies. The cost for replacement water is larger than the affordable threshold in some communities.

FINANCING DRINKING WATER IMPROVEMENTS IN CALIFORNIA

Drinking water projects in California generally are financed by three fund sources: federal funds, state bond funds, and local water system funds.

Since 2000, California voters have approved just over \$1 billion in drinking water bond funds for infrastructure and water quality improvements. Of this amount, approximately \$241.8 million is still available (as of July 1, 2015) for state drinking water system enhancements.

> Federal Safe Drinking Water State Revolving Fund

Since 1997, the U.S. EPA has provided the DPH, and now the SWRCB, with an annual Safe Drinking Water State Revolving Fund (SDWSRF) capitalization grant to use for low-interest loans and principal forgiveness to assist public water systems in achieving and maintaining compliance with safe drinking water standards. The SDWSRF provides public water systems the opportunity to use subsidized funding to correct infrastructure problems; assess and protect source water; and improve technical, managerial, and financial capabilities.

California has received 19 capitalization grants from the U.S. EPA totaling \$1.6 billion, which includes American Recovery and Reinvestment Act of 2009 funding. Since the program began in May 1998, the DPH, and now the SWRCB, have executed 343 loans totaling \$2.1 billion through June 30, 2015. American Recovery and Reinvestment Act funding accounted for an additional 51 funding agreements totaling approximately \$150 million.

The state must provide a 20 percent match to receive SDWSRF funding. In the past, matching funds have come from the state General Fund; Propositions 13, 50, and 84; interest earned on prior loans; and local funds (see Table 4 below).

TABLE 4
Projected Summary – Safe Drinking Water State Revolving Fund*

Fiscal Year	20 Percent State Match		Federal Amount	Total
2009–10	\$21.2	From Proposition 50	\$132.8	\$159.4
	\$5.4	From Interest Earnings		
2010–11			\$127.0	\$152.4
	\$25.4	From Interest Earnings		
2011–12	\$13.0	From Proposition 84	\$86.7	\$104.0
	\$4.3	From Interest Earnings		
2012–13	\$17.1	From Proposition 84	\$85.4	\$102.5
2013–14	\$15.7	From Proposition 84	\$78.7	\$94.4
2014–15	\$16.6	From Interest Earnings	\$83.2	\$99.8

* Dollars in millions.

> *State Bond Funding*

The SRWCB also reviews and processes applications for various grants associated with general obligation bond programs. Since 2000, the program has been responsible for implementation of four safe drinking water bond laws that provide a total of \$1.1 billion in grants to water systems (see Table 5 on page 11), including the passage of Proposition 1 in November 2014. As of June 2015, all the drinking water enhancement funds from

the three previous bonds, Propositions 84, 50 and 13, are fully committed. Proposition 1 allocates \$260 million in bond funding, and after the costs of administering the bond, leaves \$241.8 million available in grants and loans for new drinking water enhancement projects. This funding will be awarded to qualifying communities over the next five fiscal years.

TABLE 5
Recent Drinking Water Bond Funds Approved by California Voters

Funding Source	Description	Amount
Water Quality, Supply and Infrastructure Improvement Act of 2014 (Proposition 1)	Funding for drinking water projects for communities	\$250 million
The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84)	Funding for emergency clean water grants, small community infrastructure improvements for chemical and nitrate contaminants, and grants and loans to prevent or reduce contamination of groundwater that serves as a source of drinking water	\$300 million
The Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50)	Funding for grants to public water systems for water security, grants and loans for water quality, and grants for treatment technology	\$485 million
The Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Act of 2000 (Proposition 13)	Funding for public water system infrastructure improvements and to provide technical assistance to public water systems, including disadvantaged communities	\$70 million These funds have been completely awarded.

> State Funding Prioritization

Prior to the drinking water program being moved to the SWRCB, the DPH used a universal “pre-application” for drinking water infrastructure funding to help establish a priority project list for each funding program. The department then sent an invitation letter to the highest-ranked systems or projects to complete a full application for funding. For each funding category for the proposition bond funds, the department developed criteria and points to rank the projects. These criteria were presented at public meetings, and public comments were invited before the criteria were finalized. For example, for the small community infrastructure improvements for Proposition 84’s chemical and nitrate contaminants section, the department awarded points to water systems that were under orders to boil their water, had four or more contaminants exceeding established maximum contaminant levels, were in communities with an MHI of less than 20 percent of the SMHI, and addressed regional issues with three or more systems, among other criteria.

After the programs were moved to it, the SWRCB proceeded to adopt a policy handbook for the SDWSRF that modified the priority system and specified that applications would be continuously accepted. Projects will be funded on a readiness-to-proceed basis. Applications will continue to be “universal,” with the SWRCB utilizing the appropriate funding program for each project.

> Local Water System Funds

In addition to federal and state funds, local public water systems may raise funds to finance drinking water infrastructure. As previously mentioned, local water system funds have been used as a match for SDWSRF grants.

Drinking Water in Disadvantaged Communities: Two Stories

Some systems have residents complaining about drinking water issues, such as color, clarity, smell, pressure, and affordability, which are secondary maximum contaminant levels (MCLs) and therefore are not part of the 183 systems that the SWRCB is trying to bring back into compliance. Two disadvantaged communities not on the SWRCB list that have had drinking water issues are Edgemont in the city of Moreno Valley in Riverside County and Maywood in Los Angeles County.

Edgemont

The community of Edgemont is served by Box Springs Mutual Water Company, which has 597 active service connections. Its water distribution system is 93 years old and has insufficient water pressure for fire suppression. In addition, residents have complained about the color and smell of the water. However, the water system has not received any violations for drinking water standards and, according to water system managers, is able to meet standards by being blended with surface water. In addition to water delivery and quality issues, the water company's former general manager was convicted of embezzling the mutual water company's funds.

Residents often are unaware they have shares in the mutual water company due, in part, to communication problems between English-speaking staff and the Spanish-speaking community. There have been attempts to get grants. There also has been consideration of eliminating the water company and having either the city of Moreno Valley or a neighboring municipal water district take it over. Currently, the city is engaged in an outreach effort to educate the mutual water company shareholders on options to address the water issues facing them.

Drinking Water in Disadvantaged Communities: Two Stories, continued

Maywood

In the city of Maywood, residents are served by three different mutual water companies, and many have complained about the smell and color of the water. The Maywood Mutual Water Companies 1, 2, and 3 serve Maywood's population of almost 30,000 people, 70 percent of whom are renters.

At one community meeting, advocates from the Natural Resource Defense Council "heard residents talk about how the water is so dirty that it has ruined their clothes when they attempt to wash with it, how the bad smell being emitted from the water makes them nauseous and how they have to buy bottled water for their everyday needs. One particular comment that stuck with me was a resident who said he doesn't even give the dog the city's water for fear of getting it sick."*

Two pieces of legislation have been signed into law to address Maywood's water issues. One, AB 890 (Pérez), Chapter 259, Statutes of 2009, required a study of manganese in the water and mandated the city to hold a hearing on the outcome of the study and notify citizens of the concerns. The other bill, AB 240 (Rendon), Chapter 633, Statutes of 2013, made reforms to all of the state's mutual water companies, increased access to funding for mutual water companies, and provided \$1 million to the Water Replenishment District of Southern California (WRD) to address drinking water quality issues. Currently, the WRD is conducting outreach to citizens of Maywood to understand their concerns and to explore possible solutions. Yet public concerns about the drinking water remain. This case illustrates the need for the review of water systems without primary MCLs to ensure their water is affordable and meets residents' needs.

* Lizzeth Henao, "Maywood's Water Woes," *Switchboard: National Resources Defense Council Staff Blog*, October 28, 2009, http://switchboard.nrdc.org/blogs/lhenao/maywoods_water_woes.html.

LOCAL AND STATE SMALL WATER SYSTEMS

Per the provisions of the federal and state Safe Drinking Water Acts, the state does not monitor or regulate water systems with fewer than 15 connections or that serve fewer than 25 people. Water systems that are not regulated by the state are divided into three categories:

- State small water systems with five to 14 connections
- Local small water systems with two to four connections
- Private wells

Title 22, Section 64212, of the California Code of Regulations gives counties the authority to regulate all types of small water systems and allows them to conduct basic water quality sampling for state small water systems.¹¹ There is no requirement to sample local small water systems or domestic wells. Few counties use their authority to actively monitor these systems, and there is little data on the water affordability and quality issues that small water systems experience. In addition, it is unclear what percentage of small water systems are located in disadvantaged communities. Information on small water systems often is not collected, and knowing the quality and affordability of these largely unregulated systems presents a significant data gap. This large data gap interferes with understanding the challenges of providing clean, affordable drinking water to disadvantaged communities.

Some counties test only when the water system is seeking a permit, others test infrequently, and some not at all. But some positive county examples exist. In 1987, Monterey County passed an ordinance that regulates both state and local small water systems. This local drinking water program regulates water systems by requiring permits for them and testing water sources for both bacterial contamination and other primary contaminants. The systems also must demonstrate adequate supply. The county can require modifications to the water systems and issue compliance orders and fines.

Currently, Monterey County regulates 695 local small water systems, which serve 2,039 connections, and 274 state small water systems with 2,193 connections. The majority of the system's ownership types are mutual water companies. Some of these systems have nitrate and arsenic contamination problems. The county has identified 171 state and local small water systems with a total of 654 connections that have nitrate contamination issues. The county also has identified 72 state and local small water systems that have a total of 337 connections with arsenic contamination.

The Environmental Justice Coalition for Water is engaged in the Salinas Valley Disadvantaged Community Drinking Water and Waste Water Pilot Plan Project, where through outreach, it will give a better characterization of the communities served by these small water systems. However, it believes the vast majority are in disadvantaged communities. While little is known about the quality of the water provided and even less is known about the affordability of small and local systems, from what is known about state and local small water systems, they appear to face many of the affordability and water quality issues that small public water systems do.

SOLUTIONS AND BARRIERS

According to the SWRCB, many disadvantaged communities are served by small water systems. Also per the SWRCB, there are more than 3,000 small community water systems. There are additional systems that go uncounted because they possess fewer than 15 connections. All of the systems the SWRCB has identified as having ongoing water quality issues are small systems. These small systems with quality issues that serve disadvantaged communities often have concerns not only about water quality, but also with the color, smell, taste, pressure, and affordability of their water.

The SWRCB has taken actions to pursue what it sees as a promising option for small systems: for them to connect to a larger system and consolidate some or all of the water system's functions. During the past several decades, 145 water systems have been eliminated through consolidation. The SWRCB pursues and incentivizes consolidation because it believes it is the best option for water systems, being cheaper than other solutions. This is because the water systems gain efficiencies, such as a larger rate base, consolidation of facilities and staff, and ability to fund experienced operators. As far as affordability, the SWRCB pursues solutions, such as consolidation, that have the least impact on water affordability. The CPUC has offered higher rates of return for its larger public water utilities to take over the small ones, but has had limited success.¹² The CPUC's larger public water utilities also are required to have low-income assistance programs. Overall, consolidation improves water quality and affordability.

For disadvantaged communities served by small water systems, the procedure for consolidation was addressed for the first time this year in a budget trailer bill, SB 88 (Committee on Budget and Fiscal Review), Chapter 27, Statutes of 2015. A provision of the new law would allow the SWRCB to require certain water systems, including those systems that serve disadvantaged communities, that consistently fail to provide safe drinking water to consolidate with or receive service from another public water system.

Among the requirements for service or consolidation, the SWRCB must show it encouraged voluntary consolidation, considered other enforcement remedies, and developed a plan and financing package for the consolidation. While consolidation is not a requirement, SB 88 grants the SWRCB new authority to move toward consolidation for disadvantaged communities where needed.

It is important to point out, however, that consolidation does not work for every system, and in some cases, there are significant barriers to consolidation. The barriers to consolidation include liability from the system that has water quality problems transferring to the consolidated system. The system that needs to be taken over usually needs significant infrastructure repairs and often lacks customers who can afford increased rates to pay for improvements. In addition, some larger systems might see no advantage in taking over a system with water quantity or quality problems. In fact, geography can be a barrier to consolidation because of the cost of long pipes to connect two systems that are far apart. So if a small system is several miles from a larger one, the latter may decide it isn't worth the cost to connect to the smaller system. Moreover, new state small water systems are still being created, and there often is a disconnect between the land-use agency approving the new system and the entity that will be responsible for the system when it fails to produce clean and affordable water.

Other solutions aimed at improving the quality of water delivered include new well-drilling to locate cleaner water or well modification designed to seal off the contamination. While these options are less costly than a treatment facility, they are not always feasible and sometimes can be only a temporary solution. Treatment often is the last option because of the cost to install, maintain, and operate the system. Often the filters' media must be replaced, and when concentrated contaminated water or contaminated media exceed certain levels of contamination, the waste can be deemed universal or hazardous and has special disposal costs. In addition, finding experienced operators to run the treatment system is costly. Ongoing operation and maintenance (O&M) is a major barrier to a small water district because the only funding source for O&M is local ratepayers. Small systems in disadvantaged communities cannot afford these increased rates to cover the costs of treatment. The state cannot provide financial assistance, including grants, to public water systems that cannot afford ongoing O&M costs. In addition, if water quality worsens or new contaminants are found, additional treatment may be required.

While the SWRCB does consider the affordability of water when funding grants for capital improvements, the small systems it oversees for water quality have little other oversight over their affordability. Improvement of systems that are already unaffordable is challenging. In addition, depending on ownership type and size, there

are different levels of oversight on the water systems costs and rate structure, which leads to varying outcomes for consumers.

CONCLUSION

Providing clean and affordable drinking water to every Californian is a difficult commitment to fulfill. Water systems in California have such a range of size, organization, and sources that few are exactly alike. The establishment of a Small Water System Program Goal, transfer of the Drinking Water Program, passage of Proposition 1, and release of a Safe Drinking Water Plan (for the first time since 1993) are promising signs of progress. However, achieving the goal of the Human Right to Water Law will require innovative solutions and difficult decisions. This report, along with Part 1, is meant to provide information and tools for policy makers to understand and tackle these challenges.

APPENDIX A

Drinking Water Program Transfer

- **Class A water utilities** serve more than 10,000 connections. There are nine Class A water utilities in California. They serve 1,374,723 connections, about 95.7 percent of all connections regulated by the California Public Utilities Commission (CPUC).
- **Class B water utilities** serve 2,001 to 10,000 connections. There are five Class B water utilities in California. They serve 27,098 connections, about 1.9 percent of all connections regulated by the CPUC.
- **Class C water utilities** serve 501 to 2,000 connections. There are 24 Class C water utilities in California. They serve 24,640 connections, about 1.7 percent of all connections regulated by the CPUC.
- **Class D water utilities** serve 500 or fewer connections. There are 76 Class D water utilities in California. They serve 9,899 connections, about 0.7 percent of all connections regulated by the CPUC.

The total number of connections in California that the CPUC regulates is 1,436,360.

Source: CPUC

APPENDIX B
Glossary of Common Terms Related to Drinking Water

Disadvantaged Communities	Any community in which the median household income is below 80 percent of the statewide median household income
Groundwater	Water located underground in the cracks and spaces in soil, sand, and rock. Groundwater can be stored in and removed from geologic formations of soil, sand, and rocks called aquifers.
Local Agency Formation Commissions (LAFCOs)	Entity that sets cities' and special districts' boundaries for each county
Local Primacy Agency	Counties where the State Water Resources Control Board has delegated authority to regulate public water systems serving fewer than 200 service connections
Maximum Contaminant Level (MCL)	Maximum concentration of a contaminant permissible in public drinking water systems
Mutual water companies	Nonprofit mutual benefit corporations controlled by shareholders. Shareholders usually are the landowners who receive water service. (Neither LAFCOs nor the California Public Utilities Commission [CPUC] regulate mutual water companies.)
Private Water Systems	Water systems that meet the definition of a public utility but are not regulated by the CPUC and usually serve fewer than 20 connections
Public Water System	A system that provides water to the public for human consumption through pipes or other constructed conveyances, if such system has at least 15 service connections or regularly serves at least 25 individuals
Public Water Utilities	Privately owned water systems that provide water to the public, which are regulated by the CPUC. The CPUC controls the companies' service areas and their water rates.

Primary Drinking Water Standard	Legally enforceable standard that public water systems' water must meet. Primary standards protect public health by limiting the levels of contaminants.
Secondary Drinking Water Standard	Regulates the aesthetics of water, such as color and odor, which do not pose a risk to health. These secondary maximum contaminant levels (SMCLs) are guidelines, not enforceable limits.
Small Water Systems	Definition varies under federal and state law. The federal Safe Drinking Water Act and California Health and Safety Code define a small public water system as a community water system serving a population of 10,000 or fewer, which corresponds to 3,300 service connections or fewer. Another working definition of "small" is used to define what types of systems can be delegated to Local Primacy Agencies, meaning the system has fewer than 200 service connections. The drinking water fee structure is also used to differentiate small and large water systems. Community water systems with 1,000 or more service connections pay an hourly rate for their fees, whereas systems with fewer than 1,000 service connections pay an annual rate for their fees.
State Small Water System	Health and Safety Code 116275(n) defines a state small water system as a community water system that provides piped water to the public for human consumption that serves at least five and not more than 14 service connections. These systems are not regulated by the state and may be regulated by the county.
State Water Resources Control Board (SWRCB)	State agency responsible for administering the state's system of water rights and state and federal water quality laws
Surface Water	Water on the surface of our planet, such as in a stream, river, lake, wetland, or ocean
Treatment Facilities	Treats water through various methods to meet California's primary drinking water standards

ENDNOTES

The authors would like to acknowledge the time and assistance of Elena Humphreys and her colleagues in the Legislative Affairs Unit of the State Water Resources Control Board.

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- ¹ Assembly Bill 685 (Eng), Chapter 524, Statutes of 2012.
 - ² Ellen Hanak et al., “Paying for Water in California,” Public Policy Institute of California, March 2014.
 - ³ The Department of Public Health was responsible for the state’s drinking water program until 2014, when these responsibilities were transferred to the State Water Resources Control Board.
 - ⁴ State Water Resources Control Board, “Small Water System Program Goal Implementation Plan,” May 1, 2013.
 - ⁵ State Water Resources Control Board, “Safe Drinking Water Plan for California,” June 2015.
 - ⁶ Ibid.
 - ⁷ Ellen Hanak et al., “Paying for Water in California,” Public Policy Institute of California, March 2014.
 - ⁸ Office of the United Nations High Commissioner for Human Rights, “Annual Report of the United Nations High Commissioner for Human Rights and Reports of the Office of the United Nations High Commissioner for Human Rights and the Secretary–General: Report of the United Nations High Commissioner for Human Rights on the Scope and Content of the Relevant Human Rights Obligations Related to Equitable Access to Safe Drinking Water and Sanitation Under International Human Rights Instruments,” United Nations, Human Rights Council, Sixth Session, August 16, 2007, p. 15.
 - ⁹ Juliet Christian-Smith et al., “Assessing Water Affordability: A Pilot Study in Two Regions of California,” Pacific Institute, August 2013, p. 8
 - ¹⁰ Ibid.
 - ¹¹ Governor’s Drinking Water Stakeholder Group, “Data Collection and Management for Local and State Small Water Systems,” January 2014.
 - ¹² State Water Resources Control Board, “Safe Drinking Water Plan for California,” June 2015.

Written by Michael Jarred and Meg Svoboda with contributions from Darren Lu, Jim Damrell, and Brie Lindsey. The California Senate Office of Research is a nonpartisan office charged with serving the research needs of the California State Senate and assisting Senate members and committees with the development of effective public policy. It was established by the Senate Rules Committee in 1969. For more information, please visit www.sor.senate.ca.gov or call (916) 651-1500.