

Executive Summary

Water and planning professionals do not have adequate information on the myriad water conservation efforts occurring across the State of Colorado. In January 2019, Colorado WaterWise initiated the State of Water Conservation in Colorado pilot research project to help fill knowledge gaps in our state about the water conservation goals and efforts of public water providers.

This project brings together public water system data available from the State and newly collected survey data from 94 water providers. Through these data we explore how frequently conservation programs are implemented; which programs are believed to be the most successful; the most pressing needs of the water conservation community; and how conservation program effectiveness is being measured. The findings and recommendations are intended to benefit water providers, the State, local governments, and water conservation organizations.

Colorado WaterWise is a non-profit whose mission is to address our state's water challenges by improving water efficiency through diverse community connections, innovative solutions, and valuable member resources.

Facts about Colorado Water and Conservation

Federal Classification of Public Water Systems

There are 2,051 public water systems in Colorado that provide potable water and are regulated by the Safe Drinking Water Act (Colorado Department of Public Health & Environment, 2021).

- 906 systems are community water systems. These systems serve the same population year-round.
- 174 systems are non-transient, non-community water systems that serve at least 25 of the same people at least six months per year. Examples include schools and resorts.
- 971 systems are transient, non-community water systems that serve at least 25 people or 15 connections, but people do not remain for long periods of time. Examples include stores and campgrounds.

State of Colorado Goals and Regulations

Statewide Conservation Goals (State of Colorado, 2015; State of Colorado, 2019b)

- By 2025, 75 percent of Coloradans will live in communities that have incorporated water-saving actions into land-use planning.
- By 2050, achieve 400,000 acre-feet (ac-ft) of municipal and industrial conservation.
- Municipal and industrial users do not currently experience a gap between water supplies and demands, except during times of drought. By 2050, the gap between available supplies and projected demands is expected to grow to between 250,000 to 750,000 ac-ft/year.

Note: the terms “system” and “provider” are used interchangeably in this report.

Covered Entities

There are approximately 85 covered entities in the State of Colorado, though the exact number changes year to year. “Covered entity” is the term used by the State to refer to water providers that sell more than 2,000 ac-ft/year of water. Covered entities are only about 4 percent of water providers in the State but serve about 80 percent of the State's population.

Annual Water Use Data Reporting (HB10-1051, CRS §37-60-126)

- This statewide regulation, introduced in 2010, requires public water providers to report their data annually.
- Since 2013, 87 percent of covered entities have submitted their annual water use data at least once.

- 52 percent of covered entities submit their data every year (based on the period 2013-2019).

Water Efficiency and Conservation Plans (HB04-1365, CRS §37-60-126)

- The Water Conservation Act of 2004 requires covered entities to develop water efficiency plans using State guidelines, prompting the proliferation of standardized plans. Non-covered entities have no requirement.
- As of October 2020, 67 percent of water efficiency plans have been filed within the past seven years as required. These plans were submitted by many of the largest and most progressive providers in Colorado.
- 25 percent of analyzed providers have a water efficiency plan filed with the State that has not been updated on the mandated seven-year update cycle.
- Water systems that are not covered entities are not required to file a water conservation plan with the state, though even small public water systems would benefit from a site-scale conservation plan addressing equipment and fixture selection, maintenance, and conservation practices.

34 percent of all providers analyzed in this study do not have a water conservation plan.

Project Data Collection and Findings

Project Data

Data were compiled for 155 public water systems serving 5.5 million people. State data sources generally represented covered entities and survey data generally represented smaller water systems (Figure 1). The final dataset was combined from numerous sources and includes:

- Complete information for 94 public water systems serving 2.3 million people

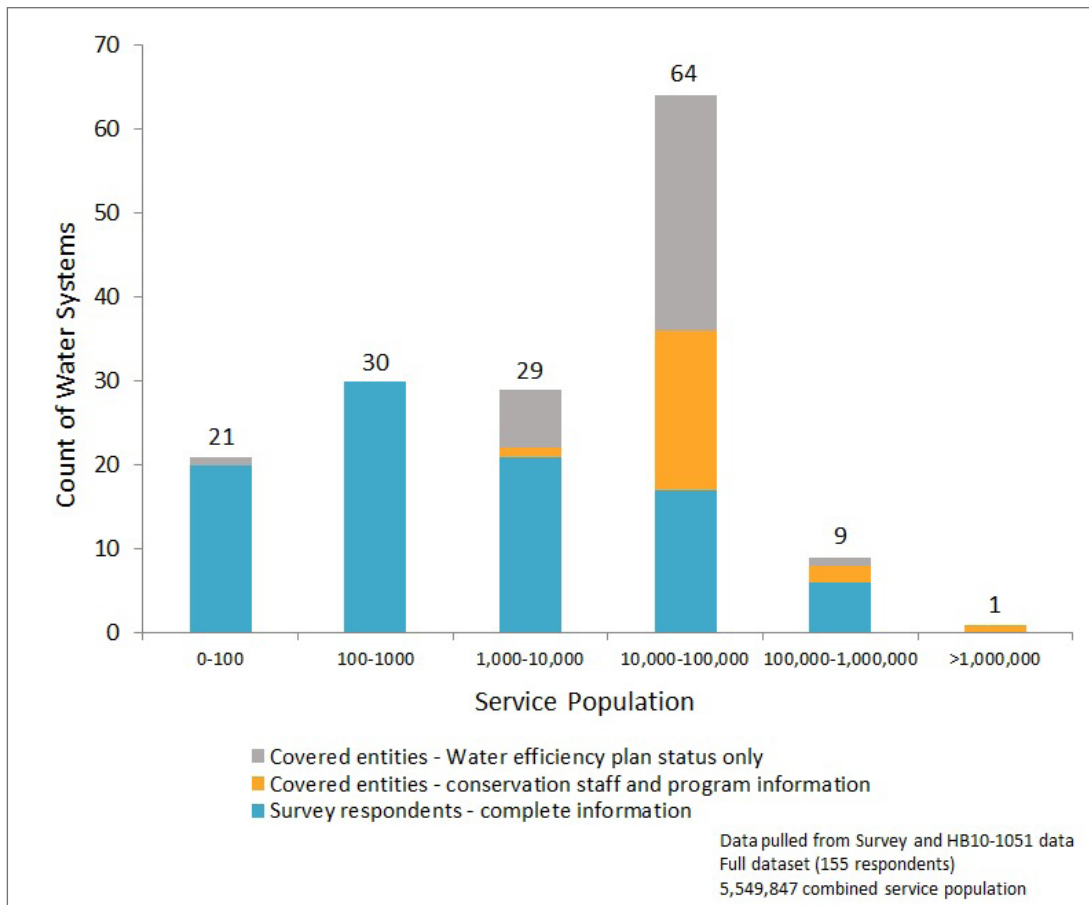


Figure 1. Breakdown of Public Water Systems Represented in Final Dataset



Conservation Program Capacity of analyzed water providers...

- 23%** do not have dedicated conservation staff.
- 52%** have one to three dedicated conservation staff.
- 58%** have no dedicated conservation program budget beyond staff time to implement conservation programs.

- Limited information about conservation staff, budget, and programs for 22 public water systems serving 2.2 million people
- Basic information about water efficiency plan status for 39 public water systems serving 1.0 million people.

Water Representation in Community Land Use Plans and Development Reviews

- 45 percent of survey respondents were unsure if the comprehensive plans that cover their service areas include water conservation.
- Where respondents were aware of conservation programs or policies in comprehensive plans, the top five most common policies and programs included in comprehensive plans are (1) water conservation goal and objectives, (2) xeriscape requirements, (3) conservation-oriented rates and fees, (4) indoor fixture efficiency standards or green plumbing codes, and (5) water efficiency standards for new development.
- 27 percent of survey respondents report that conservation staff participate in developer pre-application and development review meetings.

Water Conservation Goals

- We estimate that 54 percent of analyzed providers have established quantitative conservation goals.
- Survey results show that the most common types of quantitative conservation goals are total water use reduction, per capita water use reduction, and water loss reduction.
- 62 percent of survey respondents have established qualitative (non-numeric) conservation goals.
- Survey results show that the most common types of qualitative conservation goals are focused on education, conservation awareness, and integrated water resources planning.

Water Conservation Programs

- 38 percent of survey respondents had not implemented any water conservation programs.
 - When water providers lack dedicated conservation staff, the two most implemented programs are system water loss audits and efficiency-oriented rate structures - two program types that directly influence water sales and revenues.
 - Billing rate structures, system efficiency upgrades, and system leak detection and repairs are cited as having produced the highest water savings.

The Top 5 Conservation Programs

- 1 System water loss audits
- 2 Efficiency-oriented billing rate structures
- 3 Education programs for adults
- 4 Rebates for indoor fixtures
- 5 Direct installation programs

Implementation Barriers

The top three barriers to delivering water conservation programs come down to a lack of resources - staffing, financial, and technological.

Co-Benefits

- 74 percent of survey respondents do not measure any co-benefits, e.g. energy savings, associated with their programs, indicating that the benefit of water conservation programs is being undervalued.

Reclaimed Water

- Reclaimed water is defined under Regulation 84 as domestic wastewater that has received secondary treatment for approved uses only (Colorado Department of Public Health and Environment, 2019).
- 14 percent of survey respondents have a centralized reclaimed water system. They indicate it is used predominantly for irrigation and cooling.

Our recommendations are directed at four audiences: Colorado WaterWise, public water systems, local governments, and the State of Colorado. The following summarizes high-priority suggestions; additional recommendations are contained within the report.

Recommendations

- **Colorado WaterWise** can take several actions to support public water systems in delivering effective conservation programs, such as promoting “gold standard” water conservation resources and developing water savings methodologies.
- **Providers** can better advocate for conservation within their organizations to secure the staffing, budget, and technological resources that many providers desperately need. Writing or updating an existing efficiency plan is highly recommended for medium and large providers, and small public water systems would benefit from a site-scale plan addressing equipment and fixture selection, maintenance, and conservation practices.
- **Local government planners** can coordinate with the water providers serving their communities to develop, track, and report on progress towards shared goals.
- **The State of Colorado** can expand reporting requirements to cover all community water systems, improve the quality of the data submitted, and make the data accessible. The State can also provide grant funding and/or technical assistance to advance consistent methodologies for water savings estimates.

Most survey respondents cited difficulty in measuring water savings even though large utilities are reporting measurements regularly. The two most cited challenges were lack of analysis expertise and inability to control for external variables.

Colorado WaterWise will evaluate whether it is feasible and useful to repeat this study in future years to demonstrate forward progress in delivering conservation programs across the State of Colorado.

