

# DRINKING WATER PLANNING FOR RESILIENCE

City of Brighton  
Brighton, Colorado



The City of Brighton, CO worked with the U.S. Environmental Protection Agency (EPA) Creating Resilient Water Utilities (CRWU) initiative on a drought resilience assessment using EPA's CREAT Tool. The assessment brought together individuals from the City of Brighton and EPA to think critically about drought impacts, vulnerable utility assets, potential adaptive measures, and the monetized risk reduction that could result from implementing those potential adaptive measures. The City of Brighton focused its assessment on the impacts of drought to the utility's alluvial groundwater system.

## RESILIENCE CHALLENGES

The City of Brighton (in Adams and Weld Counties) has already experienced warmer and drier conditions, with the most recent three decades (1991-2020) being 1.5 °F above the 20<sup>th</sup> century average and precipitation decreasing by 0.1 inches per decade since 1978. Regionally, models project increasing temperatures and shifts in watershed precipitation trends, suggesting hotter and more frequent extreme temperatures and more variable snowpack. The City of Brighton already experiences abnormally dry conditions more frequently than abnormally wet conditions, and some of those dry spells can be extreme and long-lasting. Brighton's average annual temperature has increased by 0.4 °F per decade since 1978. Additionally, Adams County's trends suggest a decrease in total precipitation and the U.S. Drought Monitor shows that currently 28% of the county is in a moderate drought and 38% is in severe drought. Should this trend continue, it could lead to drought conditions that strain the city's groundwater sources.

The City of Brighton is experiencing population growth that is expected to continue and is concerned that these drought-related challenges may threaten the ability to meet drinking water demands in the future. To ensure the provision of clean and safe drinking water services to its community, the city used CREAT to explore potential adaptive measures that could make the water system more resilient to drought, evaluating the economic consequences of drought if the region becomes hotter, drier, and stormier with lower surface water flows by the year 2060.

## ABOUT

The City of Brighton, located in northeastern Colorado, supplies drinking water services to approximately 48,000 customers.

The city operates two groundwater treatment facilities, one that uses reverse osmosis and another that uses green sand filtration. Drinking water is sourced from groundwater sources, namely the South Platte River and Beebe Draw alluvium. The city produces an average of 6 million gallons per day (MGD), with summertime peaks reaching 13 MGD. The city also relies on surface water sources to augment the depletions from the groundwater wells.

Despite having a diverse water portfolio, the system remains vulnerable to water supply management issues, including drought and reduced snowpack. The City of Brighton is concerned that a major drought event may impact its ability to meet drinking water demand, especially in a more drought-prone future. The utility has already implemented an adaptive rate structure, numerous water storage reservoirs, and a backup source of power to address some impacts from drought.

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## RESILIENCE STRATEGIES AND PRIORITIES

The City of Brighton has already implemented many Current Adaptive Measures to address water supply concerns associated with drought impacts. During the assessment, the utility used CREAT to identify several additional Potential Adaptive Measures that may further enhance its alluvial groundwater system's resilience to future drought events.

**Current Adaptive Measures** (41 existing measures were identified, 3 are highlighted below)

- **Adaptive Rates:** Implement variable rates for water to customers (use based or peak pricing). The rates can be implemented with rationing or seasonal management programs to adjust to changes in demand.
- **Drought Contingency Plan:** Develop or update plans for drought to prepare for possible reductions in water supply. Plans could include the use of alternative water supplies and the adoption of water use restrictions for households, businesses and other water users. These plans should be updated regularly to remain consistent with current operations and assets.
- **Rationing:** Develop schemes and rules for limiting service provisions when conditions are unfavorable for supply to meet demand. These plans should be devised based on customer expectations, current practices and regulations, and expected changes in climate conditions. Establishing authorizations to establish rates for rationing and working with research community to define conditions to trigger the program should be considered.

### Potential Adaptive Measures

- **Alternate Water Supplies:** Develop redundant capabilities and options for water supply including water storage, water sources, treatment plants, intakes, and distribution system. Development or replacement could include entire facility or just critical portions to support operations when damage or loss occurs.
- **Reduce System Demand:** Develop and expand options that reduce demand on the water treatment process, including expansion of the non-potable water system. This would divert water into irrigation, prior to water treatment, and reduce demand on the water treatment plant.
- **Conservation Plan Update:** Improve the current conservation plan to further reduce water demand. This review has been started, and the City expects a new plan and strategy by 2027.

The City of Brighton's initial CREAT results suggest that implementing some of the assessed Potential Adaptive Measures, specifically the addition of water storage, water sources, treatment plants, expansion of non-potable systems, and conservation plan updates, could provide monetized risk reduction relative to implementation costs should the region become hotter, drier, and more stormy, with lower future surface water flows by the year 2060. The assessment helped the City of Brighton better understand the vulnerabilities of its drinking water system to drought and explore opportunities to enhance the system's drought resilience.

## FINANCING

The federal government has made unprecedented levels of funding available for reinvesting in our Nation's drinking water, wastewater, and stormwater infrastructure through the Bipartisan Infrastructure Law. Building knowledge and experience in adaptation planning can empower communities to pursue funding to implement their resilience plans. Federal programs, such as EPA's Clean Water and Drinking Water State Revolving Funds, can be used to finance eligible projects that increase climate resilience, particularly for communities that have historically faced challenges in accessing available funds, such as smaller utilities, underserved communities, and tribal entities.

The City of Brighton's CREAT results can supplement infrastructure funding and grant applications, indicating the utility has determined the proposed project has an added climate resilience benefit. This additional information may give granting agencies greater incentive to fund a project.