



**Legislative Council Staff**  
*Nonpartisan Services for Colorado's Legislature*

# Memorandum

June 4, 2026

**TO:** Interested Persons  
**FROM:** Alexa Kelly, Senior Research Analyst, 303-866-3469  
**SUBJECT:** Drought in Colorado

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## SUMMARY

Drought is defined as a shortage of water associated with the lack of precipitation. Drought is a regular feature of Colorado’s climate, and Colorado has endured significant dry periods and droughts in recent history. Drought is a unique type of weather event because it typically occurs slowly and its impacts compound over time, making it difficult to determine specifically when a drought begins and ends. Additionally, different regions of the state are affected by drought in different ways, which can complicate response efforts. Colorado water rights are also subject to strict legal doctrines, which can further exacerbate water management efforts during times of drought.

This memorandum discusses how Colorado measures and assesses drought conditions, drought risk, drought response plans, municipal drought planning, and funding available to respond to and mitigate drought impacts.



## Measuring and Assessing Statewide Drought Conditions

Colorado utilizes multiple sources of information to determine drought severity as the state is heavily reliant on snowpack for its water supply. These include monitoring snow water equivalent (SWE), surface water supply index (SWSI), and the U.S. Drought Monitor, which are discussed in detail below.

### **Snowpack, Snow Water Equivalent, and SNOTEL**

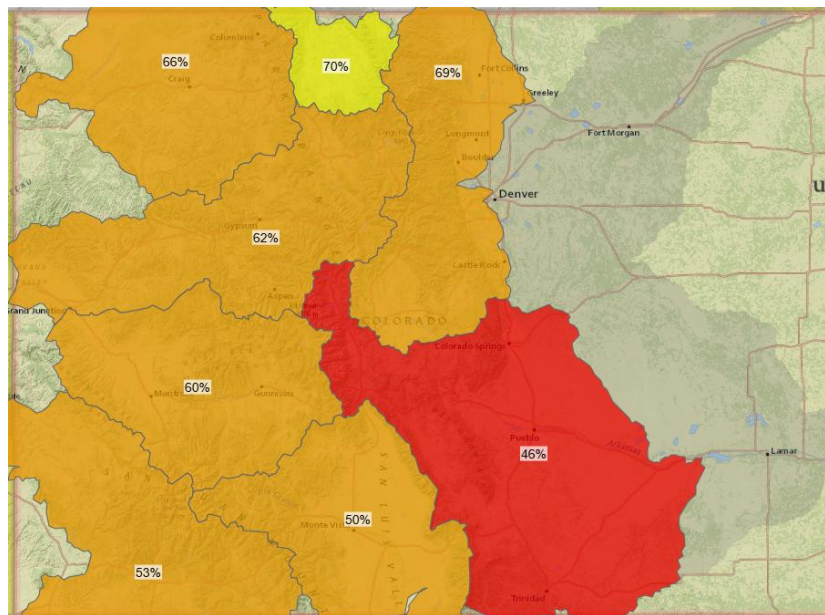
About 80 percent of Colorado’s annual water supply comes from snow, which accumulates in higher elevations as snowpack. The snowpack melts in the spring, replenishing groundwater and reservoir storage. This snowpack and subsequent snowmelt are crucial to the region’s ecosystems, urban centers, agricultural irrigation, and hydroelectric power. When precipitation is low, less snowpack develops, and spring melt-off occurs earlier, the effects of drought are further compounded.

Tracking snowpack throughout the year can help water providers and users prepare for drought. Snowpack is tracked by multiple sources, but the SNOwpackTELEmetryNetwork (SNOTEL) is the most widely used. Colorado has 117 SNOTEL sites, some of which have operated since the 1970s and provide information on the amount of water in the snowpack. These sites measure the amount of water content in an area of snow, also known as SWE. SWE helps predict how much water will flow into rivers and streams when snow melts in the spring. On average, roughly ten inches of snow contains about one inch of water.

The Natural Resources Conservation Service (NRCS) in the United States Department of Agriculture (USDA) provides daily snow data, which can be accessed through the [National Water and Climate Center Interactive Map](#) and the [Colorado Snow Survey Products](#). Figure 1 and Figure 2 are examples of the maps that are available.



**Figure 1**  
**Percent of Average of Annual SWE in Colorado River Basins (March 7, 2026)**

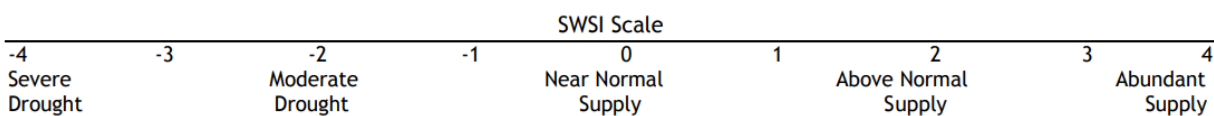


Source: [Natural Resources Conservation Service, United States Department of Agriculture.](#)

### Surface Water Supply Index

Drought is indirectly measured based on precipitation, snowpack, streamflow, and reservoir levels. To measure the collective impact of these elements, Colorado developed the SWSI, which is a scale indicating water supply conditions, as shown in Figure 3.

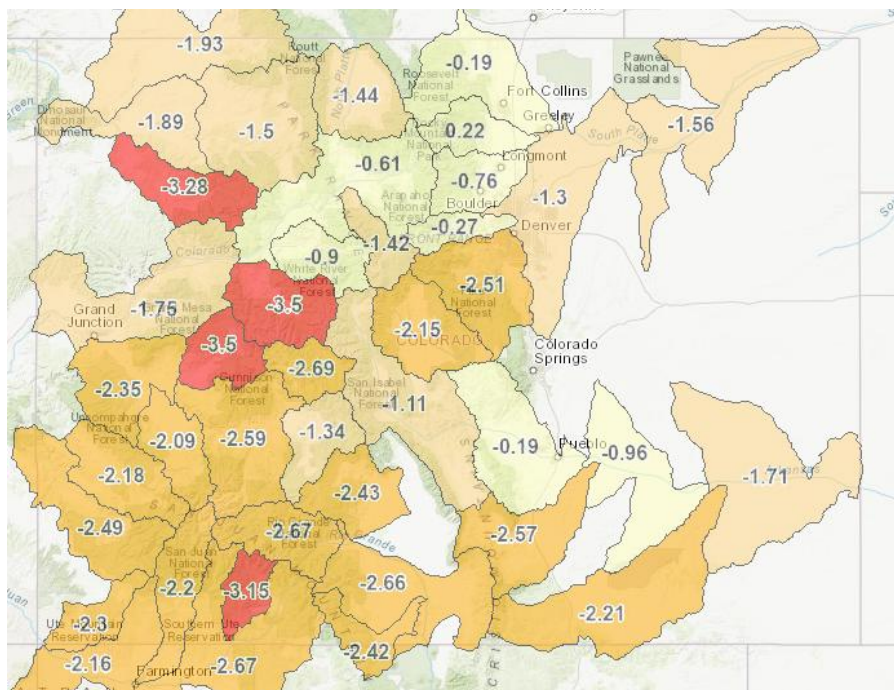
**Figure 3**  
**SWSI Scale**





The SWSI compares the total volume of water currently in a basin and sub-basins to the volume historically available in the same month. The measured volume is a combination of streamflow, forecasted streamflow, and reservoir storage. The Division of Water Resources (DWR) in the Department of Natural Resources (DNR) calculates the SWSI in river basins across Colorado on a monthly basis. The SWSI varies across the state, but current SWSI values show drought conditions in all measured areas, as shown in Figure 4.

**Figure 4**  
**SWSI in Colorado River Basins as of April 2026**



Source: [DWR](#)

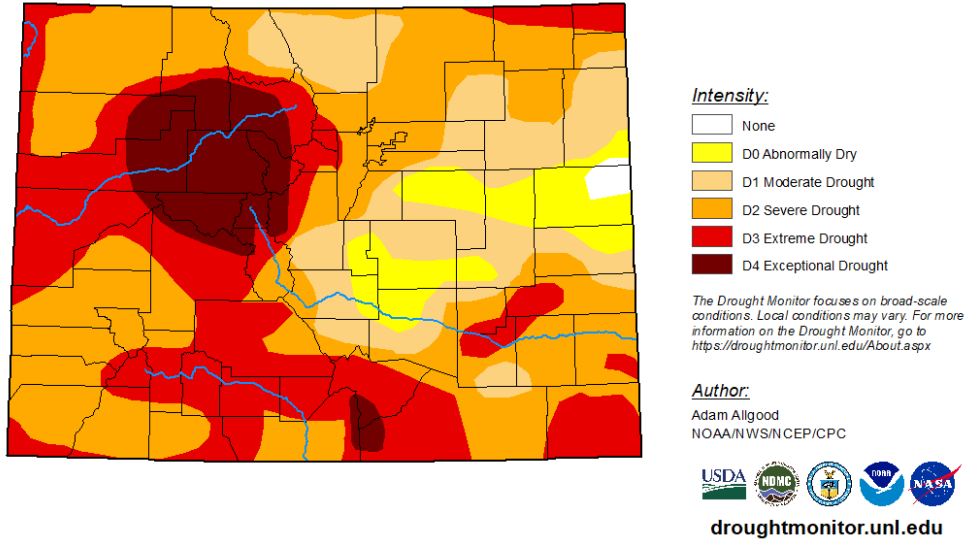
### U.S. Drought Monitor

[The U.S. Drought Monitor](#) (USDM) is another way to measure drought severity, and can be used as a tool to look at short- and long-term drought conditions. Short-term drought can have more immediate impacts on agriculture and grasslands, and these conditions can change rapidly. Long-term drought, however, can have more extreme impacts on hydrology and ecology that may not be mitigated by short-term precipitation increases.

The USDM maps are published every Thursday to reflect conditions at that point in time. Figure 3 shows the map from April 9, 2026, which shows all areas of Colorado experiencing some level of drought.

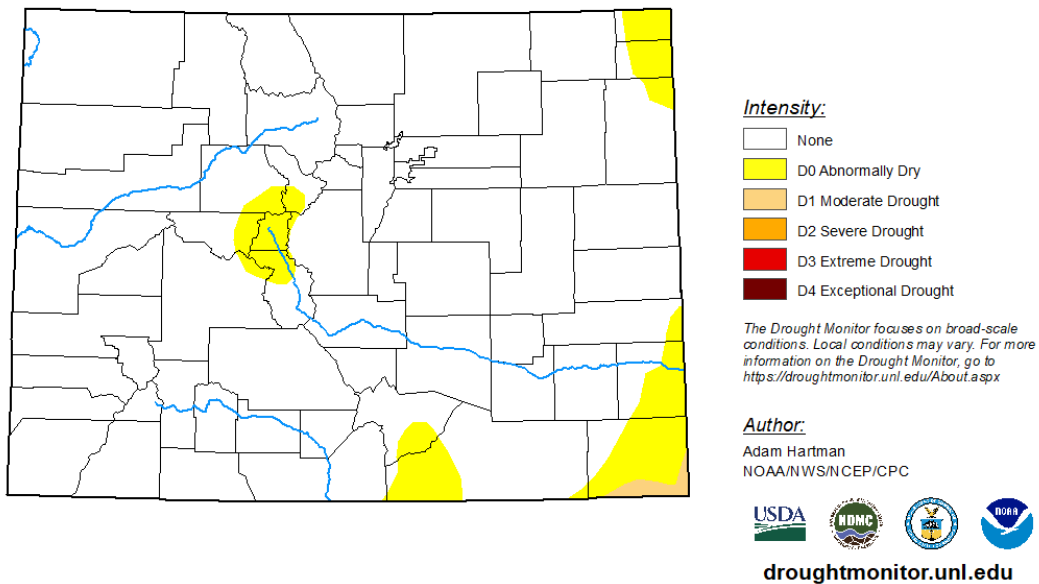


**Figure 5**  
**Colorado USDM Map as of June 2, 2026**



These maps can also be used to compare current conditions to past conditions. For example, Figure 6 shows drought conditions from June 3, 2023, which was a year of minimal drought.

**Figure 6**  
**Colorado USDM Map on June 3, 2023**





## Examples of Historical Impacts of Specific Drought Conditions

The USDM also tracks historical impacts of each category, specific to Colorado. Some examples of these historical impacts are as follows:

- D0 – hay production decreases, rangeland is drier, and irrigation begins earlier;
- D1 – ski season is limited, rangeland growth is stunted, and wildfires are more likely;
- D2 – farmers reduce planting, fire season is extended, and streamflow is lower;
- D3 – urban landscaping is impacted, large wildfires are more likely, reservoirs are lower, mandatory water restrictions are likely; and
- D4 – agricultural and recreational economic losses are significant, and dust storms and topsoil removal are more prominent.

## Drought Risk in Colorado

Drought is frequent in Colorado, occurring somewhere in the state in about nine out of every ten years. Severe, widespread, multi-year droughts are less common. Colorado has had eight multi-year droughts in recorded history.

The most significant impacts of drought in Colorado are noticeable in agriculture, wildfire protection efforts, municipal water use, commerce, tourism, recreation, wildlife preservation, power generation, and water quality. Drought in one area of the state can impact other regions of the state. For example, decreased snowpack in the mountains can impact agricultural operations downstream caused by decreased streamflow. As drought conditions worsen, vegetation dries out more quickly, creating more fuel sources for wildfires.

## Climate Impacts

Water resources and hydrology are sensitive to climate impacts, and changes in the Colorado River Basin are having negative consequences on portions of the western United States. Warming temperatures are impacting snowpack, streamflow, soil moisture, and evapotranspiration,<sup>1</sup> which is the water consumed and lost by plants. Since 2000, annual streamflow in all of Colorado's major river basins has been up to 19 percent lower than the average from 1951-2000. Studies have attributed up to half of this decrease in streamflow to warming temperatures. Additionally, soil moisture has seen overall declines in high-elevation

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<sup>1</sup> [Understanding Plant Water Use: Evapotranspiration. Colorado State University.](#)



areas from 1980-2022, and greater amounts of water are being lost from evapotranspiration as plants living in higher temperatures require more water.<sup>2</sup> Table 1 outlines the recent and future impacts on these variables.

**Table 1**  
**Recent Trends and Predictions for Changes in Certain Variables**

Variable / Event	Recent Trend	Projected Trend	Confidence in Change
<b>Spring Snowpack</b>	Lower	Lower	Medium
<b>Runoff Timing</b>	Earlier	Earlier	High
<b>Annual Streamflow</b>	Lower	Lower	Medium
<b>Summer Soil Moisture</b>	Lower	Lower	High
<b>Evaporative Demand</b>	Higher	Higher	Very High

Source: [Colorado Climate Center. Colorado State University.](#)

## Statewide Drought Preparedness Efforts

Historically, the state had little to no framework for how to respond to, prepare for, or predict drought conditions. After severe snowpack shortages in 1980-81, Governor Richard Lamm convened a special council to evaluate how Colorado could prepare for and respond to drought. This led to the creation of the first Colorado Drought Response Plan. The state's drought plan, along with other mechanisms and entities, guides Colorado's drought response and preparedness efforts.

### Colorado Enhanced State Hazard Mitigation Plan

Colorado's Drought Response Plan is a part of the [Colorado Enhanced State Hazard Mitigation Plan](#) (ESHMP). The ESHMP identifies hazards within the state and actions that can be taken to reduce their impacts on lives and property. The plan is developed under the direction of the Colorado Division of Homeland Security and Emergency Management, with input from state, local, tribal, and federal agencies, the private sector, and the general public. It discusses both natural and human-caused events, including flooding, wildfires, severe winter storms, drought, and more. The plan refers to drought as insufficient water to meet demands, continuously across

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<sup>2</sup> Bolinger, R.A., J.J. Lukas, R.S. Schumacher, and P.E. Goble, 2024: Climate Change in Colorado, 3rd edition. Colorado State University, <https://doi.org/10.25675/10217/237323>.



the state. The plan implements four phases of drought response, depending on certain observations and measurements, which are shown in Table 2.

**Table 2**  
**Drought Response Phases**

Drought Phase	Indicators	Responses
<b>Normal Conditions</b>	Drought Monitor at D0 SWSI = +2.0 to -1.9	Regular monitoring
<b>Phase 1</b>	Drought Monitor at D1 SWSI = -2.0 to -2.9	Increased monitoring of conditions No official disaster declaration
<b>Phase 2</b>	Drought Monitor at D2 SWSI = -3.0 to -3.9	Drought Task Force is operated Possible Drought Emergency declaration
<b>Phase 3</b>	Drought Monitor at D3 or D4 SWSI = -4.0 to -5.0	Drought Emergency is declared by the Governor

The full description of each phase can be found on page 799 of [the plan](#).

### Outlining Roles and Responsibilities

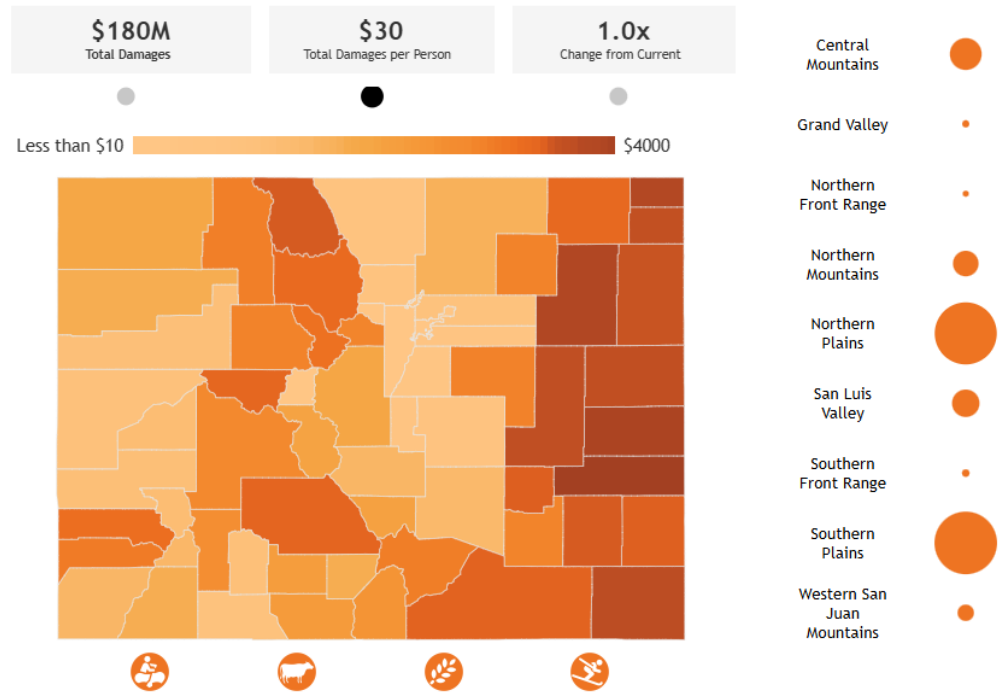
The drought response also includes the specific roles and responsibilities of state departments, agencies, and quasi-governmental, non-governmental, and non-profit organizations. The state's response is aimed at working within the existing governmental framework at the state and federal levels. The primary responding entities are the Water Conditions Monitoring Committee and, when activated, the Drought Task Force. These entities are discussed in more detail below. Additionally, all state agencies are required to cooperate and carry out assigned tasks related to the mitigation of the effects of a major emergency or disaster. These requirements are outlined in the ESHMP.

### Future Avoided Cost Explorer

The plan also includes the [Future Avoided Cost Explorer](#) (FACE) interactive tool, which was developed to help Colorado residents understand the economic impacts of flood, drought, and wildfire. The expected cost impacts are based on a selection of economic sectors (crops, cattle, skiing, and rafting) under future climate and population scenarios. Figure 7 shows a map of the average total damages per person from drought, based on current climate change and population growth trends.



**Figure 7**  
**Drought Damages per Person in Colorado through 2050**



Source: Future Avoided Cost Explorer.

### Types of Drought Declarations

There are five primary types of drought declarations, which are outlined in Table 3.

**Table 3**  
**Drought Declaration Types**

Declaration	How the Declaration is Made
Local Drought Declaration	made by a local authority at the municipal or county scale
State Drought Declaration	made by the Governor for a 30-day period that can be extended
Federal Drought Declaration	made by one or more federal authorities and can be done autonomously or at the request of a Colorado authority
Presidential Disaster Declaration	made by the President at the request of the Governor, a representative of the Governor, or an Indian Tribal Council leader
Secretarial Disaster Declaration	made by the Secretary of the United States Department of Agriculture when damages and losses due to a natural disaster reach at least 30 percent production loss in at least one crop in a county



## Water Conditions Monitoring Committee

Formerly the Water Availability Task Force, the [Water Conditions Monitoring Committee](#) (WCMC) is convened by Colorado Water Conservation Board (CWCB), and it monitors Colorado's water supply and the conditions that could affect it, including snowpack, reservoir storage, streamflow, historical climate norms, long-term precipitation and temperature outlooks, and climate variations. The committee usually meets monthly and reports on the status of these variables. The [WCMC April meeting](#) included:

- temperatures in water year 2026 have been the warmest start to the water year on record;
- statewide SWE is at an all-time low; and
- El Niño conditions are likely to begin sometime during summer 2026.

Reports from the committee help inform decision makers from various sectors about potential drought impacts.

## Drought Task Force

The [Drought Task Force](#) (DTF) is activated during Phase 2 of the ESHMP drought response. The DTF is made up of directors of key state agencies that provide recommendations to the Governor, who may provide drought assistance or seek a Presidential drought disaster declaration. The task force may also call for additional work groups that can provide input about regional drought impacts. The DTF, in conjunction with the WCMC, can recommend increased information sharing, evaluate impacted sectors and regions, procure and track resources, support local response measures, and enhance state drought programs. It can also request or propose requesting federal assistance.

## Colorado Water Plan

The [Colorado Water Plan](#) is the state's guide for water management and planning. The plan outlines opportunities for conservation and development while accounting for constantly changing factors that drive water needs in the state. The Water Plan emphasizes the importance of drought resilience and suggests potential solutions. Examples of action items in the plan include:

- municipal water conservation;
- water reuse;
- public education and outreach;
- collaborative water sharing agreements;



- agricultural water conservation;
- multi-purpose water conservation;
- collaboration;
- land use planning; and
- strategic funding.

Since the implementation of the plan in 2023, it has helped drought resilience in several ways. Example projects that have been funded include:

- \$1.5 million to Resource Central to accelerate the use of drought-resistance landscapes across the state;
- \$779,000 to Trout Unlimited to explore the viability of alternative forages that could be less water-intensive;
- \$236,006 to Rocky Mountain Farmers Union Educational and Charitable Foundation to continue the work of [Drought Advisors](#), which aims to help farmers and ranchers prepare for and lessen the impacts of drought on their operations.<sup>3</sup>

## Municipal Water Provider Drought Plans

Most municipal water providers have drought plans that dictate when conservation measures are necessary. In general, conservation measures include requiring water users to reduce water use. This is often done by limiting the days and times a water user can water outdoors. Local water districts and providers have different water resources, water storage amounts, and water rights, so not all providers have the same restrictions. Restrictions are generally based on a water provider's expectations for water supply for its customers.

For example, Denver Water, the state's largest water provider, has a [Water Shortage Implementation Plan](#), which dictates water shortage indicators, response tools, and response actions for each of the four stages of water shortage outlined in the plan. Table 4 summarizes some of the main points.

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<sup>3</sup> [2025 Water Plan Progress Report](#)



**Table 4**  
**Denver Water Stages of Water Shortage**

Category	Normal Operations	Water Shortage Watch	Stage 1	Stage 2	Stage 3
<b>Reservoir Status</b>	Reservoirs projected to be 70-100 percent full on July 1	Reservoirs projected to be 70-100 percent full on July 1	Reservoirs projected to be 45-85 percent full on July 1	Reservoirs projected to be 30-60 percent full on July 1	Reservoirs projected to be less than 50 percent full on July 1
<b>Restrictions</b>	None	Up to 3 days of outdoor watering	1 to 2 days of outdoor watering per week on a mandatory schedule	No outdoor watering except for trees and shrubs once a week	No outdoor watering except for some tree and shrub watering once per month. Indoor water use may be restricted.
<b>Reduction Goal</b>	None	None	20 percent reduction in customer water use	35 percent reduction in customer water use	50 percent reduction in customer water use

Source: [Water Shortage Response Implementation Plan, Denver Water](#)

Appendix A includes a list of drought plans for the 10 largest water providers in Colorado. These water utilities serve about 3 million customers total, or about 50 percent of Colorado’s municipal water customers.

### **Drought Surcharge Pricing**

Some water utilities may choose to implement some kind of drought pricing when restrictions are in place. For example, Denver Water, the state’s largest water provider, [implemented a surcharge](#) of \$1.10 (up to 15,000 gallons per month) or \$2.20 (above 15,000 gallons per month) on every 1,000 gallons of outdoor water use. This pricing is aimed at encouraging water conservation. It also helps the water provider continue to fund operations in a year where regular water use and income from customers are expected to be lower and maintain the financial health of the utility.



## State and Federal Disaster Funding

### Federal Emergency Management Agency

To receive federal funds from the Federal Emergency Management Agency (FEMA) following a disaster declaration, states must have a federally approved mitigation plan. In Colorado's case, it has an approved enhanced state mitigation plan, which makes the state eligible for more federal funds under the federal [Hazard Mitigation Grant Program](#). Approval of an enhanced plan is contingent upon a state demonstrating that it has developed a comprehensive mitigation program and can manage increased funding for its mitigation goals. States with enhanced plans receive funds based on 20 percent of the total estimated disaster assistance funding available, rather than 15 percent for states with non-enhanced plans.

### Building Resilient Infrastructure and Communities

FEMA currently administers the [Building Resilient Infrastructure and Communities](#) (BRIC) grant program. BRIC focuses funding on proactive infrastructure hazard mitigation, rather than post-disaster spending. The program prioritizes investment in infrastructure and construction projects that provide immediate risk reduction to communities vulnerable to natural hazards.

Colorado has \$2 million available for BRIC projects. [Eligible entities can apply](#) through the Colorado Division of Homeland Security and Emergency Management.

### United States Department of Agriculture

The United States Department of Agriculture (USDA) provides [various forms of disaster relief funding](#), specifically to farmers. The Farm Service Agency also has [funding opportunities](#) available to help farmers recover from drought, ranging from livestock loss payments to orchard replanting assistance.

### Emergency Community Water Assistance Grants

[This program](#) provides funding to help communities prepare for or recover from a disaster that threatens the availability of safe, reliable drinking water. Eligible entities include rurally located public bodies, nonprofit organizations, and federally recognized tribes.



## **U.S. Department of the Interior**

The Bureau of Reclamation administers the [WaterSMART Program](#) to provide financial assistance to support water management improvements throughout the Western United States, including drought response efforts.

## **Colorado Water Conservation Board**

The CWCB consistently supports drought planning through various efforts, including grant funding, drought planning aid, and the management of drought planning groups.

## **Agricultural Drought Response Program**

The [Agricultural Emergency Drought Response Program](#) provides \$1 million annually. Funding comes in the form of grants or loans, specifically for emergency drought-related augmentation purposes. Agricultural organizations such as augmentation companies, ditch and reservoir companies, conservancy districts, and conservation districts, located in an area where an emergency drought designation or disaster emergency has been declared, can apply for funding.<sup>4</sup> Program applications are generally due annually in April.

## **Other Water Funding Opportunities**

The CWCB administers a variety of grant and loan programs for water-related projects, studies, awareness campaigns, and more. The [CWCB Water Funding Explorer](#) allows entities and individuals to browse potential funding opportunities. The [Colorado Department of Agriculture](#) also provides information on state resources aimed at supporting agricultural producers, as well as gathers qualitative data on current drought impacts.

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<sup>4</sup> A current map of state and county-level disaster declarations can be found on the [USDA website](#).



## Appendix A. Water Provider Drought Response Plans

The following is a compilation of links to the drought response plans for the 10 largest municipal water providers, ordered from the largest number of customers to the smallest.

1. [Denver Water - Water Shortage Response Implementation Plan](#)
2. [Colorado Springs Utilities – Water Shortage Ordinance](#)
3. [Aurora Water – Water Shortage Response Plan](#)
4. [City of Westminster – Drought Management Plan](#)
5. [City of Fort Collins – Water Shortage Action Plan](#)
6. [City of Boulder – Drought Plan](#)
7. [City of Thornton – Drought Management Plan](#)
8. [City of Arvada - Administrative Rules Governing City of Arvada Water Conservation and Mandatory Watering Restriction Rules and Regulations](#)
9. [Pueblo Water – Rules & Regulations](#)
10. [City of Greeley – Water Efficiency Plan](#)