

# Could The Western U.S. Drought Threaten Municipal Credit Stability?

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## Key Takeaways

- Water supply challenges could create credit pressure for municipal utilities, irrigation districts, and local governments resulting from either a materially unfavorable shift in cost or if the service area economy stagnates due to insufficient supply.
- Managing water demand, procuring drought-resistant supply, and maintaining storage will be critical to managing fluctuations in hydrology. Issuers with prudent rate structures and strong balance sheets will be best positioned to absorb disruptions in operations or revenue collections from hydrological variability.
- Drought-related credit pressures for local governments include potential limits on economic growth, heat waves that require assistance for residents, and climate change-induced hydrological volatility that weakens levees and leads to flash flooding and mudslides.
- Extreme hydrological variability has been a pervasive challenge across the West. As droughts become more prolonged or expansive, there could be credit pressure. We expect well-defined climate adaption policies, credible long-range resource plans, and achievable supply and demand management strategies will support stable credit quality. Many of these plans will be part of issuers' ESG planning as they address what could become the "new normal" across the West.

S&P Global Ratings maintains ratings in areas across the western United States that are experiencing intense drought conditions, including Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. While our municipal ratings largely incorporate drought conditions, we remain on alert for potential impacts throughout the region such as increased risk of catastrophic wildfires, drinking water shortages, electric grid disruptions, and land subsidence, all of which could lead to credit events without mitigation measures. To date, we have not taken any rating actions solely due to the drought, but if conditions intensify to a degree that affects long-term credit stability we may make a rating or outlook change. Prolonged drought conditions also highlight the importance of an issuer's planning practices related to environment, social, and governance (ESG) that could define the response to changing conditions that affect their operations.

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## The U.S. Drought By The Numbers

**99%** 

Portion west of the Rockies  
in drought (a historical high)

**14 months** 

Since most of the West  
was not in drought

**210 mil.** 

Acres of crops  
experiencing  
drought

 **35%**

Current water level at Lake Mead, the lowest  
since the Hoover Dam was built in the 1930s

Jan.-Apr. 2021 hydroelectric production in California:



63% of Jan.-Apr. 2020



29% of Jan.-Apr. 2019

**76 mil.** 

People currently living in extreme or  
exceptional drought conditions (as of Aug. 1)



**30**

States experiencing  
moderate or  
worse drought

Sources: U.S. Drought Monitor, NOAA, Sierra Club.  
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## A Prolonged Drought Will Exacerbate Current Challenges

Typically a single year of dry weather is manageable for most local governments, municipal utilities, and irrigation districts in the West, as water infrastructure--e.g. surface water reservoirs and groundwater basins--can buffer short-term drought impacts. However, prolonged drought conditions become increasingly challenging as carryover water supplies in reservoirs are depleted and groundwater basins are over-drafted. These conditions have the potential to create changes in credit quality for debt obligations backed by user revenues, such as utility systems, as well as tax-backed bonds.

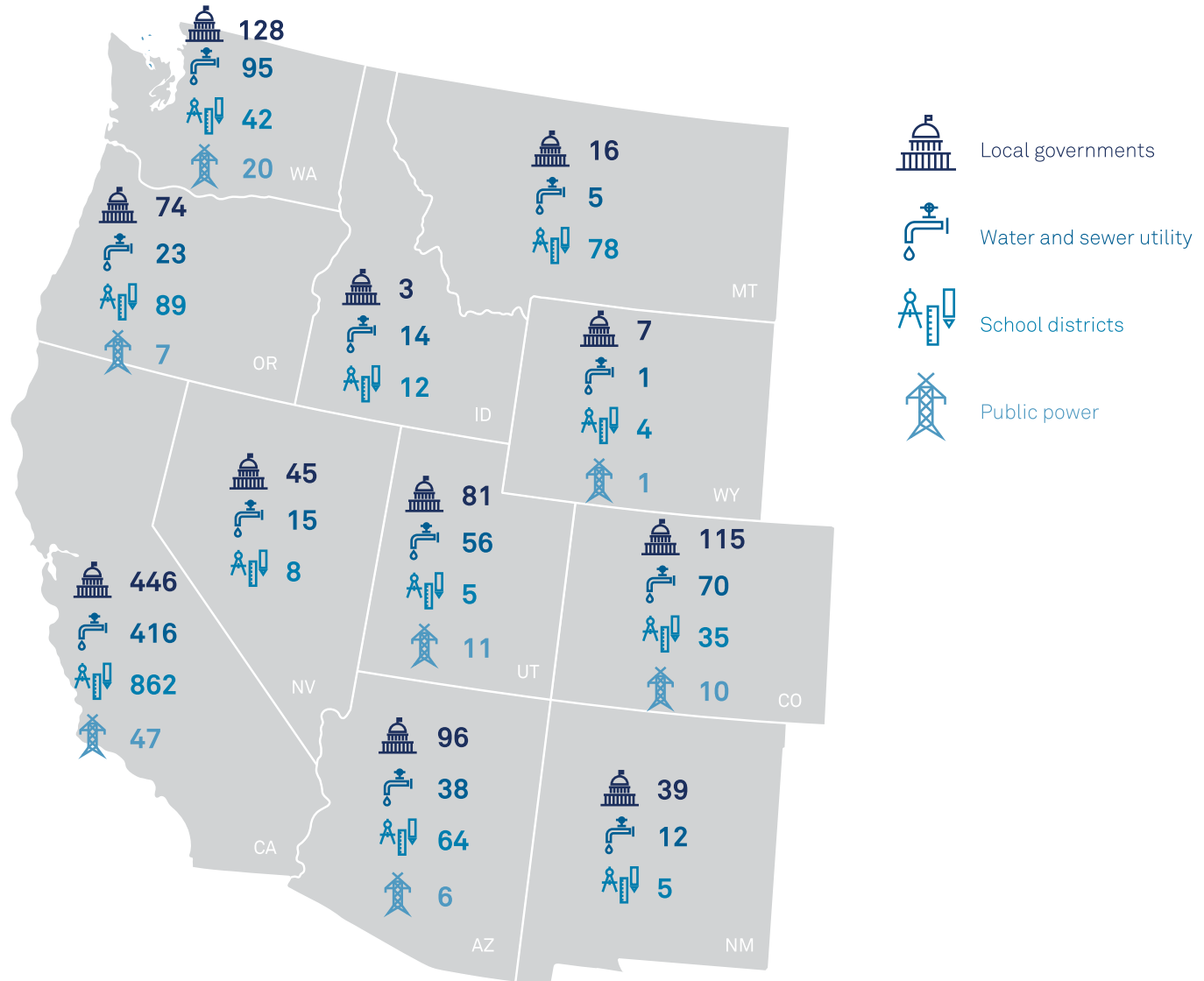
Utilities and city public works departments that manage facilities are typically most immediately affected by drought. However, while adverse hydrological conditions may acutely pressure utility operations and revenue--especially under a protracted drought--rate-setting flexibility, including implementation of a higher fixed component to the rate structure or an additional drought charge, diversity and cost of water supply, and management action (or inaction) all factor into the drought's effect on an issuer's financial metrics. Accordingly, we believe the greatest credit pressure may be on those issuers that had weak balance sheets going into the drought or those without supportive rate structures. Similarly, the cost of power could also increase in the event drought conditions constrain hydrological generation especially during heat waves and other extreme weather events, underscoring the importance of rate structures with pass-through mechanisms and sufficient liquidity to support market purchases if needed.

Local governments in drought-stricken areas will be challenged to address looming pressures, particularly related to environmental changes and the potential for social pressures that accompany jobs and housing availability and affordability. Ongoing drought conditions can result in slower economic and property value growth, both of which have revenue implications that can

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lead to rating changes. While many acute pressures from extreme weather events can be offset by FEMA reimbursements, the long-term implication of climate change has the potential to affect credit quality.

### Select Rating Statistics Across The West



Total number of public ratings in utilities (water/sewer and public power) and local governments (including school districts).

Source: S&P Global Ratings.

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## Pervasive Drought Conditions Expose Environmental Risks

Drought currently affects large portions of 11 western states including all of California, Nevada, Arizona, Utah, Oregon, and Idaho, which is a U.S. Drought Monitor (a federal interagency initiative) record. Approximately 99% of the land west of the Rocky Mountains is experiencing drought, and

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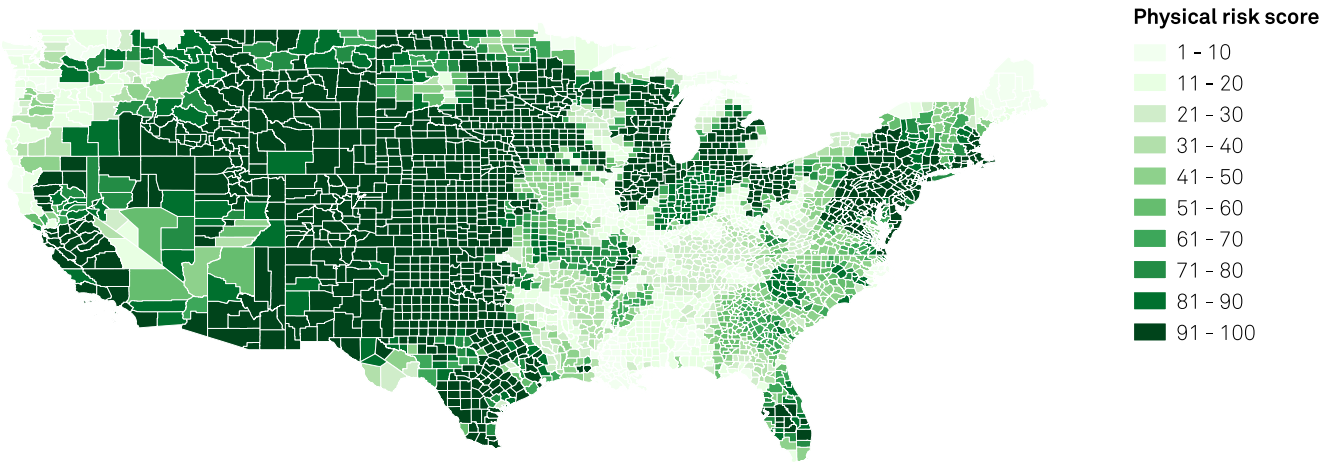
according to the National Oceanic and Atmospheric Administration (NOAA), much of the West was drought-free just over 14 months ago before drought conditions began developing in May 2020. The shift was a result of high temperatures and low precipitation last winter due to La Niña conditions that rapidly worsened the situation in California and the Southwest. In addition, record-shattering temperatures and dry conditions starting in early summer 2021 exacerbated deteriorating conditions in the Northwest, a region that was already facing multi-year precipitation deficits.

In August, the Bureau of Reclamation declared its first-ever "tier one" Colorado River water shortage, as water levels at Lake Mead have fallen to 35% capacity as a result of declines in snowpack and evaporation, driven by climate change. This is the lowest level since the lake was filled after the construction of the Hoover Dam in the 1930s. While a tier one declaration primarily affects agricultural users in Arizona and Nevada, if water levels fall further that will necessitate deeper cuts to Colorado River water deliveries for a wider swath of entities, including California as early as in 2023. NOAA's National Weather Service Climate Prediction Center also sees drought persisting in California and continuing to develop or persist in the Pacific Northwest and Rockies.

Significantly lower-than-normal hydro conditions across the West and an increased possibility of extreme weather events could exacerbate electricity-supply shortages throughout the summer. In the Pacific Northwest, the Bonneville Power Administration, which sells power from 31 hydroelectric projects, as well as several other power plants, has seen water levels fall to 85% of average across the system, which could constrain the agency's ability to export power outside of the region, including to California, if a severe heat wave boosts demand for power across the West.

Water stress, while not always driven by drought, is worsened by drought conditions. From a regional perspective, water scarcity is highest in the areas currently experiencing wildfires and could be indicative of future drought conditions.

Water Stress Scores Across The United States Under RCP8.5 In 2050  
1=lowest risk, 100=highest risk



Source: S&P Global Ratings and Trucost (2020).  
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## Water Utilities Risk Factors

While demand management and supply diversification support credit quality, there are financial impacts to both mitigation measures. As drought conditions persist, conservation becomes increasingly prevalent, directly affecting financial performance. Many utilities have tried to address downside financial implications of drought through the implementation of a higher fixed component to the rate structure or an additional drought charge. In addition, a number of utilities have procured alternative supply (such as desalination, stormwater capture, or recycled water) that is drought-resistant but often significantly more expensive than traditional supply sources.

S&P Global Ratings evaluates both the short-term and longer-term credit impacts from drought and adverse weather, with short-term risk factors largely centered on the issuer's financial capacity to absorb disruptions in operations or revenue collections resulting from conservation measures and other demand-side management techniques. Over the long term, management actions such as drought contingency planning and overall risk management practices may also factor into the degree of credit impact. We consider the degree of public engagement regarding the system's future supply diversification plans, and the likely effect on affordability within our rating analysis.

### Water Utilities: What We're Watching



**Location.** Depending upon availability of alternative water supply, opportunities for interconnections with other systems or to access water transfers, or where there are physical limitations to water storage.



**Rate structure and reserves.** We typically view favorably drought rates or the ability to automatically pass through water supply costs from a supplemental provider. In addition, available reserves to offset short-term water transfer costs can support credit quality during drought.



**Supply diversification.** Local efforts to bolster reliability of future water supply such as urban recycled water projects (i.e. treating wastewater to either drinking water or irrigation standards) or ocean desalination help mitigate the effect of reduced rainfall and snowpack. Regional planning efforts (e.g., the ability to store wet year water to be withdrawn in dry years) between multiple parties that receive supply from the same watershed are also increasingly critical across the west.

## Local Governments Risk Factors

We expect the drought will have both short- and long-term implications for local governments, from local water restrictions for residents and farmers, to commercial and residential development limitations in areas where the water supply may be insufficient to sustain additional growth. The impact is not limited to cities and counties. For example school districts in agricultural communities that depend on enrollment-based state aid could face declining revenues if lack of water supply leads to local job losses and requires families to move and seek employment elsewhere.

The relationship between general fund operations and utility systems varies across local

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governments, but some use revenues from one fund to support the other. To the extent that local water systems rely on a general fund subsidy, diminished local water supply could lead to the need to import more expensive water supplies to meet demand, pressuring general fund budgets. Conversely, higher cost water or weaker operating margins may limit transfers from the utility system that support general fund operations.

Although water efficiency and conservation programs have long been part of the management strategies in the West, extreme drought demands more change. Mitigation through planning for climate change and prolonged drought conditions will be critical to maintaining credit stability for local government issuers.

### Local Governments: What We're Watching



**Managing economic implications.** Severe, ongoing drought conditions can curtail growth if housing or commercial development is hindered by limited water supply. Watering restrictions frustrate residential customers, but the effect on agricultural economies can be much more significant including loss of jobs and production.



**Changes to support for residents.** Drought-related challenges associated with heat waves create the need for cooling centers for residents and other support during acute weather events. In agricultural areas, lack of water supply can lead to land fallowing, diminishing local community incomes and driving higher unemployment rates.



**Long-term environmental pressure.** Drought contributes to acute challenges such as mudslides and flash flooding when torrential rains cannot be absorbed, particularly in areas where there were recent wildfires. Increased groundwater usage could diminish water reserves (decreasing future sustainability) and pressure communities in the future, and water taken from deeper groundwater pumping can contain arsenic.

## Public Power Utilities' Risk Factors

Hydroelectric production throughout the West is acutely affected by drought. The broad swath of affected generation resources includes Oregon's Federal Columbia River System, the Hoover Dam, California's sizable Lake Oroville Reservoir (whose exceptionally low water levels have idled its adjoining hydroelectric generation facilities), along with many other hydroelectric facilities in California and neighboring drought-hit states.

In a bid to provide a reliable and consistent electricity supply, western utilities are increasingly turning to costlier conventional generation resources to compensate for the drought-induced curtailment of hydroelectric generation. Federal Energy Information Administration (EIA) and California Independent System Operator (Cal-ISO) statistics illustrate these practices. EIA reports that in June 2021, Pacific Northwest electricity production used 50% more natural gas than in the prior year. Similarly, Cal-ISO reported that the state's thermal generation in July represented about 40% of the total fuel mix--the highest in six years. Because summer 2021's natural gas prices are about three times higher than 2020's, they are exacerbating the financial pressures utilities face from increased reliance on gas-fired resources.

As electric utilities substitute costlier dispatchable gas-fired resources for economical

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hydroelectric resources they are collectively exerting upward pressures on wholesale natural and electricity prices by shifting the generation market's supply-demand relationship. Although these costs pressures have the potential to whittle financial metrics and ratings, we continue to observe that access to rate stabilization funds and retail cost pass-through mechanisms among the Western electric utilities we rate are shielding financial metrics. Irrespective of whether adjustment mechanisms are formulaic or discretionary, we observe that they, along with rate stabilization funds, are helping utilities shoulder additional power procurement and production costs, are limiting exposure to public rate hearings that can garner opposition, and are supporting stable ratings among affected utilities.

The West's variable hydrology is also creating increasingly high levels of combustible vegetation that contributes to significant wildfires. High-voltage transmission lines are vulnerable to wildfires and their smoke and debris. Consequently, electric utilities have deactivated transmission lines that are proximate to or within the fire zones. Notable deactivated transmission networks include the California-Oregon Intertie and the Pacific DC Intertie. These lines are essential pathways for conveying the Pacific Northwest's economical hydroelectric power to California, which adds to the necessity of California utilities to rely on costlier carbon-based generation resources.

As utilities substitute costlier resources for more economical resources, the duration and extent of higher procurement costs and the ability to recoup higher costs in rates will determine whether higher costs will negatively influence credit ratings.

### Public Power: What We're Watching



**System reliability and customer satisfaction.** High temperatures, drought conditions, and wildfires are presenting utilities with operational reliability issues, including the imposition of rolling blackouts to preserve the integrity of the grid. These issues are exacerbated by reliance on intermittent resources and the concurrent retirement of conventional resources. Low customer satisfaction can translate into resistance to rate adjustments that are critical to maintain healthy margins and fund capital needs and their related debt.



**Rate structure.** We are monitoring the capacity of pass-through mechanisms and rate stabilization funds to support financial performance as power supply scarcity persists in the West along with heat, drought, and wildfires.

This report does not constitute a rating action.

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