# Making Urban Water Data Public and Useful for Understanding Drought Impacts

This data package aims to pilot an approach for providing usable data for analyses related to drought planning and management for urban water suppliers--ultimately contributing to improvements in communication around drought. This project was convened by the California Water Data Consortium in partnership with the Department of Water Resources (DWR) and the State Water Resources and Control Board (SWB). These analyses require synthesizing disparate data sources across DWR and the SWB in a standard format and maintaining these derived datasets to ensure access to timely data. This package includes a data management plan describing its development and maintenance. All code related to preparing this data package can be found on [GitHub](https://github.com/FlowWest/urban-water-drought-data).

Below are summaries of the datasets included in this package. Data dictionaries for each dataset are included in the package.

We acknowledge that data quality issues may exist. Making these data available in a usable format will help identify and address data quality issues. If you identify any data quality issues, please contact the data steward (see contact information). We plan to iteratively update this data package to incorporate new data and to update existing data with quality fixes.

## Compiled DWR-SWB Datasets

**monthly\_water\_shortage\_outlook**

This table provides forecasted monthly (and annual) potable water shortage (or surplus) with and without shortage actions for a dry year. The Annual Water Supply and Demand Assessment (AWSDA) reports this data. All data reported through the AWSDA are available on the DWR’s Water Use Efficiency (WUE) portal (<https://wuedata.water.ca.gov/wsda_export>). The most recent AWSDA guidance is available here: <https://wuedata.water.ca.gov/public/public_resources/3517484366/AWSDA-Final-Guidance-4-2022.pdf>. See pages 30-35 for information about the data elements in the monthly\_water\_shortage\_outlook table. Methodology guidance is included in this report, though it is not implemented consistently across urban water suppliers.

*Data use limitations:* The primary function of the AWSDA is to motivate planning processes for water shortages. These data represent forecasts specific to the urban supplier and a snapshot in time based on the conditions when the supplier completed the plan. These data are expected to change as conditions change and water shortage plans are updated. These data can only be used within the year they are reported for, though if the forecasted water year is not dry, they are unreliable.

**five\_year\_water\_shortage\_outlook**

This table provides anticipated annual potable water levels (both surplus and shortage) with shortage actions and without shortage actions for five years based on the five driest consecutive years on record. The Urban Water Management Plans (UWMP) reports this data. All data reported through the UWMP are currently available on the WUE portal (<https://wuedata.water.ca.gov/wsda_export>) and the California Natural Resources Open Data Portal (https://data.cnra.ca.gov/dataset/2020-uwmp-data-export-tables). The most recent UWMP guidance is available here: <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-Water-Management-Plans/Final-2020-UWMP-Guidebook/UWMP-Guidebook-2020---Final-032921.pdf>. See 7-20 through 7-34 for information about the data elements contained in the five\_year\_outlook table.

*Data use limitations:* Similar to the *monthly\_water\_shortage\_outlook* data, these data also reflect forecasted values rather than actual values. These data are expected to change as conditions change.

**source\_name**

This table summarizes the facility type, status, and location by public water system and facility. These data are from SDWIS and processed within the SAFER Clearinghouse. These data are assigned through facility permitting process and are not user reported, and often validated through on-the-ground field visits. The data are filtered to include the most recent data; out of date data are not included. Currently, no documentation has been published for these data.

*Data use limitations:* When using these data note that the facility name is not unique and needs to be used with the facility ID and PWSID.

**actual\_water\_shortage\_level**

This table reports the monthly state standard shortage level by urban retail water suppliers, which are generally defined as agencies serving over 3,000 service connections or deliveries 3,000 acre-feet of water annually for municipal purposes. These data are collected by the State Water Resources Control Board through its monthly Conservation Reporting and the data included in this dataset represent a small component of the larger dataset. Information about these reports can be found on the Water Conservation Portal (<https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.html>), which is no longer active, and the full data (which represents the source data for this dataset) are available on the California Open Data Portal (https://data.ca.gov/dataset/urws-conservation-supply-demand). Beginning in 2023, the reporting of these data transitioned to the SAFER Clearinghouse.

*Data use limitations:* Prior to 2022, shortage levels were not standardized, which makes the data difficult to use. This dataset was filtered to include 2022 onwards where shortage levels are standardized.

**historical\_production\_delivery**

This table provides production and delivery data by water system and water type. These data were reported through the Electronic Annual Report (eAR) and published on the California Open Data Portal (<https://data.ca.gov/dataset/drinking-water-public-water-system-annually-reported-water-production-and-delivery-information-2013>). The data included in this table represent a subset of the data included in the eAR. Beginning in 2023, the reporting of these data transitioned to the SAFER Clearinghouse. The SWB is working on appending data from 2023 onwards, but this is not currently available.

*Data use limitations:* These data do not represent the most up to date production and delivery. Data from 2023 and 2024 exist but are not yet available.

## Other Relevant California State Open Data

The following list summarizes other open data resources collected and managed by California that are relevant to understanding drought. These data are not included directly in this data package because they are available elsewhere in useful formats.

* Population from SDWIS and SAFER Clearinghouse
  + <https://data.ca.gov/dataset/safer-failing-and-at-risk-drinking-water-systems/resource/255887bb-5451-4c19-8e35-27899ae8c3ad>
  + <https://data.ca.gov/dataset/urban-water-use-objectives-conservation/resource/7e539a61-9a33-49e5-a5d3-463e43f06109>
* PWSID and DWR ORGID crosswalk
  + <https://data.ca.gov/dataset/urban-water-use-objectives-conservation>
* Drinking water system boundaries
  + <https://gis.data.ca.gov/datasets/waterboards::california-drinking-water-system-area-boundaries/about>
* Environmental and operations data from CDEC
  + Reservoir
    - https://cdec.water.ca.gov/reservoir.html
  + Snow pack
    - https://cdec.water.ca.gov/snow.html
  + Precipitation
    - <https://cdec.water.ca.gov/snow_rain.html>
* Groundwater well completion reports from OSWCR
  + https://data.cnra.ca.gov/dataset/well-completion-reports

## External Data Sources

The following list summarizes other open data resources (beyond California data) that are relevant to understanding drought. These data are not included directly in this data package because they are available elsewhere in useful formats.

* US Drought Monitor
  + <https://droughtmonitor.unl.edu/DmData/DataDownload.aspx>
* NOAA Drought.gov data download
  + <https://www.drought.gov/data-download>