Supplemental Information on the Annual Urban Water Use Objective and Actual Water Use Reports

Contents

This supplemental document provides additional information about the Annual Urban Water Use Objective and Actual Water Use Reports. It focuses on the source tables from which the report data is derived, how to correct data errors, and the budget equations associated with the objective.

1. Source Tables on Open Data Portal

The report workbook is connected to external tables hosted on the Open Data Portal. These tables are constructed from pre-existing information reported to the Board and other agencies (such as the Department of Water Resources). The connection is maintained to the Open Data tables hosted online, and the tables can be periodically refreshed by the user to ensure that the most current data are being used.

The following sections briefly summarize each of the tables. Each section describes where the data is used within the report, what source data was used to create the table, what potential sources of error suppliers should look out for in their data, and how to address errors if found.

1.1 Supplier-Water System Crosswalk

The PWSID-DWRID Crosswalk in the Open Data Portal states the relationship between an urban retail water supplier and its corresponding water systems. This information is relevant for retrieving values for data such as production and deliveries, individual water loss standards, and residential population, which are all available at the water system level.

1.1.1 Dataset basis

Table 2-1 (Retail Only: Public Water Systems) of the Urban Water Management Plans submitted to the Department of Water Resources is the primary basis for the crosswalk. Other sources include water loss audits, monthly conservation reports submitted to the Board, and information self-reported by suppliers.

Public water systems are considered to be part of the same urban retail water supplier (URWS) if they:

- Individually serve 200 connections or more
- Collectively meet one or more of the following criteria:
    - Provide an average annual total of 3,000 acre-feet of water for municipal purposes
    - Serve an annual average of 3,000 municipal service connections
- Collectively meet one or more of the following criteria:
    - The systems are permanently interconnected
    - The service area boundaries are adjacent
    - The supplier is using the system's data, such as population or landscape area, to calculate its urban water use objective pursuant to Water Code section 10609.20

1.1.2 Potential sources of error in the source data and how to correct them

- Requisite data is missing for one or more water systems.
- Some of the water systems may not meet the URWS criteria listed above; these systems are not required to be included in the urban water use objective calculations. Suppliers, however, may opt to include them, if all requisite data are provided.

See Section 3.3 in the main Guidance Document for specific guidance on how to correct the water systems associated with the supplier.

1.2 Residential Population

The SDWIS Residential Population table in the Open Data Portal informs the supplier's residential indoor water use budget.

1.2.1 Dataset basis

The per-water-system population values are maintained by the State Water Board Division of Drinking Water (DDW). Values are updated by DDW District staff upon completion of the Electronic Annual Report or more frequently upon request.

The population values on the Open Data Portal are limited to the latest per-water-system values that are effective within the duration of the reporting period. Only residential (R) population values are applicable for the report; non-transient (N), transient (T), and wholesale (W) values are not included.

1.2.2 Potential sources of error in the source data and how to correct them

- For some suppliers, data reflect misreporting of non-transient, transient, or wholesale population as residential population.
- For some suppliers, population numbers have not been updated in 5 years or more.
- Water systems that are inactive may still have population values listed in the table.

To update population values, follow the instructions on this guidance document. According to the document, the new population should be online "[w]ithin 5-7 business days."

1.3 Landscape Area Measurement

The Landscape Area Measurement table in the Open Data Portal provides residential landscape measurements that are used in the residential outdoor budget calculation, as well as the square footage of pools, horse corrals, and residential agriculture that are used in some of the variances. It also contains alternative data for Department-provided values and approved values for new construction and special landscape areas (SLAs).

1.3.1 Dataset basis

The Landscape Area Measurement table is derived from the dataset provided by the Department of Water Resources. Additional fields have been added to accommodate supplier-provided alternative data, new construction, and SLA values.

1.3.2 Potential sources of error in the source data and how to use alternative data

- Landscape information is currently based on 2018 or 2020 imagery. Landscape information may be outdated for some service areas.
- Service area boundaries may be outdated or based on jurisdictional area instead of service area.
- Suppliers that were not part of the original landscape area measurement study do not have landscape area measurement data. See Section 2.14.2 in the main Guidance Document for more information.

Alternative data may be used in place of the values provided by the Department. Alternative data must be demonstrated to the Department, in coordination with the Board, to be equivalent, or

superior, in quality and accuracy to the data included in the Landscape Area Measurements Project.

Special landscape areas must be approved by the Department prior to their use in the reporting form. New construction areas must be approved by the Water Board prior to their use in the reporting form. Both kinds of values are applicable for five years. See DWR's Process for Alternative Data or Methodology, and Special Landscape Areas Requests for information on how to obtain approval.

Suppliers should contact WUEStandards@water.ca.gov to submit alternative data or SLA data, and orpp-waterconservation@waterboards.ca.gov to submit new construction data.

1.4 Annual Weather Data

The Annual Weather Data table contains service area weighted-averaged ET_0, precipitation, and effective precipitation values that inform the residential outdoor water use budget, as well as some of the variances.

1.4.1 Dataset basis

The Department of Water Resources provides annual values for the corresponding fiscal year, using a combination of modeled and observed values. The Department's own Open Data Portal page describes that data in more detail.

1.4.2 Alternative data

Alternative data may be used in place of the values provided by the Department. Alternative data must be demonstrated to the Department, in coordination with the Board, to be equivalent, or superior, in quality and accuracy to the data provided by the Department.

Suppliers should contact WUEStandards@water.ca.gov to submit alternative data.

Suppliers may also contact the Department, at DWRCIMISPublicContact@water.ca.gov for more information about acquiring a CIMIS station for their service area.

1.5 Seasonal Weather Data

The Seasonal Weather Data table contains the necessary information to calculate the residential agriculture variance.

1.5.1 Dataset basis

Seasonal values are provided for suppliers that have qualifying urban acreage in their service area, per DWR.

1.5.2 Alternative data

Alternative data may not be used in place of the values provided by the Department unless the supplier is using crop-specific data for the residential agricultural landscapes variance as described in section 968(g)(3)(A) and (C) of the regulatory text.

Suppliers may also contact the Department, at DWRCIMISPublicContact@water.ca.gov for more information about acquiring a CIMIS station for their service area.

1.6 Water Loss Standards

The System-Specific Standards table, containing per-water-system real water loss standards released by the State Water Board, informs the water loss budget calculations.

1.6.1 Dataset basis

The System-Specific Standards table is a subset of the Individual System Water Loss Standards dataset released by the Board, reformatted to facilitate use within the reporting form.

1.6.2 Potential sources of error in the source data and how to correct them

- Standards were not calculated for water systems with insufficient baseline data.
- Standards were not calculated for water systems that are utilizing an alternative baseline period.
- Standards have negative values.
- Standards were not calculated for water systems less than 200 service connections.

To request an update to calculated water loss standards, contact DDW-WaterLossControl@waterboards.ca.gov.

1.7 Water Loss Audit Data

The Data from Water Loss Audits table is a subset of water loss audit data as reported to the Department of Water Resources. It is used to pre-fill the reported actual water loss in the reporting form.

1.7.1 Dataset basis

The Data from Water Loss Audits table contains information from the water loss audit that is due on the same date as the corresponding Urban Water Use Objective Report. For example, the report due on January 1, 2026 will utilize the data from the water loss audit also due on January 1, 2026. Those audits will reflect data from either the Calendar Year encompassing January 1-December 31, 2023 or Fiscal Year July 1, 2024-June 30, 2025. If the audit was not submitted to the Department at the time the dataset was retrieved, the corresponding water system will display blank rows in the table.

1.7.2 Potential sources of error in the source data and how to correct them

- Some suppliers have not yet submitted audits for the time period subset used to create the table on the Open Data Portal.
- Some reported real loss values are negative.
- The reported PWSID was incorrectly formatted, meaning that the associated data was not retrieved from the source water loss audit data table.

To submit or update a water loss audit, please email WaterLoss@water.ca.gov.

1.8 Per-Source Potable Water Production

The Per-Source Potable Water Production table provides information on water obtained from surface water and groundwater sources, to be used in the Bonus Incentive calculations.

1.8.1 Dataset basis

The Per-Source Potable Water Production table data comes from the Clearinghouse, and is subset to the reporting period, when available. Volumes that come from consecutive connections are excluded from this table.

1.8.2 Potential sources of error in the source data and how to correct them

- Source data entered with incorrect units caused the conversion of those values to gallons to yield incorrect values.
- Data is missing due to late or incomplete Clearinghouse reports.
- Data provided is specified as a preliminary estimate and may not be accurate.
- Sources listed may not match sources the water system has in their inventory.

Suppliers may submit available Clearinghouse reports at any time, including revising and re-submitting already submitted Clearinghouse reports.

1.9 Per-Water-System Potable and Non-Potable Water Deliveries

The Potable and Non-Potable Water Deliveries table prefills the vast majority of the Actual Water Use tab with values for water deliveries (e.g., single- and multi-family residential, metered irrigation, commercial, institutional, and industrial water use) that have been reported to the Board via the Clearinghouse for the relevant reporting time period.

1.9.1 Dataset basis

The Potable and Non-Potable Water Deliveries table values come from the “Potable Demand” and “Non-Potable Demand” sections of the Clearinghouse, and are subset to the reporting period, when available. All deliveries values are converted to gallons by Water Board staff, based on the reported units.

1.9.2 Potential sources of error in the source data and how to correct them

- Source data entered with incorrect units caused the conversion of those values to gallons to yield incorrect values.
- Data is missing due to late or incomplete Clearinghouse reports.
- Data provided is specified as a preliminary estimate and may not be accurate.

Suppliers may submit available Clearinghouse reports at any time, including revising and re-submitting already submitted Clearinghouse reports.

1.10 Potable Supply and Sold/Exported

The Potable Supply and Sold/Exported table provides the necessary information to prefill the “Total Potable Water Production” section of the Bonus Incentive tab.

1.10.1 Dataset basis

Potable supply values come from the “Potable Supply” section of the Clearinghouse, and are converted to gallons within the reporting platform. The sold/exported values come from the “Potable Demand” section of the Clearinghouse and are converted to gallons by Water Board staff, based on the reported units.

1.10.2 Potential sources of error in the source data and how to correct them

- Source data entered with incorrect units caused the conversion of those values to gallons to yield incorrect values.
- Data is missing due to late or incomplete Clearinghouse reports.
- Data provided is specified as a preliminary estimate and may not be accurate.

Suppliers may submit available Clearinghouse reports at any time, including revising and re-submitting already submitted Clearinghouse reports.

1.11 List of Facilities from the Volumetric Annual Report (VAR)

The list of facilities from the Volumetric Annual Report (VAR) is used to prefill the Recycled Water Network dropdown list of wastewater treatment plants and recycled water facilities.

1.11.1 Dataset basis

The list of facilities comes from the VAR, produced by the Division of Water Quality.

1.11.2 Contact information

Data is submitted by permitted facilities as required by the Recycled Water Policy. For questions regarding the reported values please contact recycledwater@waterboards.ca.gov.

1.12 Facility reported reuse data from the VAR

The recycled water data in the VAR is used to provide the source data for the groundwater and surface reservoir recharge tables in the Bonus Incentive calculations (see Sections 3.9.2 and 3.9.3 in the main guidance document.

1.12.1 Dataset basis

The recycled water data comes from the VAR, with the volumes reported in acre-feet. For the purposes of this report, volumes from the “Groundwater Recharge” and “Reservoir Water Augmentation” water reuse categories were used in the corresponding tables.

1.12.2 Contact information

Data is submitted by permitted facilities as required by the Recycled Water Policy. For questions regarding the reported values please contact recycledwater@waterboards.ca.gov.

1.13 SB x7-7 Targets

The SB x7-7 Targets, as reported to the Department, provide a backstop to the calculated urban water use objectives. The objective plus excluded demands may be no larger than the target-based volume, plus process and recycled water. See Section 6.4 for details.

1.13.1 Dataset basis

The SB x7-7 Targets table is derived from the SB x7-7 tables as reported in the most current Urban Water Management Plans (UWMP). The individual targets are reported in gallons per capita daily. Process and recycled water are separately calculated; see Section 3.12 in the main guidance document.

1.13.2 Potential sources of error in the source data and how to correct them

- Some suppliers do not have individual target values as reported in the tables produced by the Department.
- Regional alliance information may be missing or inconsistent between the various SB x7-7 tables used to create the SB x7-7 Targets table.

Contact uwmphelp@water.ca.gov for more information on updating SB x7-7 target information.

1.14 CII Service Connections

The CII Service Connections table contains the number of metered and unmetered service connections for commercial and institutional (CI), industrial (I), and landscape irrigation (LI) connections. These values are used in the Commercial, Institutional and Industrial (CII) Classification (972) tab.

1.14.1 Dataset basis

All connections values are derived from the Electronic Annual Report (EAR), as reported to the Division of Drinking Water.

1.14.2 How to update the reported values

If the number of CII service connections as reported in the EAR does not reflect the conditions of the fiscal year being reported upon, the supplier may enter updated values in the same table (see Section 3.13.2 in the main Guidance Document.

1.15 Submissions and Approvals for Variances and Temporary Provisions

The Submissions and Approvals for Variances and Temporary Provisions table is an overall summary of the variances and temporary provisions that have been submitted to the State Water Board, as well as their approval status.

1.15.1 Dataset basis

This data is based on the requests sent by suppliers to the State Water Board. Each variance or temporary provision has the following columns associated with it:

- Submission date: When the request was received by State Water Board staff, if applicable
- Approval status: Whether the request has been approved or not, if applicable
- Approval date: If the request has been approved, the date that the approval occurred

1.15.2 Contact information

Data is periodically updated by State Water Board staff. If this table does not display the appropriate information by December 1 for variances and temporary provisions that will be applied to the report due on the following January 1, please contact orpp-waterconservation@waterboards.ca.gov.

1.16 Residential Indoor Variances and Temporary Provisions

The Residential Indoor Variances and Temporary Provisions table contains the data points that inform the per-supplier residential indoor variance and temporary provision calculations, as well as

denoting which residential indoor variances and temporary provisions have been approved for use in the Urban Water Use Objective Report.

1.16.1 Dataset basis

This data is based on the requests sent by suppliers to the State Water Board. Specifically, these values are obtained from the "Res-Indoor Variances" tab.

1.16.2 Contact information

Data is periodically updated by State Water Board staff. If this table has not been updated with the appropriate information by the time you are filling out your report, please contact orpp-waterconservation@waterboards.ca.gov.

1.17 Residential Outdoor Variances and Temporary Provisions

The Residential Outdoor Variances and Temporary Provisions table contains the data points that inform the per-supplier residential outdoor variance and temporary provision calculations, as well as denoting which residential outdoor variances and temporary provisions have been approved for use in the Urban Water Use Objective Report.

1.17.1 Dataset basis

This data is based on the requests sent by suppliers to the State Water Board. Specifically, these values are obtained from the "Res-Outdoor Variances" tab.

1.17.2 Contact information

Data is periodically updated by State Water Board staff. If this table has not been updated with the appropriate information by the time you are filling out your report, please contact orpp-waterconservation@waterboards.ca.gov.

1.18 Emergency and High Total Dissolved Solids (TDS) Variances

The Emergency and High Total Dissolved Solids (TDS) Variances table contains data points that inform the per-supplier emergency and high TDS variance calculations, as well as denoting which emergency and high TDS variances have been approved for use in the Urban Water Use Objective Report.

1.18.1 Dataset basis

This data is based on requests sent by suppliers to the State Water Board. Specifically, these values are obtained from the "Emergency and Hi TDS Variances" tab.

1.18.2 Contact information

Data is periodically updated by State Water Board staff. If this table has not been updated with the appropriate information by the time you are filling out your report, please contact orpp-waterconservation@waterboards.ca.gov.

2. Source Tables Not Connected to Open Data Portal

Some of the data used within the reporting form will not need to be updated; these are variables such as climate zone (geographical information) or a list of recycled public water systems from SDWIS. To improve workbook performance, the associated tables are not linked to the Open Data

Portal but are instead stored as static tables in the reporting form workbook. The following sections briefly summarize these tables.

2.1 Climate Zone

The corrals variance and climate-ready tree provision both utilize climate zone information to determine the number of days per week that a supplier may receive a corresponding water budget for those specific uses.

The number of watering days is as follows:

- For climate zones 1 through 5 and zone 7, 2 days per week
- For climate zones 6, 8 through 10, 12, and 16, 3 days per week.
- For climate zones 11 and 13 through 15, 4 days per week.

The climate zone information was determined by assessing the amount of overlap between supplier boundaries (as provided by the Department of Water Resources) and the California Energy Code climate zone boundaries.

2.2 List of recycled water systems in SDWIS

The recycled water system data is used to populate the dropdowns for the "PWSID and PWS name of water system that distributes the recycled water produced by the plant or facility in Column A" field in the "Recycled Water Network" tab. The table is located in the "RECYCLED_WATER_SDWIS" tab.

2.3 VAR-CWIQS Crosswalk

The VAR-CWIQS Crosswalk establishes a relationship between the WDID, Facility ID, Global ID, and Facility Name as reported in the Volumetric Annual Report (VAR) and the California Integrated Water Quality System (CWIQS). This data is used to populate the first four corresponding columns of the table in the "Recycled Water Network" tab. The table is located in the "VAR_CWIQS_CROSSWALK" tab.

2.4 Basin ID

The Basin ID table is used to populate the dropdowns in the "Bonus Incentive: Augmented Groundwater" table in the "Bonus Incentive" tab. The table contains information on groundwater basins and sub-basins (if applicable) as well as the associated Bulletin 118 Identification Number. The table is in the "Basin ID" tab.

2.5 Portfolio Manager Property Types

The Portfolio Manager Property Types table is used to populate the dropdowns in the "974(c)(3)_PT" tab. The table is in the "ESPM_property types" tab.

2.6 BMPs

The "BMPs" tab contains a table of BMPs and the associated BMP category. It populates the various 974(c) dropdowns.

3. Equations Associated with the Objective

3.1 Residential Indoor Use Budget (R_{indoor})

$$R_{indoor} = S_{indoor} * P * days\ in\ year$$

where

- S_{indoor} = Residential indoor water use standard
- P = residential service area population

3.2 Residential Outdoor Use Budget ($R_{outdoor}$)

$$R_{outdoor} = S_{outdoor} * RLA * Net\ ET_0 * 0.62$$

where

- $S_{outdoor}$ = Residential outdoor water use standard
- RLA = Square footage of residential landscape area (Irrigable Irrigated only unless actual water use exceeds budget; see 6.1)
- Net ET_0 = net reference evapotranspiration

3.3 CII Landscapes with Dedicated Irrigation Meters (DIMs) Budget (CII_{DIM})

$$CII_{DIM} = S_{DIM} * DIM\ LA * Net\ ET_0 * 0.62$$

where

- S_{DIM} = CII with DIMs Standard
- DIM LA = Square footage of CII landscapes associated with DIMs
- Net ET_0 = net reference evapotranspiration

3.4 Real Water Loss Budget ($B_{WaterLoss}$)

$$B_{WaterLoss} = S_{WaterLoss} * C * days\ in\ year$$

or

$$B_{WaterLoss} = S_{WaterLoss} * M * days\ in\ year$$

where

- $S_{WaterLoss}$ = Water Loss Standard
- C = number of service connections
- M = length of the distribution system in miles

3.5 Bonus Incentive (BI)

$$BI = V_{PR}*(D_{RLI}/T_{PW})$$

where

- V_{PR} = potable reuse volume, which may be one or more of the following: potable reuse water obtained from groundwater (V_{PRG}), potable reuse water obtained from an augmented surface reservoir (V_{PRS}), and/or potable reuse water obtained from a Direct Potable Reuse project (V_{DPR})
- D_{RLI} = water delivered to residential and landscape connections
- T_{PW} = all potable water that enters into a supplier's distribution system, excluding water placed into storage and not withdrawn for use during the reporting period and excluding water exported outside the supplier's service area during the reporting period

3.5.1 Potable reuse water obtained from groundwater (V_{PRG})

$$V_{PRG} = V_G*(LF_G*R)/V_{BP}$$

where

- V_G = Supplier's groundwater basin extractions
- LF_G = loss factor for groundwater recharge
- R = volume of potable recycled water recharging the groundwater basin (5-year average)
- V_{BP} = Total groundwater basin extractions

3.5.2 Potable reuse water obtained from an augmented surface reservoir (V_{PRS})

$$V_{PRS} = V_{SW}*(LF_S*A)/V_{SWP}$$

where

- V_{SW} = Supplier's surface reservoir extractions
- LF_S = loss factor for evaporation and seepage
- A = volume of potable recycled water augmenting the surface reservoir (5-year average)
- V_{SWP} = Total volume of water produced from the augmented reservoir

3.5.3 Potable reuse water obtained from a Direct Potable Reuse (DPR) Project (V_{DPR})

$$V_{DPR} = V_{FIN\text{-}DPR}*F$$

where

- $V_{FIN\text{-}DPR}$ = Volume of finished water produced from the DPR project
- F = Fraction of water the supplier derived from the facility producing the finished water

3.6 Urban Water Use Objective (UWUO)

The urban water use objective (UWUO) is the sum of budgets in 3.1 through 3.5, plus variances (V). The equation is

$$UWUO = R_{indoor} + R_{outdoor} + CII_{DIM} + B_{WaterLoss} + BI + V$$

4. Calculating Actual Water Use (AW)

The equation for Actual Water Use (AW) is

$$AW = RS + RM + LI + L$$

where

- RS = Residential Single-Family Deliveries, potable and non-potable
- RM = Residential Multi-Family Deliveries, potable and non-potable
- LI = Irrigation of CII Landscapes with DIMs
- L = Real Water Loss

5. Calculating Excluded Demands (ED)

The equation for excluded demands (ED) is

$$ED = CII_{EXCL} + O$$

where

- CII_{EXCL} = CII water not associated with dedicated irrigation meters (e.g. CII indoor, irrigation from mixed use meters)
- O = "Other" water use

6. Applying Irrigable-Not-Irrigated volume and "no backsliding" provision

After calculating the sum of objective components (UWUO) and actual water use (AW), some additional steps are taken before the final objective volume is determined.

6.1 Inclusion of Irrigable-Not-Irrigated (INI) landscape area

If AW is greater than UWUO, add an additional water budget component using 20% of Irrigable-Not-Irrigated (INI) residential landscape area to calculate the adjusted UWUO ($UWUO_{ADJ}$):

$$UWUO_{ADJ}=UWUO + [(INI*0.2)*Net\ ET_0*0.62]$$

Otherwise, if AW<= UWUO,

$$UWUO_{ADJ} = UWUO$$

6.2 Calculated the objective-based total water use (TU)

$$TU = UWUO_{ADJ} + ED$$

6.3 Calculating target-based total water use (SBV)

$$SBV = SBX_{GPCD}*P*days\ in\ year + PW + IR$$

where

- SBX_{GPCD} = SB x7-7 target for an individual supplier
- P = residential service area population

- PW = process water previously excluded from the target
- IR = indirect recycled water previously excluded from the target

6.4 Applying the "no backsliding" provision

Compare SBV to TU to determine the volume of the final objective ($UWUO_F$).

If SBV is less than TU,

$$UWUO_F = SBV - ED$$

Otherwise, if SBV is greater than or equal to TU,

$$UWUO_F = UWUO_{ADJ}$$

6.5 Accounting for regional alliances

Per Section 966(h)(4) of the regulatory text, until June 30th, 2040, the "no backsliding" provision does not apply to any supplier achieving its SB x7-7 target on a regional basis, if the regional alliance has met its regional target.