

Assessment of Recommended Urban Water Use Efficiency Standards in Relation to the Senate Bill X7-7 Statewide Target

WUES-DWR-2021-01A.T1

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California Department of Water Resources
Water Use Efficiency Branch

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Note: This report is part of the package of reports developed by the California Department of Water Resources to meet the requirements of Senate Bill 606 and Assembly Bill 1668 of 2018 for urban water use efficiency.

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Appendix A – Urban Water Use Efficiency Recommendation Package Reports
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Abbreviations and Acronyms

2018 Legislation	2018 Legislation on Water Conservation and Drought Planning (Senate Bill 606 [Hertzberg] and Assembly Bill 1668 [Friedman], as amended)
ACS	American Community Survey
CII	commercial, industrial, and institutional
CII-DIM	commercial, industrial, and institutional dedicated irrigation meter
DIM	dedicated irrigation meter
DOF	Department of Finance
DWR	California Department of Water Resources
eAR	electronic Annual Report
ET _o	reference evapotranspiration
gpcd	gallons per capita per day
I _i	irrigable-irrigated
I _{ni}	irrigable-not irrigated
Legislature	California State Legislature
ORWUS	Outdoor Residential Water Use Efficiency Standard
OTWU	objective-based total water use
Recommendation Package	Urban Water Use Efficiency Recommendation Package
SB	Senate Bill
State	State of California
State Water Board	State Water Resources Control Board
UWMP	urban water management plans
UWUO	urban water use objective
WC	California Water Code
WLS	Water Loss Standard

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1.0 Introduction

At the end of the 2007 to 2009 drought, and as part of a package of legislation relating to Sacramento-San Joaquin Delta management, the State of California (State) set a goal to reduce statewide urban per capita water use by 20 percent by 2020. Known as the Water Conservation Act of 2009, Senate Bill (SB) X7-7 required urban retail water suppliers to calculate their baseline water use and set water use targets for 2020. Urban retail water suppliers also were required to report on target compliance in their urban water management plans (UWMP). Statewide average baseline water use for the 10-year period (1996 to 2005) was 199 gallons per capita per day (gpcd), and the statewide 2020 target was 80 percent of this value, which is 159 gpcd (DWR et al., 2017).

Building on SB X7-7, the California State Legislature (Legislature) passed the 2018 Legislation on Water Conservation and Drought Planning (SB 606 [Hertzberg] and Assembly Bill 1668 [Friedman], as amended; hereinafter referred to as the “2018 Legislation”), which included provisions for advancing urban water use efficiency through developing and implementing various water use efficiency standards, variances, and performance measures (DWR and State Water Board, 2018). Among other things, this legislation directed the California Department of Water Resources (DWR) to recommend, and the State Water Resources Control Board (State Water Board) to adopt, numerical standards for (1) outdoor residential water uses; and (2) commercial, industrial, and institutional (CII) landscape water uses served by dedicated irrigation meters (DIM). Additionally, the legislation directed the State Water Board to develop the Water Loss Standard (WLS). Furthermore, as set forth in California Water Code (WC) Section 10609.2(d), a key provision of the 2018 Legislation is that the numerical standards recommended by DWR result in lower aggregate statewide urban water use than the SB X7-7 statewide 2020 target.

This report provides the legislative background on and context for DWR’s interpretation of the 2018 Legislation – and specifically the provisions of the WC on which DWR’s recommended standards for water use efficiency are based. It also discusses the legislative test that DWR conducted to determine if its recommended standards satisfy the directives under the 2018 Legislation. In addition, this report assesses alternative standards in relation to the statewide SB X7-7 target, and how an urban retail water supplier’s use of a bonus incentive relates to DWR’s recommended standards to meet the requirements of WC Section 10609.2(d).

DWR has completed a significant body of work to meet the requirements of the 2018 Legislation and provide recommendations on different topics to the State Water Board for adoption. To streamline document development and recognize the inherent interrelationship among different topics and the need for overall consistency, DWR organized the various reports in an Urban Water Use Efficiency Recommendation

Package (Recommendation Package) that allows mutual referencing and incorporates content by reference. All reports in this Recommendation Package are given a serial number in the form of “WUES-DWR-2021-xx.” For each report, Appendix A includes the list of documents within the Recommendation Package that are incorporated by reference. Key terms and their definitions used in this report, along with abbreviations and acronyms, are included in *Urban Water Use Efficiency Recommendation Package: Glossary and Abbreviations and Acronyms* (WUES-DWR-2021-21).

2.0 California Department of Water Resources' Interpretation of 2018 Legislation

This section discusses DWR's interpretation of the 2018 Legislation; namely, whether the urban water use efficiency standards it ultimately recommends to the State Water Board should be based on statewide aggregate urban water use or the water use of each individual urban retail water supplier relative to statewide conservation targets.

For context, WC Section 10609.2(d) states:

The long-term standards shall be set at a level designed so that the water use objectives, together with other demands excluded from the long-term standards such as CII indoor water use and CII outdoor water use not connected to a dedicated landscape meter, would exceed the statewide conservation targets required pursuant to Chapter 3 (commencing with Section 10608.16).

Relating to the above legislative text, the parts of Chapter 3 of the WC relevant to water conservation targets are as follows:

The {S}tate shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020. (WC Section 10608.16(a))

Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine targets on a fiscal year or calendar year basis. (WC Section 10608.20(a)(1))

It is the intent of the Legislature that the urban water use targets described in paragraph (1) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020. (WC Section 10608.20(a)(2))

Based on its interpretation of the WC, DWR ultimately decided that that its recommended standards should not be based on each urban retail water supplier's individual water use target. This decision was based on three factors.

First, WC Section 10608.20(a)(2) states that it was the Legislature's intent that SB X7-7 targets *cumulatively* result in a 20 percent reduction from baseline per capita water use. The 2018 Legislation emphasized the cumulative statewide result, not individual urban retail water supplier results. As such, the total water use that results from the use of water use efficiency standards must be a statewide aggregate.

Second, because SB X7-7 gave urban retail water suppliers substantial discretion in setting their targets, taken together they fall short of achieving the 20 percent reduction in statewide urban water use required by SB X7-7. More specifically, whereas the cumulative statewide target is 159 gpcd, the statewide average of the urban retail water supplier targets is 171 gpcd, meaning that collectively the individual targets achieve only a 14 percent reduction in statewide baseline water use.

Third, SB X7-7 allowed urban retail water suppliers to form regional alliances and set regional targets. An urban retail water supplier in a regional alliance is not under an obligation to meet an individual target, provided that the regional alliance meets its target. Thus, for urban retail water suppliers in regional alliances, there is no legislative basis for comparing the urban retail water supplier's individual SB X7-7 target to its water use under the recommended standards.

For these reasons, DWR has concluded that, in order to satisfy WC 10609.2(d), the standards that it recommends must result in statewide aggregate urban water use that is less than the SB X7-7 statewide 2020 target of 159 gpcd.

3.0 Urban Water Use Objective and Objective-Based Total Water Use

WC Section 10609.20(c) defines an urban retail water supplier's urban water use objective (UWUO) as the sum of the following:

1. *Aggregate estimated efficient indoor residential water use.*
2. *Aggregate estimated efficient outdoor residential water use.*
3. *Aggregate estimated efficient outdoor irrigation of landscape areas with dedicated irrigation meters or equivalent technology in connection with CII water use.²*
4. *Aggregate estimated efficient water losses.*
5. *Aggregate estimated water use in accordance with variances, as appropriate.³*

The UWUO does not include all of an urban retail water supplier's water uses. Other water uses not subject to the standards include CII uses served by non-DIM meters; other miscellaneous uses, such as water served by temporary construction meters; authorized unbilled uses;⁴ and apparent water loss.⁵ Adding these uses to the UWUO yields what DWR has termed, for the purposes of this analysis, objective-based total water use (OTWU). As discussed in the previous section, WC Section 10609.2(d) requires that the standards DWR recommends result in statewide aggregate OTWU that is less than the statewide SB X7-7 2020 target.

² CII refers to water uses by commercial, industrial, and institutional entities (i.e., non-residential water users).

³ Variances are allowances for unique uses of water that can have a material effect on an urban retail water supplier's UWUO, as set forth in WC Section 10609.14.

⁴ Authorized unbilled consumption includes water used by utility facilities, water used for flushing mains and laterals, and water drawn from fire hydrants.

⁵ There are two categories of water loss: real and apparent. Real water loss results from distribution system leakage, main and lateral breaks, and spills. Apparent water loss relates to water that is being consumed but not being paid for due to, for example, water theft, meter reading errors, meter under-registration, and water accounting errors.

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4.0 Legislative Test

To confirm the water use efficiency standards that DWR recommends would be consistent with WC Section 10609.2(d), DWR implemented the “legislative test” illustrated in Figure 4-1, which is a calculation comparing statewide OTWU to the statewide SB X7-7 2020 target. Due to some data limitations, two adjustments to the calculation of the OTWU were required in the implementation of this test. First, because DWR does not have estimates of landscape area served by commercial, industrial, and institutional dedicated irrigation meters (CII-DIM), it is unable to calculate efficient outdoor CII-DIM water use under the recommended Commercial, Industrial, and Institutional Outdoor Irrigation of Landscape Areas with Dedicated Irrigation Meters Water Use Efficiency Standard (see *Recommendations for Commercial, Industrial, and Institutional Outdoor Irrigation of Landscape Areas with Dedicated Irrigation Meters Water Use Efficiency Standard* [WUES-DWR-2021-03]). To address this issue, DWR instead applied current CII-DIM water use, which is expected to be greater than DIM water use under the recommended standard, thereby providing a conservative value for analysis. Second, DWR was not able to include variance water uses in the test, since the State Water Board must approve such variances on a case-by-case basis after the standards are adopted. Therefore, DWR used the difference between OTWU and the SB X7-7 statewide 2020 target as an indicator of the volume of water potentially available for variances, while still satisfying WC Section 10609.2(d). A large difference indicates that the recommended standards would leave ample room for variance water uses.

Statewide OTWU	
=	
Efficient Indoor Residential Use	
+	
Efficient Outdoor Residential Use	
+	SB X7-7's
Current DIM Use	2020 Cumulative
+	Statewide Water Use
Non-DIM CII and Other Uses	Target of 159 GPCD
+	
Authorized Unbilled Use	
+	
Apparent Water Loss	
≤	

Key: CII = commercial, industrial, and institutional; DIM = dedicated irrigation meter; gpcd = gallons per capita day; OTWU = objective-based total water use; SB = Senate Bill

Figure 4-1 Legislative Test Implemented by California Department of Water Resources

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5.0 California Department of Water Resources' Urban Water Use Objective Analyzer

DWR developed the *DWR Urban Water Use Objective Analyzer*, a spreadsheet model used to evaluate, among other things, alternative standards in relation to the statewide SB X7-7 target.⁶ The model utilizes the following data sources to estimate UWUO and OTWU for the State's urban retail water suppliers:

- **2017 to 2019 electronic Annual Report (eAR)** – eAR data from the State Water Board are used to estimate an urban retail water supplier's service area population, number of metered and unmetered service connections, and current residential, CII-DIM, CII non-DIM, and other miscellaneous water uses.
- **2017 to 2019 Water Audit Reports** – Urban retail water suppliers' water audit report data from DWR are used to estimate current real and apparent water loss and authorized unbilled water uses, which together make up urban retail water suppliers' non-revenue water use.
- **Indoor Residential Water Use Study** – Data from DWR's indoor residential water use study are used to estimate urban retail water suppliers' indoor residential water use. Using urban retail water suppliers' data to estimate the indoor residential water use is preferable compared to using alternative data sources that could be produced using methods that are described in the *Indoor Residential Water Use Study*.
- **Landscape Area Measurement, California Irrigation Management Information System, and California Simulation of Evapotranspiration of Applied Water** – Data from DWR's Landscape Area Measurement project are used to estimate urban retail water suppliers' residential landscape area, broken down by irrigable-irrigated (II) and irrigable-not irrigated (INI) components (see *Landscape Area Measurements Final Project, Report EA-133C-16-CQ-0044 [WUES-DWR-2021-02.T1]*). DWR's California Irrigation Management Information System and California Simulation of Evapotranspiration of Applied Water data are used to estimate the urban retail water suppliers' net reference evapotranspiration (*ET_o*), which is used in conjunction with II and INI to calculate outdoor residential water use under the recommended Outdoor Residential

⁶ The reference for the *DWR Urban Water Use Objective Analyzer* is not yet available and will be added to the References section of this report at a later date.

Water Use Efficiency Standard (ORWUS) (see *Recommendations for Outdoor Residential Water Use Efficiency Standard* [WUES-DWR-2021-02]).

- **Urban Water Management Plans** – UWMP data from DWR are used to determine urban retail water suppliers' SB X7-7 targets. UWMP data also are used to fill in missing eAR data and to correct aberrant eAR data, as described below. Additionally, UWMP data are used to calculate current potable reuse, which is used to estimate the potable reuse bonus incentive, as described in Section 7.
- **Census American Community Survey and Department of Finance Population and Housing Estimates** – In addition to the UWMP data, in certain cases, population and housing data from the Census American Community Survey (ACS) and Department of Finance (DOF) are used to cross-check and correct aberrant eAR service area population estimates. Additionally, this service area population data is separated into “residential” and “group quarters” components to estimate indoor residential water use.

Rigorous data consistency and quality assurance checks were conducted to screen the data used in the *DWR Urban Water Use Objective Analyzer*, including:

- Flagging unusual, outlier, or missing eAR data.
- Cross-checking flagged data with UWMP and/or ACS or DOF data.
- Filling in missing eAR data and correcting eAR data determined to be erroneous.

All data corrections are documented within the *DWR Urban Water Use Objective Analyzer*, and the original and corrected data are stored side-by-side in the model. There is no data destruction. Model outputs were cross-checked against outputs from a similar model developed by the State Water Board. The two models produce comparable results.

The *DWR Urban Water Use Objective Analyzer* uses the following urban retail water supplier water use definitions:

- **Current Total Use** – The average total water use reported by urban retail water suppliers in the eAR data for 2017 to 2019.
- **2020 Target Use** – The urban retail water supplier's SB X7-7 2020 per capita water use target multiplied by its 2017 to 2019 average population.
- **UWUO** – The urban retail water supplier's UWUO is calculated as the sum of:

- Indoor residential use under the Indoor Residential Water Use Efficiency Standard.
- Outdoor residential use under ORWUS.
- Real water loss under WLS.
- Current DIM use.⁷
- **OTWU** – The urban retail water supplier's estimated OTWU is calculated as the sum of the following components:
 - UWUO.
 - CII and other uses not served by DIM meters.
 - Authorized unbilled use.
 - Apparent water loss.
- **Expected Total Use** – The expected total use is the lesser of the urban retail water supplier's current total use and its OTWU. It is expected that urban retail water suppliers with current residential, DIM, and real loss exceeding their UWUO would take actions to reduce these water uses to comply with their UWUO. It is not expected that urban retail water suppliers would take actions to increase these water uses if they are currently less than their UWUO.
- **Expected Water Savings** – The difference between current total use and expected total use under the standards.

Additionally, the *DWR Urban Water Use Objective Analyzer* separates residential water use into indoor and outdoor components as follows:

- **Total Residential Use** – Average residential water use reported by urban retail water suppliers for 2017 to 2019.
- **Indoor Residential Use** – The estimate of the urban retail water supplier's indoor residential per capita water uses multiplied by its service area residential population.
- **Outdoor Residential Use** – The difference between total residential use and indoor residential use.

⁷ As noted previously, DIM water use under the DIM standard cannot be calculated because DWR does not have estimates of landscape area served by DIMs. Instead, the *DWR Urban Water Use Objective Analyzer* uses current DIM water use to calculate an urban retail water supplier's UWUO.

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6.0 Standards Tested

DWR tested two alternative sets of standards, which are summarized in Table 6-1 and Table 6-2. Both sets are identical, with the exception of the indoor residential standards. More specifically, the first set uses the indoor residential standards currently in the WC. These are 55 gpcd until 2025, 52.5 gpcd from 2025 to 2029, and 50 gpcd from 2030 onward. The second set uses the indoor residential standards recommended to the Legislature by DWR and the State Water Board in *Report to the Legislature on Results of the Indoor Residential Water Use Study*.⁸ These are 55 gpcd until 2025, 47 gpcd from 2025 to 2029, and 42 gpcd from 2030 onward.

The recommended outdoor residential standard is 0.80 from 2023 to 2029, after which time the standard steps down to 0.63.⁹ The standard is applied to 100 percent of II and 20 percent of INI residential landscape area. The standard is then multiplied by net ETo, which is ETo minus effective precipitation. Effective precipitation is capped at 25 percent of annual rainfall.

WLS used in the test is set to the draft standards for real water loss posted on the State Water Board website.¹⁰ If an urban retail water supplier's baseline real water loss is less than 16 gallons per connection per day, it is assumed they will pursue the State Water Board's proposed alternative compliance pathway. This pathway would set the urban retail water supplier's WLS to 16 gallons per connection per day, provided the urban retail water supplier maintained real loss at or below this level and satisfied other reporting requirements. The water loss standard is assumed to take effect January 1, 2028.¹¹ Prior to this date, UWUO is calculated using the urban retail water supplier's baseline water loss.¹²

⁸ <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Water-Use-And-Efficiency/AB-1668-and-SB-606-Conservation/IRWUS-Public-Review-Draft-ReportPAO7May21-v1.pdf>

⁹ The recommended standard for new residential landscape is 0.55. However, since the legislative test is based only on existing residential landscape area, the recommended standard for new landscape area does not factor into the test.

¹⁰ https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/docs/standards-to-release.xlsx

¹¹ The deadline may be extended to January 1, 2031, for Disadvantaged Community–designated urban retail water suppliers meeting certain conditions. Additionally, urban retail water suppliers with standards that require at least a 30 percent reduction from baseline real water loss may be eligible for the same deadline extension, provided they demonstrate progress in lowering their water loss and satisfy other reporting and verification requirements.

¹² This was the direction DWR received from State Water Board staff for the calculation of real water loss under the draft WLS.

Table 6-1 Standards Tested Using Indoor Residential Standards Currently in California Water Code

Period	Residential Indoor	Residential Outdoor	Distribution System Real Loss
Before 2025	55 gpcd	ETF = 0.80 applied to 100% II + 20% INI	Baseline
2025 to 2027	52.5 gpcd	ETF = 0.80 applied to 100% II + 20% INI	Baseline
2028 to 2029	52.5 gpcd	ETF = 0.80 applied to 100% II + 20% INI	State Water Board Draft Standard
2030 onward	50 gpcd	ETF = 0.63 applied to 100% II + 20% INI	State Water Board Draft Standard

Key:

ETF = evapotranspiration factor at urban retail water supplier level

gpcd = gallons per capita per day

II = irrigable-irrigated

INI = irrigable-not irrigated

State Water Board = State Water Resources Control Board

Table 6-2 Standards Tested Using Indoor Residential Standards Recommended by California Department of Water Resources and State Water Resources Control Board

Period	Residential Indoor	Residential Outdoor	Distribution System Real Loss
Before 2025	55 gpcd	ETF = 0.80 applied to 100% II + 20% INI	Baseline
2025 to 2027	47 gpcd	ETF = 0.80 applied to 100% II + 20% INI	Baseline
2028 to 2029	47 gpcd	ETF = 0.80 applied to 100% II + 20% INI	State Water Board Draft Standard
2030 onward	42 gpcd	ETF = 0.63 applied to 100% II + 20% INI	State Water Board Draft Standard

Key:

DWR = California Department of Water Resources

ETF = evapotranspiration factor at urban retail water supplier level

gpcd = gallons per capita per day

II = irrigable-irrigated

INI = irrigable-not irrigated

State Water Board = State Water Resources Control Board

7.0 Potable Reuse Bonus Incentive

WC Section 10609.20(d) specifies that an urban retail water supplier delivering water from a groundwater basin, reservoir, or other source that is augmented by potable reuse water may add to its UWUO a bonus incentive according to the amount of their potable reuse. Based on data provided in the urban retail water suppliers' UWMPs and other sources of information provided to DWR by State Water Board staff or accessed from groundwater management agency reports, DWR has calculated the bonus incentive in accordance with WC Section 10609.20(d) for 66 urban retail water suppliers that currently supply potable reuse water to their customers.

It is important to emphasize that the bonus incentive is not part of an urban retail water supplier's UWUO, as defined in WC Section 10609.20(c). Rather, it is an adjustment to the UWUO intended to incentivize potable reuse by making it easier for urban retail water suppliers to comply with their UWUOs. Because the bonus incentive is not part of the UWUO, it is not strictly part of the legislative test. Nonetheless there was interest among stakeholders and State Water Board staff regarding what effect the bonus incentive would have on the test result. Therefore, DWR ran the test with and without the inclusion of the bonus incentive. As discussed below, inclusion of the bonus incentive does not have a material effect on the result of the test.

It also should be noted that SB X7-7 allowed urban retail water suppliers to exclude industrial process water uses and demands served by potable reuse from the calculation of their baseline water use upon which the 2020 statewide target is based. Since these water uses are included in OTWU, a reasonable comparison between statewide OTWU and the statewide SB X7-7 target would first add back these deductions to the statewide target. However, because the 2018 Legislation does not specifically address this issue, DWR chose not to make this adjustment. As such, without this adjustment to the statewide SB X7-7 target, the legislative test (Section 4) is more difficult to pass.

By example, consider that an urban retail water supplier's SB X7-7 baseline water use equals its total water uses, less any industrial process water uses and other uses served by potable reuse. Summing these uses across all urban retail water suppliers and applying the 20 percent reduction, the SB X7-7 statewide 2020 target use is:

$$\begin{aligned} \text{SB X7-7 Statewide Target} \\ = 0.8 \times \left(\sum \text{Total Supplier Baseline Use} - \sum \text{Process Water Use} - \sum \text{Potable Reuse} \right) \end{aligned}$$

This is to be compared against the statewide OTWU, which is equal to:

$$\text{Statewide OTWU} = \sum \text{UWUO} + \sum \text{Other Uses not Subject to the Standards}$$

and,

$$\begin{aligned} \sum \textit{Other Uses not Subject to the Standards} \\ = \sum \textit{Process Water Use} + \sum \textit{Other Uses served by Potable Reuse} \\ + \sum \textit{Remaining Other Uses} \end{aligned}$$

A reasonable comparison would adjust the SB X7-7 statewide target to account for the different way in which the 2018 legislation treats process water and potable reuse in the calculation of aggregate statewide target urban water use.

8.0 Legislative Test Results

Results of the legislative test are summarized in Table 8-1 and Table 8-2. Test results shown in Table 8-1 include the indoor standards currently in the WC. Table 8-2 shows the test results when the indoor standards DWR and the State Water Board have recommended to the Legislature are used. In both cases, OTWU is less than the statewide SB X7-7 target, as required by WC Section 10609.2(d).

Variance water use, which is not included in the test, would need to exceed 22 gpcd under the first case and 30 gpcd under the second case for the evaluated standards to fail the legislative test. This is equivalent to 15 to 20 percent of current urban water use, or approximately 0.9 to 1.2 million acre-feet. It is implausible that variances granted by the State Water Board would potentially account for such a large volume of water use. Thus, DWR concludes that the evaluated standards are consistent with WC Section 10609.2(d), even when variances are considered.

Table 8-1 Legislative Test Results (Indoor Standards in California Water Codes)

Period	Statewide Target (gpcd)	OTWU (gpcd)	Target Exceedance (gpcd)
Before 2025	159	154	5
2025 to 2027	159	151	8
2028 to 2029	159	149	10
2030 onward	159	137	22

Key:

gpcd = gallons per capita per day

OTWU = objective-based total water use

Table 8-2 Legislative Test Results (Indoor Standards Recommended by California Department of Water Resources and State Water Resources Control Board)

Period	Statewide Target (gpcd)	OTWU (gpcd)	Target Exceedance (gpcd)
Before 2025	159	154	5
2025 to 2027	159	146	13
2028 to 2029	159	144	15
2030 onward	159	129	30

Key:

gpcd = gallons per capita per day

OTWU = objective-based total water use

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9.0 Effect of Potable Reuse Bonus Incentive on Legislative Test Results

The effect of including the potable reuse bonus incentive on the results of the legislative test are summarized in Table 9-1 and Table 9-2. Statewide urban water use under the recommended standards is roughly 2 gpcd greater when the potable reuse bonus incentive is included. This is not a large enough difference to fundamentally change the test result. The difference in statewide urban water use under the recommended standards compared to the statewide 2020 target remains sufficiently large to accommodate all credible levels of variances. Therefore, inclusion of the potable reuse bonus incentive in the test does not alter DWR’s conclusion that the recommended standards satisfy WC Section 10609.2(d).

Table 9-1 Legislative Test Results with Potable Reuse Bonus Incentive (Indoor Standards in Water Codes)

Period	Statewide Target (gpcd)	OTWU + Bonus Incentive (gpcd)	Target Exceedance (gpcd)
Before 2025	159	156	3
2025 to 2027	159	154	5
2028 to 2029	159	151	8
2030 onward	159	139	20

Key:

gpcd = gallons per capita per day

OTWU = objective-based total water use

Table 9-2 Legislative Test Results with Potable Reuse Bonus Incentive (Indoor Standards Recommended by DWR and State Water Board)

Period	Statewide Target (gpcd)	OTWU + Bonus Incentive (gpcd)	Target Exceedance (gpcd)
Before 2025	159	156	3
2025 to 2027	159	148	11
2028 to 2029	159	146	13
2030 onward	159	131	28

Key:

gpcd = gallons per capita per day

OTWU = objective-based total water use

10.0 References

DWR (California Department of Water Resources). 2021. Results of the Indoor Residential Water Use Study. Accessed at: <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Water-Use-And-Efficiency/AB-1668-and-SB-606-Conservation/Results-of-the-Indoor-Residential-Water-Use-Study.pdf>.

DWR and State Water Board (California Department of Water Resources and State Water Resources Control Board). 2018. Making Water Conservation a California Way of Life. Primer of 2018 Legislation on Water Conservation and Drought Planning Senate Bill 606 (Hertzberg) and Assembly Bill 1668 (Friedman). Accessed at: <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Water-Use-And-Efficiency/Make-Water-Conservation-A-California-Way-of-Life/Files/PDFs/Final-WCL-Primer.pdf?la=en&hash=B442FD7A34349FA91DA5CDEFC47134EA38ABF209>

DWR (California Department of Water Resources), State Water Resources Control Board, California Public Utilities Commission, California Department of Food and Agriculture, and California Energy Commission. 2017. Making Water Conservation a California Way of Life: Implementing Executive Order B-37-16. Final Report. April.

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Appendix A – Urban Water Use Efficiency Recommendation Package Reports Incorporated by Reference

- DWR (California Department of Water Resources). September 2022. Recommendations for Outdoor Residential Water Use Efficiency Standard. DWR Report Number: WUES-DWR-2021-02.
- DWR (California Department of Water Resources). September 2022. Landscape Area Measurements Final Project, Report EA-133C-16-CQ-0044. DWR Report Number: WUES-DWR-2021-02.T1.
- DWR (California Department of Water Resources). September 2022. Recommendations for Commercial, Industrial, and Institutional Outdoor Irrigation of Landscape Areas with Dedicated Irrigation Meters Water Use Efficiency Standard. DWR Report Number: WUES-DWR-2021-03.
- DWR (California Department of Water Resources). September 2022. Urban Water Use Efficiency Recommendation Package: Glossary and Abbreviations and Acronyms. DWR Report Number: WUES-DWR-2021-21.

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