Draft Staff Framework for the Making Conservation a California Way of Life Regulation (Proposed Regulatory Framework)

California is experiencing large swings between drought and flood, and due to climate change these swings are becoming more severe. The recent storms and flooding seen statewide are proof of this shift and emphasize the importance of staying prepared. So do the back-to-back droughts of the last decade: hotter and drier periods are increasing in frequency and severity, reducing snowpack, drying soils, and making our water supplies more vulnerable.

To replace and replenish the water that thirstier soils, vegetation, and the atmosphere will consume under hotter and drier conditions, Governor Newsom in August 2022 released "California's Water Supply Strategy" with actions to recycle, de-salt and conserve more water and expand water storage capacity. Making conservation a way of life is a critical part of that Strategy.

Assembly Bill (AB) 1668 and Senate Bill (SB) 606 (together, the 2018 conservation legislation) established a new foundation for long-term improvements in water conservation and drought-planning to adapt to climate change. The 2018 conservation legislation amended existing law to provide expanded and new authorities and requirements to enable permanent changes actions for those purposes, improving the state's water future for generations to come.

In carrying out the Water Supply Strategy and the 2018 conservation legislation, the draft Making Conservation a California Way of Life regulation proposes a new way of managing urban water use. The new framework would establish unique goals for each urban retail water supplier and provide communities with the flexibility to implement locally appropriate solutions.

This document summarizes key aspects of the State Water Board staff's proposed regulatory framework to make conservation a California way of life. Input received on this proposed regulatory framework will be used to inform any necessary revisions to the staff proposal prior to initiating the formal rulemaking process. Additional information about the regulatory process is available on the State Water Board's webpage: Rulemaking to Make Conservation a California Way of Life | California State Water Resources Control Board.

Other than as specifically discussed, the State Water Board's staff proposal follows the formal recommendations provided by the Department of Water Resources (Department) on September 22, 2022. Statute directed the Department to, in coordination with the Board, conduct necessary studies and investigations and to recommend the following: standards for outdoor residential use; standards for the outdoor irrigation of Commercial, Institutional, and Industrial (CII) landscape areas with dedicated irrigation

meters or other means of calculating outdoor irrigation use; CII performance measures; variances for unique uses that can have a material effect on water use; and guidelines and methodologies that identify how each urban retail water supplier (supplier) will calculate its urban water use objective.

Proposed Regulatory framework to Make Water Conservation a California Way of Life

The 2018 conservation legislation directs the State Water Board to adopt standards for the efficient use water, variances, and performance measures for CII water use. The proposed regulatory framework would require suppliers to comply with urban water use objectives, calculated using the methods and standards adopted by the Board; implement the adopted CII performance measures; and submit annual progress reports.

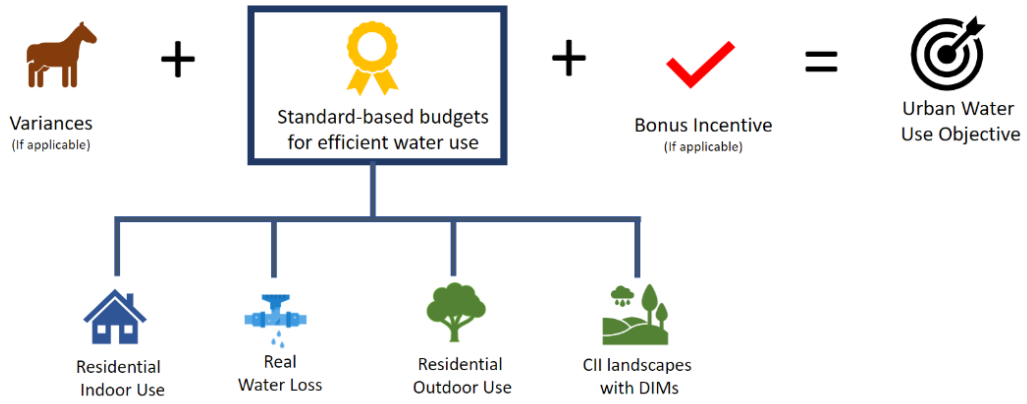
Urban Water Use Objective

A supplier's urban water use objective is a retrospective estimate of aggregate, efficient water use for the previous year, based on adopted water use efficiency standards and local service area characteristics for that year. As shown in Figure 1, a supplier's water use objective equals the sum of standard-based budgets for:

- Residential indoor use
- Residential outdoor use
- CII landscapes with dedicated irrigation meters (DIMs), which are submeters that supply water for only outdoor irrigation
- Real water losses

When applicable, the urban water use objectives will also include variances for unique uses that can have a material effect on an urban retail water supplier's urban water use objective (including, for example, water use associated with livestock), and a bonus incentive for potable recycled water use. Apart from the system-specific water loss standards, which were established by regulation pursuant to separate statutory authority, *the proposed regulation would not require suppliers to comply with any individual standard*; suppliers would be required to meet their *overall objective.*

Figure 1: How a supplier calculates its urban water use objective



Residential Indoor Use

The proposed regulation does not set every component needed to calculate a supplier's urban water use objective. The bonus incentive cap, for example, was established by the 2018 conservation legislation (Wat. Code, § 10609.2.). That legislation also set the standard for efficient residential indoor use (Wat. Code, § 10609.4.), which was then lowered in 2022 based on joint recommendations from DWR and the State Water Board (SB 1157). As shown in Table 1, the residential indoor standard lowers over time.

Table 1: Residential indoor standard as defined in Water Code Section 10609.4

	Residential Indoor Standard (GPCD)
Through December 31, 2024	55
From January 1, 2025, through December 31, 2029	47
January 1, 2030, onwards	42

The residential indoor standard, along with unique service area data, would be used to calculate an efficient residential indoor use budget. Specifically, the efficient residential indoor use budget would be calculated by multiplying the standard by the supplier's service area population, and by the number of days in the year (Figure 2).

Figure 2: How a supplier would calculate its Residential Indoor Budget

Real Water Losses

In 2022, a separate State Water Board regulation established system-specific standards for water losses (Cal. Code Regs., tit. 23, §§ 980-986). A supplier will calculate its annual water loss budget by multiplying its system-specific standard by the number of days in the year, and, depending on the units associated with the standard, by either the number of total service connections or the length of the distribution system, in miles (Figure 3). Suppliers that own and operate multiple systems will calculate an annual water loss budget by summing the estimated efficient water loss budgets associated with each system.

Figure 3: How a supplier would calculate its Water Loss Budget

Residential Outdoor Use and CII Landscapes with DIMs

Using Landscape Efficiency Factors (LEF), the proposed regulation would set the standard for residential outdoor water use and the standard for CII landscapes with DIMs. The LEF is a factor used to indicate the amount of water a supplier may need to deliver to maintain healthy and efficient landscapes across the supplier's service area. A higher LEF value would correspond to higher water-using, less efficiently irrigated landscapes; a lower LEF value would correspond to lower water-using, more efficiently irrigated landscapes. Under the State Water Board staff proposal, the long-term standard (2035 and onwards) for residential outdoor water use would be an LEF of 55%; for CII landscapes with DIMs, the long-term standard would be an LEF of 45%. Table 2 summarizes the residential outdoor standard and the standard for CII landscapes with DIMs under the proposed regulation.

Table 2: Outdoor standards under the proposed regulation

	Landscape Efficiency Factor
Through September 30, 2030	
Residential outdoor	80%
CII DIM landscapes	80%
From October 1, 2030, to September 30, 2035	
Residential outdoor	63%
CII DIM landscapes	63%
October 1, 2035, onwards	
Residential outdoor	55%
CII DIM landscapes	45%

The standards for outdoor use — along with suppliers' unique service area data — would be used to calculate efficient outdoor use budgets. For example, a supplier's efficient residential outdoor water use budget would be calculated by multiplying the standard by the square footage of residential irrigable irrigated landscape area, by net evapotranspiration, and by a conversion factor of 0.62 (Figure 4). The square footage of residential irrigable irrigated landscape area, reference evapotranspiration, and effective precipitation values will be provided by DWR, unless a supplier has produced alternative data that are, in terms of quality and accuracy, demonstrably equal or superior to what has been provided by DWR.

Figure 4: How a supplier would calculate its Residential Outdoor Budget

- Net evapotranspiration (Net ET_o) is equal to reference evapotranspiration (ET_o) minus effective precipitation (EP).
- Reference evapotranspiration (ET_o) is a standard measurement of environmental parameters that affect the water use of plants. ET_o is expressed in inches per year and is an estimate of the evapotranspiration of a

large field of four- to seven-inch tall, cool-season grass that is well watered. It varies from year-to-year and throughout the state[1].

- Effective precipitation (EP) is the portion of total precipitation that becomes available for plant growth. It too varies from year-to-year and throughout the state[2].

"Irrigable Irrigated" and "Irrigable Not Irrigated" Areas

Two critical inputs under the regulatory framework are the standards themselves and the irrigation status of the landscapes that the standards would be applied to. In making its recommendations per the 2018 conservation legislation, DWR analyzed residential outdoor water use in California, estimating residential landscape area for every supplier in California and categorizing residential landscapes based on irrigation status. As a result, DWR categorized residential landscapes as follows:

- *Irrigable Irrigated (II)* landscape areas include healthy vegetation, somewhat unhealthy vegetation (e.g., brown lawns), and non-vegetative features, such as the rows between irrigated trees and features on or between vegetated areas (e.g., mulch, rocks, gravel, or weed blocking fabric; patches of bare earth; cars, trampolines, or other movable objects).
- *Irrigable Not Irrigated (INI)* landscape area includes very unhealthy vegetation (e.g., brown or leafless plants) and areas that are not currently being irrigated, but were irrigated in the past or may be irrigated in the future.
- *Not Irrigated (NI)* areas refer to residential landscapes that are not being irrigated and are unlikely to be in the foreseeable future (e.g., undeveloped or less developed areas; or hardscapes that cannot grow plants or hold water).

In its recommendations to the State Water Board, DWR proposed that the residential outdoor standard be applied to all *Irrigable Irrigated* areas and 20 percent of *Irrigable Not Irrigated* area in a supplier's service area. DWR refers to the 20 percent of INI as an "INI buffer." Under the proposed regulation, a supplier would calculate their residential outdoor water use budget by applying the standard to Irrigable Irrigated area, plus up to 20 percent of the INI buffer, if the supplier demonstrates those INI areas have come

[1] For example, in Sacramento, in 2019 and 2020, ET_o was 55.1 inches per year and 58.5 inches per year, respectively; in, San Francisco in 2019 and 2020 it was 40.1 inches per year and 40.9 inches per year, respectively.

[2] For example, in Sacramento, in 2019 and 2020, EP was 6.7 and 2.1 inches, respectively; in, San Francisco in 2019 and 2020 it was 7.6 and 2.2 inches, respectively. Consistent with DWR's recommendation, effective precipitation would be modeled effective precipitation using Cal-SIMETAW, a daily soil-water balance model, and capped at 25% of total precipitation.

under irrigation. This differs from the Department's recommendation that the INI buffer be automatically included.

Process for Incorporating the Standard for CII Landscapes with Dedicated Irrigation Meters

Under the proposed regulation, suppliers will make annual progress in measuring the irrigated area of CII landscapes with Dedicated Irrigation Meters (DIMs), with all subject landscapes being measured by 2028. For landscapes they have not measured, Suppliers will continue to report "landscape irrigation" water associated with CII landscapes with DIMs to the State Water Board via the already-required electronic Annual Report (eAR). Starting in 2028, suppliers would use the standard to calculate efficient water use budgets for CII landscapes with DIMs.

Special Landscape Areas

The Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO) defines Special Landscape Areas (SLAs) as areas that are dedicated to edible plants, serve a recreational function, are irrigated with recycled water, or are water features that use recycled water. MWELO assigns SLAs an efficiency factor of 100%.

Under the proposed regulation, all residential landscapes and all CII landscapes with DIMs would be subject to the outdoor standards or, if considered an SLA, be granted a LEF of 100%.

- Residential SLAs include areas irrigated with recycled water.
- SLAs for CII landscapes with DIMs would be the same as defined under MWELO, with the following additional landscape types classified as SLAs: bioengineered slopes; ponds for recreation or for sustaining wildlife; public swimming pools; existing plant collections, botanical gardens, and arboretums; and cemeteries built before 2015.

For both residential areas and CII landscapes with DIMs, areas planted with non-functional turf would not be considered SLAs.

Provisions and Variances

The proposed regulation would establish variances for unique uses of water, along with the process suppliers would follow to request variances. In addition to the variances recommended by DWR, the State Water Board staff proposal includes two provisions:

- A provision for urban tree health.
- A provision for pools, spas and other water features, starting in 2030.

For the following variances, the State Water Board staff proposal would use methods different from those recommended by DWR:

- For water use for horses and other livestock, the State Water Board staff proposal references existing code (e.g., Cal. Code Regs., tit. 23, § 697).
- For water used in response to a state or local emergency, the State Water Board staff proposal references not just Government Code section 8558 subdivision (b), but also subdivision (c); it also excludes “drought” from the list of emergency events eligible for the variance.
- For water used to irrigate residential agricultural landscapes, the State Water Board staff proposal caps the LEF at 100%; it also directs DWR and Suppliers to reference 1) crop coefficients developed by the Food and Agriculture Organization or the University of California Cooperative Extension and 2) the irrigation efficiencies developed by the University of California Agricultural and Natural Resources’ CropManage tool.

Process for including additional Irrigable Irrigated area, Special Landscape Areas, and Variances

The proposed regulation would establish a process suppliers would follow to annually request approval to include additional II area beyond that calculated by DWR, SLAs, and variances. The supplier would be required to provide information quantifying and substantiating each request (e.g., demonstrating that the amount of water requested was delivered by the supplier for the requested use) and a description of efforts to prioritize water for existing trees.

Bonus Incentive

The State Water Board staff’s proposed accounting method for the bonus incentive would incorporate potable reuse water loss and surface water augmentation or groundwater recharge, as appropriate. The bonus incentive would be calculated using annual data.

Performance Measures

Under the proposed regulation, suppliers would be required to carry out several CII performance measures. Performance measures are actions to be taken by urban retail water suppliers that would result in increased water use efficiency by CII water users.

Performance measures do not include process[3] water. Under the proposed regulation, there are three CII performance measures:

1. Suppliers would be required to install DIMs on or employ in-lieu technologies for the landscapes of CII customers that a) do not have a DIM and b) the supplier estimates using 500 million gallons of water or more annually.
2. Suppliers would be required to classify their CII customers according to the broad classification categories used by the U.S. Environmental Protection Agency's ENERGYSTAR Portfolio Manager tool.
3. Suppliers would be required to offer best management practices (BMPs) to their CII customers that meet specific criteria.

    a. For customers that own or manage a building that is considered a "disclosable building" under the California Energy Commission's "Benchmarking" regulation (Cal. Code Regs., tit. 20, § 1681, subd. (d)), the supplier would be required provide annual water use data in a format compatible with ENERGYSTAR's Portfolio Manager tool.

    b. For customers that the supplier has determined to be in the top 20 percent of water use, excluding process water, relative to other customers within their specific CII classification category (e.g., lodging), the supplier would design and implement a conservation program that includes at least one BMP (e.g., educational bill inserts) from five discrete BMP categories (e.g., Outreach, Education, and Technical Assistance). The proposed regulation specifies the BMPs categories and the specific BMPs within each category.

    c. For customers the supplier has determined to be in the top 2.5 percent of water use, excluding process water, relative to all its CII customers, the supplier would design and implement a conservation program that includes at least two BMPs from each of the BMP categories.

[3] "Process water" means water used by industrial water users for producing a product or product content or water used for research and development. Process water includes, but is not limited to, continuous manufacturing processes, and water used for testing, cleaning, and maintaining equipment. Water used to cool machinery or buildings used in the manufacturing process or necessary to maintain product quality or chemical characteristics for product manufacturing or control rooms, data centers, laboratories, clean rooms, and other industrial facility units that are integral to the manufacturing or research and development process is process water. Water used in the manufacturing process that is necessary for complying with local, state, and federal health and safety laws, and is not incidental water, is process water. Process water does not mean incidental water uses.

Impact of Proposed Regulation on Urban Water Use

The State Water Board has prepared a separate document, a Standard Regulatory Impact Analysis (SRIA), that describes in detail the assumptions used to estimate overall economic and fiscal costs and benefits of the proposed regulation, a primary component of which was the water savings that would be associated with the proposed regulatory framework. Water savings were calculated by comparing, for each supplier, a future baseline to what water use would be under the proposed regulation. Data were only available to evaluate the impact of the residential indoor standard (already established in statute) and the proposed residential outdoor standard. Because we could not account for variances with existing available data, the analysis may overestimate prospective water savings associated with meeting urban water use objectives.

Absent the proposed regulation, average statewide total urban water use is forecasted to decline from an average of 130 gallons per capita per day (GPCD) today to 117 GPCD in 2035. Without accounting for variances, the proposed regulation could significantly increase urban water use efficiency, bringing average total statewide water use to 107 GPCD in 2035.

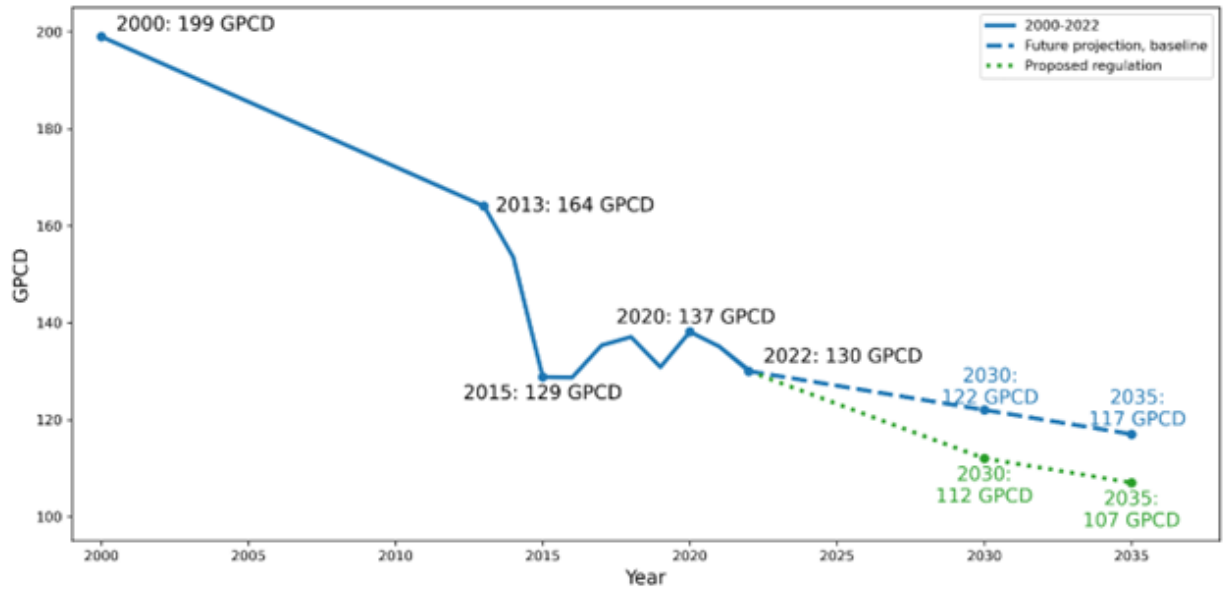
For context, urban water use trends in two affluent and industrialized nations – Australia and Denmark – provide useful examples. Total urban water use in Australia averaged 100 GPCD in 2020, with residential water use accounting for a little over half of total use in most metropolitan areas (Bureau of Meteorology 2020). In Denmark, total urban water use averaged 42 GPCD in 2021, with residential use accounting for a little over two-thirds of total use (DANVA 2022).

Table 3 and Figure 5 show the historic and future baseline as well as what average total GPCD would be under the proposed regulation (for 2030 and 2035). The table also shows the average annual change from 2020 and the GPCD savings associated with proposed regulation.

Table 3: Current and forecasted statewide urban water use, in gallons per capita daily

	Statewide Urban Water Use (GPCD)	Change per Year from 2020	Savings from Residential Sector (GPCD)	Savings from CII Sector (GPCD)
Historic level: 2020	137	-	-	-
Future reference level: 2030	122	- 1.1%	-	-
Proposed regulation: 2030	112	- 1.8%	7.5	2.5
Future reference level: 2035	117	- 1.0%	-	-
Proposed regulation: 2035	107	- 1.5%	8.2	1.8

Figure 5: Past and forecasted statewide urban water use, in gallons per capita daily, with and without the proposed regulation



In 2000, California's urban water use averaged 199 GPCD, according to the 20×2020 Water Conservation Program report (DWR et al. 2013). With the passage of the Water Conservation Bill of 2009 (SBx7 7), the State sought to reduce per capita water use by 20 percent by 2020. Between 2000 and 2013, average statewide per capita water use decreased from 199 GPCD to 164 GPCD. Between 2013 and 2015, emergency conservation regulations and tremendous drought responses by local agencies and their customers resulted in average statewide water use dropping from 164 GPCD to 129 GPCD, a 21 percent savings in two years (State Water Board 2022). Since then, California has experienced some rebound, peaking at 137 GPCD in 2020 (the beginning

of the hot, dry conditions associated with the current drought) and again dropping by the end of 2022, averaging 130 GPCD (State Water Board 2022).

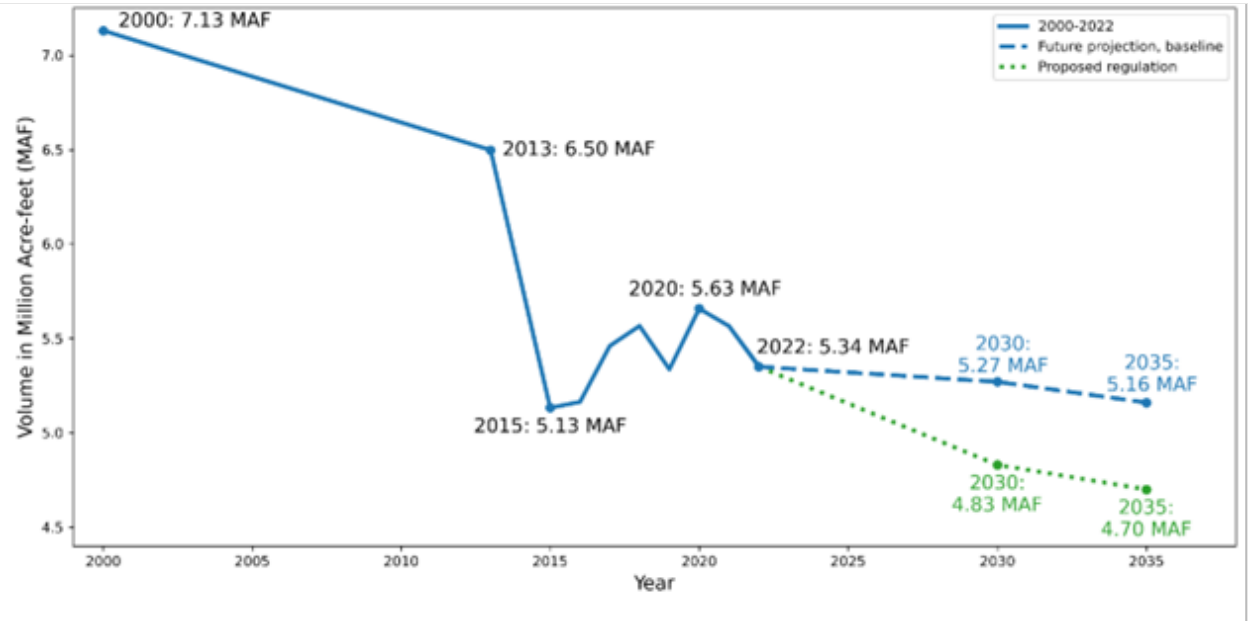
While urban water use has rebounded since the 2015 low, the long-term trend is clear: Californians are taking strides to conserve and use water more efficiently, indoors and outdoors. Between 2013 and 2022, per capita urban water use decreased by over 20 percent, savings equating to an average decline of 2.3 percent per year. By 2035, the proposed regulation could, without accounting for variances, result in average GPCD declining at a rate of 1.5 percent per year.

Per capita water use is a standard measure of efficiency. Also relevant, however, is the total volume of water consumed by the urban water sector. Volumetric trends are summarized below, with Table 4 and Figure 6 showing current and forecasted statewide total urban water use (in million acre-feet [MAF]) as well as projected water use under the proposed regulation. The table also shows the average annual change and the MAF savings associated with proposed regulation.

Table 4: Current and forecasted statewide urban water use

	Statewide Urban Water Use (MAF)	Change per year from 2020	Savings from residential sector (MAF)	Savings from CII sector (MAF)
Historic volume: 2020	5.63	-	-	-
Future reference level: 2030	5.27	- 0.6%	-	-
Proposed regulation: 2030	4.83	- 1.4%	0.33	0.11
Future reference level: 2035	5.16	- 0.6%	-	-
Proposed regulation: 2035	4.70	- 1.1%	0.38	0.08

Figure 6: Historic, current, and forecasted statewide urban water use, total water use, with and without the proposed regulation



The Board's analysis of the economic and fiscal impact of the proposed regulation reflects the data of 385 water agencies, which are assumed to collectively serve a population of over 39 million Californians in 2035 (95 percent of the state's projected 2035 population). In analyzing prospective compliance with urban water use objectives, it appears the proposed regulation would result in no or modest water savings for most urban retail water suppliers in California. Seventy-two percent of suppliers (274 suppliers), serving about half of the state's population, would see some amount of savings in complying with their 2035 objective. Of these suppliers, about half would see savings of 10 percent or less. Based on the current analysis, which does not account for variances, about a third of suppliers, representing 14 percent of Californians served by suppliers, would see savings of 20 percent or more. Table 5 shows how the proposed regulation, might impact suppliers in 2035, considering compliance with objectives only.

Table 5: Suppliers and service population, by degree of savings attributable to proposed regulation, considering compliance with objectives only

Impact Category	Percent of Suppliers in Category	Percent of Service Population in Category
No savings	28%	48%
Savings of 10% or less	32%	24%
10% to 20% savings	19%	13%
20% to 30% savings	12%	10%
Savings of more than 30%	9%	4%

When considering compliance with the objectives and the obligation to carry out CII performance standards, the proposed regulation could result in almost all (379) agencies generating additional savings above the assumed 2035 reference level. For most suppliers, those savings would be relatively small and associated with carrying out the CII performance standards only; for example, 47 percent could see savings of five percent or less.

List of Abbreviations

BMP – Best management practices

CII – Commercial, Industrial, and Institutional

DIM – Dedicated irrigation meter

EP – Effective precipitation

ET_o – Reference evapotranspiration

GPCD – Gallons per capita per day

LEF – Landscape efficiency factor

MAF – Million acre feet

Works Cited

Bureau of Meteorology. (2022). “National performance report 2020–21: urban water utilities, part A.” Bureau of Meteorology Melbourne, Australia.

Danish Water and Wastewater Association (DANVA). (2022). “Water in Figures: 2022” Denmark.

Department of Water Resources, State Water Board, California Bay-Delta Authority, California Energy Commission, California Department of Public Health, CPUC, CARB. (2013). “20×2020 Water Conservation Program Final Report: Landscape Water Use.” CA Water Plan Update 2013, vol 4.

State Water Board (2022). Water Conservation and Production Reports, Archived Monthly Reports. Water Conservation Portal - Conservation Reporting; California State Water Resources Control Board; https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.html.