Recommendations for Commercial, Industrial, and Institutional Water Use Classification System Performance Measure

WUES-DWR-2021-17

A Report to the State Water Resources Control Board Prepared Pursuant to California Water Code Section 10609.10

September 2022

California Department of Water Resources
Water Use Efficiency Branch

State of California
Gavin Newsom, Governor

California Natural Resources Agency
Wade Crowfoot, Secretary for Natural Resources
Saul Gomez, Undersecretary
Andrea Ambriz, Deputy Secretary for External Affairs

California Department of Water Resources
Karla A. Nemeth, Director
Cindy Messer, Lead Deputy Director

Deputy Directors

Business Operations
Stephanie Varrelman

Climate Resilience
John Andrew

Flood Management and Dam Safety
Gary Lippner

Integrated Watershed Management
Kristopher A. Tjernell

Security and Emergency Management Program
John Paasch

Special Initiatives
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State Water Project
Ted Craddock

Statewide Water and Energy
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Public Affairs
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Office Executives

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Thomas R. Gibson

Government and Community Liaison
Anecita Agustinez

Internal Audit Office
David Whitsell

Office of Workforce Equality
Tiffany Vital

Division of Regional Assistance
Arthur Hinojosa, Manager

Water Use Efficiency Branch
Ryan Bailey, Manager
Peter Brostrom (in memoriam)[1]

Recommendations for Commercial, Industrial, and Institutional Water Use Classification System Performance Measure Project Team

California Department of Water Resources

Water Use Efficiency Branch
Sabrina Cook
Shem Stygar

Division of Planning
Manucher Alemi, Policy Advisor

Division of Regional Assistance
Matthew Bates, Assistant Manager
Diana S. Brooks, Policy Advisor

Integrated Watershed Management
Teji Sandhu, Policy Advisor to the Deputy Director
Andria Avila, Executive Assistant to the Deputy Director

Special Restoration Initiatives Branch
James Campagna, Office Technician

---

[1] Peter Brostrom served as the California Department of Water Resources Water Use Efficiency Branch Manager through October 29, 2020, and he was instrumental in assembling the stakeholder working groups and study design.

Water Use Studies Working Group Members

Arcadis Greg Imamura	***Association of California Water Agencies*** Dave Bolland
California American Water Patrick Pilz	***Camrosa Water District*** Charlotte Lopez
City of Sacramento William Granger	***Coachella Valley Water District*** Jason Lucas
County of Napa Christopher M. Silke	***Eastern Municipal Water District*** Sara Quintero
Ecolab Mark Muellner	***Irvine Ranch Water District*** Amy McNulty
Kennedy Jenks Consultants Meredith Clement	***Long Beach Water Department*** Dean Wang
Los Angeles Department of Water and Power Terrence McCarthy	***Moulton Niguel Water District*** Justin Finch
Municipal Water District of Orange County Rachel Waite	***Natural Resources Defense Council*** Tracy Quinn
Niemela Pappas & Associates Tiffany Phan	***Pacific Institute*** Heather Cooley
Plumbing Manufacturers International Cambria McLeod	***Rancho California Water District*** Jason Martin
Retired ** Martha Davis	***Sacramento Suburban Water District*** Greg Bundesen
San Francisco Public Utilities Commission Julie Ortiz	***San Jose Water*** Courtney Rubin
Santa Clarita Valley Water Agency Matthew S. Dickens	***Sonoma-Marin Saving Water Partnership*** Chelsea Thompson
South Tahoe Public Utility District Shelly Thomsen	***Stanford University*** Newsha Ajami
Valley County Water District Tara Robinson	***Valley Water*** Metra Richert
Walnut Valley Water District Donna DiLaura	***WaterReuse CA*** Charles LaSalle

Water Use Studies Working Group Members

WaterNow Alliance
Caroline Koch

West Yost Associates
Elizabeth Drayer

Western Municipal Water District
Jason Pivovaroff

Standards, Methodologies, and Performance Measures Working Group Members

Alameda County Water District
Stephanie Nevins

Association of California Water Agencies
Dave Bolland

Bay Area Water Supply and Conservation Agency
Andree Johnson

California Water Service
Ken Jenkins

City of Glendale
Michael De Ghetto

City of Lakewood
Toyasha Sebbag

City of Petaluma
Chelsea Thompson

City of Pleasanton
Rita Di Candia

City of Sacramento
Roshini Das

City of Santa Monica
Russell Ackerman

Coachella Valley Water District
Katie Evans

Contra Costa Water District
Bob Eagle

Delta Stewardship Council
Cory Copeland

East Bay Municipal Utility District
Alice Towey

Ecolab
Mark Muellner

EKI Environment & Water, Inc.
Kat Wuelfing

Gardenworks Inc.
Peter Estournes

Irvine Ranch Water District
Fiona Sanchez

Los Angeles Department of Water and Power
Sofia Marcus

Metropolitan Water District
Krista Guerrero

Mission Springs Water District
John M. Soulliere

Natural Resources Defense Council
Tracy Quinn

Olivenhain Municipal Water District
Brian Sodeman

Pacific Institute
Heather Cooley

Plumbing Manufacturers International
Cambria McLeod

Rancho California Water District
Tyson Heine

Regional Water Authority
Amy Talbot

San Jose Water
Kurt Elvert

Stanford University
Newsha Ajami

Western Municipal Water District
Karly Gaynor

San Diego County Water Authority
Elizabeth Lovsted

*Santa Clara Valley Water District,
Pajaro River Watershed*
Samantha Greene

Water Systems Optimization
Kate Gasner

Technical Consultants

Stantec Consulting Services Inc.
Yung-Hsin Sun
Sally Van Etten
Elizabeth Simon
Vanessa Nishikawa
Maliheh Karamigolbaghi

Acknowledgements

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Appendices

Abbreviations and Acronyms

2013 CII Task Force Report	October 2013 Commercial, Industrial, and Institutional Task Force Water Use Best Management Practices Report to the Legislature
2018 Legislation	2018 Legislation on Water Conservation and Drought Planning (Senate Bill 606 [Hertzberg] and Assembly Bill 1668 [Friedman], as amended)
AB	Assembly Bill
ACWA	Association of California Water Agencies
APN	assessor's parcel number
AWWA	American Water Works Association
BMP	best management practice
CalWEP	California Water Efficiency Partnership
CEC	California Energy Commission
CII	commercial, industrial, and institutional
CII-DIMWUS	Commercial, Industrial, and Institutional Outdoor Irrigation of Landscape Areas with Dedicated Irrigation Meters Water Use Efficiency Standard
CPUC	California Public Utilities Commission
CUWA	California Urban Water Agencies
CUWCC	California Urban Water Conservation Council (now California Water Efficiency Partnership)
CWA	California Water Association
DIM	dedicated irrigation meter
DOE	U.S. Department of Energy
DWR	California Department of Water Resources
EPA	U.S. Environmental Protection Agency
gpcd	gallons per capita per day
IRWUS	Indoor Residential Water Use Efficiency Standard
Legislature	California State Legislature
NAICS	North American Industry Classification System

ORWUS	Outdoor Residential Water Use Efficiency Standard
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
Recommendation Package	Urban Water Use Efficiency Recommendation Package
SB	Senate Bill
State	State of California
State Water Board	State Water Resources Control Board
Task Force	Commercial, Industrial, and Institutional Task Force
UWUO	urban water use objective
WC	California Water Code
WEEP	Water and Energy Efficiency Program
WLS	Water Loss Standard
WRF	Water Research Foundation

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Executive Summary

The California State Legislature (Legislature) passed the 2018 Legislation on Water Conservation and Drought Planning (Senate Bill 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. This report is submitted pursuant to California Water Code (WC) Section 10609.10, which directs the California Department of Water Resources (DWR), in coordination with the State Water Resources Control Board (State Water Board), to conduct necessary studies and investigations and recommend performance measures for commercial, industrial, and institutional (CII) water use for the State Water Board's adoption. Among other things, these performance measures include a CII water use classification system that addresses significant uses of water (WC Section 10609.10).

Based on the legislative directive, DWR developed the recommendations for a CII water use classification system. In particular, the WC requires the recommended CII water use performance measures to be consistent with *Commercial, Industrial, and Institutional Task Force Water Use Best Management Practices Report to the Legislature* (DWR, 2013a and 2013b). The technical and financial feasibility recommendations provided in that report are aimed at supporting the economic productivity of the State of California's (State) CII sectors (WC Section 10609.10(c)). The documentation of the implementation of the CII water use performance measures, including the CII water use classification system, is required in the urban retail water supplier's Annual Water Use Report filing (WC Section 10609.24(a)(3)). However, quantification of water use per category is not required as the associated CII water use is excluded in the quantification reporting per provisions related to the urban water use objective.

Consistent with the legislative directive, DWR used a public process involving a diverse group of stakeholders in the review and development of the CII water use classification system. The Water Use Studies Working Group and the Standards, Methods, and Performance Measures Working Group that DWR established to assist in implementing the 2018 Legislation were the primary stakeholders involved in the development process for the CII water use performance measures. Additional stakeholders included State agencies, cities, counties, urban retail water suppliers, environmental organizations, and other interested parties. Working group members and stakeholders were provided with many opportunities to comment on and inform the suitability and practical application of the recommended CII water use classification system. Their input also informed the development and refinements of the applicable scope, specifications of the CII water use classification system, and performance measures for implementation. Technical feasibility, financial considerations, and associated potential economic effects on CII sectors were also considered during the development process.

In responding to stakeholder input, DWR incorporated into the performance measures the consideration of the limited authority urban retail water suppliers may have to unilaterally implement certain actions suggested in those performance measures without explicit cooperation from CII water users.

Through extensive review of both literature and the currently in-use CII water use classification systems, the details, pros, and cons of three options were identified and discussed with the stakeholders, including implementation considerations and potential effects on urban retail water suppliers. Based on the evaluation of technical and financial feasibility and stakeholder feedback, DWR recommends a CII water use classification system that is water-centric, with complete coverage of all CII water uses. The recommended classification system will comprise a sufficient number of categories to address major CII water uses, thereby providing adequate differentiation among different CII sectors to facilitate data collections and future references; however, the system will not be overly detailed to create unnecessary burdens on urban retail water suppliers for implementation. DWR also recommends the schedule for implementing a CII water use classification system requiring urban retail water suppliers to complete their classifications within five years after the State Water Board adopts the regulation. Progress reports also will be required in the urban retail water suppliers' Annual Water Use Report filings. Implementation of the CII water use classification system will not require urban retail water suppliers to reengineer their billing systems or any established account management practices, but will require information mapping for reporting purposes. In addition, this new requirement will require DWR to provide additional technical assistance and develop guidance for mapping CII water uses into the adopted CII water use classification system.

DWR's recommendations for a CII water use classification system are also included in the report, *Summary of Recommendations for Performance Measures for Commercial, Industrial, and Institutional Water Use* (WUES-DWR-2021-15), along with other recommendations on CII water use performance measures for coordinated implementation, which DWR prepared per requirements of the 2018 Legislation that are to be transmitted to the State Water Board for adoption. DWR's recommendations for a CII water use classification system and associated annual reporting requirements are also included in the report, *Recommendations for Urban Water Use Efficiency Standards, Variances, Performance Measures, and Annual Water Use Reporting* (WUES-DWR-2021-01A), which provides the complete context of the Urban Water Use Efficiency Recommendation Package and its implementation.

1.0   Introduction

Senate Bill (SB) 606 (Hertzberg) and Assembly Bill (AB) 1668 (Friedman) of 2018, as amended (hereinafter referred to as the "2018 Legislation"), established a new foundation for long-term improvements in water conservation and drought planning to adapt to climate change and the resulting longer and more intense droughts in the State of California (State). These two bills provide expanded and new authorities and requirements to enable permanent changes and actions for those purposes, thereby improving the State's water future for generations to come. Details of these provisions are summarized in *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)* (DWR and State Water Board, 2018).

1.1   New Approach to Urban Water Use Efficiency

Among other things, the 2018 Legislation contains provisions for advancing urban water use efficiency through developing and implementing various water use efficiency standards, variances, and performance measures per California Water Code (WC) Section 10609. The new water conservation framework is different than SB X7-7, which was established in 2009. The focus of SB X7-7 was to reduce statewide urban water use by 20 percent in 2020 compared to baseline calculated in 2010. The 2018 Legislation requires a bottom-up estimate from urban retail water suppliers of the urban water use objective (UWUO) based on the aggregated efficient water use volume considering four urban water use efficiency standards and appropriate variances. The four standards are:

- Indoor Residential Water Use Efficiency Standard (IRWUS).

- Outdoor Residential Water Use Efficiency Standard (ORWUS).

- Commercial, Industrial, and Institutional Outdoor Irrigation of Landscape Areas with Dedicated Irrigation Meters Water Use Efficiency Standard (CII-DIMWUS).

- Water Loss Standard (WLS).

Commercial, industrial, and institutional (CII) water use not associated with dedicated irrigation meters (DIM) (or equivalent technologies) for outdoor irrigation of landscape areas is excluded from the UWUO.

Each of the procedural requirements to formalize these four standards for implementation is different. The 2018 Legislation includes a default, progressively reduced IRWUS (WC Section 10609.4(a)). In November 2021, in collaboration with the

State Water Resources Control Board (State Water Board), the California Department of Water Resources (DWR) submitted the joint recommendations for IRWUS to the California State Legislature (Legislature) for further consideration, per WC Section 10609.4(b). Separately, the State Water Board is currently conducting a rulemaking process to adopt the proposed WLS, which was originally authorized by SB 555 of 2015. For ORWUS and CII-DIMWUS, the 2018 Legislation requires DWR, in coordination with the State Water Board, to conduct necessary studies and investigations and develop recommendations to the State Water Board by October 1, 2021 (WC Sections 10609.6 and 10609.8).

Another major difference between the SB X7-7 requirements and those of the 2018 Legislation is that the anticipated outcome was measured on a statewide level per SB X7-7 and on an individual urban retail water supplier level per the 2018 Legislation. Recognizing the diversity of water use to support local economic, social, and environmental needs and varying climate conditions in the State, the 2018 Legislation requires DWR, in coordination with the State Water Board, to conduct necessary studies and investigations. It also requires DWR to develop recommendations for adoption by the State Water Board by October 1, 2021, for appropriate variances for unique uses that can have a material effect on an urban retail water supplier's UWUO and the corresponding thresholds of significance (WC Section 10609.14). In this context, DWR interpreted that a material effect means that this unique water use, although used in an efficient manner, could unfairly jeopardize an urban retail water supplier's ability to meet the UWUO when not explicitly addressed and calculated separately from the volume based on the four water use efficiency standards.

As a supporting recommendation, the 2018 Legislation requires DWR to develop accompanying guidelines and methodologies for calculating the UWUO (WC Section 10609.16) and provide the recommendation to the State Water Board for adoption, along with DWR's recommendations on ORWUS, CII-DIMWUS, and appropriate variances by June 30, 2022 (WC Section 10609.2). The 2018 Legislation further requires DWR and the State Water Board to solicit broad public participation throughout the development and adoption processes (WC Section 10609(b)(3)).

Not all urban water uses are included in the UWUO. The 2018 Legislation includes considerations to manage CII water use separately, because CII water use can be complex and diverse and have direct connections to economic productivity. There is insufficient information available to properly set standards or variances, if even feasible, as other categories of urban water use. However, progress should still be made to improve CII water use efficiency. Therefore, the 2018 Legislation requires that DWR develop recommendations on performance measures for CII water use other than water use for CII outdoor irrigation of landscape areas with DIMs (already included as one of the standards) and process water. More detailed discussion on this topic is provided in Section 1.2.

The new water use efficiency management framework in the 2018 Legislation for CII water use is different from the previous SB X7-7 requirements. The SB X7-7 water conservation framework required urban retail water suppliers to set conservation targets in gallons per capita per day (gpcd) and accounted for CII water use in a lumped format for water use reduction, excluding process water. Reporting CII water use in gpcd could be misleading, because CII water use may not have a direct correlation to the number of permanent residents in the service area. Efficient water uses of different CII-related economic activities can vary significantly in volume. Reporting CII water use in gpcd or other metrics without the context of associated economic activities is not effective for showing the progress, or otherwise, in CII water use efficiency. Therefore, urban retail water suppliers are often required to provide additional justifications or description for CII water use efficiency that cannot be demonstrated by using gpcd statistics or other metrics, including factors that may hinder the anticipated progress such as lack of authority to unilaterally implement improvements or best management practices (BMP) without explicit cooperation of CII water users.

Under the 2018 Legislation, urban retail water suppliers are not required to report the volume of CII water use, except for the outdoor irrigation water use under CII-DIMWUS. However, urban retail water suppliers are required to report the performance measures in their Annual Water Use Report, including the actions they take to improve CII water use efficiency and associated outcomes. This more granular approach to improving CII water use efficiency is consistent with the approach to the volumetric reporting requirements under the UWUO and provides an opportunity for understanding the causations between performance measure actions and resulting water use efficiency improvements.

1.2   Commercial, Industrial, and Institutional Water Use Performance Measures

Following the 2012 to 2016 drought, the State reevaluated its water use practices and resolved to prioritize long-term water conservation and drought planning. In a broader sense, the 2018 Legislation calls for increased water conservation and more efficient use of water. In particular, WC Section 10608(e) states, "The success of [S]tate and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency." Providing measurable outcomes requires the evaluation of baseline water use for CII sectors in the State.

For the context of CII water use, sustainable water use and demand reduction are to be used to "[s]upport the economic productivity of California's agricultural, commercial, and industrial sectors" (WC Section 10608.4(j)), but that "…does not require a reduction in the total water used in the agricultural or urban sectors, because other factors, including, but not limited to, changes in agricultural economics or population growth may

have greater effects on water use. This part does not limit the economic productivity of California's agricultural, commercial, or industrial sectors" (WC Section 10608.8(c)).

DWR was required to conduct necessary studies and investigations and make recommendations on performance measures for CII water use to the State Water Board for its adoption by no later than October 1, 2021, as specified in AB 1668 and codified in WC Section 10609.10. In this context, "CII water use" means water used by commercial water users, industrial water users, institutional water users, and large landscape water users (WC Section 10608.12(d)), with the following supporting definitions.

- *"Commercial water user" means a water user that provides or distributes a product or service (WC Section 10608.12(e)).*

- *"Industrial water user" means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development (WC Section 10608.12(i)).*

- *"Institutional water user" means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions (WC Section 10608.12(j)).*

- *"Large landscape" means a nonresidential landscape as described in the performance measures for CII water use adopted pursuant to Section 10609.10 (WC Section 10608.12(l)).*

In addition, per WC Section 10608.12(n), "performance measures" are:

…actions to be taken by urban retail water suppliers that will result in increased water use efficiency by CII water users. Performance measures may include, but are not limited to, educating CII water users on best management practices, conducting water use audits, and preparing water management plans. Performance measures do not include process water.

Furthermore, per WC Section 10608.12(p), "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, [S]tate, and federal health and safety laws, and is not incidental water, is process water. Process water does not mean incidental water uses.

As previously mentioned, except for landscape irrigation with DIMs in connection with CII water use, CII water use is not part of the UWUO that urban retail water suppliers need to report quantitively in their corresponding Annual Water Use Reports. Water use efficiency in CII sectors is instead addressed through implementation of CII water use performance measures. The CII water use performance measures DWR was directed to develop and recommend include the following (WC Section 10609.10):

- CII water use classification system to address significant uses of water.

- Setting minimum size thresholds for converting mixed-use CII meters to DIMs or to technologies that could be used in lieu of requiring DIMs.

- BMPs, including water audits and water management plans for CII customers above a certain size, volume of use, or other thresholds.

The 2018 Legislation further requires that the recommended CII water use performance measures be consistent with *Commercial, Industrial, and Institutional Task Force Water Use Best Management Practices Report to the Legislature* (DWR, 2013a and 2013b) (WC Section 10609.10(c)), hereinafter referred to as the "2013 CII Task Force Report." The Task Force consisted of stakeholders and experts convened by DWR and the California Urban Water Conservation Council, which is now the California Water Efficiency Partnership (CUWCC, now CalWEP), to develop BMPs for CII water users, as directed by WC Section 10608. The following recommendations by the Task Force (DWR, 2013a) are particularly relevant to the development of CII water use performance measures:

***Recommendation 5-7**: DWR should work with the Association of California Water Agencies (ACWA), CUWCC [now CalWEP], California Urban Water Agencies (CUWA), California Public Utilities Commission (CPUC), California Water Association (CWA), and American Water Works Association (AWWA) to develop a full-spectrum, water-centric standardized classification system of customer categories. This classification system should include consistent use of North American Industry Classification System (NAICS) codes and assessors' parcel numbers (APNs).*

Recommendation 5-8: DWR, in consultation with a stakeholder advisory committee and through a public process, should develop a system and implementation plan for water production, delivery, and use data collection for classification and for reporting and tracking at the user, water service provider, [S]tate, and federal levels. One or more of the following options should be considered.

- *Option 5-8.1: DWR should develop a water-centric water use and user classification system.*

- *Option 5-8.2: Water service providers should classify water users using a common classification system and transition their customer databases to incorporate this system.*

- *Option 5-8.3: Water service providers should consider recording and maintaining key data fields, such as assessor's [sic] parcel numbers for customers. This would enable the linking of water usage data with information from other sources for purposes of metrics, water demand analysis, and demand projections.*

- *Option 5-8.4: Water service providers and self-supplied water users meeting defined criteria should be required to report water use to the [S]tate.*

- *Option 5-8.5: Water service providers, CUWCC [now CalWEP], and water users should expand on landscape irrigation water use categorizations that recognize and promote BMPs for separate metering, especially for larger and mixed use sites.*

Recommendation 6-3: Water and energy service providers should incorporate water audits into their efficiency programs, consider financial incentives for BMP implementation, and provide other technical assistance as appropriate.

Recommendation 6-4: Organizations representing businesses and industry, water service providers, the CUWCC [now CalWEP], other interested parties, and DWR should educate CII water users or entities on the BMPs and approaches to doing audits and performing a cost-effectiveness analysis.

The 2013 CII Task Force Report presents the following option for further study or action to improve data collection and reporting. This option is specifically related to the development of a water use and user classification system (DWR, 2013b):

> ***Option 1****: DWR should develop a water use and user classification system. The system should comprehensively address all sectors of water use, not just CII water users. The system should be designed for all water use establishments to be classified using a full-spectrum water-centric coding system integrated with national, [S]tate, regional, and local goals and objectives for water resources planning and management. The classification system should include common definitions for water use sectors for consistent aggregation of data. Consideration should be given to using a commonly accepted coding system, such as NAICS, as a basis for definitions.*

Recommended large landscape BMPs can be found in Section 7.3.5 in both Volumes I and II of the 2013 CII Task Force Report (DWR, 2013a and 2013b).

Per WC Section 10609.10(d)(1), the State Water Board, in coordination with DWR, must adopt the performance measures on or before June 30, 2022. Documentation of the implementation of CII water use performance measures, including implementation of the CII water use classification system, is required in the urban retail water supplier's Annual Water Use Report filing (WC Section 10609.24(a)(3)).

1.3 Purpose of the Report

Per legislative requirements and with stakeholder engagement, DWR conducted studies and investigations to develop and recommend CII water use performance measures for adoption by the State Water Board. This report focuses on the CII water use classification system and is one of the several performance measure–specific reports produced by DWR.

Use of a Commercial, Industrial, and Institutional Water Use Classification System

As previously described, insufficient information exists to fully understand the diversity and complexities of CII water use. When adopted and implemented, the CII water use classification system will facilitate data gathering by urban retail water suppliers for further understanding of service area-wide water use by CII water use category and corresponding effectiveness of various water conservation practices. It will also facilitate consistent reporting of CII water use on an urban retail water supplier level throughout the State.

Relationship to California Department of Water Resources' Urban Water Use Efficiency Recommendation Package

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.

Specifically, this report, *Recommendations for Commercial, Industrial, and Institutional Water Use Classification System Performance Measure* (WUES-DWR-2021-17), provides the detailed documentation for the review and subsequent CII water use classification. DWR's recommendations for this performance measure were summarized in the report, *Summary of Recommendations for Performance Measures for Commercial, Industrial, and Institutional Water Use* (WUES-DWR-2021-15), along with other performance measures for coordinated implementation. DWR's recommendations and reporting requirements are also part of the report, *Recommendations for Urban Water Use Efficiency Standards, Variances, Performance Measures, and Annual Water Use Reporting* (WUES-DWR-2021-01A). The additional context, performance measure development process and approach, evaluation of options, and stakeholder input included in this document 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).

Effects on Existing Law and Regulations

DWR developed the recommendations on CII water use classification system per legislative directive. The resulting CII water use classification system, when adopted, does not set, rescind, or modify existing or future requirements for managing CII water use.

1.4   Report Organization

This report is organized into seven sections:

- **Section 1** – **Introduction** provides the background and purpose of this document.

- **Section 2 – Scope Definition** provides the clarification of the scope for CII water use classification system development.

- **Section 3** – **Classification Approach** describes the technical approach and stakeholder engagement that DWR conducted to support performance measure

development, and those specifically applied to the CII water use classification system.

- **Section 4** – **Options** considers different CII water use classification systems and presents an associated evaluation for technical feasibility, financial considerations, reasonableness, and ability to be implemented.

- **Section 5** –**Recommended Performance Measure** provides DWR's recommendations on the performance measure, and includes specifications, guidelines, and methodologies.

- **Section 6** – **Glossary** provides a list of key terms and their definitions used in this document.

- **Section 7** – **References** provides a list of references used in this document.

This report includes one appendix:

- **Appendix A** provides the list of documents in DWR's Recommendation Package that are incorporated by reference.

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2.0 Scope Definition

In accordance with the legislative directive (WC Section 10609.10(a)), DWR conducted necessary studies and investigations to make a recommendation for adoption by the State Water Board on the CII water use classification system for the purpose of water use reporting. DWR's studies and investigations included a literature search.

In addition, consistent with WC Section 10609.10(b)(2), extensive stakeholder outreach was conducted for developing the recommendations; and DWR incorporated into its recommendations feedback and experience provided by urban retail water suppliers and stakeholders. Implementation challenges were also identified. Furthermore, DWR tested potential options for consistency with the 2013 CII Task Force Report recommendations (DWR, 2013a and 2013b), as directed by WC Section 10609.10(c).

While a CII water use classification system will aid in the data collection and evaluation of urban CII water use and of CII water use efficiency improvement, it will only be a starting point with more extensive work needed in the future. Research has shown that characterization of baseline water use for CII categories is extremely difficult because of inherent variability, even within categories, and the changing nature of operations (WRF, 2015). Understanding baseline water use requires substantial detailed information about each CII water users, a long-term record of water use, and information about any operational changes or conditions. The current recommendation does not contain a recommendation for future revisions of the recommended CII water use classification system, which would require additional authority from the Legislature.

Note that except for outdoor irrigation of landscape areas with DIMs (or equivalent technologies) in connection with CII water use, CII water use is not part of the quantitative reporting requirements for the UWUO. However, an urban retail water supplier's progress towards implementing CII water use performance measures, including the CII water use classification system, is part of the annual reporting requirements for the Annual Water Use Report. The use of the adopted CII water use classification system performance measure does not require urban retail water suppliers to report water use per category or standardize their data collection and analytical methods for any quantitative reporting on category-based water use as part of their annual report filings. However, urban retail water suppliers can choose to provide such quantitative reporting voluntarily.

The CII water use classification system is related to the other CII water use performance measures in that the conversion of mixed-use meters for landscape irrigation to DIMs (or equivalent technologies) will eventually change the way the in which water use by some CII water users is accounted for. DWR anticipates that the CII water use data collected by urban retail water suppliers could be used to help them

identify CII user and user-types most likely to benefit from targeted BMPs for improved CII water use efficiency.

3.0   Classification Approach

DWR's approach to developing the CII water use classification system was an iterative process in collaboration with stakeholders and the State Water Board to assist DWR in formulating design criteria, conducting literature reviews, and refining options and associated implementation considerations.

3.1   Stakeholder Process

Consistent with the legislative directive, DWR used a public process involving diverse stakeholders in the review and development of CII water-use related topics. The stakeholder process was part of the larger engagement process to implement the provisions of urban water use efficiency in the 2018 Legislation (see *Stakeholder Outreach Summary for Developing Urban Water Use Efficiency Standards, Variances, and Performance Measures* [WUES-DWR-2021-20]). More focused stakeholder engagement specifically for CII performance measures started in March 2020, with periodic meetings and workshops held through early 2022.

DWR established two working groups to assist in implementing the 2018 Legislation, and these groups formed the basis of the stakeholder involvement process that included State agencies, cities, counties, urban retail water suppliers, environmental organizations, professionals, and other stakeholders and interested parties. The Water Use Studies Working Group was established in July 2019 to inform DWR in developing water use studies for setting up standards, variances, and performance measures. Concurrently, the Standards, Methods, and Performance Measures Working Group was also established to provide input to DWR on developing the structure and specifications of water use efficiency standards, variances, methodologies, and performance measures. However, due to the close relationship between research on different CII water use classification systems and the implementation of urban water use efficiency standards and variances, members of both working groups were invited to participate in the same stakeholder meetings and workshops. DWR opened working group meetings and workshops to the public to allow for broader participation in and input from other stakeholders, interested parties, and individuals.

During the working group meetings, presentations and discussions covered the legislative background, DWR research into existing classification systems, and proposed CII water use classification systems. Stakeholder presentations were designed to provide information to a large number of participants. A short survey was also conducted to solicit feedback from the working groups on the topic of timeline for periodic review of the classification system. Working group members and other participants had ample opportunities to learn about the various CII water use classification systems and options considered for recommendation and to provide

feedback on these topics. They provided input on implementation, such as resource needs (staff), and other implementation considerations.

DWR also conducted and responded to requests for additional meetings and public outreach and engagement activities with both individual entity and groups of stakeholders to learn from their experiences, understand their specific concerns, and receive other feedback.

3.2 Design Criteria

DWR developed the following design criteria for the CII water use classification system in consideration of legislative requirements, stakeholder input, literature reviews, and experience of practitioners.

Water-Centric Categorization

The CII water use classification system should be water-centric and focus on water use and probable major CII water users as directed by WC Section 10609.10(b)(1). Other purposes or resource management may be also addressed by the classification system; however, the ability to address water use needs would be always required to meet the legislative requirements and the intended application.

Completeness for Statewide Application

The CII water use classification system should be complete and cover all CII water use so that it can be used consistently statewide for water conservation and other water management purposes by urban retail water suppliers. DWR recognized that the composition of CII water users and their corresponding water use could vary significantly from one geographic location to another. It is possible that there may be categories that are not used by all urban retail water suppliers. However, the consistent application of a complete system is necessary, including the number of categories, the covered scope under each category, and consistency with NAICS and APN categories.

Balance Between Resolution and Burden for Implementation

The CII water use classification should include sufficient number of categories to facilitate meaningful data collection with water use efficiency in consideration. As the nature of CII business and associated use are complex, too much refined categories do not help to establish solid foundation for data collection as an initial implementation. Therefore, a balanced consideration for an adequate number of categories should be included to address major water uses without extensive burden yet provide sufficient resolution for urban retail water suppliers to gain insights into the effectiveness of their management practices and initiatives.

It is possible that with additional experience and data collection, categories of the CII water use classification system can be further divided and refined. However, a wholesale change would be disruptive. While this perspective is considered, especially for consideration of thoroughness, the current recommendation will not include future refinements.

The categorization should also consider the implementation of other related legislative requirements to maintain consistency. This includes considerations of setting a category for the landscape irrigation water use with DIMs (or equivalent technologies) in connection with CII water use, which is subject to its own efficient water use standard.

Other Business Practice Considerations

The CII water use classification system should not require urban retail water suppliers to redo their financial or account system but requires a mapping exercise for reporting purposes. The CII water use classification system should also include considerations and provisions for urban retail water suppliers, in cooperation with other local agencies (e.g., business licensing or permitting agencies), to maintain up-to-date information.

3.3   Literature Review

A literature review was conducted to understand existing approaches to user classification systems in the CII sectors and how those approaches could meet the legislated intent for a CII water use classification system. The literature review also included a limited internet search for any additional CII water use classification systems, such as those intended for other non-water related purposes, but which might have useful elements.

In total, eight CII water use classification systems or approaches, as listed below, were identified by DWR, the State Water Board, DWR consultants, and working group members:

1. 2013 CII Task Force Report.

2. 2015 Methodology for Evaluating Water Use in the Commercial, Institutional, and Industrial Sectors: Water Research Foundation.

3. 2018 CII Water Use Classification: M.Cubed.

4. 2009 Cataloguing Commercial, Industrial, and Institutional Customer Classes: U.S. Department of the Interior, Bureau of Reclamation.

5. 2021 ACWA Recommendation for CII Water Use Classification System: Association of California Water Agencies.

6. WaterSmart Guidebook: East Bay Municipal Utility District.

7. Best Practices Guidelines: Sydney Water.

8. Energy Star Portfolio Manager (Property Types): U.S. Environmental Protection Agency (EPA) and U.S. Department of Energy (DOE).

These systems and approaches are likely not an exhaustive list, but are representative of a breadth of approaches, including classification systems from California, the United States, and international sources. The status of each system is different. Some reflect the state of thinking within industrial professional groups, while some were used by urban retail water suppliers for various outreach and water conservation measures.

The approaches were viewed through the lens of legislative requirements for the CII water use classification system. Barriers to potential applicability were either narrowness of scope (classification systems that focused on a limited number of users) or being designed for purposes other than water use reporting. To the extent that some aspects of these classification systems were still useful, they were incorporated into the design of the CII water use classification system options and presented to the working group and stakeholders. Table 3-1 shows a summary of these classification systems and approaches, and more detailed descriptions of each of the sources and their potential applicability to CII water use classification system are provided below.

Table 3-1 Summary of Reviewed Commercial, Industrial, and Institutional Water Use Classification Systems

CII Water Use Classification System	Referenced Region	Status – Developmental	Status – In-Use	Number of Primary CII Water Use Categories (Sub-categories)
2013 CII Task Force Report, Water Use BMPs	CA	✔	-	16
Methodology for Evaluating Water Use in CII Sectors (WRF)	US	✔	-	15 (29)
CII Water Use Classification	US	✔	-	15 – WRF (41)
Cataloguing CII Customer Classes (M.Cubed)	CA	-	✔	6 (18)
ACWA Recommendation for CII Water Use Classification System	CA	✔	-	3 (21)
EBMUD's WaterSmart Guidebook	EBMUD	-	✔	20
Sydney Water's Best Practice Guidelines	AUS	-	✔	7
Energy Star Portfolio Manager (Property Types)	U.S.	-	✔	18 (100+)

Key:
ACWA = Association of California Water Agencies
AUS = Australia
BMP = best management practice
CA = California
CII = commercial, industrial, and institutional
EBMUD = East Bay Municipal Utility District
U.S. = United States
WRF = Water Research Foundation

Commercial, Industrial, and Institutional Task Force Water Use Best Management Practices Report to the Legislature

DWR and CUWCC (now CalWEP) convened a Task Force of stakeholders and experts in 2013 to develop BMPs for CII water users, as directed by WC Section 10608. This classification system was to include consistent use of NAICS codes and APNs. The stated purpose of the 2013 CII Task Force Report was the identification of specific BMPs and actions intended to support efforts towards improving water use efficiency and water supply sustainability within the State's CII sectors (DWR, 2013a and 2013b).

The report provided recommendations for BMPs for specific water uses and efficiency opportunities within the CII sectors. The following list presents BMPs in this report:

- Commercial Food Service.

- Fabric Cleaning and Washing Equipment.

- Hospitality: Lodging – Hotels and Motels.

- Medical and Laboratory Equipment and Processes.

- Office Buildings.

- Prisons and Correctional Facilities.

- Retail, Grocery Stores, and Food Markets.

- Schools and Educational Facilities.

- Vehicle Washing.

- Aerospace and Metal Finishing Industries in California.

- Plating, Printed Circuit Boards, and Metal Finishing.

- Food Processing and Beverage Manufacturing.

- High-Tech Industry in California.

- Petroleum Refining and Chemical Industries in California.

- Pharmaceutical and Biotech Industries.

- Power Plants.

Of the various recommendations to the Legislature documented in the report, the Task Force identified an opportunity for the Legislature to provide the State authority and a method to collect data. Specifically, the report noted a need for a mechanism to collect detailed water use data for the purpose of tracking statewide CII water use efficiency and implementation of CII BMPs (DWR, 2013a and 2013b). As stated previously, WC Section 10609, written subsequent to the issuance of the 2013 CII Task Force Report, stipulates consistency with the report. The report did not suggest a classification system per se, rather it identified BMPs for specific water uses. These specific uses of water can be used as surrogates to form a water-centric classification system.

Although potential benefits of aligning categories with BMPs was discussed early in the classification system development process, linkage to BMPs as a method of category definition was rejected due to the challenge it would present during implementation. The BMP surrogate-categories identified in the 2013 CII Task Force Report, therefore, did not prove useful to formation of a classification system.

It is worth noting that the NAICS is used to identify industry categories and is a widely used business classification system that was developed under the auspices of the U.S. Office of Management and Budget. As the NAICS system is commonly used by wastewater agencies for categorization purposes, it was reviewed to assess applicability to this CII water use classification system development effort. Although widely used for other purposes, use of NAICS was determined to have an unworkable degree of specificity for urban retail water suppliers. The degree of specificity was excessive for the intended purposes of data collection and would be inefficient to implement for both urban retail water suppliers and data collection efforts of State agencies. However, NAICS codes could help urban retail water suppliers with identifying the type of CII and appropriate classification category.

Methodology for Evaluating Water Use in the Commercial, Institutional, and Industrial Sectors: Water Research Foundation

The Water Research Foundation (WRF), the EPA, and the Austin Water Utility jointly financed the development of a methodology to estimate and analytically characterize CII water use. The report developed data collection methods for differentiating between end uses and property types of various CII facilities and correlated these with typical CII categories. It also explored and assessed 'rate-of-use' metrics for CII water uses. Intended for use by water utilities, the paper provided a methodological process and analytical framework for the evaluation of CII water use (WRF, 2015).

The paper provided an initial CII water use classification system developed for data collection and analysis. The following categories were created with consideration of end-uses of water or similar water uses:

- Dominant End Use:

    – Commercial/Industrial Laundries.

    – Laundromats.

    – Car Washes.

    – Parks/Recreation.

    – Golf Courses.

- Landscape Irrigation.

- Lodging:

  - Hotels/Motels.

  - Resort.

- Office Building.

- Schools:

  - Primary/Secondary.

  - Universities.

- Health Care:

  - Hospitals.

  - Offices/Labs.

- Eating Places:

  - Full Service.

  - Fast Food.

- Retail Stores:

  - Shopping Centers/Malls.

  - Groceries/Supermarkets.

  - Other.

- Warehouses:

  - Cold Storage.

  - Other.

- Auto Service.

- Religious Buildings.

- Retirement Homes.

- Manufacturing:

    – Heavy Industry.

    – Light Industry.

    – Food Processing.

- Largest CII.

- Miscellaneous Commercial.

- Miscellaneous Institutional.

The WRF classification system formed the basis for many subsequently developed classification systems. Its categories were water-centric and arguably complete, although for practical purposes, the 'dominant end use' category likely needs to be broken down for tracking purposes. This particular classification system greatly informed DWR-recommended CII water use classification system.

Commercial, Industrial, and Institutional Water Use Classification White Paper: M.Cubed

A white paper commissioned by DWR streamlined the CII water use classification aspects of the WRF "Methodology for Evaluating Water Use in the Commercial, Institutional, and Industrial Sectors" report and others. The white paper provided a high-level overview of objectives, approaches, and challenges related to developing and implementing a standardized CII water use classification system (M.Cubed, 2019). M.Cubed discussed current classification approaches used by urban retail water suppliers, the effort and costs associated with updating current systems, and characterized CII water use classification system best practices.

The paper provided a roadmap for CII water use classification system development. It explained challenges encountered when specifying acceptable granularity of categories while balancing data analysis goals with the challenges associated with the provision of highly granular categories by urban retail water suppliers. M.Cubed followed the WRF recommendation of a limited number of initial categories and indicated applicability of subdivision, thus reconfirming a tiered approach to a classification system. Following list presents M.Cubed's review and redesignation of the WRF subcategories:

- Dominant End Use:

    – Commercial Laundries.

    – Laundromats.

- Car Washes.

- Parks and Cemeteries.

- Golf Courses.

- Dedicated Irrigation Meters.

- Lodging:

  - Hotels.

  - Motels.

  - Bed and Breakfasts, or B&Bs.

  - Rooming and Boarding, Dormitories, etc.

- Office Building:

  - Large Offices.

  - Small Offices.

  - Office Complexes.

- Schools:

  - Pre-Kindergarten.

  - Primary/Secondary.

  - Colleges and Universities.

- Health Care:

  - Hospitals and Sanitariums.

  - Medical Centers, Doctor Offices, Labs.

- Eating Places:

  - Full-Service Restaurants.

  - Limited-Service Restaurants.

  - Drinking Places.

- Retail Stores:

  – Shopping Centers and Malls.

  – Grocery Stores and Supermarkets.

  – Convenience Stores.

- Warehouses:

  – Refrigerated Warehousing and Storage.

  – Other Warehousing.

- Auto Service:

  – Auto Dealers.

  – Auto Service, Repair, and Maintenance (excluding Car Washes).

  – Gas Stations.

- Religious Buildings.

- Retirement Homes:

  – Nursing Care Facilities.

  – Retirement Assisted Living Facilities.

- Manufacturing:

  – Heavy Manufacturing.

  – Light Manufacturing.

  – Food and Beverage Plants.

- Largest CII:

  – Top Water Using CII Customers.

- Miscellaneous Commercial:

  – Personal Services.

  – Miscellaneous Commercial not Classified Elsewhere.

- Miscellaneous Institutional:

  – Correctional Facilities.

  – Group Live-In Shelters.

- Miscellaneous Institutional not Classified Elsewhere.

M.Cubed used the WRF classification system and extrapolated from it to designate his own different, although related, subcategories. Therefore, the M.Cubed categories were similarly helpful to the creation of the DWR-recommended CII classification system. M.Cubed's identification of best practices related to classification system development also proved useful for identifying the proper granularity (or scale definition) required for the DWR-recommended CII water classification system.

Cataloguing Commercial, Industrial, and Institutional Customer Classes: U.S. Department of the Interior, Bureau of Reclamation

A study jointly commissioned by U.S. Department of the Interior, Bureau of Reclamation (Reclamation), California Energy Commission (CEC), and Metropolitan Water District of Southern California created an integrated water and energy efficiency program. The study reported regional water and energy use trends and savings potentials, while identifying CII customer classes selected for a Water and Energy Efficiency Program (WEEP) (Reclamation, 2009). Included in the report are regional forecasts for CII water and energy use and saving potentials, a characterization of CII customer classes with NAICS codes, and a cost-benefit analysis recommendation. Following is the list of California Urban Water Management Planning Act water use sectors identified in this study.

- Multifamily.

- Commercial.

- Industrial.

- Institutional and governmental.

- Landscape.

- Sales to other agencies.

- Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

- Agricultural.

Industrial Water Efficiency End Use Categories were also documented in this study as follows:

- Cooling and Heating Systems:

  – Boilers, Hot Water, and Steam.

  – Evaporative Cooling Systems.

  – Single-Pass Cooling Water Use.

  – Equipment Cooling.

- Process and Equipment Use:

  – All Applications.

  – Rinsing and Cleaning.

  – Plating and Metal Finishing.

  – Painting.

  – Photo and X-Ray Processing.

  – Dyeing.

  – Appling Degraded Water.

- Sanitary, Kitchen, and Domestic Use:

  – Faucets.

  – Showerheads.

  – Toilets.

  – Kitchens.

- Medical Care Facilities:

  – Miscellaneous.

- Maintenance Operations:

  – Miscellaneous.

- Landscape Irrigation.

- Miscellaneous.

The WEEP program illustrated an option for coordination between energy and water efficiency efforts. Similar to the 2013 CII Task Force Report surrogate-categories, the WEEP categories were deemed unworkably different from current billing practices of urban retail water suppliers. The WEEP program referred primarily to appliances in its effort to identify water saving techniques. This approach was considered unfavorable because of the challenge it would present urban retail water suppliers to map current industry-based categories to those identified in WEEP.

Association of California Water Agencies Recommendation for Commercial, Industrial, and Institutional Water Use Classification System

ACWA provided two, separate recommendations. The first indicated concurrence with the 2013 CII Task Force Report categories. The second (ACWA, 2021), created in response to initial categories identified by DWR in an April 2021 CII Water Use Classification Working Group Meeting, is discussed below. The recommendation sought to ramp up implementation of a classification system over time by identifying three primary categories to begin with. These main categories prioritized CII sector hierarchies, which may be currently built into many urban retail water supplier billing systems. The document emphasized the importance of water savings per legislative direction, provided a classification recommendation, and requested guidance tools be provided to urban retail water suppliers by DWR.

WC Section 10609 requires DWR to solicit broad public participation from stakeholder during the development of the recommended CII water use classification system. The ACWA recommendations were a form of stakeholder participation and identified mixed and miscellaneous categories, in addition to specific industry water facilities. On more than one occasion, ACWA emphasized the importance of a category specifically for facilities with multiple CII sectors on one meter account for which separation would not be feasible.

As indicated above, ACWA proposed the categories in response to preliminary categories presented in a 2021 DWR Working Group meeting, meaning they are also based on WRF categories. Following is the list of proposed categories by ACWA.

- Commercial:

  – Office.

  – Retail Stores/Services.

  – Warehouse and Storage (Non-Temperature Controlled).

- – Food Sales and Service.

- – Hotels and Lodgings.

- – Athletic Clubs and Gyms.

- – Theme Parks and Recreational Water Facilities.

- – Entertainment/Public Assembly.

- – Vehicle Wash.

- – Mixed Commercial.

- – Other Commercial.

- Industrial:

  - – Industrial Manufacturing and Product Research Facilities.

  - – Warehouse and Storage (Temperature Controlled).

  - – Industrial Laundry and Other Laundry Facilities.

  - – Mixed Industrial.

  - – Other Industrial.

- Institutional:

  - – Education.

  - – Healthcare.

  - – Government and Utilities.

  - – Mixed Institutional.

- Other Institutional.

The ACWA-proposed classification system strongly indicated the desire of urban retail water suppliers to use mixed-use categories to deal with the common occurrence of more than one industry classification tracked by a single meter. Also, the ACWA-proposed classification system denoted the desire of many urban retail water suppliers to use existing CII hierarchy. However, strict adherence to existing CII hierarchy often results in duplicate subcategories, thereby increasing the total number of categories.

WaterSmart Guidebook: East Bay Municipal Utility District

East Bay Municipal Utility District developed this guidebook to encourage and support water use efficiency for businesses in the CII sector (EBMUD, 2008). The guidebook identified a plan review and approval framework for urban retail water suppliers and planning agencies for new construction with common business types and water-using technologies.

Although the WaterSmart Guidebook categories are not a classification system, similar to the 2013 CII Task Force Report, it links water efficiency practices and procedures to typical business categories and was useful for the purposes of informing the CII water use classification system recommendations.

Following is the list of categories identified in the WaterSmart Guidebook.

- Office Buildings.

- Schools.

- Restaurants and Fast-Food Outlets.

- Commercial and Retail Centers.

- Hotels and Motels.

- Grocers.

- Hospitals.

- Laboratories.

- Coin- and Card-Operated Laundries.

- Industrial Laundries and Dry Cleaners.

- Vehicle Washes.

- Beverage Manufacturers.

- Bakery/Pastry Shops.

- Industrial Bakeries.

- Auto Service and Repair Shops.

- Fuel Service Stations and Convenience Stores.

- Commercial Printers.

- Metal Finishers.

- Paper Manufacturers.

- Water Features, Pools, and Landscapes.

The identified categories in the WaterSmart Guidebook provided insight into those categories that can be used to assist customers with using water efficiently. The WaterSmart Guidebook categories were distinguished by industry to be most useful to their target audience. Many of the categories paralleled those offered by WRF, but its use for an overall classification system was deemed incomplete because it did not cover all water uses of CII sectors.

Best Practices Guidelines: Sydney Water

Sydney Water is Australia's largest urban retail water supplier with approximately 5.2 million customers. Although the State water policies and practices differ from those used in Australia, a look at similar efforts was appropriate. Sydney Water provided best practice guidelines literature for some of the specifically identified business types for measurement of efficient water use (Sydney Water, 2007). Following are the Sydney Water's categories for CII water use.

- Aquatic Leisure Centers.

- Clubs.

- Commercial Kitchens.

- Commercial Laundries.

- Commercial Office Buildings and Shopping Centers.

- Hotels.

- Turf Irrigation.

The methodology and goals of Sydney Water provided a comparison point for other efforts facilitating water use efficiency. The categories appeared to capture major water users in Sydney Water's jurisdiction. This assessment of major water users was not well documented in other studies, making it a useful resource for identification of potential major water users that were incorporated into several of the options developed for consideration in this effort.

Sydney Water's categories were used in this CII water use classification system development effort primarily for context. The Australian water supplier used its categories to benchmark water use in the specific industries deemed most relevant to water use best practices. Sydney Water's effort was generally unrelated to classification of all CII user-types in the State.

Energy Star Property Types in Portfolio Manager: U.S. Environmental Protection Agency and U.S. Department of Energy

Energy Star is the EPA's energy efficiency program. Authorized by AB 802 of 2015, the CEC adopted regulations for its Building Energy Benchmark Program to request owners of large commercial and multifamily buildings to report energy use through the EnergyStar Portfolio Manager (EPA and DOE, 2016). Energy Star's Portfolio Manager categories are energy-centric; however, it does provide options for water use efficiency assessment within these categories. Identified categories provided ease of identification and comparison between similar buildings. The primary categories identified in the EnergyStar program are listed below.

- Banking/Financial Services.

- Education.

- Entertainment/Public Assembly.

- Food Sales and Service.

- Healthcare.

- Lodging.

- Manufacturing/Industrial.

- Mixed Use.

- Office.

- Parking.

- Public Services.

- Religious Worship.

- Retail.

- Technology/Science.

- Services.

- Utility.

- Warehouse/Storage.

- Other.

The program is well-established and could be leveraged for its existing reporting methodologies. As a robust resource efficiency program, Energy Star could provide insights for a similar program centered on water use.

The Energy Star Portfolio Manager categories are a well-established classification system promoting energy efficiency. Therefore, the classification system and process were of interest, but the different purposes meant that many of the categories were not relevant to water use efficiency and CII water users. The Energy Star classification system provided context of a highly developed, well-respected, and detailed information-gathering effort. Because many of the first tier Energy Star categories could be readily mapped to the recommended option, data consistency and future use of this tool for water management or reporting were considered.

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4.0   Options

After conducting the literature review and receiving initial feedback from some working group participants and other stakeholders following the April 26, 2021, CII Workshop, three classification options were prepared and presented for stakeholder review and feedback during the CII stakeholder workshop on June 28, 2021.

- **Option 1**: **Water-Centric Option**. This option focused on water use, identifying categories of presumed major water users or water users with similar water use characteristics. It was developed primarily drawing from work done and classification systems proposed by WRF (Kiefer) and expanded on by M.Cubed.

- **Option 2**: **Building on Existing System Option**. This option suggested using classifications from an existing federally developed self-reporting program for energy use (Energy Star) also used by the CEC for required energy reporting by large commercial and multifamily buildings.

- **Option 3**: **Ramping Up Implementation Option**. This option suggested a system that would start out with a minimal number of categories and "ramp up" gradually to more categories. This option came out of a stakeholder proposal prepared by ACWA.

Each of the three options is presented in more detail below. The underlying approach or approaches that influenced the classification system design are also identified. Suggested implementation guidelines and a brief discussion of the proposed schedule for review of collected data are provided for each option.

4.1   Option 1: Water-Centric Option

This classification system prioritized a water-use approach that is based on the WRF study, M.Cubed white paper, and Sydney Water Best Practices Guidelines. This proposal reflected the consistent approach from up-to-date professional recommendations and research for characterizing CII water use with like categories for demand estimate and other management purposes, and the most direct link to the legislative directive for developing a CII water use classification system.

Potential Categories

Option 1 had 19 categories. Most categories reflected businesses or other entities that are combined based on similar water use characteristics. Some categories were more general and an "Other" category was included for any use that did not fit into any of the other defined categories. Based on feedback received from June 28, 2021, stakeholder workshop, a Mixed-Use Commercial category was added. The Mixed-Use Commercial category was intended to address the common challenge reported by stakeholders for

reporting water use in retail malls or other large commercial buildings housing multiple diverse water users that may share a common water meter, thereby making specific water use reporting by more refined categories extremely difficult if not impossible. There was also a separate category for DIMs used for irrigation purposes in connection to CII sector, which is part of calculating the UWUO and actual water use for the Annual Water Use Report (refer to *Recommendations for Guidelines and Methodologies for Calculating Urban Water Use Objective* [WUES-DWR-2021-01B]). A Commercial Mixed-Use category was added to address stakeholder concerns about the inability to track water use for entities in larger commercial complexes with diverse uses and shared water meters.

As presented in Table 4-1, the first 19 categories (18 + 1 DIM) were intended for the recommended CII classification system. Additional detail included twice as many categories (37 + 1 DIM) that was not intended for the recommended classification system but was included to help urban retail water suppliers classify CII water users and to provide an indication of how the classification system could be expanded in the future. The descriptions below are not intended to be comprehensive, but to provide sufficient understanding of each category and allow for proper categorization of individual CII customers by the urban retail water suppliers.

Table 4-1 Categories of Option 1: Water-Centric Option

Categories	Additional Details
Water Recreation	Public Pools/Water Parks
Recreation (non-water)	Athletic Facilities Entertainment Facilities Parks/Cemeteries Golf Courses
Food/Beverage	Full Service Fast Food
Laundry	Laundromats Commercial/Industrial Laundries
Lodging	Hospitality Retirement Homes
Healthcare	Hospitals Medical Offices Medical and Laboratory Equipment and Processes
Offices	Offices
Public Services	Government Prisons and Correctional Facilities
Sales	Retail Shopping Centers/Malls Grocery Stores and Food Markets
Services	Auto Personal
Religious Buildings	Religious Buildings
Education	Education
Vehicle Wash	Vehicle Wash
Industrial	Temperature Controlled Warehouses Non-Temperature Controlled Warehouses
Manufacturing	Aerospace and Metal Finishing Industries Plating, Printed Circuit Boards, and Metal Finishing Food Processing and Beverage Manufacturing High-Tech Industries (Server Facility/Data Center) Petroleum Refining and Chemical Industries Pharmaceutical and Biotech Industries Power Plants
Utility	Utility
Mixed Use Commercial	Multiple categories depending on major use types (e.g., Sales and Food/Beverage)
CII Dedicated Irrigation Meter	CII Dedicated Irrigation Meter
Other	Other

Implementation Schedule

A five-year schedule was suggested for the implementation of Option 1. Some urban retail water suppliers might be prepared to implement the system immediately through remapping their existing classifications. For others, a target of classifying 20 percent of accounts per year for reporting purposes was suggested with full (100 percent) reporting by Year 5.

Evaluation

This option is a water-centric classification system that merges the best available knowledge in the field (State-financed water-centric classification studies) to facilitate data collection of water use with the outcome of BMP implementation. Category selection allows for the alignment of categories with applicable BMPs, which can assist with improved water use efficiency. Moreover, the category selection considers relevant methodologies for evaluating water use which prepares for eventual analysis of collected data. It is in keeping with legislative direction that the classification system is to be consistent with the 2013 CII Task Force Report recommendations. The following provides additional detailed evaluation against the design criteria.

- **Water-Centric Categorization**. Option 1 addresses significant uses of water and categorizes water users or entities likely to use water similarly together based on common knowledge regarding various businesses, industries, or institutions. DWR recognized that the water use data would need to be collected and analyzed to verify these assumptions (WRF, 2015; M.Cubed, 2019).

- **Completeness for Statewide Application**. With all potential CII water users that could be included in at least one of the categories, Option 1 is a complete classification system. It also includes an adequate number of categories to capture all major CII water use across the State and it can be used consistently statewide. This option is consistent with the 2013 CII Task Force Report in that classification categories were considered to be easily understandable and recognizable by the general public and are consistent with NAICS and APN classifications.

- **Balance Between Resolution and Burden for Implementation**. The level of category detail in Option 1 was sufficient to begin collecting meaningful data. Option 1 also includes a category for CII-DIMs. DWR defined "meaningful" as sufficiently detailed by larger categories to facilitate data analysis of potentially similar water users, without being overly detailed at this point of initial data collection (WRF, 2015; M.Cubed, 2019).

Although not specifically a legislated requirement for the CII water use classification system, Option 1 followed the CII hierarchy as described in WC Section 10608.12 and can be further refined into more like water use categories, if warranted.

BMPs were not the primary driver for Option 1. However, entities using water similarly might also be likely to experience water use reduction from the application of similar BMPs. This function would enable urban retail water suppliers to better target BMP programs.

- **Other Business Practice Considerations**. This option would not require billing system changes but requiring mapping of customer accounts for reporting purposes.

4.2   Option 2: Building on Existing System Option

Option 2 built on an existing CII sector classification system that was used for energy management purpose with an emphasis on potential consistency to streamline the reporting efforts. EPA and the DOE solicit voluntary self-reporting of energy use through the Energy Star Portfolio Manager, which includes categories of CII entities based on property type.

Authorized by AB 802 of 2015, the CEC adopted regulations in 2018 for its Building Energy Benchmark Program with the use of the Energy Star Portfolio Manager to require reporting by owners of large commercial and multifamily buildings (i.e., more than 50,000 square feet of gross floor area) and multifamily residential buildings with 17 or more residential accounts (considered commercial under energy regulations). A system of CII property type was used in the Energy Star Portfolio Manager for corresponding energy reporting and benchmark purposes. Although not designed for water use reporting purposes, the Energy Star Portfolio Manager could also accept water use reporting.

The Energy Star Property Classification System was designed for energy reporting but not water reporting. Urban retail water suppliers and stakeholders have reported that the correlation between water use and property type is significantly less than that between energy use and property type. However, streamlining data reporting is a positive perspective considering the framework that is already established and the water-energy nexus. Certain urban retail water suppliers with authority over energy use, a characteristic that is lacking for the majority of urban retail water suppliers, like the Los Angeles Department of Water and Power have implemented this system with customization where appropriate. Therefore, Option 2 was to explore the possibility and identify potential pros and cons for implementation.

Potential Categories

Table 4-2 shows the 20 suggested categories for Option 2, including additional categories added to the existing Energy Star property classification system to provide a complete coverage of water use. However, it is important to recognize the categories

are subject to the original design of the Energy Star – in other words, the categories reflects businesses or entities that were combined based on property types with assumed similar energy use rather than water use. However, the addition of Laundry as a category is also under consideration by the Energy Star Program. Similar to Option 1, Option 2 included a Mixed-Use category, and an Other category. A DIM category would be also added (currently under consideration by the EnergyStar program).

As presented in Table 4-2, the first 20 categories (19 + 1 DIM) were intended for the recommended CII Classification System. As in Option 1, additional detail was not intended for the recommendation classification system but was included to help urban retail water suppliers classify CII water users and to provide an indication of how the classification system could potentially be expanded in the future. Additional detail mirrored the list of subcategories included in the property types in the Portfolio Manager on the Energy Star website. It included almost 100 subcategories. There were also a few instances where the same subcategory was included under more than one of the initial categories and where the original water use categories (e.g., vehicle washing) would either need to be placed in the "Other" category or grouped with another category that could artifact water use in that category (e.g., convenience store with gas station).

Table 4-2 Categories of Option 2: Building on Existing System Option

Categories	Additional Details
Banking/Financial Services	Bank Branch Financial Office
Education	Adult Education College/University K-12 School Pre-school/Daycare Vocational School Other – Education
Entertainment/Public Assembly	Aquarium Bar/Nightclub Bowling Alley Casino Convention Center Fitness Center/Health Club/Gym Ice/Curling Rink Indoor Area Movie Theater Museum Preforming Arts Racetrack Roller Rink Social/Meeting Hall Stadium (Closed) Stadium (Open) Swimming Pool Zoo Other – Entertainment/Public Assembly Other – Recreation Other – Stadium
Food Sales and Service	Bar/Nightclub Convenience Store with Gas Station Convenience Store without Gas Station Fast Food Restaurant Food Sales Food Service Restaurant Supermarket/Grocery Store Wholesale Club/Supercenter Other – Restaurant/Bar
Laundry (currently under consideration)	Laundry (currently under consideration)

Table 4-2 Categories of Option 2: Building on Existing System Option (contd.)

Categories	Additional Details
Healthcare	Hospital Medical Office Outpatient Rehabilitation/Physical Therapy Residential Care Facility Senior Living Community Urgent Care/Clinic/Other Outpatient Other – Specialty Hospital
Lodging	Barracks Hotel Prison/Incarceration Residence Hall/Dormitory Other – Lodging
Manufacturing/Industrial	Manufacturing/Industrial Plant
Mixed Use Property	Mixed Use Property
Office	Medical Office Office Veterinary Office Other – Office
Parking	Parking
Public Services	Courthouse Drinking Water Treatment & Distribution Fire Station Library Mailing Center/Post Office Police Station Prison/Incarceration Social/Meeting Hall Transportation Terminal/Station Wastewater Treatment Plant Other – Public Service
Religious Worship	Worship Facility
Retail	Automobile Dealership Convenience Store with Gas Station Convenience Store without Gas Station Enclosed Mall Lifestyle Center Retail Store Strip Mall Supermarket/Grocery Store Wholesale Club/Supercenter Other – Retail/Mall

Table 4-2 Categories of Option 2: Building on Existing System Option (contd.)

Categories	Additional Details
Technology/Science	Data Center Laboratory Other – Technology/Science
Services	Data Center Personal Services (Heath/Beauty, Dry Cleaning, etc.) Repair Services (Vehicle, Shoe, Locksmith, etc.) Other – Services
Utility	Drinking Water Treatment & Distribution Energy/Power Station Wastewater Treatment Plant Other – Utility
Warehouse/Storage	Self-Storage Facility Distribution Center Non-Refrigerated Warehouse Refrigerated Warehouse
Dedicated Irrigation Meter (not included in EnergyStar categories)	not included in EnergyStar categories but currently under consideration
Other	Other

Implementation Schedule

A five-year schedule was suggested for the implementation of Option 2. Because Option 2 had the same number of categories as Option 1, the same implementation schedule was proposed. As with Option 1, some urban retail water suppliers might be prepared to implement the system immediately through remapping their existing classifications. For others, a target of classifying 20 percent of accounts per year for reporting purposes was suggested with full (100 percent) reporting by Year 5.

Evaluation

Option 2 was based on the property classification system used by the Energy Star Portfolio Manager, which is used by CEC's Building Benchmark Program. Consistency in classification and streamlining the reporting is an attractive feature. In addition, the CEC's Building Benchmark Program imposes the reporting requirements on building owners, not on energy providers. This setting is also very attractive, if a parallel implementation is possible, to alleviate the reported challenges of lack of authority for urban retail water suppliers in promoting and implementing BMPs for water efficiency in CII sector. In a broader sense of CII water use management, this feature can be very helpful for urban retail water suppliers to reduce the barrier of their efforts in promoting BMPs and coordination with water users or facility owners. Many urban retail water

suppliers reported this major challenge because without an initiative from the owners, limited actions could be taken by urban retail water suppliers.

However, detailed analyses of Option 2 suggest that in order to be implementable and realize the above perceived benefits in streamlining reporting, additional authorities that may involve legislative actions and supplemental cooperation with CEC or Energy Star Program would be required to address the legislative requirements for CII water use classification system. In particular, the authority to require CII property owners to report their water use is currently not provided by AB 802 of 2015 or by the 2018 Legislation. There would be little apparent benefits over Option 1, if any, when requiring urban retail water suppliers to report on Energy Star based categories without the authority and other important compatible and complimentary pieces described in the following detailed evaluation against the design criteria.

Water-Centric Categorization. Some categories under Energy Star align with the water use reasonably well; however, others do not. For example, the Energy Star primary categories include Banking/Financial Services and Parking, neither of which are intuitively large water users nor were they identified as such in any of the other literature reviewed. Other categories identified as major water user categories (e.g., laundry, vehicle wash, water recreation) in more water centric systems and studies (i.e., WRF, 2015; Sydney Water, 2007) are not represented in the Energy Star Portfolio Manager main categories. The potential misalignment could make it more challenging is relating BMPs or other water conservation measures with classification categories.

Completeness for Statewide Application. Option 2 is considered to have statewide application because the current implementation of CEC's Building Benchmark Program is statewide. However, the evaluation of completeness for Option is more involved. Although it can be considered complete due to the inclusion of other and mixed use categories, the categories present certain challenges for application in the context of UWUO and associated annual reporting purpose.

Currently, laundry and landscape irrigation are under consideration to be added to the Energy Star categories; these additions would be helpful for water use purposes. In addition, water use by multifamily residential properties is not a commercial water use but included in residential water use for the purposes of the UWUO. These discrepancies would need to be reconciled with CEC (or EPA and DOE) for implementation purposes.

In addition, the current CEC reporting requirements are for large commercial and multifamily buildings. However, the water conservation legislation does not come with such an exception. Therefore, the discrepancies or authority misalignment would have to be addressed because categorizing all smaller commercial buildings into other or mixed use categories would not be effective for data collection purposes.

Balance between Resolution and Burden for Implementation. The above-mentioned discrepancies in categorization could potentially affect the effectiveness of data collection, which is the primary purposes of having a CII water use classification system. Considering the needs of addressing the discrepancies for effective water reporting (without compromising the original purpose of energy reporting), it is perceivable that a revision of classification system would be expected through the further discussion with CEC. Urban retail water suppliers may be at risk of repeated investments for redoing the classification mapping after the discrepancies are properly addressed.

Other Business Practice Considerations. This option would not require billing system changes but would require mapping of customer accounts for reporting purposes. Other than the outdoor landscape irrigation with DIMs, the 2018 Legislation does not require quantitative reporting of CII water use by urban retail water suppliers. If the property owners would like to leverage the benchmarking capability provided by Energy Star Portfolio Manager, it would not create concerns for urban retail water suppliers. It would be helpful to have additional authority to allow urban retail water suppliers to work with property owners in data analyses and use reporting. However, urban retail water suppliers cannot be liable in reporting CII water use by ownership for privacy reasons.

4.3 Option 3: Ramping Up Implementation Option

Option 3 focused on gradual implementation of classification system to alleviate the implementation challenges that may be faced by urban retail water suppliers, especially those smaller ones and with less resources. Based on the survey conducted as part of the stakeholder process, a significant amount of urban retail water suppliers do not have any billing or other account systems that are of few categories. Many are limited by having only Commercial, Industrial, and Institutional categories; many have even less structured categories. Option 3 was to provide a realistic pathway to bring urban retail water suppliers to compliance.

Implementation of Option 3 starts with four initial categories (Tier 1): Commercial, Industrial, Institutional, and DIM for the ease of implementation. Then, it is gradually scaled down to incorporate more details into the classification system. After an initial implementation period, Tier 2, a group of 10 refined categories, becomes effective. This option was the only option with two-stage implementation. This option has a potential Tier 3 implementation with further refined categories after sufficient data is collected through implementation. The end point of Tier 3 categories were built on the classification system proposed by ACWA. However, Option 3 only considered the implementation of the first two tiers.

Potential Categories

The 4 and 10 suggested categories for Option 3 are described below. The initial categories (Tier 1) were basic. Tier 2 began to reflect businesses or other entities that were combined based on similar assumed water use characteristics, although it doesn't clearly reflect the details presented in the additional details. Even in the additional detail, some categories remained less specific, such as Other Commercial, and Other Industrial and Other Institutional as with Option 1 'Mixed-Use Commercial' and Option 1 and 2 general "Other" categories. As with Options 1 and 2, there was an additional separate category for CII-DIMs.

Table 4-3 presents the progression of suggested categories in the two tiers of Option 3 implementation. Category descriptions below are not intended to be comprehensive, but are meant to provide sufficient understanding of each category to allow for proper categorization of individual users by urban retail water suppliers.

Table 4-3 Categories of Option 3: Ramping Up Implementation Option

1st Tier	2nd Tier	Additional Details
Commercial	Laundry	Industrial Laundry and Other Laundry Facilities
	Lodging	Hotels and Lodgings
	Other Commercial	Office
		Retail Stores/Services
		Food Sales and Service
		Theme Parks and Rec. Water Facilities
		Entertainment/Public Assembly
		Athletic Clubs and Gyms
		Vehicle Wash
		Mixed Commercial
		Other Commercial
Industrial	Manufacturing	Industrial Manufacturing and Product Research
	Warehouse	Warehouse and Storage (Temp. Controlled)
	Other Industrial	Warehouse and Storage (Non-Temperature Controlled)
		Mixed Industrial
		Other Industrial
Institutional	Education	Education
	Healthcare	Healthcare
	Other Institutional	Government and Utilities
		Mixed Institutional
		Other Institutional
Dedicated Irrigation Meter	Dedicated Irrigation Meter	Dedicated Irrigation Meter

Implementation Schedule

With only four categories in Tier 1, a one-year implementation schedule was suggested. If expanded into Tier 2, a three-year schedule was suggested for implementation. If expanded further to include additional details, a seven-year schedule was suggested for implementation. (Option 3's additional details had 22 categories compared to Option 1's Tier 1 with 19 categories.)

Evaluation

Many urban retail water suppliers currently use CII-hierarchy-based categories. As mentioned above, Option 2 starts from the basic CII categories for ease of implementation purposes. Therefore, it would facilitate initial compliance and transition into more detailed reporting in future, which may benefit those urban retail water suppliers with less detailed financial/account categories.

The following provides additional details for evaluation against the design criteria.

- **Water-Centric Categorization**. Option 3 is considered water-centric. The emphasis on the staged implementation does not change the nature of the option. However, the resolution is much less than other options, especially in the initial implementation stage.

- **Completeness for Statewide Application**. With all potential CII water users that could be included in at least one of the categories, Option 3 is a complete classification system. Option 3 categorized presumed "like" or similar water users together, but not until it gets to more refinement stages using additional details. The effectiveness in data collection related to BMPs or other management actions can be significantly affected.

- **Balance between Resolution and Burden for Implementation**. The level of category detail in Option 3 might not be sufficient to begin collecting meaningful data in Tiers 1 and 2 as neither tier appeared to be sufficiently detailed or represent "like" water users. Further refinements using provided additional detail was likely detailed enough to begin collecting meaningful data (WRF, 2015; M.Cubed, 2019).

- **Other Business Practice Considerations**. Option 3 does not require changes in billing system, but it requires mapping of accounts for reporting purposes. Regardless of funding and time required for mapping accounts, urban retail water suppliers were not certain if the staged implementation would really help to alleviate operational challenges because it may require the mapping efforts multiple times.

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5.0 Recommended Performance Measure

The recommendations considered stakeholder comments, legislative requirements, the 2013 CII Task Force Report recommendations, current reporting and future reporting flexibility, and utility for managing and assessing CII water use efficiency.

The final recommended CII water use classification system is based on the Water-Centric option described in Section 4, which is based on the WRF study that was developed with consideration of end-uses of water or similar water uses (WRF 2015), the CII water use classification white paper (M.Cubed 2019), and Sydney Water Best Practices Guidelines (Sydney Water 2007). The water-centric focus allows urban retail water suppliers to use the classification system in developing targeted BMP programs for improved water efficiency. Additional revisions were incorporated based on stakeholder input (e.g., mixed-use commercial). All recommendations are subject to approval and adoption by the State Water Board.

The Energy Star property classification system was not recommended due to the challenges and discrepancies in authority and practices as described in Section 4.2. While attractive and with significant potential, without a proper perspective of necessary legislative actions and cooperation with CEC, this option was not recommended. The ramping up implementation was also not recommended because of its lack of sufficient resolution for data collection or certainty of targeted benefit in alleviating operational challenges for implementation as described in Section 4.3.

The recommendations for CII water use classification system include the classification system specifications, guidelines and methodology, and performance measures to be reported in the annual reporting process.

5.1 Recommended Commercial, Industrial, and Institutional Water Use Classification System Specifications

DWR recommends a CII Water Use Classification System for significant uses of water using the following 19 categories. The number of proposed categories is sufficient to begin collection of meaningful data, with future possibilities for further refined details such that the system would not merely be a reporting exercise while not being overly burdensome for most urban retail water suppliers. In the future, DWR may recommend refinements of these recommended categories to include additional and necessary details of certain water uses after a period of data collection and analysis. If

recommended, refinements would be limited to further dividing one or more established categories but not remapping of the existing categories.

1. Water Recreation (e.g., public pools/water parks).

2. Recreation, non-water (e.g., athletic facilities, entertainment facilities, parks/cemeteries, golf course).

3. Food/Beverage (e.g., full service, fast food).

4. Laundry (e.g., laundromats, commercial/industrial laundries).

5. Lodging (e.g., hospitality, retirement homes).

6. Healthcare (e.g., hospitals, medical offices, medical and laboratory equipment and processes).

7. Offices.

8. Public Services (e.g., government, prisons and correctional facilities).

9. Sales (e.g., retail, shopping centers/malls, grocery stores and food markets).

10. Services (e.g., auto, personal).

11. Religious Buildings.

12. Education.

13. Vehicle Wash.

14. Industrial, non-manufacturing (e.g., temperature-controlled warehouses, non-temperature-controlled warehouses).

15. Manufacturing (e.g., aerospace and metal finishing industries; plating, printed circuit boards, and metal finishing; food processing and beverage manufacturing; high-tech industry (server facility/data center); petroleum refining and chemical industries; pharmaceutical and biotech industries; power plants).

16. Utility.

17. Mixed Use Commercial (e.g., strip malls, shopping centers, and other commercial spaces that are subject to frequent changes of tenants with different water use profiles to meet their corresponding business needs).

18. Dedicated Irrigation Meter.

19. Others (for those cannot be adequately categorized into the above categories).

After the State Water Board's adoption, DWR will develop a mapping guidance to assist urban retail water suppliers in implementation based on NAICS with necessary customization, including land use designations (i.e., APNs) used by county assessor's offices for categorizing their water accounts for CII performance measure reporting purposes.

Subject to further discussion and approval where necessary, DWR may coordinate with the State Water Board and other agencies to issue an advisory to local land use authorities (cities and counties) for cooperation and assistance to urban retail water suppliers in information sharing during building permit issuances that may affect CII water use.

5.2   Implementation Schedule

Urban retail water suppliers have up to five years after State Water Board adoption to complete mapping of accounts to the recommended CII water use classification system for annual reporting purposes.

- The minimum level of progress in account mapping per year is 20 percent of CII water accounts.

- If an urban retail water supplier does not meet the annual 20 percent mapping requirement, the urban retail water supplier is to include in its annual reporting an explanation and its plan to meet the full mapping requirement by Year 5.

- Should an urban retail water supplier experience a substantial hardship meeting the minimum level of progress, by Year 3, the urban retail water supplier will provide an implementation plan to meet the full mapping requirement. That implementation plan will be subject to State Water Board's approval.

Urban retail water suppliers should establish formal procedures to collect classification information and update account mapping classifications upon receipt of modified or new service requests to keep the classification mapping up to date.

- Urban retail water suppliers should coordinate with the corresponding land use authority(ies) to add a requirement for consulting urban retail water suppliers, where appropriate, to inform changes and potential reclassifications.

5.3   Guidelines and Methodologies

The CII water use classification system does not require urban retail water suppliers to change their billing systems or other established account management practice, but it

requires information mapping for reporting purposes. Urban retail water suppliers should follow DWR's account mapping guidance developed after State Water Board's adoption. This mapping guidance may also include additional advice for urban retail water suppliers to transition to the CII water use classification system, including collection of additional information when processing water account changes. Urban retail water suppliers should include the progress of performance measure related to CII water use classification system in the Annual Water Use Report.

The recommendations for a CII water use classification system are included in the report, *Summary of Recommendations for Performance Measures for Commercial, Industrial, and Institutional Water Use* (WUES-DWR-2021-15), along with other recommendations on CII water use performance measures for coordinated implementation, which DWR prepared per requirements of the 2018 Legislation that are to be transmitted to the State Water Board for adoption. The recommendations and reporting requirements are also included in the report, *Recommendations for Urban Water Use Efficiency Standards, Variances, Performance Measures, and Annual Water Use Reporting* (WUES-DWR-2021-01A), which provides the complete context of the recommendation package and its implementation.

6.0 Glossary

The following key terms are listed below for easy reference. Where applicable, existing definitions from statutes and regulations are provided.

best management practice. A set of practices, measures, or procedures that are beneficial, empirically proven, cost effective, and widely accepted by the professional community.

commercial, industrial, and institutional water use. Water used by commercial water users, industrial water users, institutional water users, and large landscape water users, as defined in California Water Code Section 10608.12(d).

commercial water user. A water user that provides or distributes a product or service, as defined in California Water Code Section 10608.12(e).

industrial water user. A water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development, as defined in California Water Code Section 10608.12(i).

institutional water user. A water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions, as defined in California Water Code Section 10608.12(j).

large landscape. A nonresidential landscape as described in the performance measures for commercial, industrial, and institutional water use adopted pursuant to California Water Code Section 10609.10, as defined in California Water Code Section 10808.12(l).

major water users. Users that use a significant percentage of an individual urban retail water supplier's total supply, or users that generally use a substantial amount of process water as part of their regular operations.

material effect. Having real importance or great consequences. In the context of California Department of Water Resources' recommendations regarding the urban water use objective and variances, a material effect is an effect on the urban water use objective that could influence the compliance status of an urban retail water supplier.

performance measures. Actions to be taken by urban retail water suppliers that will result in increased water use efficiency by commercial, industrial, and institutional water users. Performance measures may include, but are not limited to, educating commercial, industrial, and institutional water users on best management practices,

conducting water use audits, and preparing water management plans. Performance measures do not apply to process water, as defined in California Water Code Section 10608.12(n).

process water. As defined in California Water Code Section 10608.12(p), this is 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.

urban retail water supplier. A water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes, as defined in California Water Code Section 10608.12(t).

urban water use efficiency standards. The standards effective through California Water Code Section 10609.4 (indoor residential use) or adopted by the State Water Resources Control Board (outdoor residential, water loss, and commercial, industrial, and institutional outdoor irrigation of landscape areas with dedicated meters) pursuant to California Water Code Section 10609.2.

urban water use objective. An 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 described in California Water Code Section 10609.20, as defined in California Water Code Section 10608.12(u).

7.0   References

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

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