

Recommendations for Bonus Incentive Methods of Calculation and Supporting Data Requirements

WUES-DWR-2021-14

**A Report to the State Water Resources Control Board
Prepared Pursuant to California Water Code
Section 10609.20**

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California Department of Water Resources
Water Use Efficiency Branch

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

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
Bianca Sievers

State Water Project
Ted Craddock

Statewide Water and Energy
Vacant Position

Sustainable Groundwater
Management
Paul Gosselin

Legislative Affairs
Kasey Schimke

Public Affairs
Margaret Mohr

Office Executives

Office of General
Counsel
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 Bonus Incentive Methods of Calculation and Supporting
Data Requirements 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

California American Water

Patrick Pilz

City of Sacramento

William Granger

County of Napa

Christopher M. Silke

Ecolab

Mark Mueller

Kennedy Jenks Consultants

Meredith Clement

Los Angeles Department of Water and Power

Terrence McCarthy

Municipal Water District of Orange County

Rachel Waite

Niemela Pappas & Associates

Tiffany Phan

Plumbing Manufacturers International

Cambria McLeod

Private Citizen

Martha Davis

San Francisco Public Utilities Commission

Julie Ortiz

Santa Clarita Valley Water Agency

Matthew S. Dickens

South Tahoe Public Utility District

Shelly Thomsen

Valley County Water District

Tara Robinson

Walnut Valley Water District

Donna DiLaura

Association of California Water Agencies

Dave Bolland

Camrosa Water District

Charlotte Lopez

Coachella Valley Water District

Jason Lucas

Eastern Municipal Water District

Sara Quintero

Irvine Ranch Water District

Amy McNulty

Long Beach Water Department

Dean Wang

Moulton Niguel Water District

Justin Finch

Natural Resources Defense Council

Tracy Quinn

Pacific Institute

Heather Cooley

Rancho California Water District

Jason Martin

Sacramento Suburban Water District

Greg Bundesen

San Jose Water

Courtney Rubin

Sonoma-Marin Saving Water Partnership

Chelsea Thompson

Stanford University

Newsha Ajami

Valley Water

Metra Richert

WateReuse CA

Charles LaSalle

Western Municipal Water District

Jason Pivovaroff

WaterNow Alliance

Caroline Koch

West Yost Associates

Elizabeth Drayer

Standards, Methodologies, and Performance Measures Working Group Members

Alameda County Water District

Stephanie Nevins

**Bay Area Water Supply and
Conservation Agency**

Andree Johnson

City of Glendale

Michael De Ghetto

City of Petaluma

Chelsea Thompson

City of Sacramento

Roshini Das

Coachella Valley Water District

Katie Evans

Delta Stewardship Council

Cory Copeland

Ecolab

Mark Mueller

Gardenworks Inc.

Peter Estournes

**Los Angeles Department of Water and
Power**

Sofia Marcus

Mission Springs Water District

John M. Soulliere

Olivenhain Municipal Water District

Brian Sodeman

Plumbing Manufacturers International

Cambria McLeod

Regional Water Authority

Amy Talbot

**Association of California Water
Agencies**

Dave Bolland

California Water Service

Ken Jenkins

City of Lakewood

Toyasha Sebbag

City of Pleasanton

Rita Di Candia

City of Santa Monica

Russell Ackerman

Contra Costa Water District

Bob Eagle

East Bay Municipal Utility District

Alice Towey

EKI Environment & Water, Inc.

Kat Wuelfing

Irvine Ranch Water District

Fiona Sanchez

Metropolitan Water District

Krista Guerrero

Natural Resources Defense Council

Tracy Quinn

Pacific Institute

Heather Cooley

Rancho California Water District

Tyson Heine

San Diego County Water Authority

Elizabeth Lovsted

San Jose Water
Kurt Elvert

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

Stanford University
Newsha Ajami

Water Systems Optimization
Kate Gasner

WaterReuse CA
Charles LaSalle

WaterNow Alliance
Caroline Koch

Western Municipal Water District
Karly Gaynor

Participating Urban Retail Water Suppliers

Irvine Ranch Water District
Las Virgenes Municipal Water District

Technical Consultants

Stantec Consulting Services Inc.

Yung-Hsin Sun
Joan Oppenheimer
Maliheh Karamigolbaghi
Carla Cherchi
Ayu Sari

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Abbreviations and Acronyms

2018 Legislation	2018 Legislation on Water Conservation and Drought Planning (Senate Bill 606 [Hertzberg] and Assembly Bill 1668 [Friedman], as amended)
AB	Assembly Bill
afy	acre-feet per year
AWT	advanced water treatment
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CII	commercial, industrial, and institutional
CII-DIMWUS	Commercial, Industrial, and Institutional Outdoor Irrigation of Landscape Areas with Dedicated Irrigation Meters Water Use Efficiency Standard
DIM	dedicated irrigation meter
DiPRRA	direct potable reuse responsible agency
DPR	direct potable reuse
DWR	California Department of Water Resources
Existing Facility	existing facility for bonus incentive
IPR	indirect potable reuse
IRWUS	Indoor Residential Water Use Efficiency Standard
LIFO	Last-In-First-Out
MWELO	Model Water Efficient Landscape Ordinance
ORWUS	Outdoor Residential Water Use Efficiency Standard
Other Facility	A facility that is not an Existing Facility for bonus incentive
potable reuse	potable water reuse
Recommendation Package	Urban Water Use Efficiency Recommendation Package
RWC	recycled municipal wastewater contribution
SB	Senate Bill
SLA	Special Landscape Area

State	State of California
State Water Board	State Water Resources Control Board
UWUO	urban water use objective
WC	California Water Code
WLS	Water Loss Standard

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Executive Summary

The California State 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. 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 by considering four urban water use efficiency standards and appropriate variances. To balance the existing policy in the State of California (State) in encouraging potable water reuse (potable reuse) to improve regional self-reliance and water resiliency, the 2018 Legislation allows an urban retail water supplier to include a bonus incentive, based on the potable reuse volume, to adjust its UWUO to within the legislated criteria and limitations (California Water Code sections 10609(b)(2)(F) and 10609.20(d)(1)). However, specific methodologies and the details of volume calculations are needed for consistent implementation. This report provides clarity on the legislative requirements through a detailed description of the legislative criteria for bonus incentive eligibility and a detailed discussion of recommended methodologies for the bonus incentive accounting needed for implementation.

Consistent with the legislative directive, the California Department of Water Resources (DWR) used a public process involving a diverse group of stakeholders in the review and development of the bonus incentive. The Water Use Studies Working Group and the Standards, Methodologies, and Performance Measures Working Group that DWR established to assist in implementing the 2018 Legislation were the primary stakeholders involved in the process of developing data requirements and calculations. Additional stakeholders included State agencies, cities, counties, urban retail water suppliers, environmental organizations, and other interested parties. Working group members and stakeholders had many discussions to evaluate different accounting methodologies to calculate the volume of the eligible bonus incentive and supporting information needs.

Potable reuse can be implemented in two different forms: direct potable reuse (DPR), in which recycled water is provided directly to end use, and indirect potable reuse (IPR), in which recycled water is discharged into an environmental buffer for further diversion or extraction for use, along with other sources of water present in the environmental buffer. Environmental buffers can be a surface reservoir or groundwater aquifer, resulting in different needs in accounting methodologies.

For IPR, DWR identified four methodologies and considered data accessibility, staff and technical resources availability, compliance with available regulations and standards, and legislative intent to encourage potable reuse. The recommended methodology is

intended to be straightforward to implement and meets all legislative requirements, and associated guidelines have also been developed. A template for calculating an eligible bonus incentive was also developed for use by urban retail water suppliers. DWR will modify the template as necessary after the adoption by the State Water Resources Control Board (State Water Board).

DWR recommends deferring the methodology associated with calculating a bonus incentive for DPR until the State Water Board adopts criteria and regulations for DPR permitting requirements per Assembly Bill 574 (Quirk) of 2017. Until these criteria and regulations are adopted, DPR is not allowed.

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 focuses on efficient water use rather than a percent reduction in water use. Determination of efficient water use 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 by 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 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.

WC Section 10609.20 establishes the overall methodology for the UWUO, which is the sum of the aggregate quantity of water an urban retail water supplier would have used in the previous year if all water use had been compliant with adopted efficiency standards and approved variances. To balance the existing State policy in encouraging potable water reuse (potable reuse) to improve regional self-reliance and water resiliency, the 2018 Legislation allows an urban retail water supplier to include a bonus incentive based on the potable reuse volume to adjust its UWUO within legislative criteria and limitations (WC Sections 10609(b)(2)(F) and 10609.20(d)(1)). Comparison of an urban retail supplier's actual water use in the previous year with its corresponding UWUO with a bonus incentive adjustment, if applicable, determines whether the required level of water use efficiency was achieved.

1.2 Bonus Incentive for Potable Reuse

Potable reuse can be implemented in two different forms: direct potable reuse (DPR), in which recycled water is provided directly to end use, and indirect potable reuse (IPR), in which recycled water is discharged into an environmental buffer for further diversion or

extraction for use, along with other sources of water present in the environmental buffer. Environmental buffers can be a surface reservoir or groundwater aquifer, resulting in different needs in accounting methodologies.

The State Water Board’s implementation of the Recycled Water Policy recognizes the importance of recycled water as a critical component of the State’s diversified water supply to improve regional self-reliance and overall drought resiliency. As such, the State Water Board is streamlining permitting for recycled water projects and funding the highest priority research needs identified to help ensure fulfillment of the State’s recycled water goals. The Water Quality Control Policy for Recycled Water – adopted December 11, 2018, and effective April 8, 2019 – cites a goal of increasing the use of recycled water from 714,000 acre-feet per year (afy) in 2015, to 1.5 million afy by 2020, and to 2.5 million afy by 2030 (State Water Board, 2018a). This is to be achieved by (1) reusing all dry-weather direct discharges of treated wastewater to enclosed bays, estuaries, coastal lagoons, and ocean waters that can be viably put to a beneficial use; and (2) by maximizing the use of recycled water in areas where groundwater supplies are in a state of overdraft, to the extent that downstream water rights, instream flow requirements, and public trust resources are protected. Additionally, AB 574 (Quirk) of 2017 requires the State Water Board to adopt uniform water recycling criteria for DPR through raw water augmentation on or before December 31, 2023.

The allowable bonus incentive is meant to balance State policies for water conservation with implementation of potable water reuse as a water supply source. WC Section 13560(g) states that “it is the intent of the Legislature to encourage the development of potable reuse to mitigate the impact of long-term drought and climate change.” As such, the 2018 Legislation includes provisions to allow an urban retail water supplier that delivers water from a groundwater basin, reservoir, or other source that is augmented by potable reuse water to adjust its UWUO by a bonus incentive calculated pursuant to WC Section 10609.20(d) as follows:

The water use objective bonus incentive shall be the volume of its potable reuse delivered to residential water users and to landscape areas with dedicated irrigation meters in connection with CII water use, on an acre-foot basis.

The bonus incentive...shall be limited in accordance with one of the following:

- *The bonus incentive shall not exceed 15 percent of the urban water supplier’s water use objective for any potable reuse water produced at an existing facility.*

- *The bonus incentive shall not exceed 10 percent of the urban retail supplier’s water use objective for any potable reuse water produced at any facility that is not an existing facility.*

Additionally, “existing facility” under WC Section 10609 means a facility that meets all of the following:

- *The facility has a certified environmental impact report, mitigated negative declaration, or negative declaration on or before January 1, 2019 (WC Section 10609.20(d)(4)(A)).*
- *The facility begins producing and delivering potable reuse water on or before January 1, 2022 (WC Section 10609.20(d)(4)(B)).*
- *The facility uses microfiltration and reverse osmosis technologies to produce the potable reuse water (WC Section 10609.20(d)(4)(C)).*
- *For purposes of Section 10609.20, and notwithstanding paragraph (4) of subdivision (d) of Section 10609.20, “existing facility” also includes the North City Project, phase one of the Pure Water San Diego Program, for which an environmental impact report was certified on April 10, 2018 (WC Section 10609.21(a)).*

WC Section 10608.12(o) provides that potable reuse means DPR, IPR for groundwater recharge, and reservoir water augmentation as those terms are defined in WC Section 13561, which was provided through AB 574. Further discussion of this topic is provided in Section 2.

1.3 Purpose of the Report

Per legislative requirements, and with stakeholder engagement, DWR conducted studies and investigations and recommended guidelines and methodologies for calculating the UWUO (WC Section 10609.16). DWR also conducted studies and investigations to develop and recommend accounting methodology and requirements for supporting data and information for adoption by the State Water Board. This report provides a detailed description of the legislative criteria for bonus incentive eligibility, a detailed discussion of options and supporting methods for bonus incentive accounting discussed with stakeholders, and the recommended accounting methodology. The purpose of this report is to: (1) provide clarity on the legislative requirements and terminology of the bonus incentive; and (2) make a detailed recommendation for the accounting process needed to implement the incentive.

Use of Potable Reuse Bonus Incentive

The recommended guidelines and methodologies for calculating the bonus incentive for potable reuse based on the volume of potable reuse water delivered to qualified residential and CII water users are subject to adoption by the State Water Board. When adopted, the eligible bonus incentive can be added to an urban water retail supplier's UWUO for comparison with the actual water use in the previous year.

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 into an Urban Water Use Efficiency Recommendation Package (Recommendation Package) that allows mutual referencing and incorporate 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 Bonus Incentive Methods of Calculation and Supporting Data Requirements* (WUES-DWR-2021-14), provides the detailed documentation of the legislative criteria for bonus incentive eligibility and recommended accounting methodology. The recommendations for bonus incentive guidelines and methodologies were included in the report, *Recommendations for Guidelines and Methodologies for Calculating Urban Water Use Objective* (WUES-DWR-2021-01B), along with other performance measures for coordinated implementation. The 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). 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 these recommendations for a bonus incentive consistent with legislative directives for implementation needs. The resulting bonus incentive for potable reuse, when adopted, does not set, rescind, or modify existing requirements for managing potable reuse.

1.4 Report Organization

This report is organized into six sections:

- **Section 1 – Introduction** provides the background and purpose of this document.
- **Section 2 – Scope Definition** provides the clarification of the scope for bonus incentive and methodology development.
- **Section 3 – Accounting Approach** describes the technical approach and stakeholder engagement that DWR conducted to support the development of the bonus incentive accounting methodology and options considered, including evaluations for technical feasibility, reasonableness, and ability to be implemented.
- **Section 4 – Recommendations** provides DWR’s recommendations on the bonus incentive, including the guidelines and methodologies for accounting purposes.
- **Section 5 – Glossary** provides a list of key terms and their definitions used in this document.
- **Section 6 – References** provides a list of references used in this document.

This report includes two appendices:

- **Appendix A** provides the list of documents in DWR’s Recommendation Package that are incorporated by reference.
- **Appendix B** provides a template for calculating the IPR bonus incentive. This template is provided for illustrative purposes and is subject to revision after the State Water Board’s adoption.

2.0 Scope Definition

The legislation sets a very specific scope of application for bonus incentive. This section provides additional clarifications and supplemental information to improve the understanding of and provide additional context for potable reuse.

2.1 Potable Reuse

Water reuse in the State has a long history using many terms, including recycled water and reclaimed water. WC 10608.12(q) provides the definition of recycled water to be consistent with that in WC Section 13050(n), meaning “water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource.” The use of recycled water has steadily increased since the 1970s; and currently, it is an important strategy to improve regional self-reliance and overall drought resiliency. Based on the volumetric annual reporting of wastewater and recycled water published by the State Water Board for the 2020 calendar year, 261 out of the total 429 wastewater treatment plants produced recycled water. Additionally, about 728,000 afy of total volume of recycled water production, treated to California Code of Regulations (CCR) Title 22 standards, was used for an approved beneficial use. Approximately 24 percent of the total recycled water production in 2020 was reported for potable reuse (State Water Board, 2021a).

Recycled water is now an integral part of the water supply for urban areas and agricultural use. The amount of investment by urban retail water suppliers and recycled water providers was recognized in statewide water conservation efforts. For example, SB X7-7 directs urban retail water suppliers to reduce their urban water use targets, excluding recycled water use. Landscapes irrigated with recycled water are considered Special Landscape Areas (SLA) under the Model Water Efficient Landscape Ordinance (MWELo) (CCR Title 23 Sections 490 through 495). The 2018 Legislation continues to support the expanded use of recycled water, although it did not exclude recycled water use completely from the quantification of efficiency water use under the UWUO. It provides for additional directives to incorporate MWELo principles in ORWUS and CII-DIMWUS, which potentially include SLA provisions (see *Recommendations for Outdoor Residential Water Use Efficiency Standard* [WUES-DWR-2021-02] and *Recommendations for Commercial, Industrial, and Institutional Outdoor Irrigation of Landscape Areas with Dedicated Irrigation Meters Water Use Efficiency Standard* [WUES-DWR-2021-03]). It also directed DWR to develop recommendations for a potential variance for irrigation using recycled water with high total dissolved solids (see *Recommendations for Variance for Significant Landscaped Areas Irrigated with Recycled Water Having High Levels of Total Dissolved Solids, Methods of Calculation, and Supporting Data Requirements* [WUES-DWR-2021-09]).

In the 2018 Legislation, the Legislature highlighted a new focus on potable reuse, aligning the State policy for potential potable use of highly treated wastewater (e.g., AB 574). As a result, WC Section 10608.12(o) defines potable reuse as DPR, IPR for groundwater recharge, and reservoir water augmentation as those terms are defined in WC Section 13561, enacted through AB 574. The definition of recycled water was also amended to revert to that of WC Section 13050(n), with additional description of qualified conditions provided by SB X7-7 removed.

AB 574 sets forth a State policy direction for advancing potable reuse, especially DPR, and it requires the State Water Board to adopt uniform water recycling criteria for DPR through raw water augmentation by December 31, 2023. For consistency, AB 574 also provides changes to several important related terms through WC Section 13561 that are referenced in WC Section 10608.12(o).

“Direct potable reuse” means the planned introduction of recycled water either directly into a public water system, as defined in Section 116275 of the Health and Safety Code, or into a raw water supply immediately upstream of a water treatment plant. Direct potable reuse includes, but is not limited to, the following:

- 1. “Raw water augmentation,” which means the planned placement of recycled water into a system of pipelines or aqueducts that deliver raw water to a drinking water treatment plant that provides water to a public water system, as defined in Section 116275 of the Health and Safety Code.*
- 2. “Treated drinking water augmentation,” means the planned placement of recycled water into the water distribution system of a public water system, as defined in Section 116275 of the Health and Safety Code.*

“Indirect potable reuse for groundwater recharge” means the planned use of recycled water for replenishment of a groundwater basin or an aquifer that has been designated as a source of water supply for a public water system, as defined in Section 116275 of the Health and Safety Code.

“Reservoir water augmentation” means the planned placement of recycled water into a raw surface water reservoir used as a source of domestic drinking water supply for a public water system, as defined in Section 116275 of the Health and Safety Code, or into a constructed system conveying water to such a reservoir.

Both DPR and IPR refer to the planned introduction of recycled water to a public water system with the distinction dependent on whether the recycled water is introduced with an environmental buffer, such as a groundwater aquifer or reservoir water augmentation

(i.e., IPR), or without an environmental buffer (i.e., DPR). Environmental buffer means a water body such as an aquifer, wetland, river, or reservoir that provides several benefits. Benefits include contaminant removal, dilution and blending, and time to detect and respond to failures before final treatment and distribution. These benefits, in conjunction with varying levels of upstream treatment, provide the necessary public health assurances required of potable reuse projects (Advisory Group on Direct Potable Reuse, 2016).

For context, a public water system is defined as a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year. A public water system includes the following: (1) any collection, treatment, storage, or distribution facility under control of the operator of the system that is used primarily in connection with the system; (2) any collection or pretreatment storage facility not under the control of the operator that is used primarily in connection with the system; and (3) any water system that treats water on behalf of one or more public water systems for the purpose of rendering it safe for human consumption (California Health and Safety Code Section 116275(h)).

Indirect Potable Reuse (WC Sections 13561 and 10608.12(o))

IPR introduces recycled water with an environmental buffer consisting of either a groundwater basin with a blending requirement or a surface reservoir with a detention time requirement. The recycled water is produced by an advanced water treatment (AWT) facility approved by the State for provision of additional treatment of effluent from a municipal wastewater treatment facility. A generalized IPR cycle is depicted in Figure 2-1.

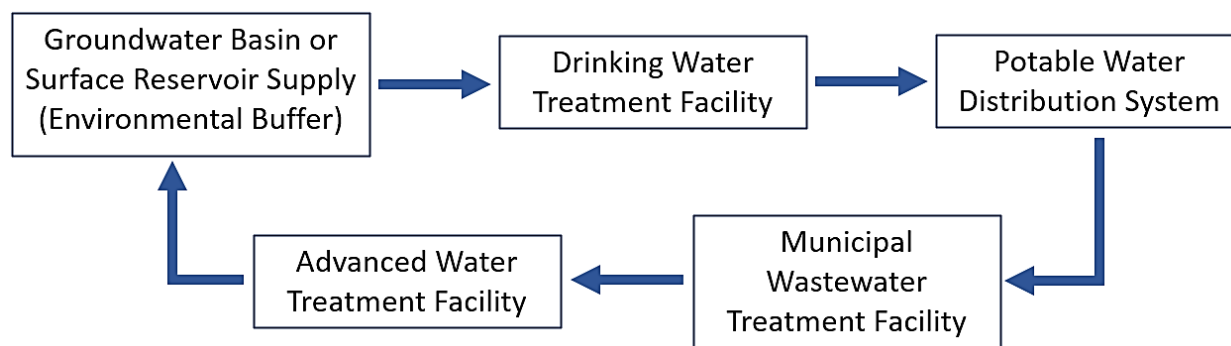


Figure 2-1 Indirect Potable Reuse

The regulations for IPR applications are described in the CCR Title 22 related to Recycled Water (State Water Board, 2018b). The regulations cover three types of IPR:

1. IPR through groundwater replenishment by surface application for facilities receiving initial permits from the Regional Board after June 18, 2014.

2. IPR through subsurface application for facilities receiving initial permits from the Regional Board after June 18, 2014.
3. IPR through surface water augmentation via the planned placement of recycled municipal wastewater into a surface water reservoir that is used, in whole or in part, as a source of domestic drinking water supply by a public water system pursuant to Article 9, Chapter 17, of Division 4 (Environmental Health) of CCR Title 22.

IPR type 1, for groundwater recharge through surface spreading, has a minimum default treatment requirement of tertiary effluent (i.e., media filtered secondary effluent). The recycled municipal wastewater contribution (RWC) can be applied at an initial maximum of 0.20 as described in CCR Title 22 Section 60320.116. An alternative initial RWC of up to 1.0 may be approved by DWR if the additional compliance criteria specified in that section are met.

IPR type 2, for groundwater recharge through subsurface application, has a minimum default treatment requirement of full advanced treatment consisting of reverse osmosis and an oxidation treatment process. The RWC can be applied at an initial maximum of 1.0 if compliance criteria specified in CCR Title 22 Section 60320.201 are met.

IPR type 3, for surface water augmentation of a surface water reservoir, has a minimum default treatment requirement of full advanced treatment consisting of reverse osmosis and an oxidation treatment process. The augmented reservoir must maintain a minimum theoretical retention time as described in CCR Title 22 Section 64668.30. The retention time should be no less than that which has been approved by the State Water Board, with an initial approved minimum theoretical retention time of no less than 180 days. An application may be made to the State Water Board for written approval for a reduced ongoing alternative minimum theoretical retention time of less than 180 days, but no less than 60 days upon satisfactory demonstration of adherence to other specified criteria as described in CCR Title 22 Section 64668.30.

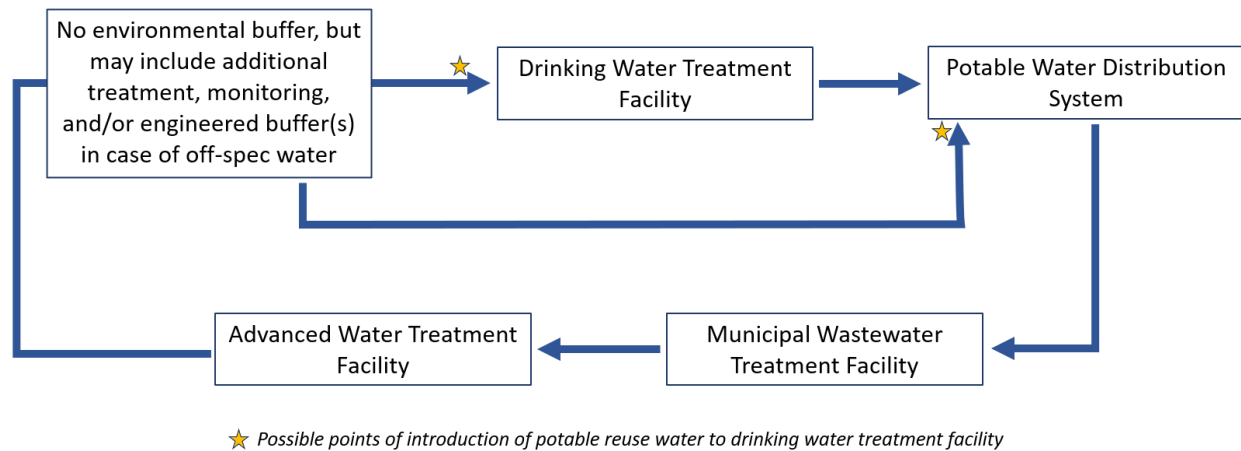
Direct Potable Reuse (WC Sections 13561 and 10608.12(o))

DPR introduces recycled water into a public water system without using an environmental buffer. The recycled water can be introduced either directly into public drinking water systems or into a raw water supply immediately upstream of a water treatment plant. The State Water Board was tasked by AB 574 with developing uniform water recycling criteria for DPR protection of public health.

The State Water Board prepared the AB 574 required Framework, which the State Water Board released for a 30-day public comment period in April 2018. A revision to the Framework (Framework Second Edition) was released in August 2019, and a Framework Addendum was released in March 2021 for public comment and stakeholder input. These collectively constitute an early draft of the anticipated criteria

for DPR to be added in Title 22, Division 4, Chapter 17, Surface Water Treatment, as new Article 10 (State Water Board, 2021b).

The draft criteria require that the source water for a DPR project shall be municipal wastewater; and the DPR responsible agency (DiPRRA) shall demonstrate to the State Water Board that all treatment processes required to control pathogens and chemicals are designed, installed, and operated pursuant to the criteria established in Article 10, when finalized and adopted, and in accordance with an operations plan approved by the State Water Board. Other requirements specified in the anticipated Article 10 must be met for approval of a DPR project; and the DiPRRA shall submit a joint plan that describes the partner agency(ies) involved in the DPR project, their roles and responsibilities, legal authority of each to fulfill their role, and the overall organizational structure involved in implementing the joint plan. A DPR project shall help ensure that the municipal wastewater receives continuous treatment prior to its distribution as drinking water; and the treatment train shall include an ozone/biological activated carbon process, a reverse osmosis membrane process, and an advanced oxidation process that meet specified criteria. DPR projects must include sufficient risk management operations and monitoring to prevent service of off-specification water. A DPR cycle is depicted in Figure 2-2.



Key:
 off-spec water = off-specification water

Figure 2-2 Direct Potable Reuse

2.2 Eligible Potable Reuse for Bonus Incentive

As previously mentioned, WC Section 10609.20(d) provides a relatively clear scope where a bonus incentive based on eligible potable reuse can be used for adjusting the UWUO of an urban retail water supplier.

Existing Facilities for Bonus Incentive

The maximum allowable bonus incentive volume that can be reported annually is either 10 percent or 15 percent of the UWUO, depending on whether the facility providing the potable recycled water can be classified as an existing facility for bonus incentive (Existing Facility) and satisfies all of the following conditions:

- The facility has a certified environmental impact report, mitigated negative declaration, or negative declaration on or before January 1, 2019 (WC Section 10609.20(d)(4)(A)).
- The facility begins producing and delivering potable reuse water on or before January 1, 2022 (WC Section 10609.20(d)(4)(B)).
- The facility uses microfiltration and reverse osmosis technologies to produce the potable reuse water (WC Section 10609.20(d)(4)(C)).
- For purposes of Section 10609.20, and notwithstanding paragraph (4) of subdivision (d) of Section 10609.20, “existing facility” also includes the North City Project, phase one of the Pure Water San Diego Program, for which an environmental impact report was certified on April 10, 2018 (WC Section 10609.21(a)).

Any facility that does not meet the criteria of an Existing Facility is an “other facility for bonus incentive” (Other Facility). In other words, an Other Facility is a facility, using any approved technologies for potable recycled water production, which either has a certified environmental impact report, mitigated negative declaration, or negative declaration completed after January 1, 2019, or begins production and delivery of potable recycled water after January 1, 2022.

Potable Reuse Volumes Eligible for Bonus Incentive

The allowable bonus incentive volume for potable recycled water is capped to not exceed a maximum percentage of the urban retail water supplier’s UWUO. Two different maximum percentage values are allowed:

The bonus incentive shall not exceed 15 percent of the urban water supplier’s water use objective for any potable reuse water produced at an existing facility (WC Section 10609.20(d)(3)(A)).

The bonus incentive shall not exceed 10 percent of the urban water supplier’s water use objective for any potable reuse water produced at any facility that is not an existing facility (WC Section 10609.20(d)(3)(B)).

Potable Reuse Water Use Eligible for Bonus Incentive

To qualify for the bonus incentive volume, the potable reuse water must be delivered to one of the following end uses:

- Residential use (indoor, outdoor, or both uses).
- Irrigation use for landscape areas with DIMs in connection with CII outdoor water use.

Due to this delivery requirement, the bonus incentive accounting must consider the annual volume of potable reuse water introduced to the public water system and the corresponding allocations of this water supply in the distribution system.

Additional Clarified Considerations

Through stakeholder engagement and input, DWR further clarified the following considerations for the bonus incentive.

AB 574 requires the State Water Board to adopt uniform water recycling criteria for DPR through raw water augmentation on or before December 31, 2023. DPR does not require an environmental buffer; therefore, the accounting requirements are simpler than that for IPR. However, since DPR is not allowed until the State Water Board adopts the uniform water recycling criteria for DPR, DWR considers it prudent to defer the development and recommendation of the guidelines and methodologies for DPR accounting until use of DPR is allowed.

Based on the above considerations and legislative requirements, the following categories of water use are not within the scope of the bonus incentive accounting.

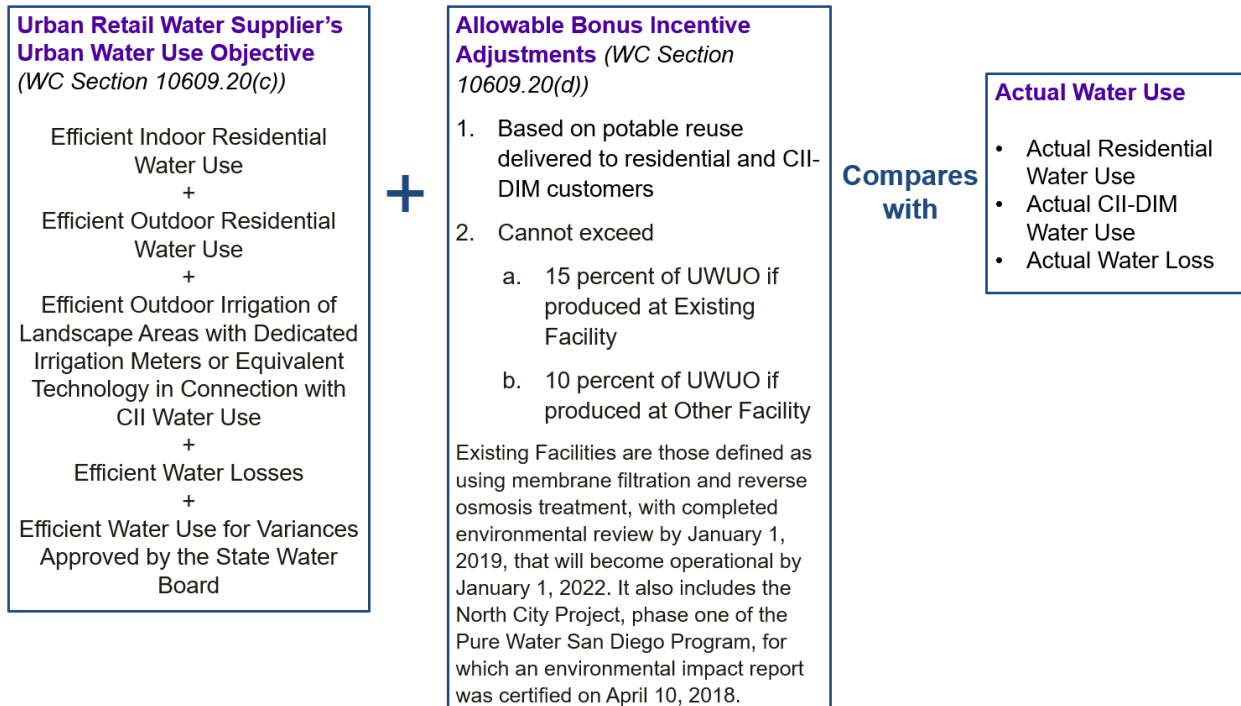
- Non-potable reuse, which is wastewater captured, treated for non-drinking water standards, and used for non-drinking purposes, such as toilet flushing, clothes washing, and irrigation.
- Potable reuse water delivered to CII water use other than for irrigation purposes for landscape areas using DIMs.
- The additional production of an Existing Facility with capacity expanded beyond the approved capacity in the environmental documentation for compliance with the California Environmental Quality Act (CEQA) dated on or before January 1, 2019, is not qualified for the bonus incentive for an Existing Facility. (However, this additional production could qualify as potable reuse water produced by an Other Facility and if delivered to qualified end uses by an urban retail water supplier, qualifies for a bonus incentive of up to 10 percent of their UWUO).

Of note, should a change of the treatment method of an Existing Facility occur, and the resulting treatment method is not microfiltration or reverse osmosis, then the qualified amount for a bonus incentive will be reduced as the facility is no longer an Existing Facility that satisfies the criteria in WC Section 10609.20(d)(4). However, facility using treatment methods other than microfiltration or reverse osmosis technologies, if permitted, is considered an Other Facility. Currently, there are no other treatment methods that are approved. The potable reuse water produced by this facility when delivered to qualified end uses by an urban retail water supplier may qualify for a bonus incentive that is up to 10 percent of its UWUO.

2.3 Adjustments to the Urban Water Use Objective

Recommendations for a bonus incentive methods of calculation and supporting data requirements based on the volume of potable reuse water delivered to qualified residential and CII water uses are subject to approval and adoption by the State Water Board. If adopted, any urban retail water supplier that would like to use the bonus incentive must follow the guidelines to determine their allowable volume.

The UWUO is the foundation for determining the allowable volume for a bonus incentive. The UWUO is the sum of the aggregated estimates of efficient water uses based on four established standards: IRWUS, ORWUS, CII-DIMWUS, and WLS, including any approved variances. Figure 2-3 outlines how the bonus incentive adjustment is to be made to an urban retail water supplier's UWUO.



Key:

CII = commercial, industrial, and institutional

CII-DIM = commercial, industrial, and institutional dedicated irrigation meter

DIM = dedicated irrigation meter

State Water Board = State Water Resources Control Board

UWUO = urban water use objective

WC = California Water Code

Figure 2-3 Bonus Incentive Adjustments in the Bottom-Up Estimate of an Urban Retail Water Supplier's Urban Water Use Objective

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3.0 Accounting Approach

DWR's approach to bonus incentive accounting methodology development and data needs was an iterative process in collaboration with stakeholders and the State Water Board. DWR received input throughout the process to assist in refining options and associated specifications and data needs.

DWR's objectives for the bonus incentive accounting methodology was that it must be consistent with the legislation and it must be clear and feasible, while considering the legislative intent of the incentive. Clarity refers to a lack of ambiguity in the requested input data and calculations used to derive the bonus incentive volume for reporting purposes. Feasibility refers to the reasonable accessibility of the necessary input data needed for the urban retail water suppliers. Considering the legislative intent refers to achieving a balance between State policies promoting water conservation and implementing potable reuse. The recommended accounting protocols should impose a reasonable burden on urban retail water suppliers without sacrificing clarity, feasibility, and consideration of legislative intent. The developed bonus incentive accounting protocol options and final protocol recommendation were derived to fulfill these objectives, with consideration of existing applicable water use efficiency accounting practices and with additional stakeholder input received during DWR meetings and workshops with working group members and stakeholders.

3.1 Stakeholder Process

Consistent with the legislative directive, DWR used a public process involving diverse stakeholders in the review and development of bonus incentive accounting methodology and data needs. The stakeholder process was part of the larger engagement process provided for implementing 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 engagements specifically for variances started in November 2020, with periodic meetings and workshops held through early 2022.

DWR established two working groups to assist with 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 assist DWR with the development of 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

bonus incentive accounting methodology and its implementation in relationship with the UWUO and associated 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 and input from other stakeholders, interested parties, and individuals.

Working group members and other participants had ample opportunities to learn about the scope of the bonus incentive and options for accounting methodologies and to provide feedback on these topics. They provided input on implementation, such as resource needs (staff), and the accessibility and sufficiency of required supporting data.

DWR also conducted and responded to requests for additional meetings and public outreach and engagement activities with both individual entities and groups of stakeholders to learn from their experiences, understand their specific concerns, and receive their feedback. DWR had multiple meetings and collaborated with WaterReuse California, Irvine Ranch Water District, Las Virgenes Municipal Water District, Pacific Institute, and individuals to review their existing practices for SB X7-7 accounting and to evaluate potential opportunities for bonus incentive accounting.

3.2 Focus on Indirect Potable Reuse

As previously mentioned in Section 2, the State Water Board has not adopted the uniform water recycling criteria for DPR through raw water augmentation per AB 574. DPR does not require an environmental buffer; therefore, the accounting requirements are likely simpler than that for IPR. However, since DPR is not allowed until the State Water Board adopts the uniform water recycling criteria for DPR, DWR considers it prudent to defer the development and recommendation of the guidelines and methodologies for DPR accounting until use of DPR is allowed. Stakeholders concurred with this approach. Therefore, the remaining discussion in this section focuses on IPR only.

3.3 Generalized Schematic Representation of Indirect Potable Reuse Water Volume Eligible for Bonus Incentive

There are four segments to consider in the schematic representation of the transport of potable reuse water and the volume changes that can occur prior to its delivery to the specified end uses that make the water eligible for the volume of the bonus incentive. These segments are briefly described below.

Segment One: Potable Reuse Water Delivery to Supply System

This segment accounts for delivery of the potable reuse water from a qualified AWT facility to the receiving agency under contract. The water is delivered either to an environmental buffer (i.e., groundwater or surface water) as part of an IPR scheme or directly to the drinking water plant or distribution system as part of a DPR scheme.

Segment Two: Water Treatment Facility Potable Reuse Water Losses

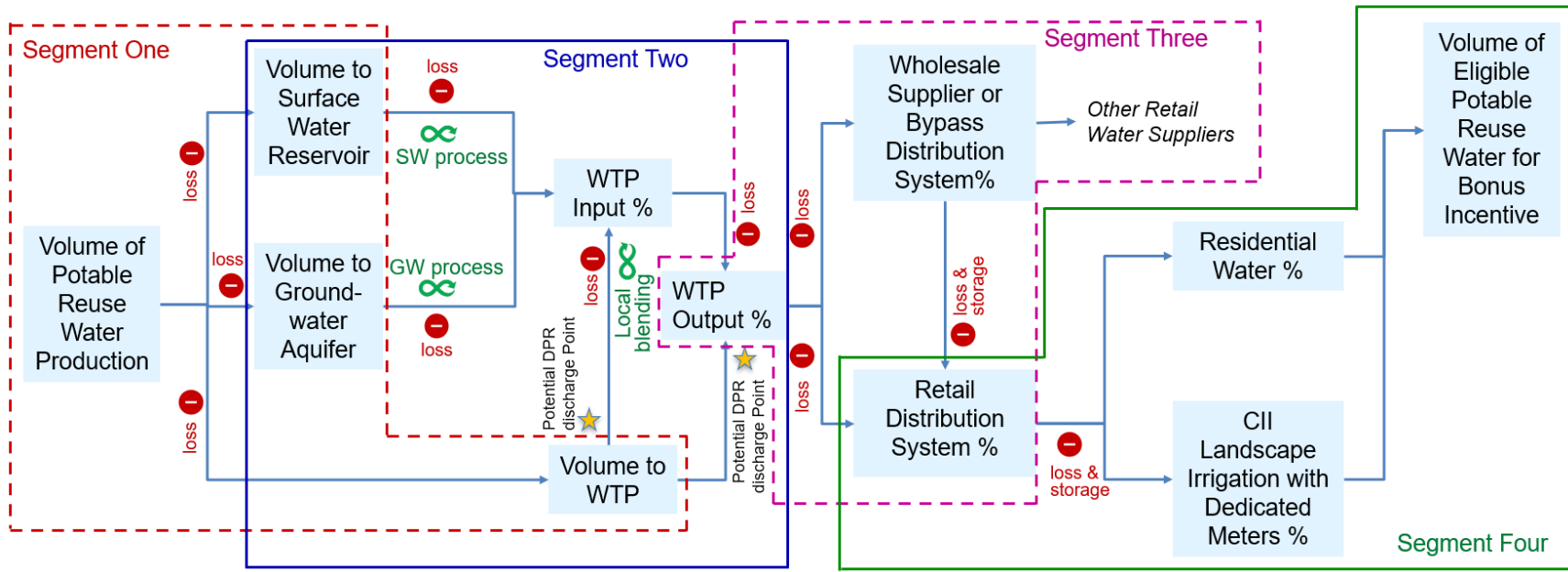
This segment accounts for the potable reuse water percentage or volume changes that may occur through the water treatment facility due to blending with other supplies or volume losses associated with the treatment process.

Segment Three: Bypass/Storage Water Distribution System Losses

This segment accounts for the potable reuse water percentage or volume changes that may occur due to its transport through bypass/storage water distribution systems.

Segment Four: Potable Reuse Water Delivered to Eligible End Uses

This segment accounts for the potable reuse water volume in the retail system that is delivered to residential customers and CII landscape irrigation with DIMs (i.e., potable reuse water end uses that are eligible for bonus incentive consideration). The schematic provided in Figure 3-1 represents these four segments and provides the baseline against which the schematics developed for the four methodologies described below can be compared.



Key:

Blue Box = Segment Two

CII = commercial, industrial, institutional

DPR = Direct Potable Reuse

Green Box = Segment Four

GW = groundwater

Loss = All applicable losses from evaporation, groundwater deep percolation, transmission, and plant/distribution processes

Purple Box = Segment Three

Red Box = Segment One

Storage = Water stored in the distribution system

SW = surface water

WTP = Water Treatment Plant

Figure 3-1 Schematic of Potable Reuse Water Production and Passage Through Supply Systems to Qualified End Uses for Bonus Incentive Calculation

3.4 Options for Indirect Potable Reuse Bonus Incentive Accounting Methodology

Through stakeholder input, DWR identified four distinct methodologies to quantitatively account for the volume of IPR water eligible for the bonus incentive:

- Option 1: SB X7-7 Adaptation Methodology.
- Option 2: Last-In-First-Out (LIFO) Exclusive of Water Loss Criteria Methodology.
- Option 2a: LIFO Inclusive of Water Loss Criteria Methodology.
- Option 2b: LIFO With Allocation Priority Methodology.

Each of the four methodologies are further described later in this section, including their corresponding evaluation and assessment on the viability of each option and the clarity and feasibility of the required data for each option. The relative merits of each option in balancing the legislative intent for water conservation and potable reuse water promotion were also evaluated. These options were presented to working group members and stakeholders during workshops on May 13 and July 21, 2021. To facilitate discussion, DWR also prepared a comparison of the bonus incentive volume outputs calculated based on the options using a uniform set of input values. Additional meetings with stakeholders were also conducted to resolve issues and concerns associated with these options.

Option 1: Senate Bill X7-7 Adaptation Methodology

SB X7-7 developed gross water use accounting protocols with methodologies for quantifying and subtracting the IPR water volume that is not considered part of the baseline and for defining compliant urban per capita water use (Advisory Group on Direct Potable Reuse, 2016). These accounting methodologies present a logical starting point for developing the bonus incentive calculations. The SB X7-7 accounting methodologies do not consider DPR water scenarios, and the quantification of the IPR volume is subtracted from reported urban water use rather than included, as is required for bonus incentive reporting. The feasibility of the SB X7-7 accounting approach for bonus incentive reporting requires evaluation for bias potentially caused by the different end-use objective of including versus excluding IPR and the development of accounting protocols for its application. Furthermore, SB X7-7 does not include protocols for tracking potable water use served to customers that qualify for bonus incentive volume reporting. It is important to expand the existing protocols to cover these identified gaps and to verify that the SB X7-7 methodology is clear and unbiased for inclusive bonus incentive reporting. The methodology also needs to be feasible in that requested data

inputs are readily available to the urban retail water suppliers reporting the bonus incentive volumes.

SB X7-7 accounting is a mass-balance approach for estimating changes in the following:

- IPR water within the environmental buffer.
- Losses during transmission.
- Losses through the water treatment facility.
- Attribution to other urban retail water suppliers.
- Losses and storage retention within the retail distribution system.

When applied to the bonus incentive calculation, the schematic of the SB X7-7 adaptation is similar to the Figure 3-1 baseline schematic with the following differences: (1) losses have been omitted for Segment #1 potable reuse water delivery from the AWT facility to either the environmental buffer (indirect) or the water treatment facility (direct), because the delivered volume is governed by contractual agreement; and (2) “other” end uses have been added to Segment #4 in addition to residential and CII landscape irrigation with a dedicated meter to show that not all distributed water is eligible for the bonus incentive.

Changes to the potable reuse quantity are tracked as volume up to the water treatment facility, where it is then tracked as a volume percentage to account for source blending within the water treatment facility. The calculation of potable reuse water volume in the environmental buffer can be based on SB X7-7 Methodology 1, Step 8.1, including the use of a multi-year moving average in volume tracking in the environmental buffer. The water loss calculation for delivery to the distribution system from the water treatment facility is provided in SB X7-7 Methodology 1, Step 8.3, based on recent system audit data, and the water treatment facility owner is responsible for tracking these losses. The volume of potable reuse water that is passed through to other urban retail water suppliers must be identified in SB X7-7 in Methodology 1, Step 5. The volume of potable reuse water retained in the retail distribution system storage must be identified in SB X7-7 Methodology 1, Step 6. Distribution system loss is not covered by SB X7-7 but can be estimated using: (1) reported average system loss; (2) reported year-specific system loss; (3) estimated from system modeling; or (4) another approach. The retail system should already be tracking and reporting annual distribution system loss to the State Water Board. The remaining potable reuse water volume in the distribution system is then multiplied by the percentage of system water delivered to residential water users and CII landscape irrigation with dedicated meters; this calculation is the amount that is potentially eligible for bonus incentive reporting up to the legislated maximum allowable percentage.

No apparent bias was found from using the SB X7-7 accounting approach related to including rather than excluding IPR water for reporting purposes. This is because (1) the exclusion protocols provide an accurate estimate of the volume changes of the IPR water as it travels through the supply system; and (2) it uses accepted accounting principles and practices. These accounting protocols clearly specify what information is needed and the recommended approach to be used for each accounting step. Further analysis of each accounting step also verified that the necessary input information should be available to the urban retail water suppliers that are responsible for bonus incentive reporting. However, this approach has a fatal flaw because the accounting will not true-up on an annual basis, which leads to potable reuse water carryover accounting from one year to the next, particularly for IPR applications. Tracking the transport of “molecules of eligible potable water” is also an unduly burdensome approach with inherent inaccuracies.

A summary table of the strengths, weaknesses, and fatal flaws with Option 1: SB X7-7 Adaptation Methodology is provided in Table 3-1.

Table 3-1 Evaluation of Option 1: Senate Bill X7-7 Adaptation Methodology

Criteria	Strengths	Weaknesses	Fatal Flaws
Input data availability	All input data should be readily available from participating entities.	No	No
Calculation feasibility	Calculations derive from existing practice, with a few areas of omission that could be developed. No apparent bias to calculation approach.	While calculations are available, the mass transport approach may be more cumbersome than necessary for the intended purpose.	No
Completeness and applicability of methodology approach	Methodology exists and is in use for reporting purposes.	There are a few gaps in the methodology that still need to be filled.	Accounting methodology will not true-up on an annual basis leading to potable reuse water carryover accounting from one year to the next, particularly for indirect potable reuse applications. Tracking the transport of “molecules of eligible potable water” is also an unduly burdensome approach with inherent inaccuracies.
Legislative balance	No	Methodology may be overly restrictive toward promotion of potable reuse by overemphasizing water loss at every transport location.	No

Option 2: Last-In-First-Out Exclusive of Water Loss Criteria Methodology

Option 2, an alternative methodology, was drafted in response to stakeholder input received after presentation of Option 1. Option 2 conceptually differs from Option 1 in that it does not attempt to track potable reuse quantity changes through the supply system in a real-time manner; instead, it tracks the volume entering the retail system using a LIFO accounting practice. It uses a three-year (i.e., surface reservoir augmentation or DPR) or five-year (i.e., groundwater recharge) running average volume of potable reuse water delivered to a retail system, following adjustment for any blending and attribution that occurs through the environmental buffer or the water treatment facility. This three-year or five-year average is then multiplied by the total water percentage distributed to the urban retail water supplier’s residential and CII landscape irrigation with dedicated meters.

The calculation can be achieved using either of the two different approaches below:

Qualified Bonus Incentive Volume (acre-feet) = Average Annual Potable Reuse Water Volume in Retail System (acre-feet) x Percentage of Total Potable Use Going to Qualified Users

where,

- The Average Annual Potable Reuse Water Volume in Retail System is a three-year average for surface water augmentation or DPR or a five-year average for groundwater augmentation.
- Qualified Users are residential customers and CII landscape irrigation with dedicated meters.

OR

Qualified Bonus Incentive Volume (acre-feet) = Average Annual Potable Reuse Water Percentage of Total Potable Water in Retail System (acre-feet) x Potable Water Volume Going to Qualified Users.

where,

- The Average Annual Potable Reuse Water Volume in Retail System is a three-year average for surface water augmentation or DPR or a five-year average for groundwater augmentation.
- Qualified Users are residential water users and CII landscape irrigation with DIMs.

While the Option 2 methodology includes calculation of water losses through the distribution system, those losses are attributed only to the non-potable reuse water in

the system with the assumption that none of the potable reuse water volume is lost. This assumption may introduce a positive bias to the bonus incentive volume calculation unless the distribution system loss remains below an acceptable threshold, or the system distribution architecture and monitoring data characteristics can demonstrate that this assumption is valid.

A summary table of the strengths, weaknesses, and fatal flaws inherent to Option 2: LIFO Exclusive of Water Loss Criteria Methodology is provided in Table 3-2.

Table 3-2 Evaluation of Option 2: Last-In-First-Out Exclusive of Water Loss Criteria Methodology

Criteria	Strengths	Weaknesses	Fatal Flaws
Input data availability	All input data should be readily available from participating entities.	No	No
Calculation feasibility	Calculations derive from existing practice.	No	No
Completeness and applicability of methodology approach	Methodology accounting will true-up on an annual basis, thereby eliminating reuse water carryover accounting from one year to the next.	Insufficient consideration of potable reuse water loss on calculation of bonus incentive could lead to large inaccuracies in certain scenarios.	WC allows for potable reuse volumes delivered to qualified uses up to the applicable threshold. This accounting methodology does not provide reasonable delivery estimates because it does not account for any distribution system losses.
Legislative balance	No	Methodology may not adequately focus on water use efficiency since 1) there is no criteria limiting water loss; and 2) losses are restricted to sources other than the potable recycled water, which does not incentivize loss limitations because they will not reduce the calculated bonus incentive volume.	No

Option 2a: Last-In-First-Out Inclusive of Water Loss Criteria Methodology

One weakness of the Option 2 LIFO approach is that it fails to define when an urban retail water supplier should include water loss in their distribution system as part of their bonus incentive calculation. WC Section 10609.20(d)(1) allows a bonus incentive based on volumes delivered to qualified users.

CCR Title 23 Section 638.5 requires that urban retail water suppliers conduct annual water loss audits on each system in accordance with the specified methodology and reporting requirements, including verification of the water loss audit. Therefore, water loss accounting appears to be a critical component that could be considered as part of the bonus incentive volume calculation.

Option 2a is a modification to Option 2 in that it incorporates potable reuse water loss in the calculation for the bonus incentive volume whenever an urban retail water supplier does not meet its annual water loss criteria established by the State Water Board. When the urban retail water supplier meets its annual water loss criteria, the bonus incentive volume calculated by Option 2a becomes identical to that calculated by Option 2. Under Option 2a, the bonus incentive calculated volume becomes smaller for any year when an urban retail water supplier exceeds their annual water loss criteria due to the lower percentage of potable reuse water in the retail system.

A summary table of the strengths, weaknesses, and fatal flaws inherent to Option 2a: LIFO Inclusive of Water Loss Criteria Methodology is provided in Table 3-3.

Table 3-3 Evaluation of Option 2a: Last-In-First-Out Inclusive of Water Loss Criteria Methodology

Criteria	Strengths	Weaknesses	Fatal Flaws
Input data availability	All input data should be readily available from participating entities.	No	No
Calculation feasibility	Calculations derive from existing practice.	Moderately complicated tracking of water losses: determining water losses and then applying water losses to indirect potable reuse volumes when Water Loss Standard was exceeded.	No
Completeness and applicability of methodology approach	Accounting methodology will true-up on an annual basis and eliminate reuse of water carryover accounting from one year to the next.	Insufficient consideration of potable reuse water loss on calculation of bonus incentive could lead to large inaccuracies in certain scenarios since there is no accounting for loss when meeting the Water Loss Standard.	Water Code allows for potable reuse volumes delivered to qualified users up to the applicable threshold. This accounting methodology may not provide reasonable delivery estimates because it does not account for all distribution system losses.
Legislative balance	Methodology eliminates any lack of water conservation emphasis that may be a concern using Option 2.	Methodology may not adequately incentivize development of potable reuse projects because the 10 to 15 percent bonus incentive volume is further eroded by water loss considerations when the State Water Board Water Loss Standard is not met. Systems with a higher percentage of potable reuse water but a lower percentage of eligible users are disadvantaged in the bonus incentive calculation even though they may have as much or more potable reuse water going to eligible users. For example, 10 percent potable reuse water to 100 percent qualified users may be a lower volume than 50 percent potable reuse water to 50 percent qualified users. The playing field should be level for all retail systems.	No

Option 2b: Last-In-First-Out with Allocation Priority Methodology

Option 2b is a further refinement to Option 2a by providing uniform accessibility to the bonus incentive volume for urban retail water suppliers that have different combinations of percent potable reuse water and percent eligible users within their distribution system. This methodology is best described by an example.

- For two urban retail water suppliers (Supplier A and Supplier B) with identical annual total potable water volumes of 100,000 acre-feet distributed to their customers:
 - Supplier A distributes water that contains 10 percent of its total volume as potable reuse water while Supplier B maintains 20 percent of its total volume as potable reuse water.
 - Supplier A has 100 percent of its customers qualifying for the bonus incentive volume while Supplier B has only 50 percent of its customers qualifying for the bonus incentive volume.
- Both urban retail water suppliers serve the specified percentage blend to all of their customers by providing the 1,000 acre-feet of potable reuse water to their eligible customers (i.e., Supplier A provides 10 percent of 100,000 acre-feet; Supplier B provides 20 percent of 50 percent of 100,000 acre-feet). Therefore, both urban retail water suppliers should be eligible for the same bonus incentive volume, even though Supplier B has less eligible users in their distribution compared with Supplier A. An approach that treats these two situations equally would not penalize urban retail water suppliers with different distribution patterns for their water blends and eligible customers.

An allocation priority approach was adapted for use with the LIFO methodology to apply this concept in a simplified conceptual manner without use of a system modeling approach to track “molecules of water” transit pathways. The allocation priority assumes that the potable reuse volume in the distribution system is preferentially served to qualified end-users first. With this approach, the volume of potable reuse water supplied to the retail distribution system is compared with the volume of total water served to qualified users. Whichever volume is smaller is then qualified as the bonus incentive volume up to the applicable threshold.

This approach incentivizes potable reuse implementation, but incentivization should not be achieved at the expense of water efficiency efforts. It is only considered for urban retail water suppliers during years that they are achieving their annual WLS as established by the State Water Board. Therefore, it is a modification of Option 2a, rather than Option 2.

A summary table of the strengths, weaknesses, and fatal flaws inherent to Option 2b: LIFO with Allocation Priority Methodology is provided in Table 3-4.

Table 3-4 Evaluation of Option 2b: Last-In-First-Out with Allocation Priority Methodology

Criteria	Strengths	Weaknesses	Fatal Flaws
Input data availability	All input data should be readily available from participating entities.	No	No
Calculation feasibility	Calculations derive from existing practice.	Calculating priority allocations is complicated.	Stakeholders had difficulty understanding the methodology.
Completeness and applicability of methodology approach	Accounting methodology will true-up on an annual basis and eliminate reuse of water carryover accounting from one year to the next.	Insufficient consideration of potable reuse water loss on calculation of bonus incentive could lead to large inaccuracies in certain scenarios since there is no accounting for loss when meeting the Water Loss Standard.	Water Code allows for potable reuse volumes delivered to qualified users up to the applicable threshold. This accounting methodology may not provide reasonable delivery estimates because it does not account for all distribution system losses.
Legislative balance	Methodology eliminates any lack of water conservation emphasis that may be a concern using Option 2. Methodology serves to further incentivize development of potable reuse projects by maximizing the available bonus incentive volume percentage for urban retail water suppliers that fulfill their annual water loss criteria established by the State Water Board. Methodology provides a more level playing field among urban retail water suppliers with different potable reuse water volumes and volumes served to bonus incentive eligible users.	No	No

Comparison of Options

Option 1: SB X7-7 Adaptation Methodology was removed from further consideration early in the development process because it was found to contain a fatal flaw preventing its application for annual bonus incentive volume calculations. The flaw arises from the methodology's inability to true-up within an annual accounting timeframe as the methodology focuses on tracking the resulting concentration of potable reuse within the environmental buffer (although it is correct from the viewpoint of physical processes). As a result, potable reuse water acquired for any given year can take many years to travel through the environmental buffer, if ever. This creates an unnecessary burden on urban retail water suppliers for its intended purpose for a bonus incentive. DWR agreed with stakeholders that this option should not be pursued further.

The remaining three methodologies eliminate the above pitfall by using the LIFO accounting principle. The LIFO approach also encourages further implementation of potable reuse projects by eliminating the long timeframe for the applied reuse water to progress through the environmental buffer to the urban retail water supplier for the bonus incentive application. Options 2a and 2b are variations from Option 2 and include additional considerations for retail system water loss and the calculation approach for attribution to those retail customers eligible for the bonus incentive. Table 3-5 ranks these three approaches in terms of ability to balance competing legislative objectives of water conservation and promotion of potable reuse.

In the working group meeting on June 10, 2021, a real-world example was used that included 11 years of records to calculate the bonus incentive volume outputs for the three methodology options. Input data for the calculations were provided by an urban retail water supplier for their existing IPR groundwater recharge facility with assumed input data for the UWUO and the annual audited system water loss. The example demonstrated that Option 2b yields the largest return because that option provides the priority to those eligible uses in the potable reuse water volume calculation, followed by Option 2, and then Option 2a. Option 2b provides the least amount of eligible potable water reuse volume on average because the accounting methodology is hinged upon the status of compliance with the WLS – a potential unnecessary complication for the bonus incentive calculation.

Stakeholder comments and additional input on these three options were also captured in Table 3-5. In general, stakeholders considered these options were reasonable for discussion purposes; however, each has its own issues to address. Particularly, Option 2b includes considerations of system losses that is under a different standard, posing a potentially unnecessary overlay and complexity. There was good intention in Option 2b to provide more equity among different urban retail water suppliers in claiming the bonus incentive; however, the suggested rules may require significant review and evaluations to reduce the confusion and improve practical application.

Table 3-5 Last-In-First-Out Accounting Methodologies Ranked in Terms of the Balanced Legislative Objective of Water Conservation and Promoting Potable Reuse

Criteria	Option 2	Option 2a	Option 2b
Rank (1 is best)	3	1	2
Ranking rationale	<p>Provides greater advantage to urban retail water suppliers with higher volume of eligible end uses, irrespective of the potable reuse percent contribution. Therefore, it is not a level playing field for all urban retail water suppliers.</p> <p>A simple calculation approach with readily available supporting data. But it was not considered to adequately calculate the volume of potable reuse delivered to eligible end uses.</p>	<p>Provides greater advantage to urban retail water suppliers with a higher percentage of eligible users, irrespective of the potable reuse percent contribution. Therefore, it is not a level playing field for all urban retail water suppliers.</p> <p>A somewhat-complex calculation approach with readily available supporting data. It addressed some issues of calculating deliveries to eligible end uses by including some water loss.</p>	<p>Provides a level playing field among urban retail water suppliers with different percentage potable reuse and volumes of eligible end uses, representing an approach that may be more equitable for all urban retail water suppliers.</p> <p>The priority allocation calculation was complicated and confusing to stakeholders, but it addressed some issues of calculating deliveries to eligible end uses by including some water loss.</p>
Balance of legislative objectives for water conservation and promotion of potable reuse	<p>May be detrimental to water conservation efforts since it omits consideration of potable reuse water when calculating supply side water losses. Since this accounting methodology avoids any impact to the bonus incentive volume due to water loss, it may lessen incentive to curtail water loss in the distribution system and does not adequately represent delivered amounts.</p>	<p>May overemphasize water use efficiency to the detriment of potable reuse implementation. Included water loss may reduce the calculated bonus incentive volume.</p>	<p>May overemphasize potable reuse to the detriment of water use efficiency, but does not penalize urban retail water suppliers with different customer allocations using the same amount of potable reuse water</p>

As previously mentioned, discussing the options did not mean that one option should be selected for implementation. The purpose was to use options with different features to solicit input from working group members and stakeholders. Based on the findings and input from working group members and stakeholders, DWR developed the recommendations by taking beneficial components from the identified options with necessary modifications to alleviate identified issues and challenges. The resulting recommendations are largely based on Option 2a, but use delivered amounts of potable recycled water to qualified end uses that implicitly include considerations of system losses without unnecessary complexity in the accounting methodology. Refer to Section Section 4 for additional discussion on this topic.

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4.0 Recommendations

This section provides the recommendations for the bonus incentive, including the accounting methodology and supporting data requirements.

4.1 Deferral of Recommendations for Bonus Incentive Accounting for Direct Potable Reuse

DWR recommends associated guidelines and methodologies for calculation of the bonus incentive for DPR be deferred until use is allowed through the State Water Board's adoption of the uniform water recycling criteria and regulations for DPR per AB 574.

4.2 Specifications of Bonus Incentive Accounting for Indirect Potable Reuse

The specifications of the qualifying criteria for the bonus incentive are comprehensive and specific in the authorizing legislation. Therefore, DWR does not have any additional recommendations. However, DWR recommends additional clarifications on Existing Facilities.

- The additional production of an Existing Facility with capacity expanded beyond the approved capacity in the environmental documentation for compliance with CEQA dated on or before January 1, 2019, is not qualified for a bonus incentive in an Existing Facility. The additional production, if delivered to qualified end uses by an urban retail water supplier, is qualified for a bonus incentive of up to 10 percent of its UWUO.
- Should a change of the treatment method of an Existing Facility occur, and the resulting treatment method is not microfiltration or reverse osmosis, then the qualified amount for a bonus incentive will be reduced as the facility is no longer an Existing Facility that satisfies the criteria in WC Section 10609.20(d)(4) and WC Section 10609.21(a).

Urban retail water suppliers should follow the guidelines and methodologies for bonus incentive accounting. These guidelines and methodologies provide a clear, streamlined accounting for the eligible bonus incentive that can be reconciled yearly based on potable recycled water production and delivery to qualified end uses. DWR may modify the guidelines and methodologies in the future, as needed.

As part of the technical assistance, DWR has provided the template of the IPR bonus incentive calculation in Appendix B. DWR may finalize the template after the State Water Board’s adoption.

4.3 Guidelines and Methodology of Bonus Incentive Accounting for Indirect Potable Reuse

The calculation methodology, data requirements, and details for groundwater augmentation and surface water reservoir augmentation are provided in this section. The following considerations are necessary in using bonus incentive accounting:

- UWUO is the sum of the aggregated estimates of efficient water uses based on the four established standards: IRWUS, ORWUS, CII-DIMWUS, and WLS plus any approved variances.
- The delivered amount for residential and commercial, industrial, and institutional dedicated irrigation meters to be qualified for a bonus incentive are the metered amounts.
- Where there are multiple participating entities having access to the reservoir or groundwater (which is used as an environmental buffer in the potable reuse scenario), those who do not hold contracts with the potable reuse producer cannot claim the bonus incentive. The potable water can only be claimed by those who hold the contracts with the producer based on the amount or other specification stipulated in the agreement.
- Use of a five-year running average to smooth the fluctuation in environmental buffers is consistently applied to both groundwater augmentation and surface water reservoir augmentation.

Bonus Incentive for Indirect Potable Reuse Through Surface Water Storage

Urban retail water suppliers receiving IPR through a surface water storage environmental buffer should use the following methodology to calculate their Bonus Incentive Allowable Volume. The bonus incentive calculation will allow for annual reconciliation of potable water reuse for IPR using a surface water storage environmental buffer. Where multiple urban retail water suppliers receive water supplies from the surface water storage facility, only those urban retail water suppliers with a contract for the potable reuse water may receive the bonus incentive in direct proportion to their contract agreement.

Data Needed for Accounting

- Total reservoir augmentation (acre-feet).
- Loss factor for evaporation and seepage (percent).
- Waste discharge to reservoir when the filter plant first started running (acre-feet).
- Percent apportionment to urban retail water supplier (percent).
- Residential metered deliveries (acre-feet).
- Metered dedicated irrigation deliveries using potable water (acre-feet).
- Total potable use (acre-feet).
- UWUO.

Estimated Amount for Bonus Incentive

The bonus incentive allowable volume is the lesser of:

- Qualified Water Volume = Residential and Dedicated Irrigation Meter Deliveries/ Total Potable Use Deliveries x Individual Urban Retail Water Supplier Potable Reuse x 325,828.8 gallons per acre-foot, or
- Urban Water Use Objective x (10% or 15%)/100 cap [per WC Section 10609.20(d)]

Individual Urban Retail Water Supplier Potable Reuse

Individual Urban Retail Water Supplier Potable Reuse = Percent Apportionment to Urban Retail Water Supplier/100 x Volume Entering Potable Distribution System

where:

- Volume Entering Potable Distribution System = (5-year Average Reservoir Augmentation x Loss Factor for Evaporation and Seepage) – Waste discharge to reservoir when the filter plant first starts running (if applicable).
- 5-year Average Recharge is calculated based on current and previous 4 years, or as many prior years as available, to account for variability in potable reuse production.
- Percent apportionment to urban retail water suppliers is about multiple entities sharing the buffer; it is the attributable amount for potable reuse in calculations.

Residential and Dedicated Irrigation Meter Deliveries

Residential and Dedicated Irrigation Meter Deliveries = Metered Residential Deliveries + Dedicated Irrigation Meter Deliveries

Referenced Data Provided by Appropriate Surface Water Management Authority

- Attributable potable reuse amount that is allowed for a certain urban retail water supplier to use (acre-feet).
- Loss factor for evaporation and seepage (percent).

Additional Data Provided by Urban Retail Water Supplier

- Total reservoir augmentation (acre-feet).
- Waste discharge to reservoir when the filter plant first start running (acre-feet).
- Annual use from surface water reservoir (acre-feet).
- Percent apportionment to urban retail water supplier (percent).
- Residential metered deliveries (acre-feet).
- Metered dedicated irrigation deliveries using potable water (acre-feet).
- Total potable use (acre-feet).
- UWUO.

Bonus Incentive for Indirect Potable Reuse Through Groundwater Augmentation

Urban retail water suppliers receiving IPR through a groundwater augmentation environmental buffer should use the following methodology to calculate their Bonus Incentive Allowable Volume. The bonus incentive calculation will allow for annual reconciliation of potable water reuse of IPR using a groundwater storage environmental buffer. Where multiple urban retail water suppliers receive water supplies from the groundwater basin, only those urban retail water suppliers with a contract for the potable reuse water may receive the bonus incentive in direct proportion to their contract agreement.

Data Needed for Accounting

- Total groundwater recharge per year (acre-feet).
- Total basin production (acre-feet).
- Loss factor for recharge and recovery (percent).

- Individual urban retail water supplier groundwater basin production (acre-feet).
- Total potable water entering urban retail water supplier's distribution system (acre-feet).
- Residential metered deliveries (acre-feet).
- Metered dedicated irrigation deliveries using potable water (acre-feet).
- Total potable use (acre-feet).
- UWUO.

Estimated Amount for Bonus Incentive

The bonus incentive allowable volume is the lesser of:

- Qualified Water Volume = Residential and Dedicated Irrigation Meter Deliveries / Total Potable Use Deliveries x Individual Urban Retail Water Supplier Potable Reuse x 325,828.8 gallons per acre-foot, or
- Urban Water Use Objective x (10% or 15%)/100 cap [per WC Section 10609.20(d)]

Individual Urban Retail Water Supplier Potable Reuse

Individual Urban Retail Water Supplier Potable Reuse = (Loss Factor for Recharge and Recovery x 5-Year Average Recharge in acre-feet / Total Basin Production in acre-feet) x Individual Urban Retail Water Supplier Groundwater Basin Production in acre-feet.

- Total Basin Production is metered groundwater pumped by all users within the groundwater basin, including urban retail water suppliers and self-supplied users.
- Loss Factor for Recharge and Recovery:
 - For losses provided as a volume: Loss Factor for Recharge and Recovery = $1 - (\text{Potable Reuse Losses in the Recharge and Recovery Processes in acre-feet} / \text{5-year Average Recharge in acre-feet})$.
 - For losses provided as a percent: Loss Factor for Recharge and Recovery = $(100 - \text{Percent Losses}) / 100$.

Losses can include but are not limited to loss to the ocean, loss to other groundwater basins, evaporative losses, and conveyance losses.

- Five-year Average Recharge in acre-feet is calculated based on current and previous four years, or as many prior years as available, to account for variability in potable reuse production.
- Individual Urban Retail Water Supplier Groundwater Basin Production is equal to the total metered volume of groundwater production for an individual producer for Potable Use (urban retail water supplier) in acre-feet.

Residential and Dedicated Irrigation Meter Deliveries

Residential and Dedicated Irrigation Meter Deliveries in acre feet = Metered Residential Deliveries in acre-feet + Dedicated Irrigation Meter Deliveries in acre-feet

Referenced Data Provided by Appropriate Groundwater Basin Management Authority

- Attributable potable reuse amount that is allowed for a certain urban retail water supplier to use in the groundwater basin (acre-feet).
- Loss factor for recharge and recovery (percent or acre-feet).

Additional Data Provided by Urban Retail Water Supplier

- Total groundwater recharge per year (acre-feet).
- Total basin production (acre-feet).
- Annual use from groundwater extraction (acre-feet).
- Individual urban retail water supplier groundwater basin production (acre-feet).
- Total potable water entering urban retail water supplier's distribution system (acre-feet).
- Residential metered deliveries (acre-feet).
- Metered dedicated irrigation deliveries using potable water (acre-feet).
- Total potable use (acre-feet).
- UWUO.

4.4 Reporting Requirements

All the supporting documentation and data used for the calculations along with calculations for the five-year running average with supporting material and all reporting

requirements as per WC Section 10608.34 must be submitted by the urban retail water supplier seeking to use the bonus incentive to adjust their UWUO.

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5.0 Glossary

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

bonus incentive. The adjustment to the annual urban water use objective that an urban retail water supplier may have based on the eligible potable reuse volume, as described in California Water Code Section 10609.20(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).

direct potable reuse. The planned introduction of recycled water either directly into a public water system, as defined in Section 116275 of the California Health and Safety Code, or into a raw water supply immediately upstream of a water treatment plant. Direct potable reuse includes, but is not limited to, the following: (1) Raw water augmentation means the planned placement of recycled water into a system of pipelines or aqueducts that deliver raw water to a drinking water treatment plant that provides water to a public water system, as defined in Section 116275 of the California Health and Safety Code. (2) Treated drinking water augmentation means the planned placement of recycled water into the water distribution system of a public water system, as defined in Section 116275 of the California Health and Safety Code, as defined in California Water Code Section 13561(b).

environmental buffer. A water body such as an aquifer, wetland, river, or reservoir which provides a number of benefits. Benefits include contaminant removal, dilution and blending, and time to detect and respond to failures before final treatment and distribution. These benefits, in conjunction with varying levels of upstream treatment, provide the necessary public health assurances required of potable reuse projects.

Existing Facility. An existing facility for bonus incentive is one that meets all of the following: (1) the facility has a certified environmental impact report, mitigated negative declaration, or negative declaration on or before January 1, 2019; (2) the facility begins producing and delivering potable reuse water on or before January 1, 2022; (3) the facility uses microfiltration and reverse osmosis technologies to produce the potable reuse water, as described in California Water Code Section 10609.20(d)(4); and (4) the North City Project, phase one of the Pure Water San Diego Program, for which an environmental impact report was certified on April 10, 2018 are also included, as defined in California Water Code Section 10609.21(a).

indirect potable reuse. The planned introduction of recycled water into a public water system, as defined in Section 116275 of the California Health and Safety Code, through the use of an environmental buffer such as that in the indirect potable reuse for

groundwater recharge or reservoir water augmentation as described in California Water Code Sections 13561(c) and 13561(d).

indirect potable reuse for groundwater recharge. The planned use of recycled water for replenishment of a groundwater basin or an aquifer that has been designated as a source of water supply for a public water system, as defined in Section 116275 of the California Health and Safety Code, as defined in California Water Code Section 13561(c).

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).

Last-In-First-Out. Last-In-First-Out assumes recycled water entering an environmental buffer does not mix with the environmental buffer volume of water from other sources and that this recycled water is extracted first when using the environmental buffer water supplies.

Other Facility. Other facility for bonus incentive is one that is not an Existing Facility for bonus incentive; that is, a facility, using any approved technologies for potable recycled water production, that either has a certified environmental impact report, mitigated negative declaration, or negative declaration completed after January 1, 2019, or begins production and delivery of potable recycled water after January 1, 2022.

potable reuse. Direct potable reuse, indirect potable reuse for groundwater recharge, and reservoir water augmentation, as defined in California Water Code Section 13561, as defined in California Water Code 10608.12(o).

public water system. A system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year. A public water system includes the following: (1) any collection, treatment, storage, and distribution facilities under control of the operator of the system that are used primarily in connection with the system; (2) any collection or pretreatment storage facilities not under the control of the operator that are used primarily in connection with the system; and (3) any water system that treats water on behalf of one or more public water systems for the purpose of rendering it safe for human consumption, as defined in California Health and Safety Code Section 116275(h).

raw water augmentation. The planned placement of recycled water into a system of pipelines or aqueducts that deliver raw water to a drinking water treatment plant that provides water to a public water system, as defined in California Health and Safety Code Section 116275, as defined in California Water Code 13561(b)(1).

recycled municipal wastewater contribution. The running monthly average of total volume of the recycled municipal wastewater used for replenishing a groundwater basin and credited diluent water for the preceding 120 months, as described in California Code of Regulations Title 22 Section 60320.116(a).

recycled water. Water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource, as defined in California Water Code Section 13050(n), as defined in California Water Code Section 10608.12(q).

reservoir water augmentation. The planned placement of recycled water into a raw surface water reservoir used as a source of domestic drinking water supply for a public water system, as defined in California Health and Safety Code Section 116275, or into a constructed system conveying water to such a reservoir, as defined in California Water Code 13561(d).

Special Landscape Area. An area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface, as defined in California Code of Regulations, Title 23, Section 491(iii).

treated drinking water augmentation. The planned placement of recycled water into the water distribution system of a public water system, as defined in Health and Safety Code Section 116275, as defined in California Water Code 13561(b)(2).

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).

water loss. The total of apparent loss and real loss (California Code of Regulations, Title 23, Section 638.1(a) and Section 638.1(k), respectively) in an urban retail water supplier's system. Apparent loss means loss due to unauthorized consumption and/or nonphysical (paper) loss attributed to inaccuracies associated with customer metering or systematic handling errors. Real loss means the physical water loss from the pressurized potable water system and the urban retail water supplier's potable water storage tanks, up to the point of customer consumption.

6.0 References

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

- DWR (California Department of Water Resources). September 2022. Recommendations for Urban Water Use Efficiency Standards, Variances, Performance Measures, and Annual Water Use Reporting. DWR Report Number: WUES-DWR-2021-01A.
- DWR (California Department of Water Resources). September 2022. Recommendations for Guidelines and Methodologies for Calculating Urban Water Use Objective. DWR Report Number: WUES-DWR-2021-01B.
- DWR (California Department of Water Resources). September 2022. Recommendations for Outdoor Residential Water Use Efficiency Standard. DWR Report Number: WUES-DWR-2021-02.
- DWR (California Department of Water Resources). September 2022. Recommendations for Commercial, Industrial, and Institutional Outdoor Irrigation of Landscape Areas with Dedicated Irrigation Meters Water Use Efficiency Standard. DWR Report Number: WUES-DWR-2021-03.
- DWR (California Department of Water Resources). September 2022. Recommendations for Variance for Significant Landscaped Areas Irrigated with Recycled Water Having High Levels of Total Dissolved Solids, Methods of Calculation, and Supporting Data Requirements. DWR Report Number: WUES-DWR-2021-09.
- DWR (California Department of Water Resources). September 2022. Stakeholder Outreach Summary for Developing Urban Water Use Efficiency Standards, Variances, and Performance Measures. DWR Report Number: WUES-DWR-2021-20.
- DWR (California Department of Water Resources). September 2022. Urban Water Use Efficiency Recommendation Package: Glossary and Abbreviations and Acronyms. DWR Report Number: WUES-DWR-2021-21.

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Appendix B – Template for Calculating Indirect Potable Reuse Bonus Incentive

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Definitions of Groundwater Basin

Column	Column Header	Definition
1	Total Groundwater Recharge - AF	Volume of potable reuse recharged into the groundwater basin
2	5-Year Average Recharge - AF	5 -Year average of the total groundwater recharge - current and previous 4 years, or as many prior years as available, to account for variability in potable reuse production
3	Loss Factor for Recharge and Recovery	Percentage of potable reuse losses in the recharge process and in the recovery process. Losses can include but are not limited to: losses to the ocean, loss to other groundwater basins, evaporative losses, and conveyance losses.
4	Volume of Potable Reuse Water Into Basin After Loss	Volume of total potable reuse groundwater recharge after losses
5	Total Basin Production	Metered groundwater pumped by all users within the groundwater basin, including water suppliers and self-supplied users.
6	Potable Reuse as a Percent of Total Basin Production	Total volume of potable reuse groundwater recharge after losses divided by the total basin production. Calculates the percentage of potable reuse in the total basin production.
7	Individual Water Supplier Groundwater Production for Potable Use	Total metered volume of groundwater production for an individual producer for Potable Use (water retailer)
8	Individual Water Supplier Potable Reuse	Multiplies the percentage of potable reuse in the total basin production by the individual producers production to calculate the individual water supplier's potable reuse.
9	Total Potable Water Entering Water Supplier's Distribution System	Total volume of potable water - all sources - entering the water supplier's (water retailer) distribution system
10	Residential Metered Deliveries	Volume of potable water delivered to residential customers. Based on metered billing data.
11	Dedicated Irrigation Metered Deliveries	Volume of potable water delivered to dedicated irrigation/landscape customers. Based on metered billing data.
12	Residential and Dedicated Irrigation Deliveries as % of Total Potable Water Entering the Distribution System	Sum of metered residential and dedicated irrigation deliveries as a percentage of total potable water entering the individual water supplier's distribution system.
13	Total Potable Reuse Incentive	Individual water supplier's potable reuse multiplied by percentage of residential and dedicated irrigation to calculate total potential potable reuse incentive.
14	Water Use Objective	Water supplier's Water Use Objective
15	Bonus Incentive Cap	Calculated as 10 % or 15% of water supplier's water use objective
16	Bonus Incentive	If the Total Potable Reuse Incentive is lower than or equal to the Water Use Objective, then it is used as the volume of water for the Bonus Incentive. If the Total Potable Reuse Incentive is more than the Bonus Incentive Cap, then the Bonus Incentive is equal to the Bonus Incentive Cap.

Instructions to use the spreadsheets:

1. Follow the definitions provided for groundwater basin (on page Definitions - Groundwater Basin) and surface reservoir augmentation (on page Definitions - Reservoir Augmentation) for different terms and abbreviations used in the calculations.
2. Fill in the data required for each calculation method (all yellow columns must be filled based on data from the urban retail water supplier.)
3. Read the comments provided in some of the cells, if there is any, to finish the calculations for that step.

Potable Reuse Bonus Incentive Calculation																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
FY or CY Ending	Total Groundwater Recharge	5-Year Average Recharge (AF) (Calculated)	Loss Factor for Recharge & Recovery (Calculated)	(2) x (3) = (4) Volume of Potable Reuse Into Basin After Loss (AF) (Calculated)	Total Basin Production (AF)	(4)/(5) = (6) Potable Reuse as a Percent of Total Basin Production (Calculated)	Individual Water Supplier Groundwater Basin Production (AF)	(6)x(7) = (8) Individual Water Supplier Potable Reuse (AF) (Calculated)	Total Potable Water Entering Water Supplier's Distribution System [note 1]	(10) Residential Metered Deliveries (AF) (Calculated)	(11) Potable Dedicated Irrigation Metered Deliveries (AF) (Calculated)	(10 + 11)/(9) = (12) Residential and Dedicated Irrigation Deliveries as % of Total Potable Water Entering the Distribution System [note 2] (Calculated)	(12) * ((8) = (13) Total Potable Reuse Incentive (AF) (Calculated)	Water Use Objective (14)	Bonus Incentive Cap = Water Use Objective (14) * (10 or 15 percent) = (15) [note 3] (Calculated)	Bonus Incentive = If Total Potable Reuse Incentive (13) is less than Cap (14), then (13) else use Cap (15) [note 4] (Calculated)
2010	65,950	65,950	97.2%	64,130	285,575	22.46%	45,057	10,118	52,900	31,477	4,712	68%	6,922			
2011	66,083	66,017	97.2%	64,197	259,861	24.70%	37,703	9,314	51,918	30,868	4,252	68%	6,301			
2012	71,678	67,904	97.3%	66,084	241,082	27.41%	43,340	11,880	54,187	31,991	4,741	68%	8,053			
2013	72,877	69,147	97.4%	67,327	309,295	21.77%	44,024	9,583	56,300	32,882	5,316	68%	6,502			
2014	66,167	68,551	97.3%	66,731	330,782	20.17%	49,607	10,008	58,537	33,765	5,671	67%	6,742			
2015	76,546	70,670	97.4%	68,850	305,259	22.55%	45,284	10,214	57,692	32,345	5,327	65%	6,669			
2016	100,347	77,523	97.7%	75,703	277,090	27.32%	41,826	11,427	49,328	28,349	3,705	65%	7,426			
2017	94,081	82,004	97.8%	80,184	301,637	26.58%	43,857	11,658	50,275	29,652	4,126	67%	7,833			
2018	103,990	88,226	97.9%	86,406	236,916	36.47%	42,629	15,547	54,266	31,948	4,740	68%	10,511			
2019	93,399	93,673	98.1%	91,853	303,496	30.26%	42,564	12,882	51,790	30,886	4,065	67%	8,694			
2020	94,235	97,211	98.1%	95,391	277,195	34.41%	43,291	14,898	51,141	31,840	4,211	70%	10,502			

Example data shown for illustrative purposes. Actuals would be used.

Notes:

[note 1] This represents the total potable water entering the distribution system after accounting for any conveyance and treatment losses.

[note 2] This represents the % of potable water entering the system that is delivered to residential and dedicated irrigation accounts.

[note 3] Determine if the facility is an existing facility or new facility. Then, determine 15 or 10% cap and calculate this column.

[note 4] Based on calculations in step (15), calculate this column.

Definitions Reservoir Augmentation

Column	Column Header	Definition	Notes related to example.
1	Total Reservoir Augmentation - AF	Volume of potable reuse for reservoir augmentation	
2	5-Year Average Recharge - AF	5 -Year average of the total reservoir augmentation - current and previous 4 years, or as many prior years as available, to account for variability in potable reuse production	
3	Loss Factor for Evaporation and Seepage	Percentage of potable reuse losses due to evaporation and seepage.	
4	Volume of Potable Reuse Entering WTP	Volume of total potable reuse entering treatment plant after losses	
5	WTP Filter to Waste	Waste discharge to reservoir when the filter plant first start running	
6	Retail Water Supplier's Potable Reuse	Total volume of potable reuse	
7	Meter Residential Use - AF	Total residential use of potable water using water meter billing data	
8	Meter Dedicated Irrigation Potable	Volume of potable water delivered to dedicated irrigation/landscape customers. Based on metered billing data.	
9	Total Potable Use with System Loss (AF)	Volume of potable reus water including system loss	
10	Residential and Dedicated Irrigation Deliveries as % of Total Potable Water Entering the Distribution System	Volume of potable water delivered to dedicated irrigation/landscape customers.	
11	Total Potable Reuse Bonus Incentive (AF)	Individual water supplier's potable reuse multiplied by percentage of residential and dedicated irrigation to calcluate total potential potable reuse incentive.	
12	Water Use Objective	Water supplier's Water Use Objective	
13	Bonus Incentive Cap	Calculated as 10 % or 15% of water supplier's water use objective	
14	Bonus Incentive	If the Total Potable Reuse Incentive is lower than or equal to the Water Use Objective, then it is used as the volume of water for the Bonus Incentive. If the Total Potable Reuse Incentive is more than the Bonus Incentive Cap, then the Bonus Incentive is equal to the Bonus Incentive Cap.	

Instructions to use the spreadsheets:

1. Follow the definitions provided for groundwater basin (on ppage Definitions - Groundwater Basin) and surface reservoir augmentation (on page Definitions - Reservoir Augmentation) for different terms and abbreviations used in the calculations.
2. Fill in the data required for each calculation method (all yellow columns must be filled based on data from the urban retail water
3. Read the comments provided in some of the cells, if there is any, to finish the calculations for that step.

Potable Reuse Bonus Incentive Calculation - Reservoir Water Augmentation																
Fiscal Year Ending	Total Reservoir Augmentation (Acre-Feet)	(1) 5-Year Average Reservoir Augmentation (Acre-Feet) (Calculated)	(2) Loss Factor for Evaporation & Seepage	(1) x (2) = (3) Volume Entering WTP (Acre-Feet) (Calculated)	(2a) WTP Filter to Waste (Acre-Feet)	(3) - (2a) = (4) Volume Entering Potable Distribution System (Acre-Feet) (Calculated)	(5) Percent apportionment to Retail Water Supplier	(4)x(5) = (6) Retail Water Supplier Potable Reuse (Acre-Feet) (Calculated)	(7) Metered Residential Use (AF)	(8) Metered Dedicated Irrigation - Potable (AF)	(9) Total Potable Use (AF) with system loss of X%	(7+8)/(9) = (10) Residential and Dedicated Irrigation as % of Total Potable Use (Calculated)	(6) x (10) = (11) Total Potable Reuse Bonus Incentive (AF) (Calculated)	Water Use Objective (12)	Bonus Incentive Cap = Water Use Objective (12) * (10 or 15%) = (13) (Calculated) [note 1]	Bonus Incentive = If Total Potable Reuse Incentive (11) is less than Cap (13), then (11) else use Cap (13) [note 2] (Calculated)
2010	-	-														
2011	-	-														
2012	-	-														
2013	-	-														
2014	-	-														
2015	-	-														
2016	-	-														
2017	-	-														
2018	2,350	2,350	98.5%	2,315	-	2,315	70.60%	1,634	16,132	642	20,601	81.42%	1,331			
2019	3,154	2,752	98.5%	2,711	-	2,711	70.60%	1,914	14,288	620	17,872	83.41%	1,596			
2020	4,256	3,253	98.5%	3,205	-	3,205	70.60%	2,262	15,988	716	19,771	84.49%	1,911			

[1] Potable reuse is advanced treated recycled water for augmentation of Las Virgenes Reservoir. The yearly totals are apportioned among the members of the Las Virgenes-Triunfo Joint Powers Authority (LVMWD and TWSD) based on agreement: LVMWD - 70.6% and TWSD - 29.4%.

[2] Loss factor provided by LVMWD, includes losses due to evaporation and seepage.

[3] WTP Filter to Waste = (3) / Total Volume Entering WTP x Total WTP Filter to Waste.

Notes:

[note 1] Determine if the facility is an existing facility or new facility. Then, determine 15 or 10% cap and calculate this column.

[note 2] Based on calculations in Column P, calculate this column.

Recommendations for Bonus Incentive Methods of Calculation and Supporting Data Requirements |
Appendix B – Template for Calculating Indirect Potable Reuse Bonus Incentive

WATER TYPE	TYPE CODE	FY2009-2010	FY2010-2011	FY2011-2012	FY 2012-2013	FY 2013-2014	FY2014-2015	FY 2015-2016	FY2016-2017	FY 2017-2018	FY2018-2019	FY2019-2020
W_T_2	TYPE CODE_Name	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
Potable	Residential - Single, Apt and Condo	25887.2	25001	25973.4	26699.7	27325.4	25630.1	22061.3	23207	25250.3	24235.4	24954.5
Potable	Residential - Fireline	242.6	258.2	270.1	283.1	302.7	29.8	19.3	38.5	24.2	0.3	0
Potable	Commercial - Fireline	0.6	0.4	0.8	0.7	1.1	0	0	0	NA	21.8	43.4
Potable	Commercial - Potable	7585.5	7632	8020.8	8352.8	8802.6	8390.6	8006.5	7677.8	8427.5	8060.4	7167.6
Potable	Industrial - Potable	4711.4	4732.9	4712.5	4782.7	4890.9	6233.1	5032.6	4749.4	4822.5	4779.8	4581
Potable	Public Authority - Potable	2292.8	2304.8	2372.6	2458.3	2458.2	2583.1	2220.4	2098.3	2193.3	2072.8	1454.1
Potable	Construction/Temporary - Potable	126.8	173.9	271.8	378.1	738.8	862.6	442	328.9	398.6	306.4	238.1
Potable	Landscape Irrigation - Potable	4712.3	4252.1	4741.3	5316	5670.8	5326.5	3704.5	4126.3	4739.7	4065.3	4211
Potable	Agricultural - Potable	209.5	183.3	228.5	206	202	241.4	116.2	139.4	132	89.1	116.8
Potable	Residential - Multi Family Condo - Potable and Sewer	1560.1	1556.4	1602.8	1595.2	1714.9	1852.6	1534.2	1584.9	1670.8	1617.2	1646.7
Potable	Residential - Multi Family Apartment	90.1	96.6	94.9	98	96.8	95.5	84.4	81.2	83.2	79.2	78.4
Potable	Residential - Multi Family Apartment - Potable & Sewer	3651	3911.5	4023.8	4186	4326.3	4480.8	4414.8	4543.4	4697.4	4725.2	4918.4
Potable	Residential - Multi Family Condo - Potable	288.9	302.8	295.9	303.3	301.2	285.7	254.6	235.3	246.1	229	241.7
Recycled	Commercial - SAC							24.9	30.7	38.4	44.6	113.8
Recycled	Construction/Temporary	0	0	0	0	0	0	0	0	147.2	12.5	0
Recycled	Agricultural - ILP	4362.5	2598.6	1833.4	1833.7	1956.8	1864.5	1768.9	1486	1422.6	793	598.5
Recycled	Agricultural - SAC						0	30.7	6.7	5.3	1.9	0
Recycled	IRV PARK-ILP	306	211	284.9	276.6	339.9	310.2	207.8	231	244.2	204.2	267.7
Recycled	CARPENTER IRR											
Recycled	Entity X	NA	NA	NA	NA	NA	NA	NA	NA	34.7	26	29.1
Recycled	Commercial - Recycled	149.9	139.5	305.2	298.9	310.5	296.9	304.2	247.9	303.5	497.1	447.1
Recycled	Industrial - Recycled	32.7	37.4	52.9	46.9	34.6	60.5	90.3	91.5	100.3	51.3	23.4
Recycled	Construction/Temporary Recycled	4.6	64.3	95.5	358.1	360.4	544.6	802.1	710.7	746	222.5	239
Recycled	Landscape Irrigation Recycled	17950.6	16090.8	19025.4	21678.2	23813.2	26541.7	20448	21615.6	25991.2	22232.1	22346.4
Recycled	Landscape Irrigation Lake Filler	53.7	343.3	110.6	137.3	138.2	103.4	106.6	135.5	170.2	97.7	113.6
Recycled	Residential - Landscape Irrigation	571.7	586.1	654.6	722.9	784	286.5	664.1	690.5	876.4	755.4	740.1
Recycled	Agricultural - Recycled	1694.5	2264.8	4424.4	4723.5	4225	3968.9	4149.4	3162.3	3004.5	2216.4	5236.7
Recycled	Landscape Irrigation - ILP	680.6	620.7	342.6	292.8	328.4	336.3	257	275.4	310.8	246.3	173.5
Recycled	Green Acre Project (GAP)	1724.69	2102.97	1826.1	699.3	26.9	0	0	1205.5	259.7	1360.2	1788.4
	Total Potable	51358.8	50405.9	52609.2	54659.9	56831.7	56011.8	47890.8	48810.4	52685.6	50281.9	49651.7
	Residential - Potable (Excluding Fireline)	31477.3	30868.3	31990.8	32882.2	33764.6	32344.7	28349.3	29651.8	31947.8	30886	31839.7
	Dedicated Irrigation - Potable (Row 10 ABOVE)	4712.3	4252.1	4741.3	5316	5670.8	5326.5	3704.5	4126.3	4739.7	4065.3	4211

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