October 25, 2019

E. Joaquin Esquivel, Chair
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

**Subject: Proposed Framework for Performance Standards for Water Loss and Economic Model**

Dear Chair Esquivel,

The coalition of organizations listed below appreciate the opportunity to provide feedback on the proposed economic model and Proposed Framework for Performance Standards for Water Loss (Framework) released by the State Water Resources Control Board (State Board) earlier this year.

The State Board held the first public stakeholder meeting about water loss on March 9, 2018, in Sacramento. Since then, there have been five more workshops and numerous meetings with stakeholders to discuss the State Board's current approach, the alternative approach developed by the California Municipal Utilities Association (CMUA), and the economic model. The coalition appreciates this continual outreach from State Board staff and Board Members and their coordination with Urban Retail Water Suppliers (URWS) to develop regulations and an economic model that will improve water loss management and control in California.

**Water Loss in California Is Unique**

A multitude of factors — such as geography, climate and population — make California unique when it comes to managing water. The passage of AB 1668 and SB 606 set a new path for making water conservation a California way of life. The legislation requires the State Board to develop new urban efficiency standards for indoor and outdoor use and water lost to leaks, and reasonable amounts of system loss for URWS.[1][2] Any regulations proposed by the State Board related to water loss should take into account the other areas in which URWS could reduce water usage. It is also important to understand how water loss in California compares to the rest of the nation.

In 2017, URWS in California submitted the first of their mandatory validated water loss audits to the Department of Water Resources. The 2017 reports resulted in the largest water loss dataset in the country. The second set of reports a year later, in 2018, created an even larger dataset.

Other states, such as Georgia and Washington, have engaged in some water loss activity, but California's current endeavor is leaps and bounds ahead of anything else being done in the United States. On top of this new regulatory endeavor, results from the national Water Audit

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[1] SWRCB Fact Sheet - Water Efficiency Legislation Will Make California More Resilient to Impacts of Future Droughts
[2] CWC 10608.12(t)

Data Initiative show that when compared to California's 2017 reports, California URWS median real losses are 40% less than utilities across the nation.[3][4]

It is important that any water loss efficiency standards in California are based on strong data and take into account California's unique water management system.

Our coalition's comments focus on several key areas that should be addressed prior to the adoption of regulations. The coalition recommends:

- improving water loss data prior to the adoption of individual standards and inputs into the economic model;
- implementing peer review and beta testing of the economic model to ensure inputs and formulas are correct;
- following standard industry practices rather than State Board staff policy decisions for input within the economic model;
- including within the economic model the cost of additional requirements contained in State Board staff's proposed Framework;
- clarifying the data exchange process between URWS and the State Board;
- considering CMUA's simplified approach to water loss regulations as a solution that would address shortcomings in the current data and enable refinements to the current economic model; and
- providing funding for technical assistance and training for URWS.

**Water Loss Data in California Must Improve Before Individual Standards and Economic Model Inputs Are Set**

Despite efforts by California and URWS to collect and better understand water loss data over the last three years, there are still significant gaps in the quality and usefulness of the data. As currently proposed, the State Board's Framework and economic model rely on two main sources: annual validated water loss reports, which URWS have been preparing and submitting since 2017; and the electronic annual report (eAR). The coalition is concerned that, at this stage, there is insufficient quality and extent of data gathered from these sources to set appropriate individual efficiency standards for URWS.

Without thorough data, any attempt to set economic levels of intervention based on standards is problematic. The Water Research Foundation's Project 4695 concludes that target-setting for key water loss performance indicators should not be attempted until the data being relied upon is valid and of "sufficient duration," three to five years after the validity of the data have been established.[5] The coalition is concerned that establishing standards for 2027 and 2035 based on a limited dataset and with insufficient confidence in the data's quality will result in potentially costly and ineffective actions taken by URWS to satisfy the regulatory requirements.

**Prior to Being Finalized, the Economic Model Must be Peer Reviewed and Tested**

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[3] https://www.awwa.org/Resources-Tools/Resource-Topics/Water-Loss-Control
[4] The Water Audit Data Initiative: Five Years and Accounting
[5] Guidance on Implementing an Effective Water Loss Control Plan

As currently constructed, the economic model relies on several inputs and defaults that are based on data from a small number of URWS that voluntarily participated in the University of California Davis pilot program tasked with developing an economic model. These URWS spent significant time working with the university to collect and submit information that could better inform the development of potential actions. The coalition appreciates UC Davis for working with URWS of varying size and capacity to help develop the UC Davis draft economic model.

Only two of the 10 URWS pilot participants were able to gather all data requested by UC Davis, which demonstrates the difficulty of obtaining the necessary data. The UC Davis team indicated to pilot study participants that without "utility-specific" data, the model could not be relied upon to develop appropriate utility-specific individual standards. There were huge variations in data and system profiles among the 10 pilot agencies, according to the UC Davis team. To address any data gaps, the State Board's modified version of the UC Davis model intends to use default data derived from limited datasets or national data derived from systems that may vary significantly from those used by individual California URWS. The coalition believes the State Board's proposed economic model and the use of default values and profiles to fill in data gaps will result in setting inappropriate individual performance standards for most URWS.

Prior to the adoption of the regulations, the coalition has recommendations to improve confidence in the finalized model: The model must be peer reviewed and beta tested prior to being utilized for setting standards and calculating intervention strategies. A peer review will ensure the appropriate metrics are considered, and a beta test will ensure that formulas and weighting are done in an appropriate manner. Multiple URWS that have tested the economic model have cited concerns with data entry fields that appear to do nothing when data is entered or adjusted. The coalition also recommends that a comparison be done of the UC Davis model and the State Board's model, along with a justification for changes.

**Inputs Determined by Staff Policy Decisions Are Inappropriate**

*Discount Rate*

At the State Board's workshop on September 23, 2019, State Board staff noted that several key inputs in the model, such as the increase to the cost of water and discount rate, were changed from the UC Davis model (which allowed URWS to input key values within recommended ranges) and instead uses hard-coded inputs in the State Board model, which reflects "staff policy decisions." The coalition believes these policy decisions are inappropriate and not based in on the ground realities. For example, State Board staff recommends a discount rate of 1%, an amount that is not in line with other recent state and federal figures. The California Water Commission determined the discount rate for all projects eligible for Proposition 1 (2014) funding, to be 3.5%.[6] The U.S. Bureau of Reclamation recommends a 2.985% rate for federal fiscal year 2019.[7] The study cited in the State Board's model appears to only recommend the use of a lower discount rate (1.4%) in order to calculate the economic value of the societal impacts of climate change *over multiple generations*.

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[6] 23 CCR § 6004

[7] https://www.federalregister.gov/documents/2018/12/18/2018-27331/change-in-discount-rate-for-water-resources-planning

*Increase to the Cost of Water*

The model presumes an 8.2% increase to the cost of water, whereas numerous water rate studies have found the cost of water would increase only 3 to 5%. For example, Metropolitan Water District of Southern California, which supplies water to the majority of URWS in Southern California, has projected a 4% rate increase over the next ten years and found no constraints in its capacity to meet projected demands. The coalition believes these policy-based data inputs in the economic model are inappropriate and are skewing the results, which will in turn require URWS to take additional actions based on what could be a flawed model. The increase in cost of water reference to the Circle of Blue 2019 report on water rates is not specific enough to locate the actual study and should be clarified. Notably, the Circle of Blue website shows data on rate increases in the 8% range only for 2010-11; the website's more recent data on water rate increases is in the 3% range.

*Customer Retail Unit Cost*

Our coalition strongly recommends utilizing Variable Production Cost, which is consistent with industry standards, when accounting for the costs and benefits of real water loss. The Customer Retail Unit Cost (CRUC), which is the preferred measure in the model by State Board staff may only be appropriate when measuring the value of both real and apparent losses. The methodologies for calculating CRUC aren't consistent and could include costs that have little to no correlation to system leakage.

Furthermore, the coalition believes that any standards developed from the model must not contain inputs that could result in legal challenges requiring URWS to take into account costs that are outside of providing service to customers.

**Proposed Framework and Model Rely on Expanded Requirements and Recommendations for Accurate Standards**

As presented during the aforementioned September 23 workshop, the economic model uses two potential elements of water loss control to calculate individual standards: leak detection surveys and pressure reduction. In the economic analysis, the State Board model fails to incorporate the upfront costs to conduct either of these activities and makes the incorrect assumption that both measures are cost-effective and feasible for URWS to implement.

*Leak Detection Surveys*

The model does not recognize that leak detection surveys may not be cost-effective to implement, particularly for URWS with low levels of leakage.

*Pressure Reduction*

The approach to pressure reduction in the State Board model compares a UWRS average operating pressure to a target pressure. How the target pressure is calculated is not well defined. Utilities must operate their systems to maintain minimum pressure at critical nodes. The use of average pressure would result in some percentage of the system being under-pressured. The only way a utility could address this would be to subdivide pressure zones, which is extremely costly,

has potential water quality impacts, and may not be feasible. Pressure is highly specific to each utility and should be based on a utility-specific hydraulic model.

State Board staff has indicated that less than 25% of URWS have completed such a model. While not requiring a hydraulic model, the three default profiles proposed by the State Board cannot account for the significant variations in systems throughout California due to differences in topography, critical nodes, age of infrastructure, fire flow requirements and other factors that affect pressure requirements. In addition, default values could limit the choices available to URWS when deciding how to best meet the overall water use objective as required by the conservation legislation.

Incorrect assumptions in the economic model's utility input section will result in incorrect results in the rest of the model, such as the valuation of benefits of potential intervention strategies, such as leak detection and repair, pressure reduction and, most importantly, the setting of the standards themselves.

*Pipe Replacement*

The State Board indicated it is considering the inclusion of pipe replacement requirements within the Framework. As noted in the East Bay Municipal Utility District's presentation on pipe replacement at the September 23 workshop, there are several reasons for pipe replacement, such as poor or weak water flow, relocating pipe due to other infrastructure considerations, and transmission improvements, as well as the potential reduction of water loss. The decision to prioritize pipe replacement is utility-specific and the economics of pipe replacement need to be considered from the perspective of full lifecycle costs.

The Framework requires URWS to conduct three leakage component analyses between 2022 and 2026, in addition to annual pressure surveys. These additional requirements will increase the amount of time and resources URWS must invest to potentially meet unfunded state mandates. The coalition is concerned the State Board may consider mandating additional control actions for regardless of the value of these efforts in the overall urban water use objectives. The coalition recommends any proposed future requirements be considered after a thorough revaluation of the efficacy of the previous efficiency standards.

**Responsibility for Data Input Is Still Unclear**

On several occasions, State Board staff has not given a decisive indication about who or what entity will be responsible for inputting URWS data into the model that ultimately will be used to set the water loss standards. At one point, staff indicated it would be the responsibility of the URWS to populate the model with data and then submit those inputs to the State Board for review. At other times, State Board staff said the SWRCB would populate each URWS model and those water suppliers then could provide alternative inputs into the model to account for adjustments.

The coalition recommends that URWS be designated as the parties responsible for collecting and submitting utility-specific data to the state of California for review. If the state has neither data of its own to be placed in the model, nor hard coded inputs, then the coalition requests that those figures be ranged so that URWS are able to make adjustments. This would reduce the burden on

administrative staff and allow more time to be spent working with underperforming URWS that have incomplete or inaccurate data.

**An Alternative Approach Should be Considered**

As presented at the September 23 workshop, the coalition supports the consideration of an alternative approach to the State Board's current Framework and economic model. CMUA's proposed alternative approach has several similarities to the Board's approach, including a requirement that all systems take actions to improve water loss control and reduce water loss. This alternative approach proposes that all systems conduct a leakage component analysis and perform annual pressure surveys.

The alternative approach differs from the Framework in how it would calculate performance standards. Specifically, the alternative approach would utilize the 85$^{th}$ percentile of gallons per connection per day per PSI, or gallons per mile of water main per day based on the three-year average values from validated water audit data sets. The coalition believes this is an appropriate level because it highlights systems that are outside of the 85$^{th}$ percentile — representing approximately 26% of total real losses reported and those that could be early candidates for any technical, managerial and financial assistance should funding be available.

The Framework and CMUA's alternative approach would handle differently those systems with low water loss. The coalition supports the alternative approach that allows exemptions from additional actions for suppliers with validated water audits and a data validity grade of Level 3 score that demonstrate low water loss. This language reflects the intent of SB 555[8] and would allow compliant URWS to focus their efforts in other important areas, such as indoor or outdoor water use. By requiring URWS to achieve a Level 3 data validity, the alternative approach would ensure the State Board can be confident in the accuracy and quality of data submitted by URWS.

The coalition has serious concerns about State Board staff's intent to utilize informational orders to further scrutinize water systems with water losses of less than 20 gallons per connection per day. State Board staff has indicated that compliance could be fulfilled by submitting additional information. The alternative approach would account for this issue by requiring systems to have a data validity score in the Level 3 range in order for their data to be considered valid. When queried at the September 23 workshop about what would constitute sufficient information for validating water loss below 20 gpcd, State Board staff indicated that a Grade Level 3 data validity would be sufficient.

Our alternative approach also recommends a compliance path for water suppliers that may not meet a set standard but are currently undertaking efforts to reduce water loss through programs such as, but not limited to, meter calibration and flow testing, active leak detection and attempted leak mitigation. Providing a pathway to compliance would account for the uncertainty that is inherent in water loss control and would support the development of volumetric performance standards based on system-specific data.

In contrast to the Board's Framework, which is reliant on the yet-to-be-finalized economic model in order to set agency-specific standards, the alternative approach can be implemented

[8] CWC 10608.34(i)

immediately and would utilize the economic model as a tool to inform URWS on potentially cost-effective water loss mitigation measures. This approach also would enable the State Board to focus on those systems outside of the 85$^{th}$ percentile for water loss. The alternative approach does not preclude any future consideration of individual standards, but instead it would encourage the State Board and water suppliers to improve their data model and conduct a leakage component analysis as well as pressure monitoring. An improved dataset and better understanding of system-level water loss in California could also help the State Board and stakeholders in the process of refining the economic model so that it ultimately can be used for the purpose of setting individual standards.

If the State Board's goal is to have effective and implementable regulations by July 1, 2020, the coalition believes the alternative approach is the most appropriate vehicle to meet that deadline.

**Technical Assistance, Training and Funding Will be Critical**

In 2015, the State Water Resources Control Board allocated funding to create the Water Loss Technical Assistance Program (WL TAP). The WL TAP Program trained more than 1,500 water utility employees, completed more than 400 Level 1 validated water audits, and jumpstarted the validated water loss reporting program. Given the complexity of water loss as a whole and the potential of new requirements proposed in the Framework, economic model and CMUA's proposed alternative approach, the coalition respectfully requests the State Board consider providing funding and training for the URWS that will be required to carry out the recommendations and requirements in the final regulations.

In conclusion, the coalition recommends that the State Board consider the alternative approach (attached to this letter), which would enable the State Board and URWS to move forward while refinements are made to the economic model and Framework — with consideration that the approach and standards for water loss will be reevaluated in 2027.

The coalition thanks the State Water Resources Control Board and its staff for considering these comments. If you have any questions, please contact Jonathan Young, regulatory water advocate for the California Municipal Utilities Association, at (916) 326-5806.

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