**Water Loss Performance Standards**

Response to Comments

**Link to Comments:** [https://ftp.waterboards.ca.gov/#/2022/February/021122\_Water%20Loss/](https://ftp.waterboards.ca.gov/%22%20/l%20%22/2022/February/021122_Water%20Loss/%22%20/h%20%20HYPERLINK%20%22https%3A/ftp.waterboards.ca.gov/%22%20/l%20%22/2022/February/021122_Water%20Loss/)

Contents

[A. 45-Day Comments 2](#_Toc116639846)

[A1. Alternative Compliance: Extension 2](#_Toc116639847)

[A2. Alternative Compliance: Low losses (Off Ramp) 2](#_Toc116639848)

[A3. Apparent Loss Inventory Requirement 6](#_Toc116639849)

[A4. Default Values: Adjustments 7](#_Toc116639850)

[A5. Default Values: Original 9](#_Toc116639851)

[A6. Economic Model 10](#_Toc116639852)

[A7. General 14](#_Toc116639853)

[A8. Text Wording Changes 17](#_Toc116639854)

[A9. Leak Reporting Registry 24](#_Toc116639855)

[10. Multiple Systems 25](#_Toc116639856)

[A11. Questionnaires 27](#_Toc116639857)

[A12. Small Systems 29](#_Toc116639858)

[A13. Technical and Financial Assistance 29](#_Toc116639859)

[A14. Variances 30](#_Toc116639860)

[B. Informal Comments (Oral Comments During Workshop) 31](#_Toc116639861)

[C. 15-Day Comments 34](#_Toc116639862)

[C1. Apparent Loss Inventory Requirement 34](#_Toc116639863)

[C2. Default Values: Adjustments 35](#_Toc116639864)

[C3. Economic Model 36](#_Toc116639865)

[C4. General 38](#_Toc116639866)

[C5. Text Wording Changes 42](#_Toc116639867)

[C6. Leak Reporting Registry 42](#_Toc116639868)

[C7. Multiple Systems 44](#_Toc116639869)

[C8. Questionnaires 44](#_Toc116639870)

[C9. Small Systems 46](#_Toc116639871)

[C10. Technical and Financial Assistance 46](#_Toc116639872)

[C11. Variances 47](#_Toc116639873)

# A. 45-Day Comments

## A1. Alternative Compliance: Extension

Comment A1-1: Extend alternative compliance. Currently, the alternative compliance pathway extends the compliance deadline from 2028 to 2031. Stakeholders would like an option for the compliance deadline to be extended beyond 2031.

Response: The regulation allows for a compliance extension, and suppliers that need more time can use an alternative enforceable agreement (section 986(a)(1)).

Comment A1-2: Request to include “or making progress” for the requirement that suppliers complete two full cycles of leak detection surveys.

Response: This section has been changed to only require one full leak detection survey instead of two.

Comment A1-3: The proposed alternative compliance pathway is prohibitively restrictive. Although utilities may implement proactive leak detection, utilities may not demonstrate a minimum reduction of 30% due to the uncertainty and variability of water audit results. Documentation of utilities’ leak prevention activities, required in section 981(h)(5)(B), is a better criterion for eligibility for the alternative compliance pathway.

Response: This alternative compliance pathway is for those that can prove they have reduced real loss by at least 30% of the amount necessary to reach their standard. If suppliers have done this but it is not shown on their audits because of poor data quality, then other options may be more suitable, such as a voluntary enforceable agreement (section 986(a)(1)) to address data quality issues.

Comment A1-4: The required transition from Version 5 to Version 6 of the Free Water Audit Software is not addressed in the regulation. The transition may result in lower data validity scores for utilities and may impact their eligibility for the alternative compliance pathway.

Response: This is now addressed in section 981(h)(3).

## A2. Alternative Compliance: Low losses (Off Ramp)

Comment A2-1: Support for raising the off-ramp threshold from 10 to 16 GPCD (this was changed in previous versions of the regulation).

Response: Thank you for your support.

Comment A2-2: Support for section 982(d)(3), which allows 2021 and 2022 data to be used to qualify for the off ramp. However, commenter states they believe this section refers to 2020 and 2021 data.

Response: Thank you for your support. This section allows for 2021 and 2022 data to be used to qualify for the off ramp, not 2020 data (which is already used in the baseline).

Comment A2-3: Exempt suppliers with benefit to cost ratio (BCR) < 1 from the low loss requirement for off ramp. Stakeholders also recommend that suppliers with an initial BCR less than 1 be eligible for the off ramp and associated reporting exemptions regardless of their adjusted numeric target.

Response: The off ramp in the regulation is intended for those suppliers with low real water loss levels and high data quality. (Section 982(d).) Suppliers whose BCR are less than one and therefore whose standards are set at their average baseline real loss may request a variance supported by information demonstrating that their water loss control activities during the baseline period were not cost-effective long term. (Section 985(c).) Suppliers granted a variance on this basis will be in compliance with their real water loss standards if their real water loss is no more than 10 gallons per connection per day above their average baseline real loss. (Section 985(d).) Until data practices improve overall, exempting suppliers with higher real losses from reporting is not currently appropriate even if existing data shows that further reductions in water loss are not cost effective.

Comment A2-4: Allow utilities to submit documentation for the low-loss compliance pathway (1) by January 1, 2028, and (2) at each of the compliance dates thereafter.

Response: Thank you for the suggestion. We have made changes to this section to allow suppliers to apply for the low-loss compliance pathway (off ramp) at any time.

Comment A2-5: Recommend that the criteria for source meter testing in section 982(d)(1) be modified to allow for testing and/or calibration. Some meters cannot be moved to be tested.

Response: We recognize that it may not be practical to test some meters. However, the regulation is intended to support improved data quality over time and accordingly requires testing for some meters and calibration for others. Text has been added to section 982(d)(2) to allow for exemptions to the testing and calibration requirements when justified.

Comment A2-6: Alternative compliance for the requirement to test a statistically significant sample of customer meters or 300 (whichever is lower) annually should be allowed, specifically for those already complying with California Public Utilities Commission [General Order 103-A](https://docs.cpuc.ca.gov/PUBLISHED/Graphics/107118.PDF), which requires suppliers to test or replace meters on a set schedule based on size.

Response: Suppliers may be able to show that the number of meters they test annually (possibly because of compliance with California Public Utilities Commission orders) already constitutes a significant sample. However, General Order 103-A allows suppliers to develop their own plan and does not guarantee that an appropriate number of meters are tested annually. For these reasons, the regulation was not changed to allow adherence to General Order 103-A to replace the meter testing requirement for the off ramp.

Comment A2-7: Change the off ramp limit for year-to-year real loss variability from 10 to 20 GPCD.

Response: The 10 GPCD variability in this section matches the definition for outlier data, so that suppliers can only qualify for this section if they have no outliers (and therefore, higher quality data). Making this change would cause this provision to no longer match with the outlier definition. Additionally, it would not be appropriate to consider data that varies from year to year by more than the off ramp standard (16 GPCD) to be “high quality data.”

Comment A2-8: Remove the off ramp requirement in section 982(d)(1)(B), which requires suppliers to identify the cause of any negative real loss values in the data used to qualify for the off ramp.

Response: Negative real loss value numbers are, in all cases, errors. Without identifying the cause(s) of negative real losses, suppliers cannot be sure future water loss audits are not being impacted by the same issue(s) that caused the negative real loss value. Reviewing data can usually reveal from which part of the data the error originated, allowing the supplier to narrow down to the specific cause. If suppliers are unable to determine the cause(s) of the negative real losses in a data set, they should not use that data set to meet the off-ramp requirements, which require high data quality and low real losses. The regulation text has been updated to allow any three consecutive years of data to be used to qualify for the off-ramp, so suppliers are no longer restricted to using baseline data.

Comment A2-9: Change “water from own sources” to “volume from own sources” in section 982(d)(1)(C).

Response: The term “water from own sources” matches the other places in the regulation text that refer to the same thing. In addition, we believe including the word “water” is more descriptive of the term.

Comment A2-10: Remove the off ramp requirement in section 982(d)(1)(D), which requires suppliers to annually test supply meters measuring at least 95% of the total produced volume if the water from their own sources is greater than 5% of the total water they supply.

Response: This off ramp requirement is important because the supply meters are a key water volume in the water audit, and high data quality is needed for the source volume to produce a high-quality water loss audit. Not all suppliers need to meet this requirement; only those qualifying for the low loss off ramp.

Comment A2-11: Change the meter testing requirement for exported water in section 982(d)(1)(F) to a calibration requirement.

Response: Keeping the testing requirement is important because exported water is an important water volume for the water loss audits, and high data quality is needed for the exported water to produce a high-quality water loss audit. If suppliers are unable to test certain meters, they may receive an exemption or be required to calibrate the meters instead.

Comment A2-12: Remove from section 982(d)(1)(G) the requirement that all customer accounts (excluding those for fire flow) are metered with at least 90% success rates in meter reading. This should be replaced with the requirement to meter 70% of customer accounts, with no requirement for meter reading.

Response: The requirement to meter all customer accounts is important for having high data quality in a water loss audit. Without metering all accounts, an accurate estimate of water sold cannot be calculated. In addition, having at least a 90% success rate reading those meters ensures that the data from the meters is being used in the audits.

Comment A2-13: The testing requirement for the off ramp in section 982(d)(1)(H) should include the number of meters replaced as well as those tested.

Response: The requirement to test meters is intended to be unaffected by a supplier’s need or decision to replace meters. Replaced meters to not aid in understanding current meter errors.

Comment A2-14: Requested changes:

982(d)(2) This subdivision shall only apply to urban retail water suppliers that submit, on or before January 1, 2023, supporting documentation to demonstrate they meet the real loss and data quality criteria of this subdivision. If a supplier that would otherwise meet the above criteria is unable to meet the criteria for subsection (E) due to aspects outside of their control, such as not having access to calibrate water meters owned by other entities, then they may petition to be exempted from criteria involving only those aspects outside of their control. T~~his petition may be granted at the discretion of the~~ The Board shall grant the petition if the documentation is verified and may include provisions, such as a requirement to request in writing that water meters be tested and/or calibrated. (3) ~~An urban retail water supplier whose average real loss reported for the years 2021 and 2022 is 16 gallons per connection per day or less, or, for an urban retail water supplier that reports real loss in gallons per mile per day in the annual audit, 1,184 gallons per mile per day or less, shall maintain real loss at or below 16 gallons per connection per day, or, for an urban retail water supplier that reports real loss in gallons per mile per day in the annual audit, 1,184 gallons per mile per day, assessed on a three-year average basis every three years beginning 2028, provided that the supplier also meets the criteria identified in subdivision (d)(1) of this section in its annual audits, except that for subdivisions (d)(1)(A) and (B) the supplier’s data shall be for the years 2021 and 2022.~~

Response: These changes have not been made. Other changes have been made to this section.

Comment A2-15: Negative real losses are not necessarily easy to identify. Requiring suppliers who may apply for a standard of 16 gallons per connection per day to identify cause for negative values should be changed to an action list of work to identify the source of the data error.

Response: Negative real loss value numbers are, in all cases, errors. Without identifying the cause(s) of negative real losses, suppliers cannot be sure future water loss audits are not being impacted by the same issue(s) that caused the negative real loss value. Reviewing data can usually reveal from which part of the data the error originated, allowing the supplier to narrow down to the specific cause. If suppliers are unable to determine the cause(s) of the negative real losses in a data set, they should not use that data set to meet the off-ramp requirements, which requires high data quality and low losses. The regulation text has been updated to allow any three consecutive years of data to be used to qualify for the off-ramp, so suppliers are no longer restricted to using baseline data.

Comment A2-16: Requiring suppliers who may apply for a standard of 16 gallons to test annually is infeasible. If an agency is obtaining water from a wholesale water agency that uses venturi meters, testing annually is infeasible

Response: If testing annually is infeasible for a supplier, they can request to be exempted from those requirements, as detailed in section 982(d)(2).

Comment A2-17: Remove: ~~If the unbilled metered water volume is higher than 1% of the total water supplied, the supplier reads the meters for accounts that are supplied through unbilled metered water accounts at the same or greater frequency as the supplier reads the meters for the majority of customers~~. *(Comment: Annually for the audit is sufficient. What is this monitoring requirement is intended to satisfy for the board? How is this a performance requirement? If this stands, would the board disqualify them due to the noncompliance?)*

Response: This is a requirement to meet the off ramp because the low loss off ramp should not be available to suppliers for which there is significant uncertainty regarding their water loss.

## A3. Apparent Loss Inventory Requirement

Comment A3-1: Limit the apparent loss data collected to supplier specific, currently available data.

Response: We do not expect submitted data to be perfect and understand that data from the field may have gaps or errors. However, limiting the data to currently available data would discourage any improvement in data collection. The apparent loss data is important for improving the science of water loss, and, specifically, for understanding the characteristics of leakage in California. Leakage characteristics vary by region and system, and very little leakage data is publicly available for California utilities. This data is likely to be used in the future to improve the water loss regulation.

Comment A3-2: Clarify what is being asked for in the apparent loss inventory and provide examples. Some stakeholders are asking for the State Water Board to provide inventory documentation examples to guide stakeholder submissions. Some would like clarification on what is expected to be submitted in the inventory, especially since the definition of apparent losses (inaccuracies associated with customer metering and billing inaccuracies in addition to theft) implies that they cannot be tracked or documented.

Response: This has been addressed in section 981(d), and an example spreadsheet has been provided.

Comment A3-3: Support for the inclusion of a numeric apparent loss standard.

Response: Thank you for your support.

Comment A3-4: Proposed regulatory text edits for clarity. Some stakeholders think that the regulatory language regarding the apparent loss standard is unclear. They have proposed edits for section 981(d):

At the time compliance with real loss standards is assessed, apparent losses will also be evaluated. ~~If the average apparent losses for any compliance period are greater than~~ The apparent loss standard is the average baseline apparent losses plus an allowed variation of 5 gallons per connection per day. If the average apparent losses for any compliance period are greater than this standard, then the supplier must submit an inventory of all apparent losses and any calculations and data used to determine apparent losses for that compliance period within 6 months of being informed by the State Water Board of exceeding the apparent losses standard.

Response: Thank you for your comment. We have edited this section with some of your suggestions and believe the text is clear.

Comment A3-5: Some stakeholders believe the apparent loss variance of 5 GPCD is too large. Since apparent losses average between 25% and 35% of total losses, a variance of 2 GPCD should be sufficient.

Response: Thank you for bringing this to our attention. The apparent loss variability for purposes of compliance has been changed to 2 GPCD.

## A4. Default Values: Adjustments

Comment A4-1: Support for extending the adjustments deadline from 2022 to 2023.

Response: Thank you for your support.

Comment A4-2: Request additional time (beyond July 1, 2023) for staff approval rather than Board approval. Some commenters request that these adjustments be allowed until 2025, some in perpetuity, and some in “multiple adjustment periods.”

Response: Approvals will be made under appropriate delegations of authority, and will be used for submissions beyond July 1, 2023. However, submissions past that date must be accompanied by a satisfactory explanation for not submitting the information earlier.

Comment A4-3: Support for allowing suppliers to input their specific data in place of default values.

Response: Thank you for your support.

Comment A4-4: Add the word “written” before the word “decision” in 984(c). This change would provide certainty for water suppliers that have received written approval of their default updates.

Response: Thank you for your suggestion. This change has been incorporated.

Comment A4-5: Send out formal letters acknowledging the modified model inputs and guaranteeing the supplier’s use of the modified model inputs in the current and any subsequent versions of the economic model through the 2028 compliance period at minimum. After 2028, either the Board or supplier could propose changes to the inputs if (1) sufficient data has been supplied by the Board or supplier supporting and justifying the need to alter the inputs, (2) any further modifications have a 2 year effective start date from the formal approval date of modifications, and (3) the Board establishes an appeals process available to URWS to formally appeal further input modifications proposed by the Board.

Response: Thank you for your suggestion. We have added the word “written” to section 984(c) to address concerns regarding final parameter update approvals (see comment 4-4). Written approvals for parameters are final, and will generally only be changed if the supplier proposes changes to those values as described in section 984(b). However, the Board does not believe a 2-year delay in applying new data would be beneficial.

Comment A4-6: The final rule should provide public notice and opportunity for comment on all requests from water suppliers to adjust individual standards through data substitution under section 984.

Response: Thank you for your suggestion. All supplier specific data will be posted online. However, requiring public notice and public comment for each data change would be burdensome for both the Board and suppliers, and it is not likely to result in better outcomes.

Comment A4-7: The Board should not accept default adjustment requests from suppliers with baseline losses below their individual standard using default values (those with a “no reduction” requirement) to prevent them from increasing their standard further. This would prevent gaming.

Response: Thank you for the suggestion. Standards will no longer be automatically raised, so updating default values no longer has the potential to increase standards beyond the baseline real loss.

Comment A4-8: The approval of default updates should remain a staff action beyond the deadline.

Response: Thank you for your comment. Approvals will be made under appropriate delegations of authority.

## A5. Default Values: Original

Comment A5-1: Instead of using the AWWA M36 methodology to calculate an economically-justified leak detection survey frequency for each utility, the model assigns a leak detection frequency based only on the utility’s size and is not necessarily the economically-optimal frequency.

Response: Suppliers may submit their specific leak detection frequency.

Comment A5-2: Metropolitan [Water District] rates and/or rate increases should not be estimates for other suppliers, since Metropolitan isn't representative of other suppliers.

Response: Thank you for your comment. Metropolitan Water District’s rates and rate increases are no longer used to calculate the rise in price of water. However, Metropolitan’s cost of imported water is still being used as a data point for the average alternative price of water. The average alternative price of water is a default parameter that can be replaced with supplier specific data.

Comment A5-3: Metropolitan [Water District]’s ten-year financial forecast is a better indicator of future rate increases, if the State Water Board uses wholesale water rate increases. Overall rate increases from FY 2022/23 through FY 2029/30 projected to average 3.67% per year. This is a better projection than historical rates.

Response: Thank you for the information. We currently estimate rate increases from the following source: Gaur, Sanjay; Diagne, Magu. (2017). California Water Rate Trends: Maintaining Affordable Rates in a Volatile Environment. Journal of AWWA, September, 46-52.

Comment A5-4: State Water Board model places a disproportionate responsibility on northern California utilities due to its assignment of an artificial cost of water. Revise the model to be consistent with industry tools and guidance by valuing real losses at the variable production cost when it is appropriate and remove the automatic comparison of variable production cost and marginal avoided cost of water.

Response: Thank you for your comment. The automatic comparison of the variable production cost and the marginal avoided cost is necessary to ensure high data quality. These parameters can be updated by suppliers to better represent their specific water costs when they have supporting data. The model will not be revised as recommended.

Comment A5-5: Reduce the default values for average leak detection survey frequency and clarify if water suppliers with one operations team and multiple Public Water System Identifications (PWSIDs) should consider the total length of mains for the supplier’s system or the length of mains for each PWSID when determining average leak detection survey frequency.

Response: The default values consider only the data for one PWSID. The data for each PWSID needs to be kept separate, except when two PWSIDs function as one system.

## A6. Economic Model

Comment A6-1: The economic model has issues, such as the imbalance of benefit and cost assumptions and limited robustness.

Response: All specific issues in the economic model that have been brought to our attention have now been addressed.

Comment A6-2: Economic model contains significant errors. Recommend that the model be reviewed by third-party water loss experts or that the State Board hire water loss experts to improve the economic model. Suggestion to conduct additional third-party review by water loss experts. Some commenters claim the peer review was inappropriately narrow and excluded technical information related to compliance, such as the 5 GPCD variance for real and apparent losses.

Response: Consistent with the CalEPA external peer review program statute, the peer review covered the technical approach (the economics and engineering) and not policy decisions, such as variances. All specific issues in the economic model that have been brought to our attention have now been addressed.

Comment A6-3: The audit values have a significant amount of uncertainty embedded in them. If this is used in the economic model, that uncertainty will be reflected in the model output.

Response: As data quality improves, suppliers can apply for adjustments to the baseline data (section 984(c)). Some uncertainty is unavoidable; that is one reason suppliers can have losses up to 5 GPCD above their real loss standard and remain in compliance.

Comment A6-4: Revise section 980(l) as follows:

“Average duration between reporting and repair of reported leaks on mains” means the average duration between the time when the urban retail water supplier becomes aware of a leak occurring on mains and the time when it repairs the leak, rounded to the closest whole number, in days. ~~Unless a supplier uses its own values as indicated in this article, the default value shall be 3 days.~~

Agencies may not have good documentation on this going back years. It may leave some agencies without certainty for the validity of the value. The economic model needs to reflect that reality.

Response: As documentation improves, suppliers can apply for adjustments to the baseline data (section 984(c)).

Comment A6-5: Support for calculating water loss standards with goal of achieving a minimum BCR of 1.

Response: Thank you for your support. In response to other comments, the model no longer raises standards with the goal of achieving a minimum BCR of 1. This provision was originally included for the purpose of bringing each supplier to a cost-effective water loss level. The regulation (section 982(b)(1) now assigns the average baseline real loss as a supplier’s standard in these cases, and section 985 includes a cost-effectiveness variance for suppliers that can show that maintaining baseline real losses would not be cost-effective long term. This variance would allow suppliers to stay in compliance with the regulation while their real losses are up to 10 GPCD higher than their average baseline real losses. Granting the cost-effectiveness variance on a case-by-case basis will also make sure that only qualified suppliers receive the benefit rather than including those that may not need it.

Comment A6-6: The calculation used to raise standards with BCR < 1 is not in the Excel model. The full calculation should be included in the released Excel model.

Response: Standards are no longer being raised when BCR < 1.

Comment A6-7: Recommend revision of the model to be consistent with industry tool and guidance, such as AWWA M36 methodology, WRF Project 4372 Component Analysis.

Response: All specific issues in the economic model that have been brought to our attention have now been addressed.

Comment A6-8: Recommend changing the way the number of repaired leaks are calculated in the model. The current equation inflates the number of leaks for systems with lower baseline real loss and deflates the number of leaks for systems with higher baseline real loss, creating a counter-intuitive relationship. Instead, Unavoidable Annual Real Losses (UARL) failure flow rate assumptions can be used to establish the count of leaks expected to repair.

Response: We have updated the way the number of repaired leaks are calculated at each time step, detailed in section 982(a)(18) and (19).

Comment A6-9: System specific flow rates used in the model in place of defaults should not be corrected for pressure. No scaling is appropriate since the flow rate estimates would need to be collected on-site and therefore would already account for variations in pressure.

Response: The commenter is correct that system specific flow rates should not be corrected for pressure. The model now includes an option to specify whether the flow rate provided is either standard pressure (70 psi) or the system’s pressure, and the model will adjust for pressure only if standard pressure is selected.

Comment A6-10: Oversight of reported leakage on appurtenances. Reported leakage volumes include main and service leaks, but not other leaks (e.g., valves and hydrants). The model does not include a category for appurtenances. This causes utilities confusion about either including these leaks in the main or service leaks categories or excluding them.

Response: A definition for appurtenances is now included.

Comment A6-11: The economic model should not be used until it has been fully vetted to account for the uncertainty of model inputs and output. There is too much uncertainty in the model inputs and output. The 5 gpcd buffer may not adequately compensate for the uncertainty imbedded in the constants. Why was 5 gpcd selected and not 5.1 gpcd or 6 gpcd or 10 gpcd?

Response: The 5 GPCD buffer was designed to account for the variance in real loss observed in the submitted water audits. The average real loss variability from 2017 to 2020 was 4.95 GPCD. A 5 GPCD buffer is therefore able to account for the variability of a 3-year real loss average

Comment A6-12: This heavy reliance on leak detection surveys earmarks utility budgets for something that is not necessarily an area of system need for water conservation or public health. There is a heavy reliance on leak detection of the whole distribution system, which is questionable. The estimated water savings will not be fully realized as calculated by the economic model because of the uncertain nature of water loss interventions. The reliance on leak detection surveys and associated success rate, the assumption that cost of such surveys being stagnant, and the time taken to conduct the surveys seems loaded with uncertainty.

Response: Suppliers can submit their own data for parameters including costs, leak detection efficiency rates, and time taken to conduct surveys. Some uncertainty is unavoidable; that is one reason suppliers can have losses up to 5 GPCD above their standard and remain in compliance.

Comment A6-13: How do the regulations and the requirements account for leakage on the customer side of the meter that is below meter recording capability? No leak detection survey will catch those losses. No meter will record those leaks. The components associated with those leaks are neither owned or operated by water suppliers.

Response: The standards do not include leaks on the customer side of the meter, and suppliers are responsible for data collection. The data used to calculate standards is collected through AWWA’s free water audit software, which is validated and then reviewed by DWR.

Comment A6-14: The regulations require a significant amount of leak detection surveys. With the skyrocketing demand for leak detection surveys, will suppliers be able to comply with the regulations? What will be the cost increase for those surveys as demand is increased so significantly?

Response: Suppliers can submit their own leak detection cost data as an update to the default parameters to account for changing costs. We do not anticipate the demand for leak detection surveys will prevent compliance.

Comment A6-15: The benefit cost ratio of 1 is being used despite peer review concerns that such an approach may not be appropriate due to artifacts and uncertainty.

Response: The benefit cost ratio 1 was chosen to determine the point at which the benefit of addressing real loss outweighs the costs. This methodology was chosen as the most appropriate methodology after a lengthy peer review process. A separate provision, the compliance buffer, is included to account for uncertainty.

Comment A6-16: Average flow rate for reported leaks is only a very, very rough estimate. The model needs to reflect this fact.

Response: Suppliers are expected to use best available data and the model will use data provided by the supplier. A separate provision, the compliance buffer, is included to account for uncertainty.

Comment A6-17: Leak detection surveys are a useful tool for utilities but are not the only tool. The cost of these surveys versus the cost of other activities that assist in sharpening the focus on water system losses (e.g., commercial meter replacement) needs to be realized. The heavy focus for the economic model using leak detection is misdirected and adds uncertainty to the validity of the model.

Response: Suppliers may improve their data accuracy and reduce real loss in any way they choose and are not limited to leak detection surveys. Other approaches may have lower costs than leak detection surveys.

Comment A6-18: Recent proactive leak detection is not accounted for because the model only takes into account the baseline period (2017 through 2020). Utilities that performed proactive leak detection should be eligible to deduct an estimate for the rate of loss recovered from the initial baseline loss rate because it is no longer available for recovery. This issue affects only the cost-benefit analysis and not the performance standard.

Response: The model calculates the standard based on the time between the baseline period and the time by which suppliers need to meet their standard (January 1, 2028). Any proactive leak detection that occurred before 2020 should be reflected in the baseline audits, and any performed after is part of compliance to reach standards.

Comment A6-19: In the economic model, rows 37 and 39 of the Inputs sheet should not have an “OR” between them.

Response: The model has been changed to reflect this suggestion.

Comment A6-20: Oversight of awareness time of reported leakage. If a total volume of reported leakage is not provided, the volume of reported leakage is calculated incorrectly using the response duration alone, neglecting to include the awareness duration as well.

Response: Awareness duration is not included because it is usually not known. This is a conservative assumption that ensures benefits are not being over-calculated.

Comment A6-21: Potential sum inconsistency of leakage components. Utilities can enter any volume of unreported, reported, or background loss such that it is possible to have the sum of the components of loss that is different than the utilities three-year baseline rate of real loss

Response: The Board will review parameter changes to prevent issues like this from occurring. Water audits submitted to DWR are reviewed and validated before approval.

Comment A6-22: Unreported losses without intervention are calculated incorrectly and do not match the calculation described in the Equations worksheet.

Response: This commenter is correct. This calculation and equation have been updated, reflected in section 982(a)(12).

Comment A6-23: Include a provision to allow updates to the economic model following adoption of the regulation.

Response: Thank you for your comment. Changes to the structure of the model itself would have to be made through a formal rulemaking process because the model is part of the regulation.

Comment A6-24: The regulation does not allow for adjustment of model inputs to reflect changing conditions during the compliance phase.

Response: The regulation allows for the adjustment of baseline data. Suppliers can apply for adjustments to reflect changing conditions and/or better data (section 984(f)).

## A7. General

Comment A7-1: Benefits from water loss standards should be balanced with benefits that the same investment could produce in other areas.

Response: The water loss standards compare the modeled economic benefits of water loss to the modeled cost. Balancing benefits of other investments is outside the scope of the model.

Comment A7-2: Proposed regulation is flexible and should be attainable for suppliers. Needs to be further action by the State Water Board to promote data improvement practices since the model is dependent on accuracy of reported data.

Response: Thank you for your comment. Suppliers can submit updates to their baseline data as well as updates to the parameters as data improves. This encourages data improvement practices, as standards do not have to remain static as suppliers get more accurate data. If suppliers are unable to meet their standard due to poor data quality, alternative enforceable agreements can be used for compliance.

Comment A7-3: Thoughtful balance of priorities is necessary for water suppliers to continue to reliably provide water at reasonable cost. We request that the State Water Board keep in mind delicate balance of priorities as the regulation is finalized.

Response: Thank you for your comment.

Comment A7-4: Scope of economic model has shrunk considerably from three types of interventions (leak detection and repair, pressure management, pipeline replacement) to just one (leak detection). Standard for real losses can and should be stronger. Stated rationale for rejecting Alternative 1 is flimsy at best - that the average cost of reducing water loss is higher than for the proposed regulation. Board should not turn its back on cost-effective water savings of this magnitude. Alternative should be in the final regulation.

Response: Thank you for your comment. While Alternative 1 in the SRIA can save up to 38% more water (corresponding to 39% more benefits) than the proposed regulation, it would cost 86% more, representing a poor return on investment compared to the regulation. In addition, most of the increased costs in Alternative 1 would be required upfront (the initial cost per system would increase by about 112%), worsening any affordability and capital funding issues.

Comment A7-5: The proposed reporting requirements (data quality, apparent losses, pressure management, asset management, and pipe breaks) would be an unnecessary burden to compliant utilities.

Response: Thank you for your comment. There is currently no comprehensive state-wide data on leakage as well as other components of system management practices related to water loss. This data will be beneficial for any future adjustments to the regulation the State Water Board may consider.

Comment A7-6: Request that the State Water Board work with impacted water suppliers on adjusting their real water loss standard to match improvements in data.

Response: The regulation allows for the adjustment of model inputs. Suppliers can apply for adjustments to match improvements in data (section 984(f)) and Board staff will remain available to assist suppliers with matters relating to the regulation.

Comment A7-7: Given uncertainties of water loss measurement methodologies and the inherent uncertain nature of water loss, the State Water Board should allow for additional compliance flexibility for suppliers throughout the water loss regulation timeframe.

Response: Thank you for your comment. We recognize the variability of audit input data due to the unique circumstances experienced by suppliers. For these reasons, the following are some aspects that have been built into the regulation to make it more flexible: additional time to comply with standards for qualifying suppliers with standards lower than their average baseline water loss by 30% or more, continued opportunities for adjustments to parameters and baseline data when necessary, variances for suppliers facing adverse conditions, variances for suppliers for whom the real loss standard is not cost effective, and variances for suppliers with increased apparent losses due to improvements in data validity. If further compliance options are needed, alternative enforceable agreements can be used.

Comment A7-8: Add regulation text to specify the circumstances under which additional water systems may be brought into an existing URWS’s service area with flexibility for compliance. Commenters suggest a separate, adjustable timeline and updated water loss target for consolidated or regionalized water systems taking into consideration the infrastructure condition, maintenance history, water loss audit experience, and other local conditions of the newly added system(s).

Response: Thank you for your comment. We understand the necessity for consolidation to be addressed in the water loss regulation. Section 984(e) provides flexibility for consolidated systems.

Comment A7-9: Request clarification in the regulation text on terms used to outline compliance requirements. Examples include clarifying the following terms: full cycle of leak detection survey, reported leaks on laterals and service lines, annual unreported leakage, and unreported real loss (versus real loss).

Response: Thank you for your comment. We have added a definition for full cycle of leak detection. We already have definitions for reported leaks, laterals or service lines, annual unreported leakage, and real loss, which have all been edited for clarity.

Comment A7-10: Glossary tool in existing guidance document would be helpful.

Response: Thank you for your recommendation.

Comment A7-11: Request guidance to show step by step calculations of raising real water loss standards to meet benefit cost ratio (BCR) of at least 1.

Response: The regulation text has been changed and standards are no longer automatically raised for suppliers with a BCR ratio of less than 1.

Comment A7-12: When an urban retail water supplier does not meet its standard required by section 981 the executive director, or the executive director's designee, may issue conservation order” please cite the enabling code.

Response: Section 981 of the regulation implements Water Code sections 1058 and 10608.34, along with Article X, Section 2 of the California Constitution, section 116275 of the Health and Safety Code, and sections 102, 104, 105, 350, 516, 1846, 10608.12, and 10608.34 of the Water Code.

## A8. Text Wording Changes

Comment A8-1: Suggest rewording section 982(d) and 982(d)(3) to clarify the intent as current text is difficult to follow.

Response: The text has been reworded for clarity.

Comment A8-2:Section 986(a)(1) to avoid ambiguity, revise section to read "When an urban retail water supplier does not meet its standard required by section 981, the executive director or the executive director's designee, may issue conservation orders […]" with the highlighted comma after "section 981."

Response: The comma has been added.

Comment A8-3: There appears to be paradoxical wording in the proposed regulation. "The standard will require leakage reduction only if the net benefit is positive for the supplier given the system and water resource conditions. If the net benefit is negative, the standard will be increased to the point at which the net benefit is positive, if possible. **Otherwise, in cases where a positive net benefit is not possible, the standard will be raised to the point at which the net benefit is positive, if possible.** If a positive net benefit is not possible, the supplier must maintain current real water loss" The bolded text appears to state that if a "positive net benefit" is not possible, then the standard will be raised until the net benefit is possible - but it was previously stated to be impossible. This appears to be a paradox.

Response: This section has been re-worded.

Comment A8-4: Section 986(a)(1) does not distinguish between real and apparent loss standard.

Response: The text has been updated to distinguish between real and apparent losses.

Comment A8-5: Revise section 981(h) to read, “Suppliers that do not meet their real ~~water~~ loss standard by January 1, 2028, will be considered in compliance for the first compliance period if:”

Response: The text now consistently uses “real water loss standard” instead of “real loss standard.”

Comment A8-6: Some commenters think the language in the last sentence in section 986(a)(1) limits the alternative enforceable agreements to only those that meet the requirements of section 981 (g) or (h), which are the provisions for DACs and extended compliance. They request the removal of the sentence, which is: “Informal resolutions of noncompliance will be sought particularly for suppliers that have met the provisions of section 981 (g) or (h).”

Response: The regulation does not limit alternative enforceable agreements to specific subsets of systems and does not limit the Board’s progressive approach to enforcement. The text of section 981(a)(1) has been updated to make it clear that informal resolutions of noncompliance will be sought for all systems.

Comment A8-7: “Active leak detection” is vague. It is a term that is only used in the definitions (Section 980). Under this term, anything could be interpreted as active leak detection. The text should specify what constitutes actions that “proactively” detect and locate leaks.

Response: This definition has been edited for clarity.

Comment A8-8: Suggestion to remove all default values and references to specific years of data from the definitions section and move to separate section.

Response: Thank you for your comment. We believe it is valuable to have all the relevant information about each term with that term’s definition, so this change has not been made.

Comment A8-9: Revise to read: “Annual reported leakage” ~~is~~ means the estimated total volume of real loss occurring due to reported leaks on mains and reported leaks in lateral and service lines, in acre- feet per year…

Response: These changes have been made.

Comment A8-10: Revise to read: “Annual background leakage” ~~is~~ means the estimated total fraction of real loss that is not detected…

Response: These changes have been made.

Comment A8-11: Annual unreported leakage” ~~is~~ means the average baseline real loss that remains after deducting the annual reported leakage and the annual background leakage, in acre-feet per year…

Response: This change has been made.

Comment A8-12: Revise to read:

“Apparent losses” means ~~the type of inaccuracies associated with customer metering and billing inaccuracies in addition to water loss to theft as reported in the annual audit as “apparent losses.~~ losses in customer consumption attributed to inaccuracies associated with customer metering, systematic data handling errors, plus unauthorized consumption (theft or illegal use of water). Apparent losses represent nonphysical (paper) losses that result in uncaptured revenue for the water utility and distortion of customer consumption data.

Response: Some of these changes were made. The last sentence regarding nonphysical losses was not included in the definition update because unauthorized consumption is a physical loss of water.

Comment A8-13: Revise to read:

“Average baseline apparent loss” means the average of the apparent losses ~~reported in the~~ calculated from annual audits submitted for the fiscal or calendar years 2017, 2018, 2019, and 2020.

Response: Thank you for your comment. This definition has been updated to reference “apparent losses reported in the annual audits submitted for the baseline period.” Keeping the phrase “reported in the” keeps this definition consistent with many others that use the same phrasing.

Comment A8-14: Revise to read:

“Average baseline real loss” means the average of the real loss ~~reported in~~ calculated from the annual audits submitted for the fiscal or calendar years 2017, 2018, 2019, and 2020…

Response: Thank you for your comment. This definition has been updated to reference “real losses reported in the annual audits submitted for the baseline period.” Keeping the phrase “reported in the” keeps this definition consistent with many others that use the same phrasing.

Comment A8-15: Revise to read:

“Average leak detection survey frequency” is the average length of ~~pipelines~~ mains, laterals, and service lines on which the urban retail water supplier can conduct active leak detection, in miles per month.

Response: These changes have not been made. However, other changes have been made to the text for clarity. The word “pipeline” already refers to mains, laterals, and service lines.

Comment A8-16: Revise to read:

“Compliance Period” means the three-year period preceding the date that compliance with the water loss standard is assessed. ~~The first compliance period consists of the years 2025, 2026, and 2027 and the data that corresponds to those years.~~

Response: Thank you for your comment. We deleted “and the data that corresponds to those years.” However, it is important to define the years in first compliance period for clarity.

Comment A8-17: Requested changes:

“Infrastructure condition factor” (ICF) means the ratio between the actual level (volume) of background leakage in a zone or district metered area and the calculated unavoidable background leakage volume of a well-maintained system. Several methods can be used to quantify the ICF. The more accurate methods require a greater data collection effort to calculate the ICF~~.is a factor that relates the total background leakage with the unavoidable background leakage based on distribution system characteristics. It can be determined by assessing the distribution system’s condition. Infrastructure condition factor is calculated as the total background leakage divided by the unavoidable background leakage for the distribution system owned or operated by the urban retail water supplier. Unless a supplier uses its own values as indicated in this article, the default value shall be 1.~~

Response: Thank you for your comment. We have made these changes with some minor editorial changes for internal consistency, except that the last sentence (“Unless a supplier uses its own values as indicated in this article, the default value shall be 1.”) is still included because the default value needs to be defined.

Comment A8-18: The term “median household income determination” is vague, not known at this time. Utilities should be told what this term means to them, including the value, prior to the board’s adoption of the regulations. How and why is the board calculating this to come to a determination instead of using HCD determinations? Is this delegated to staff or will it be formally adopted by the board after a public meeting, allowing for public comment? The value could easily change over 30 years. How is this accounted for in the regulations?

Response: Thank you for your comment. The board is calculating this based on service area boundaries and available county and census income information. This decision may be made under any applicable delegation of authority.

Comment A8-19: Revise to read:

“Month of implementation” means ~~the month after the end of 2021 to implement water loss control, and ranges from 1 to 360~~. January of 2022 ~~is the first month of implementation.~~

Response: Thank you for your comment. This term is being defined for the model, which refers to “month of implementation” in several monthly calculations over a 30-year period. Therefore, the month of implementation cannot be defined as a single month, and no changes have been made.

Comment A8-20: Revise to read:

“Rate of rise of leakage” means the rate at which real loss rises over time in the distribution system owned or operated by the urban retail water supplier, in gallons per service connection per day per year. ~~This is equivalent to the volume of leakage that rises per unit time between two leak detection surveys, after repairing all detected leaks through the preceding active leak detection and repair effort in portions of the distribution system. Unless a supplier uses its own values as indicated in this article, the default value shall be 5 gallons per connection per day.~~

The use of this term as a function of complete water system survey intervals may be ok if the water system is all the same age and same material. It commonly is not. Water agencies need the flexibility to prioritize areas known to have a higher probability of leaks rather than what is proposed. Evening flow monitoring is an alternative.

Response: Thank you for your comment. All parameters in the model (unless stated otherwise) represent or are averages for the whole water system. Many of these parameters will vary across a system (such as pressure), but only one value can be used in the model. While different parts of a system may have different rates of rise, only one rate of rise can be used in the model to represent the system as a whole. Therefore, these changes have not been made.

Comment A8-21: Revise to read:

“Real loss” means the physical water losses from the pressurized system and the utility’s storage tanks, up to the point of customer consumption, which is the customer meter in those utilities that meter their customers. In unmetered systems, the delineation is the point at which the customer is responsible for the customer service connection piping maintenance and repairs. Real losses include leakage from mains and service connections (the largest component by volume for most systems), and storage tank overflows ~~the volume of annual leakage volume due to physical leakage, not including apparent losses,~~ reported in the annual audit as “current annual real loss.”

Response: Thank you for your comment. Some changes have been made to this definition for clarity, including adding: “Real loss has three components: reported, unreported, and background leakage.” However, because the term is defined for purposes of this regulation and, more specifically, the model equations, detailing the specifics of real loss as requested by this comment is not necessary or relevant. In addition, the specific details of real loss may change over time, which would necessitate regulatory updates.

Comment A8-22: Revise to read:

“Repair” means an action taken and/or paid by the utility ~~using the appropriate method to fix a leak~~ to stop real loss ~~occurring from it.~~

Response: Thank you for your comment. These changes have been made, with some editorial modifications for internal consistency.

Comment A8-23: Revise to read:

“Reported leaks” means leaks ~~occurring~~ discovered in the water distribution system ~~owned or operated by the urban retail water supplier that are found~~ without the aid of active leak detection and that are reported to the urban retail water supplier by the general public or the supplier’s personnel, staff or contractors.

Response: Thank you for your comment. These changes have been made, with some editorial modifications for internal consistency.

Comment A8-24: Revise to read:

“Unavoidable background leakage (UBL)” means ~~the minimum volume out of the average baseline real loss that is not detected by active leak detection in a distribution system.~~ that portion of the background leakage (tiny weeps and seeps at pipe and customer service connection piping joints that are acoustically undetectable) that exists below the low threshold that currently best pressure management technology can address.

Response: Thank you for your comment. We do not believe that the regulation text and the proposed text are incompatible, and the regulation text is intended to be more generic and flexible (not referring to specific types of leaks or technologies). Accordingly, at this time no changes have been made.

Comment A8-25: Delete text:

~~“Unbilled metered consumption water” means the volume of water supplied by the urban retail water supplier that is not billed but metered as reported by the urban retail water supplier in the annual audit as “unbilled metered consumption.~~ This definition is unnecessary since use of annual audit data is sufficient.

Response: Thank you for your comment. This definition is included because section 982(d)(1)(I) refers to unbilled metered water. Therefore, this text will not be deleted.

Comment A8-26: Revise to read and renumber:

“~~Water~~ Volume from own sources” means the volume of water withdrawn from water resources controlled by the urban retail water supplier as reported by the urban retail water supplier in the annual audit as “volume from own sources.

Response: Thank you for your comment. No changes have been made because “water from own sources” is the term used in section 982(d)(1) that is being defined.

Comment A8-27: Proposed edits:

(b) ~~(a)~~ No later than January 1, 2028, each urban retail water supplier shall reduce real loss from its distribution system to no greater than the real water loss standard identified in Section 982 of this article, ~~as reflected in the supplier’s reported real loss in its annual audit submitted for 2027.~~

(c) ~~(b) I~~ After January 1, 2028, if the urban retail water supplier’s real loss ~~reported in its 2027~~ ~~annual audit~~ exceeds the supplier’s real water loss standard calculated in accordance with section 982, the supplier will be in compliance with subdivision (a) of this section if the supplier has achieved its real water loss standard ~~as reflected in the real loss levels~~ ~~reported~~ as shown in its annual audit submitted for either 2025 or 2026.

Response: The suggested edits remove the important information that compliance can be met with 2027 data and remove the specifics referring to real loss. The 2027 information needs to be included so suppliers know they can use 2027 data for compliance, and specifying real loss adds clarity to the text, so no changes have been made.

Comment A8-28: Revise to read:

(d) (c) After January 1, 2028, each urban retail water supplier’s compliance with its real water loss standard specified in section 982 shall be assessed in every third year based on an average of the real losses reported in its three most recent annual audits. A supplier shall maintain, for each compliance assessment, real loss that is no greater than 5 gallons per connection per day above the supplier’s water loss standard.

Response: This text intends to specifically say “after 2028” because 2027 data should be available to the Board by the end of 2028 (2027 water loss audits are due January 1, 2029). Therefore, no changes have been made.

Comment A8-29: Requested change:

(c) For purposes of subdivision (a) of this section, each input value, except real discount rate, average annual rise in price of water, and effective timeline for lifecycle benefit-cost analysis, shall be either the default value identified in section 981~~0, or the supplier’s own value if adequately supported by documentation submitted to the board.~~ Average annual rise in price of water shall be either the default value identified in section 980 or the supplier’s own value if the requirements in section 984 subdivision (b) are met. If the board concludes that any specific value used by a supplier is not adequately supported by documentation, the board shall promptly communicate, within 30 days of receipt of the documentation, that deficiency to the supplier with a timeline within which to cure the deficiency.

Response: The removed phrase is important to keep because it specifies that suppliers may use their own parameter values if they are supported by documentation; without this phrase, the text would not allow suppliers to change those default parameters to their own values. The proposed addition of a specific timeline within which notification of a deficiency shall be communicated would remove flexibility from the Board in determining on a case by case basis what a “prompt” response is, including consideration of the amount of supporting documentation that has been submitted. No changes have been made.

Comment A8-30: I recommend replacing the phrase “an indication” with “notice” in section 986(a)(1).

(a)(1) When an urban retail water supplier does not meet its standard required by section 981 the executive director, or the executive director's designee, may issue conservation orders requiring additional actions by the supplier to come into compliance with its water loss standard. Prior to issuance of a conservation order, the Board will provide the supplier ~~an indication~~ notice of their noncompliance and seek to resolve the noncompliance informally, including through alternative enforceable agreements with the supplier. Informal resolutions of noncompliance will be sought particularly for suppliers that have met the provisions of section 981 (g) or (h).

Response: “Notice” can trigger specific criteria and processes in different context and the intent is not to incorporate other processes relating to “notice” in this particular usage. No changes have been made.

Comment A8-31: I recommend revising as follows:

(b) The executive director, or the executive director’s designee, may issue an informational order requiring an urban retail water supplier to submit additional information relating to water loss. The failure to provide the information requested within ~~30~~120 days or any additional time extension granted is a violation subject to….

Response: The text already allows for a time extension if one is needed. Allowing four months for suppliers to respond to data requests rather than one month is likely to significantly delay communication and resolving issues.

## A9. Leak Reporting Registry

Comment A9-1: Request to align leak reporting registry requirements with the first compliance milestone in 2028 to allow more time for implementation of a fully-functioning database that collects the required information. In addition, some commenters request that the registry be required every three years instead of every year.

Response: Thank you for the suggestion; we have implemented it. The first submission of the leak reporting registry will be due on January 1, 2029, which should include data for 2025, 2026, and 2027. The State Water Board understands that data collection practices and data quality are likely to change over time, and systems are not asked to implement new databases to comply with this regulation.

Comment A9-2: Recommend that required registry submissions be limited to supplier specific, currently available data in a format that already exists or is convenient for each supplier. Commenters state that this registry will be a resource intensive task with limited benefits to the supplier.

Response: The regulation text has been updated to clarify that the registry must be submitted on a spreadsheet readable by the Board, and a template will be made available. However, limiting data to “supplier specific, currently available data” may encourage suppliers not to collect data. The leak registry data is important for improving the science of water loss, and, specifically, for understanding the characteristics of leakage in California so that data can be used in the future to improve the water loss regulation. Leakage characteristics vary by region and system, and very little leakage data is publicly available for California utilities. Accordingly, the data must be submitted in a format that is both consistent statewide and readable by the Board and people interested in the data collected by the Board.

Comment A9-3: Strong support for suppliers reporting of water main breaks and repairs, which will allow for a wide-ranging analyses.

Response: Thank you for your support.

Comment A9-4: Additional reporting requirements, such as leak registry and questionnaires, will bring additional challenges to CWD's limited resources. Annual registry of water line breaks and associated estimated losses will further exacerbate aforementioned staffing resource issues. Recommend the State Water Board address the need for centralization and consolidation of data inquiries with high quality templates, guidance documents, and training.

Response: Templates are now available, and registry may be submitted on any spreadsheet that is readable by the Board.

## 10. Multiple Systems

Comment A10-1: Allow water suppliers to be able to report as a single weighted aggregate standard or individual water systems.

Response: Suppliers will be required to meet standards for each individual system. Otherwise, there may be inequitable patterns in where suppliers implement water loss control efforts.

Comment A10-2: Proposed regulations do not specify how real water loss standards are to be calculated for suppliers with multiple systems. Some commenters recommend adding the following (or similar) subsection that allows suppliers to proportionally combine standards for multiple systems:

For an Urban Retail Water Supplier whose service area includes multiple systems that are geographically separate and do not share the same distribution system, its real water loss performance standard may be calculated by either 1) including each of the Urban Retail Water Supplier’s systems in one performance standard calculated proportionally to the volume of water served in each system, or 2) having individual performance standards calculated for each individual system. In either case the Urban Retail Water Supplier may choose to include or exclude its small systems from the performance standard and the compliance requirements of this Article. The Urban Retail Water Supplier shall make this determination at its sole discretion by informing the State Water Board and providing its rationale and any supporting information on or before January 1, 2023. The Urban Retail Water Supplier may make subsequent adjustments pursuant to section 984.

Response: Each system will continue to receive individual standards. The urban retail water supplier definition has been updated to exclude the smallest systems serving less than 200 service connections.

Comment A10-3: Some commenters recommend adding the following definitions:

“Multiple systems” means two or more water systems that are owned or operated by an Urban Retail Water Supplier that are geographically separate water systems and do not share the same distribution system.

“Small systems” means individual water systems that are owned or operated by and Urban Retail Water Supplier that directly provide potable municipal water to 3,000 or fewer end users or that supply 3,000 acre-feet or less of potable water annually at retail for municipal purposes and are geographically separate and do not share the same distribution system with the Urban Retain Water Supplier’s other systems.

Response: We have not used these definitions but have updated the urban retail water supplier definition in the regulation.

Comment A10-4: Clarify how variances will factor into and apply to systems with multiple PWSIDs. If there are two consecutive years of improvements in the system but technically involve two different PWSIDs, would variance still be allowed?

Response: Variances will be determined on a system by system basis. If two systems function as one system, they have the option to consolidate, after which they will be treated as one system.

Comment A10-5: To the extent that a water supplier is allowed to establish a combined performance standard, allow the water supplier to submit one annual water loss audit report covering those systems. This is an issue because financial information for some suppliers’ systems must be “arbitrarily allocated to each PWSID via an estimate when submitting audit reports.” This prevents these audit reports from having reliable costs and cost metrics, and prevents suppliers from improving their data validity scores.

Response: A water supplier will not be receiving a combined performance standard for multiple systems. Water loss audits are required to be submitted to DWR on an individual system basis, and this regulation does not affect the water loss audit submittal requirements.

## A11. Questionnaires

Comment A11-1: Allow suppliers to submit questionnaires in their own format to best reflect their unique utility practices.

Response: While allowing suppliers to submit information in their own formats would provide flexibility, it would hinder the process of combining and analyzing the data. Accordingly, the data must be submitted in a format that is both consistent statewide and readable by the Board and people interested in the data collected by the Board. However, we understand that knowing which format(s) to use for submissions can aid in planning. The formats for each submission have been clarified in the regulatory text to include any spreadsheet readable by the Board.

Comment A11-2: Acknowledge the diversity of the supplier community and recognize that not all suppliers will have the requested questionnaire data.

Response: The questionnaires only ask questions related to supplier practices, which should be answerable by all suppliers. If a question does not apply to a specific supplier, the supplier should explain why in the response.

Comment A11-3: Consider elaborating on Question 9, Item 1 (“The billing account activation process results in a period of time that can elapse between the date of the water meter installation and the date that an active billing account is established in the Customer Billing System, thereby allowing water consumption to occur without billing for the elapsed time period.”) to include the following: “If the Agency’s account activation process allows for this time lapse, does the Agency have a policy for billing the consumption?”

Response: Thank you for the suggestion; we have made this change.

Comment A11-4: Consider elaborating on Question 9, Item 2 (“The customer billing system allows accounts that are not active (such as a vacant house) to exist in ‘non-billed’ status, under which a bill is not issued.”) to include the following: “If the Agency’s billing policies allow a location to close its account (because the house is vacant, for example), does the Agency have policies or practices in place to determine if there is unauthorized consumption at those locations and to bill for said unauthorized consumption?” For example, some suppliers would allow a customer to close an account, but agency staff would still read the meter to see if there was consumption at a closed location, and, if consumption was registered, would then require the resident to sign up for service and be billed for that consumption. The current language does not recognize this possibility.

Response: Thank you for the suggestion; we have made this change.

Comment A11-5: Please define “high leakage zones” and acceptable methods for their identification. Questions 6, 7, and 9 refer to “high leakage zones,” but do not define them.

Response: Thank you for your comment. “High leakage zones” will be defined in the questionnaires. This will not result in any regulatory text changes.

Comment A11-6: Define “high operating pressure” for the purposes of the questionnaires.

Response: Thank you for your comment. “High operating pressure” will be defined in the questionnaires. This will not result in any regulatory text changes.

Comment A11-7: Clarify submission date for the Data Quality Questionnaire. The questionnaire and public webinar presentation presented conflicting dates.

Response: We apologize for the confusion. The dates on the questionnaire will be corrected. The due date for the Data Quality Questionnaire is July 1, 2023.

Comment A11-8: Revise subdivisions (a) through (d) of Section 983 to read:

“Each urban retail water supplier, except those meeting the criteria in section 981 subdivisions (a) through (g) ~~982, subdivision (d)~~, shall submit responses to specific questions developed by the board .…”

Response: Only the high data quality, low-loss suppliers that meet the requirements of the off-ramp will be exempted from the reporting requirements. The off-ramp criteria is in section 982 (d), not 981 (a) through (g). Section 981 (a) through (g) describes the real water loss standards, the apparent loss inventory, and extended compliance for disadvantaged communities. Making the change as suggested would remove all reporting requirements.

Comment A11-9: The Authority (Sections 1058, 10608.34, Water Code) cited for this section does not appear to authorize questionnaires and reporting requirements. This is a request for a technical report due to noncompliance. Since noncompliance is enforcement, the cited authorities are inadequate. Please correct the authority citation or remove this section, since it appears that the board has no authority to require questionnaires associated with establishing water loss standards. Questionnaires and reporting are not performance standards.

Response: Section 983 (questionnaires) does not require technical reports based on non-compliance, it elicits information necessary to ensure compliance with the performance standards and evaluation of whether any changes to those standards in the future may be needed, specifically due to current issues with metering practices and data handling that influence data quality for water loss audits. Section 983 is supported by the cited authorities.

## A12. Small Systems

Comment A12-1: Recommend that the State Water Board exempt small systems (less than 3,000 connections or 3,000 AF/yr) from the regulation, which will yield multiple benefits: avoids undermining consolidations, addresses the majority of current concerns from suppliers with multiple systems, and allows suppliers to focus on mitigating larger system water loss where the return on investment for loss interventions is more sustainable to rate payers, more cost effective, and produces more substantial water savings.

Response: The updated definition for URWS only includes small systems if they meet certain criteria. Additionally, the regulation specifies how newly consolidated systems will be required to meet standards.

Comment A12-2: Provide an alternate option for small systems that are unable to fund and/or allocate resources for dedicated leak detection survey teams.

Response: Small systems are no longer included unless they meet specific criteria.

Comment A12-3: Provide funding for pipeline replacement of the small water system as part of consolidation or modify the regulation to exclude consolidated pipelines from assessment of water loss compliance.

Response: Small systems are no longer included unless they meet specific criteria.

## A13. Technical and Financial Assistance

Comment A13-1: Provide robust technical and financial assistance. Some commenters specifically asked that this assistance go to small and older water systems to implement necessary equipment for data validity and leak detection. One commenter recommended contracting with a water loss expert consultant so that they could be available to suppliers at least through 2028. Other commenters specifically asked for staff support for economic model inputs and additional trainings.

Response: State Water Board staff is available for guidance and support for supplier adjustments to the default parameters. Financial assistance is not in the scope of this regulation, but funding opportunities may be available through other Board Divisions or processes.

Comment A13-2: Provide a few hours of one-on-one staff assistance in navigating the economic model to assist suppliers who are struggling to obtain the relevant data inputs to adjust their real water loss standard.

Response: Staff have been and will continue to be available to assist in any questions regarding water loss standards.

Comment A13-3: State Water Board should prioritize DACs for financial support, since not all systems serving DACs will qualify for an extension.

Response: This is a funding policy decision and is outside the scope of this rulemaking.

Comment A13-4: Cost associated with implementing the draft regulation have a potential to increase cost of water in service area. More frequent leak detection surveys, pressure management systems, and increased staffing allocated to supporting the proposed standards are passed on to customers. Request that the State Board provide funding and technical assistance.

Response: Modeling suggests this should save suppliers money over time but will require upfront investments. Staff will be providing technical assistance. Funding is outside the scope of this regulation.

Comment A13-5: Recommend that the State Water Board use the unique funding mechanisms for consolidation to improve systems’ abilities to generate valid water loss audits and to help with eventually meeting water loss standards.

Response: Consolidation funding is outside the scope of this regulation.

## A14. Variances

Comment A14-1: Allow variances on a continual basis.

Response: Variances are allowed on a continual basis.

Comment A14-2: Allow suppliers to exclude water loss audit data in years with extreme drought. This will ensure that URWS are not held accountable for data quality or imported supply volumes with inaccuracies.

Response: Except for the first compliance period, real water loss is averaged in 3-year cycles to account for fluctuations in real water loss, some of which may be caused by drought. Drought is likely to be a common occurrence in California in the years to come, and excluding data from those years may cause large regulatory gaps.

Comment A14-3: Revise section 985(d) to only require one year (instead of two consecutive years) of the supplier’s audit to show a data grading value of 6 or higher for only customer metering inaccuracies, removing the requirements for the entries under the “water supplied” heading.

Response: The point of requiring two consecutive years is to show that the data is consistent, and to prevent a potential outlier from being used as a regulatory value.

Comment A14-4: After section 985(b), insert a paragraph for real loss variances related to improvements in data quality.

Response: An adjustment process has been added for any updates to data from the baseline period (section 984(f)).

# B. Informal Comments (Oral Comments During Workshop)

Comment B1: Removing systems with less than 200 connections is a step in the right direction. We recommend that systems within urban water suppliers with less than 3,000 connections be removed from the definition of urban water supplier for the following reason: First, small systems are generally less reliable since the audit methodology isn’t built for smaller systems, resulting in expensive targets for small systems built on less reliable data. Water agencies also have limited funding available to do water reduction work so prioritizing larger systems could mean more savings for suppliers. Second, the intent of Senate Bill 555 was to capture larger systems and not smaller systems. Lastly, there could be equity issues with keeping smaller systems in the definition.

Response: There is flexibility included in the regulation to exclude systems with less than 200 service connections, which will ensure that the smallest systems will not be given water loss standards. Suppliers are required to include smaller systems with 200 or more service connections under some conditions to reduce any incentives for a supplier to split systems for the purpose of avoiding regulation.

Comment B2: The fact that systems share a local water source does not mean that those water systems operate as a single distribution system. Water loss audits begin wherever the definition of entry point is in the system. Therefore, water source should not be one of the criteria for the urban retail water supplier definition.

Response: Thank you for your comment. We have removed shared water source from the urban retail water supplier definition criteria.

Comment B3: If the intent of staff is to offer exemptions for systems that have between 200-3,000 service connections, it is unlikely that that would happen. Most systems with between 200-3,000 connections would still be included in the definition.

Response: The definition of Urban Retail Water Supplier reflects the systems that will be subject to the regulation.

Comment B4: There needs to be clarification on whether systems have to provide 3,000 acre-ft every year, for one year, etc. Will systems fall out of the definition of urban retail water supplier if they supply less than 3000 acre-feet in a given year?

Response: Based on the definition in the regulation, systems will be required to meet water loss standards for any given year if they provide on average, 3,000 acre-ft (or meet the service connections criteria) for the previous two years.

Comment B5: The 3 miles requirement in the urban retail water supplier definition is arbitrary and irrelevant. This should be removed.

Response: The regulation text has been updated to change the service area boundaries requirement to be adjacent rather than within 3 miles.

Comment B6: The variance process is an appropriate approach for suppliers that have a benefit-cost ratio of less than 1. This approach is preferable to the one that is currently written in the draft regulation and the water community would support this approach.

Response: Thank you for your support.

Comment B7: We appreciate the extension of staff approval for default adjustments beyond 2023 as well as the clarity around the apparent loss inventory and leak registry requirements. We appreciate the included consideration of consolidated systems

Response: Thank you.

Comment B8: The term over-investment should not be used in the regulation

Response: The regulation text has been updated to replace the term “over-investment” with more appropriate terminology.

Comment B9: The threshold criterion (300 meters) to meet the off-ramp should not have been rejected and should be reconsidered. [See comment A2-6].

Response: The threshold criterion of 300 meters is still part of the regulation. Please see the response to comment A2-6.

Comment B10: The board should adopt the latest industry definitions where applicable to maintain consistency and standardization as industries continue to progress.

Response: The definitions in the regulation make industry definitions more specific, where possible, for example, regarding data sources. Amendments could be considered to adjust definitions and other parts of the regulation in the future as needed. Generally, however, where the definitions of terms or practices differ in the regulation from those used elsewhere, those differences were necessary for internal consistency of the Board’s economic model and the regulation and reflect consideration of the universe of applicable use cases of the Board’s regulation. Additionally, other industry-used definitions are subject to change through a different process than the Board must follow for adoption of regulations and it would be inappropriate to incorporate into the Board’s regulation potentially variable rules and/or definitions that are not subject to the APA rulemaking procedures.

Comment B11: The board should consider submission of the leak registry as a requirement only for suppliers that do not meet their real loss targets, mirroring the framework that currently exists for the apparent loss standard.

Response: The purpose of the leak reporting registry is to develop a more robust and comprehensive dataset of leaks throughout California, which will help develop any changes to the model or water loss requirements that the Board may consider in the future after initial implementation of the regulation. Staff used data from other jurisdictions because California-specific data were not available. Leak registry data only from suppliers not meeting real loss targets would not provide information that would be needed to assess potential changes on a larger class of suppliers.

Comment B12: If standards are changed via updates to the default parameters, there should be opportunity for public comment.

Response: If suppliers provide parameter updates, they will receive new standards, and those new standards will be posted online. Comments may be submitted at any time and will be considered, however providing a specific time for public comment for each data change would be burdensome for both the Board and suppliers, and it is not likely to result in better outcomes.

Comment: Alternative 1 would be highly cost effective and would save 40 percent more water. Alternative 1 should be fairly evaluated by the board before the final rule.

Response: Thank you for your comment. While Alternative 1 in the SRIA can save up to 38% more water (corresponding to 39% more benefits) than the proposed regulation, it would cost 86% more, representing a poor return on investment compared to the proposed regulation. In addition, most of the increased costs in Alternative 1 would be required upfront (the initial cost per system would increase by about 112%), worsening any affordability and capital funding issues

Comment B13: Stay with the statutory definition of URWS, the definition should be the same as in statute. In particular, the language regarding small systems should be deleted. Additionally, all the language that makes small systems applicable needs to be deleted.

Response: Thank you for your comment. Small systems are included in the definition only if they meet specific requirements. Suppliers are required to include smaller systems with 200 or more service connections to reduce any incentives for a supplier to split systems for the purpose of avoiding regulation.

Comment B14: Can the leak/break registry be required for submittal only when the current real loss goes over the 5 gallon per connection per day “safe harbor” from the standard?

Response. The leak/break registry will be required for all systems except those meeting the criteria in section 982(d).

Comment B15: The variance for the apparent loss standard should be reverted to 5 GPCD. The apparent loss performance standard was a late addition to the overall rule making process spurred by SB 555. It is most consistent and appropriate that both the real and apparent loss standards carry the same variance of 5 GPCD for consistency moving forward.

Response. Since apparent losses are often less than real losses, the variance for apparent loss standards should also be less than the variance for real losses.

Comment B16: Leaks found per part of the system with intervention do not make sense. The calculation of a volume of a leak seems OK for the case of steady state when regular surveys are being conducted an average leak duration can be estimated. But in a period of backlog reduction, I don’t see how a duration can be determined.

Response: The calculation for leaks found per part of the system has been updated from the first version in the model and an explanation of the updates is provided on the water loss website.

Comment B17: Regarding the “Water Loss Occurring Without Intervention” equation, the new method adds one year of the rise of unreported leakage to the water loss without intervention scenario. The increase is only applied to the “without intervention” scenario when it should be applied to the “with intervention” scenario as well. The two cases have different starting points in terms of leakage. If the “without intervention” is adjusted, but not the “with intervention,” the water loss savings in the backlog reduction period will be over-estimated.

Response: Thank you for your comment. The equation has been updated and the increase has been applied to the “with intervention” scenario as well.

Comment B18: Regarding the “Water Loss Occurring Without Intervention” equation, the baseline is an average of real loss in AF/Yr from 2017-2020 audits, then that baseline is for the end of year 2018, not end of year 2020. So both scenarios would need either three years of rate of rise. Also, adding to three years to each scenario may work out the same as adding one year of rate of rise to both. But a year of rate of rise to one scenario and not the other is quite illogical.

Response: The baseline data represent the data for 2017 through 2020. The model equations have been updated to include the rate of rise between the end of the baseline period in 2020 and the start of the model in January of 2022. However, the rate of rise should not be applied to 2018 through 2020 because that time period is part of the baseline period. The model only provides calculations for after the baseline period.

# C. 15-Day Comments

## C1. Apparent Loss Inventory Requirement

Comment C1-1: The Proposed Regulation text reduced the apparent loss buffer (“allowed variation”) from 5 gpcd to 2 gpcd based on stakeholder feedback. We believe the original 5 gpcd buffer was appropriate and consistent with the real loss buffer, and request that it is reverted to the original amount. Water loss audit data, including both real and apparent loss calculations, are subject to variation as they are a function of each other (real loss is total estimated loss minus estimated apparent loss) and are based on system data that is continually being refined and improved.

Response: Apparent losses are on average about 35% of real losses. Therefore, the apparent loss variance should be lower than the real loss variance to account for this difference.

Comment C1-2: The Proposed Regulation text reduced the apparent loss buffer (“allowed variation”) from 5 gpcd to 2 gpcd. This seems arbitrary and needs to be peer reviewed as required by California Health and Safety Code Section 57004. I believe the original peer reviewed 5 gpcd buffer was more appropriate.

Response: No additional peer review process is required or needed for the apparent loss allowed variation used for determining compliance. The apparent loss standard and “buffer” are policy decisions that were not incorporated into the original peer review process, which appropriately focused on the economics and engineering components in the model, consistent with the peer review statute.

Comment C1-3: Real loss volumes are calculated from total water input to the system, less apparent losses (the water balance model). However, the accuracy of apparent loss assumptions and default apparent loss estimates is still in its infancy.

Response: Thank you for your comment. We understand that process for making apparent loss estimates is still in its infancy. Because of this, the apparent loss requirement is treated differently than the real loss standard; rather apparent losses exceeding baseline apparent losses only triggers an additional inventory.

Comment C1-4: Section 985, subdivisions (e) and (f) set out the process for a water supplier seeking relief from its apparent loss standard due to increases in data validity. As this process results in an actual adjustment of the water supplier’s apparent loss standard, subdivisions (e) and (f) would be better placed in section 984.

Response: Thank you for your comment.

## C2. Default Values: Adjustments

Comment C2-1: Revise subdivision (f)(2) of Section 984 to read:

“Staff can initiate ~~an~~ a parameter adjustment process for any system that has significant changes in data compared to the baseline if at least 3 compliance assessments have passed since the baseline period and the last staff-initiated parameter adjustment process. To notify the urban retail water supplier that an adjustment process has begun, staff will provide written notification to the urban retail water supplier within 30 calendar days of staff’s commencement of the parameter adjustment process. The written notification shall include the parameters under consideration for adjustment.

Response: Thank you for your comment. Specifying “parameter” adjustment would limit the Board’s ability to adjust baseline data, which is the main purpose of this text. Staff will communicate to the affected suppliers when an adjustment process had begun, and will be in communication through all steps of the process.

Comment C2-2: Section 984(b)(1) lays out the requirements for seeking an adjustment in the rise in price of water. As this is essentially a financial calculation, any alternative rise in price should be certified by the water supplier’s chief financial officer, rather than simply by any licensed engineer.

Response: Thank you for your comment. Although this does involve economics, a professional engineer will have the best knowledge of the system and is most equipped to approve calculations.

Comment C11-5: Requested Action: Revise section 984(f) to read, “~~Any other~~ Parameter adjustment requests may be submitted to the Board at any time and will be considered based on the merits of the proposed change.”

Response: This suggested change would limit adjustment requests to only parameter adjustment requests. A major purpose of section 984(f) was to provide the opportunity for baseline adjustments. Therefore, this change was not made.

## C3. Economic Model

Comment C3-1: The coalition supports the proposed variance process described in section 985(a), (c) and (d) for the potentially limited scenarios in which a supplier’s present value of net benefit over 30 years is less than 1 (as calculated by the State Water Board’s economic model) and appropriate documentation can be provided that maintaining baseline real water loss is not cost-effective long term. The proposed variance process that provides for real loss not greater than 10 gallons per connection per day (gpcd) above the supplier’s average baseline real loss is appropriate, recognizes the limitations of the economic model and variability in real water loss, and helps promote water loss performance targets that are more cost-effective. This variance considers the findings of a case study conducted by UC Davis in 2021 that found “real loss GPCD had the greatest variability, with a median average percentage change of 35.1%. For this parameter, any given year of data could have a large (and potentially inaccurate) impact on resulting standards.”

Response: Thank you for your support.

Comment C3-2: The state's economic model unfortunately falls short in determining true cost effectiveness and benefit-cost ratio of losses and intervention activities. Independent analysis showed that the model is unable to calculate a real loss standard for almost a third of water systems. Yet, we are all attempting to create workable regulation despite its shortcomings. From a utility perspective water loss costs are part of a complex economic picture and represent only one of many factors they must manage.

Response: Thank you for your comment. This comment is unclear; the economic model is able to calculate standards for all water systems. However, the economic model is designed to work best once suppliers have provided supplier-specific data for the default parameters.

Comment C3-3: Despite the changes that were made, there are still limitations with the model, and the model may not be able to set a performance standard above the level of unavoidable real loss (UARL) for all suppliers. The American Water Works Association (AWWA) defines unavoidable real loss as “the minimal level of loss that could be attained if all efforts could be exerted to contain water loss, regardless of cost.” By definition, it is not technically feasible to attain levels of loss below the UARL. Publicly available data from the 2018-2022 annual validated water loss reports submitted to the Department of Water Resources show that 30 percent of suppliers have proposed performance standards lower than their UARL. While we expect this number to decrease when customized inputs are inputted into the model, there still will likely be some performance standards that may not be technically feasible for suppliers.

Response: While UARL can be a useful benchmarking tool for systems, it does not represent the actual minimum level of loss that could be attained by a system. For example, an Australian benchmarking project reported that 46% of Australian utilities with more than 3,000 connections had real loss levels below the UARL.[[1]](#footnote-2) The Board’s economic model is most reliable when suppliers provide their own default values, and a UARL concept is unnecessary for the Board’s regulation, which offers opportunities for extensions, adjustments, and variances. In addition, if a system cannot meet its assigned standard, there are other means of compliance, such as alternative enforceable agreements, which can tailor compliance to a supplier’s specific needs.

Comment C3-4: We recommend that suppliers and the SWRCB work together to utilize supplier staff and professional water loss practical experience and available industry “gut check” metrics to identify potential compliance feasibility issues that come to light during implementation and as data quality improves over time. Feasibility issues, supplier costs and achieved water savings should be tracked and evaluated to document how the regulation’s expectations perform in a real-world water loss mitigation environment, which must account for supplier budget constraints and varying effectiveness of water loss mitigation activities.

Response: Thank you for your comment. Staff will meet with suppliers whenever necessary to discuss real loss standards, cost issues with meeting real loss standards, and other issues that may arise.

Comment C3-5: Once the State Board processes ACWD’s CY2020 Water Loss Audit now available in the WUE data portal and updates the Economic Model using the ‘averaged’ values from the full baseline period of CY2017-CY2020, ACWD’s real loss performance standard as calculated by the September 2, 2022, Economic Model should ultimately be 26.0 gallons/connection/day and the apparent loss standard should be 10.6 gallons/connection/day. ACWD asks the State Board to update the Proposed Individual System Water Loss Performance Standards to reflect the published Water Loss Audit data and the output generated by the updated Economic Model (26.0 gallons/connection/day for real losses and 10.6 gallons/connection/day for apparent losses), or please explain how and why the State Board has landed on different and unsupported values.

Response: Thank you for your comment. Changes to ACWD’s baseline data have been made.

Comment C3-6: Complete a technical review of the economic model by third-party water loss experts. Prior to the 15-day comment period, the SWRCB revised the economic model twice in four weeks, yet the model still contains errors. This is the second comment period where the SWRCB presented stakeholders a model containing errors. This pattern supports the need for a technical review of the economic model by third-party water loss experts.

Response: Additional peer review is not required or necessary. The model has already undergone a significant and extensive peer review process. If additional specific errors are brought to the attention of the Board, the Board will review them.

## C4. General

Comment C4-1: The coalition requests that the following are retained in the Final Regulation:

* Ongoing adjustments beyond 2023 to recognize and incentivize data quality improvements.
* A compliance pathway for real water loss if a supplier’s water loss standard is lower than the supplier’s average baseline real loss by 30% or more.
* Guidance and process for submitting supplier-specific input data for the economic model.
* Supplier templates for apparent loss inventory and leak registry submissions.
* Clarified terms, including ICF, apparent and real loss, and leakage definitions.
* Time extension consideration for newly consolidated systems.
* Flexibility for meter testing requirements for suppliers considering the offramp option.
* Exemption for some small systems (remaining related concerns described above).
* Leak registry reporting required every three years instead of annually (remaining related concerns described above).

Response: Thank you for your support. All of these components have been retained.

Comment C4-2: We appreciate the revised water loss definitions in the current Proposed Regulation but request an acknowledgement in the regulation text that recognizes the AWWA water loss definitions contained in the software and M36 manual (current and future versions) as equivalent definitions. This acknowledgement would minimize confusion for water loss professionals that rely on the AWWA definitions and methodology to design and implement water loss control programs. In particular, the definitions of Apparent Losses and Real Loss need to match the industry standard prescribed in the statute.

Response: Generally, where the definitions of terms or practices differ in the regulation from those used elsewhere, those differences were necessary for internal consistency of the Board’s economic model and the regulation and reflect consideration of the universe of applicable use cases of the Board’s regulation as compared to the AWWA Manual of Practice. Additionally, AWWA Manual definitions are subject to change through a different process than the Board must follow for adoption of regulations and it would be inappropriate to incorporate into the Board’s regulation potentially variable rules or definitions that are not subject to the APA rulemaking procedures.

Comment C4-3: To avoid confusion with already existing industry-standard definitions, LADWP encourages state board staff to incorporate the following paragraph in the regulatory text in section 980: “Definitions, components of definitions, or commonly referred to industry standard terms in this article are defined by the latest AWWA M36, where applicable, or as follows:”

Response: Generally, where the definitions of terms or practices differ in the regulation from those used elsewhere, those differences were necessary for internal consistency of the Board’s economic model and the regulation and reflect consideration of the universe of applicable use cases of the Board’s regulation as compared to the AWWA Manual of Practice. Additionally, AWWA Manual definitions are subject to change through a different process than the Board must follow for adoption of regulations and it would be inappropriate to incorporate into the Board’s regulation potentially variable rules or definitions that are not subject to the APA rulemaking procedures.

Comment C4-4: The regulation should include appropriate references to the AWWA Manual of Practice (“M36” – Water Audits and Water Loss Control Programs) and the Free Water Audit Software, which serve as the guiding standards for water loss control and contain important definitions of terms and practices used by water utilities.

Response: The regulation text recognizes the potential for changes to the AWWA Free Water Audit Software to the extent changes could affect operation of the regulation (see section 981(i)(3)). Generally, however, where the definitions of terms or practices in the AWWA Manual of Practice differ in the regulation from those used elsewhere, those differences were necessary for internal consistency of the Board’s economic model and the regulation and reflect consideration of the universe of applicable use cases of the Board’s regulation as compared to the AWWA Manual of Practice. Additionally, AWWA Manual definitions are subject to change through a different process than the Board must follow for adoption of regulations and it would be inappropriate to incorporate into the Board’s regulation potentially variable rules or definitions that are not subject to the APA rulemaking procedures.

Comment C4-5: The Authority and References in the draft regulation do not match with the requirements prescribed. The State Water Board is requiring additional monitoring and reporting not included in the statute for performance standards. It is questionable if such requirements are allowed under other current statute or not. It is unclear.

Response: Thank you for your comment. The monitoring and reporting requirements are supported by the authority and reference citations.

Comment C4-6: The District appreciates that the Proposed Water Loss Standards includes an exemption from additional reporting requirements for suppliers with real water loss less than 16 gallons per connection per day, in recognition of the fact that additional actions would not be cost-effective for those suppliers.

Response: Thank you for your support.

Comment C4-7: Why are acre-feet prescribed as the only unit in the definition of annual unreported leakage? This requirement is antiquated and is not consistent with other reporting requirements for Water audits, UWMPs, WSCPs, AWSDAs.

Response: Thank you for your comment. Acre-feet is not the only unit that annual unreported leakage can be expressed in or reported in. However, for the model to calculate correctly, annual unreported leakage will need to be converted to acre-feet when entered into the model.

Comment C4-8: Whether it be part of the state's UWMP Guidebook, assigned to the California Building Standards Commission, or at the direction of the State Water Board, encouraging the adoption of the ANSI water conservation standard in place of any other water use restrictions on the construction of new pools would be of great assistance to the swimming pool and spa industry in this state.

Response: This is outside the scope of the regulation.

Comment C4-9: Water loss requirements that overemphasize the need to address water loss may adversely affect other supplier priority areas like water affordability.

Response: We do not believe the regulation overemphasizes water loss control.

Comment C4-10: To help ensure reliable data availability, we recommend SWRCB staff work with DWR staff to establish a long term, efficient and accurate transfer of water audit data as soon as possible.

Response: Thank you for your comment. Staff have been and will continue to work with DWR to establish the most efficient and accurate transfers of water audit data.

Comment C4-11: We recommend a regular updating of the standards/inputs spreadsheet and timely correction of errors. As this data is publicly available, this recommendation will minimize inaccurate citations of supplier standards in media publications and analysis performed by external stakeholders.

Response: Thank you for your comment. Staff is planning on updating the standards as needed.

Comment C4-12: Please define “high leakage zones” and acceptable methods for their identification. Currently, the proposed language for Question 5 reads: *“Has your agency identified portions of your system or pressure zones that have high operating pressure (80 psi or higher)?”* However, Question 5 and subsequent Questions 6, 7, and 9 then refer to “high leakage zones,” but do not define this term. Please define “high leakage zones” within the questionnaire and clarify if “high leakage zones” are simply areas with high pressure (80 psi or higher), or if there is some other definition. For example, would “high leakage zones” refer to areas of the distribution system where higher numbers of large leaks have been reported historically (volume) or higher numbers of leaks of any size have been reported (frequency), or is it instead specifically related to areas with pressure above 80 psi where such high pressure might increase unreported or background leakage? As currently worded, this question would be difficult to answer appropriately.

Response: “High leakage zones” will be defined in the questionnaires as areas with high pressure (80 psi or higher). No changes were made to the regulatory text.

Comment C4-13: Section 984(e) lays out requirements for a water supplier to receive a new standard following system consolidation. The process includes a period of time when the supplier will have no applicable standard at all. To avoid the potential for gaming, this process should be open to systems where a new system configuration due to consolidation brings about significant change, rather than small incremental changes. The option for seeking a revised standard following hydraulic consolidation should be qualified as follows:

(e) If a supplier hydraulically consolidates another system within its service area that increases the number of active service connections by 10% or more, the supplier will have a period of 5 years before being given a new standard.

Response: While suppliers may not be adding many new service connections, they are likely to be adding service connections that have not participated in a water loss control program and may leak much more water on a per connection basis than the original system. For this reason, and to not discourage appropriate consolidations, we believe it is appropriate to give suppliers time to integrate the consolidated system into their own and receive an updated standard based on the data for the new combined system. The period of 5 years is necessary to allow enough time for four years of audit data collection and submission.

Comment C4-14: Section 980(a) of the draft regulation is inconsistent with AWWA M36. The text implies that district metered areas could be a required component of an active leak detection program. Revise Paragraph (a) of Section 980 to read:

“Active leak detection” means a leak control strategy utilizing ~~the appropriate combination~~ of leak detection surveys and may include continuous monitoring of flows to proactively detect and locate leaks in water distribution systems owned or operated by urban retail water suppliers.

Response: As defined, Active Leak Detection does not require both leak detection surveys and continuous monitoring of flows to be utilized if one of those methods is not appropriate.

## C5. Text Wording Changes

Comment C5-1: In section 983(b), subparagraphs (2) and (3) should be clarified as follows:

(2) Placement, inspection, maintenance and repair of devices installed for controlling pressure transients in the distribution system

(3) Placement, inspection, maintenance and repair of pressure reducing/modulating valves installed in the distribution system

Response: Thank you for your comment. The current text already encompasses the information that will be asked about in the questionnaire.

## C6. Leak Reporting Registry

Comment C6-1: Section 983(d) sets out the reporting requirements for water main breaks. These reports will have great value to the water industry as a whole, as well as to the individual reporting entities. To facilitate comprehensive analysis and robust findings, this reporting requirement should apply to all urban retail water suppliers, including those that qualify under section 982(d). The main break responses of water suppliers with very low levels of real loss will be an important contribution to this dataset. The 982(d) exclusion should be removed from this paragraph.

Response: Thank you for your comment. Suppliers that qualify under section 982(d) are low loss suppliers that meet specific criteria related to high data quality for the purpose of being exempted from reporting requirements.

Comment C6-2: We recommend the leak registry reporting only be required when a water supplier exceeds its real water loss standard. This approach mirrors the apparent loss reporting trigger and reduces unnecessary supplier reporting requirements. This approach mirrors the apparent loss reporting trigger and reduces unnecessary supplier reporting requirements. If a water supplier exceeds its real loss standard, it would report the data required in the leak registry for the prior three years and, in the future, on a three-year cycle until the supplier meets its real loss standard again.

Response: Leakage characteristics vary by region and system, and very little leakage data is publicly available for California utilities. A robust annual leak registry for systems in California will be a helpful database to better understanding water losses that occur in different kinds of water systems and for possible amendments to the regulation. Leak registry data only from suppliers not meeting real loss targets would not provide information that would be needed to assess potential changes on a larger class of suppliers.

Comment C6-3: While State Water Board staff have provided clarification regarding Break Registry content, additional clarification is needed regarding the data to be collected for the Break Registry. Is the State Water Board only interested in bursts or bursts and hidden leaks found through acoustic leak detection? Is the State Water Board interested in only the water system side of the meter leaks or customer side leaks too?

Response: The regulation specifies that “at a minimum the following data: brake identifier (e.g., name, number, cross street), date and time the break was found, date and time the break was repaired, estimated duration of the break, and estimated water volume lost through the break.” Further specificities of the leak reporting registry will be provided with the template that will be available on the board’s website. The State Water Board is only interested in the water system side of the meter leaks in the current regulation.

Comment C6-4: Additionally, the break registry should include the date and time that the break was first reported, rather than the date and time the break was “found,” which implies the time it was located. The effectiveness and efficiency of work order assignments and leak location procedures are better assessed by measuring the elapsed time from report to repair, rather than from location to repair.

Response: Thank you for your comment. The term “found” refers to when a supplier was made aware of the break.

Comment C6-5: Some commenters would like the leak reporting registry to only be required for suppliers that do not meet their real loss standard. They say the annual registry of water line breaks appears unnecessary for agencies who are meeting the real water loss standards and, if required, would further exacerbate the aforementioned staffing resource issues. Commenters urge the need for centralization and consolidation of data inquiries.

Response: Thank you for your comment. Leakage characteristics vary by region and system, and very little leakage data is publicly available for California utilities. A robust annual leak registry for systems in California will be a helpful database to better understanding water losses that occur in different kinds of water systems and for possible amendments to the regulation. Leak registry data only from suppliers not meeting real loss targets would not provide information that would be needed to assess potential changes on a larger class of suppliers. It will be required for all systems except those meeting the low loss criteria in section 982(d).

Comment C6-6: LADWP also requests SWRCB consider alternative forms of data and/or studies conducted by URWS in lieu of the leak registry that can provide the type of information sought by the SWRCB without imposing a significant reporting burden on URWS. Such reports can include, but are not limited to: asset management studies, infrastructure plans, and real loss component analysis.

Response: Thank you for your comment. Please see the response to Comment C6-4.

Comment C6-7: Contrastingly, providing an accurate leak registry with water loss estimates will be resource intensive and cost prohibitive. Each leak event is documented in multiple databases that collect information on time of leak reported, staff productivity, and costs. With the construction and coordination work required to repair leaks, it is difficult for crews to perform bucket tests or do other water loss volume calculations in the field. Further, cost data for LADWP repair crews is not broken down by each event. Attempting to calculate the information required by the leak registry for each leak event will be a laborious process and require several months to complete. To ensure consistency in reporting requirements, LADWP recommends that the leak reporting registry become a requirement only for those suppliers that do not meet their real loss standard at the time of compliance assessment.

Response: Thank you for your comment. Leakage characteristics vary by region and system, and very little leakage data is publicly available for California utilities. A robust annual leak registry for systems in California will be a helpful database to better understanding water losses that occur in different kinds of water systems and for possible amendments to the regulation. Leak registry data only from suppliers not meeting real loss targets would not provide information that would be needed to assess potential changes on a larger class of suppliers. It will be required for all systems except those meeting the low loss criteria in section 982(d).

## C7. Multiple Systems

Comment C7-1: We recommend that urban retail water suppliers operating Districts consisting of multiple public water systems be provided a consolidated water loss standard incorporating a weighting of each system based on the number of connections.

Response: Suppliers will be required to report standards by individual system. Having suppliers have a single standard would create the potential for suppliers to choose to focus water loss control efforts on some systems and leave out other systems, which could create equity issues.

## C8. Questionnaires

Comment C8-1: LADWP recommends that the SWRCB include comment boxes for each question on the questionnaires to allow detailed explanations of programs and operational practices that will clarify the responses given. This will ensure that the SWRCB is fully informed on URWS practices prior to developing additional standards.

Response: Thank you for your comment. The Board will consider your comment when finalizing the questionnaire templates. Adding optional comment boxes to the questionnaires does not require a change to the regulation text.

Comment C8-2: In Section 983, provision should be made to ensure that responses are in a standard format that lends itself to review and analysis of large numbers of submissions. The language should require submission in standardized format as follows: “Each urban retail water supplier . . . shall submit responses on such forms as the Board may specify to specific questions developed by the board . . .”

Response: Thank you for your comment. To assist suppliers, the board will provide forms for submitting the questionnaires.

Comment C8-3: In both section 983(a) and (b), the introductory sentences for the listed requirements are unnecessarily imprecise, stating the responsibility of the Board rather than more appropriately the responsibility of the respondent water supplier. In both cases, wording should be modified as follows:

Responses shall convey ~~Questions shall solicit~~ information on each of the following:

Response: Thank you for your comment. This part of the regulation is necessarily specifying the information that is asked for in the questionnaires; the regulation specifies that responses are required in the preceding sentence.

Comment C8-4: In section 983(a), to avoid confusion between meter testing and meter calibration, volumetric testing practices for source meters should be referred to as “flow testing” (as was done in subparagraph (6)), as follows:

(3) Frequency with which source meters are flow tested

Response: Thank you for your comment. This language is left broader to allow for any questions related to meter testing.

Comment C8-5: Please consider adding language in question 9 to address the following concept: “If the Agency’s account activation process allows for this time lapse, does the Agency have a policy for billing the consumption?” This more detailed question would help determine if there are policies in place to avoid such unbilled consumption.

Response: Thank you for your suggestion. The board will consider your suggestion as it identifies the questions that will be asked on the questionnaires, consistent with the regulation text.

Comment C8-6: Please consider adding the following language: “If the Agency’s billing policies allow a location to close its account (because the house is vacant, for example), does the Agency have policies or practices in place to determine if there is unauthorized consumption at those locations and to bill for said unauthorized consumption?” For example, although ACWD would allow a customer to close an account, agency staff would still read the meter to see if there was consumption at a closed location, and, if consumption was registered, would then require the resident to sign up for service and be billed for that consumption. The current language does not recognize this possibility.

Response: Thank you for your suggestion. The board will consider your suggestion as it identifies the questions that will be asked on the questionnaires, consistent with the regulation text.

## C9. Small Systems

Comment C9-1: All definitions need to be consistent with the Statute. In particular, the regulation’s definition of Urban Retail Water Supplier (URWS) needs to be the same as Water Code section 10608.12 and California Code of Regulations, title 23, section 638.1. The language regarding small systems should be deleted. Additionally, all the language that makes small systems applicable needs to be deleted.

Response: Thank you for your comment. The definition of Urban Retail Water Supplier in the regulation is consistent with and interprets the statutory definition, and to the extent the definition differs from any of regulatory definitions there is no conflict because the definition in section 980 only applies to the specific requirements of chapter 3.5 of the Board’s regulations. No changes were made.

Comment C9-2: The regulation should exclude any small system (serving fewer than 3,000 end users or less than 3,000 acre-feet of potable water annually) that is one of multiple systems owned or operated by an urban retail water supplier. Differentiating the rules for these small systems is important to account for the economies of scale they lack, and the greater opportunity for economical water savings from focusing water loss efforts on the owner/operator’s larger systems.

Response: Small systems are only included if they collectively serve more than 3,000 acre-feet or 3,000 service connections and are owned and operated by the same supplier (or meet other specific criteria). This will help account for the economies of scale they may lack, since these small systems are not independently owned and operated but are part of a larger group of systems.

## C10. Technical and Financial Assistance

Comment C10-1: Continue to request the State Water Board help secure additional funding for technical and financial assistance for water suppliers to customize supplier specific inputs for the economic model, apply for a variance, adjustment or offramp, and to support meeting their real water loss standard. Suppliers serving disadvantaged communities may need additional and/or prioritized funding.

Response: State Water Board staff is available for guidance, one-on-one assistance, and support for supplier adjustments to the default parameters, apply for a variance, and adjustments processes. Financial assistance is not in the scope of this regulation, but funding opportunities may be available through other Board Divisions or processes.

Comment C10-2: The state’s investment in training provided by the Water Loss Technical Assistance Program in 2018-19 played a significant role in this developmental stage. A similar opportunity exists now to provide training on data collection for system pressure and apparent loss elements.

Response: Technical training is not in the scope of this regulation.

Comment C10-3: We continue to urge the State Water Board to provide training programs and one-on-one assistance in navigating the economic model in order for CWD to increase our understanding of the relationship between the data inputs and the models water loss target outcomes.

Response: State Water Board staff has published guidance on the economic model equations. Staff will be available for one-on-one assistance in navigating the economic model.

## C11. Variances

Comment C11-1: The Proposed Water Loss Standards regulation already addresses the issue of cost-effectiveness in Section 985. We ask that technical infeasibility be similarly addressed. This can be done by amending Section 985(a) along the lines of the following:

1. An urban retail water supplier may seek approval of a variance to its real water loss standard if needed to respond to unexpected conditions out of the utility’s control, ~~or~~ where a supplier’s standard has been set according to section 928 (b) (2), or where a supplier’s standard has been set below its level of unavoidable real loss (UARL).

Any request for a variance based on a standard being set below the level of unavoidable water loss shall include a description of water loss control activities. To be approved, the request must demonstrate that even if the water supplier makes supplier-specific parameter adjustments to the economic model that the resultant water loss performance standard is lower than the supplier’s level of unavoidable real loss.

Response: No changes were made. The unavoidable real loss calculation does not apply consistently to different types of systems and therefore, has not been included in the regulation. Please also see the response to Comment C3-3. If other accommodations are needed, variances, adjustments, and extensions are available. If those options do not work, alternative enforceable agreements are available to tailor compliance options to a supplier’s specific needs.

Comment C11-2: We request clarification in section 983(a), (b), (c), and (d) of the Draft Regulation that water suppliers with an approved variance for cost-effectiveness or technical infeasibility (performance standard is below the level of unavoidable real loss) reasons are eligible for the off-ramp and associated reporting exemptions irrespective of their adjusted numeric target if those suppliers meet the data quality requirements and are in compliance with their adjusted standard.

Response: The low loss off ramp is only available for suppliers that have both high data quality and low losses, defined as less than 16 GPCD. Until data practices improve overall, exempting suppliers with higher real losses from reporting is not currently appropriate even if existing data shows that further reductions in water loss are not cost effective. Please also see the response to Comment A2-3.

Comment C11-3: MWDOC supports the proposed variance process described in section 985(a), (c) and (d) for the potentially limited scenarios in which a supplier’s present value of net benefit over 30 years is less than 1 (as calculated by the State Water Board’s economic model) and where appropriate documentation can be provided that maintaining baseline real water loss is not cost-effective long term.

Response: Thank you for the support.

Comment C11-4: Section 985(c) lays out requirements for a variance sought by water suppliers that received a standard based on the present value of net benefits being negative, pursuant to section 982(b)(2). When determining that water loss control activities during the baseline period were not cost effective, the Board should require a full accounting of monetary costs and savings by these activities, as follows:

(c) Any request for a variance based on a standard being set according to section 982 (b)(2) shall include a description of water loss control activities during the baseline period, the costs of water loss control activities during the baseline period, and an evaluation of the monetary value of water saved and other costs avoided (e.g., overtime, property damages) by those water loss control activities.

Response: Requiring suppliers to report speculative costs is unlikely to produce better information or aid in evaluating a cost-effectiveness variance. No change has been made.

1. Lambert, A.O. (2009). Ten Years Experience in using the UARL Formula to calculate Infrastructure Leakage Index. [↑](#footnote-ref-2)