

Revised Draft Proposal:
Pressure Management in Water Loss Control Regulation

Impact of Pressure on Leakage

High water pressure in a distribution system increases strain on water distribution infrastructure, exacerbating chronic seepage areas or small leaks, and increasing the likelihood of pipe bursts and failures. It is well established in water loss control literature and supported by case studies¹, that reducing pressure reduces leakage volumes, especially when leaks are too small to be detected by leak detection equipment. Water hammers or pressure transients can also stress components and increase pipe bursts and other distribution component failures. Common causes of pressure transients are rapidly opening or closing valves or rapidly starting or stopping pumps. Transients can be reduced by controlling valve and pump changes or by installing surge tanks.

Prior proposal

In the prior draft staff proposal, the draft economic model to calculate volumetric standards for real loss included a component to evaluate the feasibility of pressure management and calculate the associated feasible volumetric reduction in real loss. Public comments were received on the draft economic model released prior to the stakeholder workshop in September 2019. Several public comments highlighted the utility-specific nature of the applicability of pressure management. Utilities must strike a delicate balance between maintaining water quality and meeting fire flow requirements, on one hand, while reducing excessive pressures that could increase bursts and leakage in the system.

Comments received and staff response

Staff reviewed public comments received after the stakeholder workshop conducted in September 2019 and developed an initial draft of this proposal with the objective of obtaining utility specific data to evaluate the feasibility of pressure management and the associated water loss reduction, which were labeled as 'Distribution system pressure management plans'. Staff conducted a series of focused stakeholder calls to receive feedback on the initial draft in December 2019.

Additionally, water suppliers also provided feedback that the feasibility and potential for pressure management should be evaluated for portions of distribution systems with higher leakage, rather than those with higher pressure. Based on comments received,

¹ Lambert, A. et al, (2017), Pressure: Leak Flow Rates Using FAVAD: An Improved Fast-Track Practitioner's Approach, Computing and Control for the Water Industry Water Research Foundation, Report 4321, 2014, Pressure Management: Industry Practices and Monitoring Procedures

the revised proposal aims to reduce reporting burdens, while obtaining additional data on feasibility of implementation of pressure management.

Staff proposes that urban retail water suppliers would complete Water Board's data submission request by 2024 and provide updated responses to the data submission by 2027. The current staff proposal does not include additional standards for 2036, in addition to standards for 2028. But the data submission request would provide the State Water Board information to evaluate any potential for incorporating leakage reduction from pressure management in future standards.

Proposed regulatory requirement

Urban retail water suppliers would provide responses to the following by 2024 and provide updated responses in 2027:

1. Does your agency have a program to regularly inspect and repair devices installed for controlling pressure transients in the distribution system, so that they are maintained in working condition?
 - Agency has a program to regularly inspect installed pressure transient control devices.
 - Agency plans to have a program beginning in year _____. (only for 2024) (skip question 2)
 - Agency does not plan to have a program to regularly inspect installed pressure transient control devices. (skip question 2)
2. On an average, how frequently is each device installed in your system for controlling pressure transients inspected, to maintain them in working condition?
Once every ____ years
3. Has your agency identified portions of your system or pressure zones that have high leakage?
 - Agency has identified high leakage zones in the distribution system
 - Agency plans to have identify high leakage zones by year _____. (only for 2024; skip questions 4 and 5)
 - Agency does not plan to identify high leakage zones. (skip questions 4 and 5)
4. Has your agency evaluated the potential for reducing or modulating pressure for reducing leakage in these zones? Consider pressure reduction/modulation during low demand periods as an approach for pressure reduction, if your agency evaluated that.
 - Agency has evaluated potential for pressure reduction for high leakage zones. (skip question 5)
 - Agency plans to evaluate potential for pressure reduction for high leakage zones by year _____. (only for 2024, and skip question 5)
 - Agency does not plan to identify potential for pressure management for high leakage zones. (skip questions 6 and 7)

For 2027 only:

5. If your agency has not evaluated or planned to evaluate the potential for reducing or modulating pressure for reducing leakage in high leakage zones identified, how does your agency plan to reduce the leakage in these zones?
 - Prioritized asset management
 - Leak detection and repair
 - Reduction of time passing between report of leak or break and repair
 - Agency does not plan to reduce leakage in these zones.

6. Based on your agency's evaluation of potential for reducing or modulating pressure, has your agency determined if pressure management can be implemented while meeting water quality and fire flow requirements for the distribution system?
 - Yes, pressure management can be implemented in portions of the distribution system.
 - No, pressure management cannot be implemented in portions of the distribution system. (enter zero as a response to question 7)

7. Provide the estimated feasible water loss reduction (acre-feet per year) as a result of your agency's pressure management approach, projected to 2035.