Water Loss Performance Targets: An Overview

WSO

RWA
Regional Water Authority
BUILDING ALLIANCES IN NORTHERN CALIFORNIA

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POWERING WHAT'S NEXT

June 2, 2022

Introductions

- Amy Talbot, RWA
- Kate Gasner, E Source

Agenda

- Context: California Water Conservation Framework
- Details: SWRCB Water Loss Standard & Economic Model
- Examples: Utility approaches to date

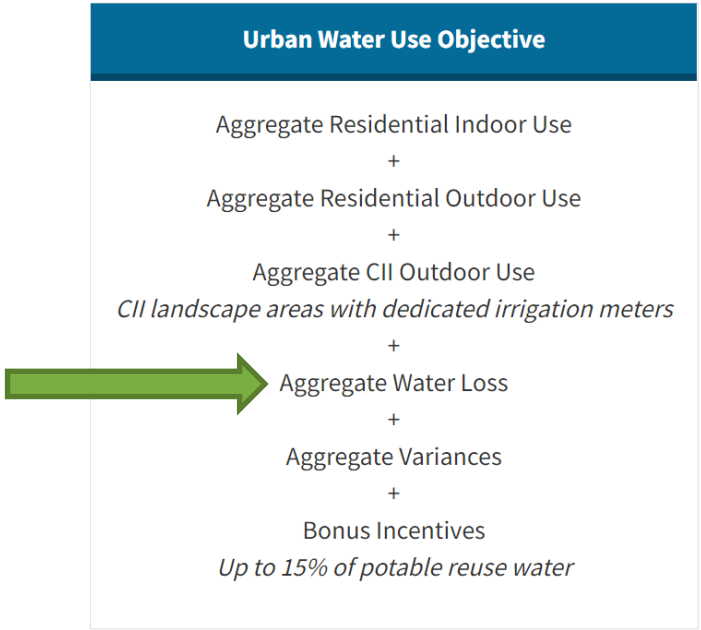
Regulatory Background

Water Efficiency Legislation Overview

- *SB 555 – specific to water loss*
- Executive Order, *Making Water Conservation a California Way of Life*
- Framework Report (2017), *Implementing Governor's Executive Order B-37-16*
- SB 606 and AB 1668 (2018), *Water management planning*

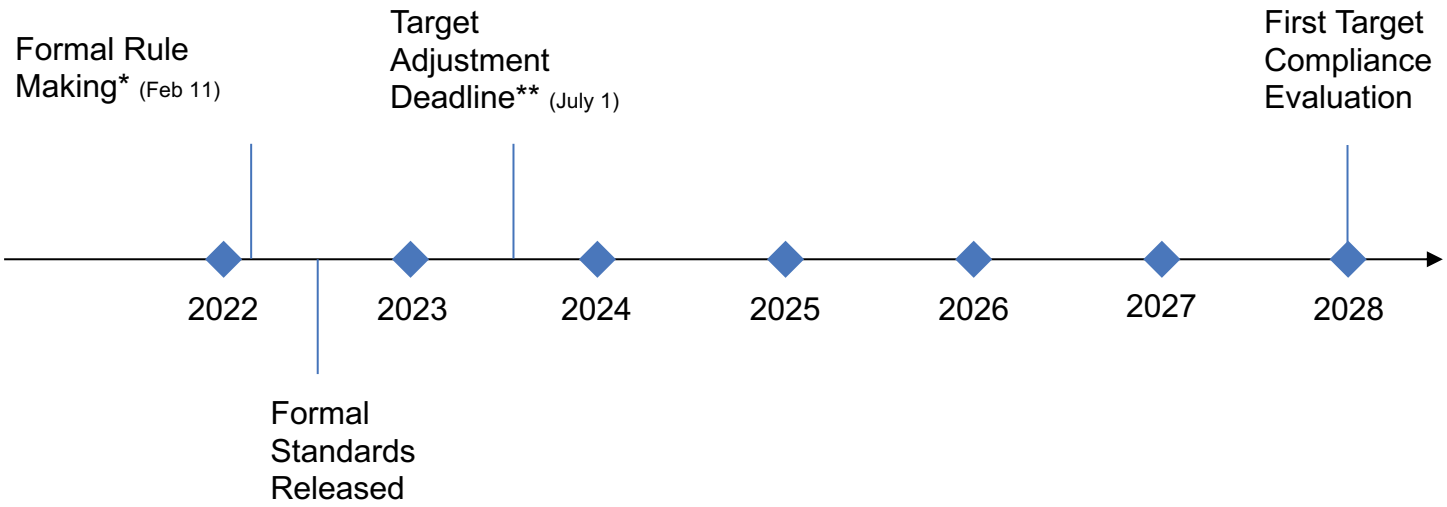
Water Efficiency Framework Components

- Urban Water Use Objective (UWUO)
- CII Performance Measures
  - CII water use classification
  - Mapping of accounts
  - Implement in-lieu tech or BMPs



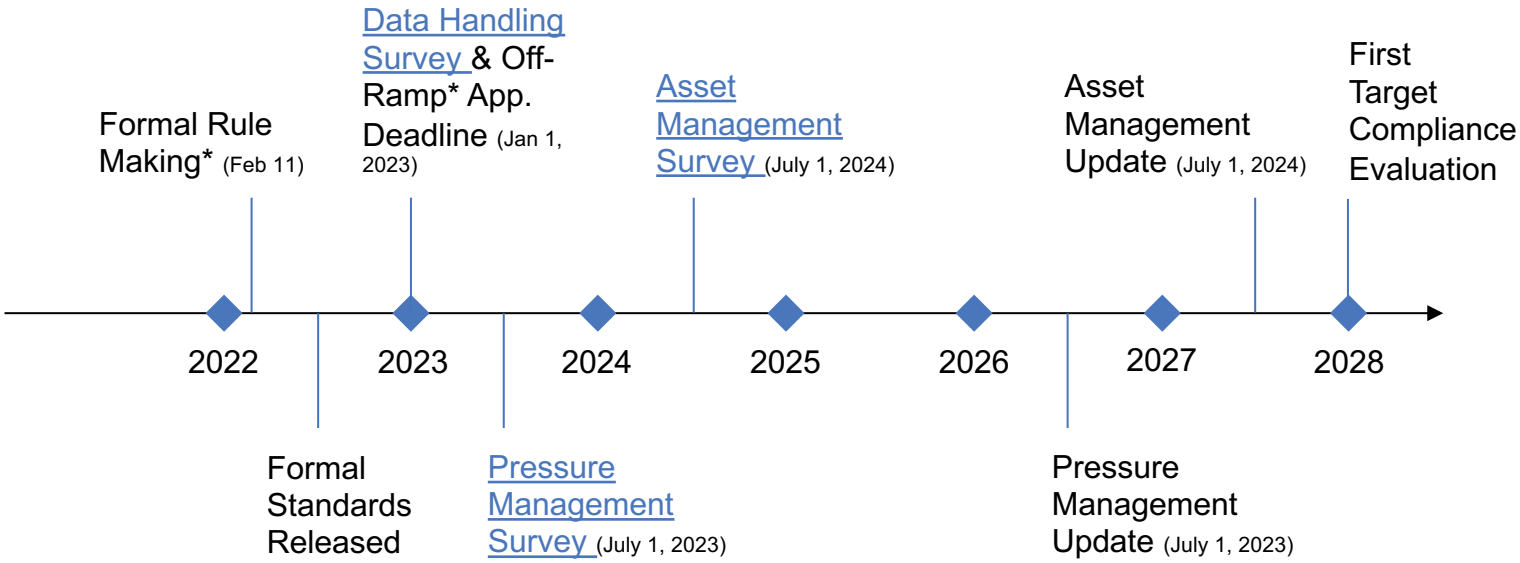
https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/california_statutes.html

Water Loss Target Timeline



*Adjustments filed before February 11, 2022 & approved will be reflected in formal standards released later this year (2022)
**Adjustments filed after July 1, 2023 require SWRCB formal board approval.

Water Loss Survey/Questionnaire Timeline



*Utilities qualifying for the “off-ramp” are exempt from survey submissions & subsequent updates.

Regulatory Framework

Residential Indoor & Outdoor Objective

+

Irrigation Meter Objective

+

Real Loss

+

Approved Variances

+

Potable Reuse Credits

=

Urban Water Use Objective

Details: SWRCB Cost Benefit Analysis Model

Regulatory Framework

The Target Setting Excel Workbook

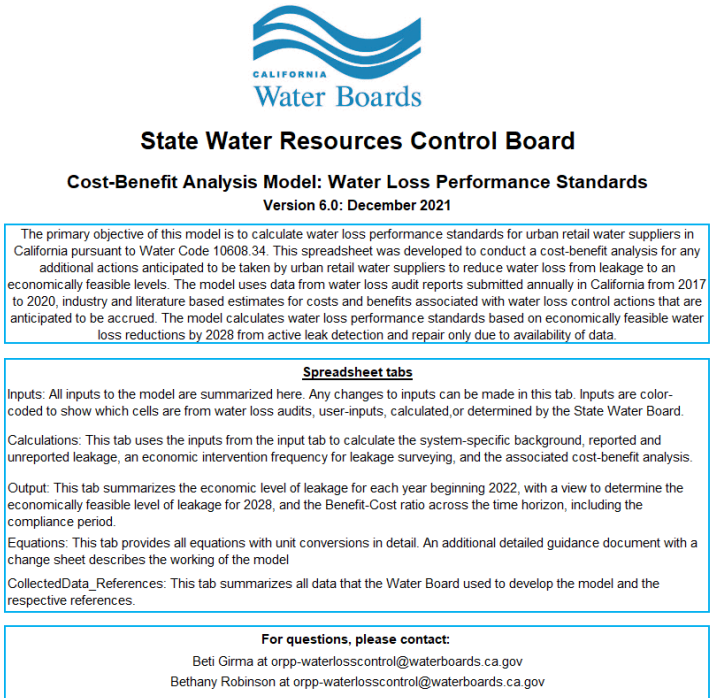
27 Possible Input Parameters

↓

Educated Guessing With Math

↓

Real Loss Target Rate Evaluated in 2028



CALIFORNIA Water Boards

State Water Resources Control Board

Cost-Benefit Analysis Model: Water Loss Performance Standards

Version 6.0: December 2021

The primary objective of this model is to calculate water loss performance standards for urban retail water suppliers in California pursuant to Water Code 10608.34. This spreadsheet was developed to conduct a cost-benefit analysis for any additional actions anticipated to be taken by urban retail water suppliers to reduce water loss from leakage to an economically feasible levels. The model uses data from water loss audit reports submitted annually in California from 2017 to 2020, industry and literature based estimates for costs and benefits associated with water loss control actions that are anticipated to be accrued. The model calculates water loss performance standards based on economically feasible water loss reductions by 2028 from active leak detection and repair only due to availability of data.

Spreadsheet tabs

Inputs: All inputs to the model are summarized here. Any changes to inputs can be made in this tab. Inputs are color-coded to show which cells are from water loss audits, user-inputs, calculated,or determined by the State Water Board.

Calculations: This tab uses the inputs from the input tab to calculate the system-specific background, reported and unreported leakage, an economic intervention frequency for leakage surveying, and the associated cost-benefit analysis.

Output: This tab summarizes the economic level of leakage for each year beginning 2022, with a view to determine the economically feasible level of leakage for 2028, and the Benefit-Cost ratio across the time horizon, including the compliance period.

Equations: This tab provides all equations with unit conversions in detail. An additional detailed guidance document with a change sheet describes the working of the model

CollectedData_References: This tab summarizes all data that the Water Board used to develop the model and the respective references.

For questions, please contact:

Beti Girma at orpp-waterlosscontrol@waterboards.ca.gov

Bethany Robinson at orpp-waterlosscontrol@waterboards.ca.gov

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Key Concepts Defined – Loss Components

Background Leakage

Undetectable using traditional acoustic equipment

Unreported Leakage

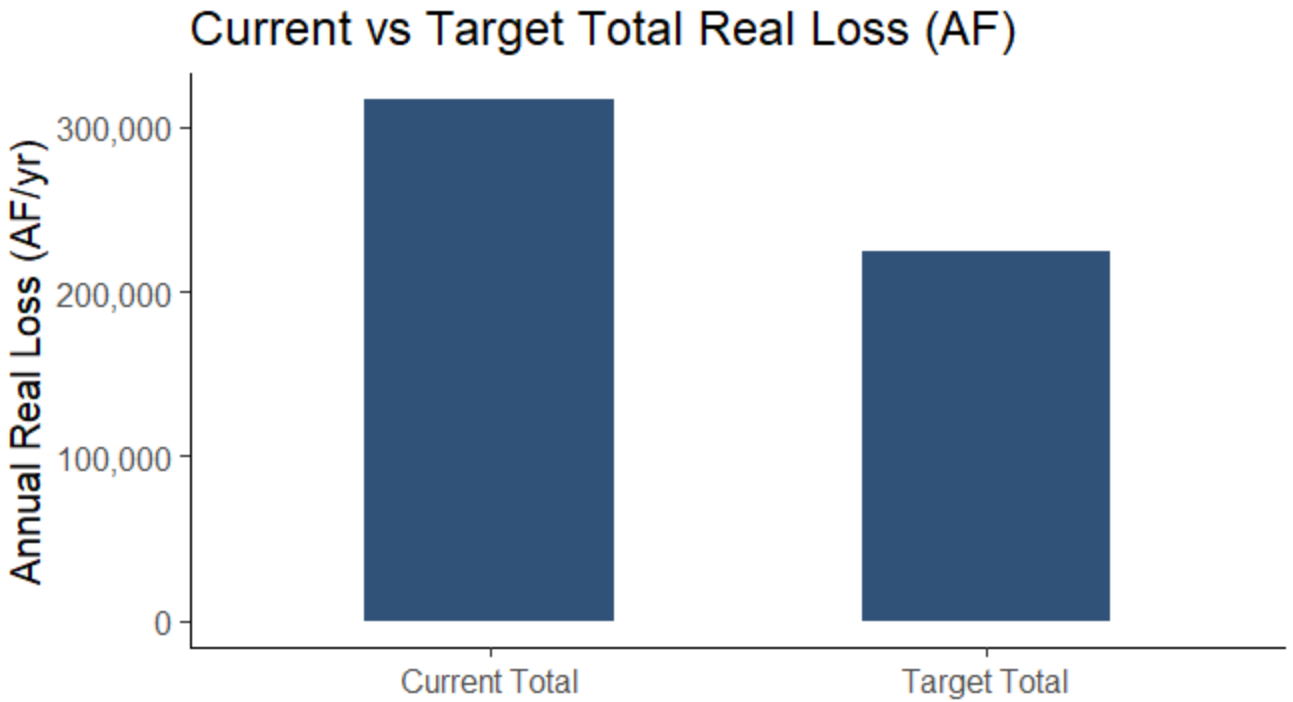
Detectable using traditional acoustic equipment.

Reported Leakage

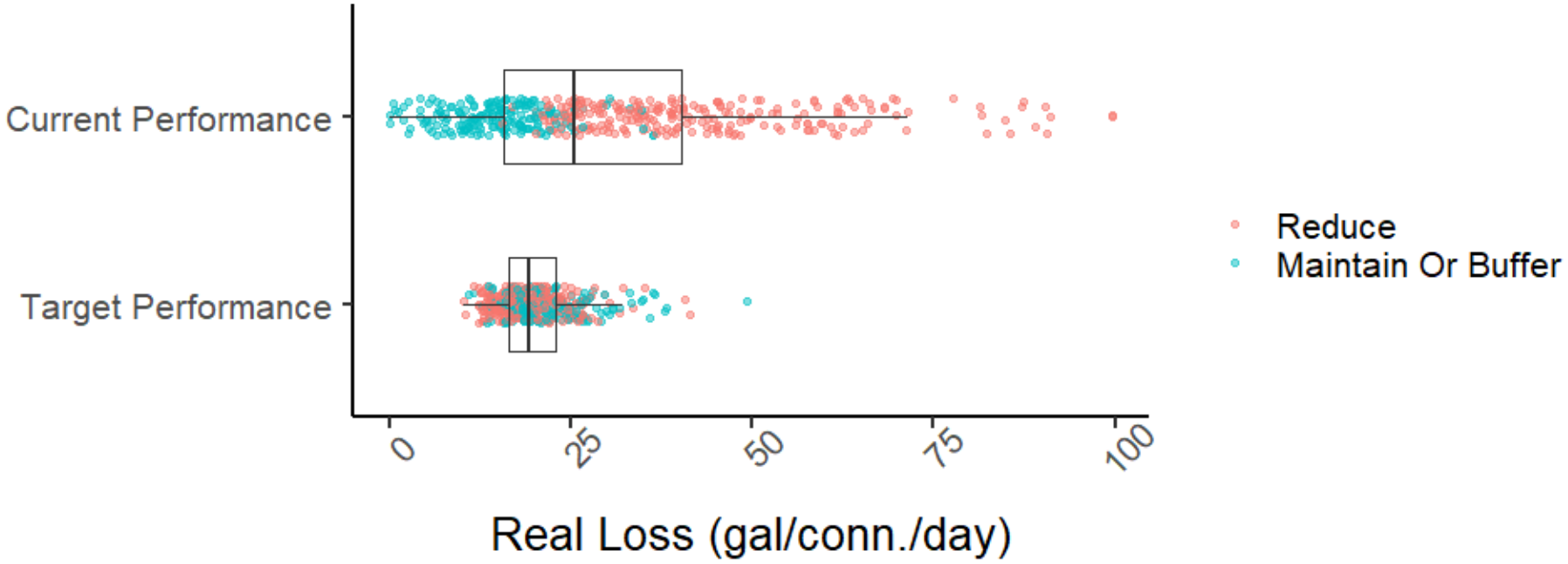
Surfaced and is reported by public or utility staff.

Statewide
Draft Targets

Total Permitted Real Loss



CA Current Performance vs. Target

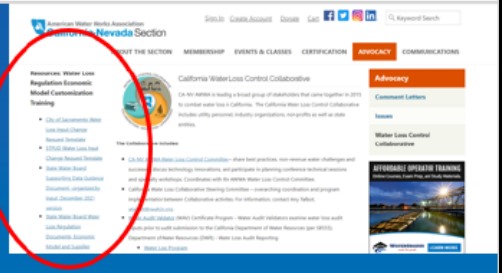


*current performance outliers > 100 gal/conn./day removed

Help is available!

Resources

www.ca-nv-awwa.org/waterlosscollaborative



- Training Presentation Recording and PowerPoint
  - January 27th – CA NV AWWA and MWDOC Sponsored
- City of Sacramento Water Loss Input Change Request Template
- STPUD Water Loss Input Change Request Template
- State Water Board Supporting Data Guidance Document December 2021 version
- State Water Board Water Loss Regulation Documents, Economic Model and Supplier specific water loss targets
- AWWA M36 Manual Water Audits and Loss Control Programs
- AWWA Water Loss Audit Software

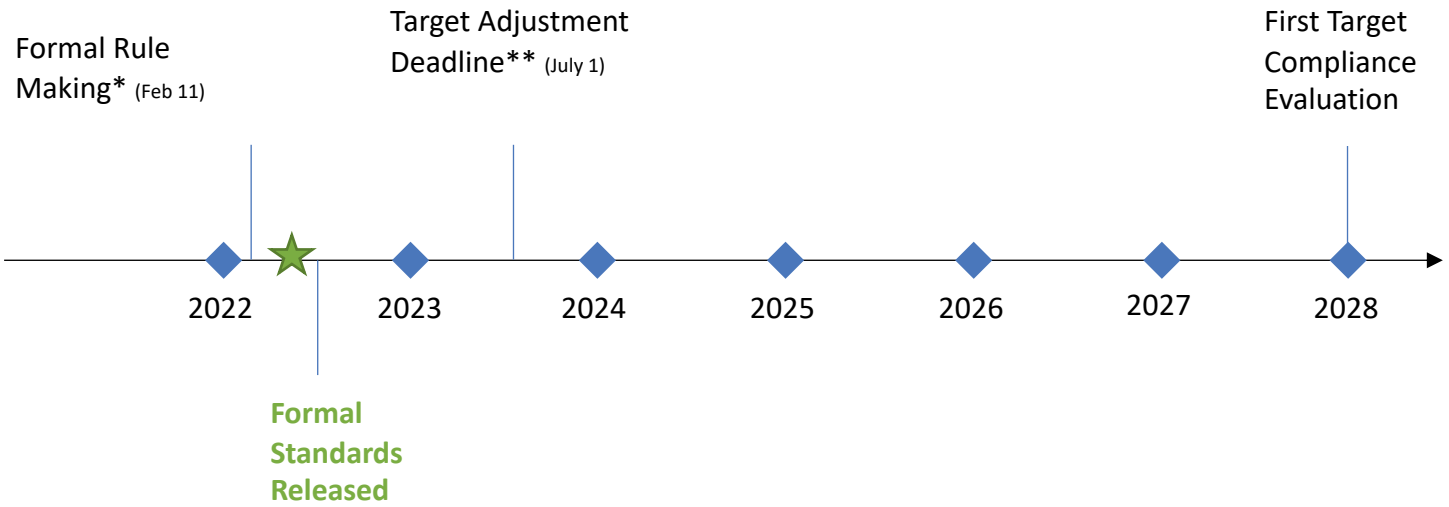
American Water Works Association
California-Nevada Section

Practical Next Steps

- Agency Examples, experience to date

- CalWEP “What The Framework”

What Next



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Thank You!

- Amy Talbot - atalbot@rwah2o.org
- Kate Gasner - kate_gasner@esource.com

APPENDIX

Apparent Loss

Standard

See § 981(d)

- Average apparent loss for any compliance period must be ≤ baseline apparent loss + 5 gpcd
- If apparent loss exceeds above value, supplier must submit an inventory of all apparent losses and calculation/data used to determine apparent losses for the compliance period.

Variances

See § 985(d)-(f)

- Supplier may request variance if increases from average baseline apparent loss are attributable to improvements in data validity.
- Variance may be requested if, after two consecutive years, data validity grades have improved to a grade of 6 or higher for the following inputs:
  - Customer metering inaccuracies; OR
  - *All entries under the heading "water supplied"*
- Variance will be in the form of an adjustment to the apparent loss standard.

Why is it worth understanding mechanics?

- The targets can be customized by adjusting input parameters.
- Compliance with the target is evaluated first in 2028 and every three years thereafter - long time-horizon of use.

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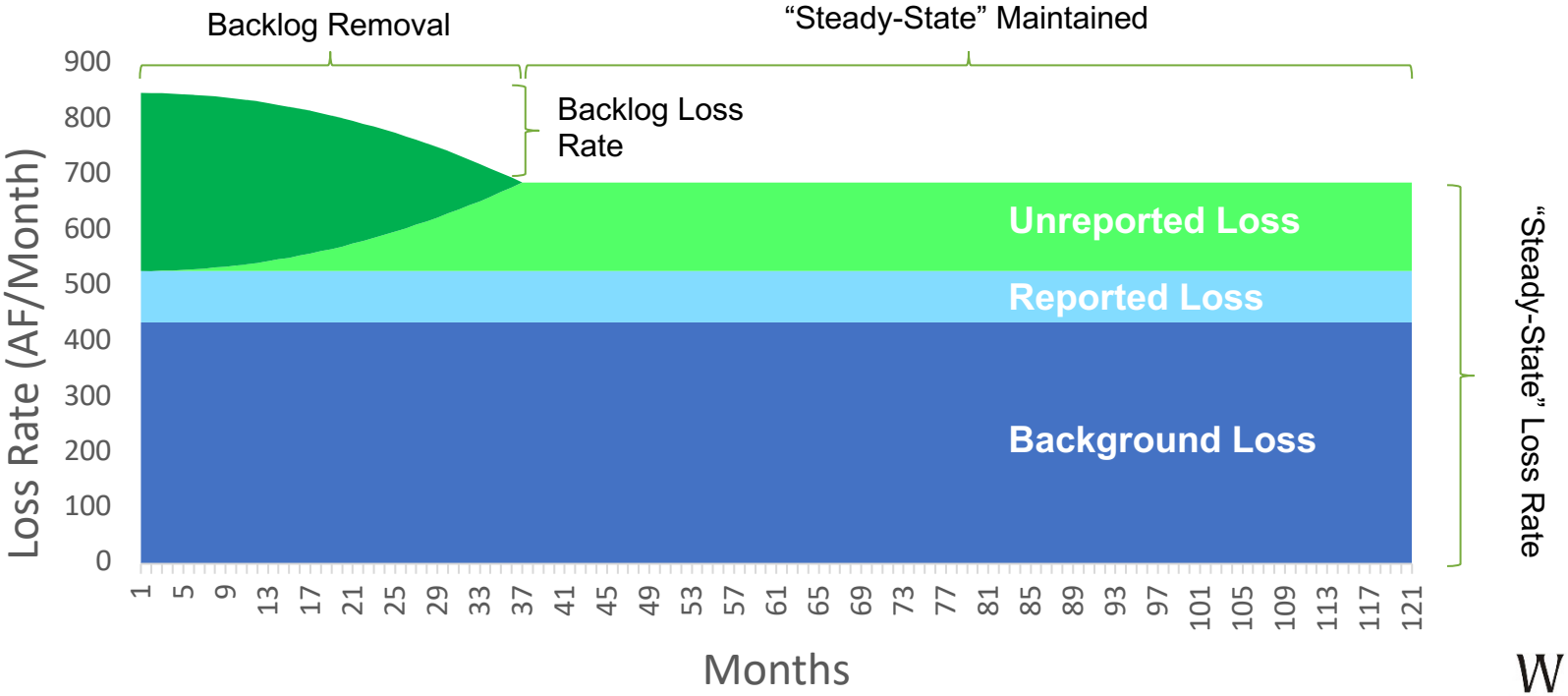
Key Concepts Defined – “Steady-State” Loss

Assumes Constant Leak Detection Survey

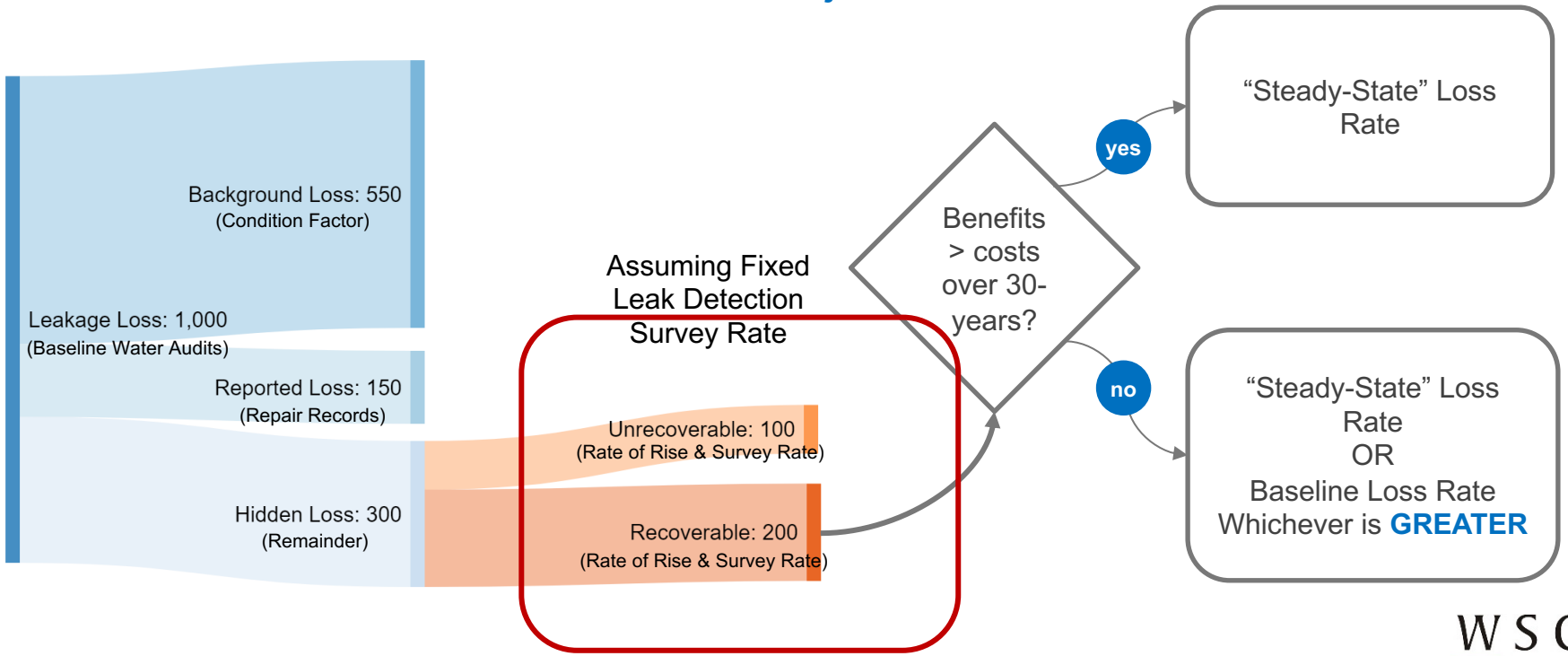


Real Loss Target Model Overview

Component Analysis

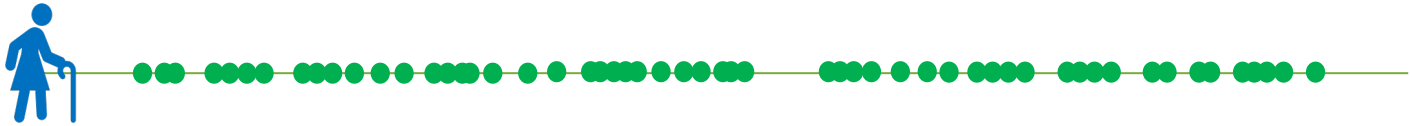
30-Year Loss Rate & Cost Projection

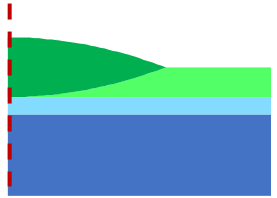
Target Determination



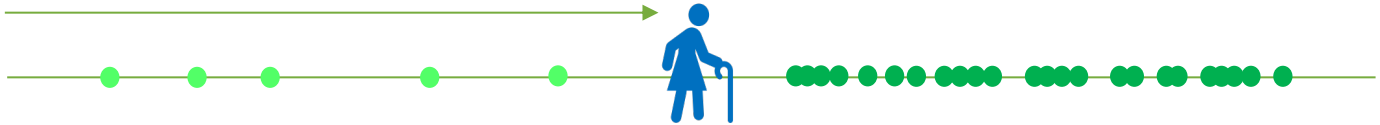
Steady-State Unreported Loss Rate

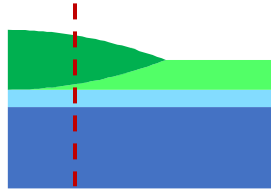
Time = 0



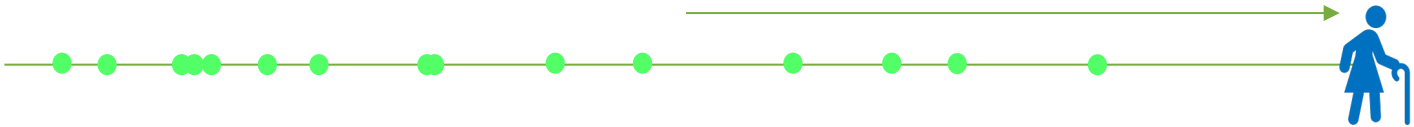


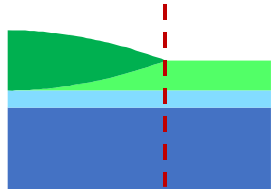
Time = 1/2 Survey



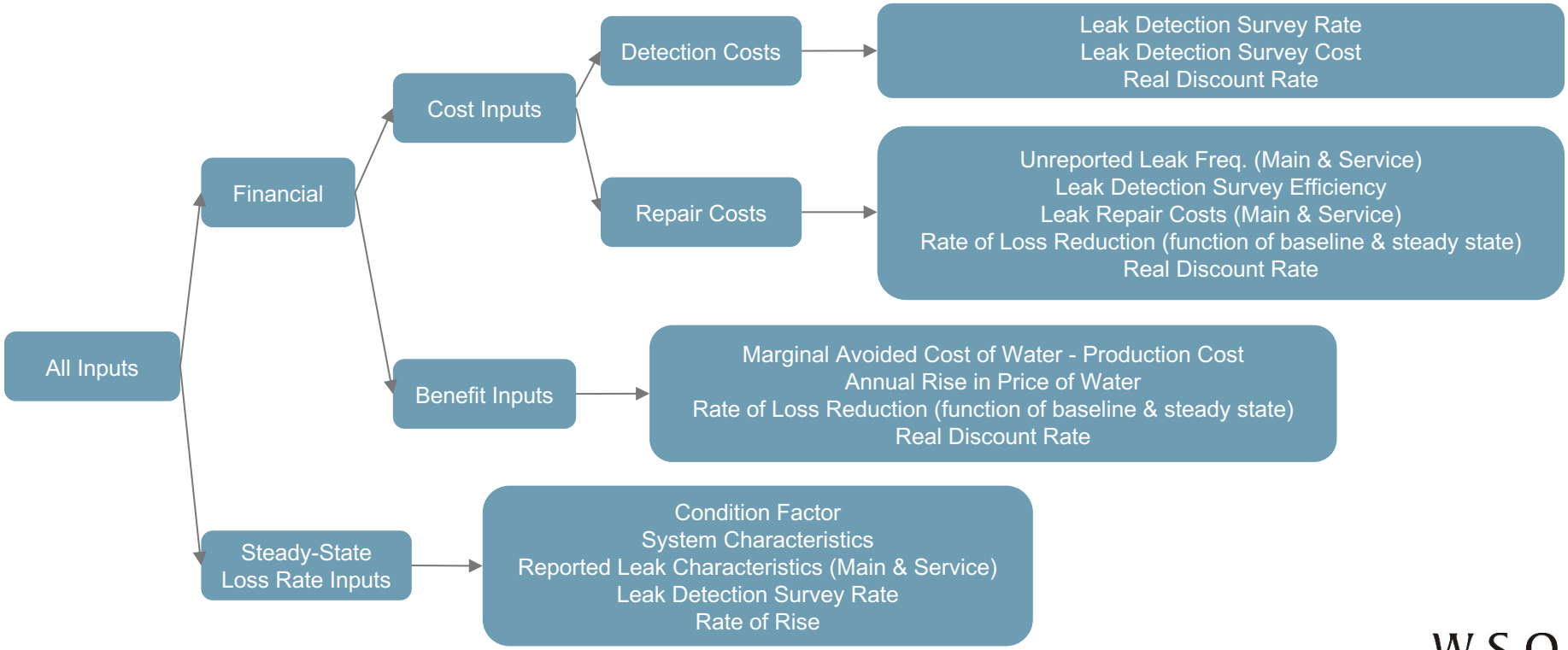


Time = 1 Full Survey





Simplified Model Parameter Taxonomy



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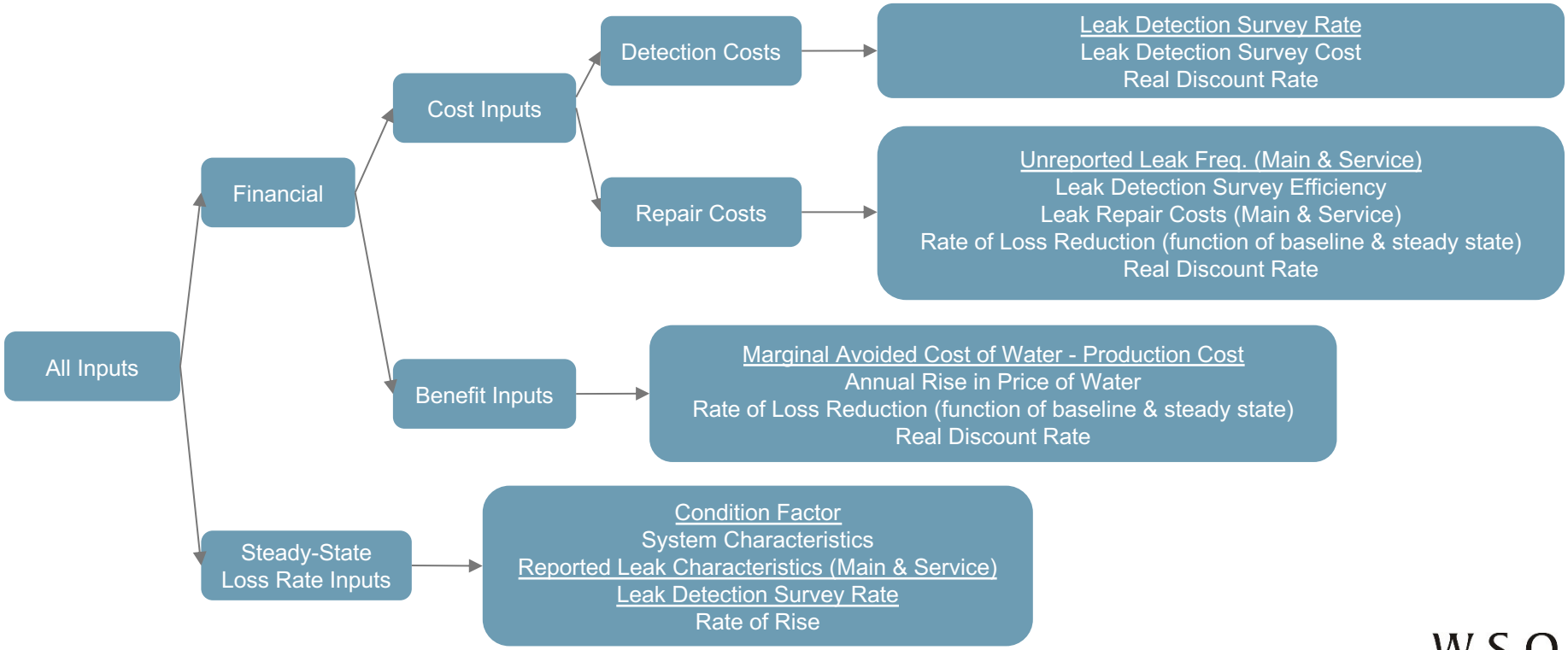

Visualizing Impact of Selected Parameters