Revised Economic Model: Water Loss Performance Standards

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Released Reference Documents

**Rulemaking**
- Proposed regulatory text
- Initial Statement of Reasons with Economic Impact Analysis

**Economic model**
- Revised draft economic model
- Draft guidance for model and adjustments
- Summary of changes from previous version

**Regulatory proposal**
- Fact Sheet on proposed regulation
- Proposed water loss standards
- Questionnaires: Data quality, Asset management, Pressure management
- Alternative compliance pathway (Offramp) - Criteria
Draft Economic Model and Inputs

- Revised to address comments to version released on April 13, 2020 and customized inputs further
- Peer review of economic model in process
- Suppliers have the option to:
  - Discard one outlier from baseline real loss
  - Provide supplier-specific data and justification during comment period
  - Request to adjust input values for economic model due by July 1, 2023
- All inputs supplier-defined except discount rate, life cycle timeline and rise in price of water
Key Consideration 1: Leakage and Available Approaches

- Background leakage
- Reported leakage
- Unreported leakage
Key Consideration 2: Economic level of leakage

**AWWA Methodology assumption:**
- Only background leakage remains after intervention – No backlog

**Need to consider:**
- Steady state v/s backlog
- Repair costs
- Lifecycle cost accounting

AWWA methodology: Based on rate of rise of leakage, unit cost of leak detection and marginal cost of water
Baseline real loss

Background and reported leakage at minimum

Unreported leakage

Number of unreported leaks

Costs of leak repair

Leak detection efficiency

Costs of leak detection

Survey rate based on system size and industry data

Rate of rise of leakage

Production cost or avoided cost of water

Rise in price of water

Unreported leakage reduced each month

Water saved compared to baseline

Associated benefits

Discount rate

Net benefit over life cycle

Positive
Reduce leakage

Negative
Maintain leakage

Discount rate

Discount rate

Production cost or avoided cost of water

Rate of rise of leakage

Survey rate based on system size and industry data

Baseline real loss

Background and reported leakage at minimum

Unreported leakage

Number of unreported leaks

Costs of leak repair

Leak detection efficiency

Costs of leak detection

State Water Board determined inputs

Blocks with blue text: State Water Board determined inputs
Water Savings - Benefits

Intervention v/s No intervention
Baseline: No intervention, business-as-usual

• Rate of rise considered only till first month of first survey for baseline
• Water loss in first month equal with or without intervention as surveying begins
  • Water saved in first month is zero
• Beyond the first month, baseline water loss considered to be constant
Leakage profile

- Reported leaks
  - Mains and service connections and laterals
  - To include lower flow reported leaks

- Unreported leakage
  - Number of unreported leaks
  - To consider smaller leaks
    - more leaks to find, higher repair cost
Costs

• Cost for leak repair for service connections and laterals added
• Unit average cost of leak detection corrected
  • $595 per mile from $605 per mile previously
  • Higher end of the range
  • Estimate included detection and pinpointing
  • Upfront, maintenance, administrative costs included
  • Additional reference data added to model
Draft Economic Model - Revisions

Benefits

• Marginal avoided cost of water converted to present value
  • $1093 from $1126 per acre-foot previously

• Average annual rise in price of water corrected
  • 5.9% from 5.6% previously
  • Historical year data correctly included
  • Marginal price for 2020 included
Model Demo
Key Takeaways

• More customized model inputs
  • Additional system-specific leakage inputs

• Standard is sensitive to:
  • Number and volume of leaks
  • Type of leakage – Detectable?
  • Rise in leakage

• High leakage and high reduction
  • High apparent loss or red flags in audit
Key Takeaways

• Benefit-cost assessment
  • Checks feasibility for reducing losses
  • Key inputs: Unit costs and Value of water

• Per economic model using default values and current baseline real loss:
  • All but 21 suppliers break even by 2028
  • The 21 suppliers are already in compliance per current data
Guidance to Economic Model

• Overview of model framework
• Default inputs to the model – underlying data and rationale
• Guidance for adjustment for each supplier-defined input
• Calculation of impact of leak detection on real loss
• Benefit-cost analysis
Guidance to Economic Model
Peer Review of Economic Model

- Economic model framework
- Benefit-cost calculation and assessment
  - Leak detection and repair costs
  - Avoided cost of water
  - Rise in price of water
  - Discount rate
  - Lifecycle time horizon
  - Projection of costs and benefits across lifecycle time horizon

- Correlation: Water loss reduction with unreported leakage
- Leak profile and
  - Reported, unreported and background leaks Detectable v/s Undetectable
    - Infrastructure Condition Factor
  - Estimated leak detection frequency (not prescribed)
  - Rate of rise of leakage
  - Leak detection efficiency
Economic Model: Next Steps

• Peer review in process
• Formal rulemaking: Suppliers can opt to send economic model with entered data to State Water Board
  • Provide supporting documentation
• Adoption of standards based on model with entered or default data