

WATER LOSS TASK FORCE

AAEES E3S Conference



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Los Angeles Department of Water and Power

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Nation's Largest Public Utility



Sierra Mountains

Bay Delta

LA Aqueduct

State Water Project

Colorado River Aqueduct

Local Groundwater, Stormwater, Conservation & Recycling





Why are we doing Water Loss Audits?

💧 Fulfills California Urban Water Conservation Council (CUWCC) requirements:

- Water loss audit due annually
- Component analysis due every 4 years

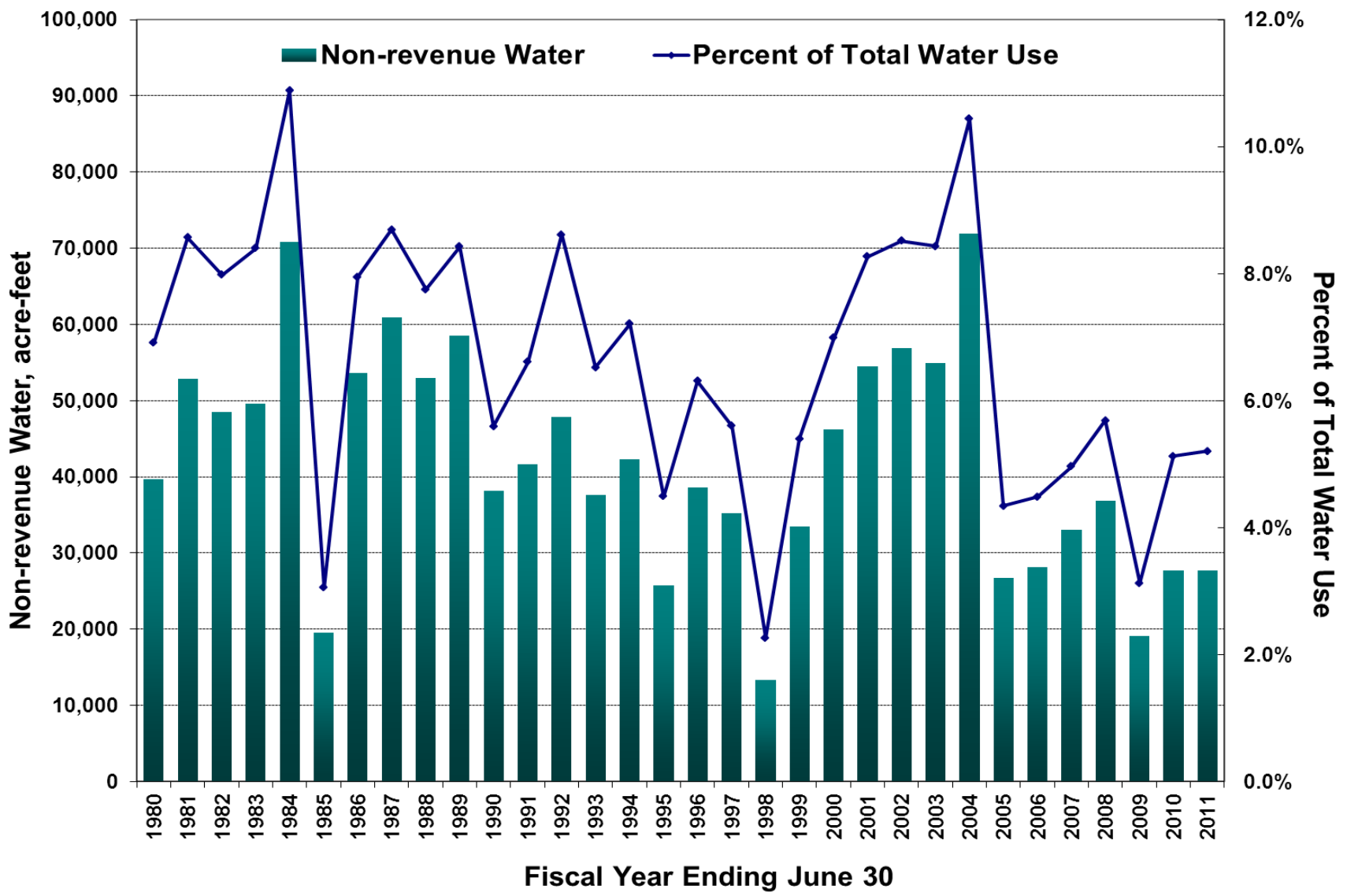


💧 New regulations require water loss audits be submitted annually to State Department of Water Resources

💧 ***Discovering and addressing system water losses saves water and money!***



Historical Tracking of Non-Revenue Water





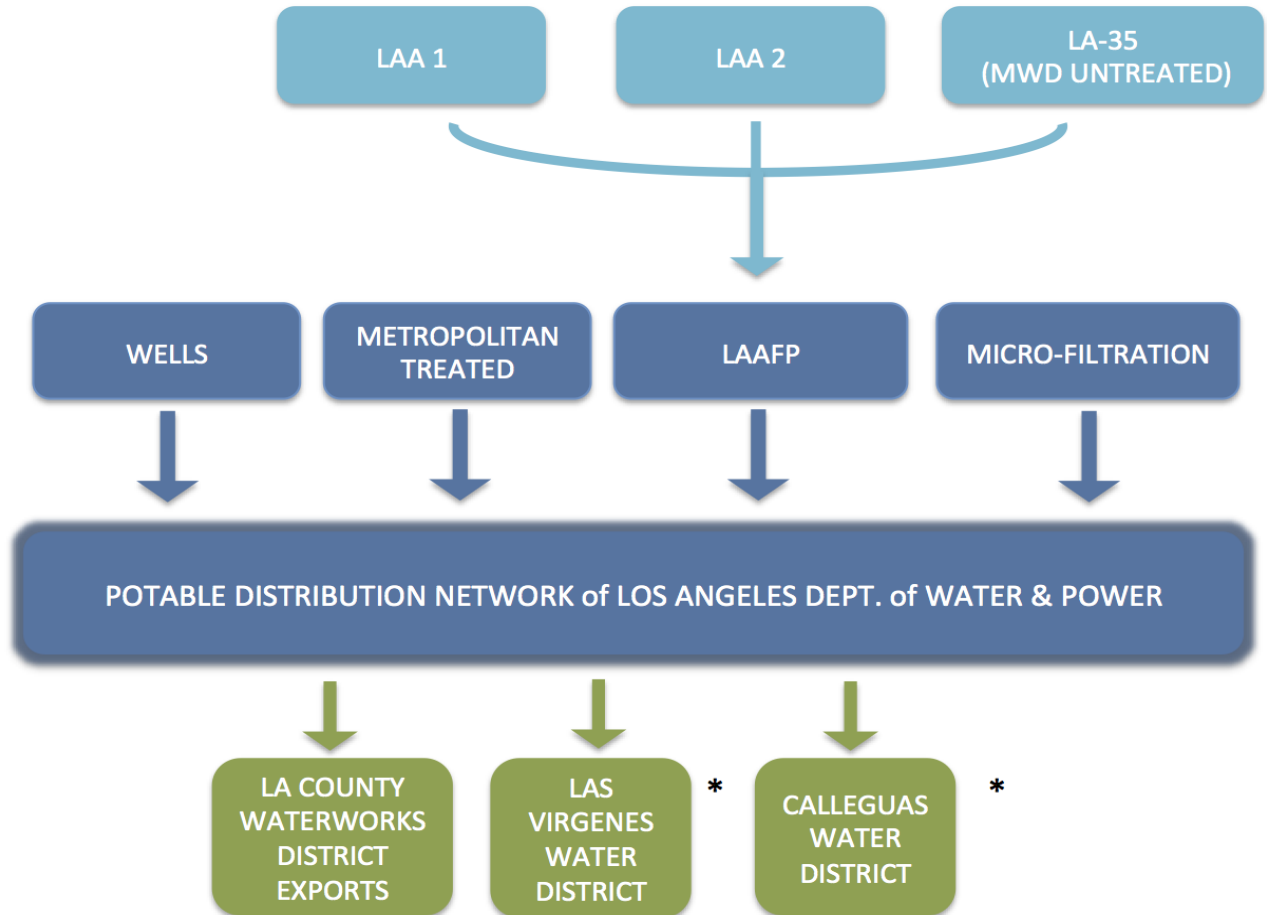
American Water Works Association Water Balance

System Input Volume	Authorized Consumption	Billed Authorized Consumption	Billed Metered Consumption
			Billed Unmetered Consumption
		Unbilled Authorized Consumption	Unbilled Metered Consumption
			Unbilled Unmetered Consumption
	Water Losses	Apparent Losses	Unauthorized Consumption
			Customer Meter Inaccuracies
		Real Losses	Leakage on Transmission and Distribution Mains
			Leakage and Overflows at Storage Tanks
			Leakage on Service Connections up to Point of Customer Meter



System Input Volume Validation

💧 Analysis of system input volume data and meter accuracies

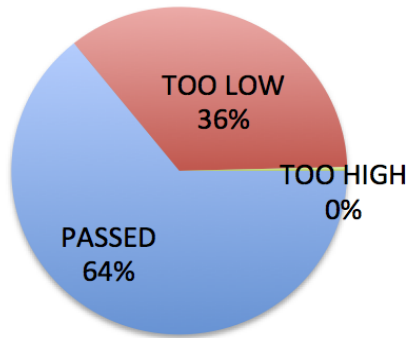


*no exports during FY 2010-2011

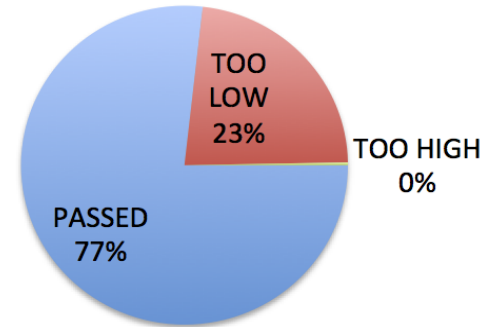


Apparent Losses: Small Meter Testing

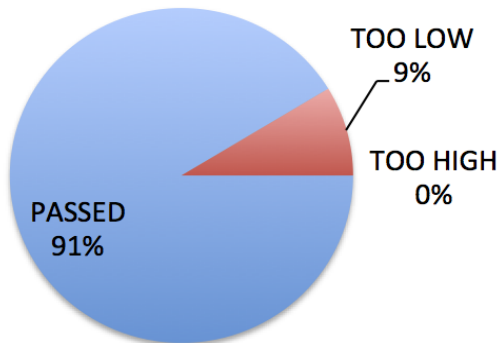
LOW FLOW



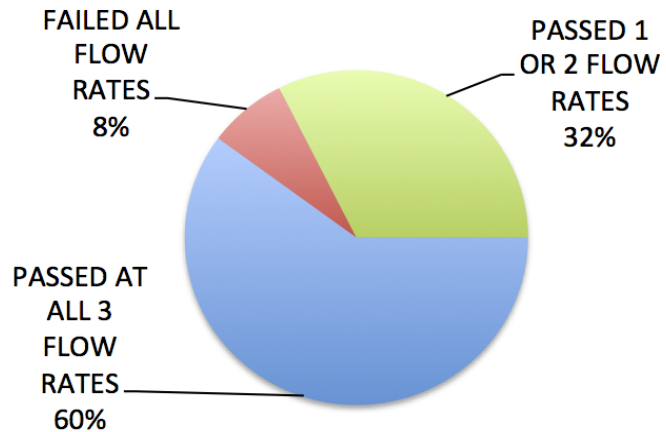
MEDIUM FLOW



HIGH FLOW

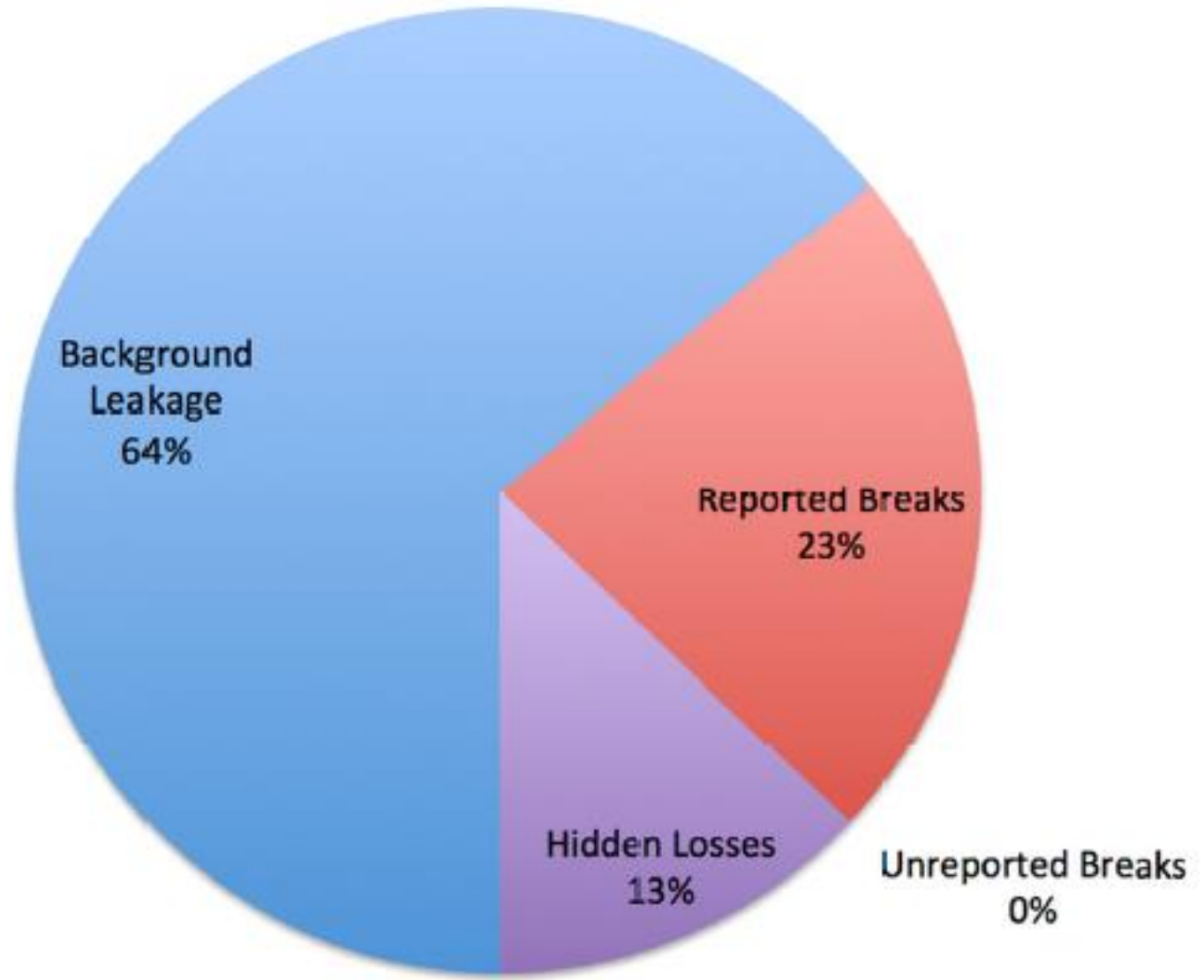


ALL FLOWS





Component Analysis of Real Losses for FY 2010-2011





Water Loss Task Force





1. System Input Volume

Recommendations:

- *Reevaluate meters used for accurate system input volume tracking*
- *Improve meter reading accuracy*
- *Install meters on two backup supply sources*



Actions:

- *Change supply tracking for aqueduct and groundwater meters*
- *Calibrate supply volume meters on an annual basis*
- *Install backup supply source meters*





2. Database Management

Recommendations:

- *Centralize multiple meter and leak databases*
- *Improve recycled water and process water tracking*
- *Address discrepancies between different databases*



Actions:

- *Evaluate feasibility of centralized operational technology system*
- *Develop pilot mobile leak reporting system*
- *Establish billing system protocol to identify recycled water and treatment process water*
- *Address remaining duplicate badge number discrepancies*



3. Meter Testing and Replacement

Recommendations:

- *Replace worst performing meters*
- *Prioritize large meter replacement and analysis*



Actions:

- *Implement meter testing of a representative sample of 1,500 operational small meters*
- *Analyze large meter test results*

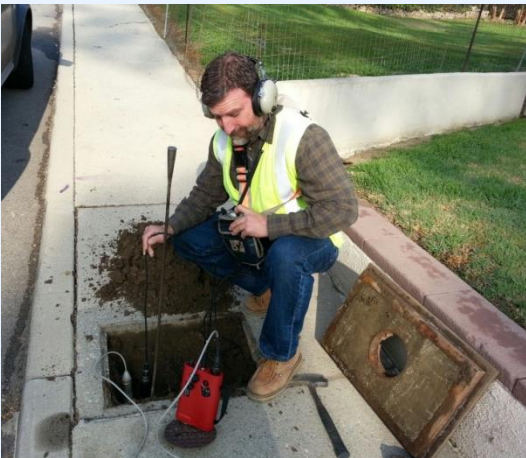




4. Leak Detection and Prevention

Recommendations:

- *Implement pressure monitoring*
- *Reduce average time to locate and repair leaks*
- *Implement active leak detection programs*



Actions:

- *Site-specific pressure monitoring in 13 highest leak density areas and 17 high pressure zones*
- *Increase staff to decrease leak response time by 50%*
- *Perform acoustic leak detection on 10% of the entire system per year*
- *Install acoustic leak monitoring sensors in high leak density areas*



5. Unmetered and Unauthorized Consumption

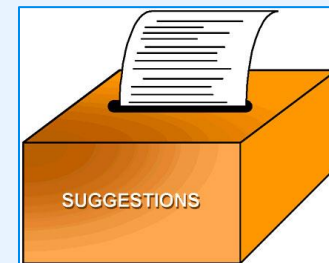
Recommendations:

- *Implement measures to improve tracking of theft activities*
- *Implement measures to improve estimates of authorized unmetered uses*



Actions:

- *Add AMI/AMR to record fire service meter data on a continuous basis*
- *Develop estimates to track volume used for system flushing*
- *Collaborate with the LA Fire Department to estimate volume used in fire fighting and training activities*





Summary of Costs

<i>Section 1: System Input Volume</i>	Capital Cost	O&M Cost
<i>Section 1 Total Costs of Proposed Actions</i>	\$1,518,000	\$191,600
<i>Section 2: Database Management</i>		
<i>Section 2 Total Costs of Proposed Actions</i>	\$83,000	\$0
<i>Section 3: Meter Testing and Replacement</i>		
<i>Section 3 Total Costs of Proposed Actions</i>	\$244,000	\$0
<i>Section 4: Leak Detection and Prevention</i>		
<i>Section 4 Total Costs of Proposed Actions</i>	\$1,281,000	\$355,000
<i>Section 5: Unmetered and Unauthorized Consumption</i>		
<i>Section 5 Total Costs of Proposed Actions</i>	\$1,241,000	\$1,402,000
Total Costs of All Proposed Actions	\$4,392,000	\$1,948,000



Final Report and Executive Summary

WATER LOSS TASK FORCE

ACTION PLAN

LA Los Angeles Department of Water & Power

In Partnership With

W S O

Water Systems Optimization, Inc.

September 2015

National Leaders in Water Loss Prevention

The cover features a large blue circular logo at the top left. Below it is a collage of three photos showing workers in safety gear performing maintenance on water infrastructure. The background is a cityscape with a river and a sailboat. The text "ACTION PLAN" is written vertically in large white letters on a dark blue background. At the bottom, there are logos for the Los Angeles Department of Water & Power and Water Systems Optimization, Inc., along with the date "September 2015" and the slogan "National Leaders in Water Loss Prevention".

The *Water Loss Task Force Action Plan* and the *Water Loss Audit and Component Analysis Study* can be found on our website:

<http://www.ladwp.com/wc>

Los Angeles Department of Water and Power:
WATER LOSS AUDIT & COMPONENT ANALYSIS PROJECT

Fiscal Year 2010-2011

FINAL REPORT

SEPTEMBER 2013

W S O

LA Los Angeles Department of Water & Power Water Resources

RECLAMATION
Managing Water in the West

The cover features a collage of four photos showing water infrastructure components like pipes, valves, and tanks. The text is centered and includes the project name, fiscal year, report title, date, and logos for the Los Angeles Department of Water & Power and Reclamation.



KEEP SAVING WATER, L.A.!!

