This presentation premiered at WaterSmart Innovations

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California's Largest Private Water Agency Tackles Water Loss Control

October 2, 2019 Water Smart Innovations Conference

Quality. Service. Value.





- Introductions
- Why Water Loss?
- Work to Date (policy, planning, baseline analysis)
- Work Ahead (data improvement, water loss recovery)

California Water Service Group





- Largest Water Utility in the West
- 3rd largest in U.S.
- Serves 2 million+ people
- Investor Owned; **CWT** Ticker
- Contract Operations
- Assets:
 - 6,000+ miles of main
 - 1,130 wells
 - 662 storage tanks
 - 155,000+ valves
 - 50,000+ hydrants
 - 2,010+ sampling stations
 - 6 surface water treatment plants
 - 10 wastewater treatment plants

Urban Retail Water Suppliers Subset





- California Water Service (Cal Water) has 21 systems that qualify as Urban Retail Water Suppliers and serve as the Water Loss Auditing and Control program focus
- Hired Water Systems Optimization, Inc (WSO) in
 2018 for data analysis and program design guidance



Why Water Loss?



California Water Loss Activity

- SB555 requires annual reporting and Level 1 validation
- Long-term leakage performance targets currently under consideration by State Board
- Key component of Making Conservation a Way of Life

Cal Water Specific Motivations

- Coordination between systems, across departments, between Corporate and District level staff
- Goals (featured in policy):
 - effectively collect and manage data
 - reduce water loss to promote affordability
 - improve system efficiency
 - enhance environmental stewardship

Water Loss Background





Project Overview



Goals:

- Satisfy current and future **state requirements**
- Refine and standardize water audits and data validity scores, where reasonable
- Develop a Water Loss Control Optimization **Plan** and Water Loss Control **Policy**
- Implement water loss control activities to reduce real and apparent water losses



Water Loss Control Program Infrastructure



Policy

Articulates Cal Water's commitment to proactively assess and manage water loss.

Details goals, governance, and principles of Cal Water's approach.

POLICY	AND PROCEDURE MANU			
Subia	ur#+	Department-		Number
Wa	ter Loss Control Policy	Engineering		X
		() Complete Revision	Supersedes:	Page:
		() Partial Revision (X) New	N/A	1

Scope: This policy applies to all California Water Service (Cal Water) water systems.

1.0 Goals

Cal Water promotes a culture of accountability, stewardship, and transparency as it applies to the operation, maintenance, and replacement of its water systems. As such, Cal Water seeks to effectively collect and manage data and reduce water loss to promote affordability, improve system efficiency, and enhance environmental stewardship. Cal Water also seeks to reduce apparent losses for revenue recovery.

2.0 Governance

2.1 Cal Water will regularly convene a Water Loss Control Steering Committee responsible for overseeing water loss control efforts.

Teams

Convene staff responsible for water loss related projects and progress.



Water Loss Control Program Baseline & Analysis



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For each water audit input:

- What is the most accurate **data source?**
- What are the processes of **review and/or maintenance**?
- Who's responsible for the meter/data point/process?
- Are practices **consistent** across systems?

Water Loss Control Program Baseline & Analysis



Handbook specifies Water Audit compilation protocols



Final Report January 2019

WSO

Water Systems Optimization, Inc.

Current Status Workbook specifies characteristics and practices for each system

System Name 👳	Acronym =	Own Source Production (Yes/no)	SCADA Data Collection = (Yes/No)	Manual Data Collection (Yes/No)	Data Collection ⊽ Frequency	Data Review 👳	Accuracy Testing = (Yes/No)	Accuracy Testing Frequency	Testing Method =	Accuracy Test Documentation = (Yes/No)
Bear Gulch	BG	Yes	Yes	No	Continuous	Daily	No	None	None	n/a
Bakersfield	BK	Yes	Yes	Yes	Daily	Monthly	Yes	Annually	Ultrasonic	No
Bakersfield – North Garden	BK-NG	Yes	Yes	Yes	Daily	Monthly	Yes	Annually	Ultrasonic	No
Chico	СН	Yes	Yes	Yes	Daily	Daily	Yes	Occassionally	Unknown	No
Dominguez	DOM	Yes	Yes	Yes	Daily	Monthly	Yes	Occassionally	Pitot Tube	No
East Los Angeles	ELA	Yes	Yes	Yes	Daily	Each business day.	Yes	Annually	Insertion Meter	No
Hawthorne	HAW	Yes	No	Yes	Daily	Each business day.	Yes	Occassionally	Insertion Meter	No
Hermosa Redondo	HR	Yes	No	Yes	Daily	Each business day.	Yes	Occassionally	Insertion Meter	No
Los Altos	LAS	Yes	No	Yes	Weekly	Daily	Unknown	n/a	n/a	n/a
Livermore	LIV	Yes	No	Yes	Daily	Daily	Yes	Annually	Ultrasonic	No
Mid Peninsula – San Carlos	MPS-SC	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mid Peninsula – San Mateo	MPS-SM	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Marysville	MRL	Yes	Yes	Yes	Continuous	Monthly	Yes	Annually	Ultrasonic	Yes
Oroville	ORO	Yes	Yes	Yes	Continuous	Monthly	Yes	Occassionally	Ultrasonic	No
Palos Verdes	PV	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Selma	SEL	Yes	Yes	Yes	Daily	Daily	Yes	Annually	Ultrasonic	No
Salinas	SLN	Yes	Yes	Yes	Continuous	Daily	Yes	Annually	Ultrasonic	No
South San Franscisco	SSF	Yes	No	Yes	Daily	Monthly	Unknown	None	n/a	n/a
Stockton	STK	Yes	Yes	Yes	Daily	Monthly	Yes	Annually	Ultrasonic	No
Visalia	VIS	Yes	Yes	Yes	Daily	Monthly	Yes	Occassionally	Ultrasonic	No
Westlake	WLK	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
* Occassionally - within the	suct five years									
Occassionally - within the	ciscilive years									





Water Loss Background





Water Loss Control Program Baseline & Analysis



Water Audit Results, 2017



Water Audit Results, 2018



wide range of performance across systems

how do we balance uncertainty and decisions to intervene/invest?

Water Audit Performance Indicators



Key Audit Metrics*	2018 Cal Water Median	2017 Cal Water Median	2017 State Median
Data Validity Score	63	62	64
Infrastructure Leakage Index	1.2	1.6	1.5
Real Loss (gal/connection/day)**	19.5	20.5	26.6
Non-Revenue Water as Percent of Cost of Operating System	3.2%	3.9%	3.7%

Water Loss Control Program Plans & Priorities





Water Loss Control Program Plans & Priorities



Water Losses

pilot water loss recovery and get better data!

get better data!

pursue water loss recovery (and keep collecting data)

monitor water losses (and keep collecting data)

1) Act candidates for water loss recovery

2) Hold uncertainty calls for a focus on data improvement

3) Monitor

performance does not justify intervention yet

Outcomes: systems sorted into these readiness groups and next steps for each group

Certainty*

Water Loss Control Program Plans & Priorities





• Hidden loss cost

Water Loss Control Program Implementation



Areas of focus for the remainder of 2019

Production Meter Inventories & Testing Protocols

Small Meter Accuracy Testing

District Workshops

Leakage Recovery Pilot Planning

Thank You!





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Regulatory Background



Context

Proposed

Timeline

SB-555 – water loss objectives to be published by July 2020

- Urban Retail Water Suppliers must submit a Level 1 validated water audit by Oct 1, annually
- State Water Resources Control Board must adopt water loss standards by July 1, 2020.

EO B-37-16 – water budgets framework, includes a water loss component

Takeaway: URWSs must meet leakage goals

Ongoing Compliance Compliance Compliance compliance Improved data Ongoing Initial System-wide collection and water loss implementation implementation quality control 2020 2021 2022 2026 2027 2035 Phased approach • Customized water loss target *Emphasis on component analysis* designated for each agency Aligned timing with Conservation EO •

Water Loss Program Tools



Program Tools

- **Policy** (2.5)
- Taskforce Roster (1.2)
- Roadmap (1.5)
- Plan (2.4)



Assessment Tools

- Validated Water Audits (2.1, 3.1)
- Water Audit Handbook (1.4)
- Current Status Worksheet (1.4, 2.4)
- Leakage Component Analysis (2.2)
- Process Maps (2.3)
- Detailed Investigation of Audit Inputs (3.2)

