This presentation premiered at WaterSmart Innovations

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MWDOC Water Loss Control:

Building a Regional Hub

MUNICIPAL WATER DISTRICT OF ORANGE COUNTY

WSO

Striving to Achieve an Economically Optimized Level of Water Loss

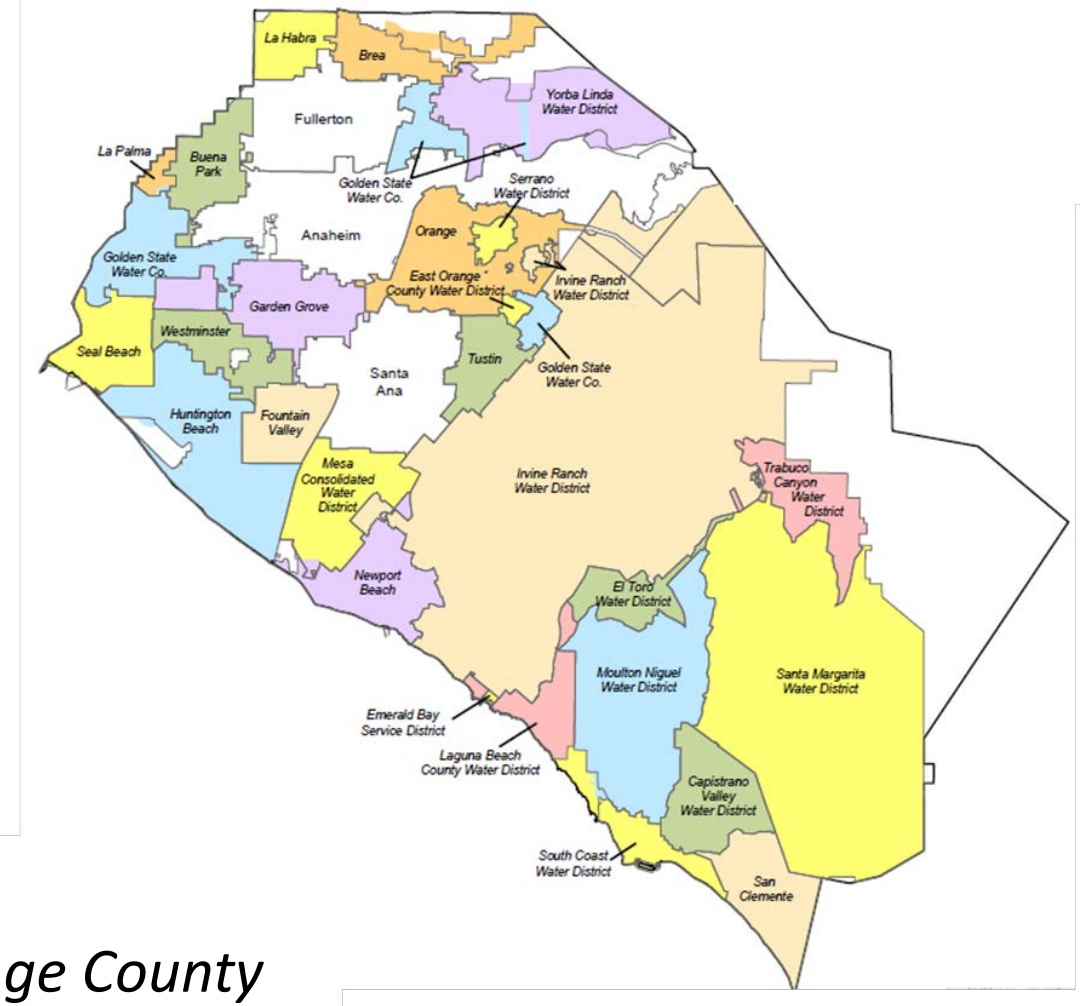
WaterSmart Innovations 2018

Game Plan

- Introduction to Orange County
- California context
- MWDOC workgroup & technical assistance
- Three years of data – findings and challenges
- Recommendations for water loss regulations
- Building a regional water loss control hub

Who Is MWDOC?

Orange County has 32 retail water agencies and a diverse water supply including imported water, ground water, recycled water, and water use efficiency that serves **3.2 million residents**



MWDOC *Municipal Water District of Orange County*

Water Loss Control in California

Annual reporting – Senate Bill 555 (DWR):

Level 1 validated water audits

Annual improvements (water losses and/or data)

Targets – Senate Bill 555 and EO B-37-16 (SWRCB):

Making Water Conservation a California Way of Life

Will debut in July 2020

The MWDOC Water Loss Control Program

Started in 2016 to empower Orange County agencies to:

- Comply with state water loss regulations
- Achieve cost-justified distribution efficiency
- Develop fluency in water loss analysis and management

Technical Assistance **Work Group** **Shared Services**

Agencies pick which technical assistance and shared services tasks they want to pursue

Work Group Capacity Building

Bimonthly workgroup meetings to:

- Develop expertise across Orange County
- Promote peer learning and exchange

Well-received topics so far:

Sales meter management

District metered areas

Leak Detection

Loss and theft recovery

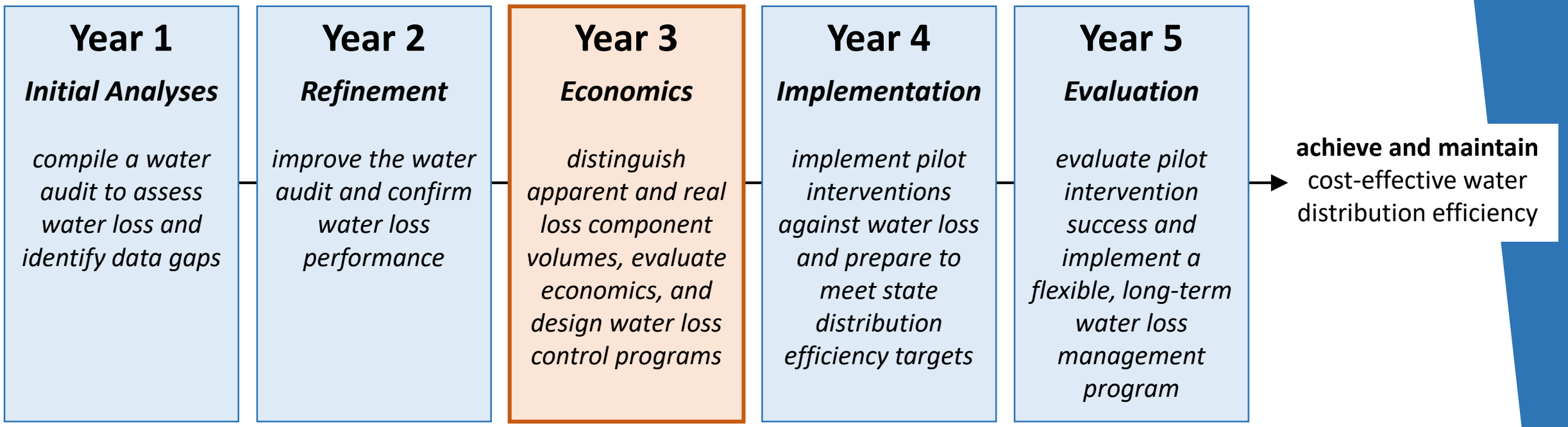
Performance indicators

Cost-justified intervention

AMI

Multi-Year Progression

5-year plan allows agencies to collect missing information, improve data sources, consider economics, and refine implementation



Progress So Far

29 agencies have participated in technical assistance

3 years of water audits

8 agencies that tested customer meters through the MWDOC program

Acquisition of a USBR grant for regional leak detection equipmen t lending library

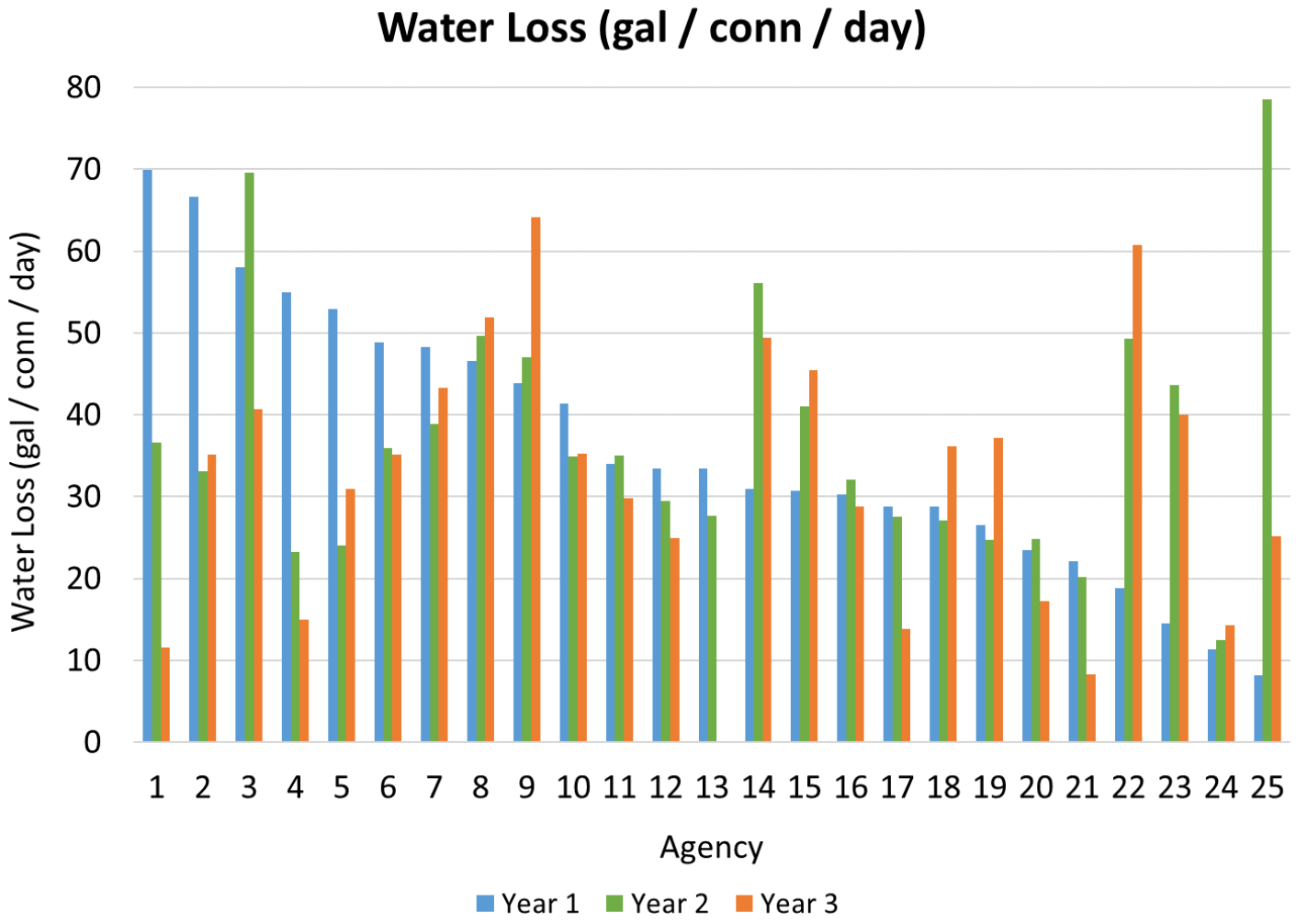
Pilot leakage savings research with MWDSC

Findings: Three Years of Water Loss

Year-to-year variability, particularly in audits reporting extreme performance

- Better data through time?
- Source profile changes?
- Normal fluctuation?

n = 25 agencies

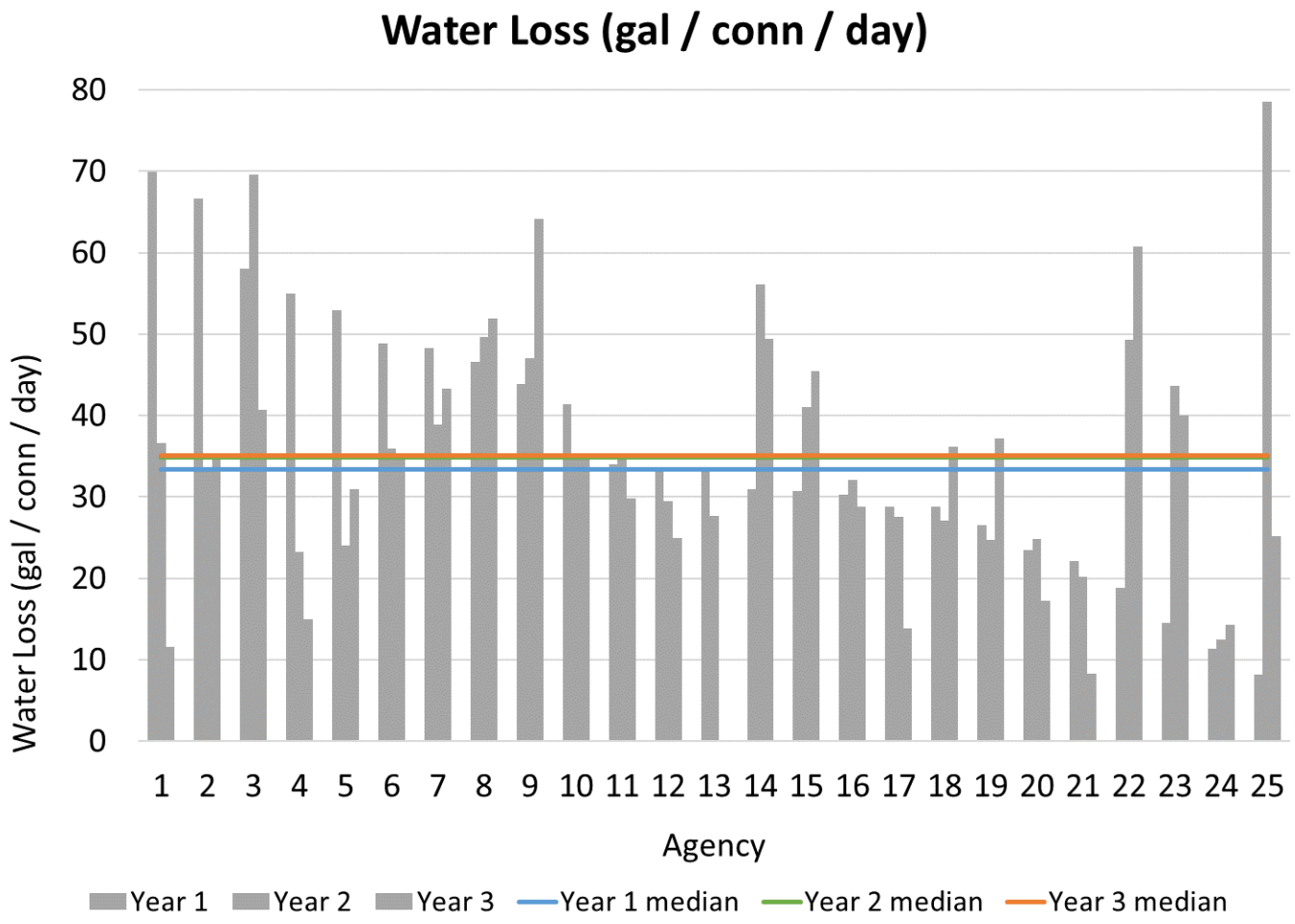


Findings: Three Years of Water Loss

But the median performance doesn't change.

So a set of audits is more reliable than any single audit.

n = 25 agencies



2018 Results

Orange County region: **23,600 AF*** of water loss

$22 million* value

** current dataset is missing audits – actual values are higher!*

Metric	OC Median *n = 26*	Units
Apparent Loss	8	gal / conn / day
Real Loss	21	gal / conn / day
Water Loss	**35**	**gal / conn / day**
Infrastructure Leakage Index	1.2	
Data Validity Score	67	

Common Data Challenges

Source meter accuracy

Meters aren’t accessible
Meters are owned by another agency (MWDSC)
Volumetric testing isn’t always feasible

Customer meter accuracy

Test data is not yet available or extensive enough
Meter populations are in transition
Age and accuracy and age and throughput don’t correlate

Pressure

Field data is not available and/or representative

Lessons for California

Understanding water loss takes time (and money). One audit (or even two!) is not sufficient to assess performance.

Regional cooperation can reduce the cost burden on individual agencies, promote best-practice sharing, and share knowledge.

Component analysis of real and apparent loss is necessary for water loss management to be cost-justified and effective.

Possible California State Goals

- Reduce water loss to achieve a statewide leakage budget?
- Improve the performance of the poorest performers?
- Improve the performance of all agencies?

SWRCB: *focused on real loss*

will not use ILI or data validity grades

Challenges in Regulating Water Loss

- Each agency's volume of water loss is subject to uncertainty
- The cost of a unit of water loss varies across agencies
- Effective and efficient water loss control strategies vary widely and require localized knowledge to evaluate and deploy

Proposed Regulatory Principles

Sharp thresholds should be avoided because they probably can't accommodate uncertainty in volumes of loss.

Ranges of acceptable performance may be more appropriate.

There must be the **option to pursue water loss monitoring and maintenance** rather than reduction.

Strategies and technologies that utilities are encouraged to use must be **proven to recover water loss at consistent rates**.

Proposed Regulatory Principles

Data that utilities are required to use for objective calculations or water loss management **should be available for most, if not all, utilities.**

> *Relationships between system characteristics and objectives calculation should be consistent and well-studied.*

An interim standard should be used while utilities are still studying their water loss profiles.

Leak Savings Research

Guiding questions:

1. What method is most effective **and efficient** for estimating a utility's leakage reduction opportunity and appropriate investment?
2. How should leak flow rates be quantified and documented, and how should savings be proven?
3. How can uncertainty in instrumentation and data be navigated to promote positive return on investment in leakage reduction?

Leak Savings Research

Full analysis

Water audit

Instrument testing

Component analysis of real loss

Full intervention

Leak detection

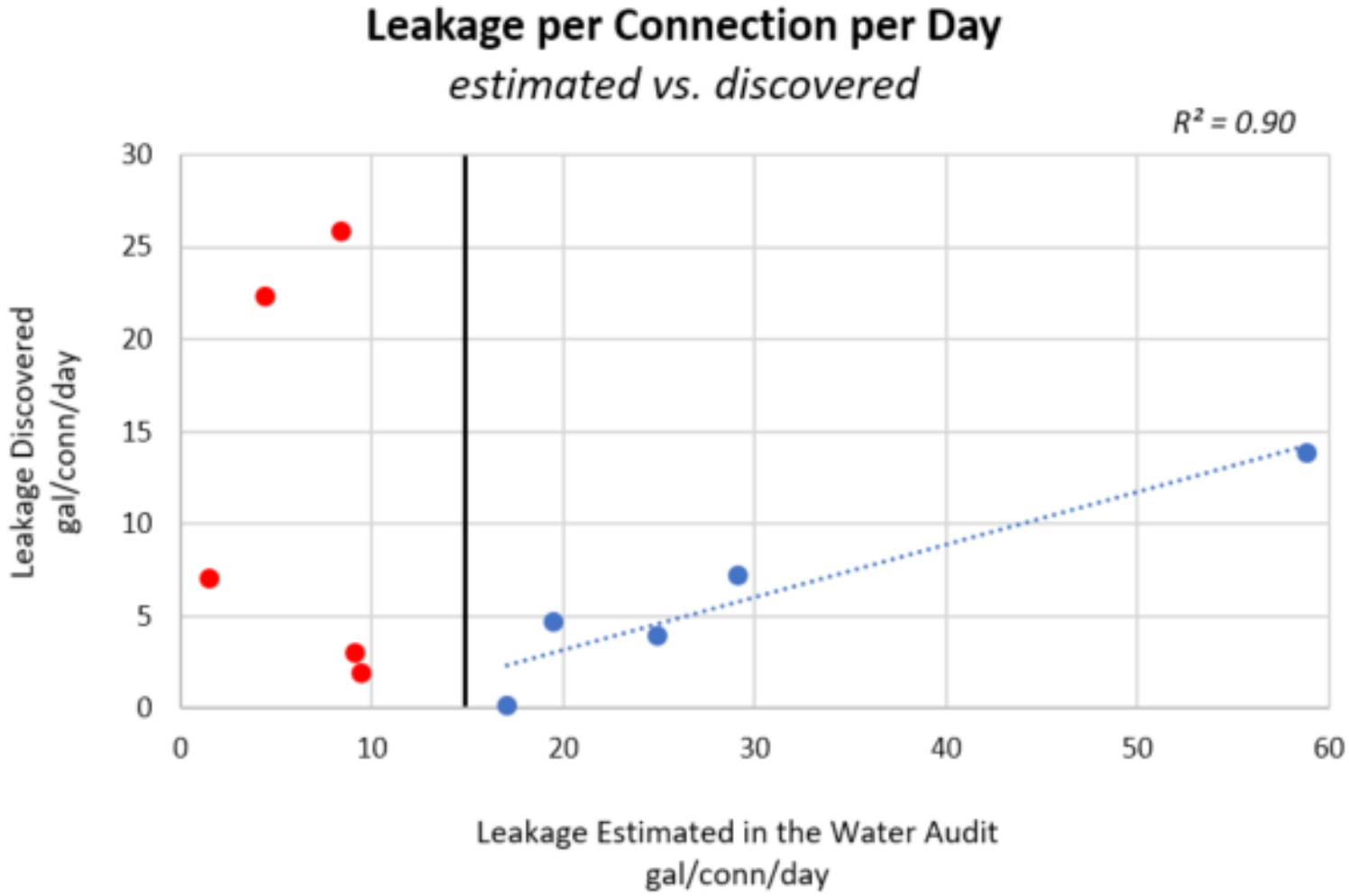
Documentation

Consistency

Predictive relationships

Effect of uncertainty

Leak Savings Research



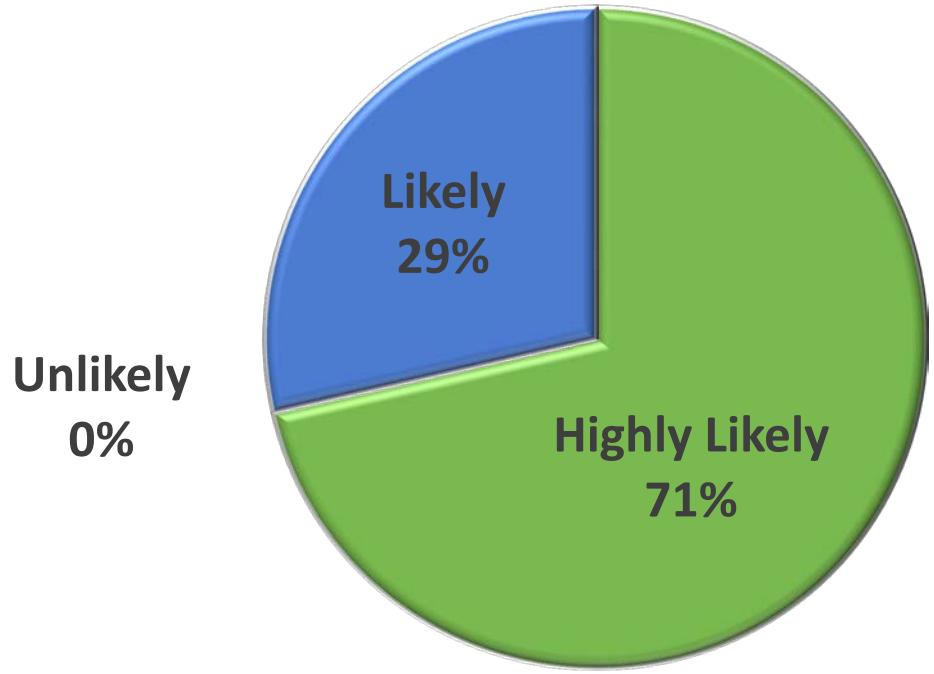
Building a Regional Water Loss Control Hub

Services of interest:

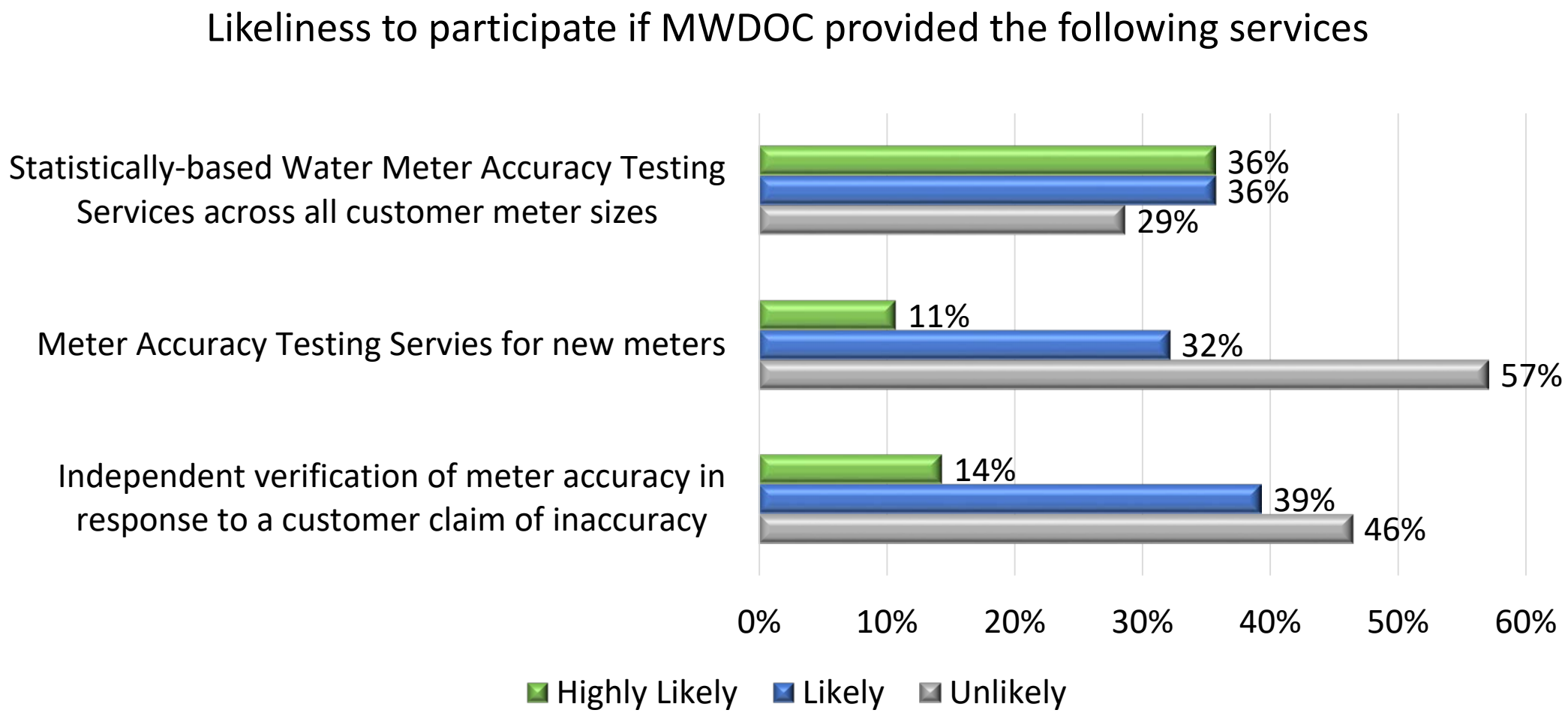
- Water Balance Validation
- Meter Accuracy Testing
- Leak Detection
- Pressure Survey
- Distribution System Flushing

Water Audit Validation

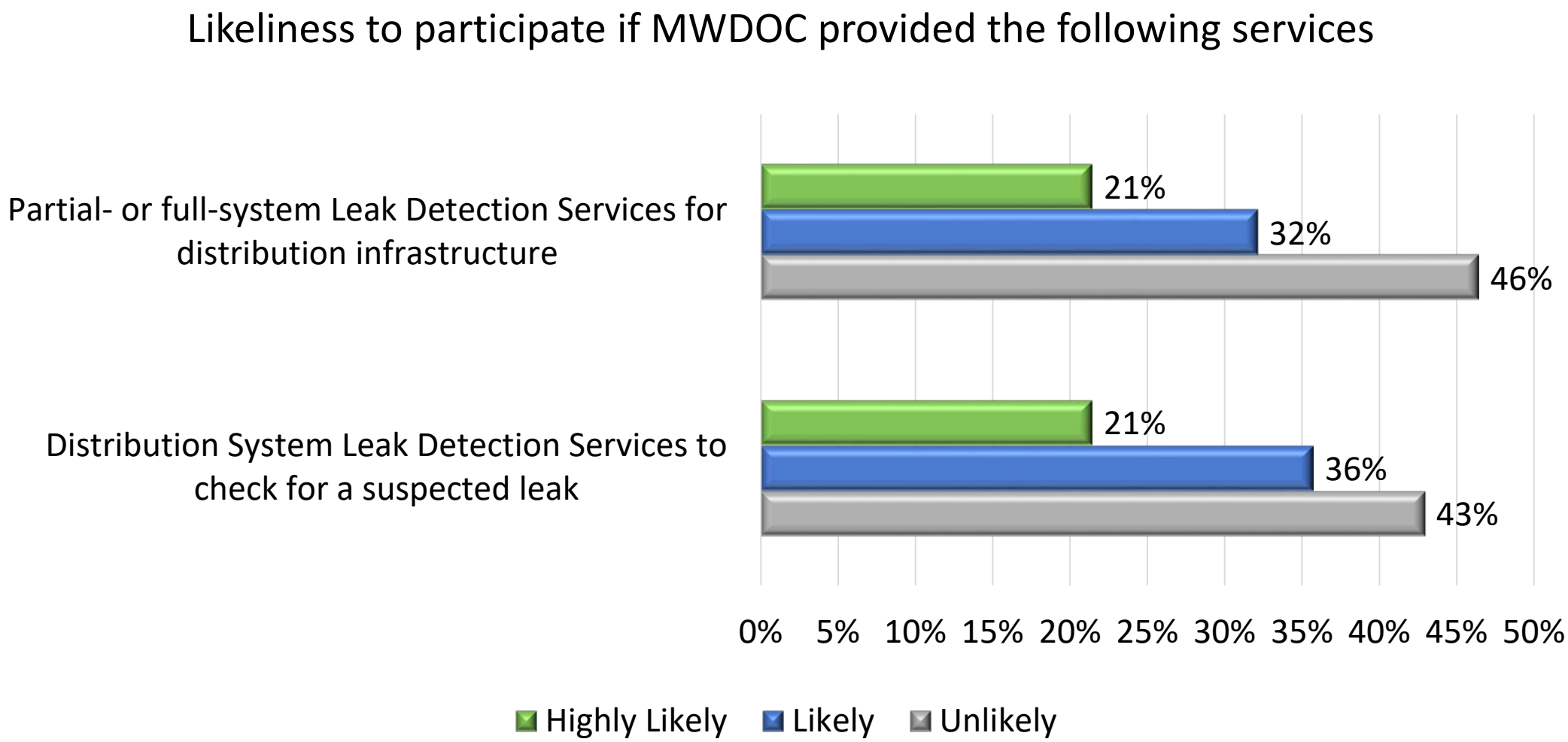
If MWDOC provided annual Water Audit Validation Services, as required by SB 555, would your agency participate?



Customer Meter Testing



Leak Detection



Shared Services

- **Water Audit Validation** - 28 agencies
- **Sales Meter Accuracy Testing** – 3,100 to 4,300 meters per year
- **System Leak Detection** - 500 to 550 miles of mains per year
- **System Pressure Survey** - 10 agencies
- **System Flushing** - 600 miles of mains per year

Two staff:

Supervisor

Technician

Summary

Water loss control pursued through regional collaboration:

Saves money and time

Distributes knowledge and expertise

Makes research possible

MUNICIPAL WATER DISTRICT
OF ORANGE COUNTY

Thank You!

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