Water Efficiency

and

Water Loss Control Program

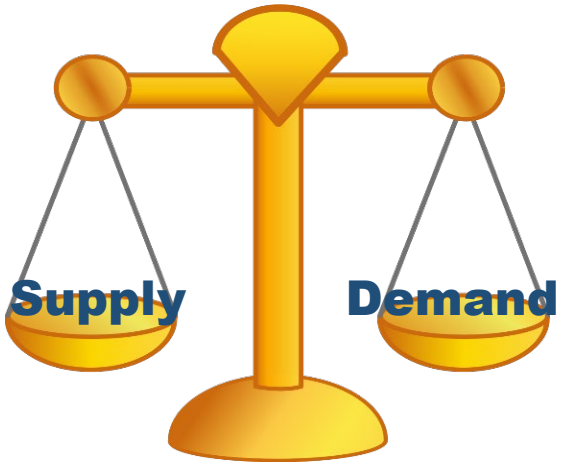
AWWA Water Audit Methodology

Today's Discussion

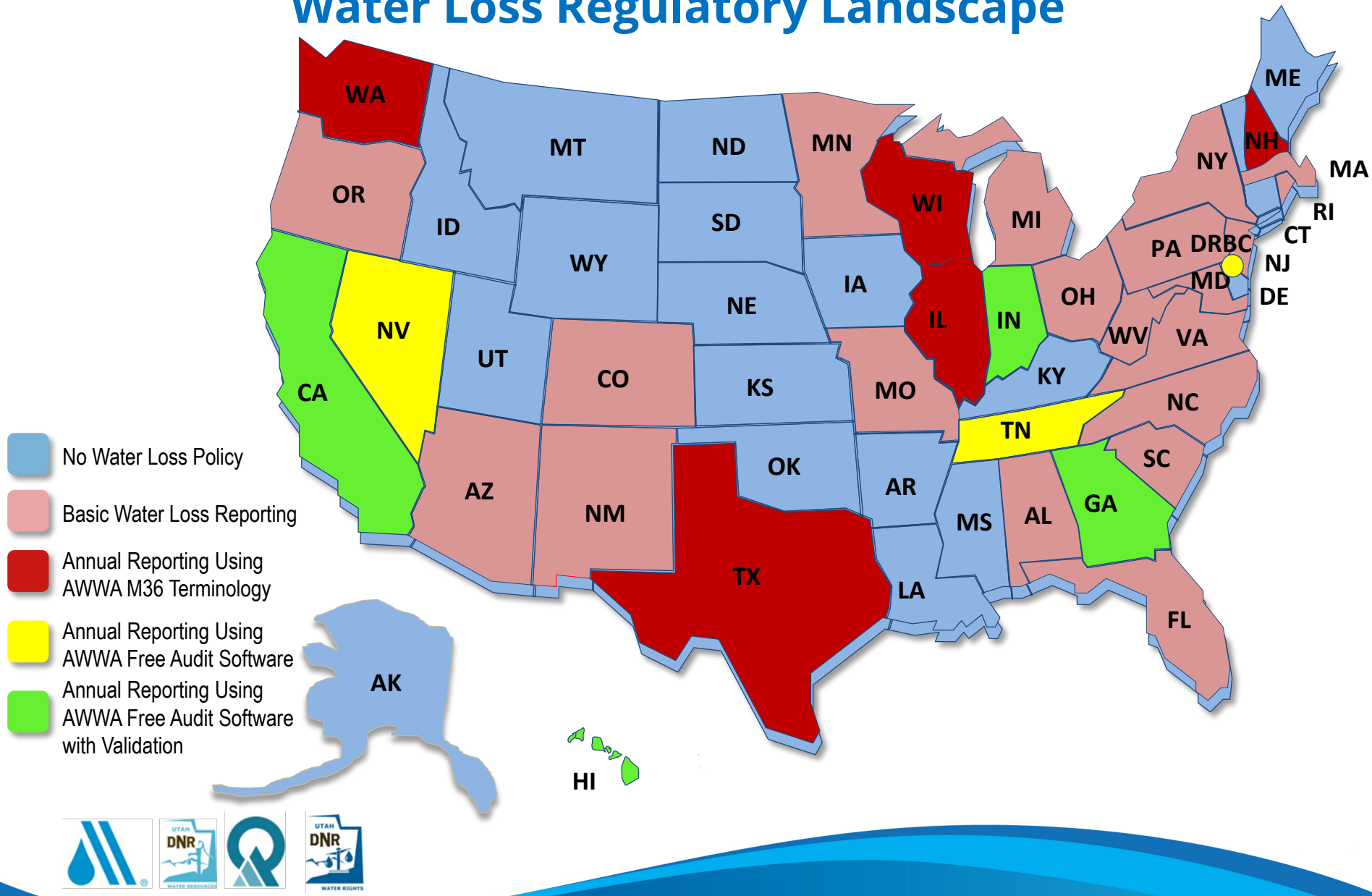
- Nationally recognized methodology (FREE AWWA Water Audit)
- Water Loss Control - How it works
- Pilot Programs
- Proposal - State-Wide Program
- Benefits

What Does the AWWA Water Audit Methodology Provide?

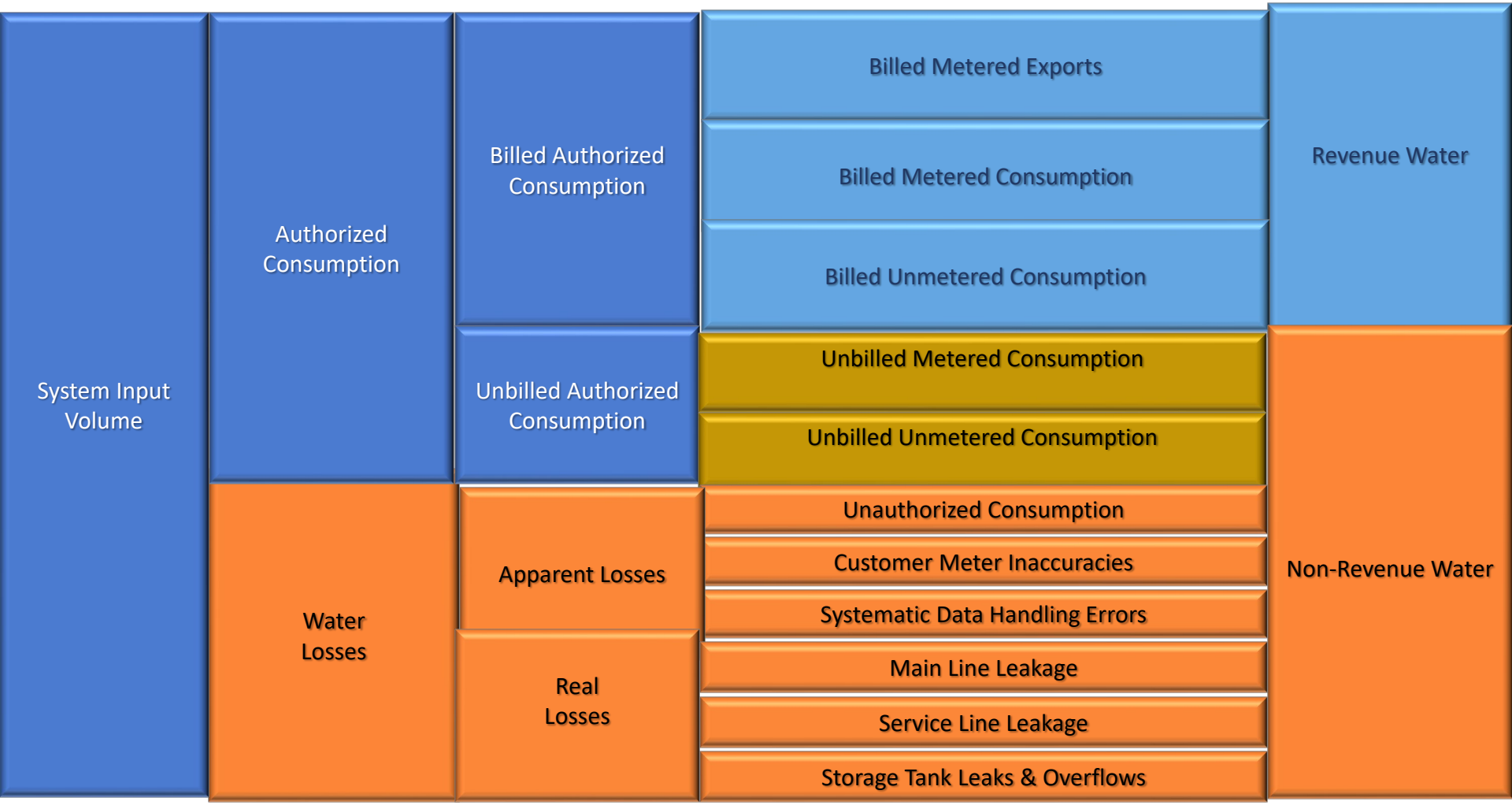
- The industry standard tool for water system accounting
- Water Balance model where all water is accounted for
- Data validation component
- Provides guidance on when and how to engage in water loss control



Water Loss Regulatory Landscape



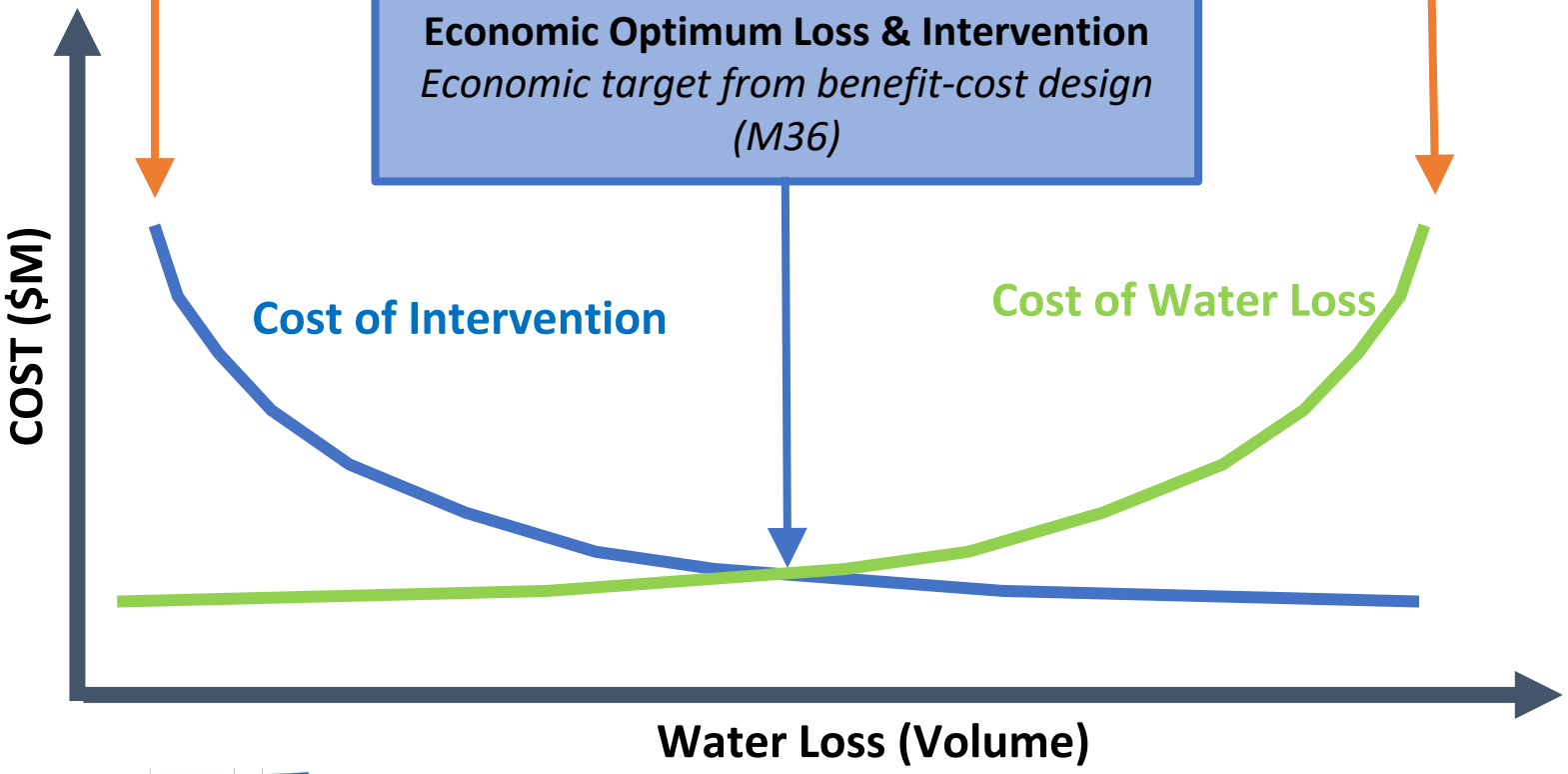
Central Feature: The Water Balance



Aggressive Intervention = Over-Spending
Example: replacement of pipes and meters before their optimal useful life

Reactive Intervention =Over-Spending
Example: fixing only leaks that surface, replacing meters only when they stop

Economic Optimum Loss & Intervention
Economic target from benefit-cost design (M36)



Data Validation

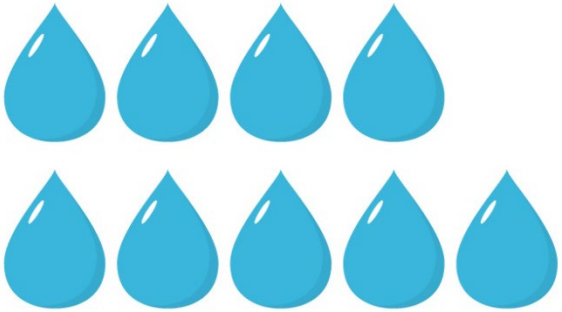
- Process of examining water audit inputs
- Improve the water audit's accuracy
- Document the uncertainty
- Level 1 water audit validation = confirms that AWWA Water Audit methodology correctly applied to a utility's specific situation

2016 & 2018 Pilot Programs

Program that Works!
Pilot Program with 12 Utilities

2016 Pilot Program—3 Utilities

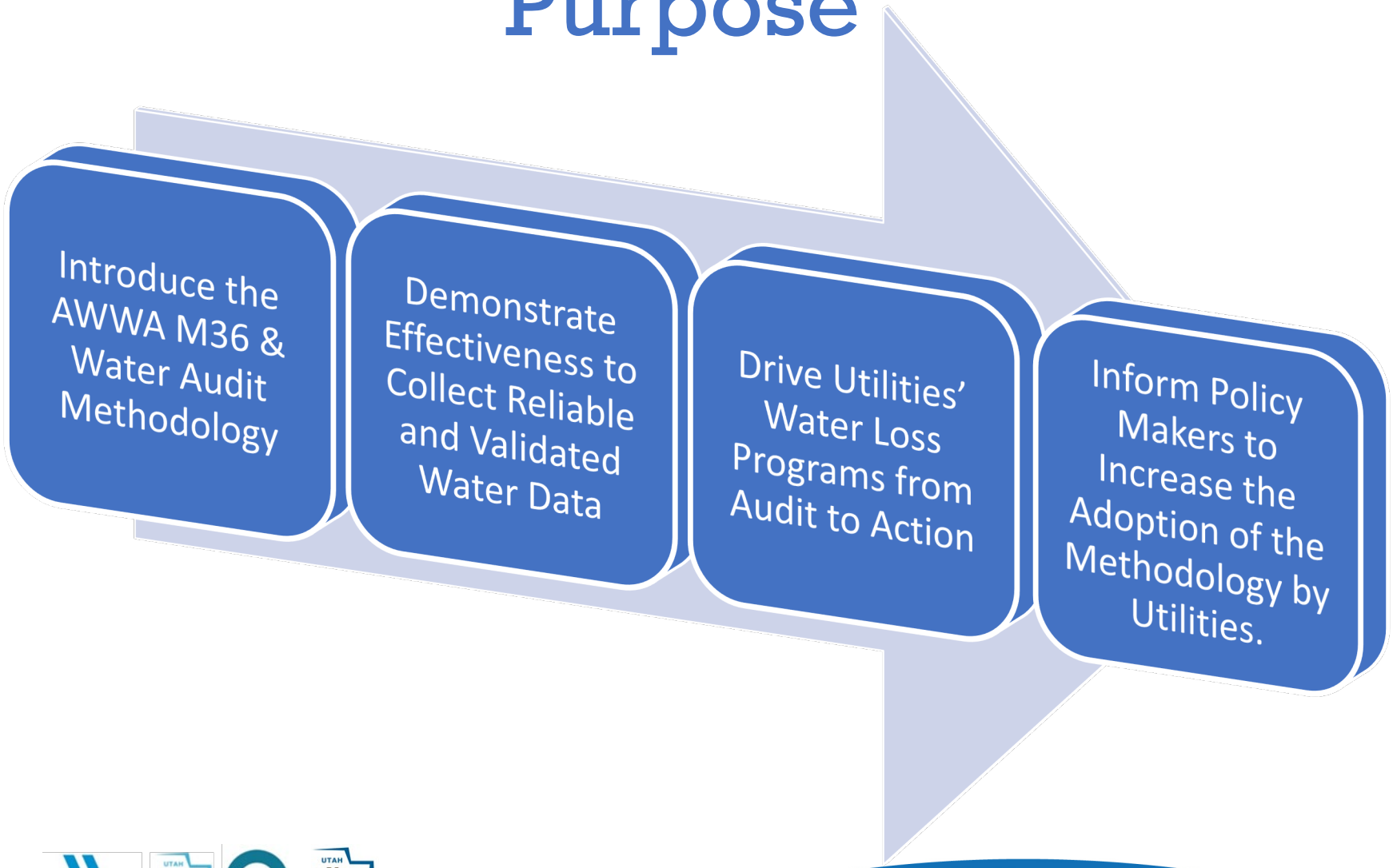
Granger Hunter Improvement District
Kearns Improvement District
Orem City



2018 Pilot Program—9 Utilities

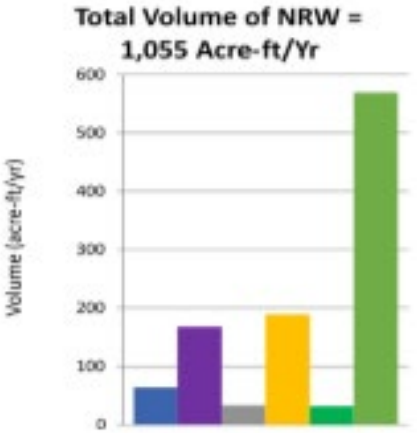
Jordan Valley Water Conservancy District
Lehi City Water Department
Murray City
Nibley City
Provo City Water Resources Department
Riverton City
Taylorsville Bennion Improvement District
WaterPro / Draper Irrigation
Weber Basin Water Conservancy District

Purpose


Introduce the AWWA M36 & Water Audit Methodology
Demonstrate Effectiveness to Collect Reliable and Validated Water Data
Drive Utilities' Water Loss Programs from Audit to Action
Inform Policy Makers to Increase the Adoption of the Methodology by Utilities.

12 Unique Outcomes—2 Examples

Volume



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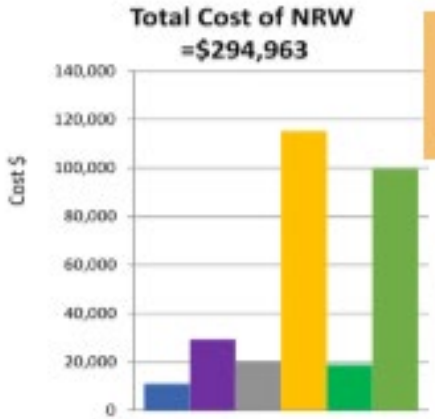
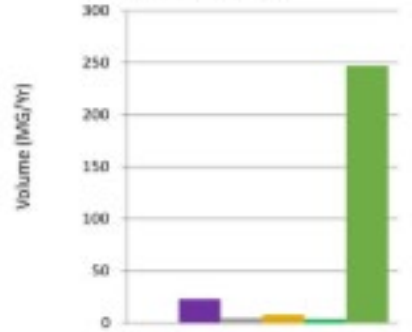


Taylorsville-Bennion I.D.

67,000 POPULATION

15,871 CONNECTIONS

Volume



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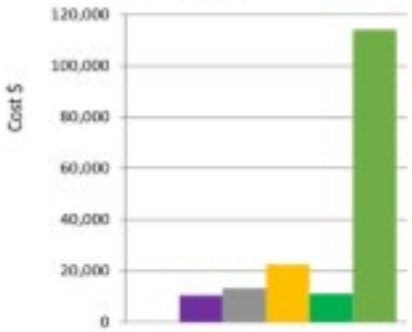


Lehi City

47,400 POPULATION

13,015 CONNECTIONS

GRANGER-HUNTER
IMPROVEMENT DISTRICT

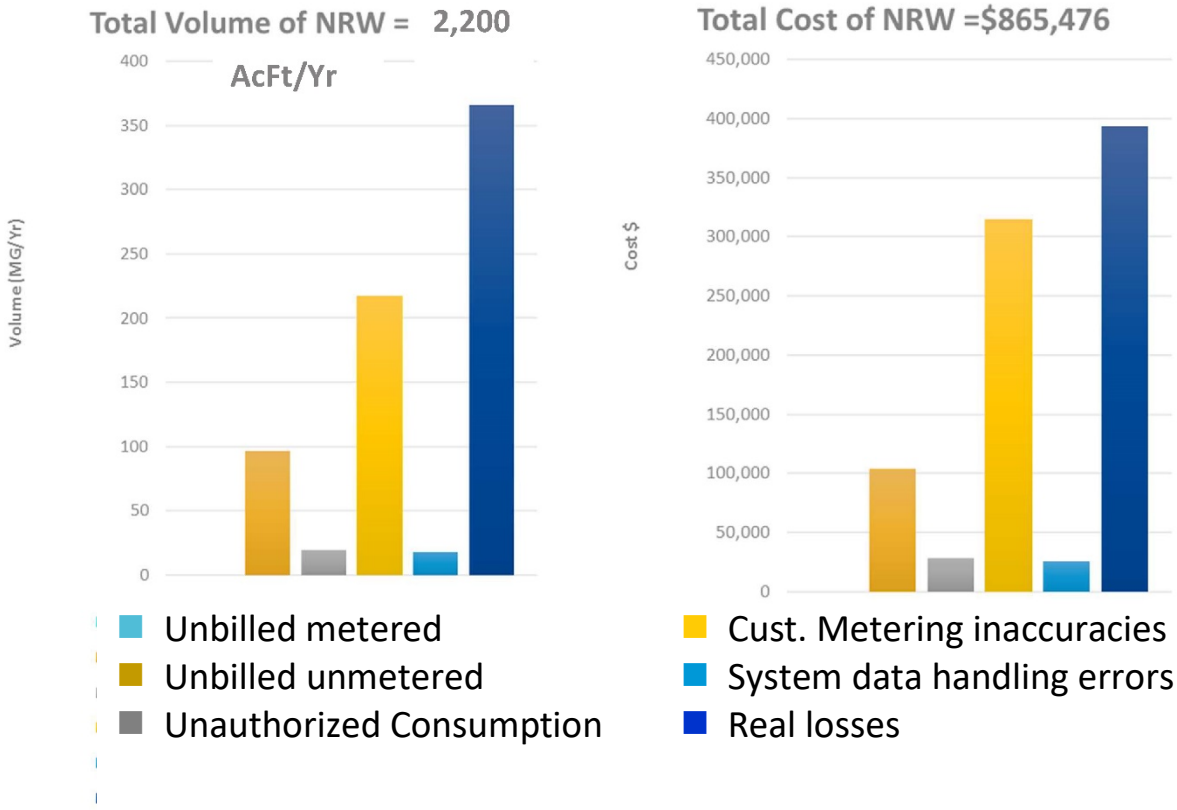
Water Audit Reporting Year:	*Calendar Year 2015*
Data Validity Score:	54
Service Connections:	26,900
Miles of Main:	383.4
Average Operating Pressure:	78.0 psi
Apparent Losses per service connection per day	25.88
Real Losses per service connection per day	37.28
Infrastructure Leakage Index	2.10

Validity

Level 1 validated DVS score of 54/100. Represents mid-grade reliability, efforts should focus on both data improvement and loss reduction. Priority areas for attention are:

A. Water Imported
B. Customer meter inaccuracies
C. Variable production cost

Volume



Value

Kearns Improvement District

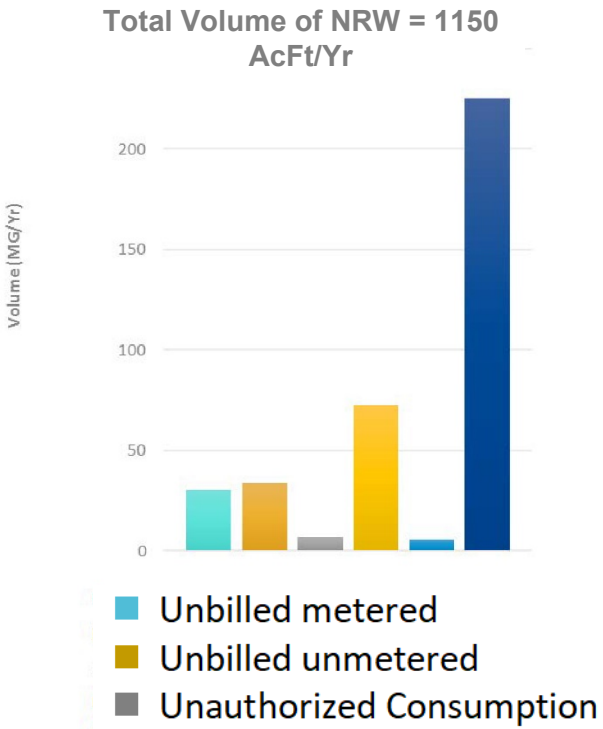
Water Audit Reporting Year:	*Calendar Year 2015*
Data Validity Score:	46
Service Connections:	13,770
Miles of Main:	171.2
Average Operating Pressure:	79.0 psi
Apparent Losses per service connection per day	16.99
Real Losses per service connection per day	44.83
Infrastructure Leakage Index	2.61

Validity

Level 1 validated DVS score of 46/100 for Water Audit Reporting Calendar Year 2015. The Data Validity Score suggests that priorities should be made to improve the validity before moving to targeted water loss control efforts. Priority areas for attention are:

- Water Imported
- Unbilled metered
- Customer metering inaccuracies

Volume



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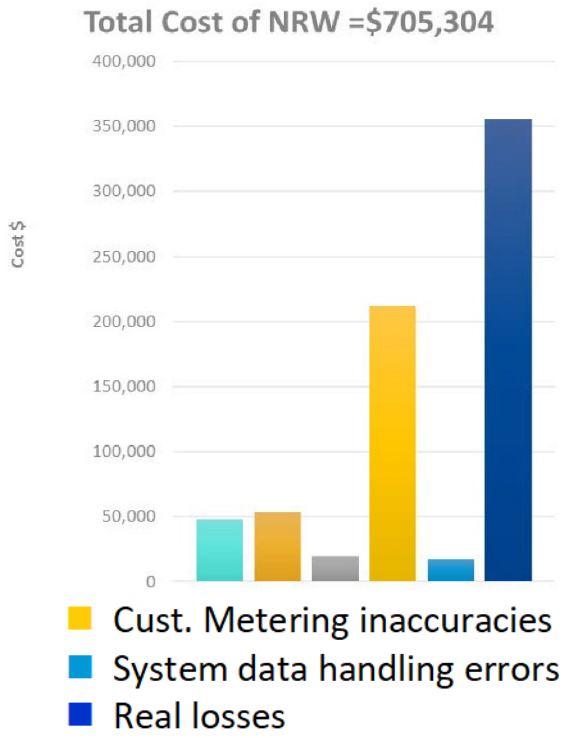


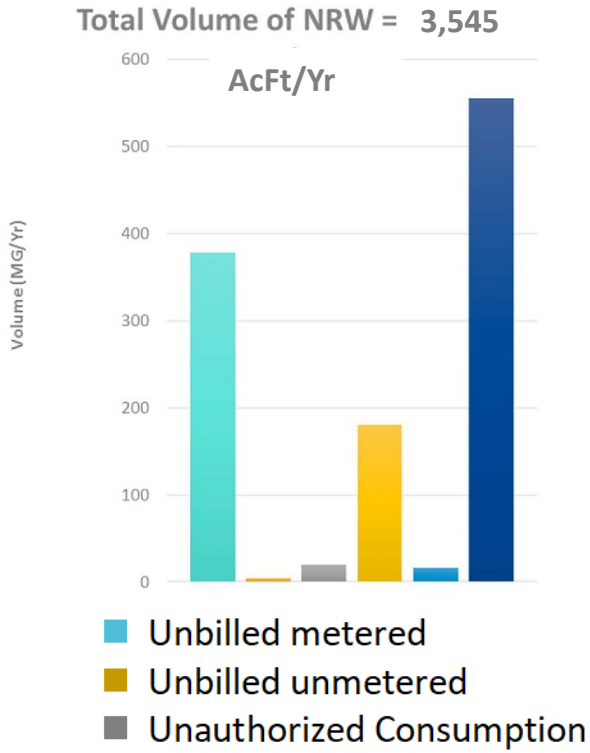
Water Audit Reporting Year:	*Fiscal Year 2015/16*
Data Validity Score:	55
Service Connections:	22,770
Miles of Main:	360.0
Average Operating Pressure:	87.1 psi
Apparent Losses per service connection per day	26.11
Real Losses per service connection per day	66.85
Infrastructure Leakage Index	3.26

Validity

Level 1 validated DVS score of 55/100. Represents mid-grade reliability, efforts should focus on both data improvement and loss reduction. Priority areas for attention are:

- Water Imported
- Volume from Own Sources
- Billed Metered

Volume



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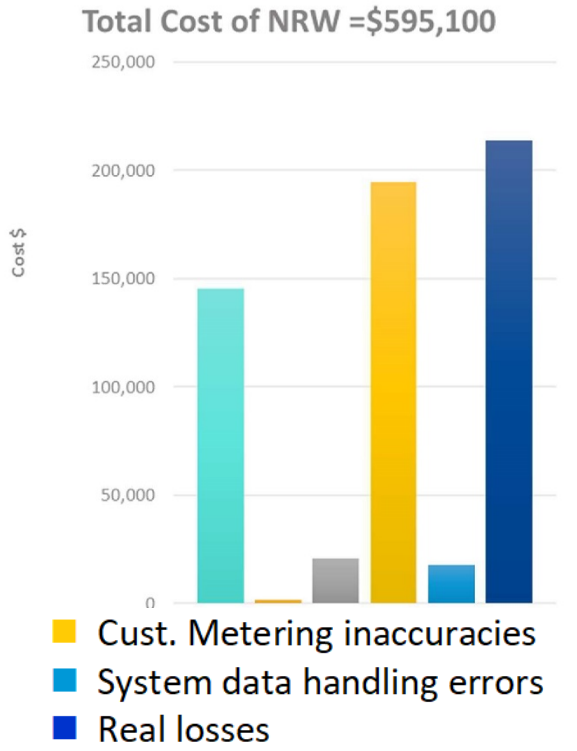


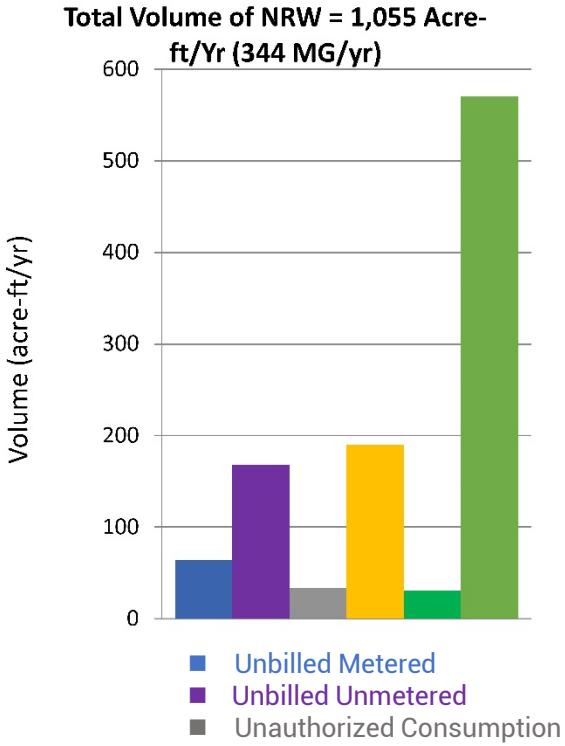
Water Audit Reporting Year:	*Fiscal Year 2016*
Data Validity Score:	58
Service Connections:	17,224
Miles of Main:	230.8
Average Operating Pressure:	100.0 psi
Apparent Losses per service connection per day	13.16 gallons/connection/day
Real Losses per service connection per day	29.53 gallons/connection/day
Infrastructure Leakage Index	1.33

Validity

Level 1 validated DVS score of 58/10 suggests that next steps may be focused simultaneously on **improving data reliability and evaluating cost-effective interventions for water & revenue loss recovery**. Priority areas for attention are:

- Volume from Own Sources
- Water Imported
- Customer Metering Inaccuracies
- Unbilled Unmetered Authorized Consumption
- Billed Metered Authorized Consumption

Volume



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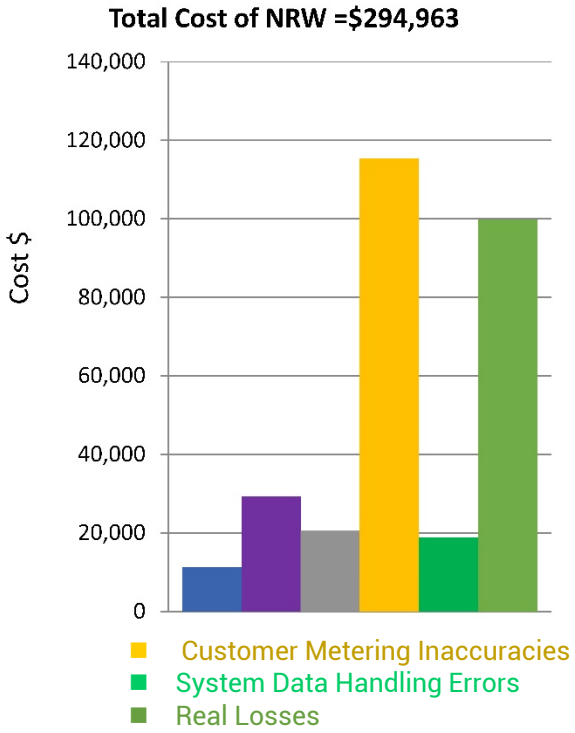

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Intermountain Section

Proposal: State-Wide, Integrated Program

4 Integrated Recommendations

ENSURE RELIABLE DATA
Provide Technical Assistance Program for Utilities

01

CONFIRM DATA IS VALID
Develop Level 1 Water Audit Validation Certification Program

02

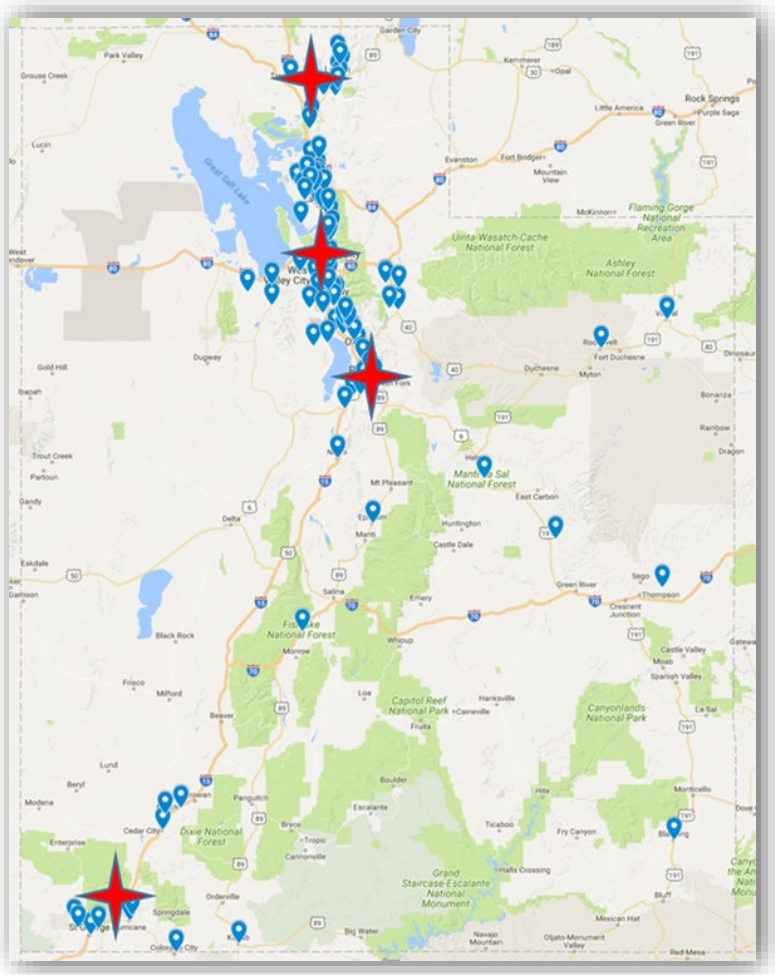
SUPPORT A STANDARD INPUT TOOL
Develop Data Input Module that Integrates with current Water Use Data Input

03

CREATE CONSISTENT PROCEDURES
Develop Rules for Data and Water Audit Submittal

04

Targeted Program



Targeted Program

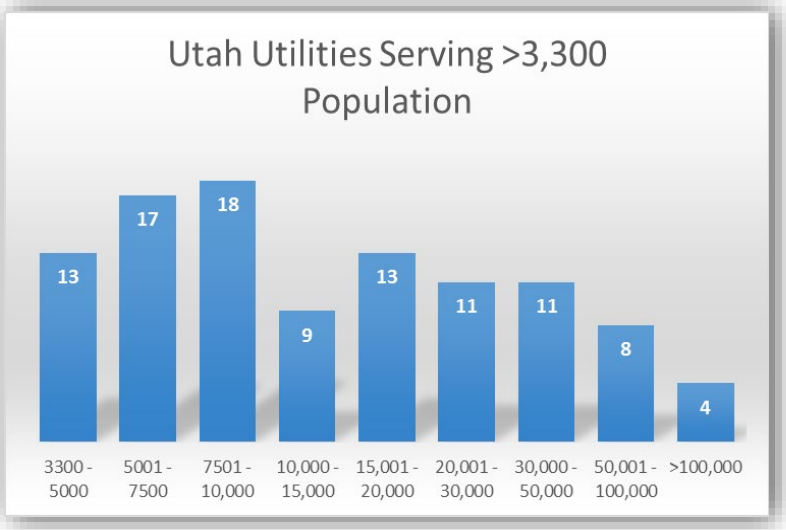
104 Utilities in Utah

Serving Populations >3,300

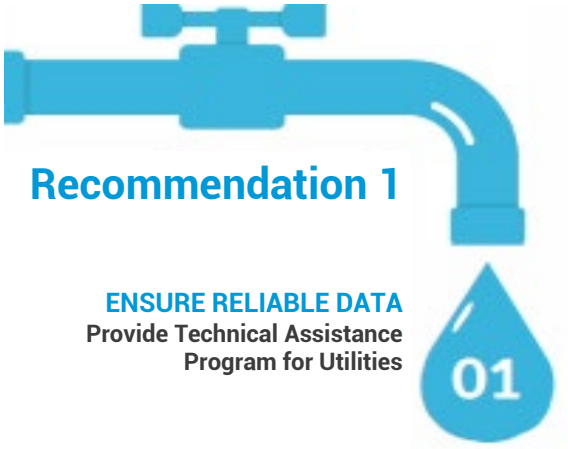
104 Utilities Represent

92%

of the Service Population in Utah



Recommendation 1
Provide Technical Assistance Program



Initial Cost: $850,000 to $900,000

Objective: Train each utility

- how to properly conduct an audit
- provide tailored action items
- economic justification for water loss control
- Provide level 1 Validation

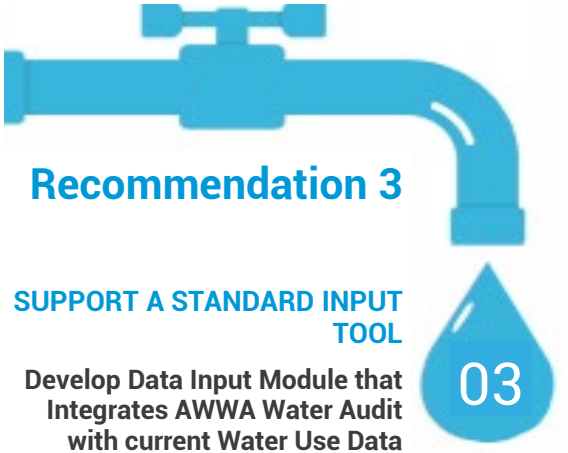
Recommendation 2
Develop Validation Certification Program

Initial Cost: $400,000 to $450,000

Objective: Develop certificate program:

- Train individuals in validation methods
- Certify individuals to conduct independent validation of audit data

Recommendation 3
Develop Data Input Module



Initial Cost: $75,000 to $100,000

Objective: Integrate

- State's water use data input module

  With

- AWWA Free Water Audit Software

Recommendation 4
Develop Rules for Data & Analysis

Initial Cost: $30,000 to $50,000

Objective: Develop a coordinated and consistent set of rules

- for Utilities and State Agencies
- for input, storage, extraction and analytics processes

Water Use Data

Current Process

- Water Use Online Data Entry
- Submission to the State - Data
- Contact water providers

Water Use Data Reporting Checked Data

Proposed Process

- Input Module for Data Entry
- Water Balance and Self Evaluation
- Level 1 Validation
- Submission to State – Data & Audit

Reliable Water Use Data
Water Audit
Data Validity Score
Reporting
Validation

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Four Part Program
to Deliver
Accurate and Validated Data

Initial Costs: $1.5M over two years
On-going Annual Cost: $300,000

4 Integrated Recommendations

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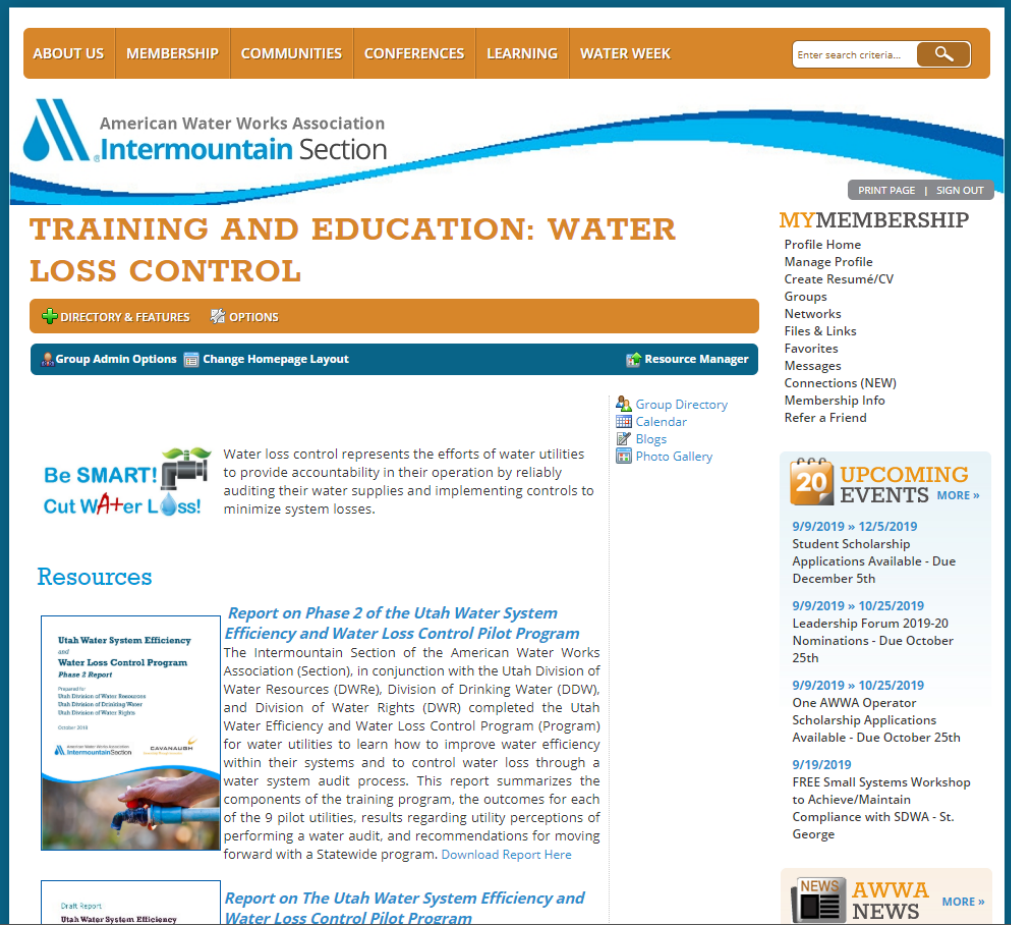
Develop Rules for Data and Water Audit Submittal

04

Win-Win-Win-Win

- **DWRe / Water Rights / DDW**
  - Nationally recognized process to collect Reliable Water Use Data
  - Data Validation Process to assess the credibility of data inputs of the water audit.
  - Consumption Estimates provide data for Source Sizing & Infrastructure Capacity
  - Track actual water use improvements.
  - Reduces losses which helps stretch existing supplies
- **Legislature**
  - Data Validation Process shows credibility of water use data
  - Provides Budget Controls by Targeting the Economic Optimum loss and intervention
- **Public**
  - Supply Side Conservation measures stretch existing supplies
  - Cost Controls by targeting the Economic Optimum loss and intervention
- **Utilities**
  - Easy process to develop Reliable and Accurate Water Use Data
  - identify water use improvement plan and track actual improvements.
  - Saves Water by Reducing losses
  - Saves Energy
  - May Increase Revenue
  - Saves money by targeting the Economic Optimum loss and intervention

www.ims-awwa.org/group/WaterLossControl



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Additional Discussion

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