



# Water Meter Replacement with Advanced Metering Infrastructure

**Presentation to City Council**

February 13, 2024





# Agenda

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- 1 What is AMI?**
- 2 Current & Desired State Overview**
- 3 Project Costs & Benefits**
- 4 Project Next Steps**
- 5 Consensus**



# Project Goals & Objectives

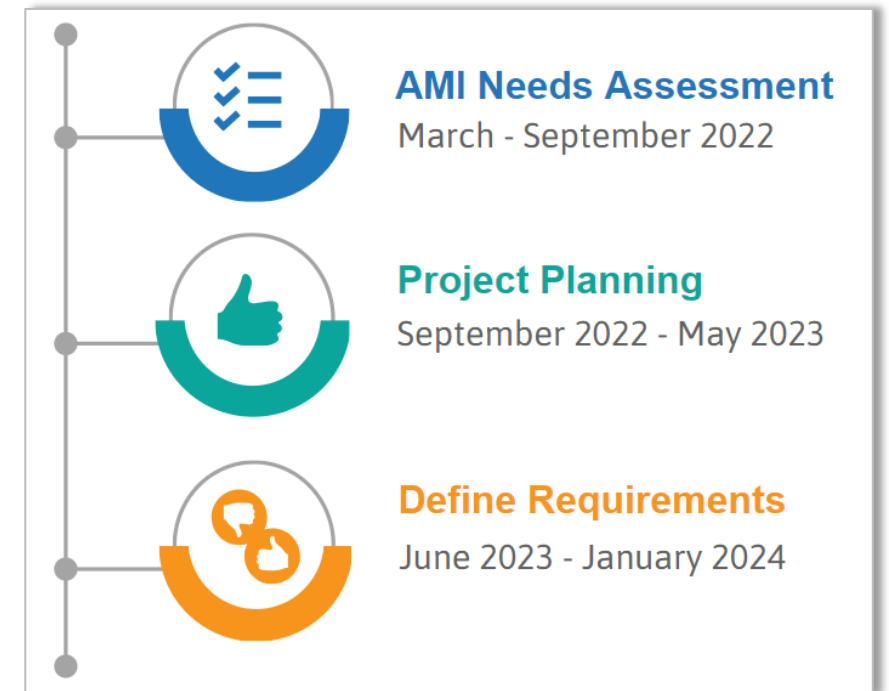
## Goal

- Modernize metering infrastructure

## Objectives

- Optimize water conservation efforts with improved water usage analytics
- Improve customer experience by providing water usage & billing information more quickly
- Optimize in-house operations and processes
- Improve metering accuracy and reduce non-revenue water
- Stay current with industry norms and practices

## Work Performed To-Date

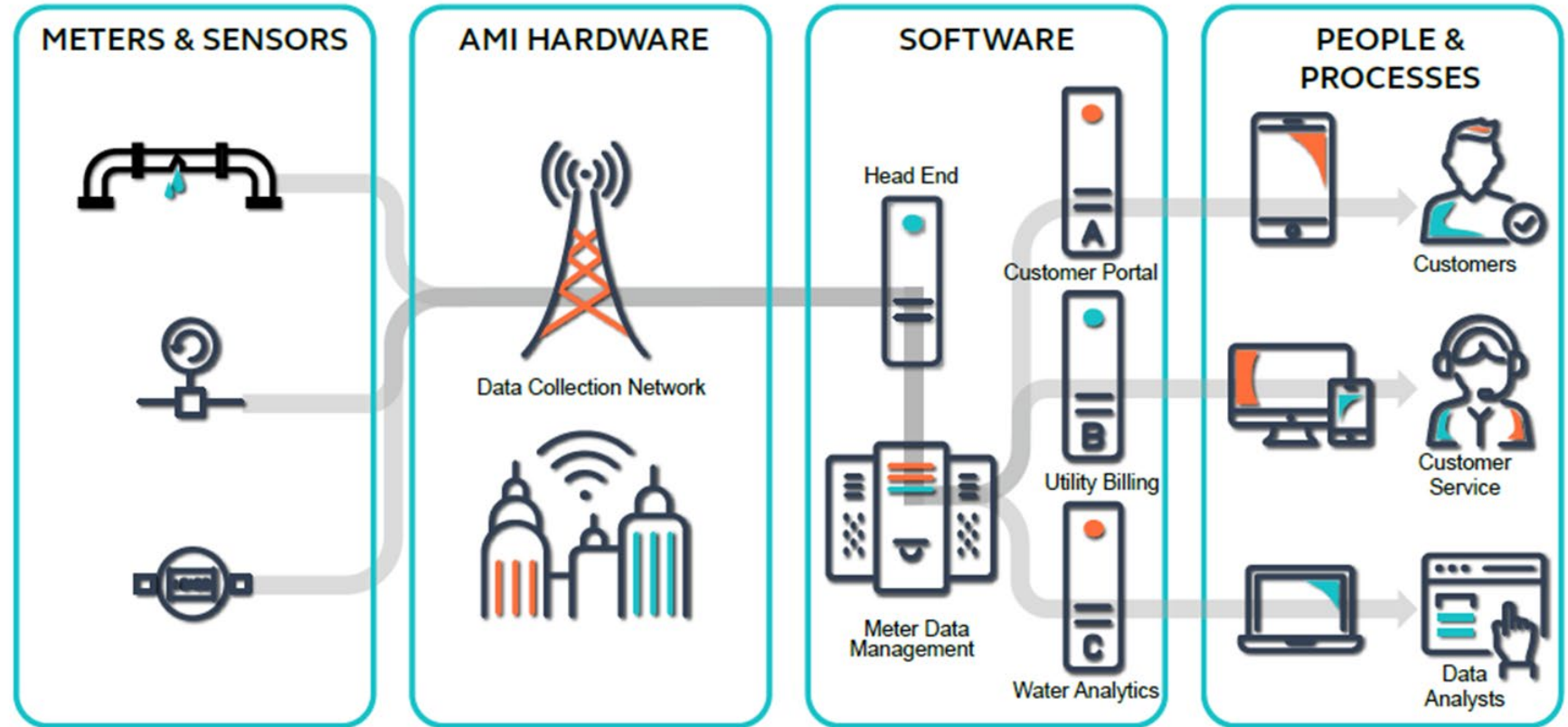




# What is AMI?

## Advanced Metering Infrastructure

AMI is an integrated system of communication networks, meters & sensors, data management systems, and people & processes that enables two-way communication between the utility and the customers.





# AMI Communication Networks Overview



- Based on commonly used and FCC approved digital communication methods
- Both cellular and fixed-network options are available.
- Very short data transmission duration... milliseconds
- Encrypted and secured
- No personally identifiable information
- Built-In network redundancy





# Overview of Static Meters



## Advantages of Static Meters

- No moving parts
- Static meters generally perform better than mechanical meters at low flow rates.
- Static meters have the capability to record water flow at “ultra low flow” levels (0 – ¼ GPM), which mechanical meters lack.
- Static meters should not lose accuracy over their life





# AMI Adoption Examples



**61% of water utilities surveyed are either assessing, updating, or installing a new meter reading system**

## Example AMI Systems in AZ Region

- Chandler - Implementing
- Flagstaff – Yes
- Gilbert – Implementing
- Las Vegas – Yes
- Mesa – Implementing
- Scottsdale - Implementing
- Surprise – Implementing
- Tempe – Yes

## Other Notable Water Utility AMI Systems

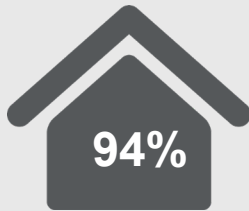
- New York City DEP
- Cleveland, OH
- DC Water
- San Francisco PUC
- Jacksonville Electric Authority
- Sacramento, CA



# Current and Future Water Metering

## CURRENT

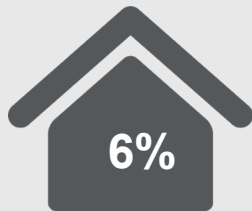
Approximately 65,000 total water meters, located outdoors in water meter boxes.



Visual Read Mechanical Meters



Walk By Meter Reading



Radio Read Mechanical Meters



Drive By Meter Reading (AMR)

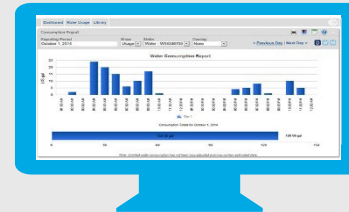
## FUTURE WITH AMI



Static Meters



Data Collection Network



Customer Portal



Customer



Water Analytics Software



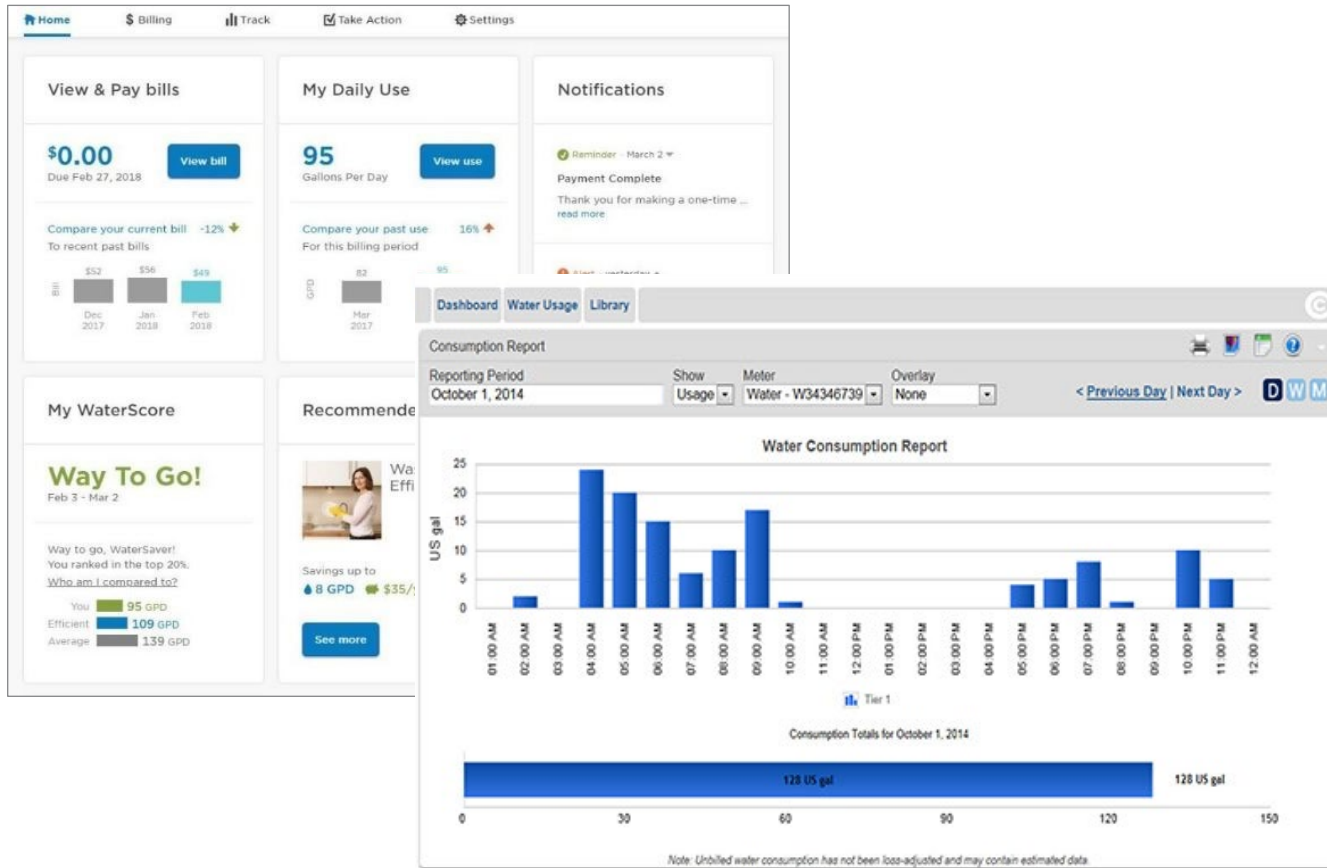
System Manager and Data Analysts



Technicians and Field Reps.



# AMI Benefits – Customer Portal



- New web-based Customer Portal provides information and self-service capabilities to utility customers
- Detailed water usage information empowers customers to effectively manage water usage
- Proactive leak detection tools

# AMI Benefits - Utility

**AMI helps utilities become more effective.**



- More precise water usage measurements from state-of-the-art meters
- Reduces bill complaints, rebills, and adjustments
- Vehicle cost and carbon footprint reduction
- New data analytics capabilities will drive water conservation programs



# Summary of Project Cost and Benefits Estimate

## Acquisition Cost Estimate

Scope Item	Cost
Water Meters Meter Box Lids	\$15,250,000
AMI Hardware	\$7,060,000
Meter and AMI Installation Services	\$5,070,000
Software Integration	\$1,300,000
AMI SaaS and Network Monitoring (Year 1)	\$290,000
<b>Subtotal</b>	<b>\$28,970,000</b>
Meter Salvage	-\$450,000
Contingency @ 10%	\$2,850,000
<b>Total Acquisition Cost With Contingency</b>	<b>\$31,370,000</b>

## Business Case Evaluation 15-year Lifecycle Benefits and Costs

Benefit Item	Benefit
Improved Meter Registration (Water and Sewer)	\$43,870,000
Labor Productivity	\$4,930,000
Operational Cost Reductions	\$1,200,000
<b>Total Net Present Value (Lifecycle Benefit)</b>	<b>\$50,000,000</b>
<b>Total Net Present Value (Lifecycle Cost)</b>	<b>\$34,470,000</b>

Economic Indicators	
Benefit/Cost Ratio	1.45
Internal Rate of Return	8.8%
Simple Payback Period (years)	8.92

**Actual project costs will be confirmed during the procurement process.**



# Project Funding

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- Approximately \$33M will be proposed in the Capital Improvement Plan (CIP) budget
- Bureau of Reclamation, WaterSMART Water and Energy Efficiency Grant is available
  - Awards up to \$5M
  - Grant Applications Are Due February 22, 2024
  - Award Notifications by Fall of 2024



# Rate Impact

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- Project cost approximately \$33 million
  - \$5 million potential grant
  - Approximately \$28 million in water bond financing
    - Cost of debt service to be offset by increased revenue and operational savings
    - Structured as interest only during the 3-year implementation



# Requested Action

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- Consensus to move forward with AMI project
- Consensus to seek grant funding opportunities



# AMI Project Next Steps

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- **Submit WaterSMART Grant Application...**February 22, 2024
- **Procurement. . .** March - November 2024 (target)
- **Potential Award of Contract. . .** December 2024
- **Implementation Project Kick-Off. . .** January 2025



Thank You!

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