



Advanced Metering Infrastructure (AMI) Implementation Development

Infrastructure & Development Committee
May 6, 2026



Purpose

- The City has initiated the development of an Advanced Meter Infrastructure (AMI) Program through an interdepartmental committee, focused on improving the condition, accuracy, and reliability of the City's meter infrastructure.
- While AMI remains the long-term goal, the most immediate need is the replacement of aging and underperforming meters that have reached or exceeded their expected service lives.
- Addressing these core infrastructure issues first provides the foundation for future AMI capabilities.

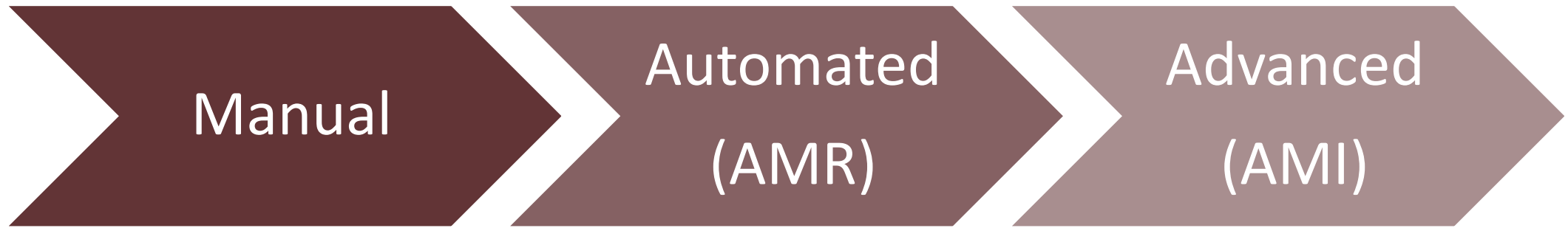
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AMI Planning Committee Members

Background

- Burleson water customers represent approximately 16,500 metered connections (91% residential, 9% non-residential)
- Meter sizes range from 5/8-inch for a typical home to 6-inch for larger commercial/industrial users
- Monthly meter readings used to generate billing based on actual water consumption
- Our goal according to the city's current water conservation plan is to replace 1-inch and smaller meters on a 10-year cycle, larger meters replaced based on testing results (1.5-inch and 2-inch meters tested every 3 years, meters larger than 3-inches tested annually)
- Metering technology continues to evolve from physical, meter-by-meter "walk-by" readings to "Automated Meter Reading" (AMR), to "Advanced Metering Infrastructure" (AMI) systems being deployed over the last two decades

Evolution of Meter Reading



1855: Henry Worthington issued first patent in U.S. for water meter

1950s: Visual Readings Remotely (without entering building)

1980s: Radio Frequency Remote Readings

1990s: Fixed Frequency Radio Readings (cellular)

2000s: Two-way Communication Systems Deployed

**Current
Operations**

Current State of Meters



Automated Meter Reading (AMR) system

- Meter data is transmitted wirelessly but only over short distances (typically a few hundred feet), requiring field personnel to be in close proximity to collect readings using an in-vehicle transceiver or MRX device with a laptop, tablet, or phone.
- The citywide meter reading process takes approximately eight business days (64 hours) and is divided into four billing cycles, data is downloaded into billing software to generate bills.
- Missed readings are common (around 1%), requiring return visits and contributing to roughly 200 work orders per month due to missing or irregular usage. The work orders take anywhere from 10-20 hours to complete based on complexity.
- There are three water utility workers and one supervisor that perform all meter reading and recheck work orders in addition to their regular daily job duties.

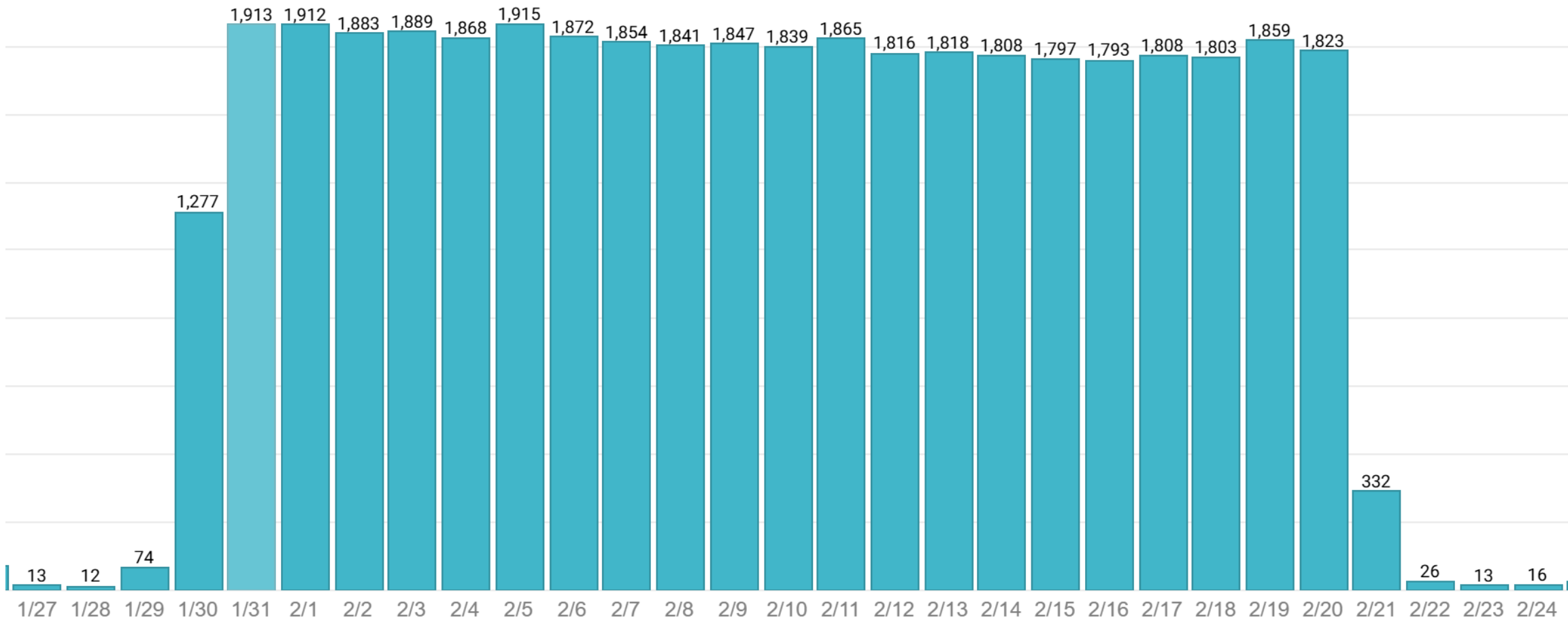
Current State of Meters (continued)



Automated Meter Reading (AMR)

- The current system uses separate meter and register components which can create intermittent connection issues if the register is not secure on the meter.
- Meters are mechanical and have moving parts that wear, resulting in loss of accuracy as they age.
- Residents do not have direct access to daily or hourly usage data without contacting the office.

Real Life Example Customer Consumption Issue



Looking Ahead

Staff has been exploring the feasibility of a meter upgrade project over the past few years as a means of strategically addressing multiple issues.

- **Meter Replacement**
Routine meter replacement is behind schedule with respect to the goals included in the city's Water Conservation Plan
- **Technology Upgrades**
 - Solid state meters are more durable than the current mechanical meters with better warranties
 - Ultrasonic meters provide greater accuracy (especially at low flows) compared to current meters
 - Advanced Metering Infrastructure systems provide customers and staff with actionable data in near real-time

In 2025, Ameresco was hired to evaluate Burleson's water metering infrastructure and identify improvements to restore meter accuracy, increase revenue, reduce operational costs, and modernize aging systems

Looking Ahead, continued

Ameresco Effort Included

- Review of historical consumption and account data
- Testing of meters in the field for accuracy and in accordance with American Water Works Standards (statistically significant sample of meters, not all meters)
- Field survey of meters and boxes
- Development of revenue projections and AMI propagation studies
- Evaluation of meter technologies and costs

Ameresco Results Include

- 10% of the meters evaluated had a register that wasn't secure on the meter
- Based on AWWA standards
 - 68 residential meters had weighted average accuracy of 97.64%
 - Intermediate (2") meters had weighted average accuracy of 98.8%
 - Large (> 3") meters had a wider range of accuracies depending on meter type
 - Meter upgrade projected to increase annual revenue by \$198k and reduce annual operational costs by \$66k

Staff is also evaluating potential collaboration between an AMI project and telecommunications projects being explored by Information Technology

Future State of Meters



Advanced Metering Infrastructure (AMI) system

- Eliminates the need for physical visits and vehicle-based meter reading by transmitting data over long ranges. (typically 0.5 to 5 miles)
- Sends readings to the cloud as frequently as every 15 minutes.
- Provides highly detailed water usage data, helping quickly identify and address leaks.
- Uses solid-state, ultrasonic meters for accurate and reliable measurement.
- Enhances customer access and communication through web portal, giving residents near real-time insight and greater control over their water usage.
- Allows customers to setup consumption alerts to notify them almost immediately of abnormal usage / potential problems.

Current Meter Stats

2027

Meter size	Newer than 10; AMI	Newer than 10; not AMI	Older than 10; AMI	Older than 10; not AMI
5/8"	3,121	3,529	3,175	5,293
3/4"	3	1	3	3
1"	241	63	177	186
1-1/2"	29	5	60	71
2"	91	4	112	150
3"	10	1	16	9
4"	2	1	2	3
6"	0	0	0	1
	3,497	3,604	3,545	5,716
			9,261	

Conceptual Project Overview

PHASE 1: ADDRESS METER AGING

Replace meters currently beyond their recommended service life consistent with Water Conservation Plan and funding

PHASE 2: AMI IMPLEMENTATION

- Deploy Communication Infrastructure (monopoles and data collectors)
- Integrate system
- Deploy web portal for customers

ADDRESS METER COMPATIBILITY

← REPLACE METERS THAT ARE NOT AMI COMPATIBLE →

Project Funding Options Under Consideration

Option 1

Fund project in full (one year) or in phases (multiple years) by including in the five-year Capital Improvement Plan

We are in the process of getting quotes for the additional meter replacements needed to complete the project. (approximately \$10-12 million)

Option 2

Fund the project over several years from working capital in the Water Fund

Replace a set number of meters each year to get all inventory up to date and AMI compatible (number of meters to be replaced and timeline would be determined based on approved funding for the multi-year program)

Option 3

Pursue a grant (or grants) to fund the entire project or portions of the project.

Potential Opportunity

Texas Water Development Board (TWDB)

Water Supply and Infrastructure Grant

- House Bill 500 (89th Legislative Session) appropriated \$1.038 billion for water supply and infrastructure projects
- TWDB will award funding in the form of 100 percent grants
- Major criteria (all complete or in progress)
 - Water Use Survey: Applicants must have submitted to the TWDB the annual Water Use Survey (WUS) of groundwater and surface water for the last THREE years.
 - Water Loss Audit: Applicants must have submitted to the TWDB the most recently required water loss audit on or before May 1, 2026.
 - Water Loss Audit Validation: Applicant acknowledges that its most current water loss audit will be validated prior to consideration of a request for financial assistance from the Board.
 - Water Conservation Plan: If the funding request for funding exceeds \$500,000, a Water Conservation Plan (WCP) is required. Plans must have been adopted by the applicant's governing body on July 20, 2021, or later.

Meter Standardization

Beginning fiscal year 2027, the City will transition to solid state, ultrasonic water meters as the standard for all new meter sets and replacements.

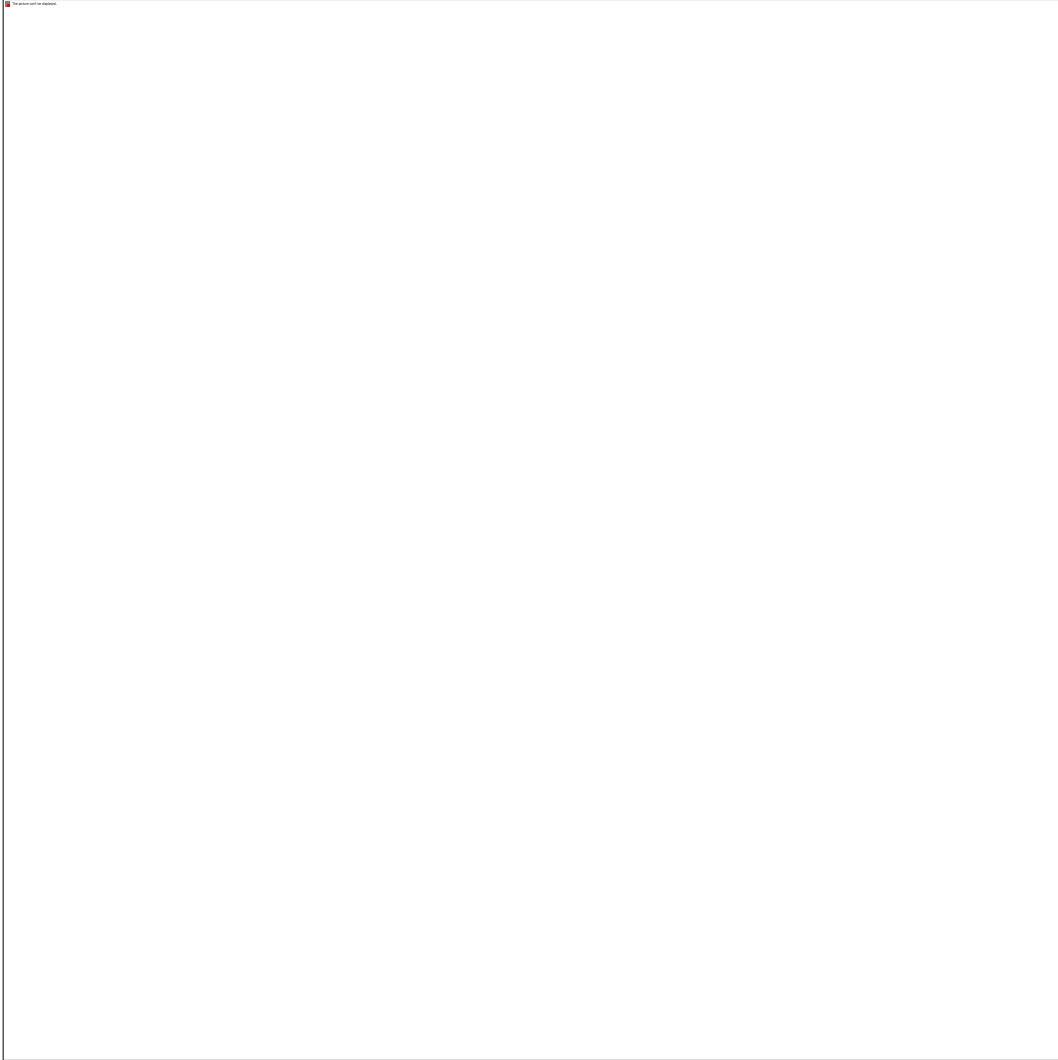
Advantages of Solid-state, Ultrasonic Meters

- Longer term accuracy and reliability warranty due to no moving parts that will wear out over time
- Enhanced ability to detect extremely low flow rates compared to current meters
- Meter and register are combined in a single component, resolving the issue of intermittent connection of the register

This will support the upcoming meter replacement project and future AMI capabilities.

Next Steps

- Continue exploring grants
- Staff committee recommendations to City Manager's Office
- Fiscal Year 27 budget considerations
- Staff update to Infrastructure & Development Committee in August 2026



Questions/ Comments
