Advanced Metering Infrastructure (AMI)

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AMI History

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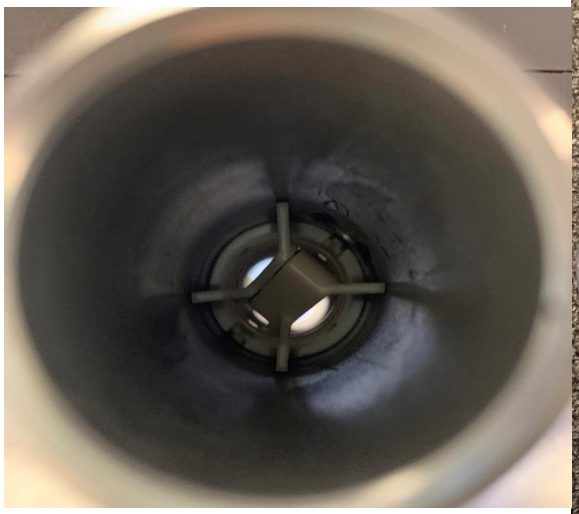
- Last City meter change out 2003
- Neptune mechanical meter and drive by system
- AWWA recommends meter replacement at 10 years or 1 million gallons
- 2016 City approved application to TWDB for the SWTP and requested by TWDB to include water meter change out program
- 2017 went through several iterations of reviews and then issued and conducted a two-step process
- Request for Expression of Interest
- Request for Proposals
- Itron network and OpenWay Riva system
- Badger E-series meter (one of major meter manufacturers)

AMI History

Meter program includes:

- One contract to supply meters and installation
- Replace boxes and lids, GPS locations
- Transition to an AMI network
- Network system and endpoints are open
  - This means that we can utilize any meter in the future
- Meters are solid-state
- Integration from collection software to billing software



AMI

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- What is AMI?
- A group of components that work together to
  - Read water consumption
  - Transmit water consumption
  - Upload water consumption
  - Share water consumption

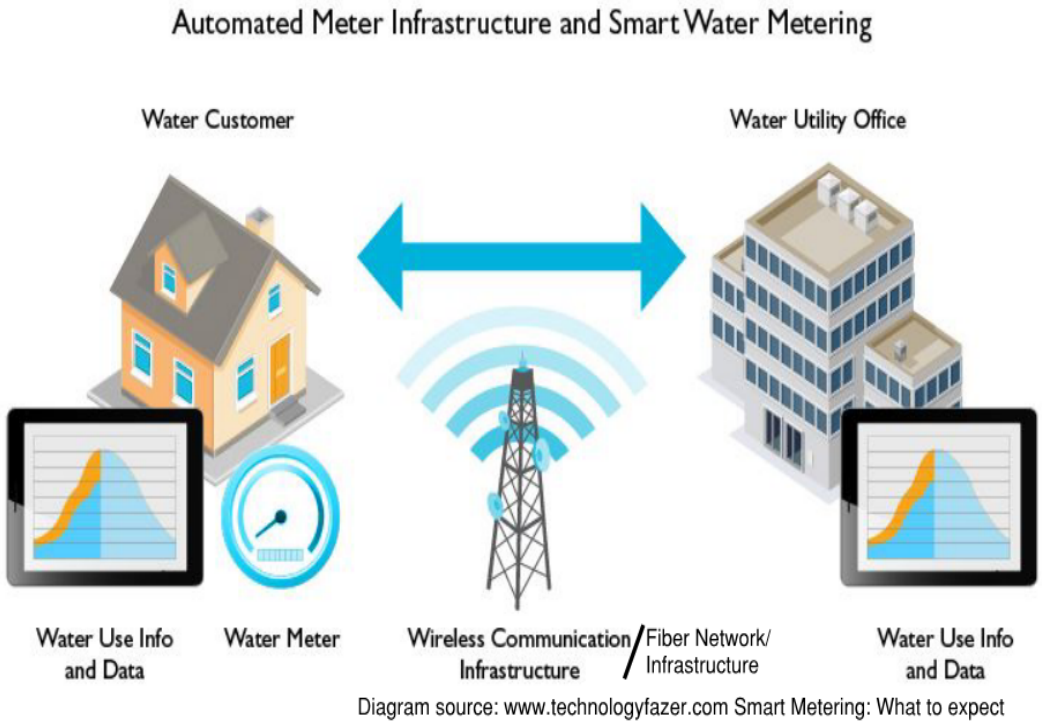

Diagram source: www.technologyfazer.com Smart Metering: What to expect

Meters

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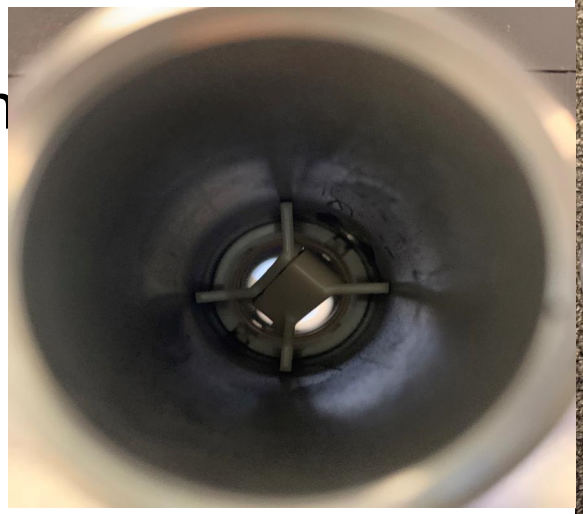
- Solid State meters
- No moving parts
- Uses an ultrasonic signal
- Measures upstream and downstream and time
- V=Q x A
- Operating range 0.1-25gpm
- Low-flow to 0.05gpm
- +/-1.5% operating
- +/-3% low-flow



AMI Meter Reading

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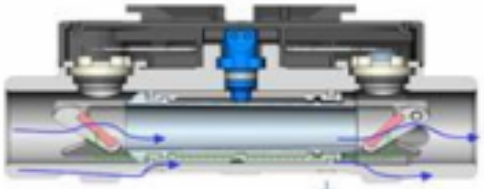
Ultrasonic Measurement Technology

- E-Series Ultrasonic meters use transit-time technology
- How it works:
  - Measures the time **differential** between **signal** sent **upstream** and a corresponding **signal** sent **downstream**. The **differential** is directly **proportional to the velocity** of the water.
  - Internal clock calculates the time between the two, and since the distance is known, the microprocessor can calculate the velocity
  - Velocity x Cross Section Area = Volume



AMI Collect and Transmit

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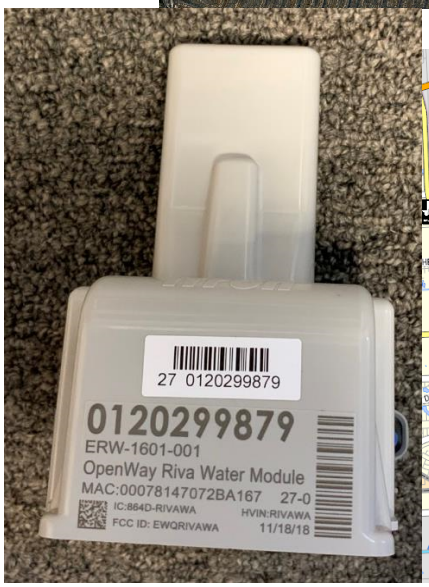
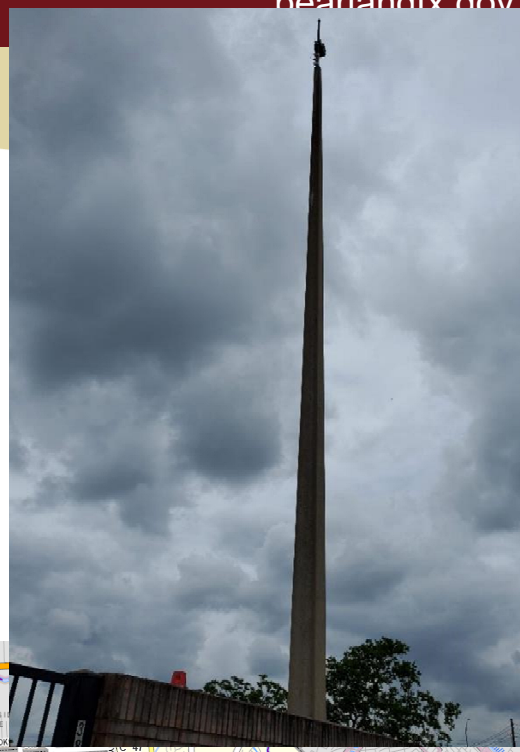
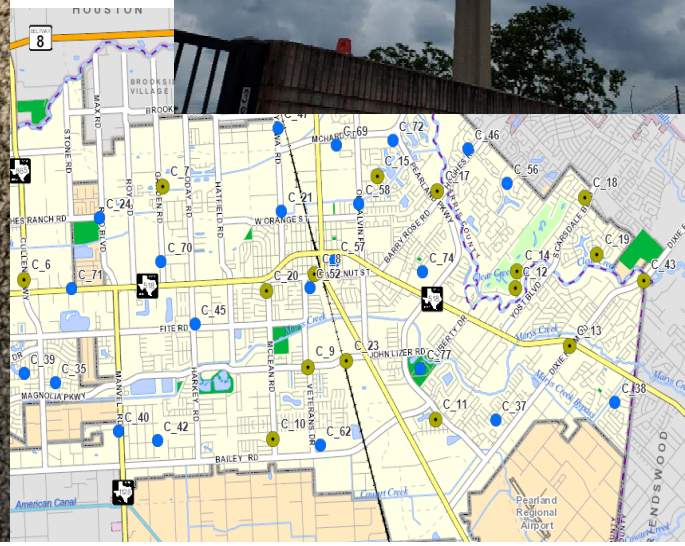
- Endpoints
- Connected Grid Routers (CGRs)
  - Total of 53 needed
  - Located on poles 60 feet tall
  - Located throughout the City
  - Based upon a propagation study
  - Coverage and redundancy







AMI Upload

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- Once AMI network is active
- Endpoints are collecting hourly meter reads
- Endpoints are interrogated every 8 hours and information is uploaded to the ITRON OpenWay Operations Center
- Information transmitted to Utility Billing

- Customer Portal
  - Usage tracking
  - Alerts

Thank you