Listening to Your System

Improving System Efficiency

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Listening to Your System

Water utilities are the largest single user of electricity in the US.

5 – 10 billion kilowatts annually are expended on water that is non-revenue.

Source – AWWA M36
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- Steps to improve your water system health
- Water audits
- District metering
- Acoustic leak detection
- Results
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• Personal health
  – Review of past
  – Physician asks questions
  – Physician listens to your systems
  – Improve health and well being

• System health
  – Utility must look at the outside
  – Review records and infrastructure
  – Look for misapplications
  – Listen for leaks
  – Improve system health, reduce non-revenue water
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Water Audit

• AWWA/IWA M36 Manual
  – Limit unnecessary or wasteful source water withdrawals
  – Optimize revenue and promote equity among ratepayers
  – Minimize system disruptions, optimize supply efficiency, generate reliable data
• Balance sources of water with revenue and non-revenue water
# Listening to Your System

- **Water Audit**

- **Checkbook Analogy** - Water In/Water Out

## Total System Input
- **Authorized Consumption**
  - (allow for known errors)
  - **Water Losses**
    - Real Losses
    - Apparent Losses
  - Revenue Water
  - Billed Authorized Consumption
  - Unbilled Authorized Consumption
  - Billed Water Exported
  - Billed Unmetered Consumption
  - Billed Metered Consumption
  - Unbilled Metered Consumption
  - Unauthorized Consumption
  - Customer Metering Inaccuracies
  - Data Handling Error
  - Leakage on Mains
  - Leakage on Service Lines to Meter
  - Leakage & Overflows at Storage
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Water Audit

• Water audit identifies the amount of non-revenue water

• Then steps to reduce the amount of non-revenue water:
  – Meter replacement programs
  – District metering program
  – Leak identification and remediation program
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Meter Sizing & Replacement

• Meters are mechanical and tend to slow down over time through usage.

• AWWA recommended test intervals
  – Residential – every 10 years
  – C & I – every 1 – 4 years depending on size

• Proper sizing and selection of meters
  – Different meter sizes – 5/8” – 54”, use the correct size
  – Different meter types for different expected flows
    • Positive displacement, turbine, compound, magnetic flow
Distribution system is broken down into small areas that can be metered individually and then compared with the billed consumption of customers. Data.
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District Metering

- Monitor flows at different times
- When supply flow is lowest – leakage rates are at their highest proportion
- Leaks don’t fix themselves – they only get worse
- Data, Hydraulic Models
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Acoustic Leak Detection

• Thank you for the opportunity to speak and introduce Badger Meter, Inc.