


# This presentation premiered at WaterSmart Innovations

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**Effective  
Water Conservation  
Policies to Leverage  
Automated Meter  
Infrastructure (AMI)**

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**Water Smart Innovations  
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# Outline

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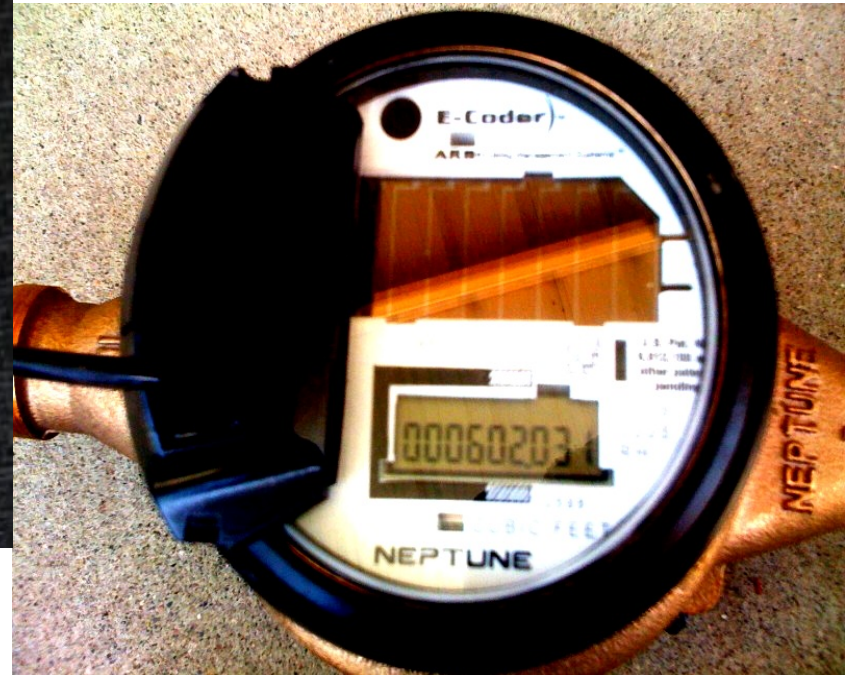
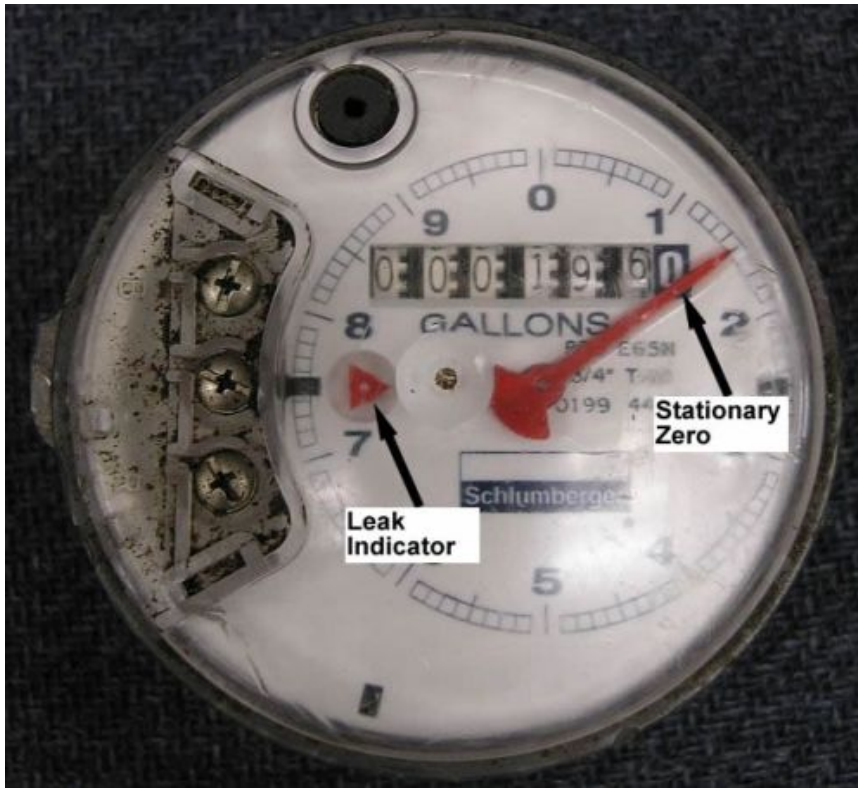
- What savings are we targeting?
- What is AMI?
- How can AMI be an effective tool?
- City of Sacramento case study – pilot program results
- Benchmarking of policy options and implementation approaches used by other utilities
- Lessons learned

## Water Waste = Targeted Water Savings

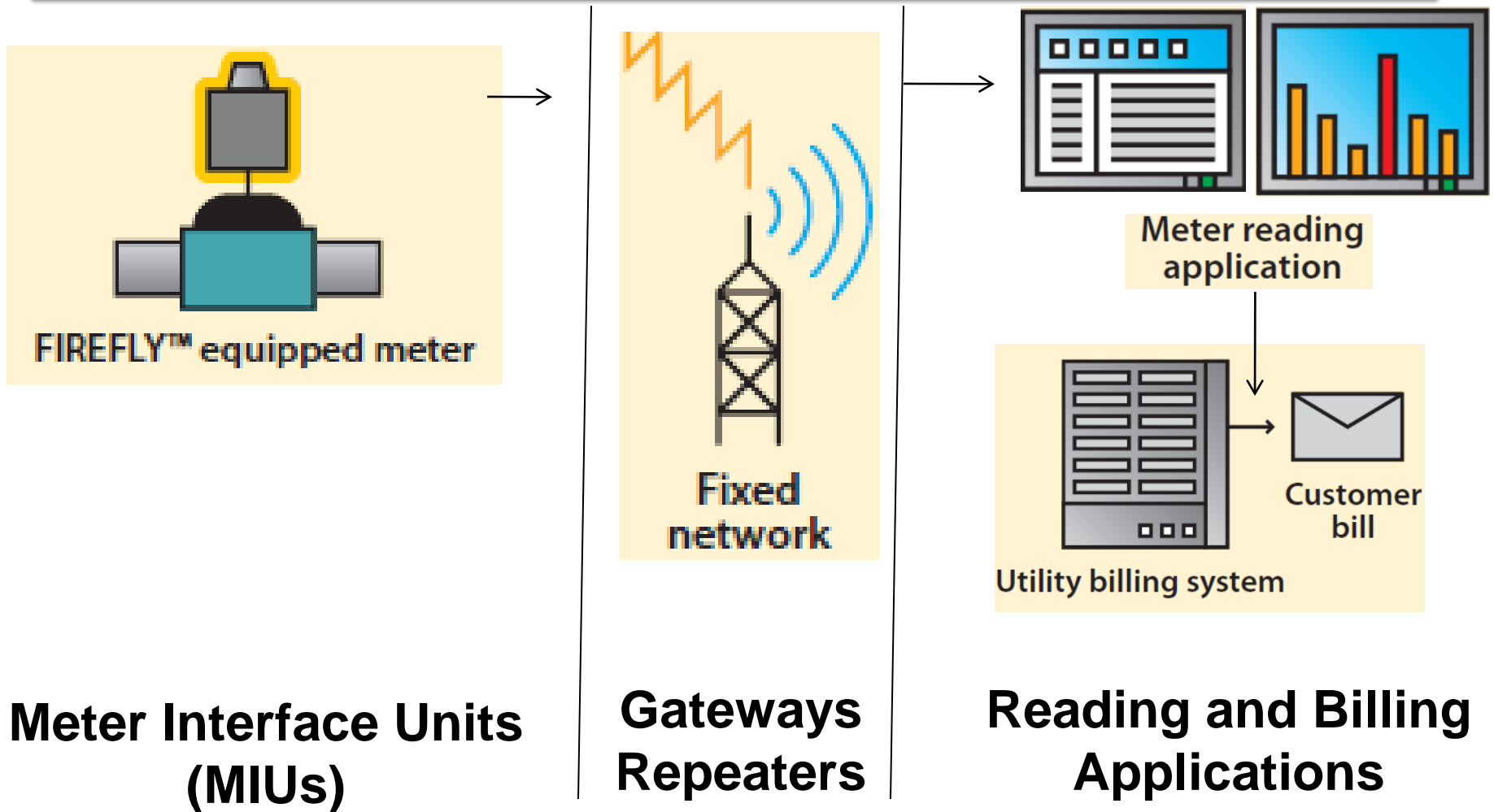
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- Primary policy vehicle: Water waste ordinance
- Applies to all customers, targeting:
  - Water waste runoff
  - Times of use
  - Leakage of irrigation systems
  - Leakage of indoor fixtures & appliances
- Customer action required to fix leaks
- Alerting customers is critical to savings
- Coordinate volunteer & community support

# Old Versus New Metering Technology



# AMI Components and Design



# AMI Leak Monitoring Capabilities

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- Identifies consumption data for leak detection and volumetric trends, meter tampers, and spikes
- Sends “leak” report from system on a regular basis for each account with continuously running meter
  - Predetermine thresholds of consumption
  - Automate notifications to utility staff and customer
- Follow-up on potential leaks by operations staff
  - On-site investigation of leakage
  - Follow-up monitoring after customer contact
- Other post processing of data (e.g., GIS)

# MOSAIC Meter Reading Application

Reading Report | Meter Detail | Profile Graph | Graph Options

Account#:  Cycle/Route: 11/041  Un-Read Meters Service Type: All

Name:  Start: 08/22/10  Audit Failures

Meter ID:  End: 08/25/10  Trouble Codes

Address:

Current Gateway:   Associated Only

FF SN:   Un-Exported / Un-Transferred Only  Global Search

Leak Indicator

Report Total: 785 Save As: [CSV](#) | [XLS](#) | [PDF](#)

Cycle	Route	Account#	Name	Svc Type	Meter ID	FF SN	Seq #	Address	Read Date	Read	Failed Audit Amount	Trouble Code	Export Date	Transfer Date
11	041								8/25/2010 1:00:00 AM	<a href="#">1256120</a>	-	-		
11	041								8/25/2010 1:00:00 AM	<a href="#">292514</a>	-	-		
11	041								8/25/2010 1:00:00 AM	<a href="#">1062980</a>	-	-		
11	041								8/25/2010 1:00:00 AM	<a href="#">2568035</a>	-	LEAK		
11	041								8/25/2010 1:00:00 AM	<a href="#">3062730</a>	-	-		
11	041								8/25/2010 1:00:00 AM	<a href="#">16869460</a>	-	LEAK		
11	041								8/25/2010 1:00:00 AM	<a href="#">1490150</a>	-	-		
11	041								8/25/2010 1:00:00 AM	<a href="#">386691</a>	-	-		
11	041								8/25/2010 1:00:00 AM	<a href="#">187181</a>	-	-		
11	041								8/25/2010 1:00:00 AM	<a href="#">295445</a>	-	-		
11	041								8/25/2010 1:00:00 AM	<a href="#">339837</a>	-	-		
11	041								8/25/2010 1:00:00 AM	<a href="#">105868</a>	-	-		
11	041								8/25/2010 1:00:00 AM	<a href="#">208722</a>	-	-		

Reading Application  
Sample Consumption Data



# AMI Water Conservation Benefits

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- Water conservation tool to accurately account for water consumption and discourage leaks
  - Improves leak detection and customer education
  - Provides a method to quantify detailed demand patterns
  - Allows staff to proactively notify customers of potential water loss prior to billing
- Provides a system for customer driven water efficiency
  - Creation of an AMI web interface provides customer access to personalized consumption data to manage individual water efficiency and encourage repair of leaky fixtures

## Case Study 1: City of Sacramento, CA

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- 140,000 customers in warm climate
- Plentiful supplies with high peak irrigation demand
- State mandate: 20% per capita reduction by 2020
- Everyday best practice, not just drought mitigation measure
- Necessary legal structure and support (e.g., ordinances)
- PR and customer notification process of potential leak
- Process for utility staff action to follow-up on potential leaks
- Incentives to encourage customer repair of the leakage
- Options for enforcement actions for ongoing water waste
- Support from voluntary community “ambassadors”

# City's AMI Leak Detection Pilot



**Pilot areas of 6,811 residences with associated firefly's:**

616 single family homes showed leak alert

- 75% leaks verified during field investigation
- 155M gallons of aggregate annual water loss identified
- 72% of leaks alarms were resolved
- 20% of customers utilized Water Wise Call
- 93 Water Wise Calls resulted in 114M gallons of water saved

## City's Future Goals and Next Steps

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- *Policy*: Update ordinance
- *Implementation*: Automated notification of customer and offer of free Water Wise House Call. Targeting largest leaks for staff follow-up.
- *Incentives*: Upgrade rebates available for indoor plumbing and outdoor controller/irrigation system.
- *Enforcement*: Use education and incentives first; fines for chronic outdoor waste, indoor waste next
- *Data Management*: AMI Customer Web Interface

# Informal Benchmarking Survey

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- Identified 8 utilities that have the following:
  - AMI system in place or piloting
  - Enforceable water waste ordinance
  - Ability to flag “leaking” account using AMI
  - Process to notify customers
  - Follow-up method

# Summary of Findings

Agency	Number Connections	Notification Approach
City of Folsom, CA	24,500	None currently
East Bay Municipal Utility District (EBMUD), CA	375,500	Beta-testing; email notification to customers
Lake Arrowhead CSD, CA	8,300	Staff contact or written if not available
Cucamonga Valley Water District, CA	49,000	Email notification to customers
City of Sacramento, CA	136,636	Targeted customer notification
Las Vegas Valley Water District, NV	360,000	Targeted customer notifications from “Trickle Report”
Denver Water, CO	303,900	Targeted customer notifications
City of New York, NY	830,000	Future email notification to customers

## Summary of Policy and Implementation Options

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- Every agency has a unique approach to:
  - Ordinance language
  - Leak Report settings for notifying customers
    - All continuous reads
    - Volume thresholds
  - Means to notify customers
    - Letter, Email
    - Staff contact
  - Enforcement
    - Incentives (e.g., rebates to replace leaking fixtures)
    - Warnings/Fines

## Case Study 2: Lake Arrowhead, CA

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- Small system: 8,300 connections in mountainous region
- Water scarcity issues
- Customer service benefits (e.g., freezing)
- *Policy*: Use ordinance covering indoor/outdoor leakage and irrigation timing restrictions
- *Implementation*: Use desktop monitoring
- *Incentives*: Rebate programs
- *Enforcement*: Dispatch staff for follow-up response



## Case Study 3: Denver Water, CO

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- Large system: More than 300,000 connections
- *Policy:* Service rules (only city/county ordinances)
- *Implementation:* Use AMI to set targets for threshold of usage and presumed calculated assumptions of “potential waste,” use GIS mapping of high use accounts, then canvas targeted neighborhoods
- *Incentives:* Partner with GreenPlumbers USA for subsidized replacement of leaky fixtures
- *Enforcement:* Restricted by state law, currently water suppliers prohibited from issuing fines for water waste

## Other Lessons Learned

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- AMI is still building up momentum in terms of technology capabilities to ID leakage
- Thresholds are important for larger systems
  - Understand the “volume” and “dollars” the leak costs to the customer to learn how motivated the customer will be to make the “fix”
  - Plan for support (e.g., letters, site visits)
  - Plan approach and notification. “Courtesy notice” initially and then use enforcement as necessary

# Summary

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- Everyday practice, not just drought measure
- Suggest policies:
  - Create formal ordinance or service rules
  - Include both indoor and outdoor leakage in addition to “standard” runoff and times of use restrictions
  - Provisions for enforcement (including fines)
  - Provisions for waivers due to medical need (e.g., dialysis)
- Protocol for addressing identified customers with potential leakage
- Planning for response and follow-up

## Questions?

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Thank you!