

Can Smart Meters (AMI) Promote Water Conservation?

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PROJECT DESCRIPTION

Demand Management is crucial to achieving future adequate water supplies in the U.S. Brooks (2006) stated that “water demand management promises to be as important in this century as water supply management was in the last.” To meet future needs, we must better understand not only which programs save water and at what cost, but also which programs work best for various demographics.

Texas A&M University has teamed with four Texas cities to investigate achieving household water-use efficiency using automated metering infrastructure (AMI), also known as smart meters. The analysis results will demonstrate the most effective methods to communicate meter data to household water users to maximize water-use efficiency.

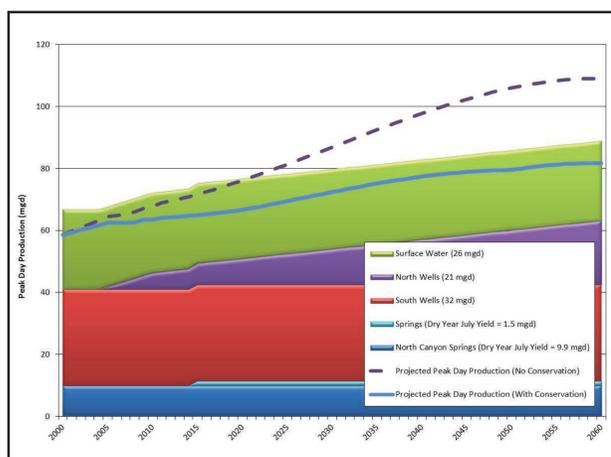


Figure shows how cities could potentially eliminate new supply development with conservation.



OBJECTIVES

- Assess short-term reduction in usage by September of 2015.
- Assess long-term reduction in usage by August of 2016.
- Reduce customer water leakage by utilizing the AMI data.
- Evaluate impacts of water conservation and education programs at the household level.
- Evaluate adoption and penetration rates within each water system by metrics such as education level, income level, yard size, house size, family size, and water usage.
- Evaluate usage reduction rates within each system.
- Develop a web portal that water systems can use to provide customized water usage and conservation information.

Customer Class	Accounts ¹	% of Connections	Annual Water Use ²	% of Total Water Use
Residential	17,113	90.1%	15,711	58.2%
Commercial	1,649	8.7%	7,874	29.1%
Industrial	20	0.1%	113	0.4%
Institutional	201	1.1%	2,990	11.1%
Other ³	2	0.0%	325	1.2%
Total	18,985	100.0%	27,014	100.0%

¹ Based on 2007-2011 meter records.

² In Acre-Feet.

³ Estimate Construction Water, Fire Flow Tests, Reservoir Cleaning, etc.

Table shows sample distribution of meter class and usage within a city.

METHODS

Task 1: Technical Advisory Committee. A technical advisory committee composed of industry and utility partners will be established to help steer the research team.

Task 2: Identify Test Groups. This task includes collecting and analyzing consumer data, obtaining participants, sorting participants into test groups, and distributing surveys/evaluations.

Task 3: Develop Database, Web Portal and Mobile Application. Connect with each community's database and develop a web portal that will provide a customized experience for consumer based on preferences and usage patterns. This will allow the city to customize education and outreach messages, as well as track and evaluate online user behavior and data.

Task 4: Track Usage Data. Usage data will be gathered daily and compared against the historical usage baseline for a 30-month period.

Task 5: Data Analysis and Interpretation. Data collected in Task 4 will be analyzed and compared with test groups to determine which methods of communication resulted in conservation.

Task 6: Education and Outreach. A local outreach and education program will be developed to help individual systems determine if using AMI is justified.

CURRENT STATUS

- Four water systems have committed to participate.
- Analyzing historical usage and collecting background data.
- Designing consumer participation surveys and web portal. Surveys will be distributed May 1. Web Portal will go live June 1.



Sample billing insert informing residents about the program.

ANTICIPATED BENEFITS

As a result of this project, the following benefits are expected:

- Quantify short term and long term water savings using AMI.
- Develop customized conservation education platform for water systems.
- Better understand efficacy of conservation programs.
- Detailed analysis of consumer adoption, penetration of measures, and permanence of efficiency gains at the household level.
- Identify potential existing leakage rates and associated reduction.
- Help communities identify potential for infrastructure optimization.