Indoor and Outdoor Water Budget Calculation & Mobile Customer Engagement

Summary

The City of Folsom, located in the northern Central Valley, is home to roughly 72,000 Californians. In 2012 the City of Folsom invested in and deployed city-wide Advanced Metering Infrastructure (AMI). As of January 2013, 100% of residential homes in the City of Folsom were equipped with a smart meter with hourly reads and charged volumetrically.

In late 2014, prior to Governor Brown's 25% conservation mandate, the City of Folsom invested in several software technologies that would improve means of residential indoor and outdoor water budgeting, customer engagement, and utility staff efficiency. In June 2015, the City of Folsom's state mandated reduction in residential water was set at 32%, in reference to 2013 levels. Through the first two months of the Governor's mandate, the City of Folsom has achieved 33.5% conservation.

This poster will examine the City of Folsom circumstances, integration of the AMI system and how several software technologies supported conservation efforts and customer engagement.

CITY OF FOLSOM
DISTINCTIVE BY NATURE

23 Miles NE of Sacramento, CA
32 Sq Miles
Elevation 220' +
Population 72,000

Folsom Lake

The City of Folsom's only source of water

Folsom Lake – July 20, 2011   *Folsom Lake – January 16, 2014*

- Max Volume: 977,000af
- July 2015: 357,388af
- September Prediction: 120,000af
- Below Intake: 90,000af

Folsom Water Service

- Annual Water Rights - 34,000 af
- Water Service Area Population - 63,376
- 22,000 Connections - 18,000 Residential
- State mandated reduction 32%

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Timeline

2006
January
City of Folsom begins metering residential homes

2012
January
Water meter retrofit complete
Complete AMI installation

2013
January
100% volumetric/metered rates

December
Folsom declares drought restrictions

2014
'14/'15 Fiscal Year
Folsom appropriates $350k to Water Conservation Program

2015
January
Folsom launches Dropcountr

April
Governor Brown mandates 25% conservation

June
34.3% conservation reduction (J'13 v. J'15)

July
6-month analysis of Dropcountr finds 10% conservation effect

AMI Integration

In 2006, the City of Folsom began to move away from flat-rates and towards a metered system, in accordance with federal and state law. As the city ramped up its meter installation, it was decided that the benefits of AMI – daily water reads and improved accuracy about where the water is going and how it is being used – was worth the investment, and the city completed AMI integration in January of 2012. By January of 2013, 100% of all Folsom residents had been transferred from a flat rate system to volumetric metered rates.

AMI integration did not come without its challenges. Folsom chose to integrate 100% of the city and skip the process of a pilot project. This led to several vendor issues and an initial high equipment failure rate. Fortunately, Folsom had success with the second vendor, which greatly reduced failure rates and allowed for in house data storage and easy database management.

After AMI installation was complete, Folsom recognized that with hourly usage data came significant opportunities. It became clear that in addition to utility staff purposes, residential customers also needed a customer portal where they could get up-to-date data on their water use.

Why?
- Automate meter reading
- Detailed water data
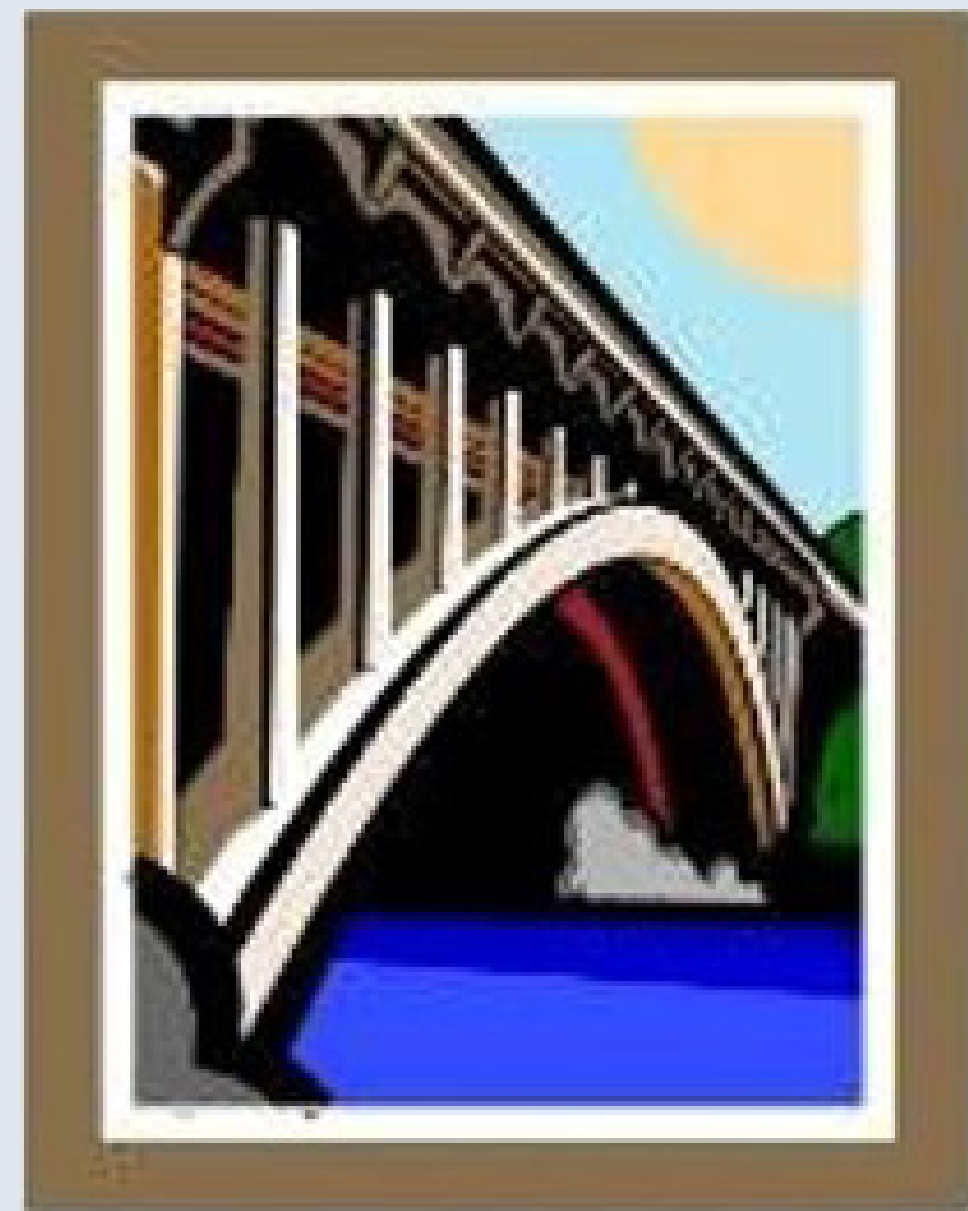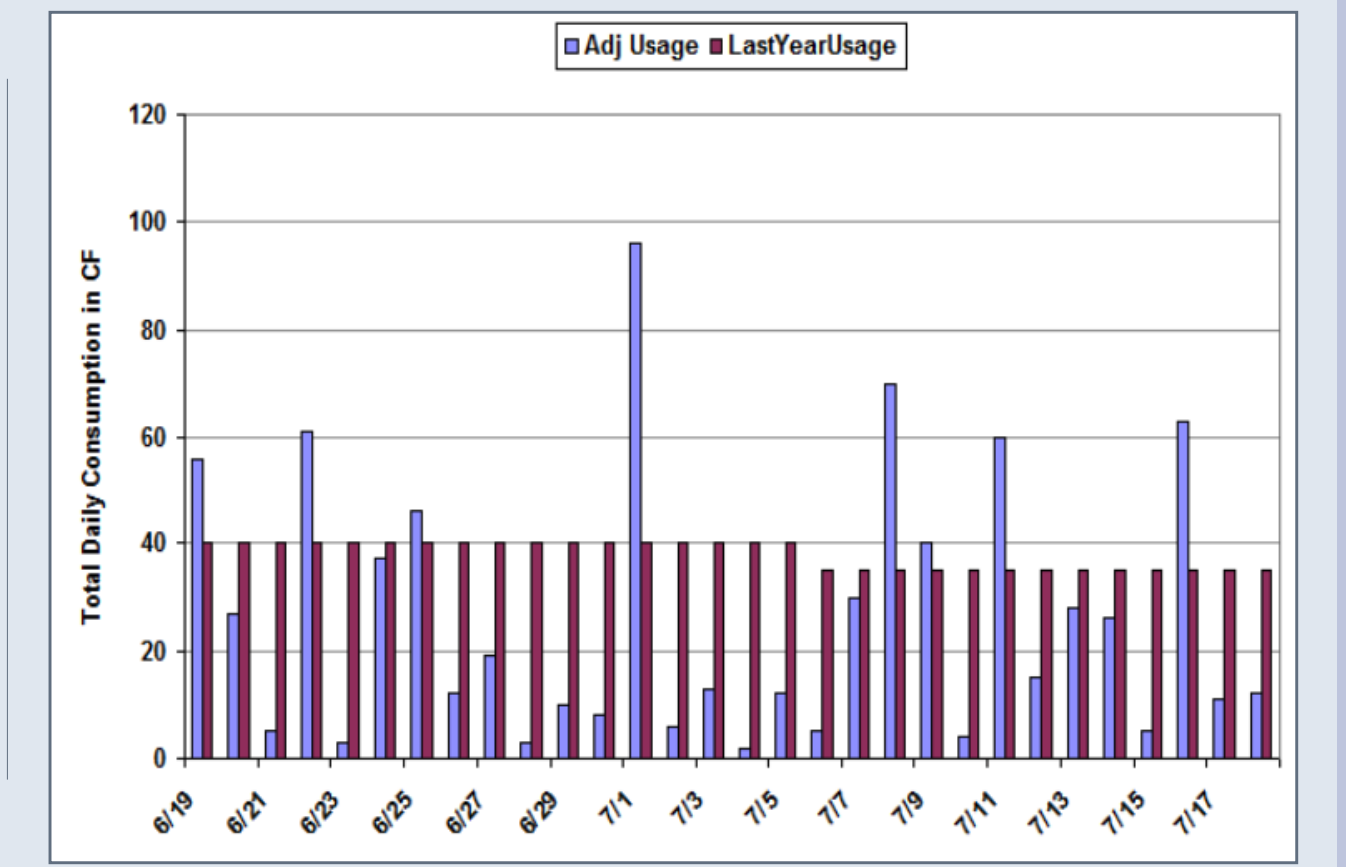- Daily meter reading
- Hourly reads

Challenges
- No pilot project
- Vendor problems
- Initial High Equipment Failure Rate
- Offsite Data Storage
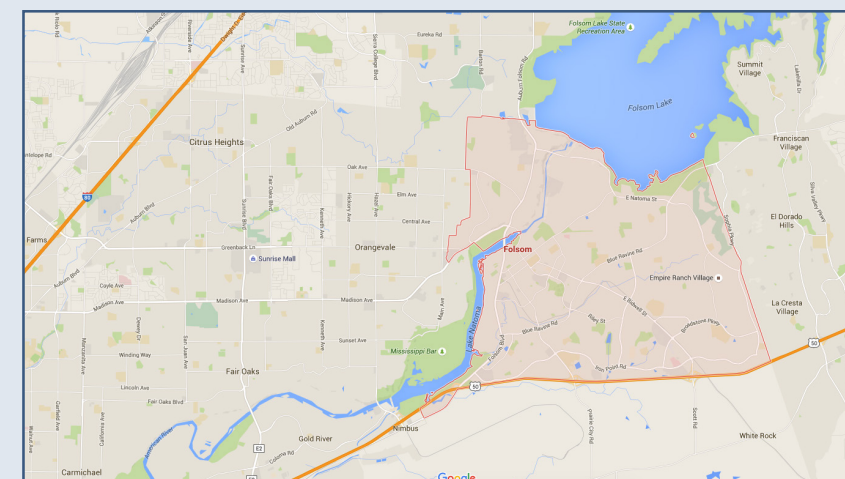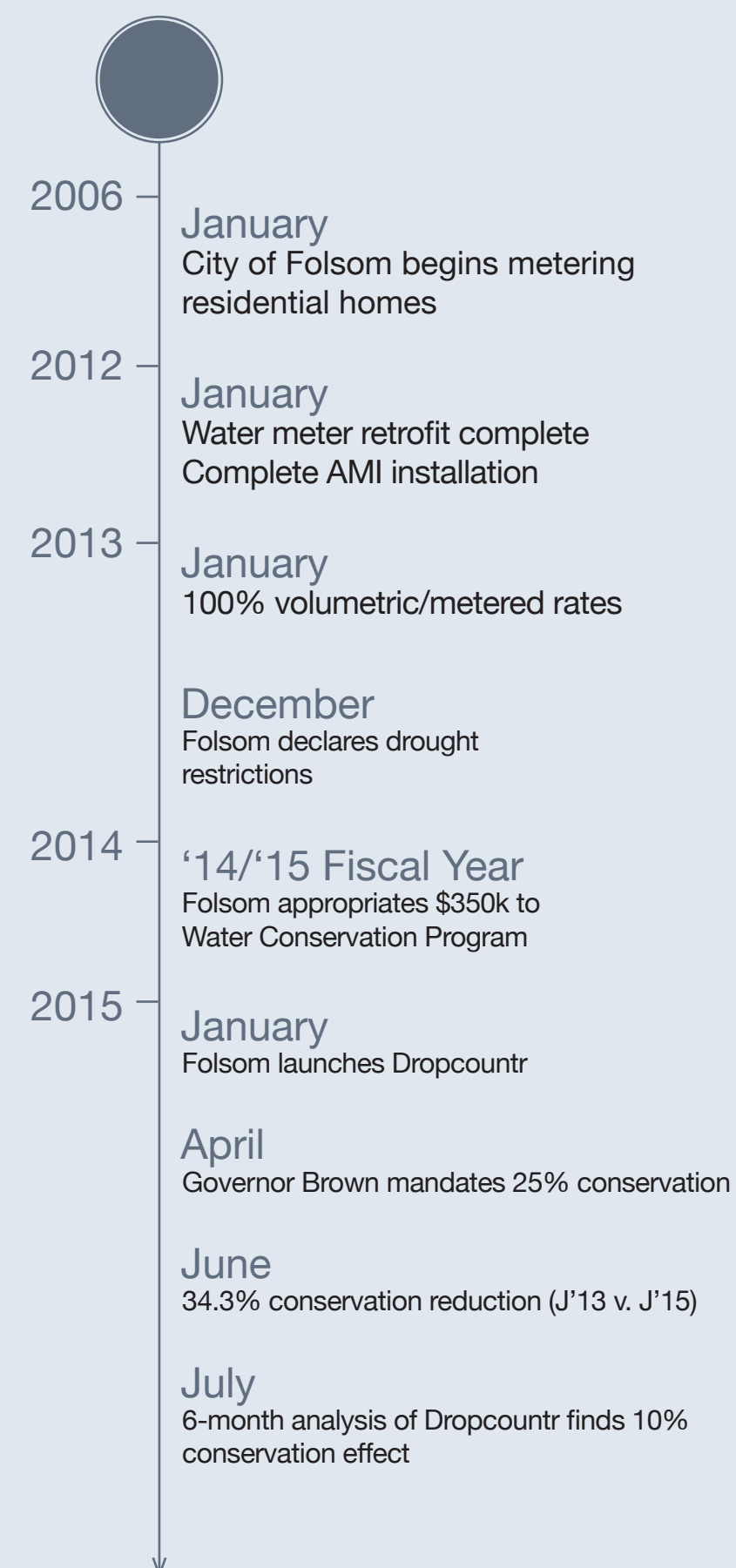- Data Management

Successes
- Second vendor performing well
- Greatly reduced failure rate
- In-house data storage
- New customized database

Functions
- Daily meter data
- Multiple reports
- Year to Year Comparisons
- Exception Reports:
  high/low use, no-read, leaks

dropcountr *Water Budgeting & Customer Engagement*

In December of 2014 Folsom began a 1-year pilot program with Dropcountr, a California-based integrated software platform for utilities. In addition to Meter Data Management (MDM), Dropcountr provided a Customer Information System (CIS) and Customer Relationship Management (CRM) for utility staff – optimizing several standard tasks into one intuitive tool. For Folsom residents, Dropcountr provided access to a "water hub" from the convenience of their smartphone or computer. This customer portal included real-time and historical water use, a tool for setting a "water goal", access to available rebates, important utility announcements and tips for conservation.
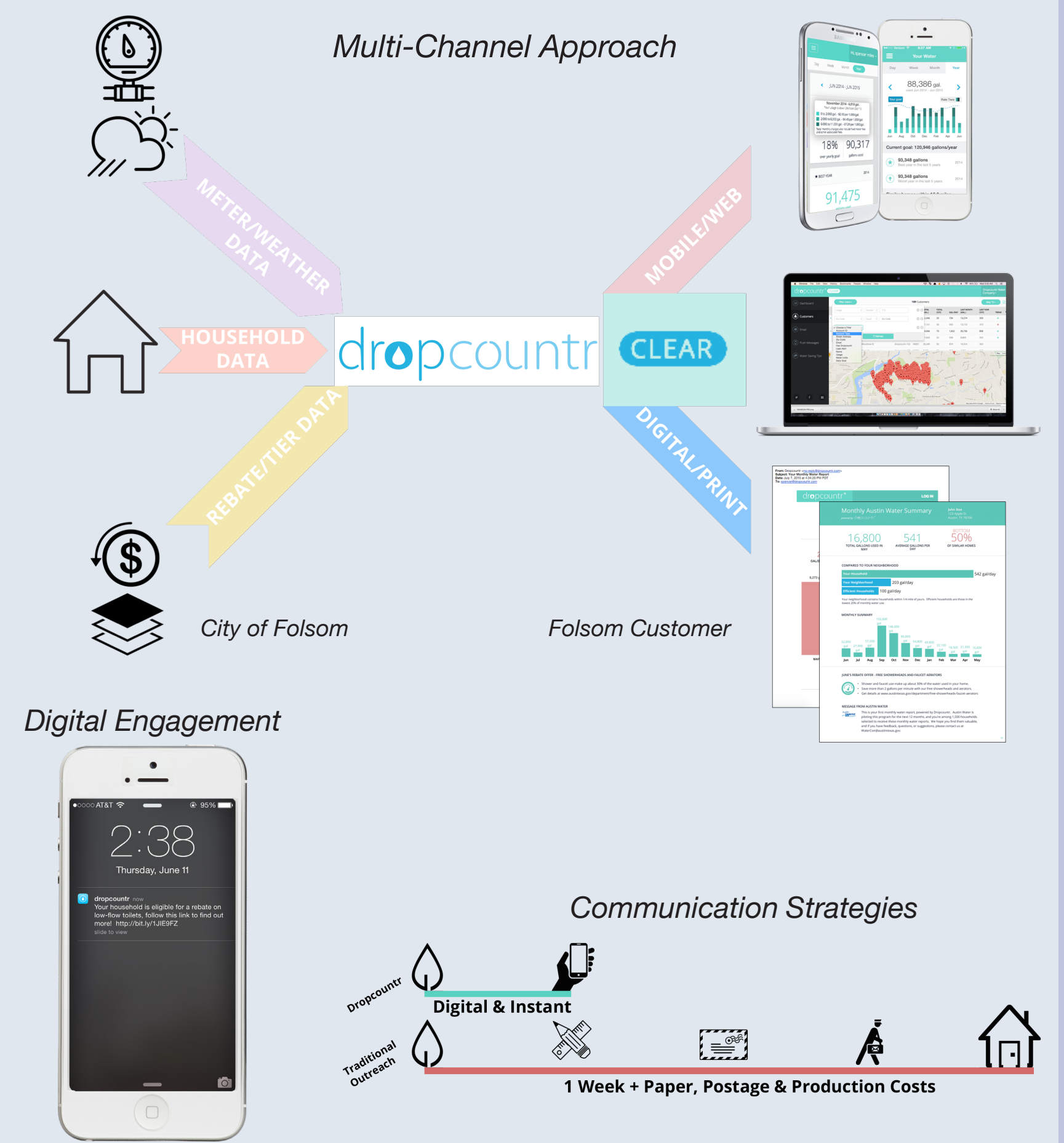
Dropcountr builds a profile for all new users as part of the onboarding process. In addition to collecting household occupancy information, which informs the calculation of an indoor water budget, the onboarding questions collect key demographic data on indoor and outdoor appliances, fixtures and irrigation hardware. Dropcountr also utilizes parcel size data, with an estimated irrigated percentage, along with local CIMIS data which allows calculation of an outdoor water budget. Folsom employs a simplified outdoor budgeting formula, presented below:

$$\text{Outdoor Water Budget} = \left(\frac{\text{Monthly}}{\text{Evapotranspiration}} \times \frac{\text{Monthly}}{\text{Crop Coefficient}} \times \text{Quality Factor} \times \frac{\text{Monthly}}{\text{Dampening Effect}} \times \text{Irrigated SqFt} \times .623 \right) + \text{GPCM}$$

(number of gallons in 1 foot-inch)

Additionally, Dropcountr uses "social norming" and compares a household's usage with that of their neighbors and what an "efficient household" should be using. This has not only given Folsom residents a target to shoot for, but also uses behavioral psychology to encourage conservation.

Lastly, Dropcountr provided a means for engaging with Folsom residents instantly and efficiently through digital communication. A utility staff member can use the CLEAR dashboard to identify certain demographics of customers they want to reach, and then send them a message through email or push notification instantly. This not only helps alert customers in the event of a leak or emergency, but has also saved the city time and money that would traditionally be used for mail outreach.

In August 2015, the City of Folsom extended their contract with Dropcountr three years

Multi-Channel Approach

METER/WEATHER DATA · HOUSEHOLD DATA · REBATE/METER DATA · MOBILE/WEB · DIGITAL/PRINT · CLEAR

City of Folsom   Folsom Customer

Digital Engagement

Communication Strategies
Digital & Instant
1 Week + Paper, Postage & Production Costs

Results

A recent analysis found that those households who used Dropcountr had lower monthly consumption, as a group, across the entire sample period, including the period prior to offer of service. This feature is consistent with the idea that households who are likely to "opt in" to such a service are more likely to be households who are already interested in conservation practices. Despite this difference in average consumption across the treated and control groups, there exists a visually distinct increase in this average consumption difference between treated and control households following introduction of Dropcountr services.

This analysis found that Dropcountr users decreased monthly consumption by 9.97%, on average, after removing any decreases in consumption that may be true of all Folsom Water Department customers. Said another way, while all households reduced their monthly consumption, on average, Dropcountr users decreased their consumption nearly 10% more than those households that did not enroll. This difference may also be interpreted as an additional 868 less gallons of monthly consumption, on average, for the Dropcountr users.

The City of Folsom selected Dropcountr not only for the conservation benefits, but also for operational efficiency: several of the functions Folsom staff do everyday are packaged in an intuitive and powerful software. Metrics for this benefits are slightly more difficult to calculate, but Folsom and Dropcountr and working together to provide those stats.

On several occasions, the City of Folsom has received calls and reviews from customers who use the Dropcountr app and are shocked at the volume of water they use, or thankful for alerting them to leaks in their system

Average monthly consumption across time by DropCountr enrollment

Introduction of Dropcountr

Gallons (thousands)

Jan 13 · Apr 13 · Jul 13 · Oct 13 · Jan 14 · Apr 14 · Jul 14 · Oct 14 · Jan 15 · Apr 15

Dropcountr Status   Never enrolled   Enrolled