FATHOM

CEDAR HILL
WHERE OPPORTUNITIES GROW NATURALLY

Data Innovation for Utility Financial Survival

June 2017

Presenters

CEDAR HILL
WHERE OPPORTUNITIES GROW NATURALLY

FATHOM

- Jason Bethke, President, FATHOM
- Joe Komisarz, Manager, Utility Services Department, City of Cedar Hill, Texas

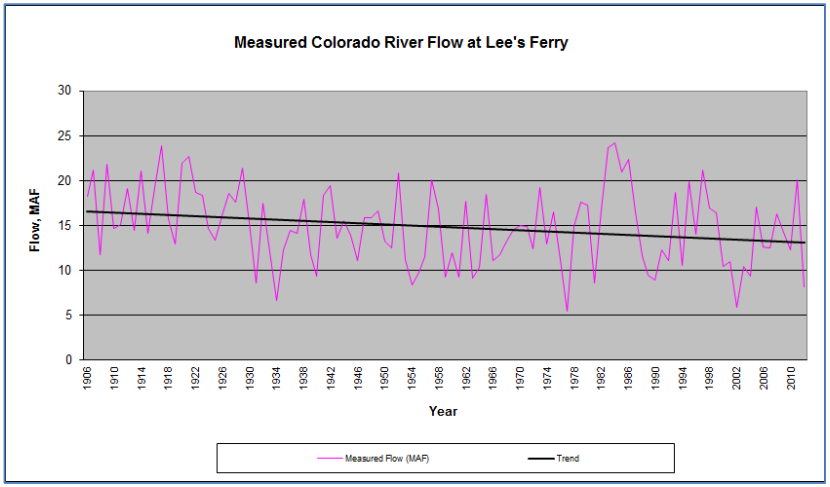
Objectives

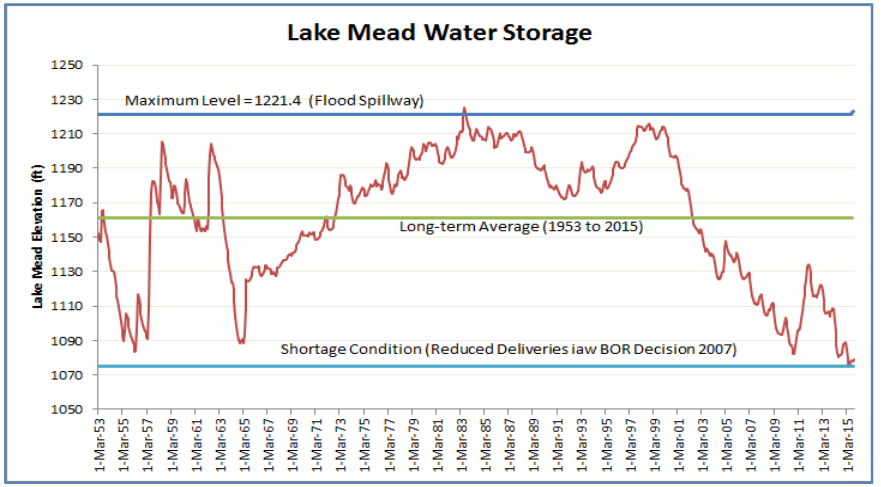
- Understand the value of Smart Grid for Water;
- Understand how to use data to offset revenue destruction from voluntary and regulated conservation mandates, and extend the life of existing assets through analytics; and
- Understand the intricacies of data and analytics to maximize collectible revenue and improve customer satisfaction.

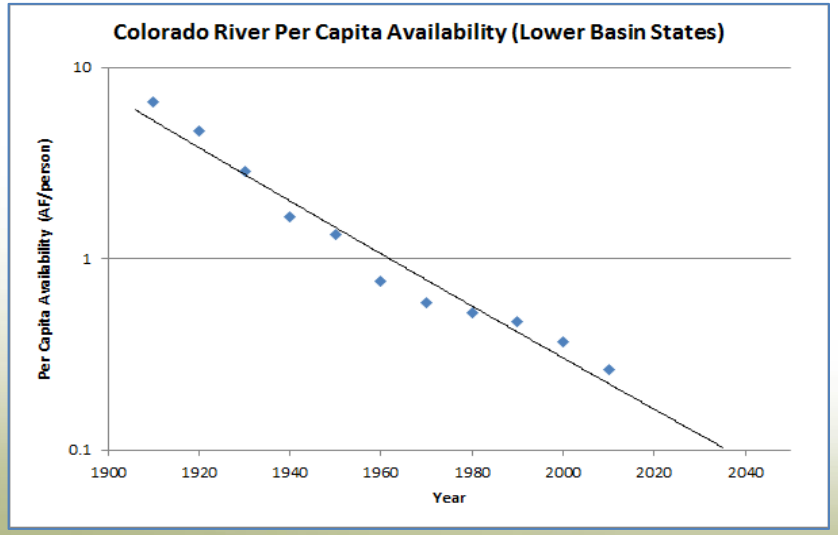
Water Sector Challenges

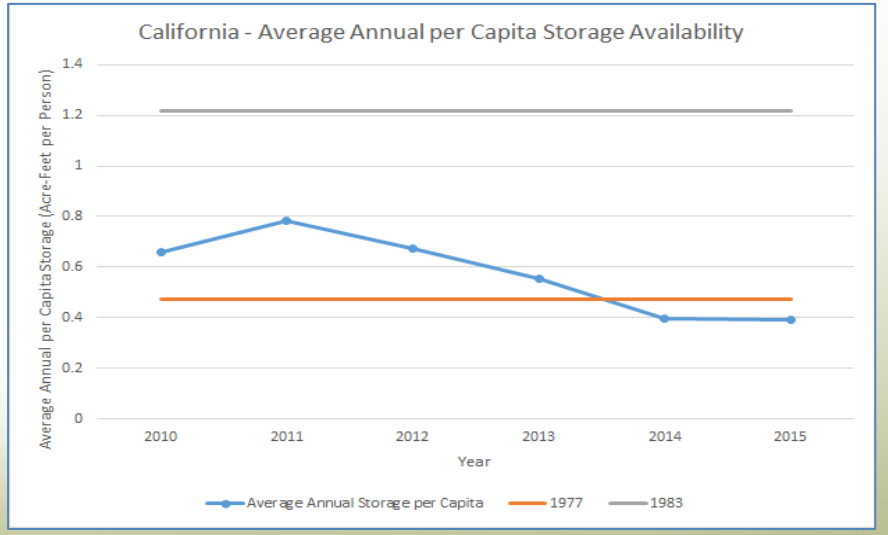
- Resource Volatility
- Infrastructure Survivability
- Financial Viability
- Customer Centricity

Resource Volatility

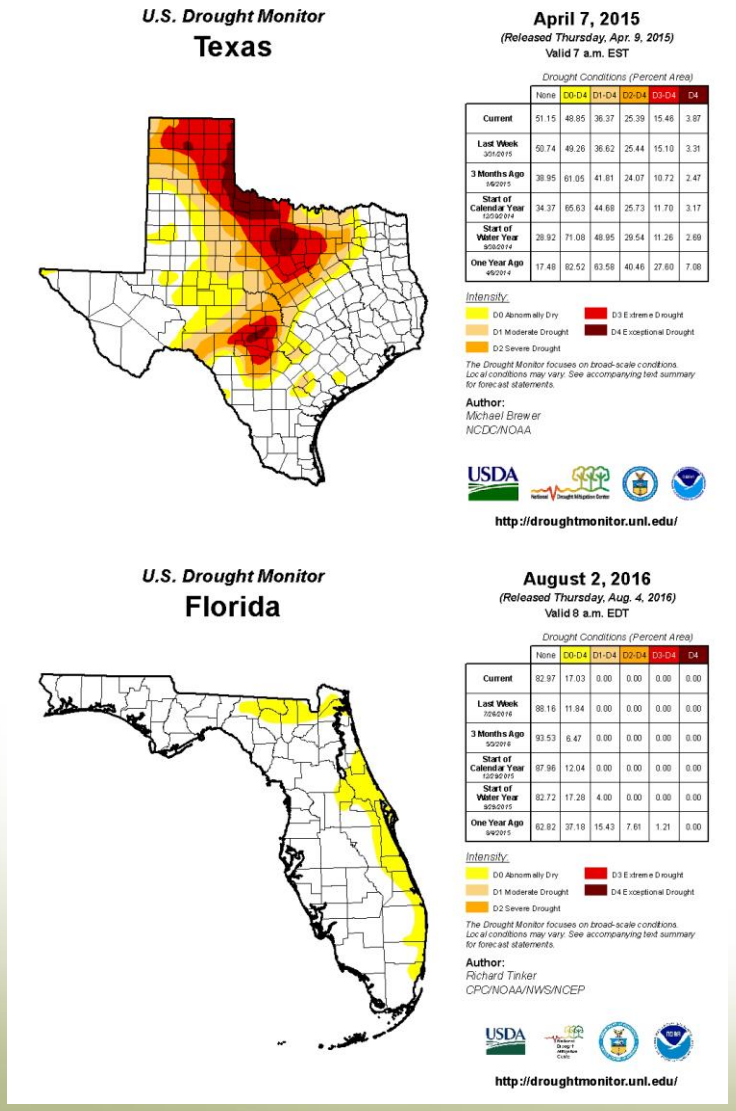


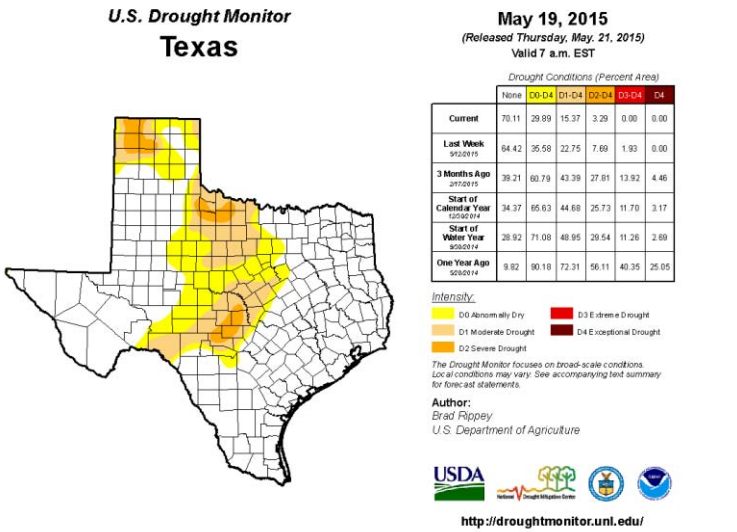


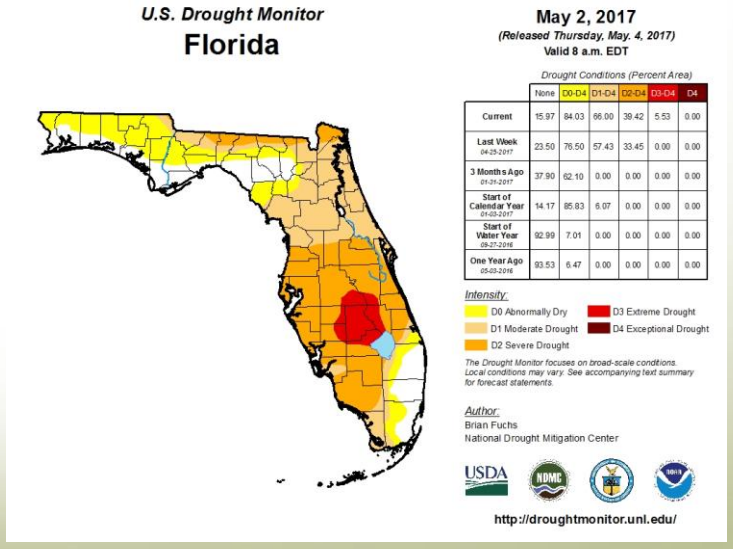




Resource Volatility

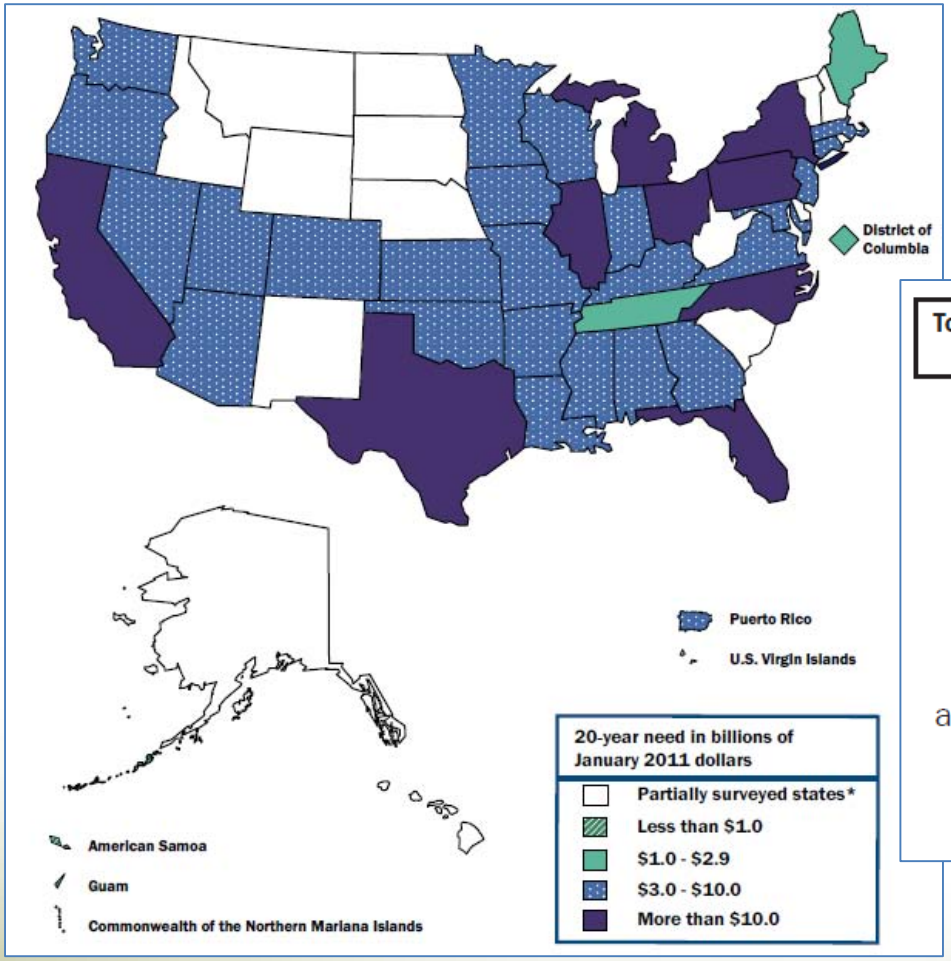


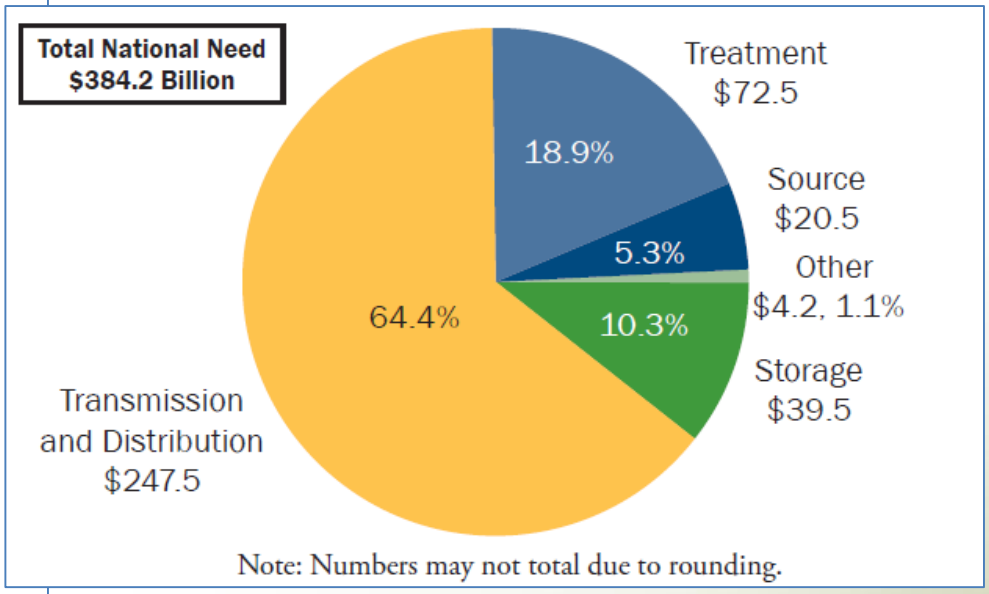




Source: http://droughtmonitor.unl.edu/MapsAndData/MapArchive.aspx

Infrastructure Survivability





Source: 2011 EPA Infrastructure Needs Assessment (published 2013)

Infrastructure Finance Requirements

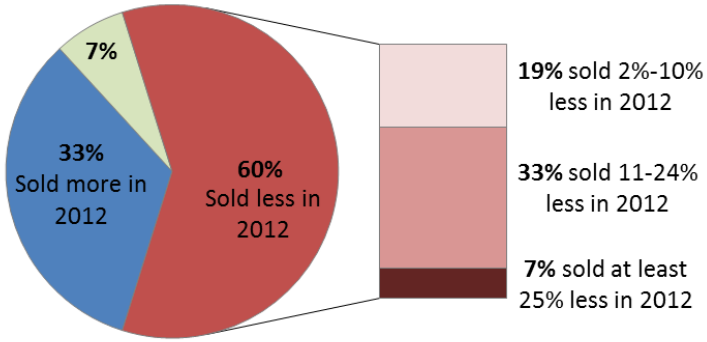
2011-2035 Totals			
(2010 $M)	**Replacement**	**Growth**	**Total**
Northeast	$92,218	$16,525	$108,744
Midwest	$146,997	$25,222	$172,219
South	$204,357	$302,782	$507,139
West	$82,866	$153,756	$236,622
Total	**$526,438**	**$498,285**	**$1,024,724**

Source: AWWA, Buried No Longer: Confronting America ’s Water Infrastructure Challenge, 2012

Financial Volatility

- Structural Conservation
- Voluntary Conservation
- Mandated Conservation

Total Water Volume Sales in 2012 Compared to 2006 in 129 Utilities Nationwide



Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill and Raftelis Financial Consultants, Inc. Data Source: Biennial, national AWWA-RFC Water and Wastewater Rate Surveys in 2006 and 2012. Water utilities that reported their total daily gallons sold (MGD) in 2006 and 2012 are included in this analysis. 81% of the sampled utilities increased total number of accounts from 2006 to 2012.

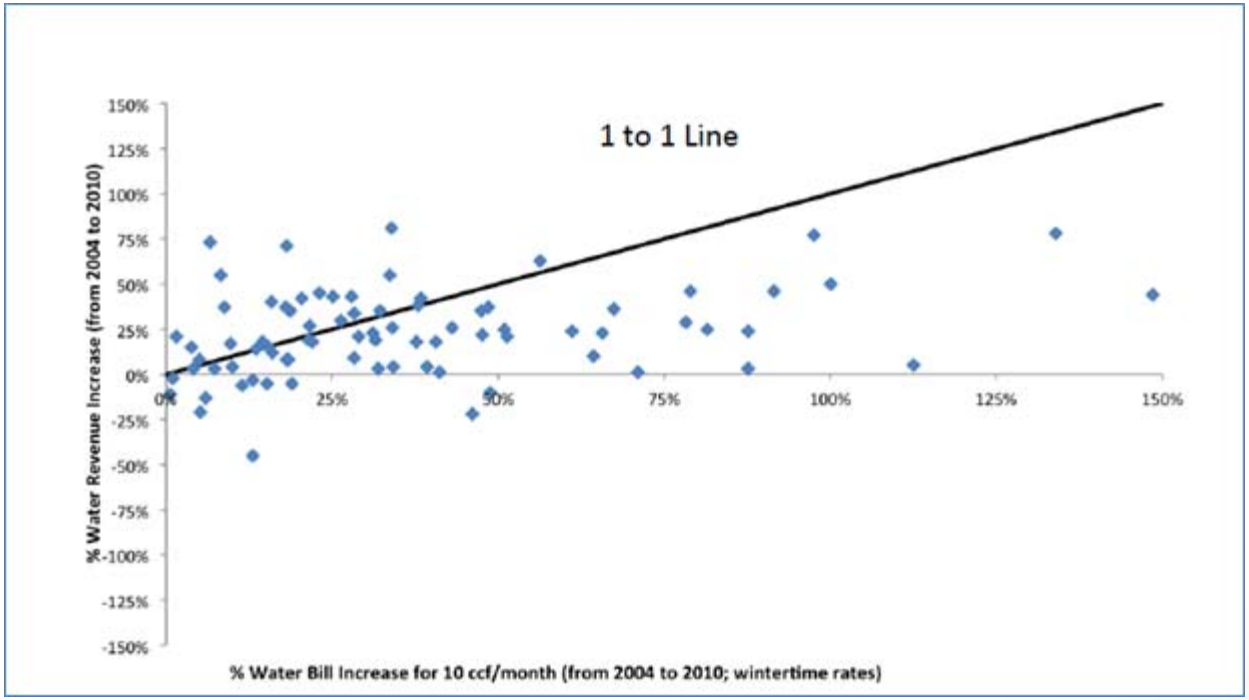
USGS report for Florida stated that freshwater use in the state decreased 22 percent from 2000 to 2010, while the state's population increased 18 percent.

California State Water Resources Control Board: water utility net revenues to **"decrease between $500 and $600 million"**

Sources:

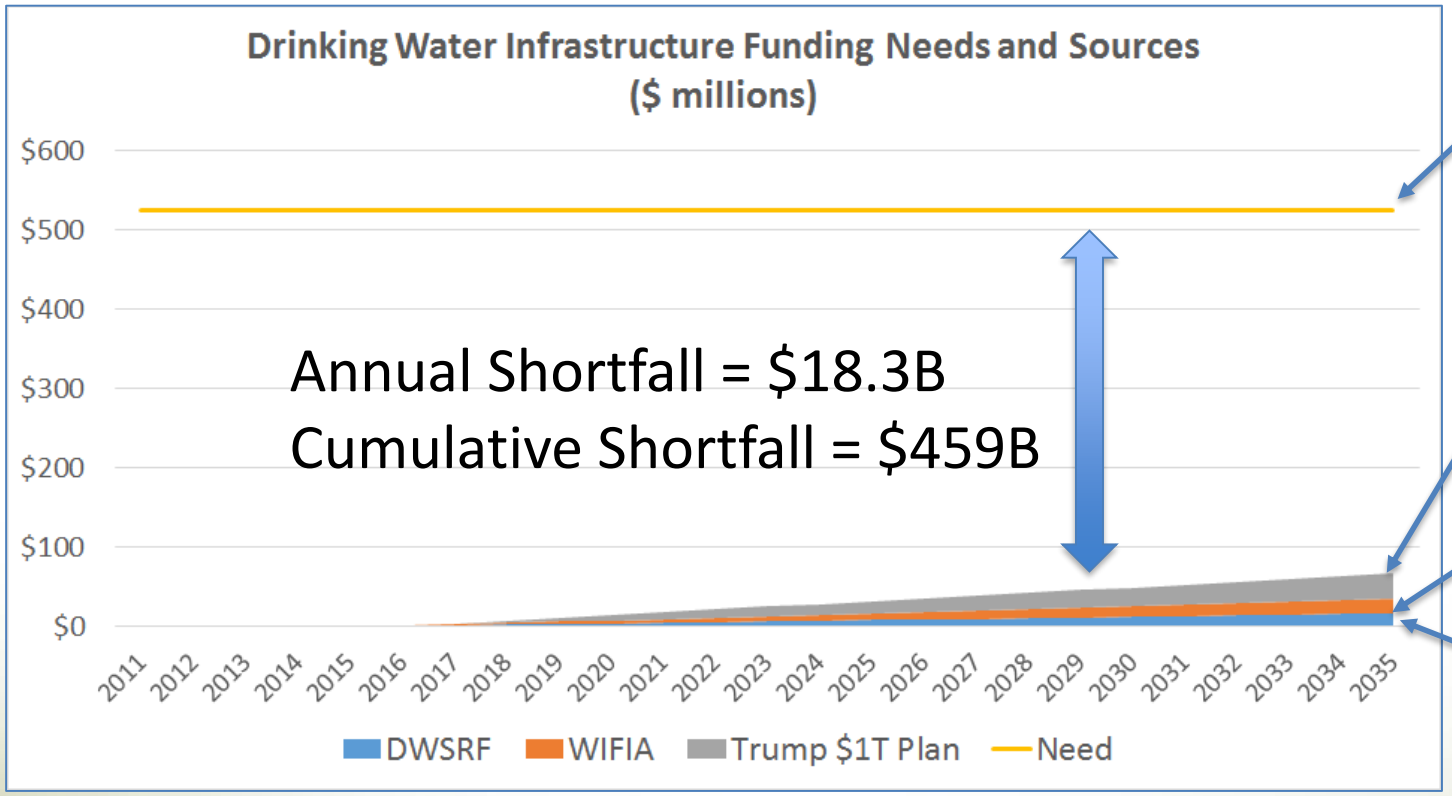
S. Eskaf, "Even Total Water Demand is on the Decline at Many Utilities", April 15, 2014
S. Moss, et al., "Executive Order B-29-15 State of Emergency Due to Severe Drought Conditions Economic Impact Analysis", May2015
A. Reid, K. Spear, "Water demand shrinks even as state, U.S. grow", South Florida Sun-Sentinel, 7 Nov 2014

Rates can't Keep Up



Source: Jeff Hughes, UNC Environmental Finance Center (http://www.efc.sog.unc.edu/sites/www.efc.sog.unc.edu/files/HughesCascadePresentation_0.pdf)

Show Me The Money



Investment Needed

Trump $1T Infrastructure Plan

WIFIA

SRF

Customer Centricity

Customers' expectations are being driven not by comparisons to other water utilities, but by their experiences in other sectors: on-line retail, banking, data, airlines, etc.

"Consumers want highly personalized information and they want it at any time on any device – Web, TV, print, smart phone."

Source: Jesse Berst, "The six things utilities still don't get about consumers (but better learn fast!)", Smart Grid News, Apr 5, 2011

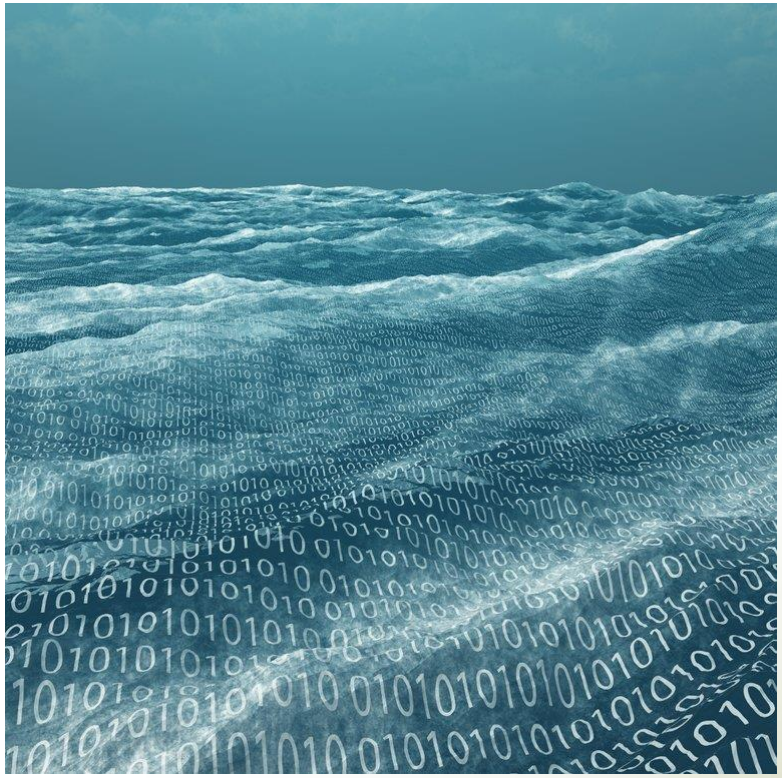
Customer Centricity

"Understanding the role of information and the household consumer is integral for transforming a 'Water Supply City' where the focus is on infrastructure alone to a 'Water Sensitive City' where infrastructure, users and the environment are integrated."

Source: Damien P. Giurco , Stuart B. White and Rodney A. Stewart, "Smart Metering and Water End-Use Data: Conservation Benefits and Privacy Risks" Water 2010, 2, 461-467

Transforming Our Utilities

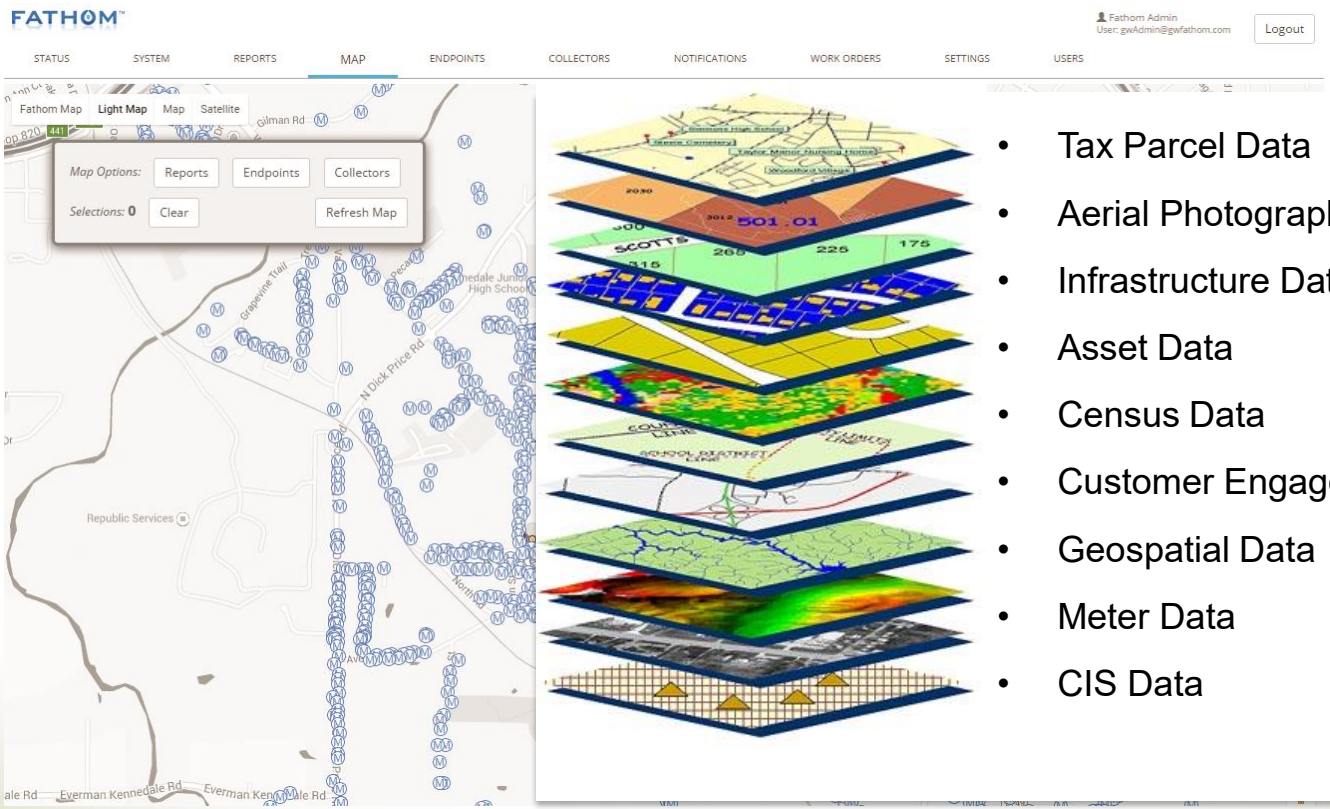
- Resource Volatility
- Infrastructure Survivability
- Financial Viability
- Customer Centricity



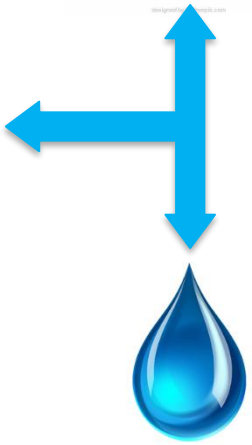
DATA

- Incentivize Conservation
- Find Capacity in Existing Infrastructure
- Find Revenue in the Data
- Engage the Customer in the Business of the Utility

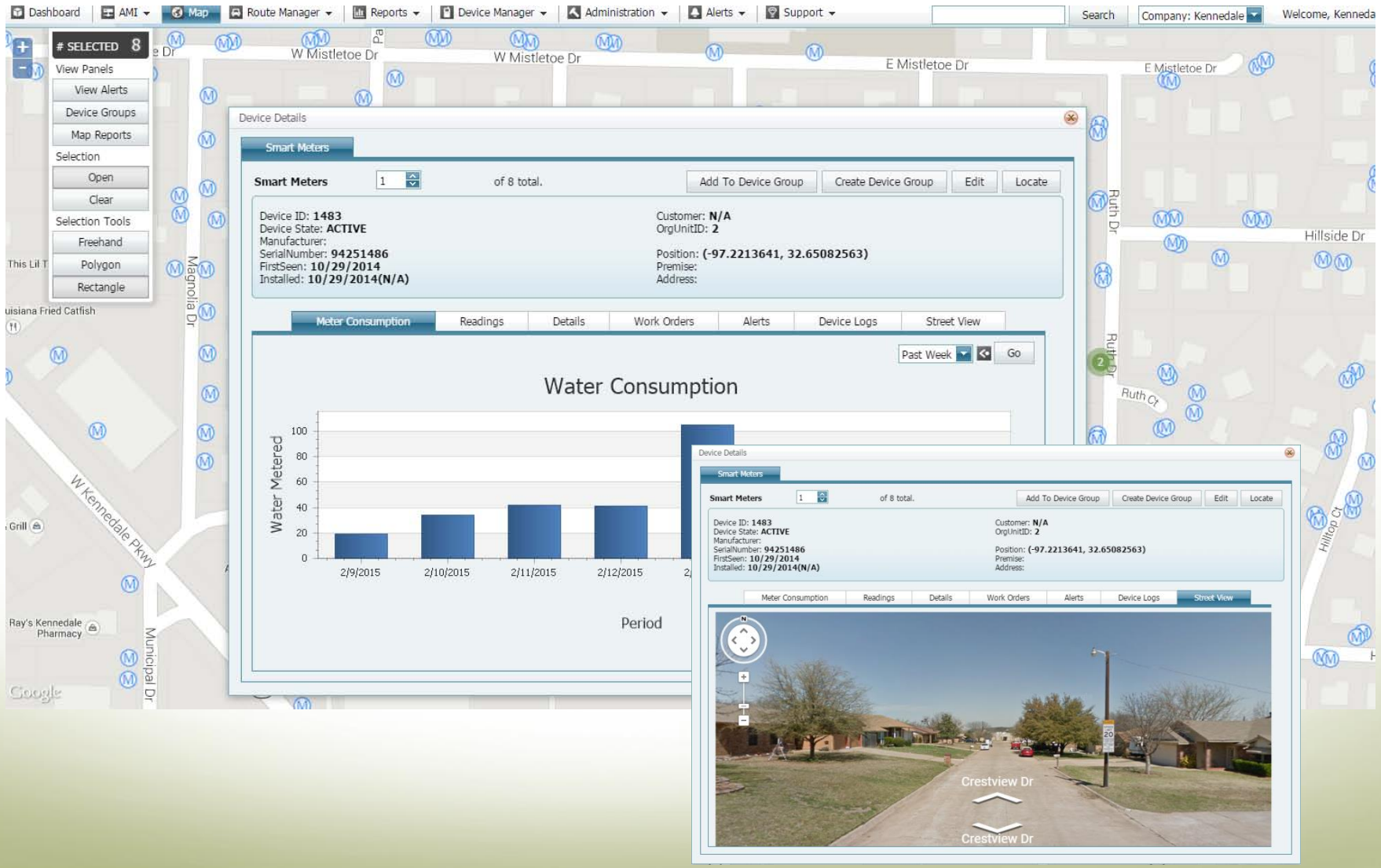
Putting Data to Work



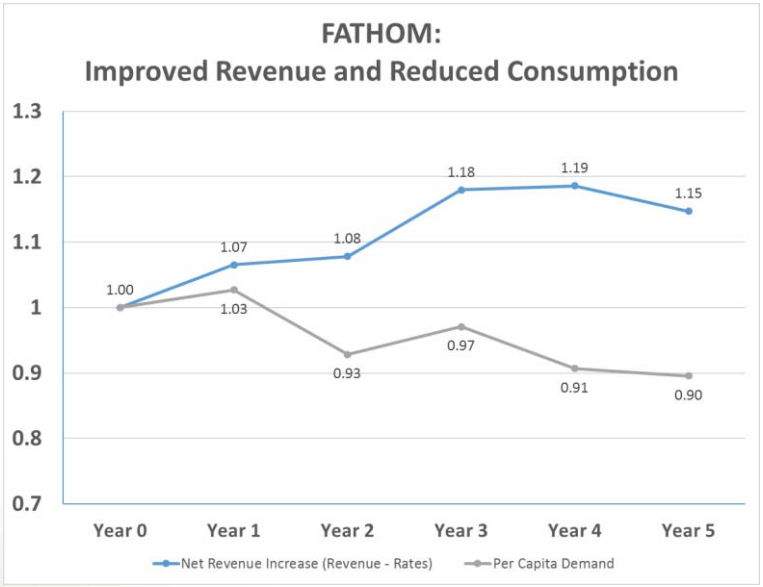
- Tax Parcel Data
- Aerial Photographs
- Infrastructure Data
- Asset Data
- Census Data
- Customer Engagement
- Geospatial Data
- Meter Data
- CIS Data

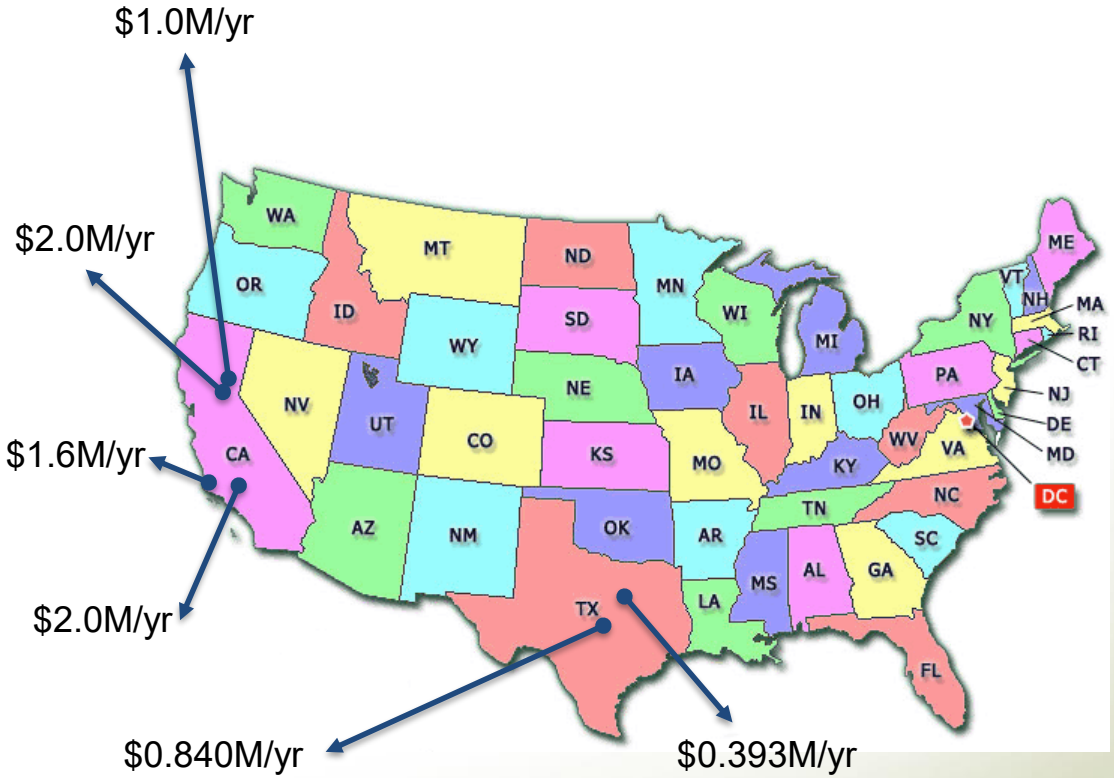


Locating Water in Time & Space

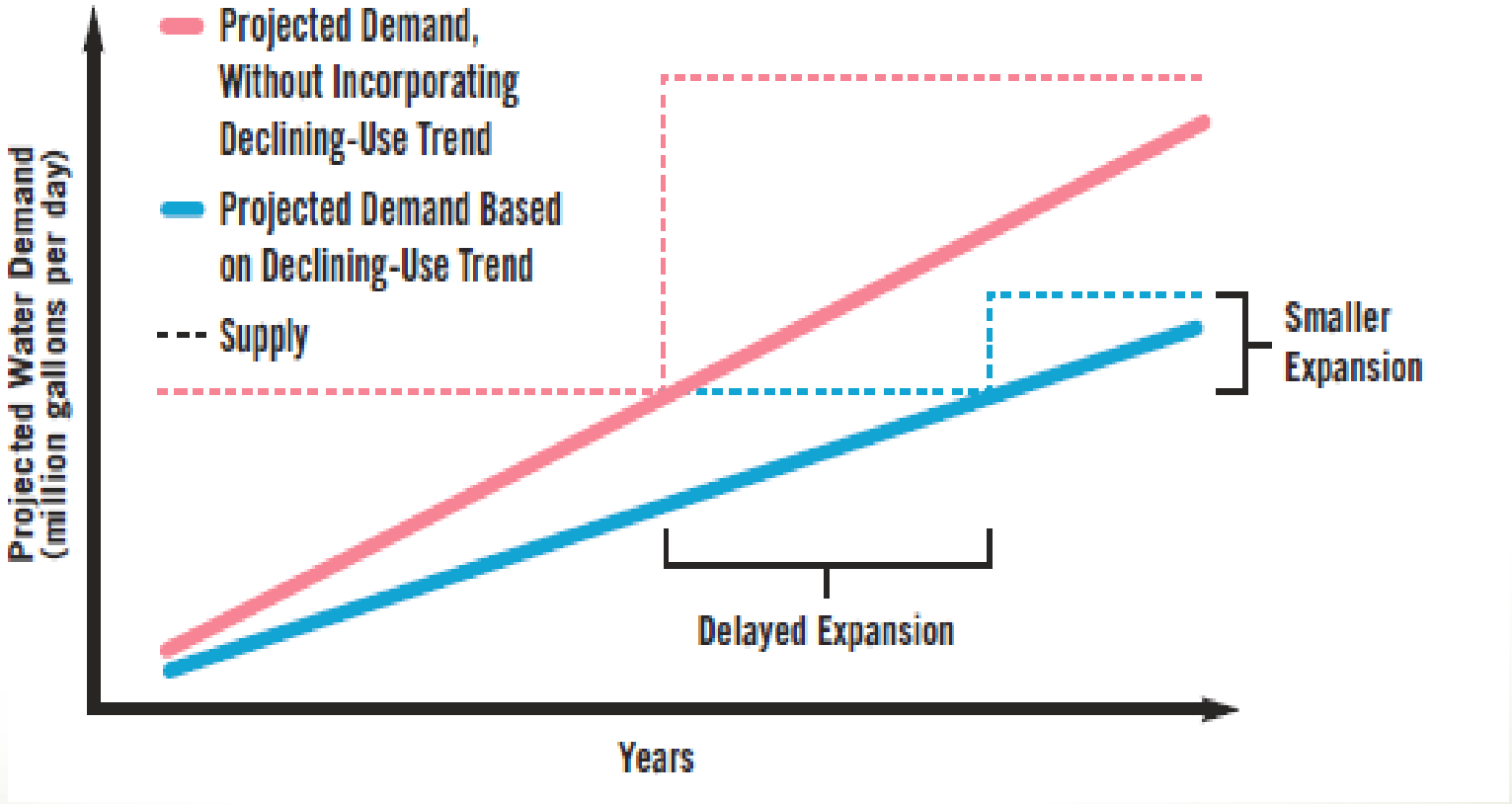


Dollars and Drops in the Data





Capacity in the Data



Source: CERES, Water Ripples: EXPANDING RISKS FOR U.S. WATER PROVIDERS, December 2012

Speaker Transition

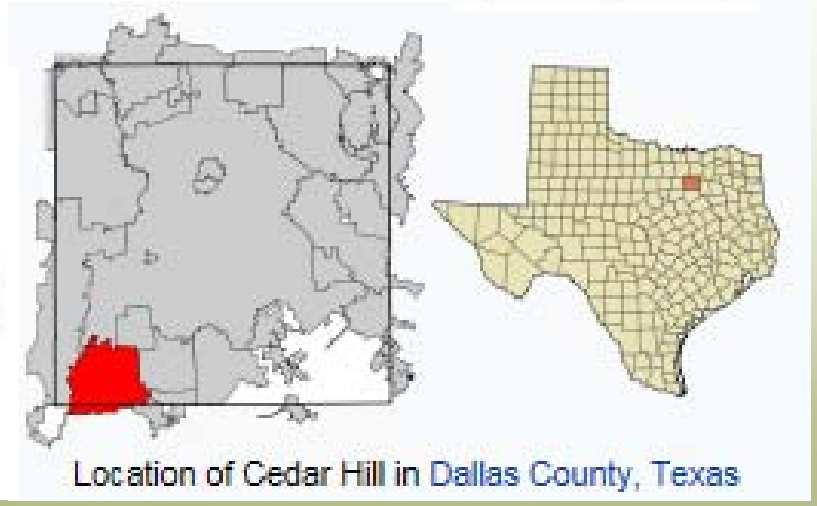
Joe Komisarz, Manager, Utility Services Department, City of Cedar Hill, Texas

Cedar Hill, Texas

Land Area: 35.5 mi²
Incorporated: 1938
Population(2015): ≈49,650
Water/Sewer services only
Water Connections: ≈16,250
Initiatives in:

- Sustainability
- Conservation
- Green facilities

CEDAR HILL
Growing Green
For you, for the community, for the environment!



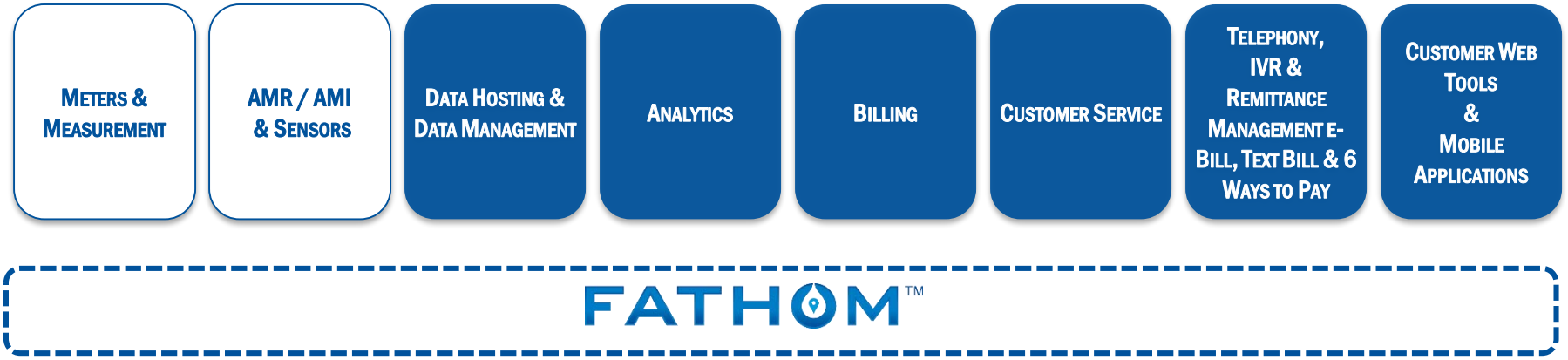
Local Environment (2011/12)

- Customer Service
  - Service consistency issues
  - City centric, reactive operations
- Outdated infrastructure
  - Most meters 15 to 20 years old
  - Reliability and accuracy issues
  - Needed recapitalization
- Lost Revenue
  - Billed water at approximately 60% of purchased water

Desired Project Outcomes

- Enhance Customer Service
- Recover Lost Revenue
- Reduce Expenditures
- Be Fiscally Prudent
- Facilitate Conservation and Green Initiatives

Single Contact Contractor



FATHOM MDM

- FATHOM Prime (including FATHOM Store)
- FATHOM Meter Accuracy & Warranty Management
- FATHOM Water Balancing & Reporting
- FATHOM Meter Verification & Data Collection Tool
- FATHOM Revenue Assurance

FATHOM CIS

- FATHOM Traditional CIS
- FATHOM Smart Grid CIS
- FATHOM Revenue Management (Managed Service)
- FATHOM Customer Care (Managed Service)

FATHOM U_2You Customer Portal

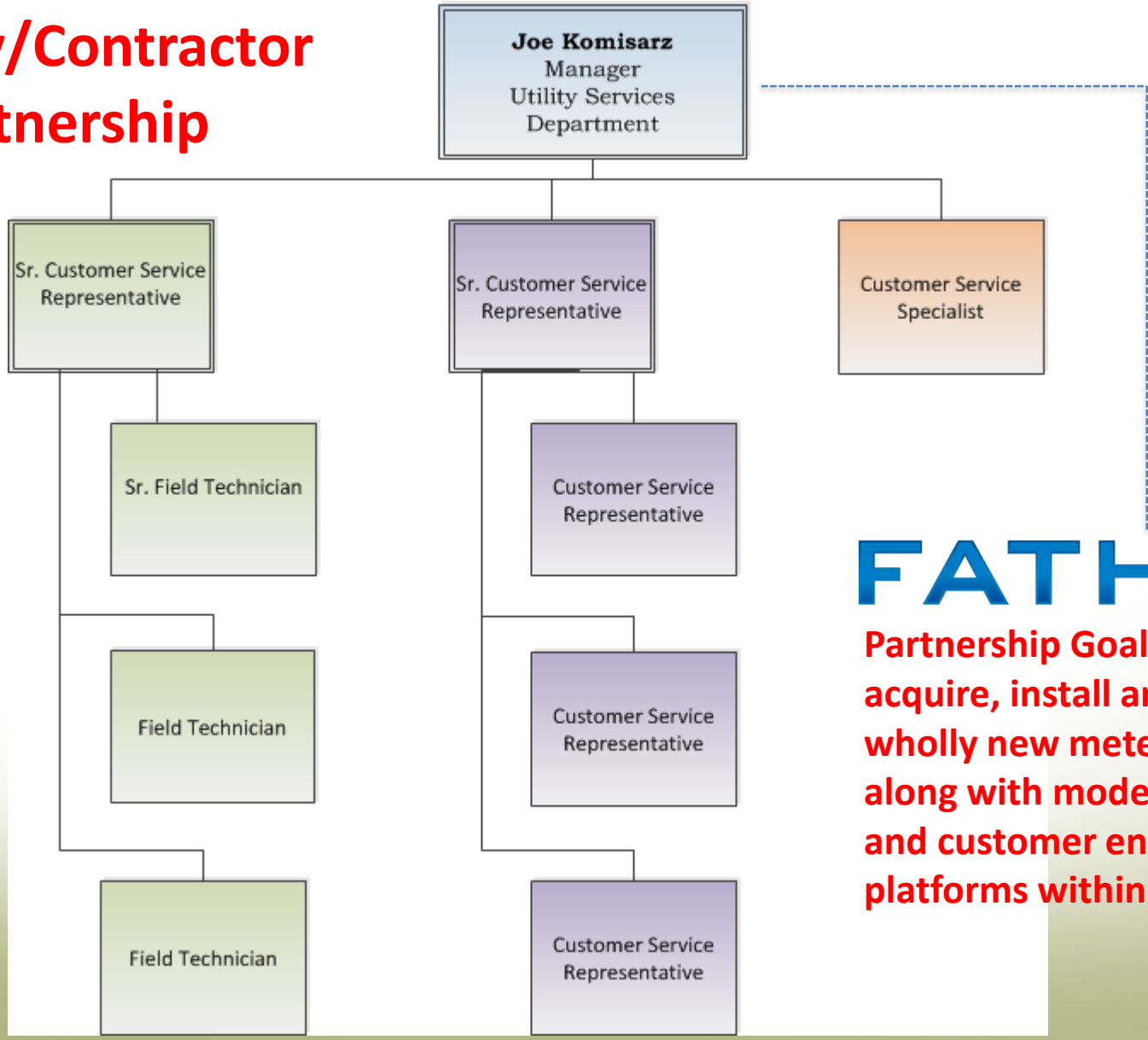
- FATHOM U_2You—Consumption Presentment
- FATHOM U_2You—Financial Presentment

Project Components

- Agreement Signed November, 2013
- Billing and Service Component
  - Billing transferred to Fathom
    - CCH retained a walk-up service counter
  - Portal and phone app added
  - Went live October 2014
- AMI Component
  - 16,200 meters replaced; started Dec 2014
  - Radio transmitters & data collectors added
  - Full MDM
  - Accepted August, 2016

Utility Services Team

City/Contractor Partnership



FATHOM

Partnership Goal: Finance, acquire, install and operate a wholly new meter population, along with modernized billing and customer engagement platforms within existing costs.

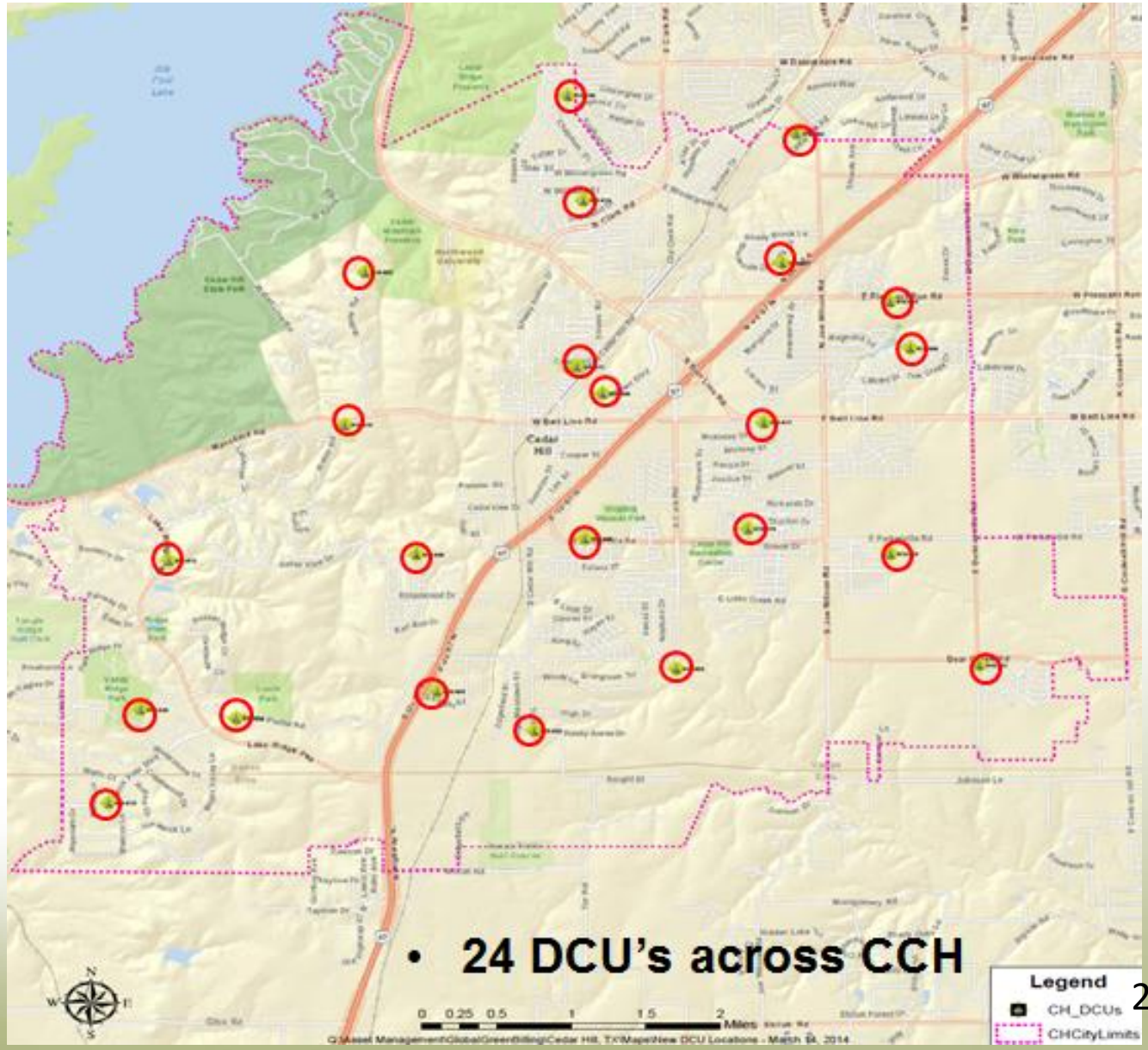
Meter Infrastructure

- MasterMeter 1” meters
- Acculinx Encoder/Register paired with Aclara radio transmitter
- Residential and light commercial
- Approximately 15,500 in use

- Neptune T-10 2” meters
- Neptune eCoder/Register paired with Aclara radio transmitter
- Commercial use
- Approximately 610 in use

Data Collector Locations

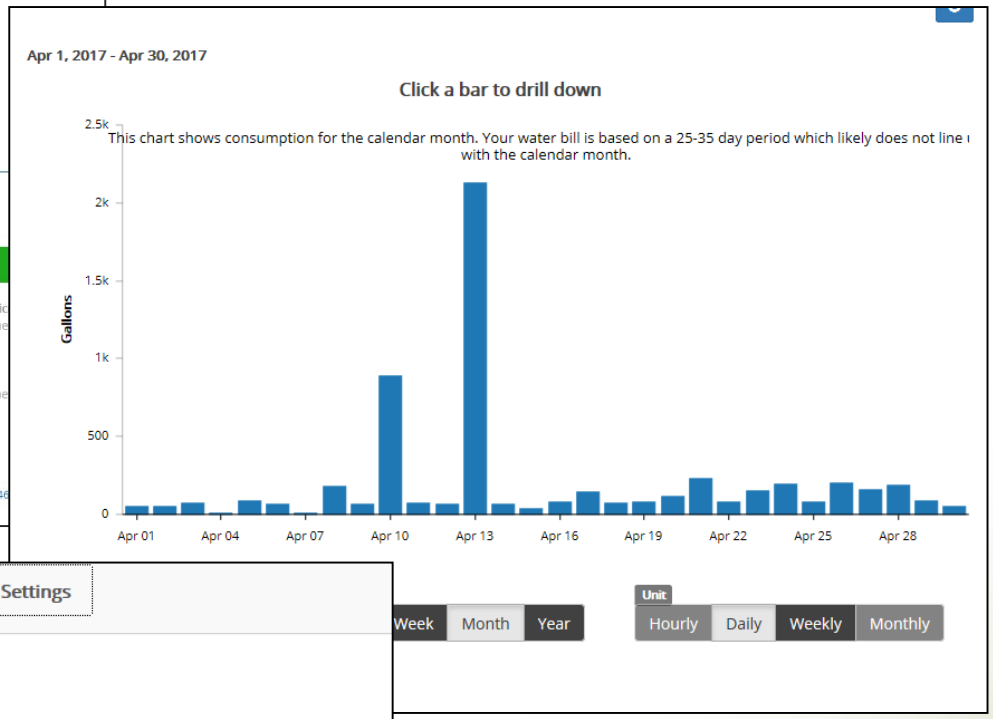
- Each w/ two transmitters
  1. Meter data from
  2. Timing signals to
- Each MTU can hit at least 6 DCU's for redundancy.
- Pole mounted and powered by battery charged via solar panels.
- *Fathom is responsible for M&R.*

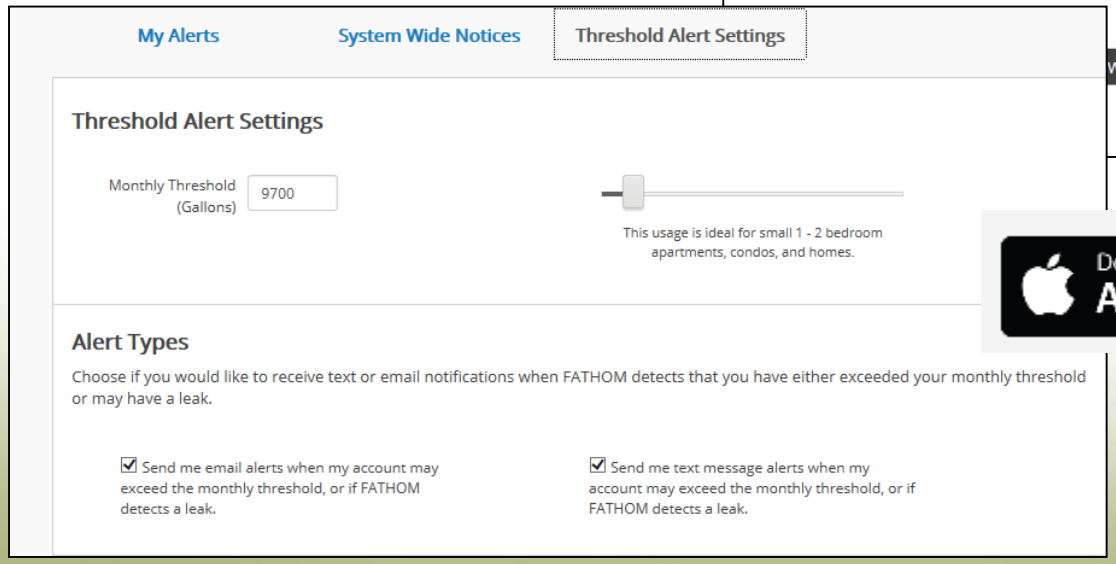


Enhanced Customer Service

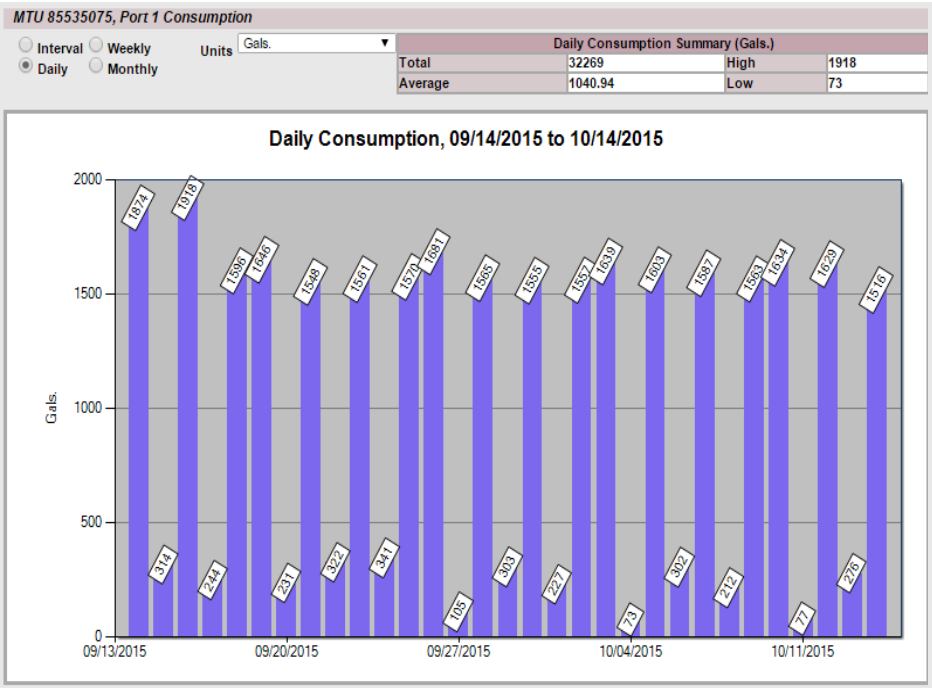
- Project added new tools for personal, real time management of monthly consumption and utility bills
  - Ability to set consumption alerts
    - Email or text notifications to account holder
  - Immediate awareness of leaks or other unintended consumption
  - Helps reduce careless water use
- Reduces negative customer contacts, frustration and account adjustments

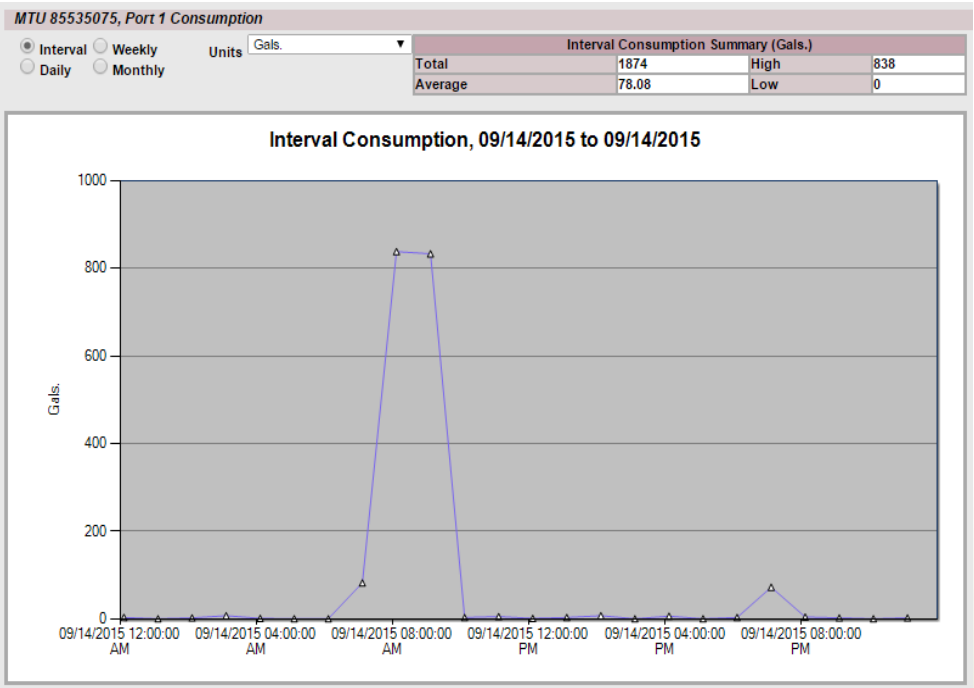
Enhanced Customer Service





Enhanced Customer Service





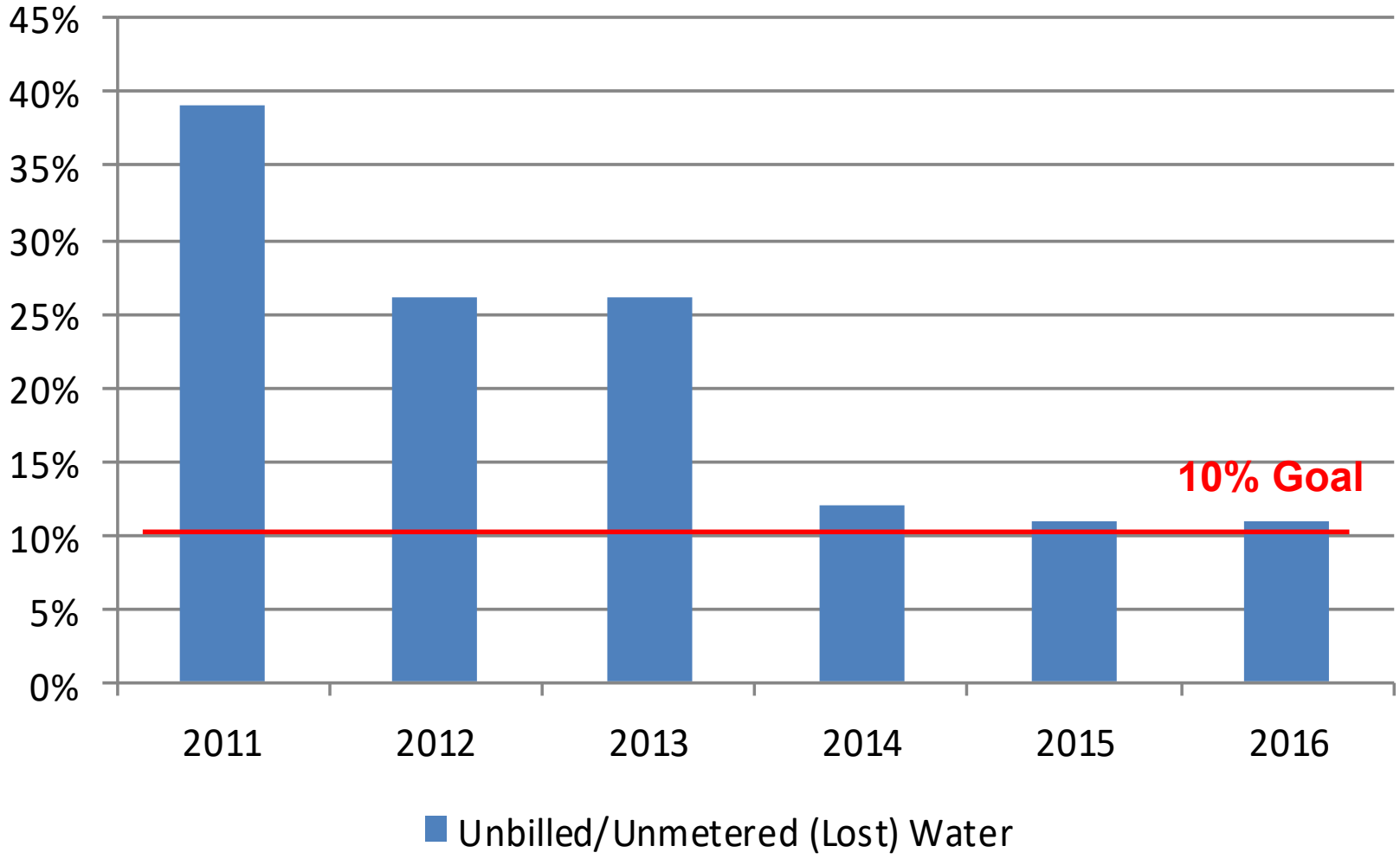
- Monthly and daily detailed consumption data
- Analyses provided to customers with billing questions

Recover Lost Revenue

Step 1: Complete data audit & complete field audit
- 2,800 “problem accounts” identified

- Water theft from bypassed meters
- Unauthorized connections
- Meter degradation
- Meter programming errors
- Missing meters from billing inventory
- Meter installation errors
- Improperly sized or specified meters
- Data transcription errors
- Incorrect billing codes
- Human errors

Recover Lost Revenue



Note: 2016 is year-to-date data

Reduce Expenditures

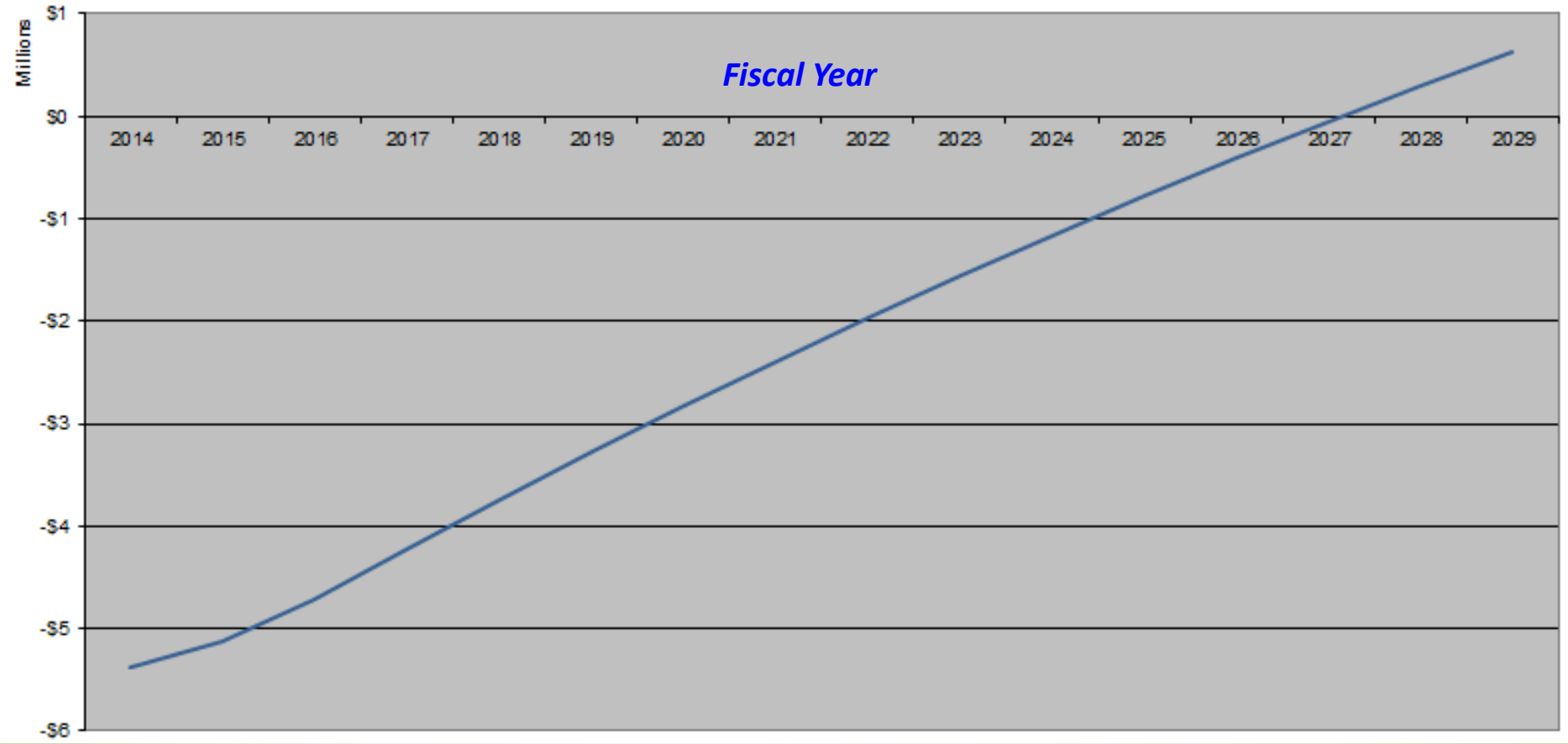
- Reduced staff and tasks
  - Eliminated 6 full & part time positions since 2014
- Saved billing and printing costs by contracting out billing functions
- Eliminated meter reading as a primary task
- Deferred meter purchases for 10 to 15 years

Be Fiscally Prudent

- Cost of service improvement
  - In-house Cost: $6.51/meter/month
  - Fathom Cost: $4.49/meter/month
  - Net Savings: $2.02/meter/month
- $2.02/meter/month: $393,756/year
  - Paying down the investment in AMI infrastructure

Be Fiscally Prudent

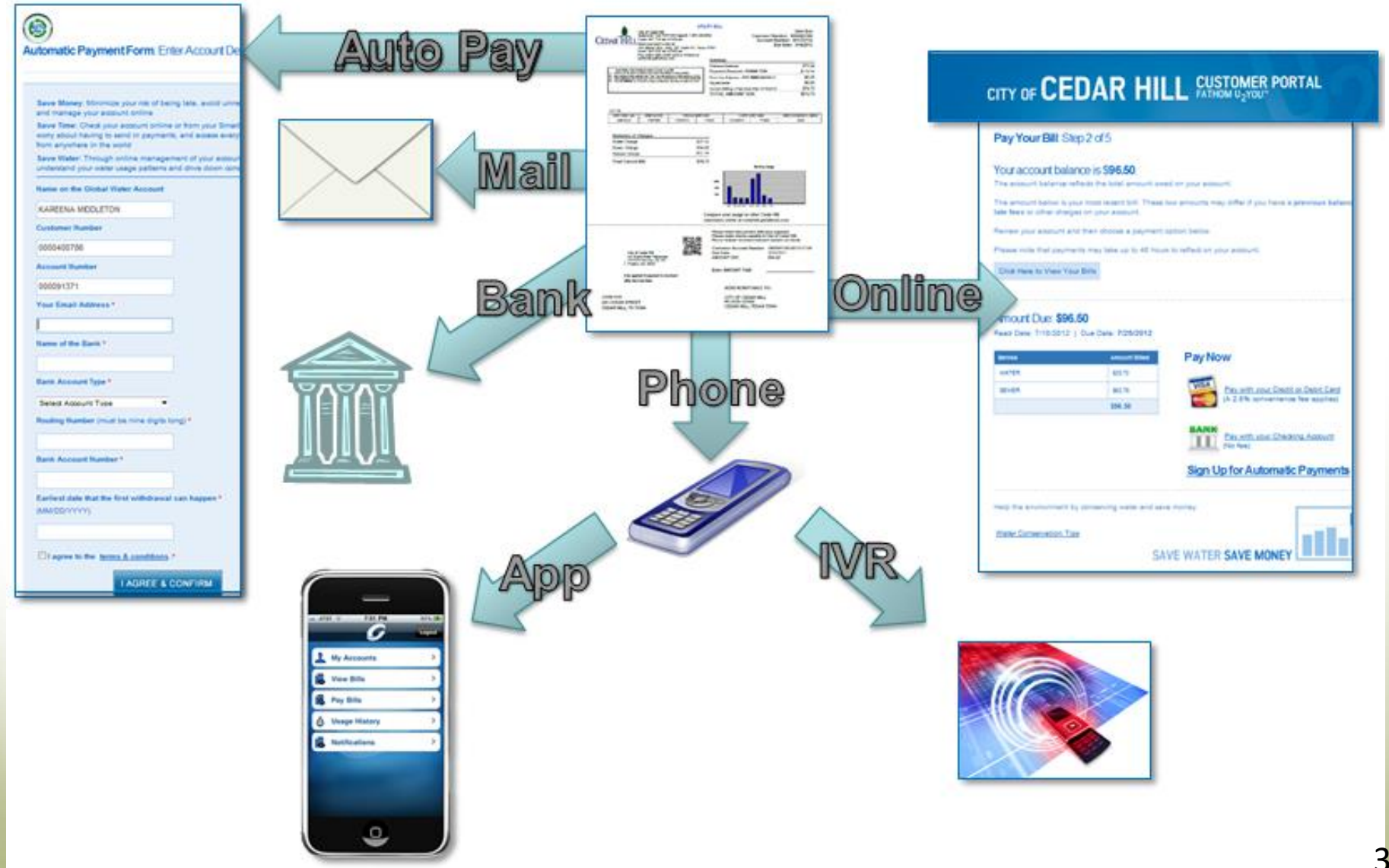
Projected Payback Schedule



Facilitate Conservation & Green Initiatives

- Eliminated meter reading routes covering 210 miles monthly
  - Reduced emissions; saved fuel costs
- Provide 6 ways to pay without leaving home
  - Pay by mail
  - Pay by phone (Voice-IVR)
  - Pay by phone (Data-App)
  - Pay via web through customer portal
  - Automatic monthly charge to credit card
  - Automatic deduction from bank account

Facilitate Conservation & Green Initiatives



Additional Project Benefits

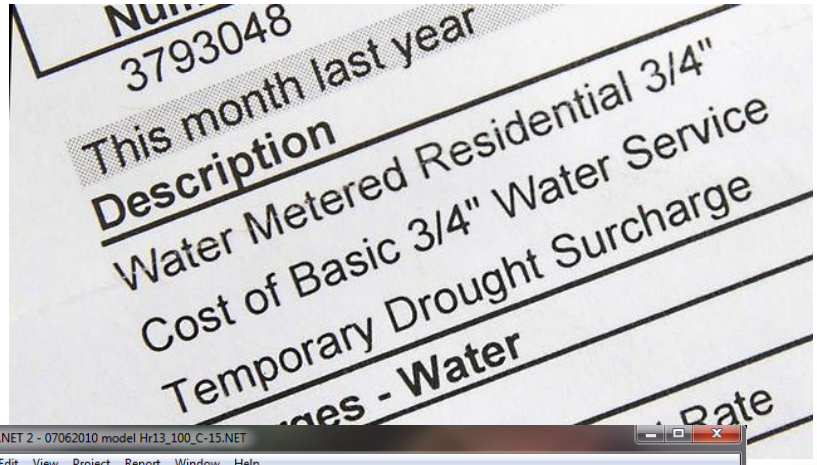
- Make real time, data driven decisions
  - Budget and planning
  - Rate structure decisions
  - Resource allocation
  - Training
- Improve service, responsiveness and performance
- Incentivize conservation

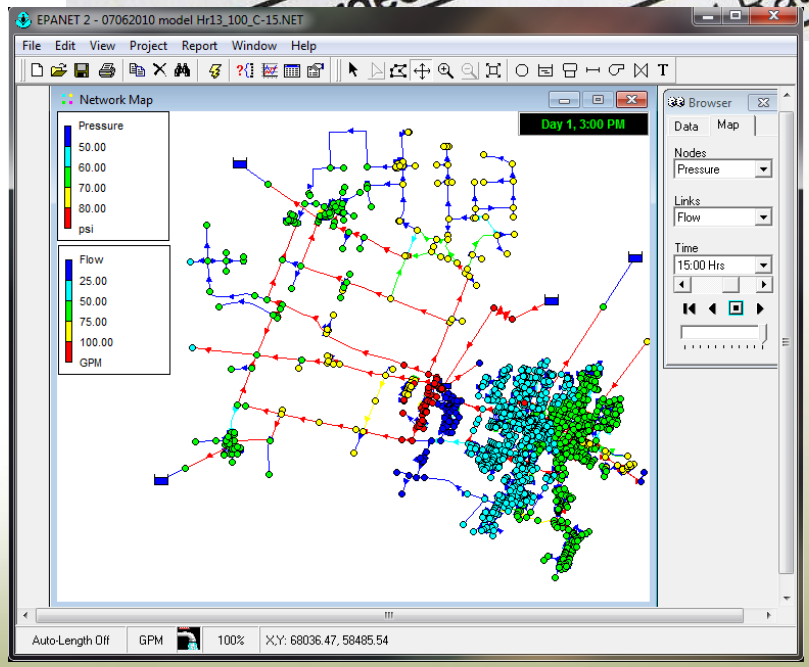
Current Challenges

- Large amounts of new data available
- Change management
  - Internal and external resistance to change
  - Public outreach and education workload
- Repurposed workforce & modified duties
  - Before: Routine, simple, repetitive, reactive tasks
  - After: Diagnostic, investigative, complex and proactive tasks
- New maintenance priorities
  - Benefits depend on fully operational system; rapid maintenance responses are critical

Future Opportunities

- Analyzing rate structure to consider shaping customer behavior in response to water consumption data
- Incorporating consumption and system data into our operations models to reduce cost and increase efficiency





Questions?

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