Data Innovation for Utility Financial Survival

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Presenters

• 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

Measured Colorado River Flow at Lee's Ferry

Lake Mead Water Storage
- Maximum Level: 1221.4 (Flood Spillway)
- Long-term Average (1953 to 2015)
- Shortage Condition (Reduced Deliveries after BOR Decision 2007)

Colorado River Per Capita Availability (Lower Basin States)

California - Average Annual per Capita Storage Availability
- Average Annual Storage per Capita
- 1977
- 1988
Resource Volatility

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

Source: 2011 EPA Infrastructure Needs Assessment (published 2013)
# Infrastructure Finance Requirements

<table>
<thead>
<tr>
<th></th>
<th>2011-2035 Totals</th>
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<tbody>
<tr>
<td></td>
<td>Replacement</td>
</tr>
<tr>
<td>(2010 $M)</td>
<td></td>
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<tr>
<td>Northeast</td>
<td>$92,218</td>
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<tr>
<td>Midwest</td>
<td>$146,997</td>
</tr>
<tr>
<td>South</td>
<td>$204,357</td>
</tr>
<tr>
<td>West</td>
<td>$82,866</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$526,438</strong></td>
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Source: AWWA, Buried No Longer: Confronting America’s Water Infrastructure Challenge, 2012
Financial Volatility

- Structural Conservation
- Voluntary Conservation
- Mandated Conservation

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
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

Annual Shortfall = $18.3B
Cumulative Shortfall = $459B

Investment Needed
Trump $1T Infrastructure Plan
WIFIA
SRF
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, smartphone.”

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

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
Dollars and Drops in the Data

FATHOM: Improved Revenue and Reduced Consumption

- $1.0M/yr
- $2.0M/yr
- $1.6M/yr
- $0.840M/yr
- $0.393M/yr
Joe Komisarz, Manager, Utility Services Department, City of Cedar Hill, Texas
Cedar Hill, Texas

Land Area: 35.5 mi²
Incorporated: 1938
Water/Sewer services only
Water Connections: ≈16,250
Initiatives in:
- Sustainability
- Conservation
- Green facilities
• 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
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 U₂You Customer Portal
- FATHOM U₂You—Consumption Presentment
- FATHOM U₂You—Financial Presentment
• 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
City/Contractor Partnership

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

**Utility Services Team**

Joe Komisarz
Manager
Utility Services Department

**Sr. Customer Service Representative**

Sr. Field Technician

Field Technician

**Customer Service Representative**

Customer Service Specialist

**FATHOM**

25
Meter Infrastructure

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

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

LOG IN
Sign in to access your account.

Password
Forget Password?

LOG IN

QUICK PAY
Pay your bill now without logging in.

PAY NOW
Customer Service Forms (Request New Service, Transfer Service)
For customers who need to establish water service at their home/business address.
Disconnect Notice
If you have received a disconnect notice, please contact Customer Services at:
469-272-2931
Mon - Fri 8 a.m. - 5 p.m.

FOR HELP, CONTACT:

Click a bar to drill down
This chart shows consumption for the calendar month. Your water bill is based on a 25-35 day period which likely does not line up with the calendar month.

My Alerts
System Wide Notices
Threshold Alert Settings

Threshold Alert Settings

Monthly Threshold (Gallons) 9700

Alert Types
Choose if you would like to receive text or email notifications when FATHOM detects that you have either exceeded your monthly threshold or may have a leak.

Send me email alerts when my account may exceed the monthly threshold, or if FATHOM detects a leak.

Send me text message alerts when my account may exceed the monthly threshold, or if FATHOM detects a leak.

Download on the App Store
Download on Google Play

This usage is ideal for small 1 - 2 bedroom apartments, condos, and homes.
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
• 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
• **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

Fiscal Year
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

Automatic Payment Form

- Enter Account Details
  - Save Money: Minimize your risk of being late, avoid unnecessary overcharges, and manage your account online.
  - Save Time: Check your account online or from your smartphone. Avoid having to send or pay bills, and save energy whenever possible.
  - Save Water: Through online management of your account, you can understand your water usage patterns and detect leaks to water issues.

Auto Pay

- Mail
- Bank
- Online
- Phone
- App
- IVR

CITY OF CEDAR HILL
CUSTOMER PORTAL
FATHOM 2 YOU

Pay Your Bill: Step 2 of 5
Your account balance is $96.50.

- City of Cedar Hill
- Customer Portal
- Fathom 2 You

Pay Now

- Credit or Debit Card
- Bank Debit

Sign Up for Automatic Payments

Help the environment by conserving water and save money.

SAVE WATER SAVE MONEY
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?