

# This presentation premiered at WaterSmart Innovations

[watersmartinnovations.com](http://watersmartinnovations.com)



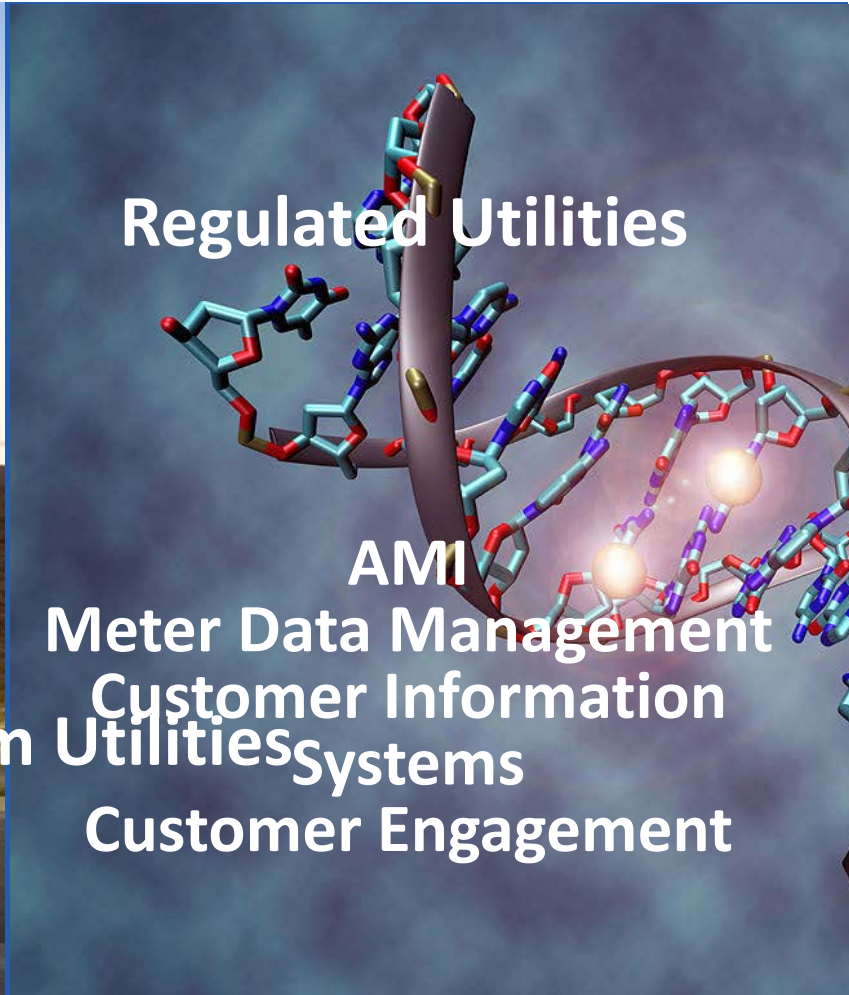


# **The Alchemy of Reducing Per Capita Water Consumption and Increasing Utility Revenue**

**Jason Bethke  
FATHOM**

**October 2015**

# Utilities are in our DNA



Regulated Utilities

AMI  
Meter Data Management  
Customer Information  
Systems  
Customer Engagement

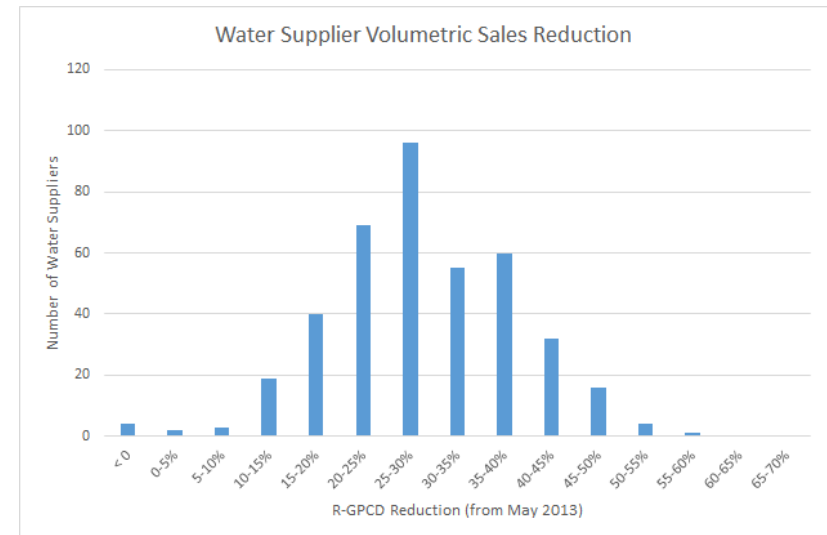
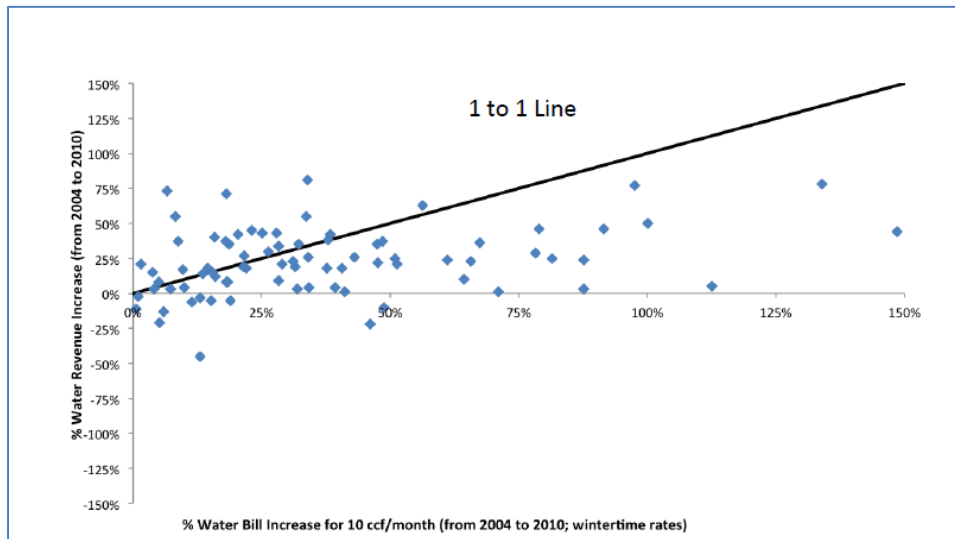
# The Utility Reality

- Prolonged economic stress
- Lack of resources
- Lack of investment
- Aging infrastructure
- Inefficient and lack of technology utilization
- Technology paralysis
- Scarcity driving advanced metering (meter centricity)
- Rapidly changing customer expectations (customer centricity)

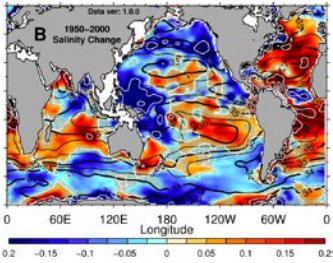


# It's Getting Elastic

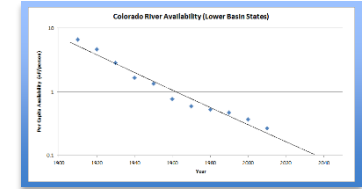
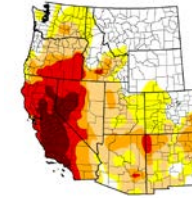
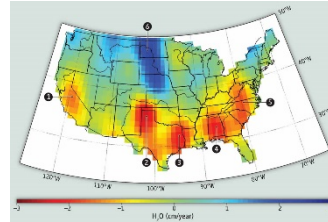
## Rates can't keep up with Demand Destruction



# The New Water Utility Paradigm



Increasing Volatility



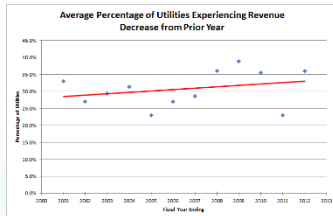
Decreasing Supply



## Sec. 865. Mandatory Actions by Water Suppliers

(c)(1) To prevent the waste and unreasonable use of water and to meet the requirements of the Governor's April 1, 2015 Executive Order, each urban water supplier **shall reduce its total potable water production** by the percentage identified as its conservation standard in this subdivision. Each urban water supplier's conservation standard considers its service area's relative per capita water usage.

## Mandated Conservation



Decreasing Revenue



Changing Customer Expectations

# Alchemy

## alchemy

*noun* al·che·my \ 'al-kə-mē\

1: a medieval chemical science and speculative philosophy aiming to achieve the transmutation of the base metals into gold, the discovery of a universal cure for disease, and the discovery of a means of indefinitely prolonging life

2: a power or process of transforming something common into something special

3: an inexplicable or mysterious transmuting

— **al·chem·i·cal** \-mi-kəl\ also **al·chem·ic** \al-'ke-mik\ *adjective*

— **al·chem·i·cal·ly** \-mi-k(ə-)lē\ *adverb*

## Examples

She practiced her *alchemy* in the kitchen, turning a pile of vegetables into a delicious salad. The company hoped for some sort of economic *alchemy* that would improve business.

## Origin

Middle English *alkamie*, *alquemie*, from Middle French or Medieval Latin; Middle French *alkimie*, from Medieval Latin *alchymia*, from Arabic *al-kīmiyā'*, from *al* the + *kīmiyā'* alchemy, from Late Greek *chēmeia*

First Known Use: 14th century

Source: <http://www.merriam-webster.com/dictionary/alchemy>

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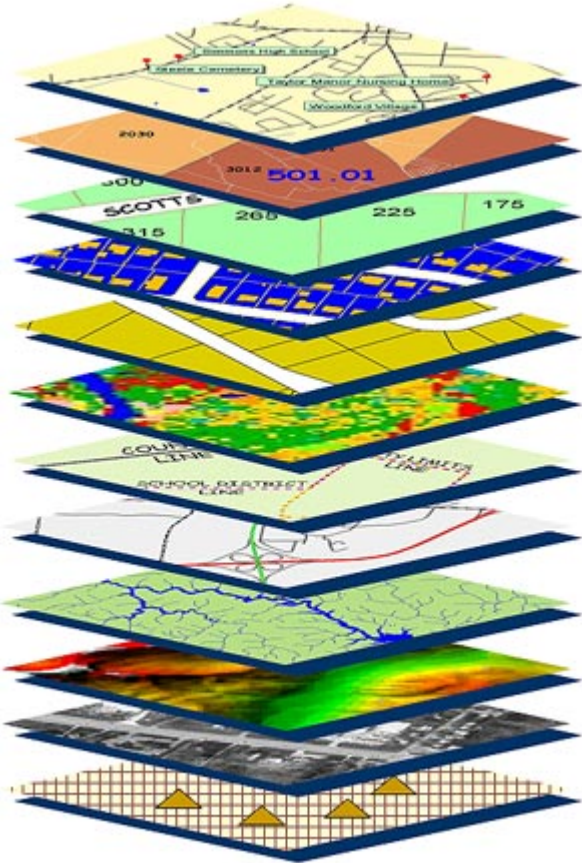
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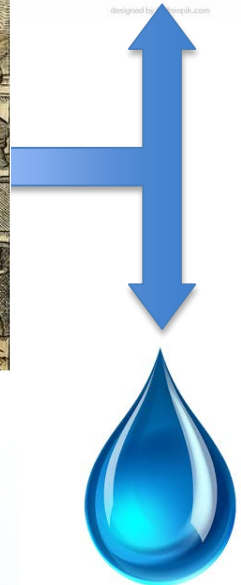
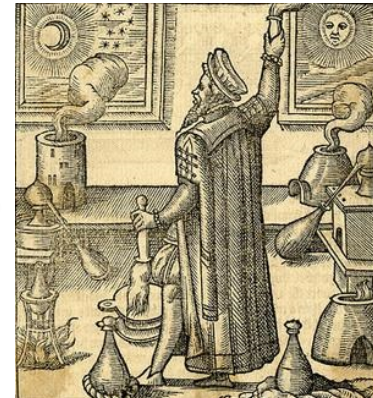
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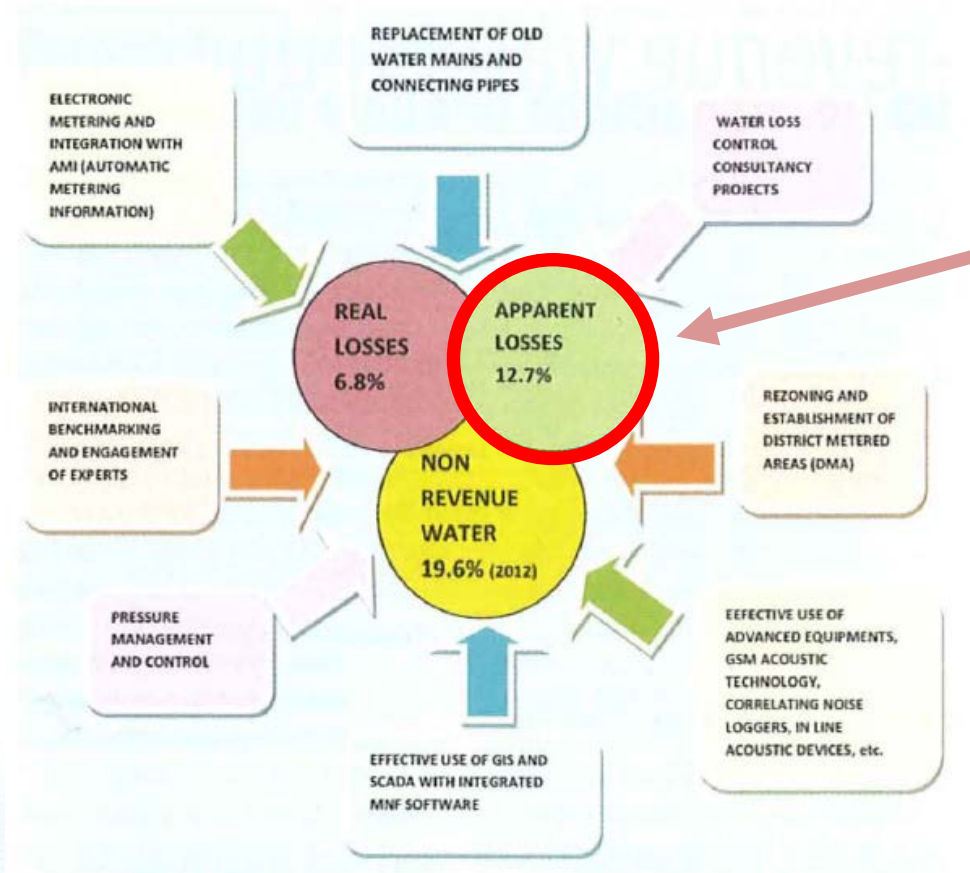
# Finding Dollars and Drops in the Data



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



# Leaking data = "Lost Water"



Apparent Losses = 2 x Real Losses

## LEAKING DATA

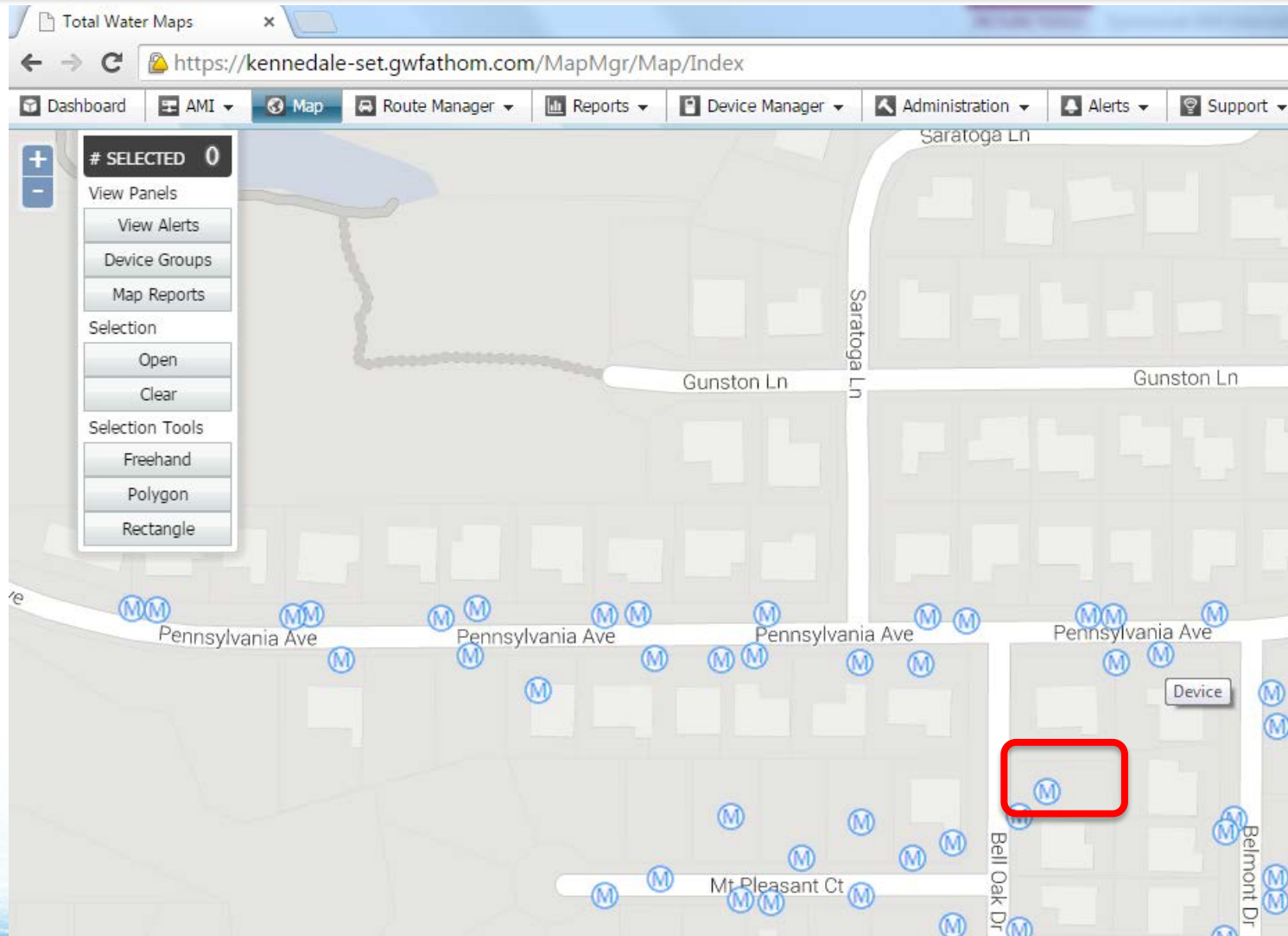
Source: Mattar, R., "Kahramaa's vision for non-revenue water reduction", Water Utility 21, April 2013

# Data Errors = Lost Revenue



- Water theft from bypassed meters
- Unauthorized connections
- Meter degradation and inaccuracy due to meter age or physical damage
- Meter degradation due to water quality or particulate precipitation
- Meter programming errors
- Meter losses, including meters missing from the billing inventory
- Meter installation errors
- Improperly sized or specified meters
- Data transcription errors, including meters not correctly mapped to customer information
- Incorrect billing codes in the billing platform
- Human errors, including meter reading mistakes or estimates

# Geospatial Relevance



# Geospatial Relevance


Device Details

**Smart Meters** Add To Device Group Create Device Group Edit

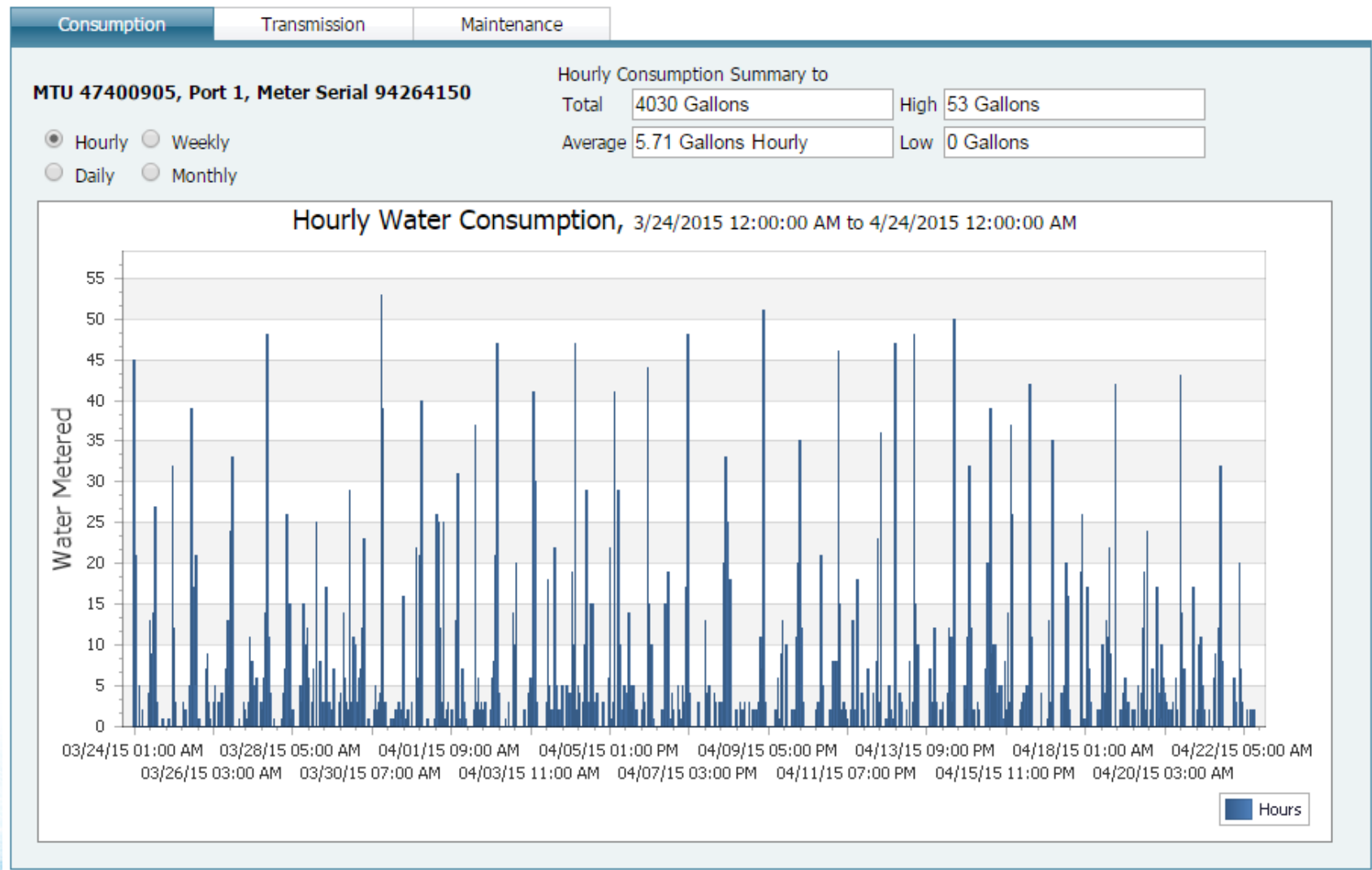
Device ID: **2641**  
Device State: **ACTIVE**  
Manufacturer:  
SerialNumber: **94263463**  
FirstSeen: **10/29/2014**  
Installed: **11/12/2013(N/A)**

Customer: **N/A**  
OrgUnitID: **2**  
Position: **(-97.2193222045898, 32.6594200134277)**  
Premise:  
Address:

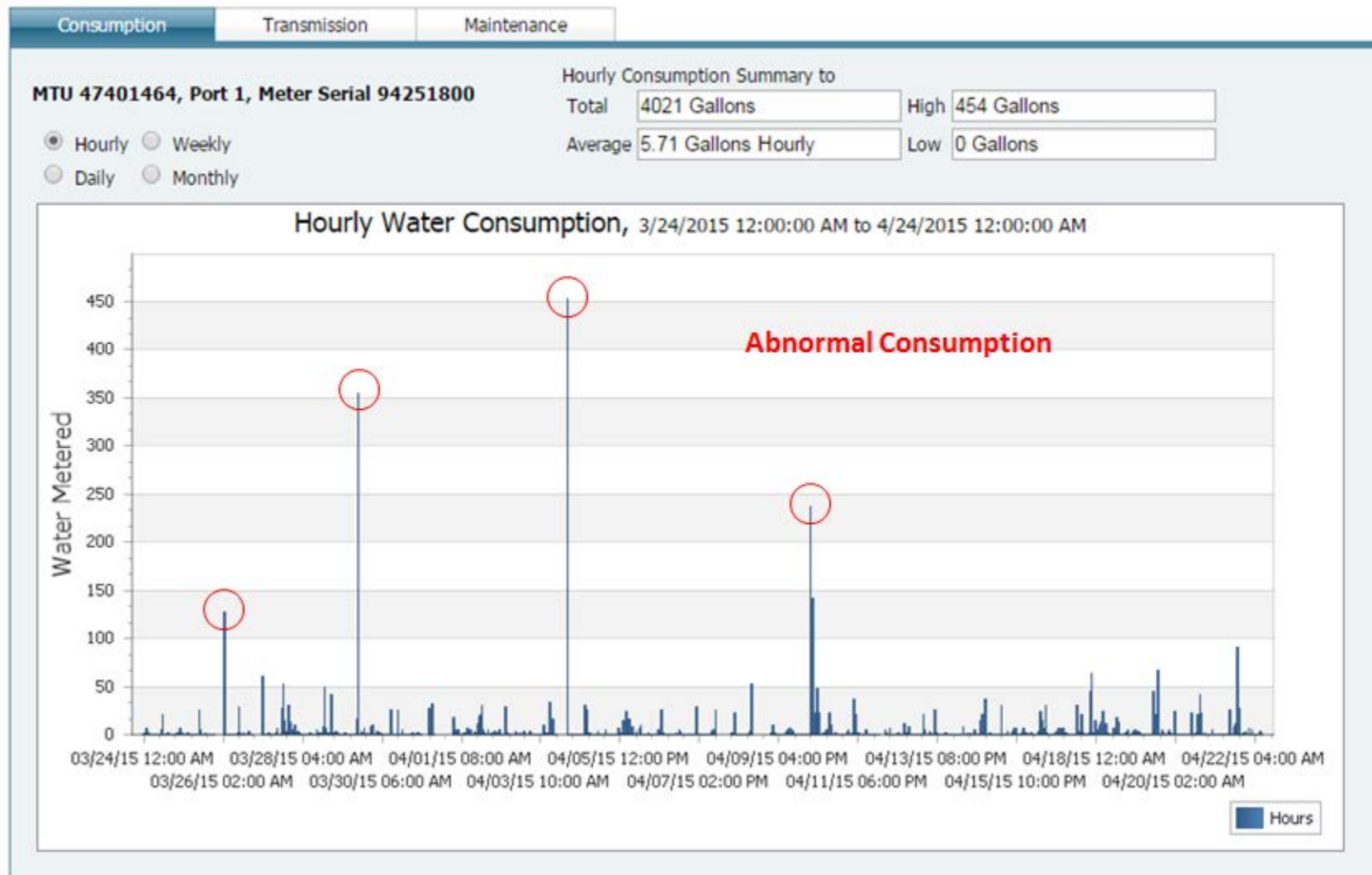
Meter Consumption | Readings | Details | Work Orders | Alerts | Device Logs | **Street View**



# Temporal Relevance



# Temporal Relevance



# Using Data to Conserve

- Account Balance**  
See your account balance
- Billing History**  
See your billing history
- Payment History**  
See your recent payments
- Usage History**  
See your water consumption
- Customer Service**  
Request repairs or get help
- Report a Problem**  
Notify us of water leaks, poor water flow and other issues

## Water Consumption

Your water consumption as calculated by meter reads in accordance with your utility's reading schedule.

80 Gallons 4/22/2015	950 Gallons 4/12/2015-4/18/2015	9,200 Gallons 4/7/2015
----------------------------	---------------------------------------	------------------------------

**Daily Consumption**

**Weekly Consumption**

**Monthly Consumption**

This graph shows your Monthly Water Consumption calculated by your utility's reading schedule.

Your consumption is the dark blue graph bar. You can compare your consumption to your neighborhood and your city.

Average Consumption	Date
<b>15,933</b> Gallons per month	04/07/15
	03/08/15
	02/04/15
	01/05/15
	12/07/14
	11/06/14
	10/07/14

You used **106% more** than others in your area.

To save money and to lessen your impact on the environment see water conservation tips at [Water Use It Wisely](#).

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**Daily Consumption**

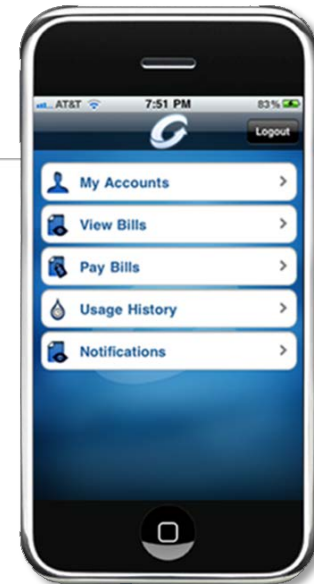
**Weekly Consumption**

**Monthly Consumption**

This graph shows your Daily Water Consumption, displayed in Gallons, as calculated by your utility's reading schedule.

Your consumption is the dark blue graph bar. You can also see how you compare to your neighborhood and your city.

Average Consumption	Date	You	Neighbors	City
<b>131</b> Gallons per day	04/22	80	219	0
	04/21	110	204	0
	04/20	130	212	0



“Throughout history, a crucial feature of human behavior has been our propensity to copy or imitate the behaviors, choices and opinions of others.”

Source: Paul Ormerod, “Social networks can spread the Olympic effect”, 20 SEPTEMBER 2012 | VOL 489 | NATURE | 337



# Personalized Water



How much water do I use?

Is that a normal amount?

How do I fare compared to my street,  
my neighborhood, my city?

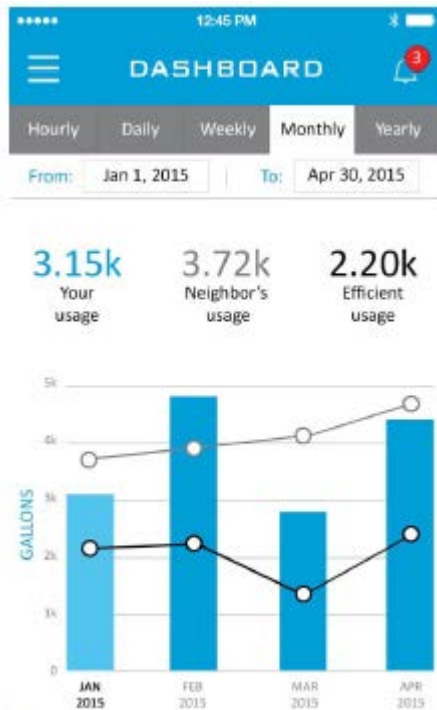
How much water **should** I use?

Tell me when I have used too much.

Tell me when I have a leak.

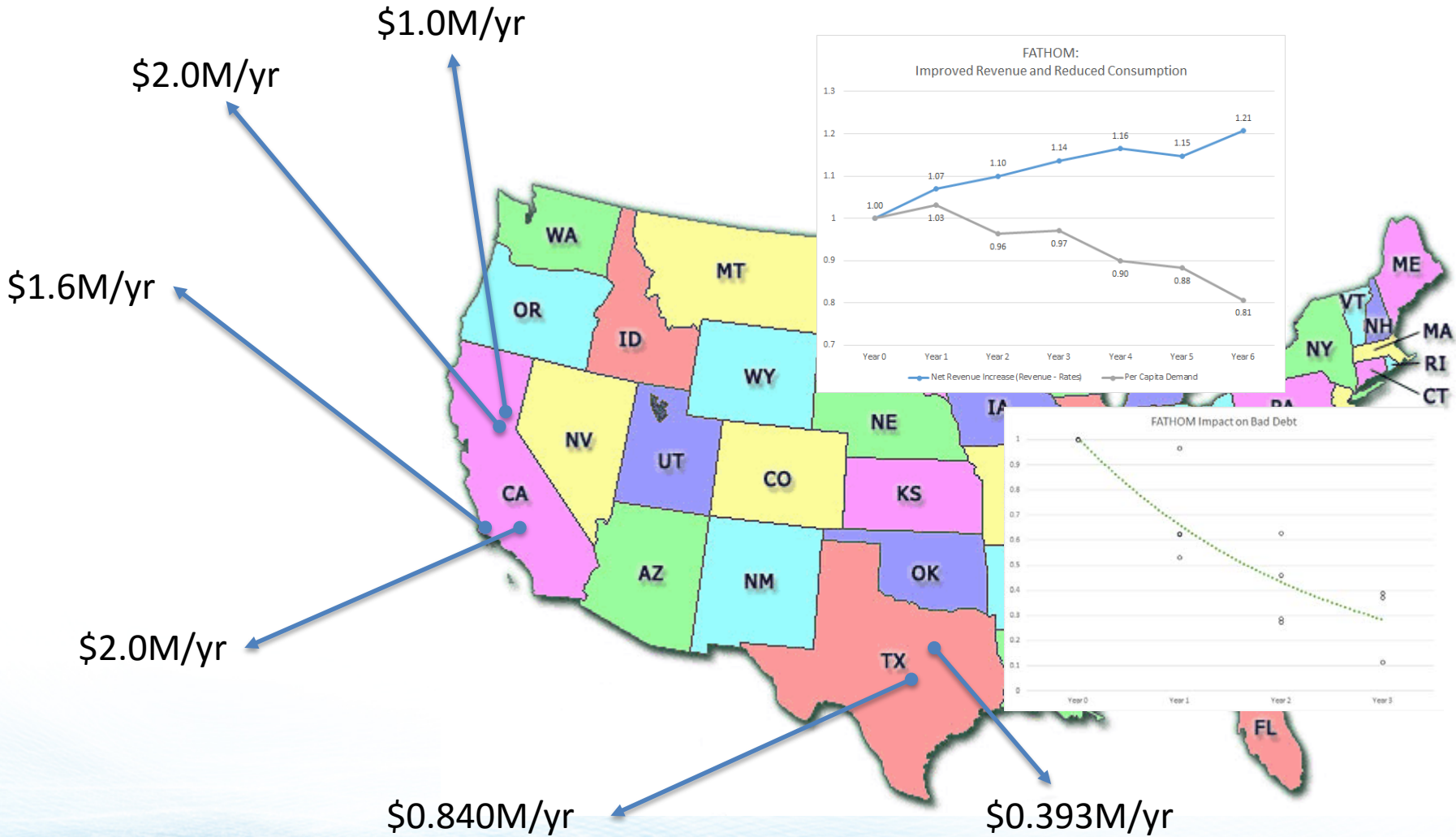
Help me **manage** my water use and  
control costs.

# Meeting the Needs of the Industry with Data

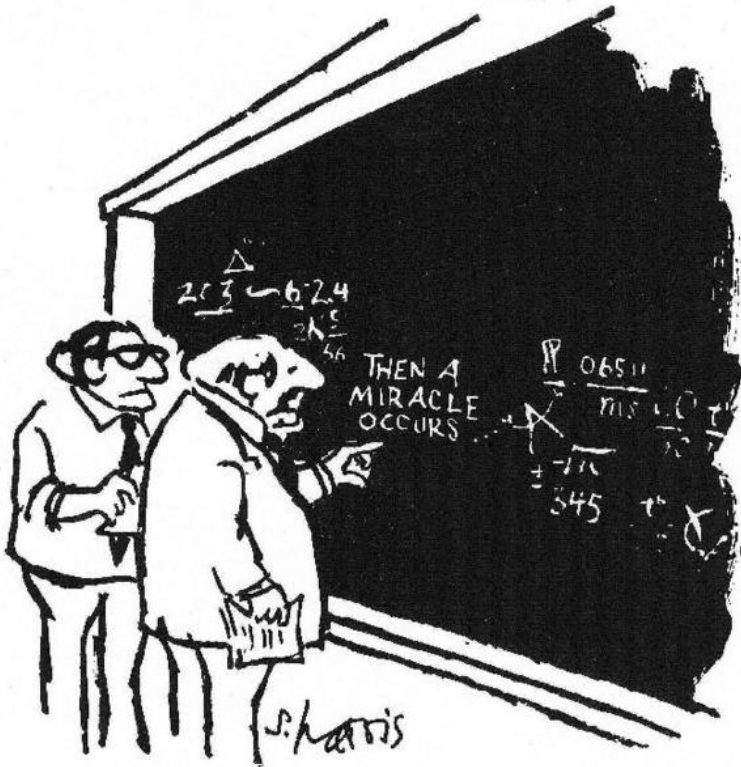


- Improve Systems
- Optimize operations
- Measure and manage resources: natural, physical, human
- Maximize revenue
- Eliminate NRW
- Engage customers
- Access technologies

# Finding Dollars & Drops in the Data



# It's not a miracle – It's Better Data



"I think you should be more explicit here in step two."

## Better Data

- More correct
- More relevant
- More granular
- More connected
- More accessible

## Faster Deployment

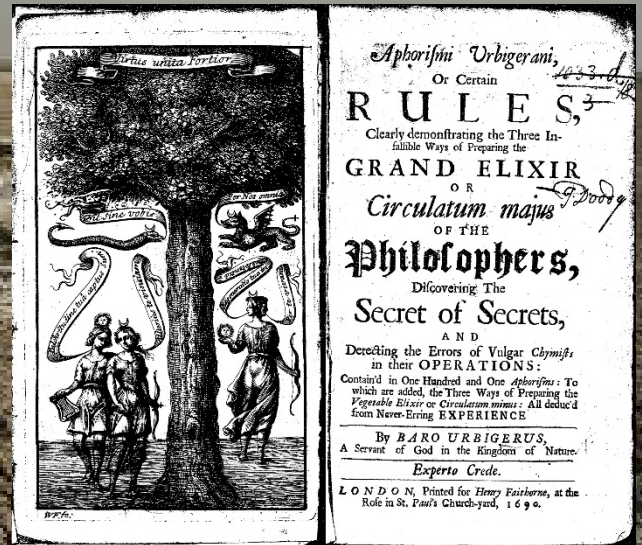
- Easier integration
- Integral Best Management Practices
- Technology independent & agnostic

## Cheaper

- Cloud-services
- No dedicated IT resources
- Pay-as-you-go

# Information

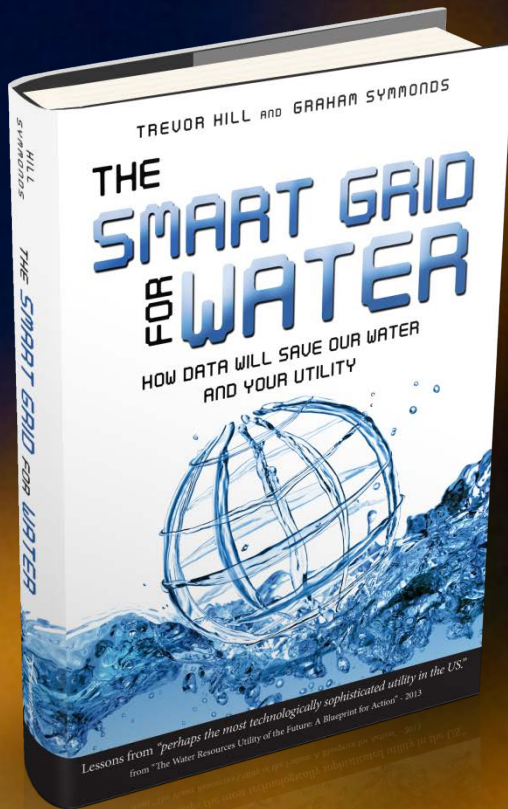
“A key to improving efficiency is understanding where, when, and why we use water.”



Source: Gleick, P., "Roadmap for sustainable water resources in southwestern North America," PNAS, 14 Dec 2010

# Questions?

- Increase Revenue
- Decrease Costs
- Delight Customers
- Preserve Our Most Vital Resource



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