



World Water Congress XV  
International Water Resources Association (IWRA)  
Edinburgh, Scotland. 25 - 29 May 2015



# THE ALCHEMY OF REDUCING PER CAPITA WATER CONSUMPTION WHILE INCREASING UTILITY REVENUE

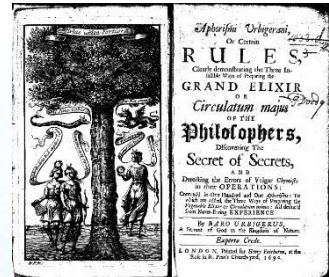
GRAHAM SYMMONDS

FATHOM

26 MAY 2015



UTILITY-TO-UTILITY SOLUTIONS



FATHOM™

# UTILITIES ARE IN OUR DNA

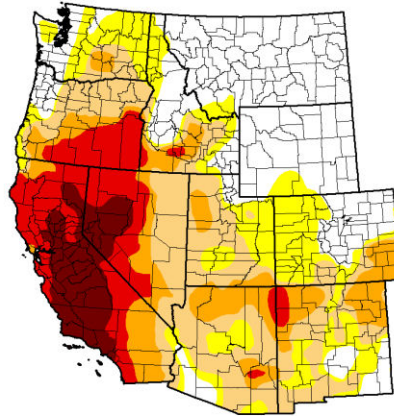
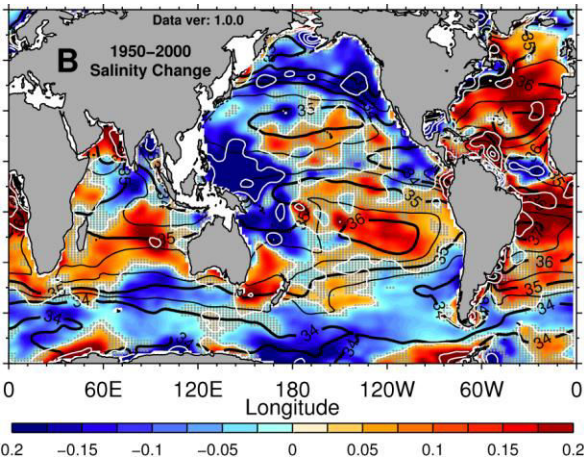


## Regulated Utilities

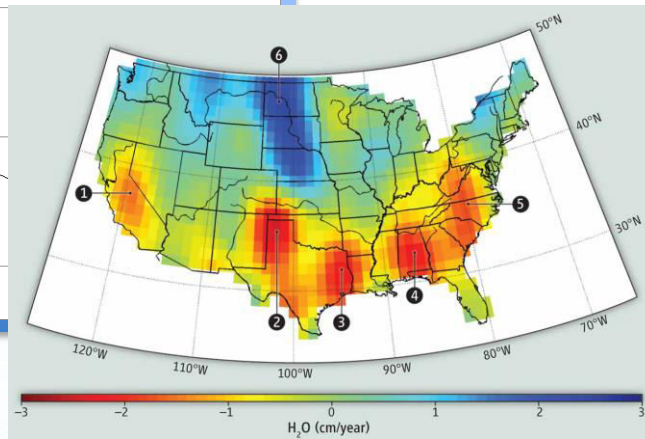
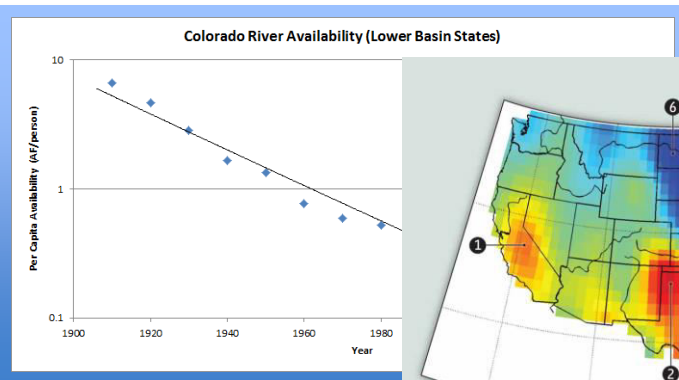
Meter Data Management  
Customer Information  
Systems  
Customer Engagement



# INCREASING WATER VOLATILITY



- World-wide water volatility is increasing
- Our engineered systems are ill-equipped to handle this volatility
- Supply-side solutions take years to permit and develop
- Supply-side solutions are expensive to build and operate
- Conservation is now being mandated
- Customers' expectations are changing
- Utilities need **DATA** to change behavior
- Utilities need **DATA** to assure revenue



Sources:

Durack & Wijffels, Journal of Climate, 2010 (CSIRO)

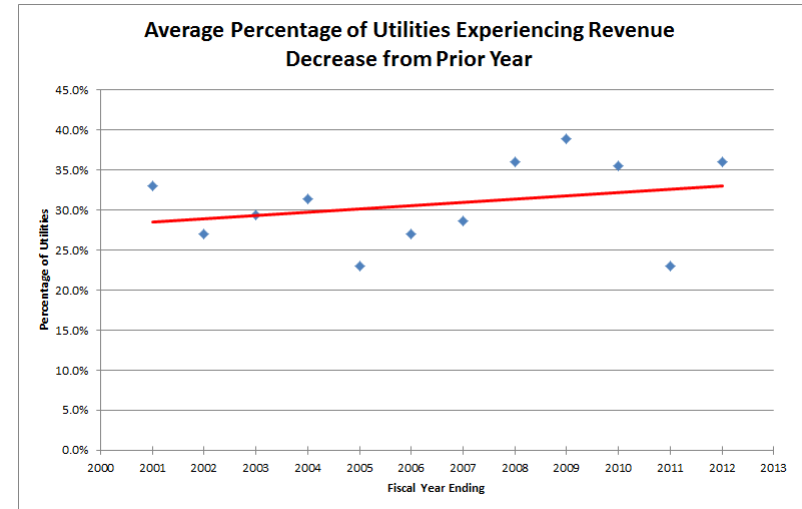
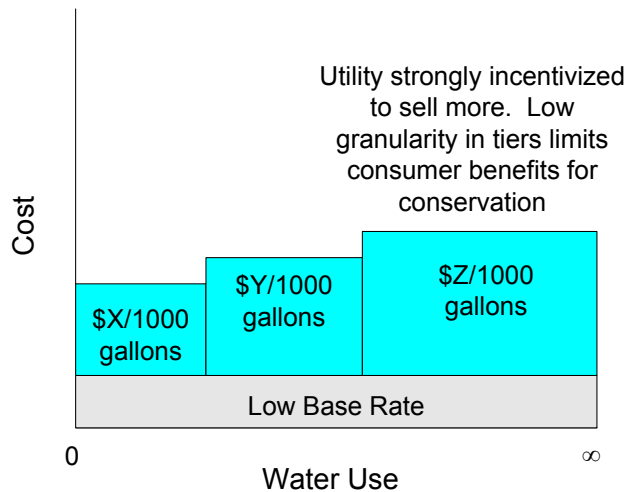
[droughtmonitor.unl.edu](http://droughtmonitor.unl.edu)

J S Famiglietti, and M Rodell Science 2013;340:1300-1301

US BoR, US Census Bureau

# INCREASING REVENUE VOLATILITY

## INVERTED BLOCK RATE DESIGN



## 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.

As utilities sell less water, their revenues become increasingly fragile.

Source: Shadi Eskaf, "Are operating revenues declining for local government-owned water utilities? Evidence from six states", 2013, Environmental Finance Center at the University of North Carolina. (<http://tinyurl.com/crd2rpt>)

# DATA ERRORS = LOST REVENUE

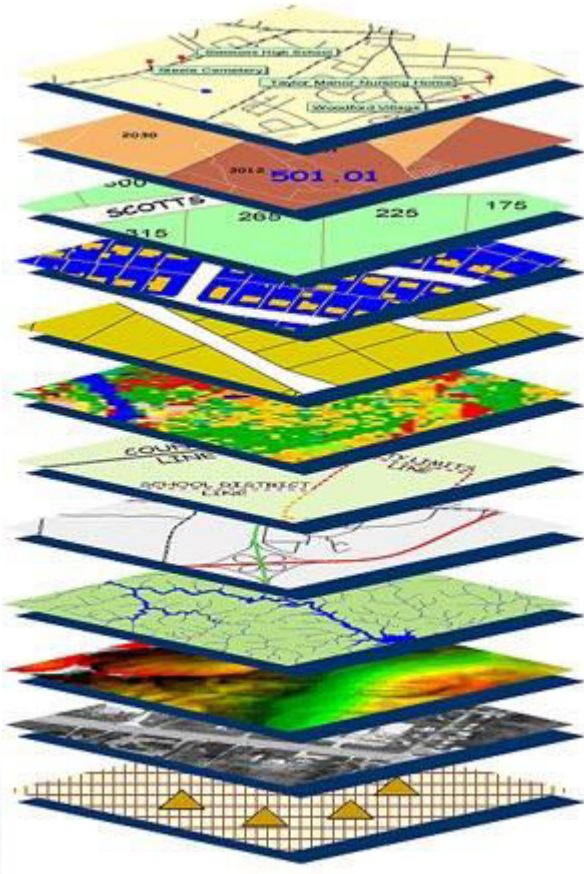


- Water theft from bypassed meters
- Unauthorized connections
- Meter degradation and inaccuracy due to meter age or physical damage
- Meter degradation due to water quality or particulate precipitation
- Meter programming errors
- Meter losses, including meters missing from the billing inventory
- Meter 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



# USING DATA TO FIND REVENUE

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



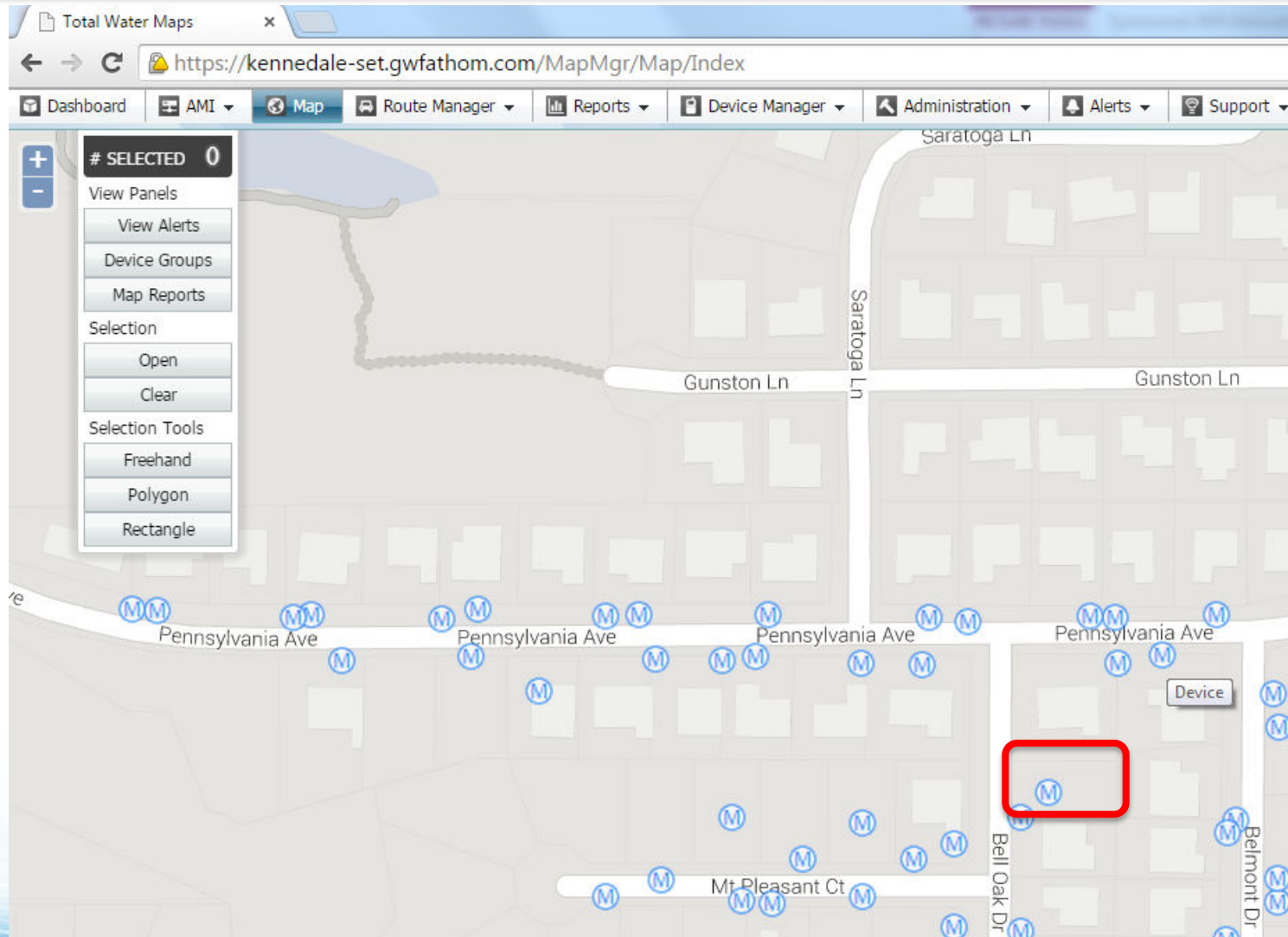
- Tax Parcel Data
- Aerial Photographs
- Infrastructure Data
- Asset Data
- Census Data
- Customer Engagement
- Esri Data
- Meter Data
- CIS Data

Understanding:  
where, when &  
why of water  
use

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

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# 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**

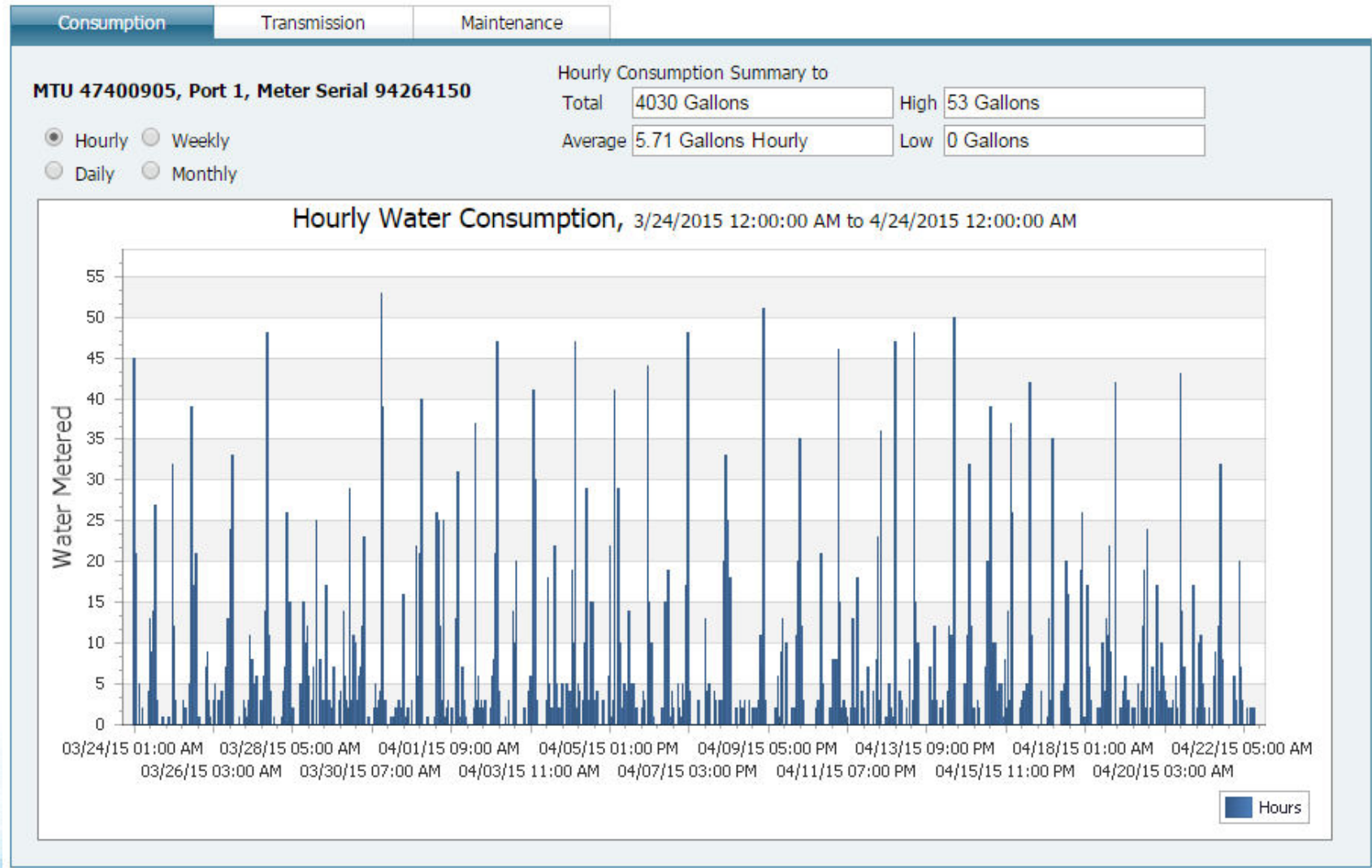
Position: **(-97.2193222045898, 32.6594200134277)**  
Premise:  
Address:

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

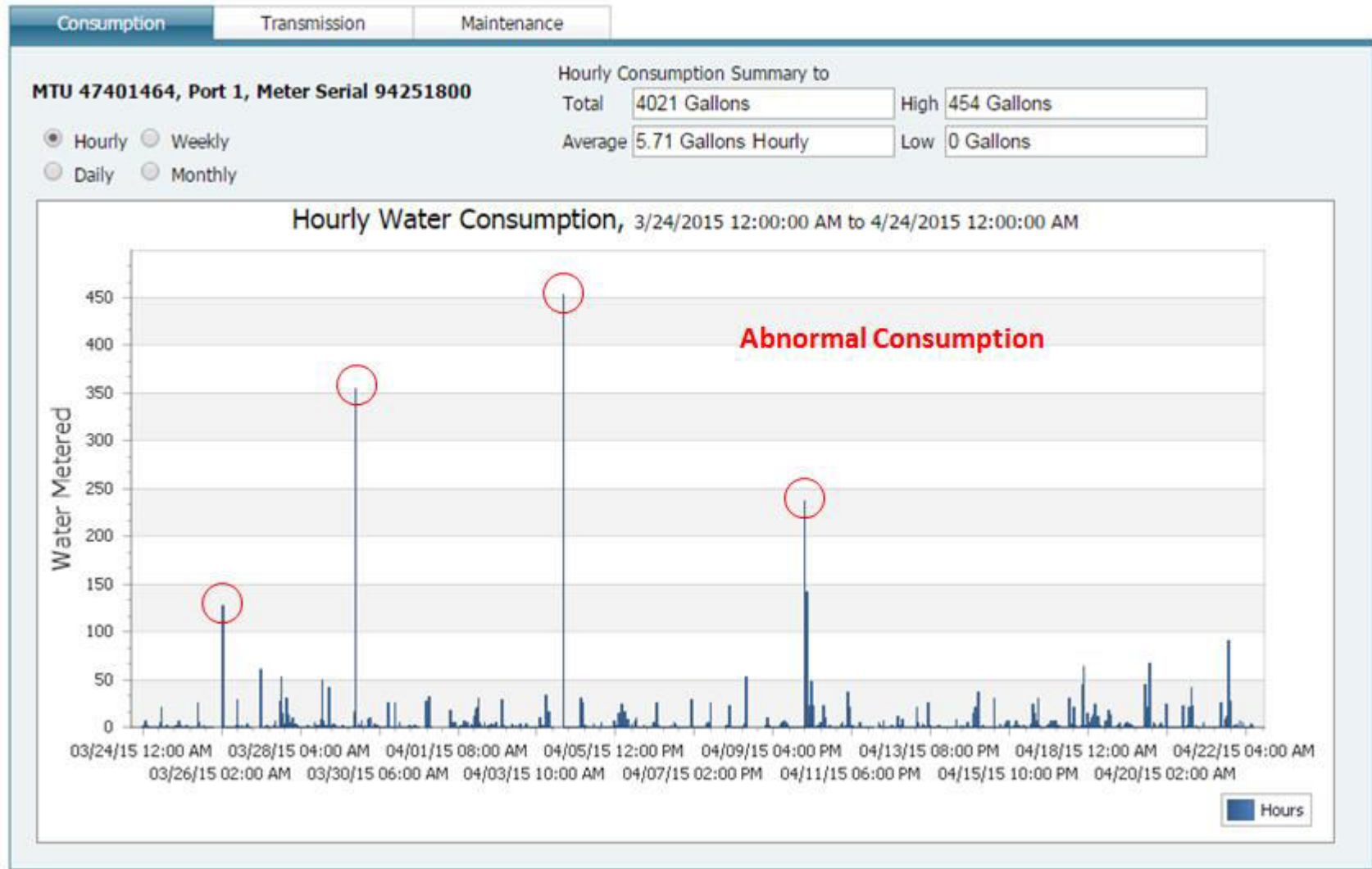




# TEMPORAL RELEVANCE



# TEMPORAL RELEVANCE



# USING DATA TO CONSERVE

**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 4/12/2015-4/19/2015    9,200 Gallons 4/7/2015

**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 4/12/2015-4/19/2015    9,200 Gallons 4/7/2015

**Water 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
04/22	80	219	0
04/21	110	204	0
04/20	130	212	0

131 Gallons per day

“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?

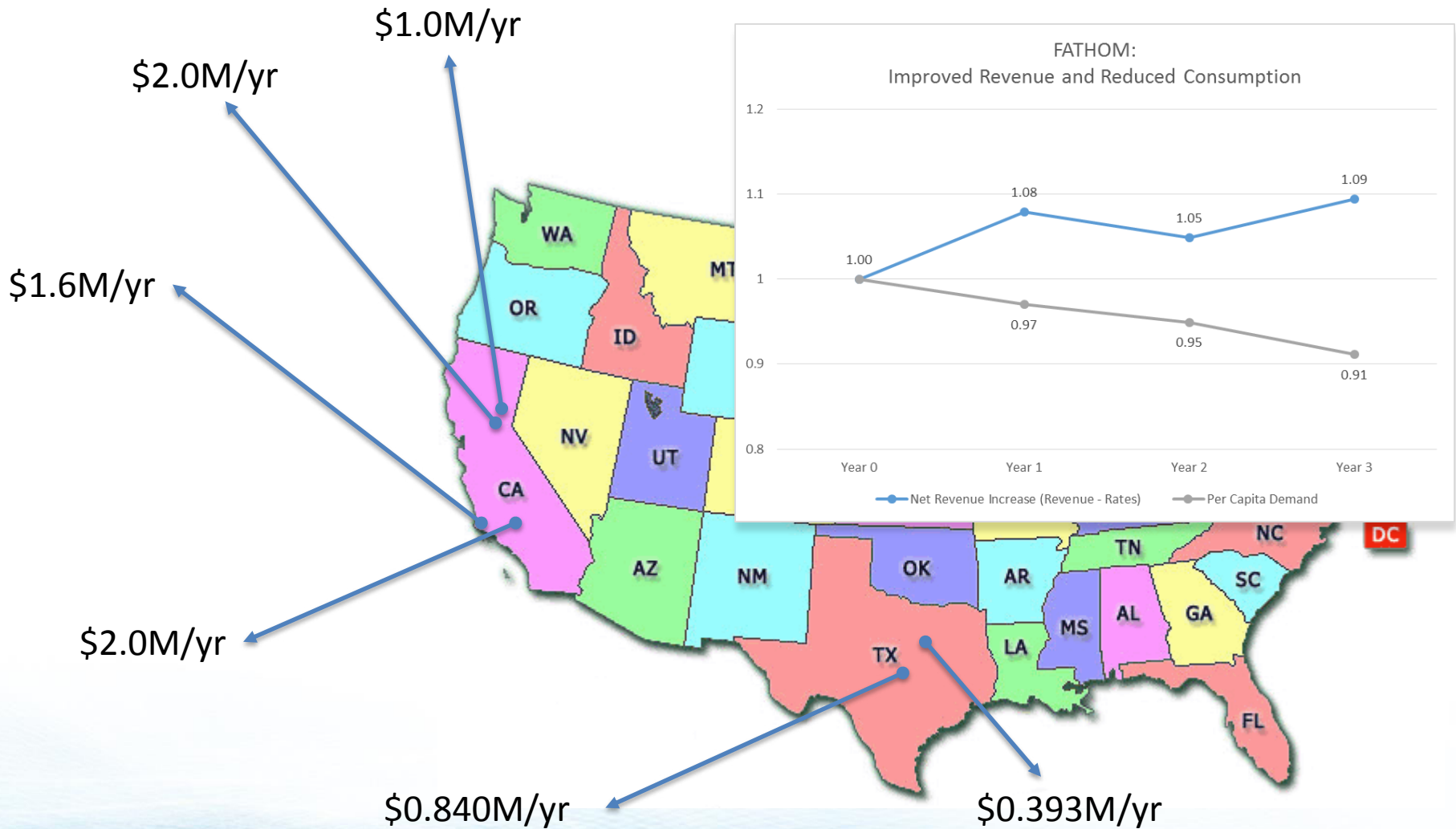
How much water **should** I use?

Tell me when I have used too much.

Tell me when I have a leak.

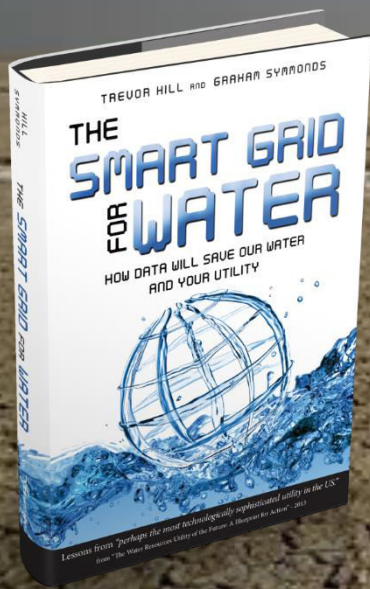
Help me **manage** my water use and  
control costs.

# FINDING DOLLARS & DROPS IN THE DATA



# INFORMATION

“For water utilities, focusing on collecting, aggregating, and analyzing data and converting it into real-time information will be critical. The twenty-first century water manager needs to manage the flow of data and information as well as the flow of water. Our future depends on it.”



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[www.gwfathom.com](http://www.gwfathom.com)  
[www.TheSmartGridForWater.com](http://www.TheSmartGridForWater.com)



Source: Hill, T., Symmonds, G., The Smart Grid for Water: How Data will Save our Water and your Utility, Advantage Publishing, 2013