FATHOM™

FATHOM DROUGHT WATCH

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REGULATING CONSERVATION

We know that there is increasing pressure on water resources as a function of increasing volatility of supply, increasing demand and the fact that our water infrastructure is deteriorating.

The result in California has been to regulate, or mandate, conservation. The California State Water Board released draft regulations this week requiring the State's cities to achieve specific water reductions that are based on their current per capita usage, or residential gallons per capita per day (R-GPCD).

The draft regulations read, in part[1]:

> 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.

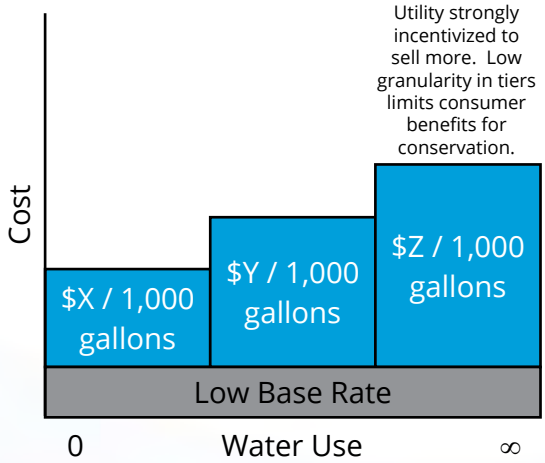
The required R-GPCD reductions range from 8% to 36%[2], with the intent of achieving a state-wide reduction of 25%.

IMPACT OF CONSERVATION ON REVENUE

Water conservation has an immediate impact on water use for utilities and the 8% to 36% R-GPCD reductions will have an immediate impact on revenue. Most utilities are structured with rates that are comprised of a fixed monthly charge and a volumetric charge. And in most cases the bias is skewed to the volumetric charge, resulting in most of the revenue being generated from water use. This puts utilities in an unstable financial position when that use declines.

In reality, the water sector is highly infrastructure based and as a result has a high "fixed" component to the cost of service. In fact water remains the most capital-intensive utility business in which to operate. The National Association of Water Companies notes that "for a water utility to earn a dollar, nearly $3.40 must be invested in infrastructure, an intensity that approaches an average of three times that of other utility sectors."[3]

INVERTED BLOCK RATE DESIGN



And that infrastructure requires constant upkeep, upgrades, and replacement, and so while some of that infrastructure has been depreciated (paid off) there is a constant need to invest in renewing that infrastructure.

We have been reticent to recognize that in our rate structures which has resulted in much of our infrastructure being ignored. The American Society of Civil Engineers publishes an annual report on the state of our infrastructure and recently gave the nation a failing grade of D[4]:

> At the dawn of the 21st century, much of our drinking water infrastructure is nearing the end of its useful life. There are an estimated 240,000 water main breaks per year in the United States. Assuming every pipe would need to be replaced, the cost over the coming decades could reach more than $1 trillion, according to the American Water Works Association (AWWA).

So we have a condition where drought conditions are resulting in mandated conservation requirements, rate structures that make utility revenue highly susceptible to changes in water sales, and infrastructure that is at the end of its life and needs investment.

This is the perfect storm.

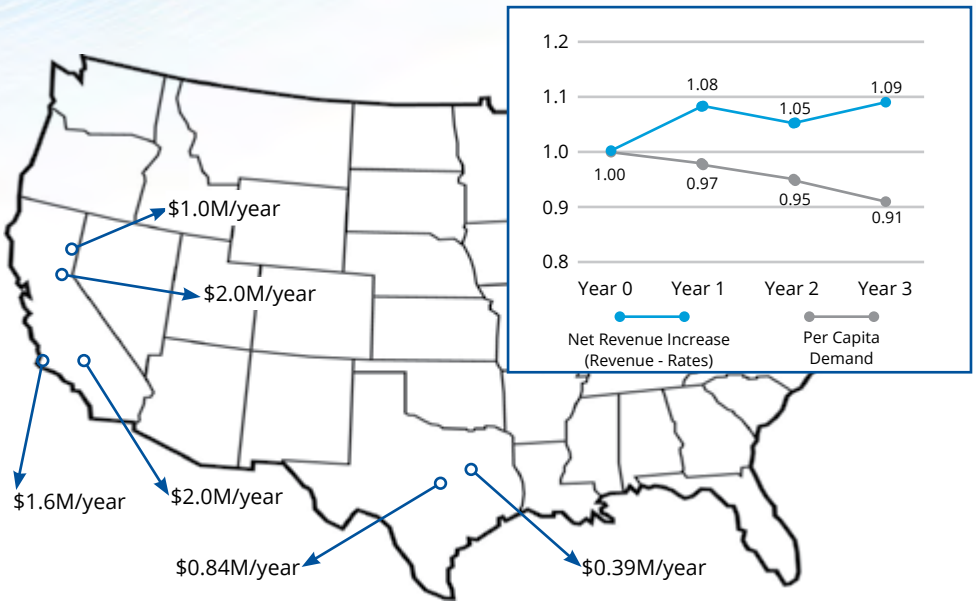
FINDING REVENUE WITH FATHOM

In the face of declining revenue, it is imperative to find all the missing revenue that is available to utilities. Utilities need better data and better data systems, particularly as it relates to Meter Data Management (MDM), to accomplish this. FATHOM provides significant benefit in this regard. Through the FATHOM MDM platform, utilities find :

- Water theft from bypassed meters
- Unauthorized connections
- Metering degradation and inaccuracy due to meter age or physical damage
- Metering degradation due to water quality or particulate precipitation
- Meter programming inaccuracy, including meters programmed to read in thousand gallons but entered into the billing record as gallons
- 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

A key component to FATHOM MDM is that it is geospatial. For the first time, utilities have the ability to see their metering information on a map. That geospatial representation allows for correlation with tax parcel rolls, aerial maps, census documentation, and other data sources that continually validate that meter data set.

IMPROVED REVENUE & REDUCED CONSUMPTION



The result is that all the utilities employing FATHOM have experienced significant increases in billed volume and revenue. This "found revenue" is often enough to fully pay for the FATHOM solution. And with this revenue, utilities are much more capable of withstanding the conservation shock that regulatory mandates like California's State Water Resources Control Board will deliver.

REFERENCES

[1] http://www.swrcb.ca.gov/waterrights/water_issues/programs/drought/docs/emergency_regulations/draft_emergency_regs.pdf

[2] http://www.swrcb.ca.gov/waterrights/water_issues/programs/drought/docs/emergency_regulations/draft_usage_tiers.pdf

[3] National Association of Water Companies, "Price, Cost, Value"

[4] http://www.infrastructurereportcard.org/a/documents/2013-Report-Card.pdf

[5] T.T. Hill, G.S. Symmonds, The Smart Grid for Water, Advantage Media Group, Charleston, South Carolina, 2013