Retail Demands and Conservation

Water-Use Efficiency Workgroup
April 16, 2015

Overview

- Tracking 20x2020 GPCD
- Historical and forecasted demands
- Conservation savings
- Next steps
  - Technical memo
  - Discussion topics

In this presentation, I will be talking about:
Where we are as a region in 20x2020 GPCD.

Then we'll look at water demands for the past 25 years and the next 25 years.

Conservation is part of demand. I'll touch on how conservation is calculated.

I'll close with a few next steps. One of them is a Technical Memo on the Conservation Savings Model. Bill sent it out on Monday; if you've had a chance to see it, some of my presentation will be familiar to you. We'll be looking to you for help in reviewing that memo. Also, after this presentation, there will be some discussion topics on remaining issues, namely how do we measure conservation due to behavior changes, and also what happens after 2020?

GPCD – 20% Reduction by 2020
Regional Tracking
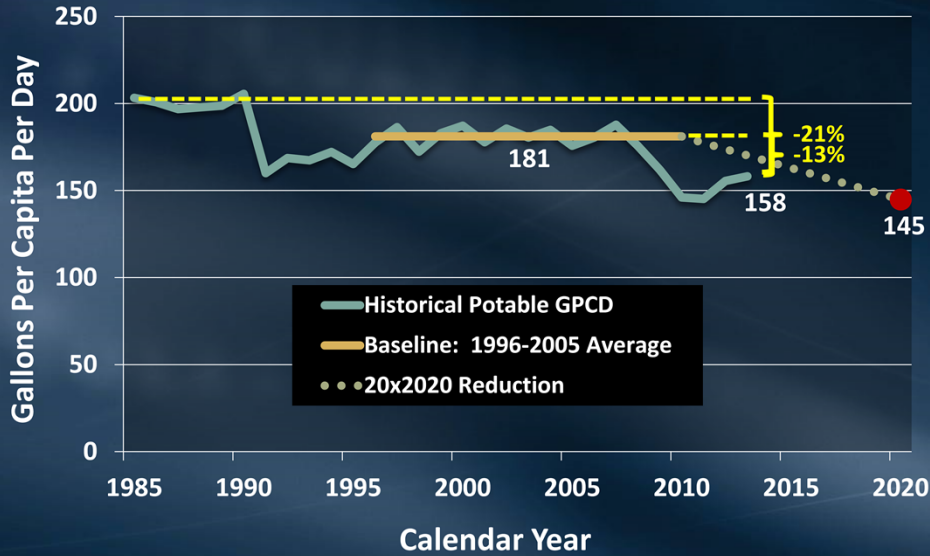
Under SBx7-7, Metropolitan as a wholesale water agency, is not required to reduce consumptive demand. However, Metropolitan is committed to help the region achieve a 20% reduction by 2020.

Before 1990, the average per capita use was about 200 GPCD for the region. With the plumbing code in place in 1992 and aggressive active conservation programs, per capita water use has stayed below 200 GPCD.

The baseline for calculating a 20% reduction is 181 GPCD. The 2020 target is 145 GPCD. So far, we've been tracking below the annual target. The annual target is represented by the dotted line.

As of 2013, per capita use dropped by 21% compared to pre-1990. And 13% from the baseline.
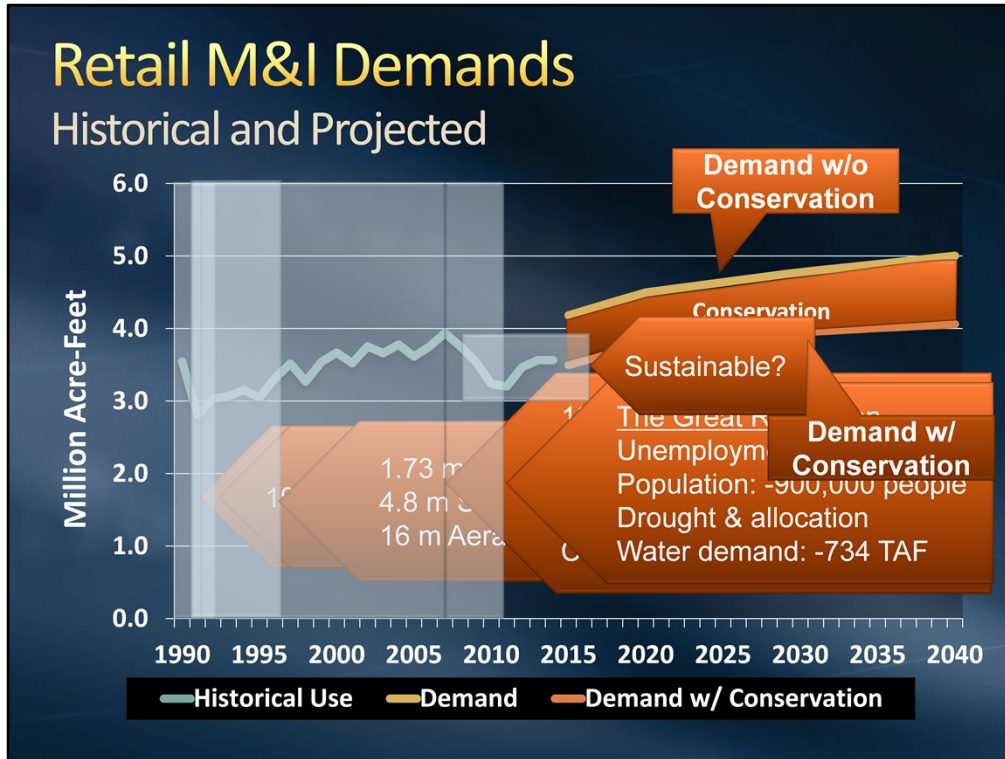
Now I would like to talk about retail demands in Metropolitan's service area.
1. Here's the historical water-use pattern.
2. Demand dropped by 732,000 AF from 1990 to 1991 as the region came out of an extended drought and an economic recession.
3. In 1992, new plumbing codes were in place.
4. Between 1991 and 1995, with plumbing codes in place and active conservation programs in full blast, the region replaced
    1. 1.7 m toilets with ULFTs – 471,000 of which were replaced through active conservation programs
    2. 4.8 m showerheads were replaced with more efficient ones – 1.6 m of which were replaced through active conservation programs
    3. 16 m faucet aerators were replaced at the same period
5. After the 1991 recession, the region experienced 16 years of economic growth. Average GDP growth rate was 3.5%.
    1. During this period, the region's population grew by 2.6 million people and
    2. Water demands increased by 1.1 MAF compared to 1991
    3. By 2007, the region saved a total of 4.7 MAF through conservation.
6. The Great Recession officially started in Dec. 2007 and ended in Jun. 2009.
    1. During this period, the region saw double digit unemployment rates
    2. By 2010, the region had 900,000 fewer people
    3. 2007 was also the start of a drought that lasted 2 years. In 2009, Metropolitan declared allocation
    4. By 2011, water demand dropped by 734,000 AF compared to 2007.
7. Since 2008, water demand has been relatively low. This is attributed to:
    1. Continuing economic recovery and slower population growth
    2. Lower water usage is also due a number of factors that include customer behavioral changes, city ordinances to prevent waste, and conservation awareness outreach.
    3. Is the recent water use trend sustainable?
8. As the region's economy recovers and population grows, we'd expect water demand to increase.
9. Conservation will continue to play an important role in holding demand down
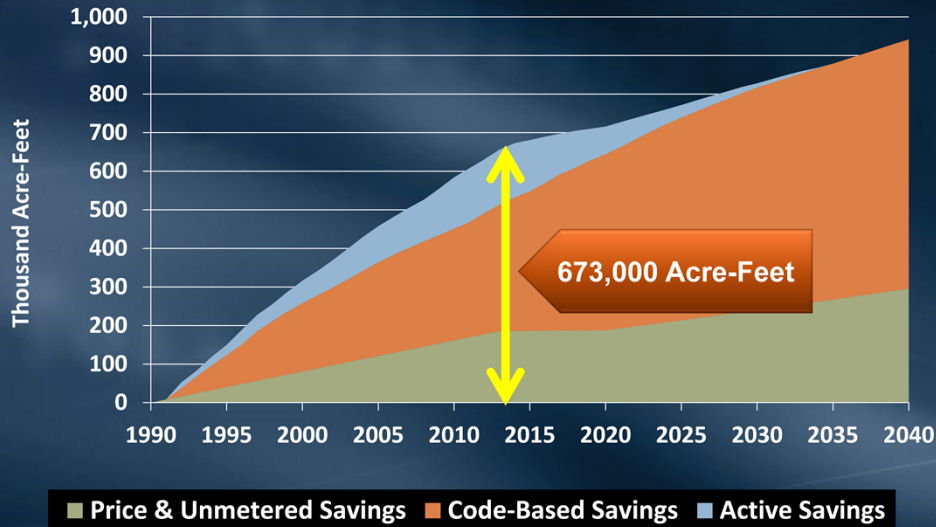10. Conservation lowers demand by nearly 1 MAF in 2040
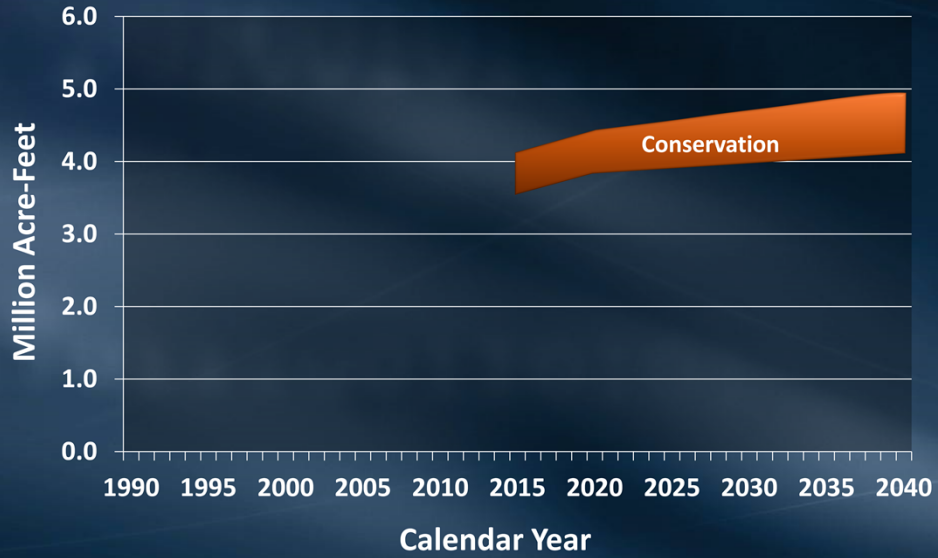
Next, I want to talk about what makes up this conservation.

There are 3 components of conservation: price and unmetered savings, code-base savings, and active savings.

Price and unmetered savings are calculated from our retail demand forecasting model.

Code-based conservation savings are based on the same demographic projections such as households and jobs used in forecasting retail demand. Code-based conservation produces the largest share of total conservation.

And active conservation savings are from the active conservation programs you administer. In this graph, we only assume active conservation through 2014. As you can see, the savings goes away when the devices reach the end of their useful lives.

In 2014, the region saved a total of 673,000 AF.

Unmetered savings
Water system has some leakages. The more water moved through the system, the more loss you'd have. With conservation, less water is moved through the system. The amount of water not loss because of conservation is consider as unmetered savings.

Metropolitan's Conservation Savings Model Assumptions
- Active conservation
  - Devices and programs
    - 85 devices and programs since 1990
  - Savings factors
- Code-based conservation
  - Housing stocks
  - Employment
  - Savings factors
  - 8 devices

In the previous graph, we showed how much water we conserved each year. How did we come up with those numbers? We do it through a model. This model is called the Conservation Savings Model. It calculates savings for active and code-based conservation using these assumptions.

1. Active conservation is based on devices and programs.
    1. Since 1990, we have administered 85 different devices and programs through the Conservation Credits Program.
    2. Each device and program has an associated savings factor. Savings factor includes gallons saved per day and device life.
2. Code-based conservation is based on housing stocks and employment.
    1. We use estimates of average number water fixtures per household or per employee and savings factors to calculate acre-feet saved.
    2. Currently there are 8 code-based devices in our model.

Residential toilets, showerheads, aerators and washing machines
CII toilets, urinals, pre-rinse spray heads, and washing machines

In summary…
The regional potable GPCD is tracking at 13% below 20x2020 baseline as of 2014.

As the economy grows, population will follow. Demands are projected to grow despite recent downward trend

Conservation is projected reduce the region's demand by 1 MAF in 2040.

We would like your input on the assumptions and methodology used in our model. We will have a more in-depth discussion on the Conservation Model at the Conservation PAC meeting on April 29. We would like written recommendations by May 15, 2015, so we can compile comments and talk about them at the next WUE meeting in May.

Also, after Stacie's presentation, there will be time for discussion on issues related to how to measure conservation from things like changes in behavior, conservation outreach, and city ordinances, as well as what happens after 2020.
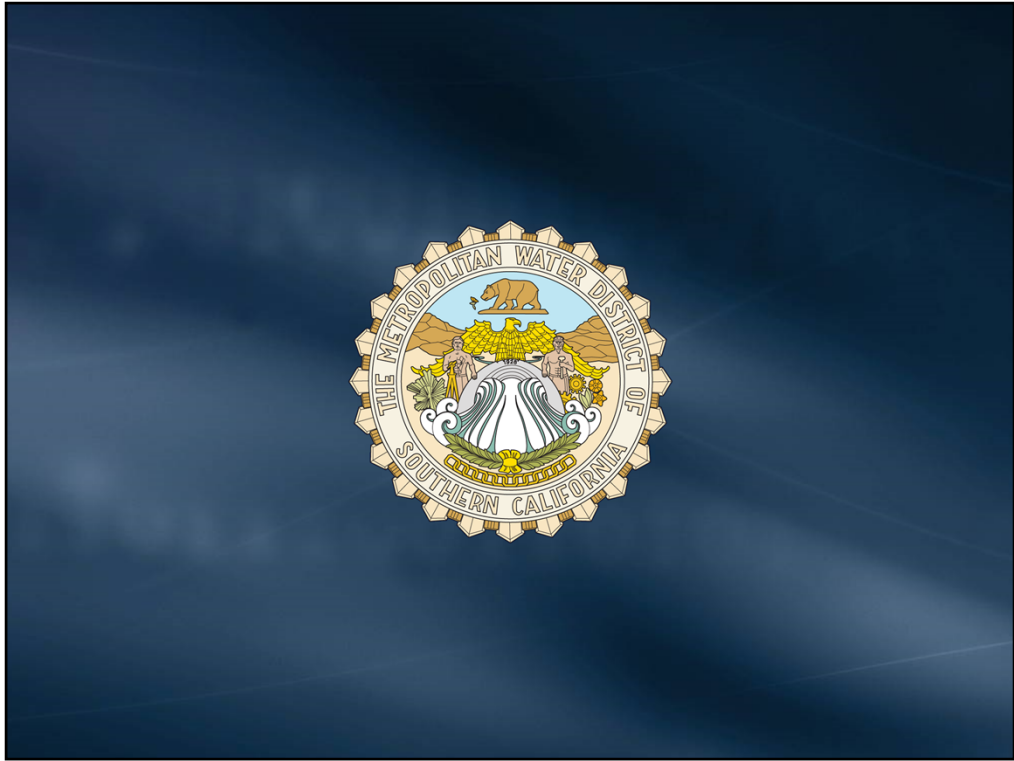
Drivers for Retail Demand Forecast

- Demographic and employment forecasts
  - Population
  - Household
  - Income
  - Employment
- Conservation
  - Active savings
  - Code-based savings
  - Price and unmetered savings

These are the things we look at when we do our demand forecast.

We use demographic projections from the Southern California Association of Governments and the San Diego Association of Governments to forecast water demands.
1. The 4 key drivers are population, household, income, and employment.
2. The other component is conservation. Conservation reduces demands. It consists of savings from active conservation programs, plumbing code, price, and unmetered use.

Unmetered savings
Water system has some leakages. The more water moved through the system, the more loss you'd have. With conservation, less water is moved through the system. The amount of water not loss because of conservation is consider as unmetered savings.