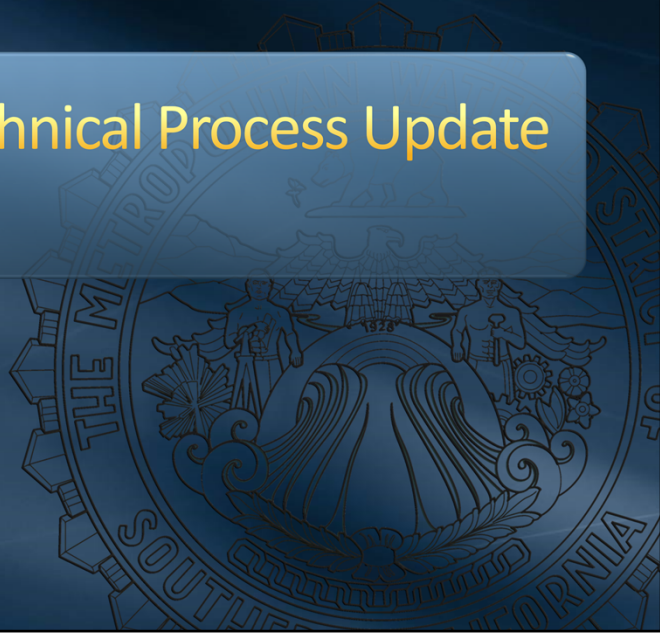
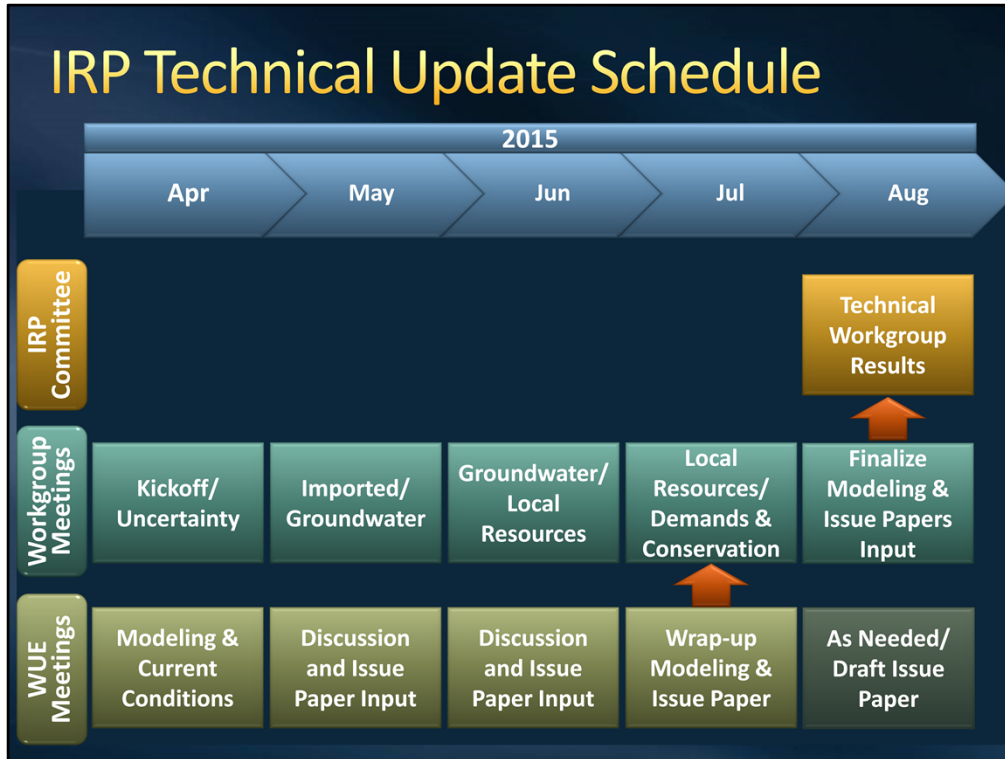


IRP Technical Process

Water Use Efficiency Meeting
July 16, 2015

IRP Technical Process Update





Internal Process –
Ongoing

MA Technical Process –

MA workgroup meetings twice a month April through August, as needed through October

WUE meetings monthly standing meeting April through July

Board –

Reporting in Feb and March (IRP Committee)

Monthly Updates from MA tech process

Wrapping up around the end of the year, head into Board Policy Process

Following slides breakdown activities at Board and MA levels

Updated Conservation Savings Forecast



Overview

- Types of conservation saving tracked by MWD
- MWD's Conservation Model
 - Active Conservation
 - Code-based Conservation
- Conservation Model Results
- Review of Conservation Model comments

I would like to start by reviewing the types of conservation saving we track and the tools that we use to estimate conservation savings.

We'll review a draft forecast that include active conservation up to the end of this fiscal year.

Then we'll review comments we received from this workgroup and the Conservation PAC group on the conservation model.

Conservation Savings Tracked by MWD

Conservation Savings Model

- Active Conservation
 - Savings from conservation programs by MWD and member agencies
- Code-Based Conservation
 - Savings resulting from plumbing codes
- Price-Effect Conservation
 - Savings resulting from price increases
- Un-metered Water Use Savings
 - Savings from avoided system loss

If you recall from our meeting in April, I talked about how we track and calculate conservation savings.

We have a conservation model that calculates Active and Code-based conservation savings.

We also track savings from price-effect as well as savings from avoided system loss.

Price savings is calculated in our retail demand model and un-meter water savings is calculated using system losses from UWMPs.

Metropolitan's Conservation Models

- Active Conservation
 - Devices and programs
 - 85 devices and programs since 1990
 - Savings factors
- Code-based Conservation
 - Housing stocks
 - Employment
 - Savings factors
 - 8 devices

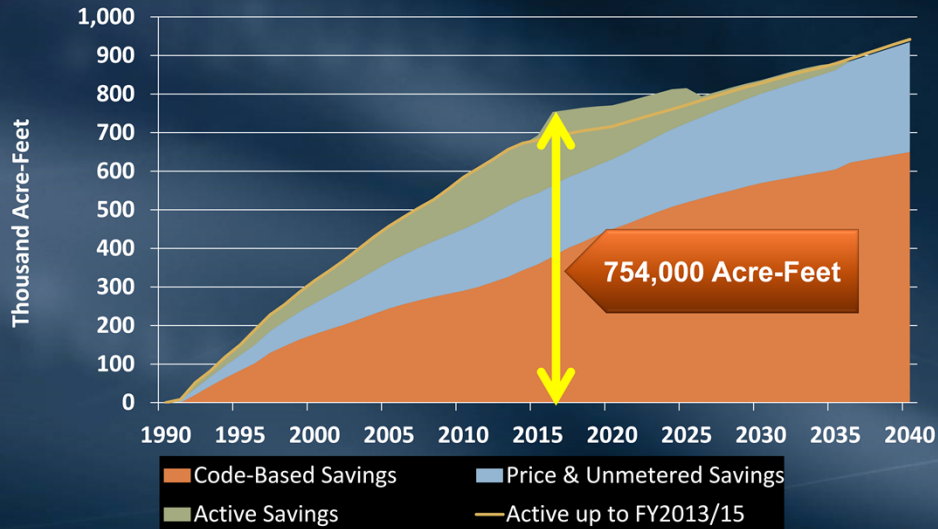
The conservation model is a device-based model, consists of two components:

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

Conservation Savings

MWD Service Area: Active up to FY2015/16



So, let's look at the model results. The graph I'm about to show you includes active conservation up to the end of this fiscal year.

Code-based conservation...

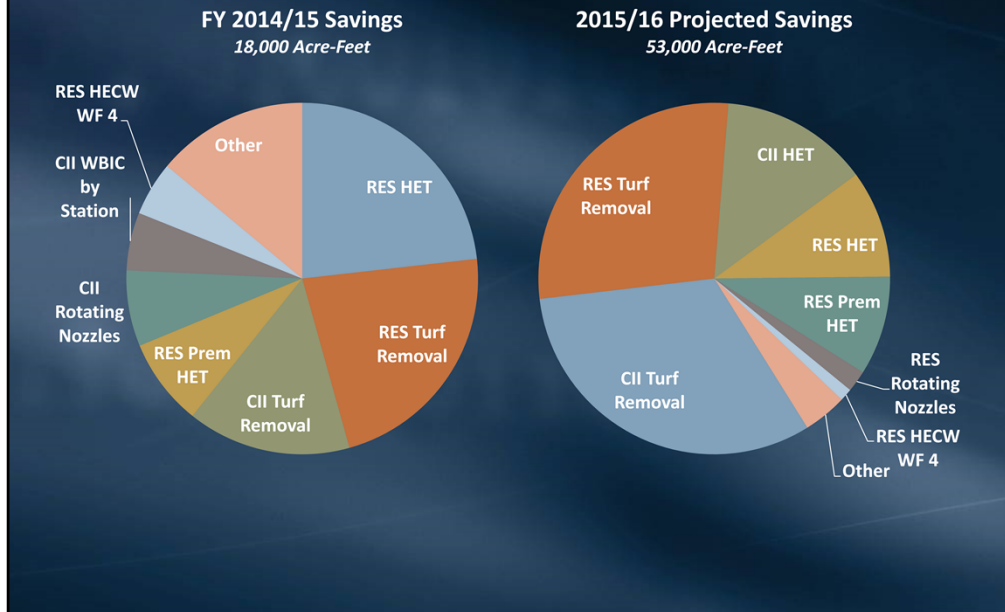
Price and unmetered water use...

Active conservation. We allocated the remaining balance of the \$450 million biennial budget to different devices and programs in fiscal 2015/16.

The result is an increase in savings starting from 2015 to 2025. The tan line is the savings before FY2014/15.

Let's take a closer look at active savings in fiscal years 2015 and 2016...

New Water Savings



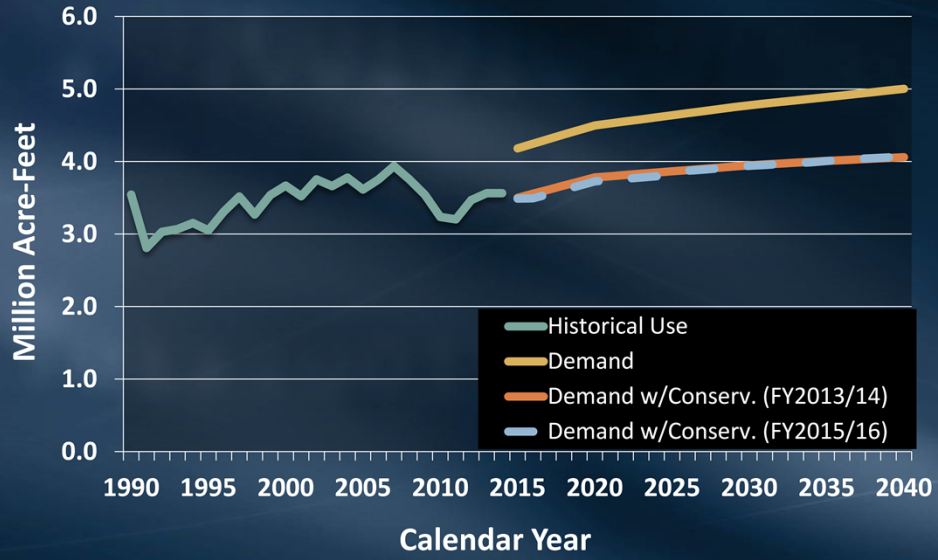
This graphic shows the devices or programs that contributes to new water savings for fiscal years 2015 and 2016.

Talk about \$ allocation here...

We projected turf replacement contributes to about 2/3 of the total water saved in fiscal year 2015/16.

Retail M&I Demands

Historical and Projected



Questions on Conservation Model

- How is 20x2020 tracked in the model?
 - 20x2020 is a target; the conservation model tracks savings from devices
- How are behavioral changes captured?
 - Behavioral changes due to marketing campaigns are not captured
- Does the code-based model include outdoor?
 - Currently, no outdoor devices under plumbing code

Q. How is 20x2020 tracked or represented?

A. 20x2020 is a target. The conservation model calculates savings from active programs and plumbing codes.

Q. How are behavioral changes captured?

A. Behavioral changes due to marketing campaigns are not captured. Currently, we do not have empirical data to estimate such savings.

Q. Do active savings include non-MWD programs?

A. Yes, if they use MWD's vendor to administer.

Q. Does the code-based model include outdoor?

A. Currently, there are no outdoor devices under the plumbing code

Questions on Conservation Model

- What is the starting point for code-based fixtures?
 - Based on housing stock with assumptions for fixtures per household
- How are discontinued incentives tracked?
 - For active devices not part of code, savings are discontinued after useful life
 - For devices that are part of plumbing code, savings are picked up in stock model as devices are replaced with same standard

Q. What is the starting point for code-based devices?

A. Based on housing stock with assumptions for fixtures per household

Q. How are discontinued incentives tracked?

A. For devices not part of code, once device reaches useful life, the savings will drop off.

B. For devices that are part of plumbing codes, savings are be picked up in stock model as devices are replaced with same standard.

Questions on Conservation Model

- When did MWD last update its savings assumptions?
 - Ongoing effort
- Does MWD verify its conservation program performance against assumptions?
 - MWD continually reviews studies on water savings factors and updates model accordingly
- How is un-metered water use determined?
 - Based on system losses published in UWMPs

It looks like #1 is answered. I can try to answer #2. I'm not sure how to answer #3 or #4. But I think the question to #3 is no, as it is based on device savings estimates that are reviewed and updated as described in #1.

Q1: When did MWD last update its saving assumptions from various devices?

A1: Ongoing effort. If MWD learns about a new studies that show different savings factor, they update the factor.

Q2: How does MWD include savings resulted from its various conservation programs in its model – including device-based, code/ordinance, and behavior changes?

A2: The savings for active programs are based on counts and tabulations of devices or program interventions for each member agency. Code and ordinance savings are calculated in stock models which track the “populations” of conserving and non-conserving devices. The stock models quantify (estimate) the number of conserving devices originating from codes and ordinances. These devices are then run through the same savings factors used for devices retrofitted through active programs. Active programs affecting behavior, such as home audits, are assigned savings factors similar to devices and appliances devices. Behavioral changes due to marketing campaigns such as shower length or irrigation timing changes are not captured in the model.

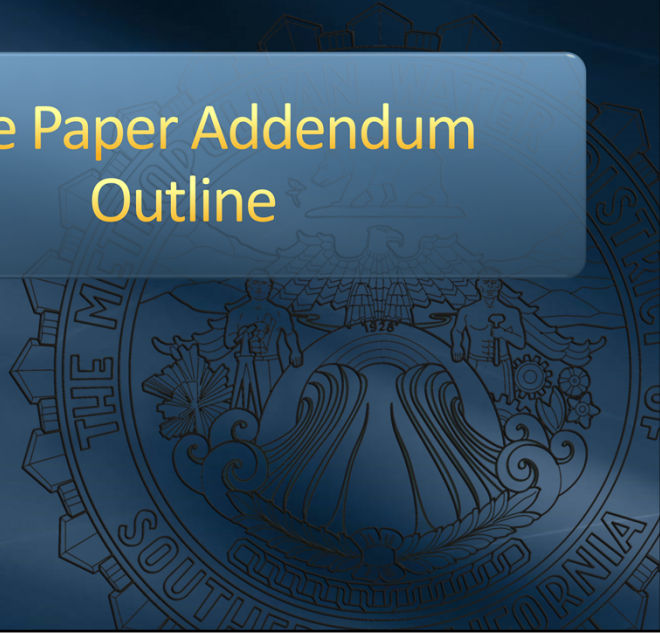
A thorough description of this process is contained in the draft memo shared with the conservation coordinators.

Q3: Does MWD verify its conservation program performance against assumptions?

Q4: How does it differentiate the retail mandate (20x2020) conservation target by member agencies and its board policy objective of 20 percent reduction at MWD level beyond retail

mandate?

Issue Paper Addendum Outline



IRP Information Categories

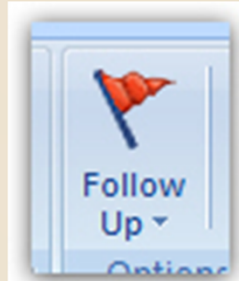
Forecast



Issue
Paper



Policy

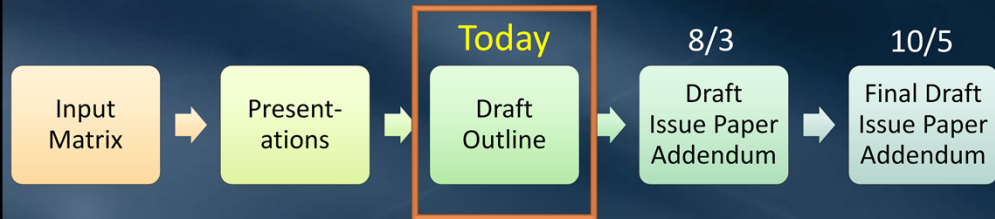


Information for the IRP can be placed into three categories (information that...):

- 1) Informs the forecast
- 2) Feeds the issue paper (discuss conservation issues)
- 3) Will be flagged to add to a subsequent Board discussion on policies and implementation

All three feed the policy implementation discussion

Issue Paper Development Process



Draft Outline: Sections

Opening Material (Execute Summary, TOC, Intro)

Conservation

Groundwater and Stormwater Recharge

Recycled Water

Seawater Desalination

Stormwater Direct Use

Graywater

Conclusion (Resource Interrelations, Overall)

Resource Subsections

-  Background
-  Challenges/Barriers
-  Opportunities
-  Lessons Learned
-  Recommendations

Preview of Draft Outline

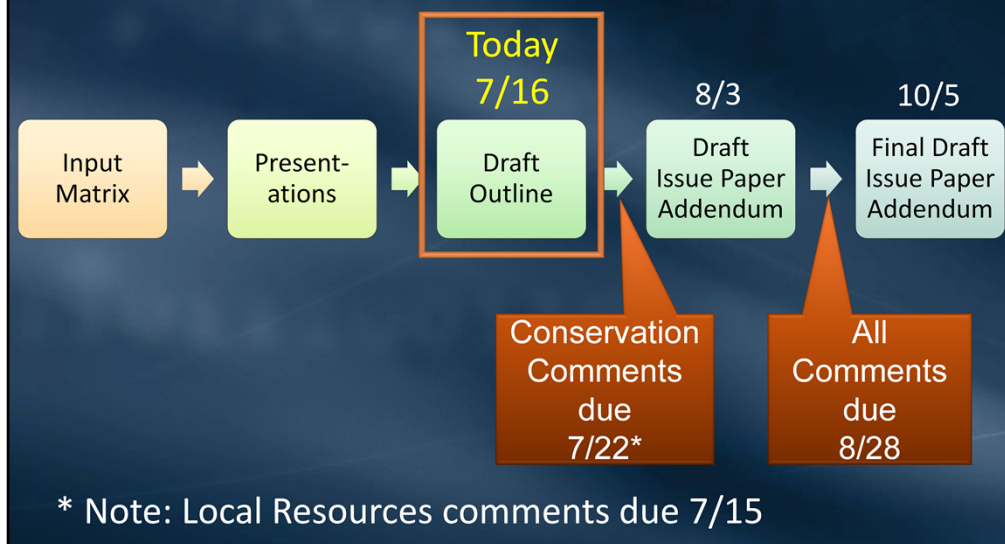
Outline in table form, designed to be easy to read and digest. Color coded per section. Hyperlinks to each section on the first page. Not necessarily looking for edits to the outline. Looking more for major comments: significant content needs.

Preview of Draft Outline – Conservation Section

2015 IRP Issue Paper Addendum		2e Recommendations	
Opening Material Executive Summary Table of Contents Introduction/Background		Recommendations for Increased Conservation Programs Measures Communication Retail Water Pricing Overall	
2. Conservation 2a Background Background / Overview 2b Challenges Programs Measures		2c Opportunities Programs Measures Communication Retail Water Pricing Overall 2d Lessons Learned Programs Measures Communication Retail Water Pricing Overall	
		3. Groundwater and Stormwater Recharge 3a Background Background / Overview 3b Challenges Potential Threats to Sustainable Groundwater Production Costs/Funding	

Outline in table form, designed to be easy to read and digest. Color coded per section. Hyperlinks to each section on the first page. Not necessarily looking for edits to the outline. Looking more for major comments: significant content needs.

Issue Paper Development Process Comments Schedule



Very condensed schedule that we're working with. One week to review the outline for major comments on content. Then an opportunity to review the draft paper.

Next Steps



