



# Allocation of Demand Management Costs

Finance & Insurance Committee  
Item 6a  
May 13, 2019

# Allocation of Demand Management Costs

- In April 2018, the Board approved board letter 8-2, which directed staff to undertake a Demand Management Cost Allocation Study
- Proposed process
  - May 2019: Overview of Demand Management Cost Functionalization
  - July 2019: Demand Management Cost Functionalization for Metropolitan
  - Fall 2019: Incorporating Demand Management Cost Functionalization recommendations into the Cost of Service process
  - December 2019: Budget process
  - February 2020: proposed water rates and charges for calendar years 2021 and 2022



Peter Mayer, P.E.  
Principal  
Water Demand Management, LLC

- Professional engineer and urban water expert
- 25 years experience
- Urban water management
- Water planning
- Rate analysis
- Demand analysis and forecasting
- Water loss control
- Author of reports evaluating the benefits of demand management programs

Over his career, Peter has worked with hundreds of water utilities and organizations across the US and Canada.





# Functional Assignment of Metropolitan's Demand Management Costs

*Finance and Insurance  
Committee – Item 6a*

*May 13, 2019*

*Peter Mayer, P.E.*

# Water DM Project Goals



Review approaches and update Metropolitan's functional assignment method for its demand management program costs.



Establish conformance of the approach with industry best-practices.



Develop a clear, understandable, method Metropolitan can update and use regularly in the cost of service rate making process.

# Presentation Outline

## Review

Fundamentals of water service and essential role of demand management.

## Examine

Why Metropolitan implements demand management programs.

## Consider

How Metropolitan recovers the real \$\$ spent on demand management.

## Present

Metropolitan's historical functional assignment of demand management based on avoided costs.

## Introduce

WaterDM project to update functional assignment.

“Water management is multidimensional.”

Viessman, W. and M.J. Hammer. 1993. Water Supply and Pollution Control, 5<sup>th</sup> Edition, HarperCollins College Publishers, NY.

Reliable water service includes:

Source water management

Conveyance and distribution infrastructure

Storage

Water treatment and water quality

**Demand management**

Administration (planning, engineering, management, etc.)

And more...



# Demand Management is Standard Utility Practice



Since the 1990s demand management has become an essential function for American water utilities.



Public water providers across the US (and around the globe) implement a wide variety of demand management programs.



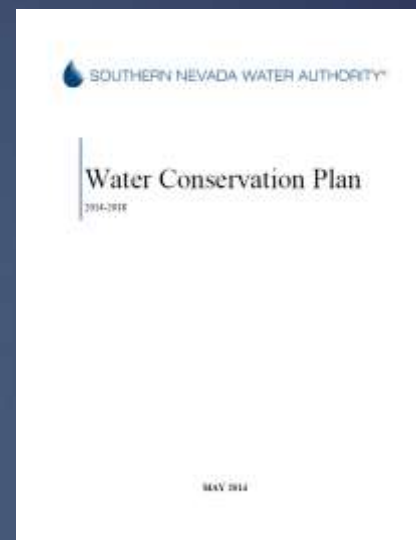
# Wholesale and Retail Utilities Across the US Implement Demand Management

Conservation and demand management plans Peter has prepared or reviewed:

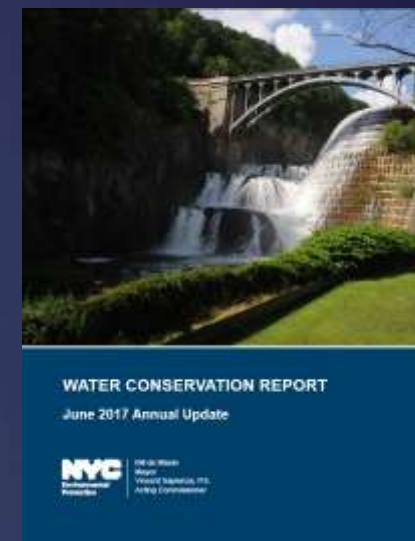
- New York City, NY
- Atlanta, GA
- Metro N. GA Water Planning District
- Austin, TX,
- San Antonio, TX
- Denver, CO
- Boulder, CO
- Aurora, CO
- Louisville, CO
- Region of York, Can.
- Greeley, CO
- Fort Collins, CO



- Seattle Public Utilities, WA
- Tucson, AZ
- Los Angeles, CA
- East Bay Municipal Utility District, CA
- Glenwood Springs, CO
- Aspen, CO
- San Diego County Water Authority, CA



- S. Nevada Water Authority, NV
- Yonkers, NY
- SUEZ Westchester, NY
- Gilbert, AZ
- Hilton Head, SC
- Tacoma, WA
- New Paltz, NY





### 1996 IRP Preferred Resource Mix

Included demand management with the intent of reducing and avoiding infrastructure expansion and new construction.

Regional participation necessary to achieve success.



### State conservation laws

SB 60 – Specifically directed Metropolitan to increase conservation and local resource development.

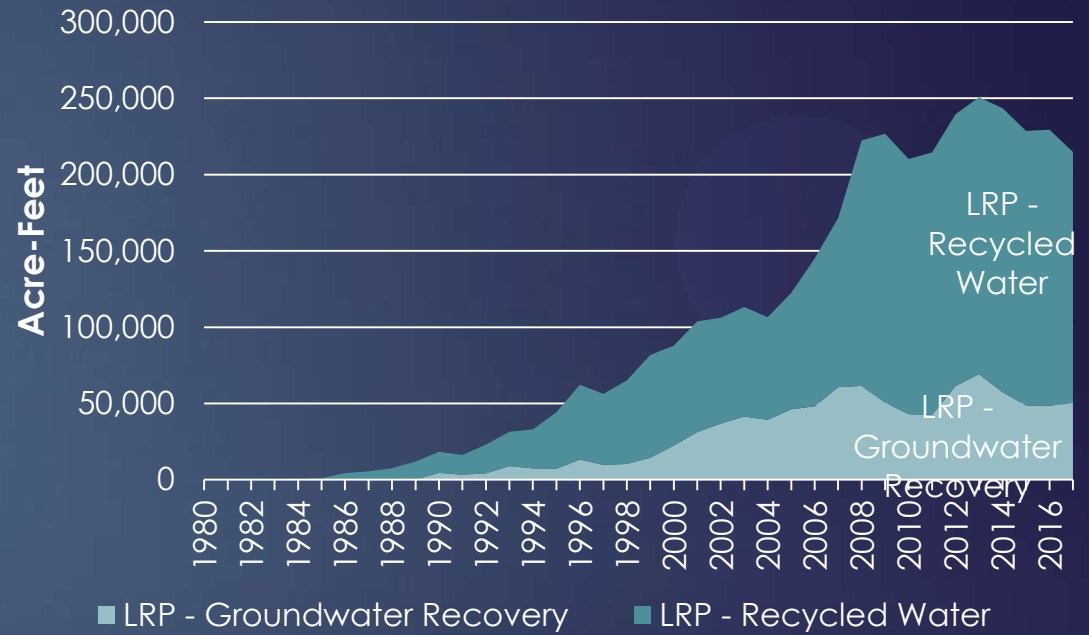
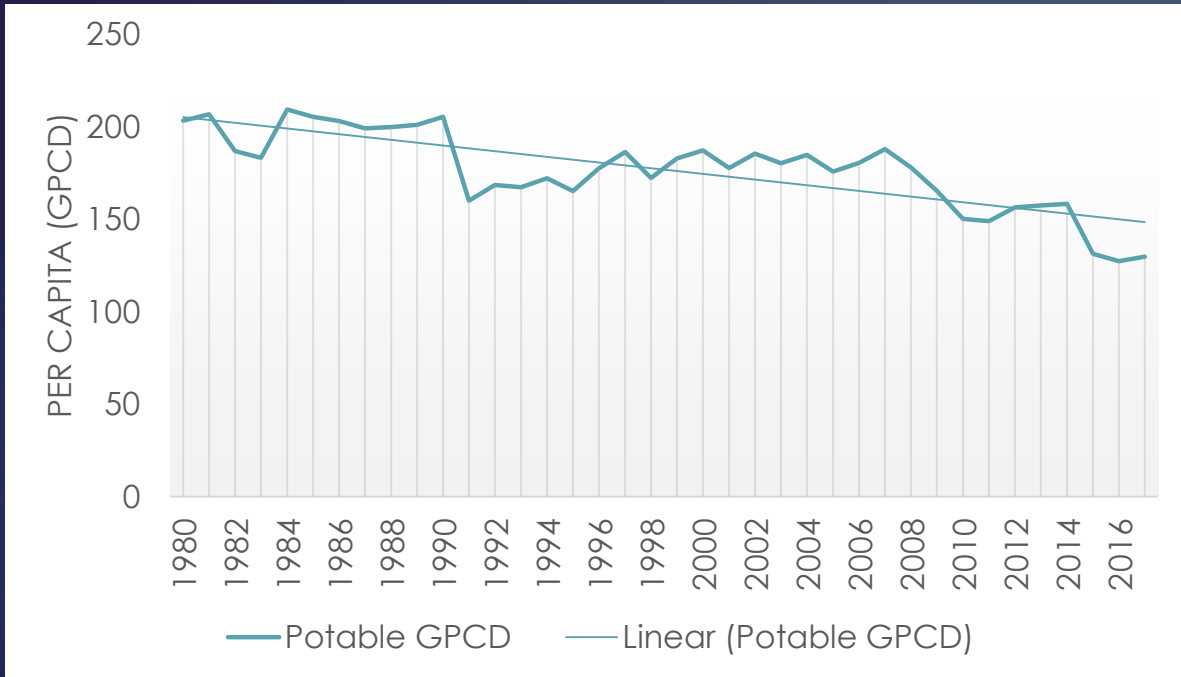
SB X7-7 – Metropolitan supports the regions compliance to reduce per capita water use by 20 percent by 12/31/2020.

For Metropolitan, Demand Management is Both Preferred and Legislated

# Metropolitan Demand Management =

Conservation Program +

Local Resources Program (LRP)

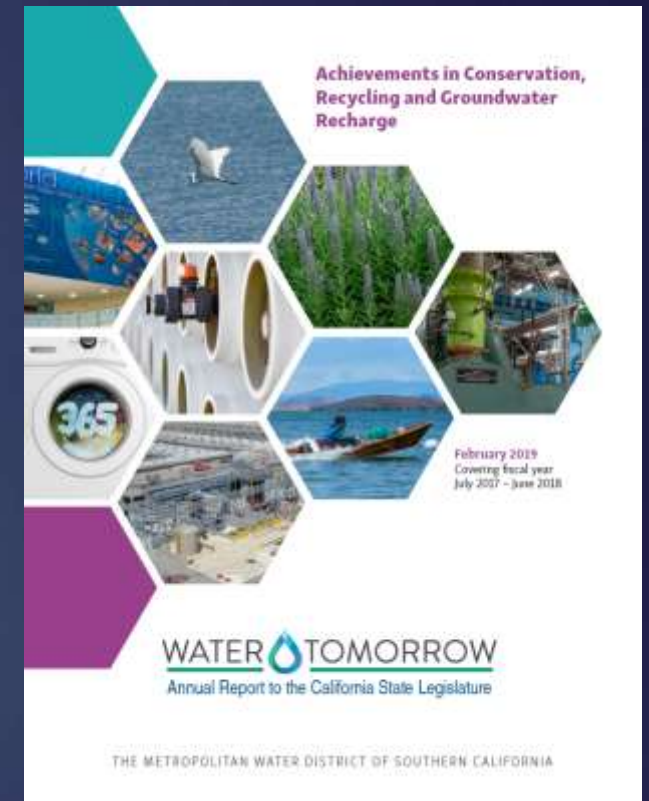


Metropolitan’s flexible, interconnected system benefits all member agencies. Demand management\* is a key component of Metropolitan’s Preferred Resource Mix to deliver least-cost, sustainable water supply into the future.

\*Metropolitan Demand Management also includes the Future Supply Action Program, advertising, and labor.

# Documented Impacts

Demand Management Program	Category	FY2017/18 (AF)
Conservation	Water saved from Metropolitan Conservation Credits Program	223,000
LRP - Recycled Water	Water produced from projects receiving Metropolitan funding	165,000
LRP - Groundwater Recovery	Water produced from projects receiving Metropolitan funding	48,000
<b>Total</b>	<b>Conservation + LRP</b>	<b>426,000</b>



More than 5.4 million AF cumulative savings and LRP production since 1990.



# Demand Management Costs

Metropolitan budgets \$80 - \$100 million per year to implement demand management programs.



# Demand Management Costs are Recovered Through Rates



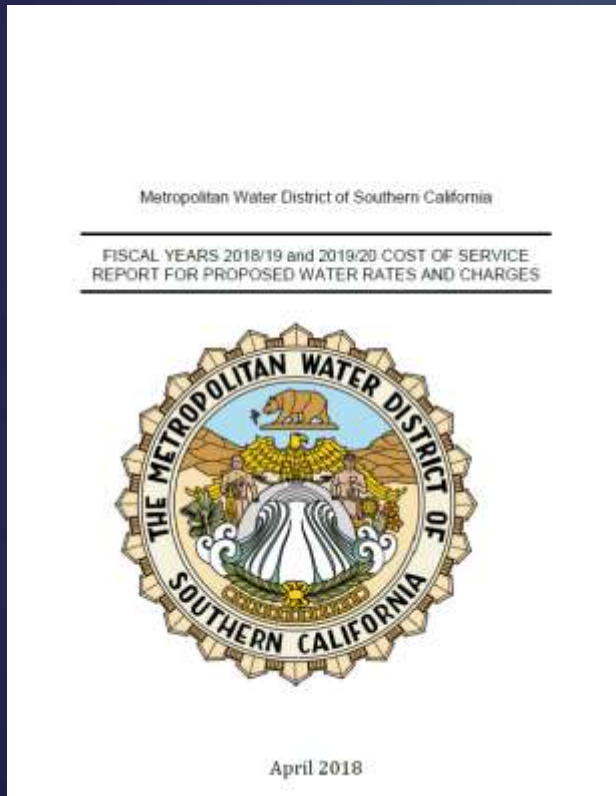
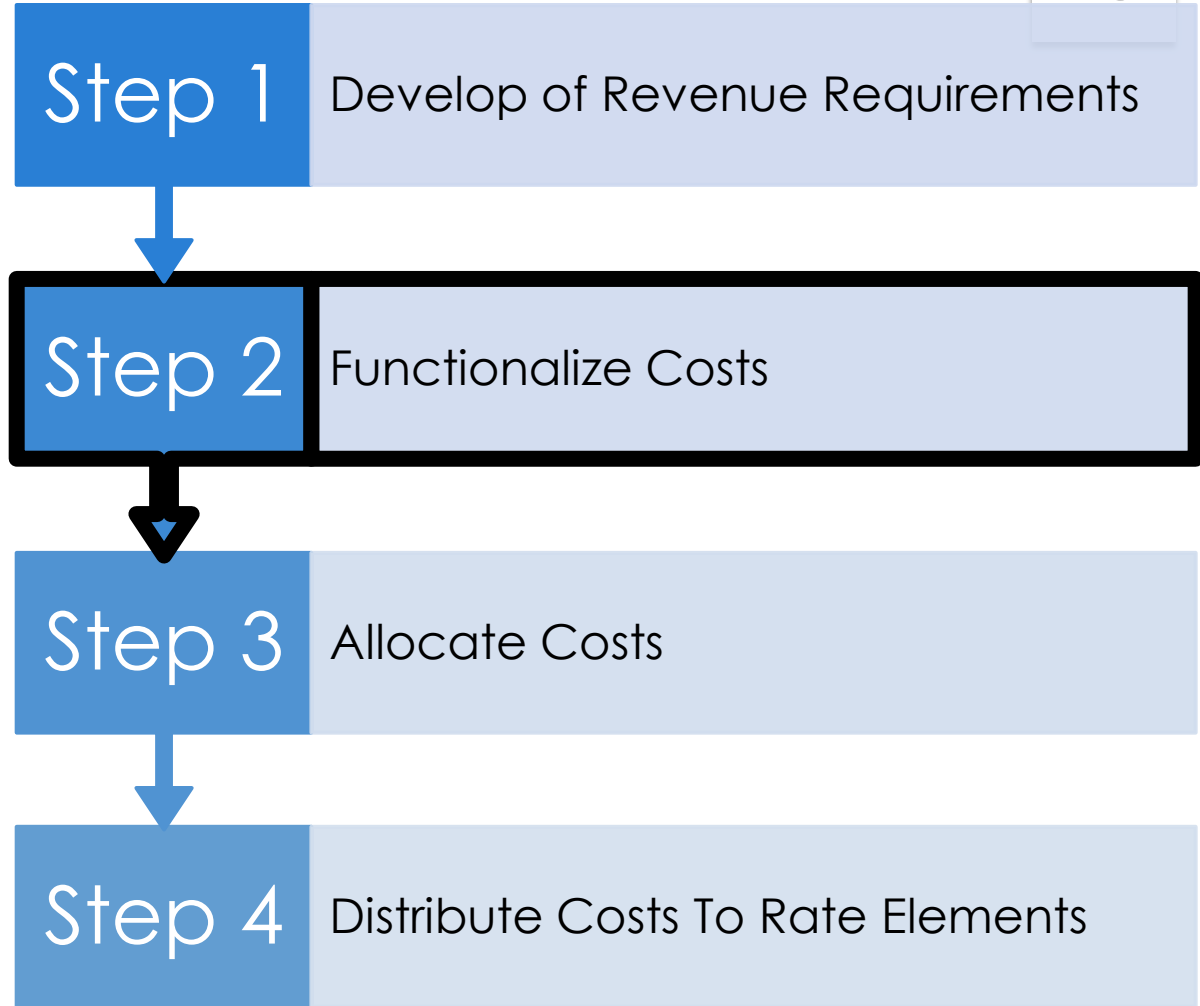
Metropolitan's annual expenditures for demand management programs are a necessary and legislated expense for the provision of water service across the region.



Metropolitan, like its peers, recovers the costs of implementing demand management through its water rates and charges.

# Metropolitan Cost of Service Process

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# Functional Assignment of Demand Management Costs

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## Real Costs



**Method of assignment to appropriate cost components in rate making process.**

## Functional Categories



Supply %

Aqueduct & Conveyance %

Storage %

Distribution %

Treatment %

Hydropower %



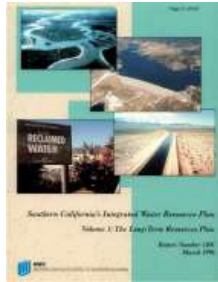
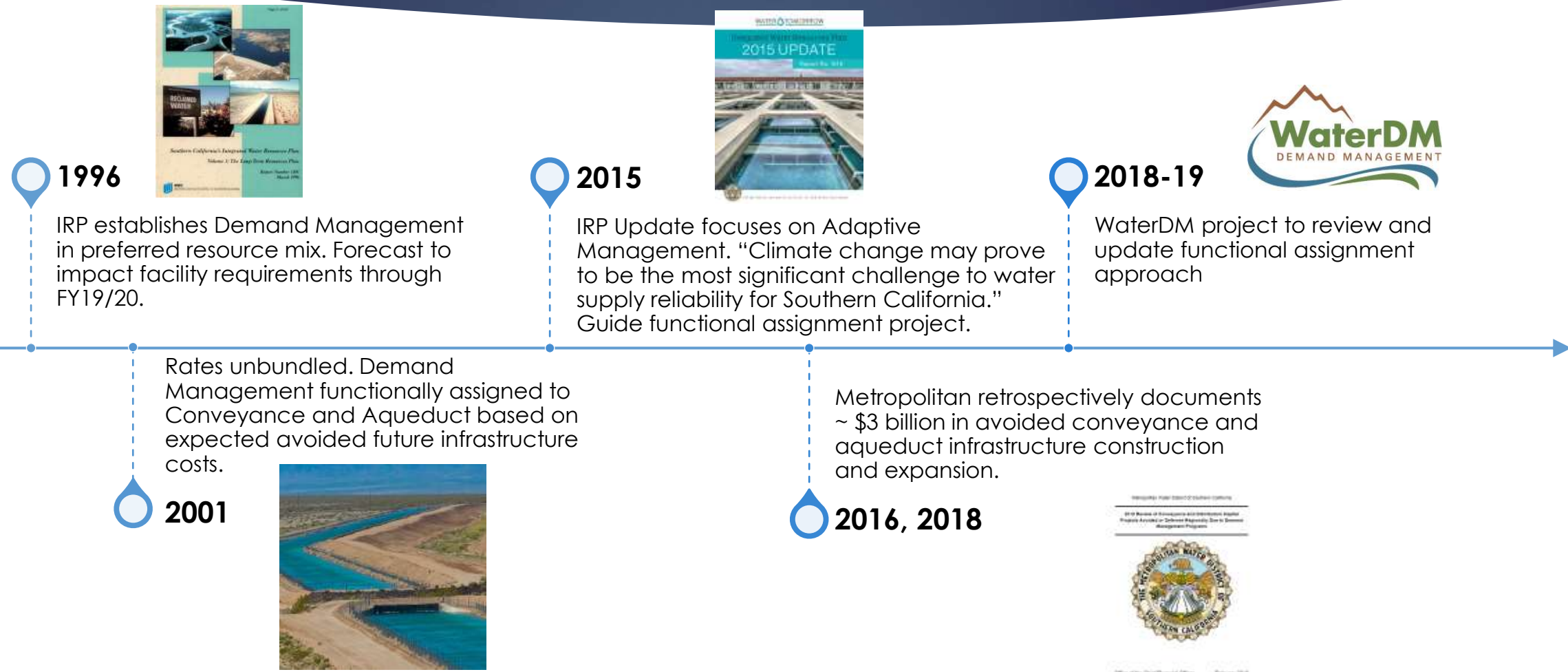
Functional assignment establishes the allocation of the real costs for demand management to the appropriate cost components, in the appropriate proportion.

Adapted from:

AWWA. 2017. Water Rates. M1, Seventh Edition, American Water Works Association. Denver Colorado.

Bonbright, J. C., A.L. Danielson, D.R. Kamerschen. 1988. *Principles of Public Utility Rates*. Public Utilities Report Arlington VA.

# History of Metropolitan Functional Assignment for Demand Management



“Avoided Cost is the marginal cost avoided or saved by choosing one option over another to achieve the same goal.” – AWWA M1, 7th ed.

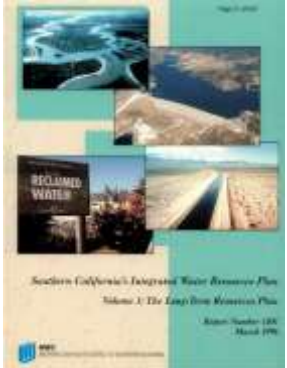
# Demand Management



*spend millions*



1996 IRP



# Infrastructure



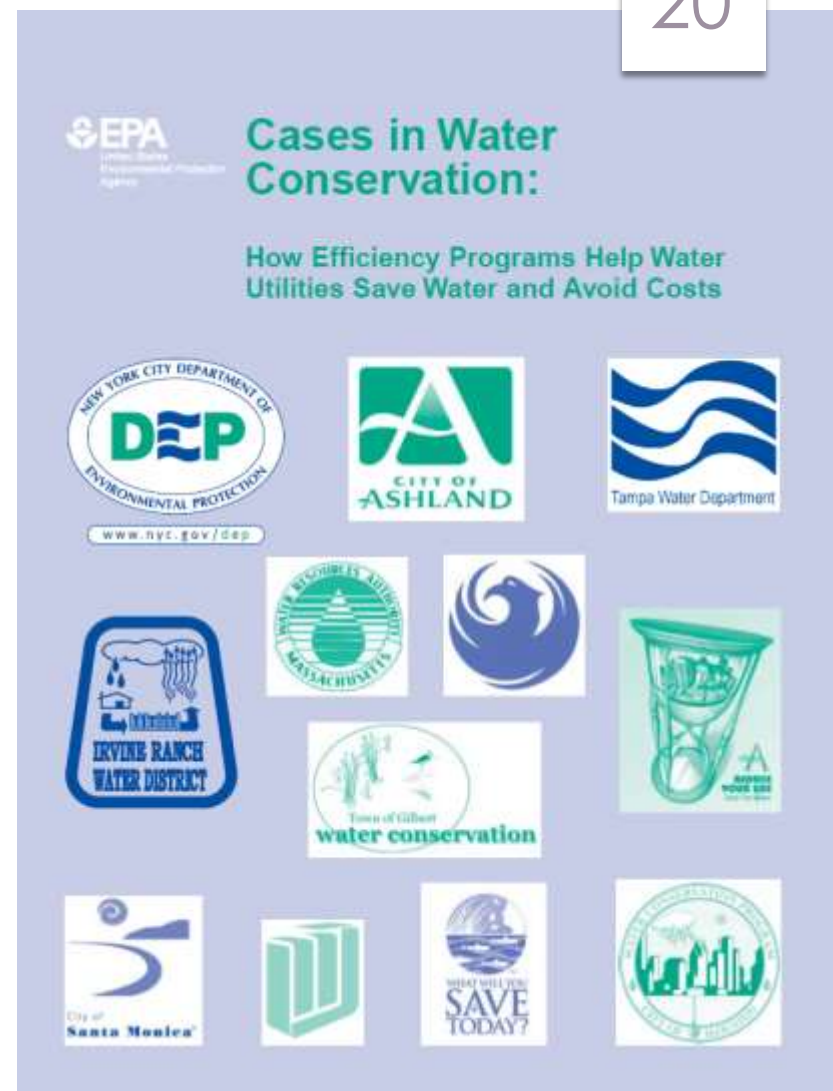
*avoid spending billions*



## EPA – Cases in Water Conservation

- ▶ Documents 17 water conservation program including Metropolitan.
- ▶ Describes avoided capital and O&M costs from conservation programs from California to New York.
- ▶ “Conservation efforts have considerably reduced the cost estimate of Metropolitan’s capital-improvement.”

U.S. EPA (2002) Cases in Water Conservation: How Efficiency Programs Help Water Utilities Save Water and Avoid Costs. Environmental Protection Agency. Washington, D.C.



# What are Avoided Costs?

An **avoided cost** is a cost saving, but the savings anticipates *future* spending.

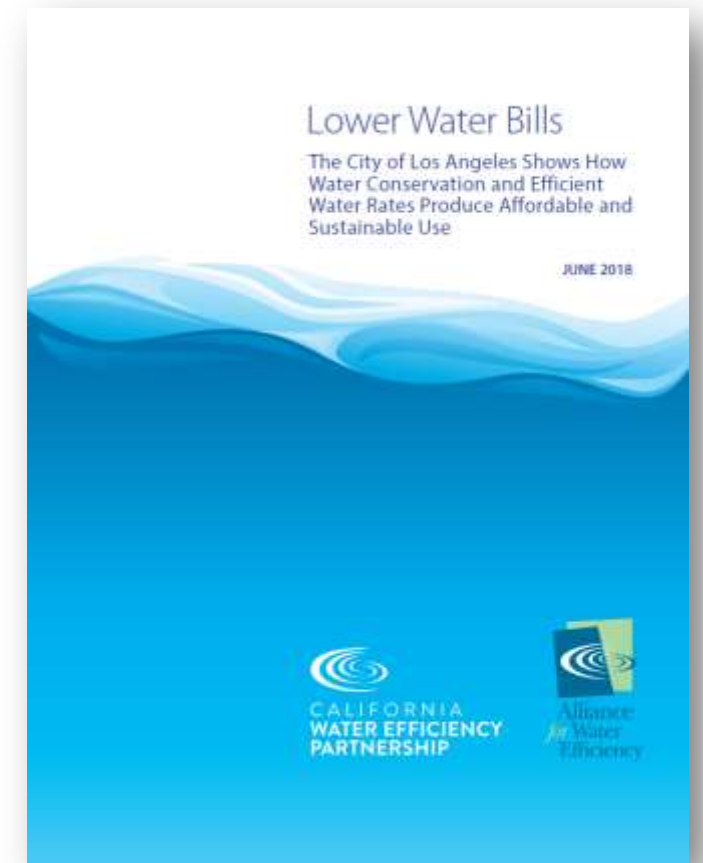
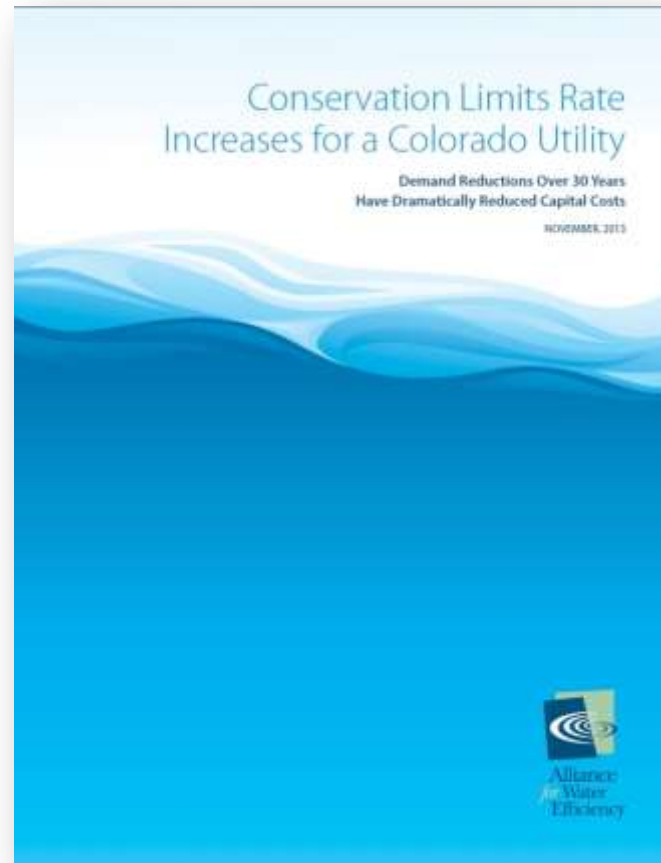
Examples:

Spending money for preventative maintenance on a car—such as regular oil changes—**avoids the future cost** of replacing an engine.

Metropolitan's annual \$80 – 100 million demand management expenditures across the Southern California — **avoids higher future spending** that would be associated with providing more water including capital and operations and maintenance costs.

# Recent Avoided Cost Studies

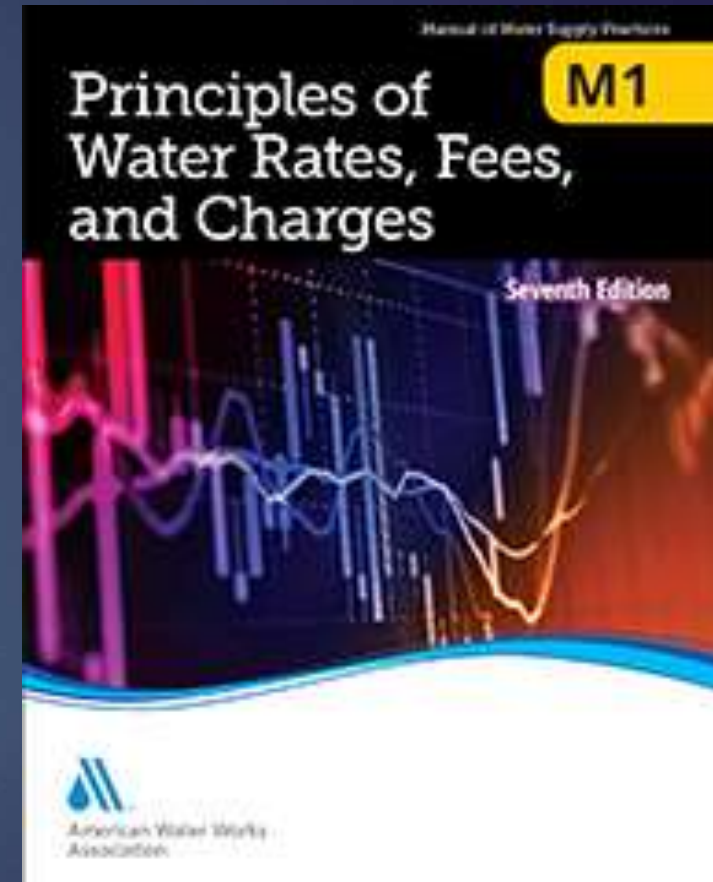
- ▶ LADWP
- ▶ Westminster, CO
- ▶ Tucson, AZ,
- ▶ Gilbert, AZ





“Avoided costs can be considered in establishing cost allocations.”

– AWWA M1, 7<sup>th</sup> ed.



# Functional Assignment of Demand Management Costs

## Real Costs



Method of assignment to functional categories through analysis of avoided costs.

## Functional Categories

- Supply %
- Aqueduct & Conveyance %
- Storage %
- Distribution %
- Treatment %
- Hydropower %

The functional categories are listed on the right side of the slide. Each category is accompanied by a small rectangular image: Supply % (a landscape with mountains and a lake), Aqueduct & Conveyance % (a wide river or aqueduct), Storage % (a large reservoir), Distribution % (a canal or pipeline), Treatment % (a water treatment facility), and Hydropower % (a pipeline or dam structure).

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