Los Angeles Department of Water & Power

Sustainable Water Future for the City of Los Angeles

National Research Council

Pathways to Urban Sustainability: Challenges & Opportunities

April 29, 2015

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Los Angeles Department of Water & Power

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Continued Planning and Resource Development Transformed LA

1913

1st Los Angeles Aqueduct Completed

1930's and 1950's

In Partnership with MWD, LADWP Helped Fund the Colorado River Aqueduct and State Water Project

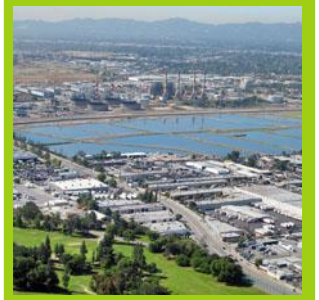
1970

2nd Los Angeles Aqueduct Completed

1979

Delivery of Recycled Water Commenced

2008



Watershed Management Group Created

1900 | 1910 | 1920 | 1930 | 1940 | 1950 | 1960 | 1970 | 1980 | 1990 | 2000 | 2010

Pre-1900's

Pueblo Rights to San Fernando Basin Reaffirmed in 1979

1928

Joined Metropolitan Water District

1977

Water Conservation Program Initiated

2006

Integrated Resources Plan Completed

2012

Recycled Water Master Planning

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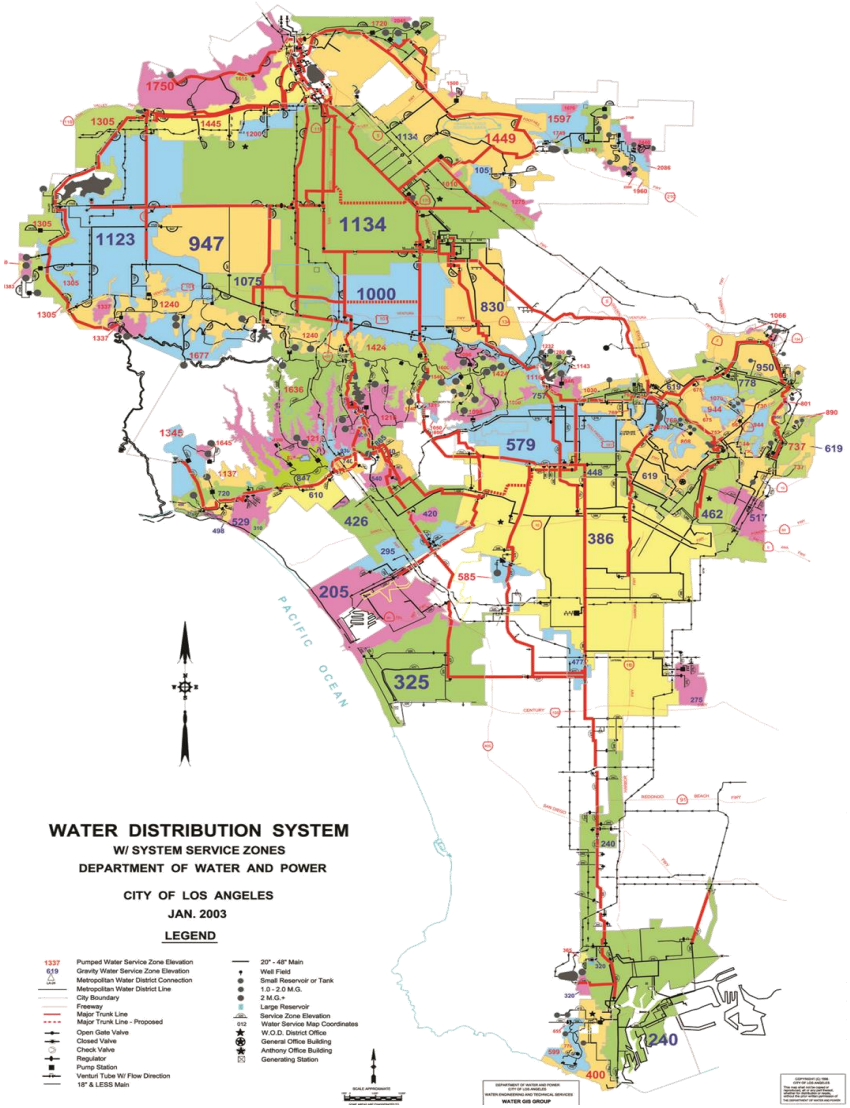
LADWP Today



- Service area (473 square miles)
- Provide Water and Power to approximately 4 million people every day
- Over 494 million gallons of water delivered per day – 553,900 acre-feet per year
- Provide over 77 million kilo-watt hours of electricity on typical day (double on hot summer days) – 6100 MW peak load

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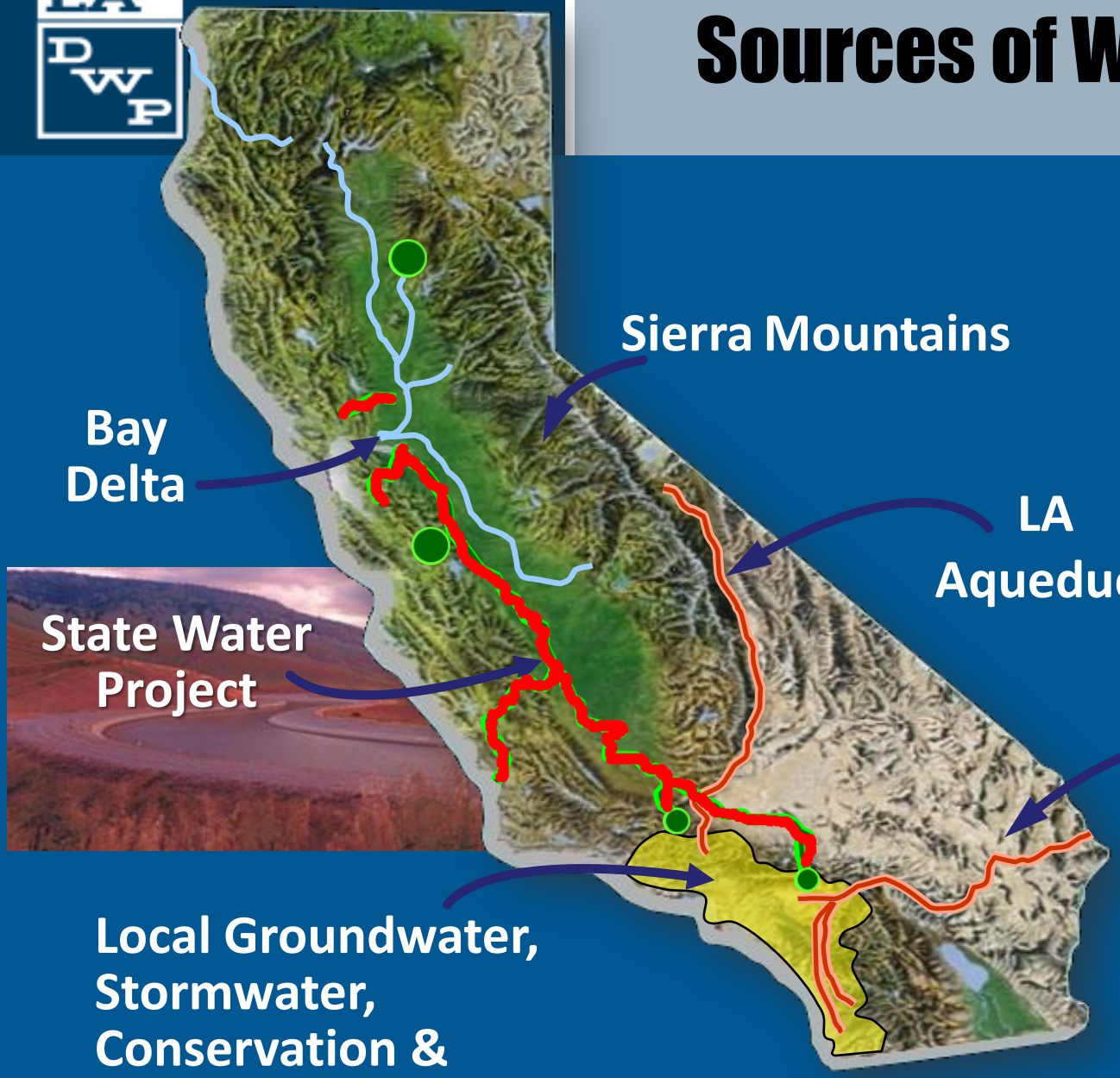
Water System Overview

Our Water System infrastructure:

- About 697,100 water service accounts
- About 7,260 miles of distribution mains
- 114 local tanks / reservoirs
- 9 LAA reservoirs
- 88 pump stations
- 421 regulator stations
- 23 chlorination stations
- 7 fluoridation stations
- 60,400 fire hydrants
- Advanced water treatment facility uses ozone as disinfectant

Sources of Water Supply



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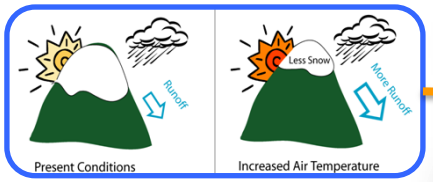
Water Supply Challenges

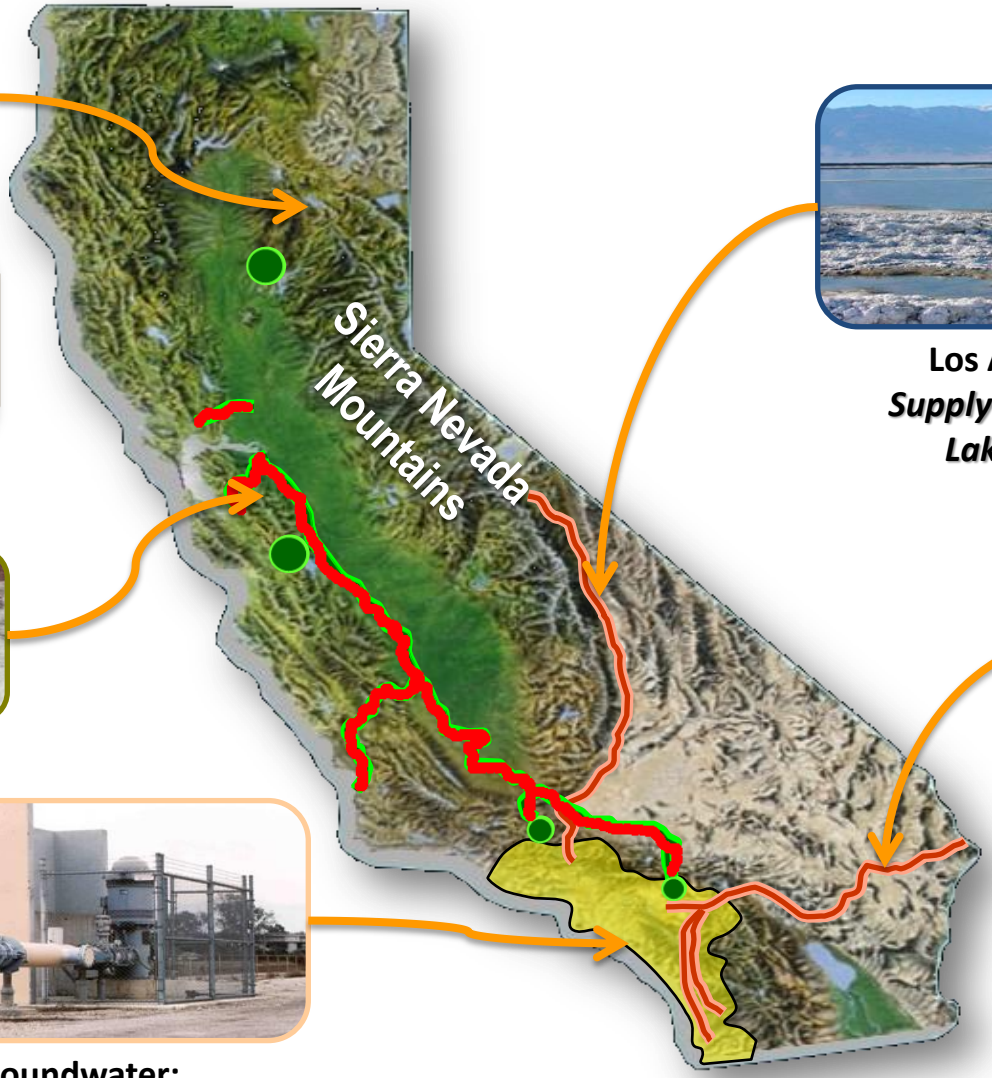


Climate Change

Seismic Risk to Imported Supplies

Bay-Delta Uncertainty

Local Groundwater:
Contamination in the San Fernando Basin



Los Angeles Aqueduct:
Supply reduction due to Owens Lake dust mitigation

Colorado River Aqueduct

Rising MWD Water Costs

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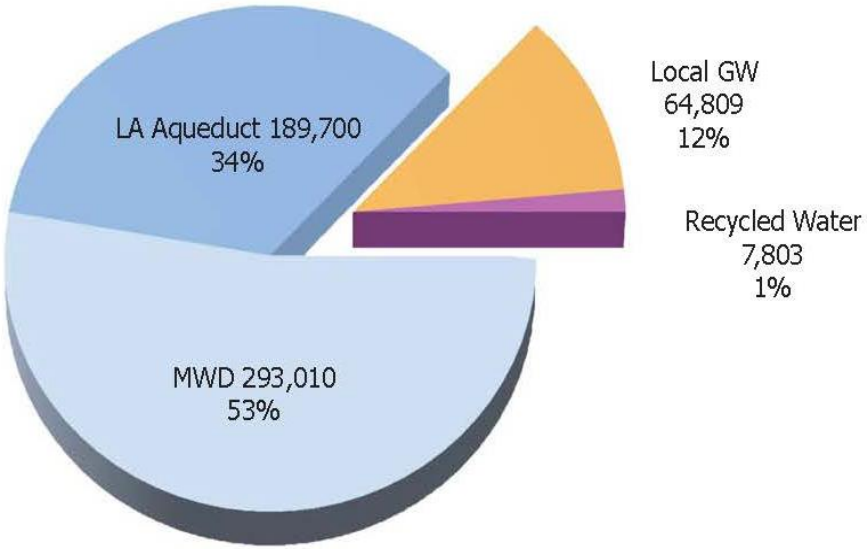
Water Supply Reliability

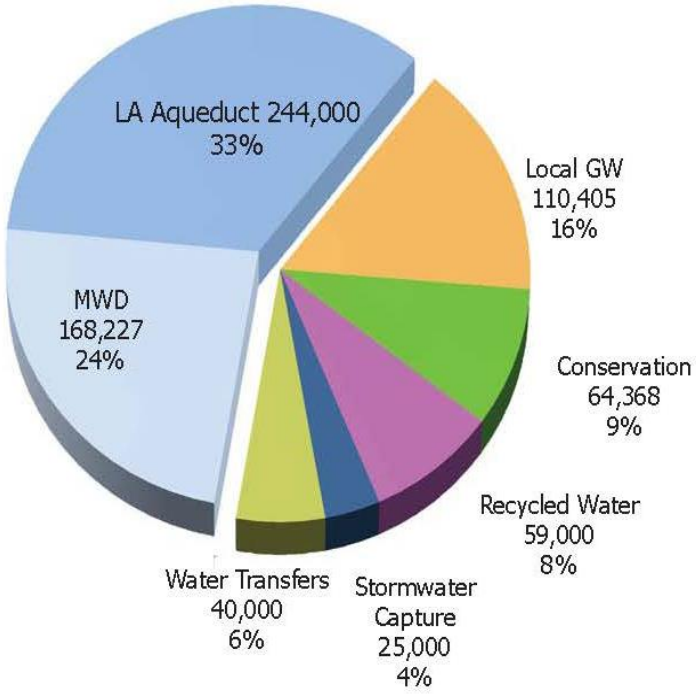
Today

FYE 2010 - 2014 Average
Total: 553,876 AFY



Future*

Fiscal Year 2034 - 2035
Total: 711,000 AFY



***Estimate from the 2010 Urban Water Management Plan**

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Record Dry Conditions

- **CY 2013**
  Driest on Record
- **Jan 2014**
  Lowest Snowpack
- **WY 2014**
  4th Lowest Runoff
- **2014 Temps**
  Record High
- **April 2015**
  Lowest statewide snowpack

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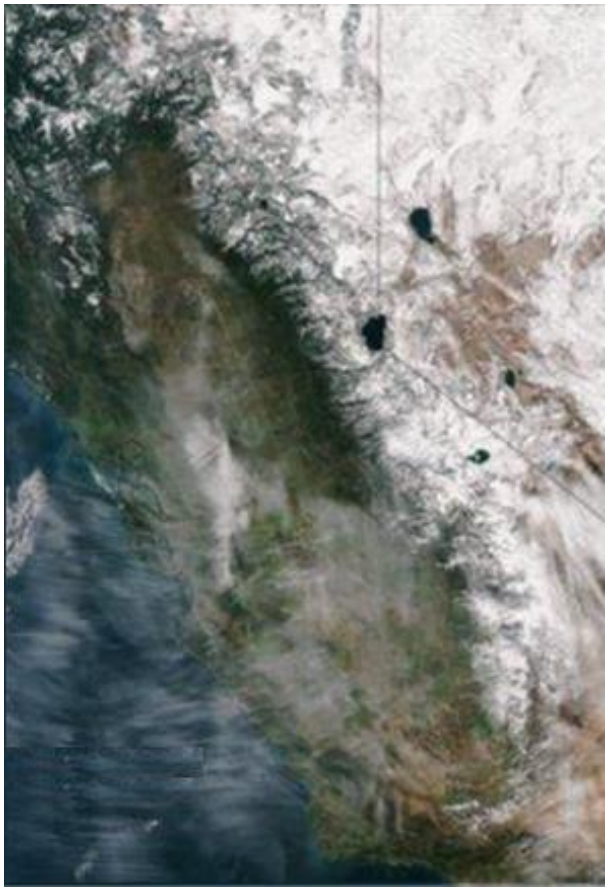
Drought Effects on Sierra Snowpack

January 2013



January 2014

January 2015

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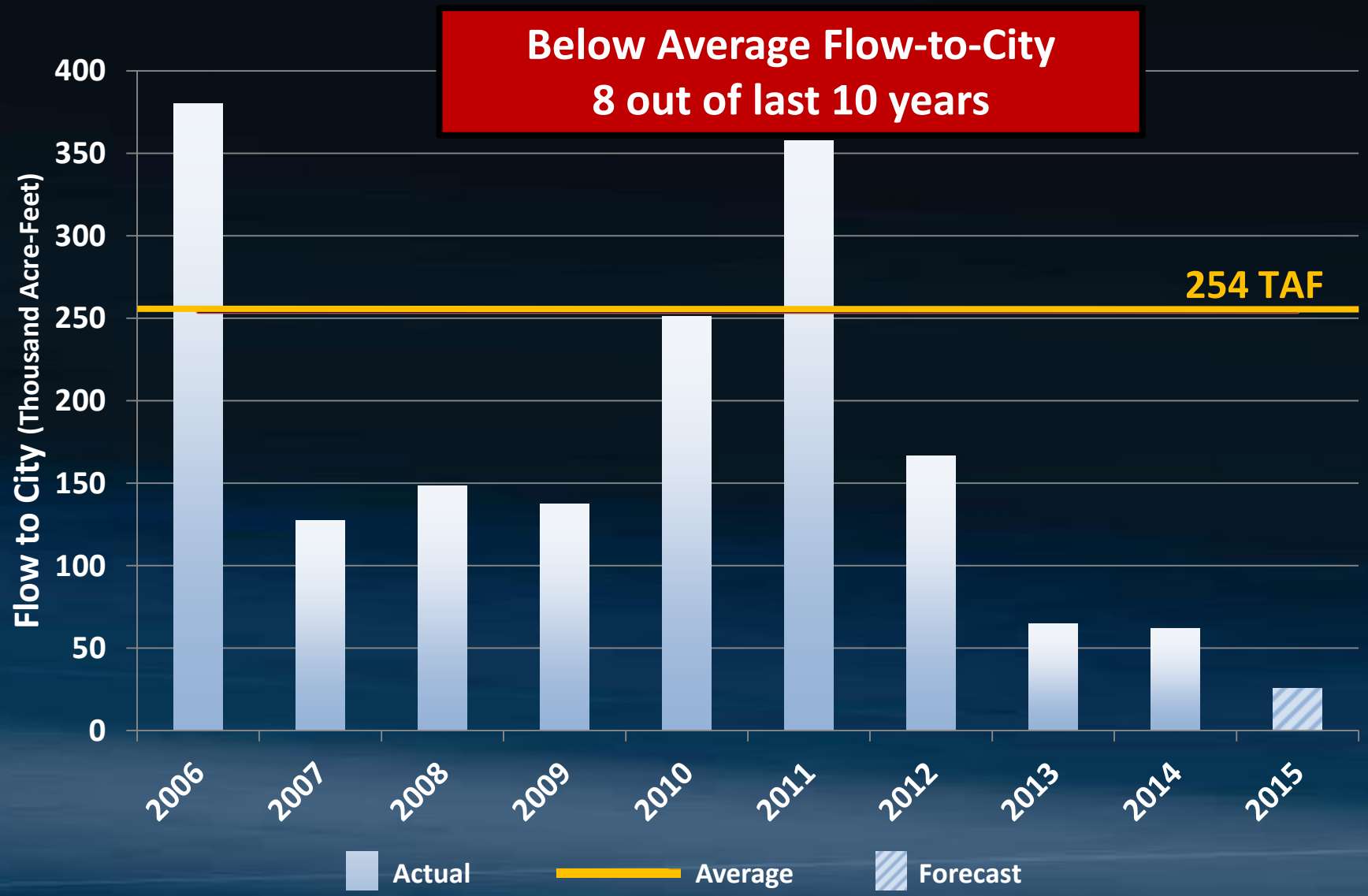
Los Angeles Aqueduct Deliveries



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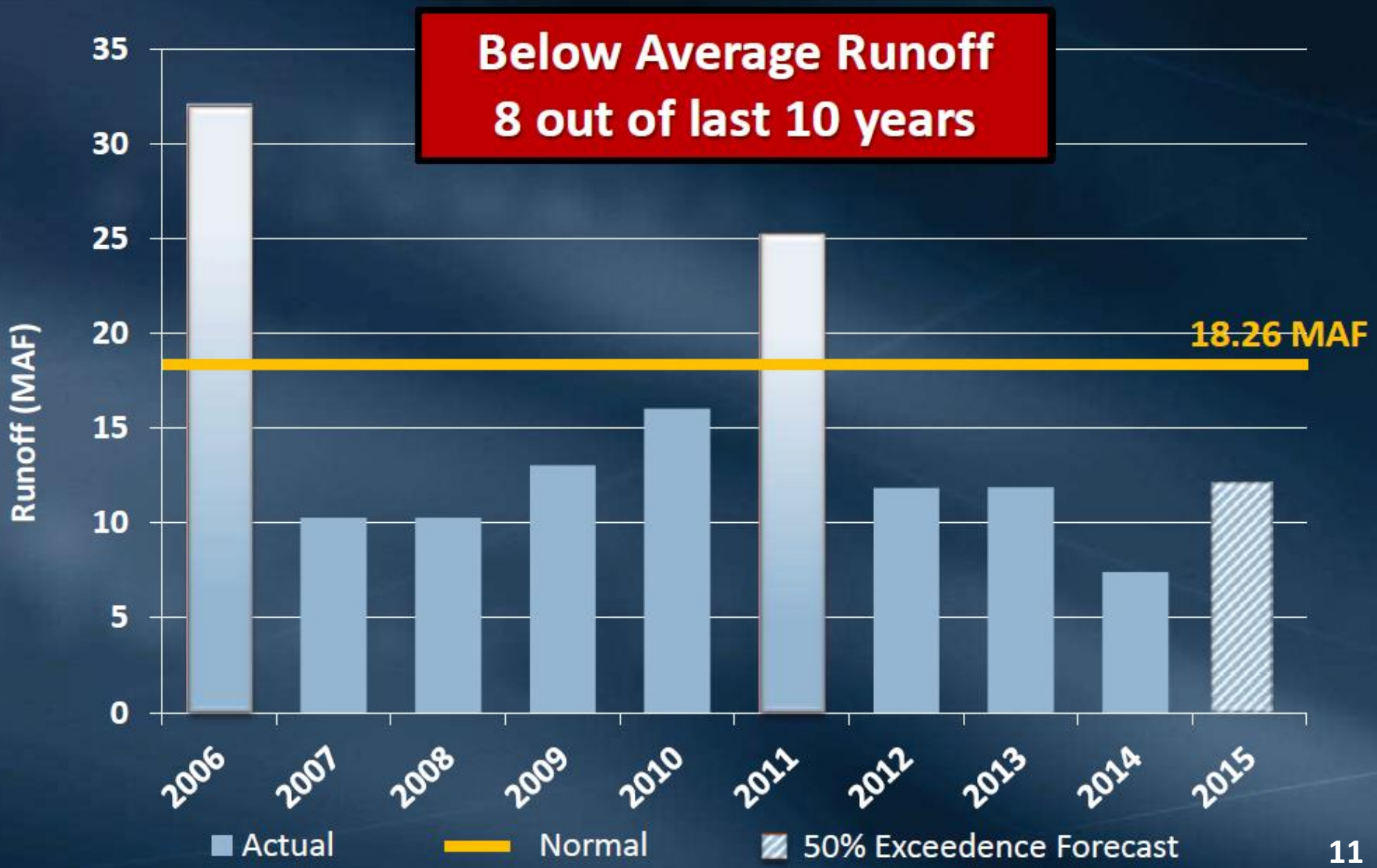
Northern California Runoff



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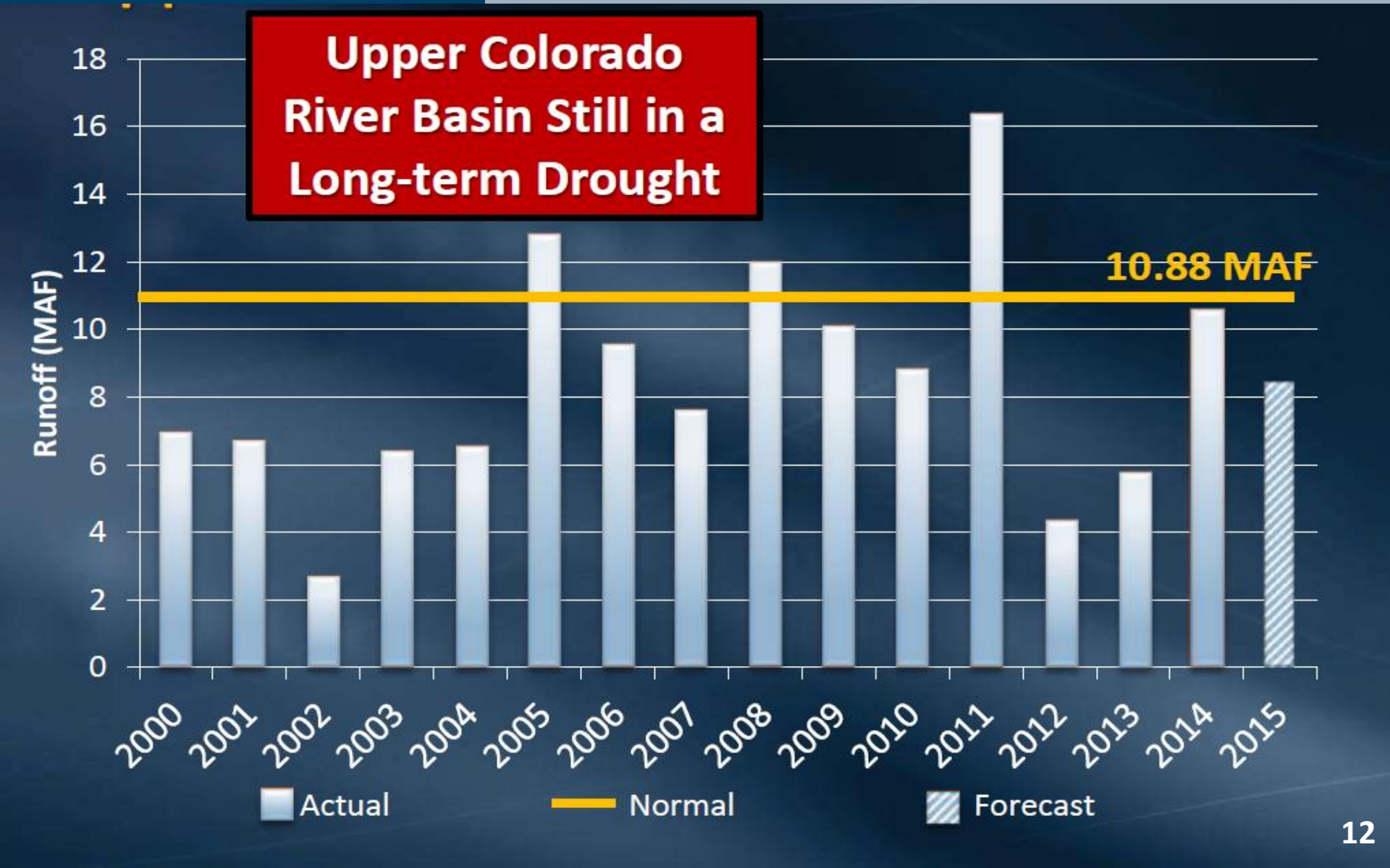
Upper Colorado River Basin Runoff



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Runoff Is Key to Imported Supplies

WE ARE DEPENDENT ON RAINFALL & SNOW FOR OUR MOST IMPORTANT LIFE SUSTAINING SUBSTANCE

WATER

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Mayor's Executive Directive 5

- Reduce water use 20% by 2017
- Reduce purchased imported water 50% by 2024
- Create integrated water strategy

Increased Reliability

More Sustainable

Provide Local Jobs

Reduce costs

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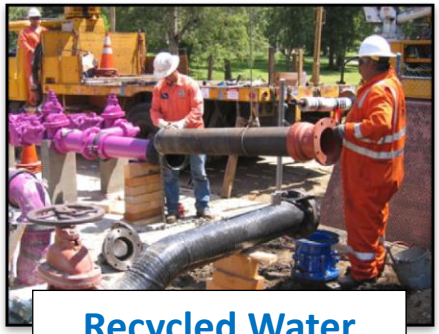
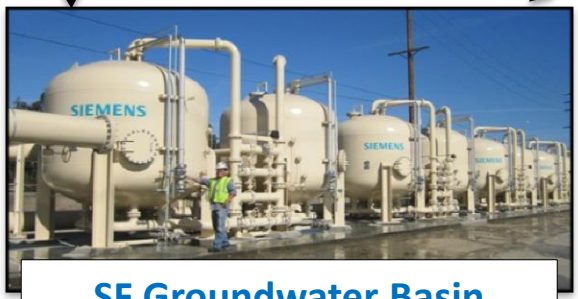
Long Term Strategy for Water Supply Reliability



Recycled Water

Stormwater Capture

Water Conservation



SF Groundwater Basin Remediation

Local Water Supply Reliability

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Stormwater Capture Projects

Dam Improvements

Centralized

CAPTURE

Distributed

Cisterns

Spreading Basins

Rain Gardens

Rain Barrels

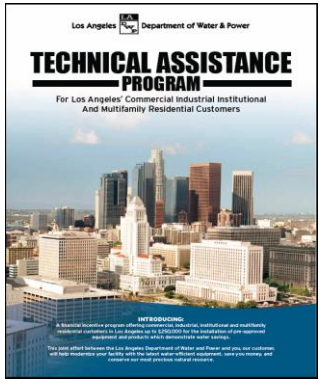
Water Conservation & Water Use Efficiency

Commercial/Industrial:

- Technical Assistance Program
- CA Friendly Landscape

Residential:

CA Friendly Landscape



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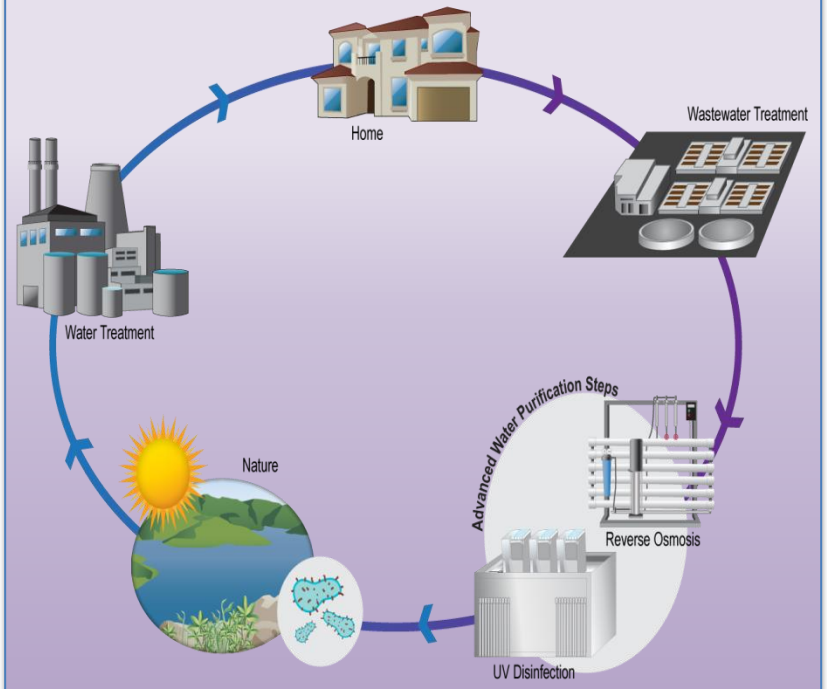
Recycled Water Program

Reuse

Non-Potable Reuse – 29,000 AFY

Indirect Potable Reuse – 30,000 AFY



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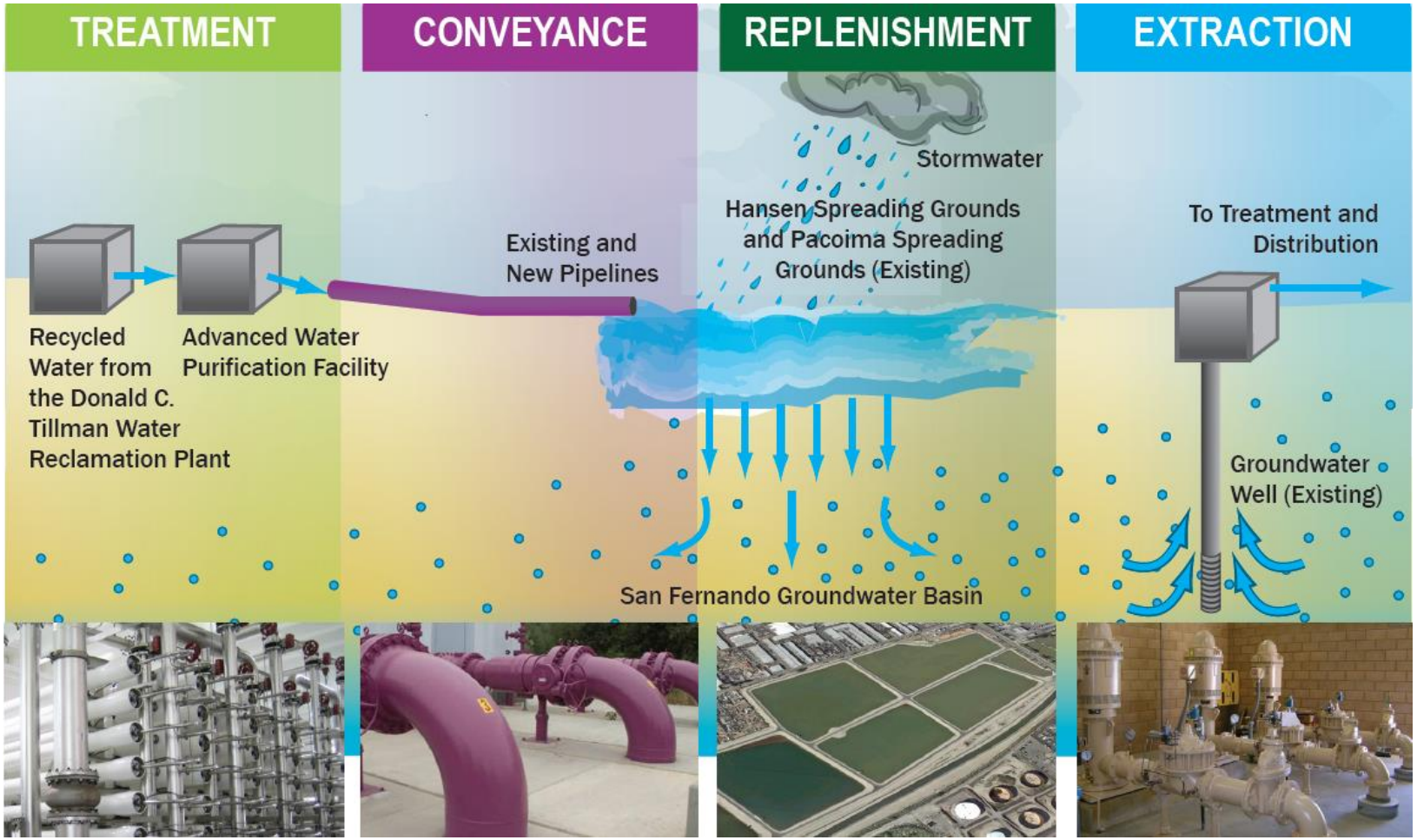
Recycled Water
Advanced Treatment Project



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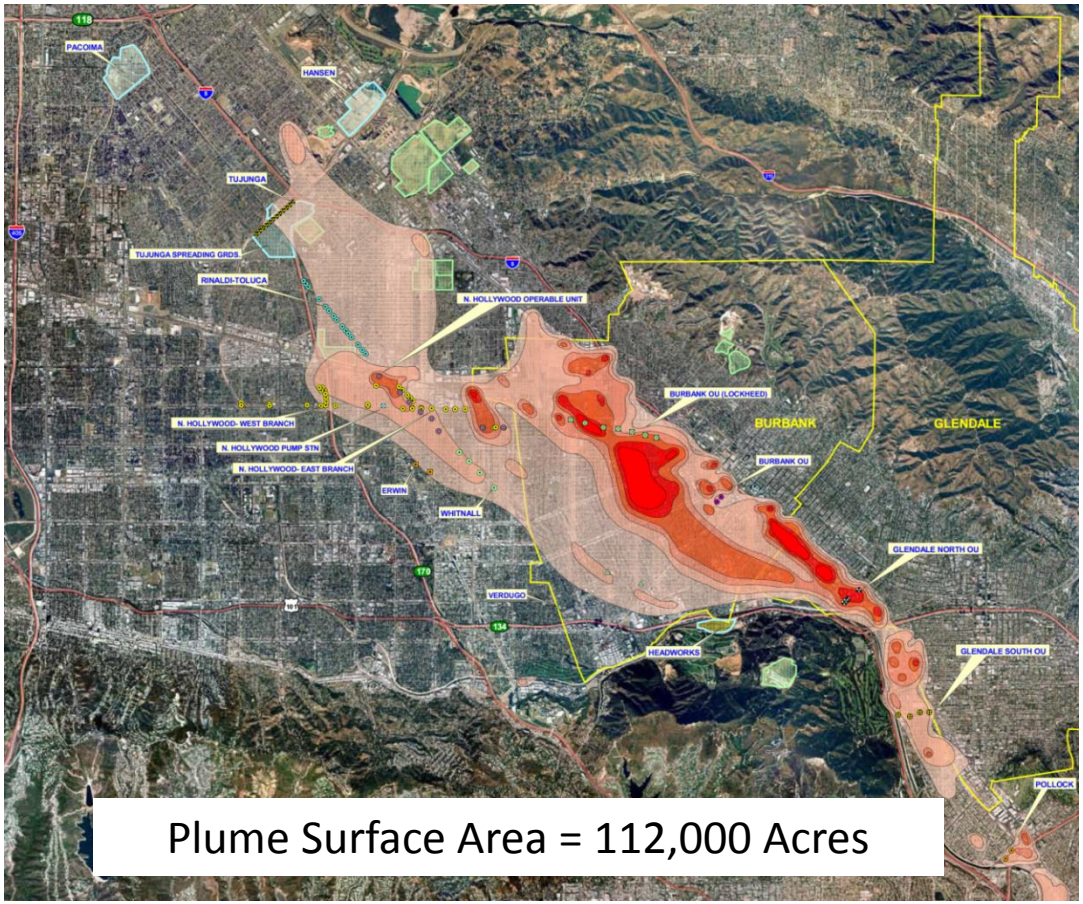
Groundwater Sustainability
Cleanup and Prevention of Contamination



TCE Plume (Source: USEPA, 2005)

- > DL - 5 ug/L (MCL)
- 5.01 - 50 ug/L
- 50.01 - 100 ug/L
- 100.01 - 500 ug/L
- 500.01 - 1000 ug/L
- 1000.01 - 5000 ug/L

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San Fernando Basin Groundwater Remediation

- Remediation of San Fernando Basin will restore the city to its groundwater entitlement of 110,405 AFY
- Prevent total loss of the groundwater resource within the next decade

GAC Treatment at Tujunga Well Fields – Pilot Study


Pollock Water Treatment Facility

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Safe Drinking Water Program

- New regulations and mandates are changing our Water System
- No more open reservoirs
  - USEPA/CDPH: Long Term 2 Surface Water Treatment Rule
- Conversion from chlorine to chloramine
  - USEPA/CDPH: Stage 2 Disinfection By Products Rule
- Owens Lake dust mitigation
  - Great Basin Unified Air Pollution Control District
- 20% conservation & recycling by 2020
  - SBX7-7, Water Conservation Act of 2009

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Infrastructure Investments

- Los Angeles Aqueduct Centennial 2014
- We have an aging water distribution system.
- The average lifespan of a water main is less than 100 years.
- About 700,000 feet of our pipes are older than 100 years.
- With our current budget we can replace our pipelines only once every 275 - 300 years.

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A Strategic Future is a Sustainable Future

- LADWP's Water System continues to provide safe, reliable, and affordable water to its customers for over 100 years.
- Achieving a sustainable future for LA's water supply will require annual investments and actions on a range of supply options over a sustained period of time.
- Investments in local supply development require customers / stakeholders / governing bodies to commit to long-term plans.
- Supplemental supplies still need to be reliable, even if LA is 100 percent successful with plans for local supply development in the future.

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Questions?