Sustainable Water Future for the City of Los Angeles

National Research Council
Pathways to Urban Sustainability: Challenges & Opportunities

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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


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
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
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

- Bay Delta
- Sierra Mountains
- State Water Project
- LA Aqueduct
- Colorado River Aqueduct
- Local Groundwater, Stormwater, Conservation & Recycling
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
Water Supply Reliability

**Today**
FYE 2010 - 2014 Average
Total: 553,876 AFY

- LA Aqueduct: 189,700 (34%)
- MWD: 293,010 (53%)
- Local GW: 64,809 (12%)
- Recycled Water: 7,803 (1%)

**Future***
Fiscal Year 2034 - 2035
Total: 711,000 AFY

- LA Aqueduct: 244,000 (33%)
- MWD: 168,227 (24%)
- Local GW: 110,405 (16%)
- Conservation: 64,368 (9%)
- Recycled Water: 59,000 (8%)
- Water Transfers: 40,000 (6%)
- Stormwater Capture: 25,000 (4%)

*Estimate from the 2010 Urban Water Management Plan
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
Drought Effects on Sierra Snowpack

January 2013

January 2014

January 2015
Los Angeles Aqueduct Deliveries

Below Average Flow-to-City
8 out of last 10 years

Flow to City (Thousand Acre-Feet)

- Actual
- Average
- Forecast

Year: 2006 - 2015

2006: 360 TAF
2007: 120 TAF
2008: 150 TAF
2009: 130 TAF
2010: 240 TAF
2011: 350 TAF
2012: 190 TAF
2013: 80 TAF
2014: 70 TAF
2015: 25 TAF

Total: 254 TAF
Northern California Runoff

Below Average Runoff
8 out of last 10 years

Runoff (MAF)


Actual Normal 50% Exceedence Forecast

18.26 MAF
Upper Colorado River Basin Runoff

Upper Colorado River Basin Still in a Long-term Drought

Runoff (MAF)


Actual Normal Forecast

10.88 MAF
WE ARE DEPENDENT ON RAINFALL & SNOW FOR OUR MOST IMPORTANT LIFE SUSTAINING SUBSTANCE WATER
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
Long Term Strategy for Water Supply Reliability

- Recycled Water
- Stormwater Capture
- SF Groundwater Basin Remediation
- Water Conservation

Local Water Supply Reliability
Stormwater Capture Projects

- Dam Improvements
- Centralized
- Spreading Basins
- Rain Gardens
- Rain Barrels
- Cisterns
- Distributed
Commercial/Industrial:

• Technical Assistance Program
• CA Friendly Landscape

Residential:
CA Friendly Landscape
Recycled Water Program

Reuse

Non-Potable Reuse – 29,000 AFY

Indirect Potable Reuse – 30,000 AFY
Recycled Water Advanced Treatment Project

**TREATMENT**
- Recycled Water from the Donald C. Tillman Water Reclamation Plant
- Advanced Water Purification Facility

**CONVEYANCE**
- Existing and New Pipelines

**REPLENISHMENT**
- Stormwater
- Hansen Spreading Grounds and Pacoima Spreading Grounds (Existing)

**EXTRACTION**
- San Fernando Groundwater Basin
- To Treatment and Distribution
- Groundwater Well (Existing)
Groundwater Sustainability
Cleanup and Prevention of Contamination

Plume Surface Area = 112,000 Acres

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
• 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
• 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
• 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.
• 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.
Questions?