Climate Resilience Expert Panel

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Metropolitan Water District of Southern California's Water Shortage Contingency Plan

Southern California Association of Governments Energy and Environment Committee

July 6, 2023

Metropolitan Water District of Southern California

Nation's largest wholesale water provider

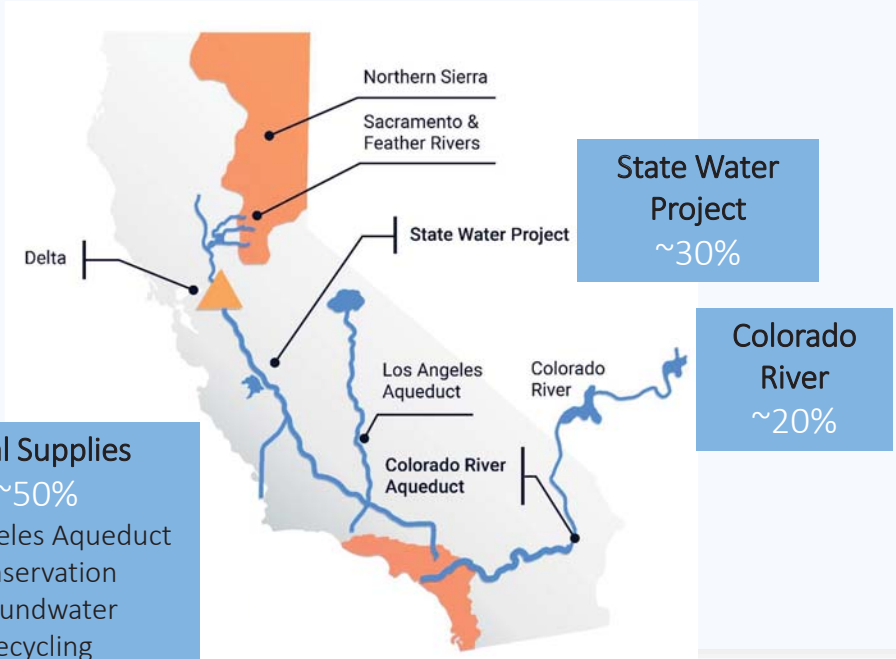
Service area:
19 million people,
5,200 square miles,
parts of six counties

26 member agencies

Supports $1.7 trillion regional economy (ranked 12th in the world)

Service area includes
- 152 cities
- 89 unincorporated communities
- 250 retail water suppliers

Securing Water for Southern California

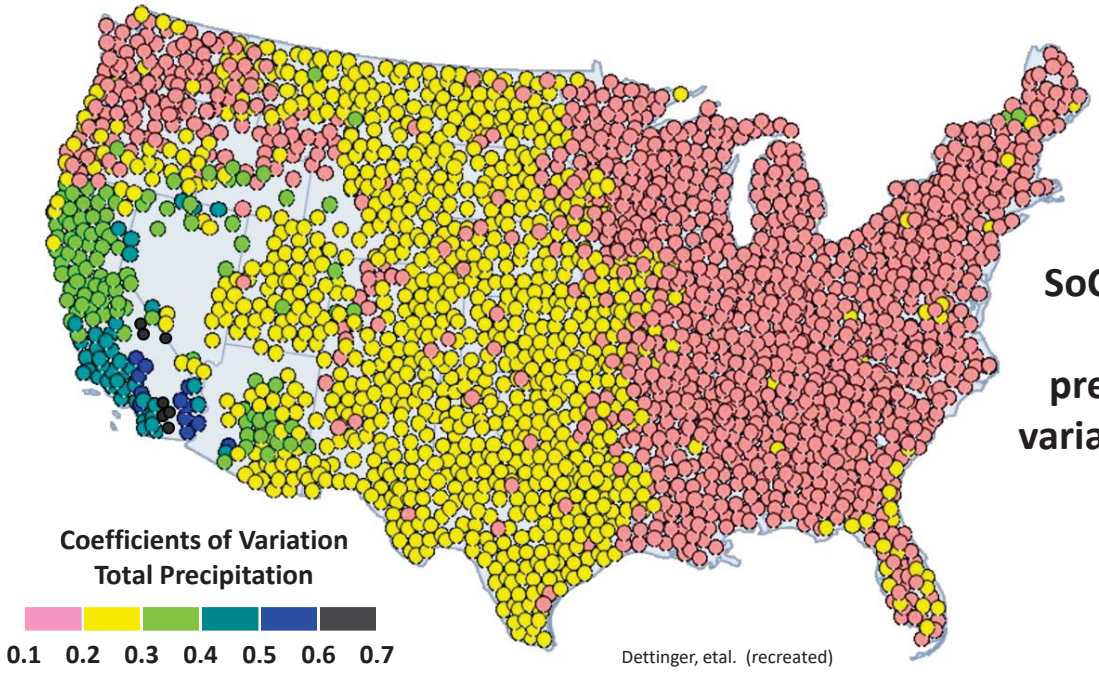


State Water Project
~30%

Colorado River
~20%

Local Supplies
~50%
Los Angeles Aqueduct
Conservation
Groundwater
Recycling
Desalination

Southern California Water Reliability Challenges



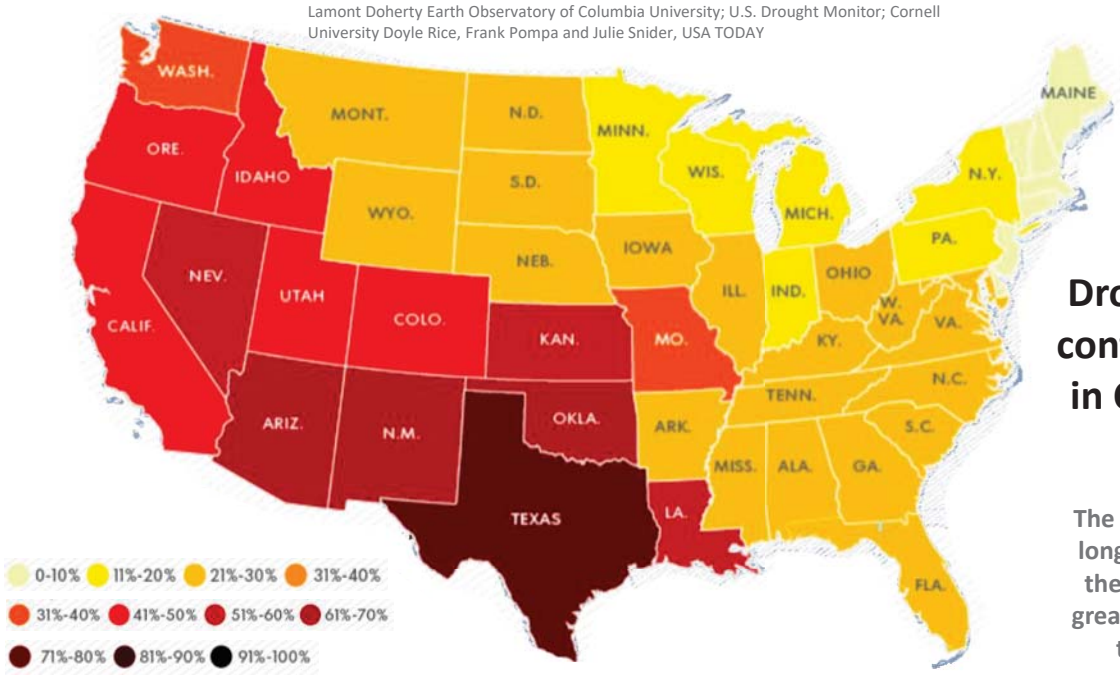
Dettinger, etal. (recreated)

SoCal has the highest precipitation variability in the nation

Southern California Water Reliability Challenges

California has a population/ precipitation mismatch

Southern California Water Reliability Challenges

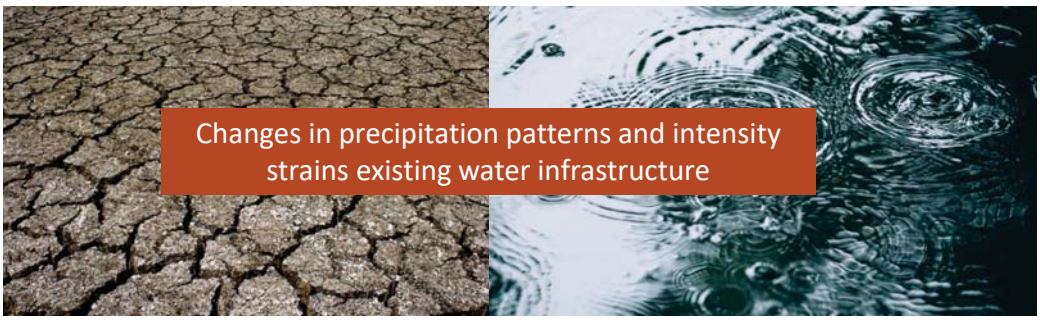


Lamont Doherty Earth Observatory of Columbia University; U.S. Drought Monitor; Cornell University Doyle Rice, Frank Pompa and Julie Snider, USA TODAY

Droughts will continue to be in California's future

The risk of a decade-long drought within the next century is greatest in Texas and the Southwest

Challenges of Climate Change



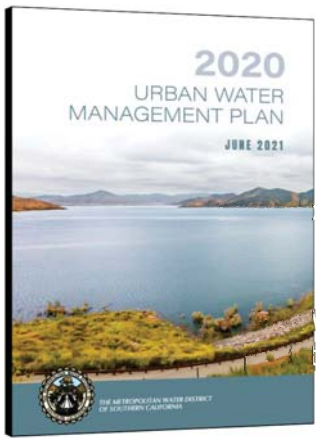
Changes in precipitation patterns and intensity strains existing water infrastructure

Future expectations:

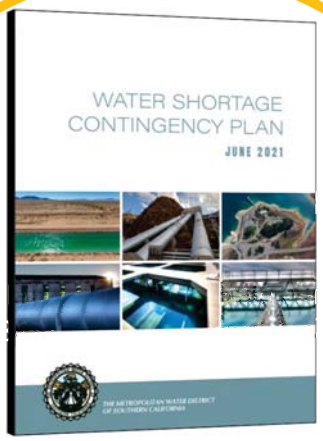
- Warmer temperatures and sea level rise
- Flashier storms and more extreme weather
- Less snowpack/more rain

Ability to move and store water will become even more important

Planning for Future Reliability



Urban Water Management Plan
Assessment of water service reliability



Water Shortage Contingency Plan
Action plan for droughts and shortages

Annual Regional Progress Report to Legislature
Investments in regional self-sufficiency

All informed by Metropolitan's Integrated Water Resources Plan, Metropolitan's adaptive strategy to identify water resources, needs, and opportunities for the region

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What is the Water Shortage Contingency Plan?

- Requirement for urban water agencies under the 2018 Water Conservation as a California Way of Life Legislation
- Included in the 2020 Urban Water Management Plans, but also a standalone document
- 10 required elements
  - 8 apply to water wholesalers

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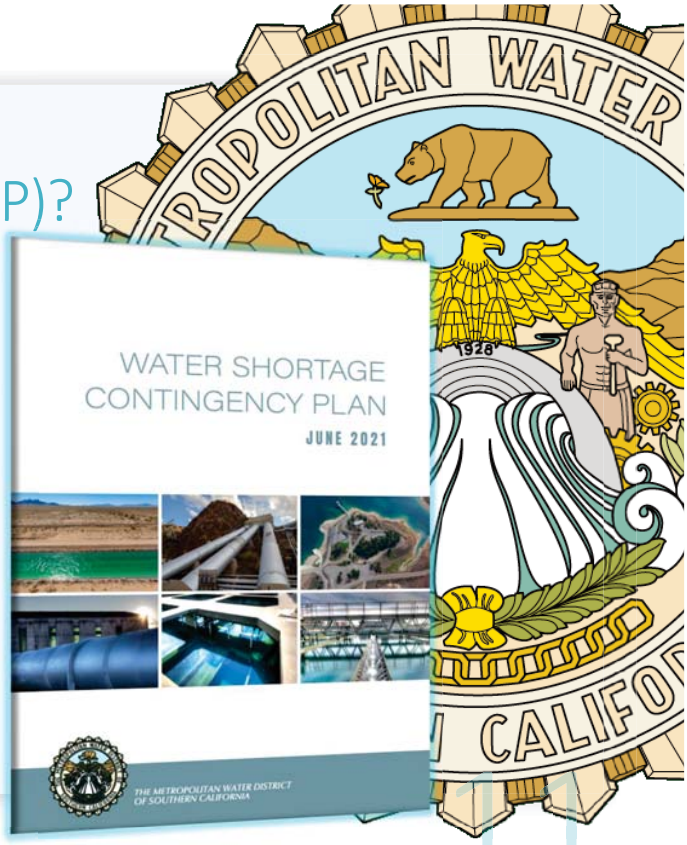
What is in Metropolitan's Water Shortage Contingency Plan (WSCP)?

- Documentation of existing planning processes and concepts for purpose of Annual Reporting
- Communication protocols for communicating shortages and shortage responses
- Consistent other planning documents



Metropolitan's Approach to WSCP Shortage Planning

- Compliance with State Requirements
  - Standardized reporting, calculations, transparency, evidence of due diligence
  - Annual Assessment for a next dry fiscal year scenario to the State serves as a single snapshot, but Metropolitan continues to respond to changing conditions
- Actively, adaptively anticipate and balance real-world supplies and demands
  - Practical application of Metropolitan's portfolio of plans, supplies, storage programs, and system facilities
  - WSCP framework useful for what-if scenario planning

Calculating WSCP Shortages

ASSUMED IMPORTED WATER DEMANDS

Projections of imported water needs for Southern CA

\-

ASSUMED CORE SUPPLIES

Projections of imported supplies from State Water Project and Colorado River

=

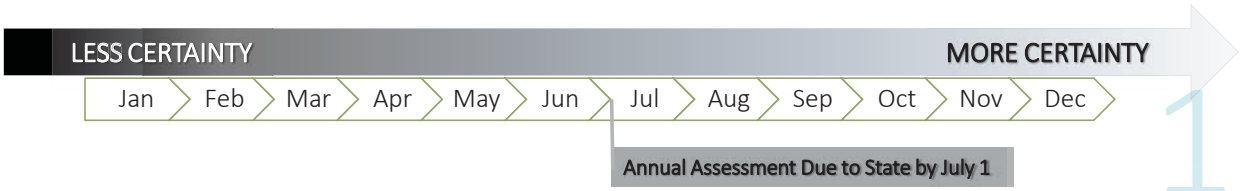
WSCP SHORTAGE FOR AN ASSUMED NEXT DRY FISCAL YEAR

Difference Between Demands and Core Supplies

WSCP Shortage To Be Met with "Shortage Response Actions"
(Supply Augmentation, Demand Reduction, Operational Flexibility)

Iterative Process

Each calendar year begins with preliminary projections and estimates
Data and assumptions are continually refined and improved throughout the year



WSCP Shortage Levels and Responses

Level	Percentage	Shortage Response Actions*	
1	Up to 10%	<u>Supply Augmentation</u>: • Take from Storage • Use Flexible Supplies (transfers) <u>Operational Flexibility:</u> *...as appropriate:* • Adjust maintenance schedule • Adjust distribution system load	<u>Demand Reduction:</u> • Implement Communication Plan *...as appropriate:* • Implement conservation Outreach Campaign • Implement water supply limits through Water Supply Allocation Plan or other emergency program
2	Up to 20%	Same tools as above, combination and intensity depending on situation	
3	Up to 30%	Same tools as above, combination and intensity depending on situation	
4	Up to 40%	Same tools as above, combination and intensity depending on situation	
5	Up to 50%	Same tools as above, combination and intensity depending on situation	
6	More than 50%	Same tools as above, combination and intensity depending on situation	

*Actions taken will be based on resource and operational conditions throughout the year.

To determine specific actions that would be taken at each level, Metropolitan will evaluate conditions specific to cost, timing, distribution needs and capabilities, and other variables that include SWP allocation, Colorado River conditions, take capacities, and storage balances.

WSCP Shortage Response Effectiveness

Level	Percentage	Shortage Response Actions	
1	Up to 10%	• Take from Storage • Execute Flexible Supplies • Implement Demand Reduction • Implement Water Supply Allocation Plan (WSAP) or other program to assign limits on remaining wholesale supply	• 0 to 100% met by Storage • 0 to 100% met by Flexible Supplies • 0 to 20% of total retail water use met by voluntary Demand Reduction • 0 to 50% of total base wholesale demand met by WSAP supply allocation
2	10% to 20%		
3	20% to 30%		
4	30% to 40%		
5	40% to 50%		
6	More than 50%		

Level	Percentage
1	Up to 10%
2	Up to 20%
3	Up to 30%
4	Up to 40%
5	Up to 50%
6	More than 50%

WSCP Shortage Level Determination

The WSCP shortage level percentage is calculated by dividing the difference between core supplies and unconstrained demand by unconstrained demand

[(Demand – Supply) ÷ (Demand)] * 100%

Level	Percentage
1	Up to 10%
2	Up to 20%
3	Up to 30%
4	Up to 40%
5	Up to 50%
6	More than 50%

WSCP Shortage Level Is **Just a Number**

Shortage Levels 1-6 do not signify impacts to end users, which depend on availability of Shortage Response Actions such as water in storage

Example: A Level 6 shortage might be met entirely with storage if storage is full and accessible to demands, but Level 1 could be a problem if storage is depleted

Metropolitan's WSCP Annual Water Supply and Demand Assessment Procedure

- Assessment due to the California Department of Water Resources by July 1st
  - Based on a "Next Dry Year" Scenario (Upcoming Fiscal Year, July-June)
  - Calculates the WSCP "Shortage Level" for the next dry fiscal year scenario
  - Reports on the Shortage Response Actions to meet the WSCP Shortage
- Based on best available information
- Stored water and flexible on-call supplies such as transfers are not considered Core Supply but Shortage Response Actions
  - Implication: Metropolitan will always be in a "WSCP shortage" in the Annual Assessment's next dry year scenario, but Southern California users are only affected if there will not be enough available storage and flexible supplies to meet imported water demands

Results from Metropolitan's Recent WSCP Annual Assessments

2022 ANNUAL ASSESSMENT
(for upcoming FY 2022-23)

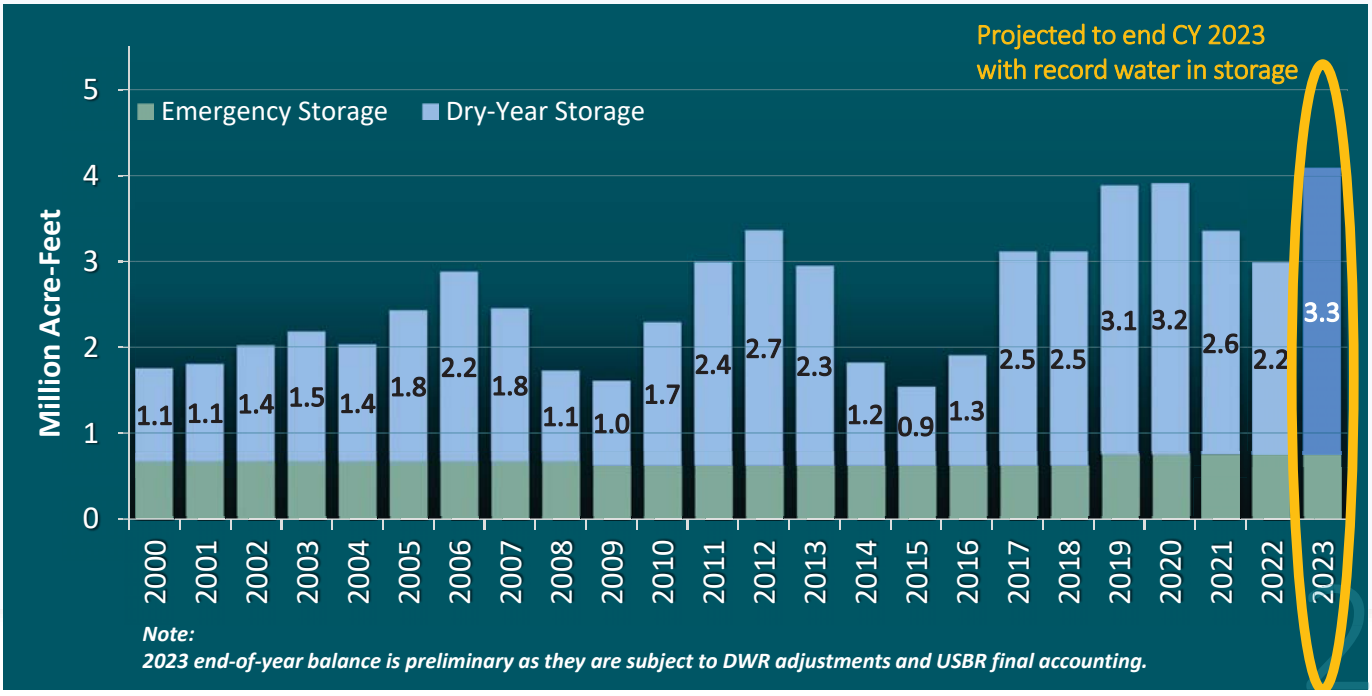
- Context: 5% SWP Table A Allocation in 2022; Assumed 6% allocation in 2023
- **43% WSCP Shortage before actions**
- **WSCP Shortage Level 5**
- Hypothetical gap is met with a combination of mandatory conservation restrictions in areas dependent on SWP water, water transfers, and withdrawals from storage reserves

2023 ANNUAL ASSESSMENT
(for upcoming FY 2023-24)

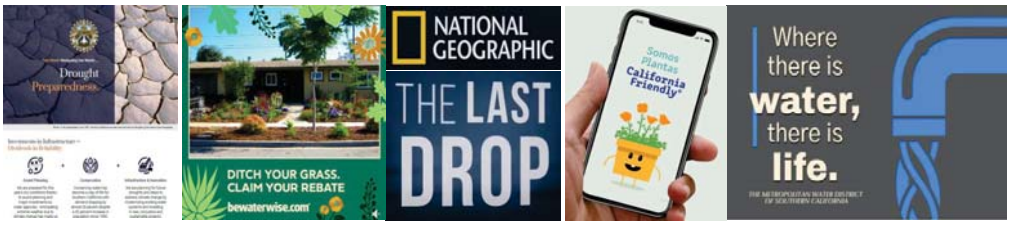
- Context: 100% SWP Table Allocation in 2023 Assumed 6% allocation in 2024
- **17% WSCP Shortage before actions**
- **WSCP Shortage Level 2**
- Hypothetical gap is met with a combination of water transfers and withdrawals from storage reserves
  (No mandatory conservation)

Metropolitan Projecting to Refill Storage Accounts

End-of-Year Balances



Top Things to Know about Water Shortage Contingency Planning



- Major known uncertainties in annual water supplies
- Dynamic and evolving situations mean that best estimates keep changing
- A prescriptive plan is less useful than an adaptive strategy
- Storage is vital to Southern California's reliability strategy
- Spatial and accessibility considerations are critical to ensure that all demands can be met with available supplies in a vast service area

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Questions? Comments?

FOR MORE INFORMATION, PLEASE VISIT WWW.CONNECTSOCAL.ORG.