

# Strengthening California's Drought Resilience

*Supplemental information to support CUWA's December 2021 issue brief*



CALIFORNIA URBAN WATER AGENCIES

In collaboration with:



# CUWA agencies collectively serve two-thirds of the state's population and are committed to providing reliable water supply.

## Who is CUWA?

*Established in 1990, California Urban Water Agencies (CUWA) is a non-profit corporation representing the collective voice of **11** major urban water agencies that serve **two-thirds** of the state's population and power the bulk of the state's **\$3 trillion** economy.*

*CUWA agencies are committed to providing reliable water supplies for the state's current and future urban water needs in a cost-effective manner for the public, the environment, and the economy.*



## MEMBER AGENCIES

Alameda County Water District  
City of Fresno  
City of San Diego Public Utilities Department  
Contra Costa Water District  
East Bay Municipal Utility District  
Los Angeles Department of Water and Power  
Metropolitan Water District of Southern California  
San Diego County Water Authority  
San Francisco Public Utilities Commission  
Santa Clara Valley Water District  
Zone 7 Water Agency



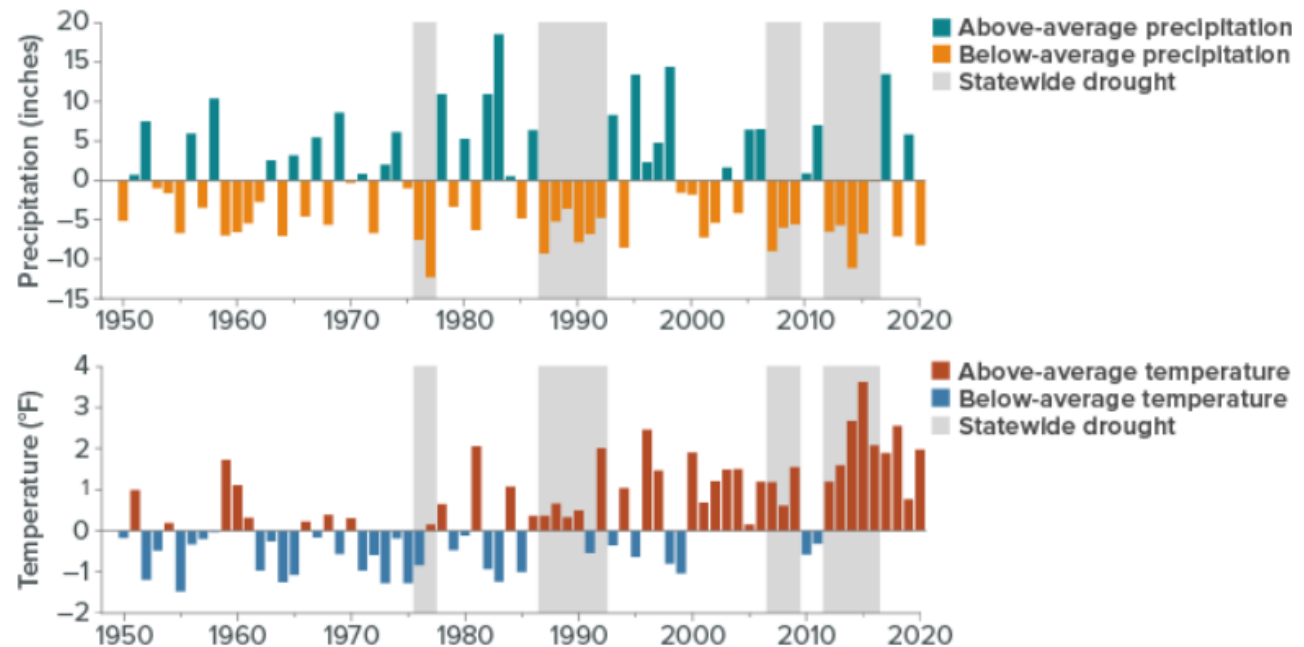
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# Drought is a recurring feature of California's climate.

Droughts are becoming more frequent and severe – with 2021 being one of the driest and warmest years on record.



SOURCE: Western Regional Climate Center California Climate Tracker, DWR California's Most Significant Droughts.  
NOTES: Averages are calculated for 1950–2000. Average statewide precipitation is 24.3 inches, and average temperature is 57.2 (F).

Accessed at: <https://www.ppic.org/publication/droughts-in-california/>



# Urban water suppliers have many tools to prepare and respond, including new planning requirements since the 2012-16 drought.

Legislation passed in 2018 (AB 1668/SB 606) expanded on the existing urban water management plan (UWMP) process, requiring urban water suppliers to submit the following information.

## EVERY 5 YEARS (as part of the UWMP):

- Drought Risk Assessment
- Long-Term Water Supply Forecast
- Water Shortage Contingency Plan (WSCP) with new elements

## EVERY YEAR:

- Annual Supply and Demand Assessment

**Each agency's WSCP identifies a set of response actions unique to their service area.**

*Planned actions may include supply augmentation, demand reduction, or a combination of both. Agencies activate different shortage levels and response actions based on local conditions.*



# While every water supplier must plan for drought, the path to resilience looks different for everyone.

- Shortage levels and response actions vary by agency based on each community's unique conditions, opportunities, and risks.
- Local agencies decide when and how to take action based on what's best for their community.
- The state can support urban water suppliers by continuing to allow local flexibility to identify and respond to local drought conditions.



# Water shortage is caused by many different factors that vary by system and location.

Water shortage can be caused by many different factors, which vary across the state.

At any given time, shortage conditions (of varying levels) may exist for some agencies and not others, based on local and regional factors.

**Hydrologic Conditions** | Precipitation, snowpack, runoff

**Storage Levels** | Surface reservoirs & groundwater

**Ecosystem Health & Regulations** | Fishery obligations & curtailments

**Operational Capabilities** | Water quality & infrastructure constraints

**Demand** | Customers' water needs (varies by season)



# There is no one-size-fits-all approach to drought response.

Urban water suppliers have many tools to respond, which vary by agency:



*Depending on shortage severity and available resources, agencies may implement a mix of supply augmentation, demand reduction, and/or other measures, as documented in local WSCPs.*





# CUWA agencies have made significant investments to mitigate the need for emergency demand cutbacks.

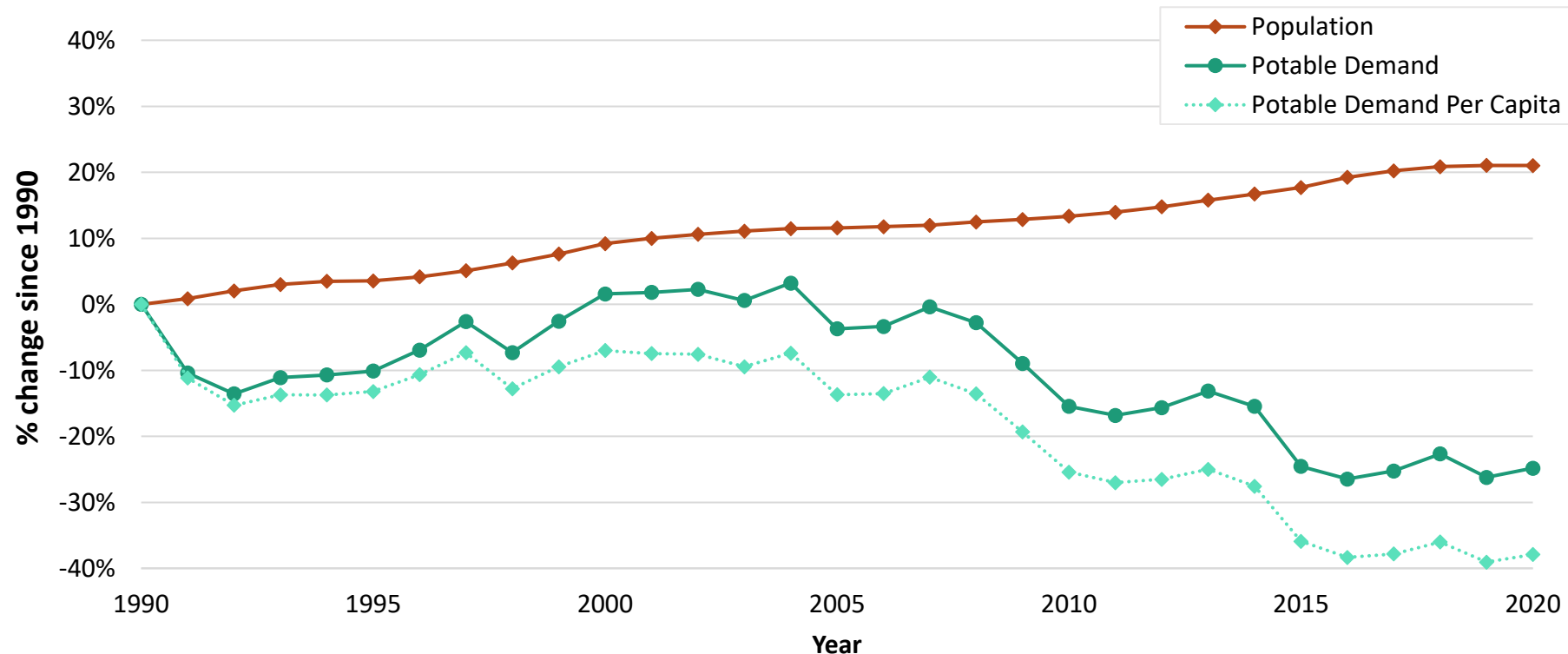
- Collectively, CUWA agencies have made substantial progress in water supply resilience through ratepayer investments in **water use efficiency (WUE), supplies, and storage**.
- Ratepayers need assurance that state actions will support these investments, which enable agencies to maintain reliability during drought and leverage the various response tools in place.
- While each agency takes a different approach based on their unique conditions, the outcome is the same: reliable water service.

The following slides demonstrate CUWA agencies' collective progress in water supply reliability.



# Urban potable water demand has decreased significantly and remained low since the 2012-16 drought, even while population has grown.

Percent Change in CUWA Retail Agencies' Collective Population and Potable Water Demand



Long-term WUE mitigates the need for—and in some cases, limits the ability to achieve—further demand reduction during drought.



On average, urban potable demands have **decreased 25%** (and by as much as 36%), while population has **increased more than 20%** over the same time period. Collective per capita demand has **decreased nearly 40%** since 1990.



# CUWA agencies have been developing diverse, drought-resilient supplies.

By 2045, CUWA agencies estimate nearly **500,000 acre-feet** in new local and regional supplies (such as potable and non-potable reuse, stormwater capture and recharge, and desalination), which will augment or offset existing supplies, improve regional self-reliance, and increase operational flexibility.



# Existing developed supplies continue to play a key role.

Supplies imported through the State Water Project and Central Valley Project enable greater storage, transfers and exchanges, and groundwater sustainability through conjunctive use.



By optimizing surface water diversions or capturing stormwater when water is plentiful, agencies can store excess water in reservoirs or groundwater basins for use during dry periods.



# CUWA agencies have extensive storage in surface reservoirs and groundwater basins.

- CUWA agencies collectively operate **more than 50 surface water reservoirs**, with additional storage available in other (e.g., state-owned) facilities.
- Additionally, CUWA agencies have **extensive groundwater storage**—both in local basins and groundwater banks.
- Many agencies can address supply shortfalls through withdrawals from storage.





# Each agency takes a different approach based on their unique conditions and community factors.

- Water suppliers base drought strategies on what's best for their community, the environment, and economy.
- Agencies must balance demand restrictions with critical needs, such as health & safety and post-pandemic economic recovery.
- The following slides include examples of success across a range of drought mitigation and response strategies, including individual agency strategies and regional approaches. Examples include CUWA and non-CUWA agencies, representing a wide range of water suppliers across different parts of the state.



Affordability & Equity



Population & Land Use



Public Health



Ecosystem Health



Economic Growth &  
Recovery





# Water use efficiency (WUE) has been a key drought mitigation tool for many agencies.

## Example successes:

Water use within San Francisco has been on a general decline since the 1970s, despite population growth. At **42 GPCD**, the residential per capita demand is among the lowest in the state.



Los Angeles has replaced over **51 million square feet** of turf with CA friendly landscaping since 2009, and per capita demands have decreased by over 30% since 2007.



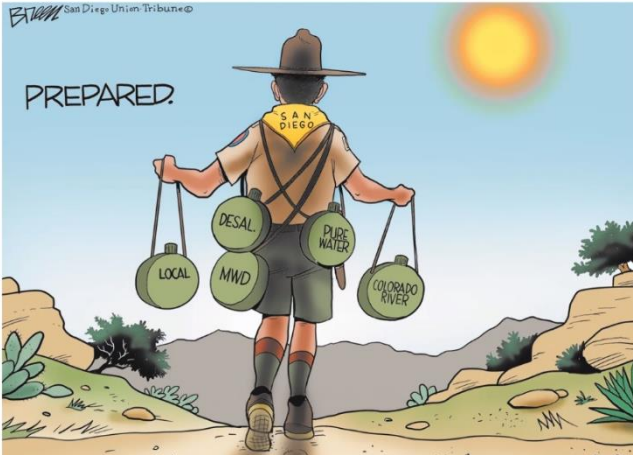
Smaller urban agencies, like the City of Santa Rosa, have also made significant progress in WUE. Since the early 1990s, Santa Rosa has invested over \$21 million on WUE, **driving total water use down 14%** between 1990-2020, despite a 53% increase in population.





# Supply diversification strengthens local and regional self-reliance.

## Example successes:



San Diego County Water Authority's investments in the Carlsbad Seawater Desalination Project, Colorado River conservation and transfer agreements, and member agency recycled water, groundwater, and purified water projects have improved regional resilience and reduced reliance on the Delta (particularly important during dry years).



Zone 7 Water Agency's local and banked groundwater play a key role in offsetting shortfalls in surface water supplies. Zone 7 is currently exploring a suite of new supply, storage, and conveyance projects to further improve resilience.







# Investments in water reuse provide new drought-resilient supply.

## Example successes:

Pure Water San Diego is the City of San Diego's phased, multi-year program that will provide more than 40% of San Diego's water supply locally by the end of 2035. The Pure Water San Diego Program will use proven water purification technology to clean recycled water to produce safe, high-quality drinking water. The program offers a cost-effective investment for San Diego's water needs and will provide a reliable, sustainable water supply.



In addition to continued WUE and storage expansion, Valley Water has advanced water reuse in Santa Clara County. Valley Water's Silicon Valley Advanced Water Purification Center currently produces up to 8 MGD of purified water. Valley Water set a goal to meet 10% of Santa Clara County's total water demands with recycled and purified water by 2025 and develop up to 24,000 acre-feet per year of highly purified water for potable reuse by 2040.





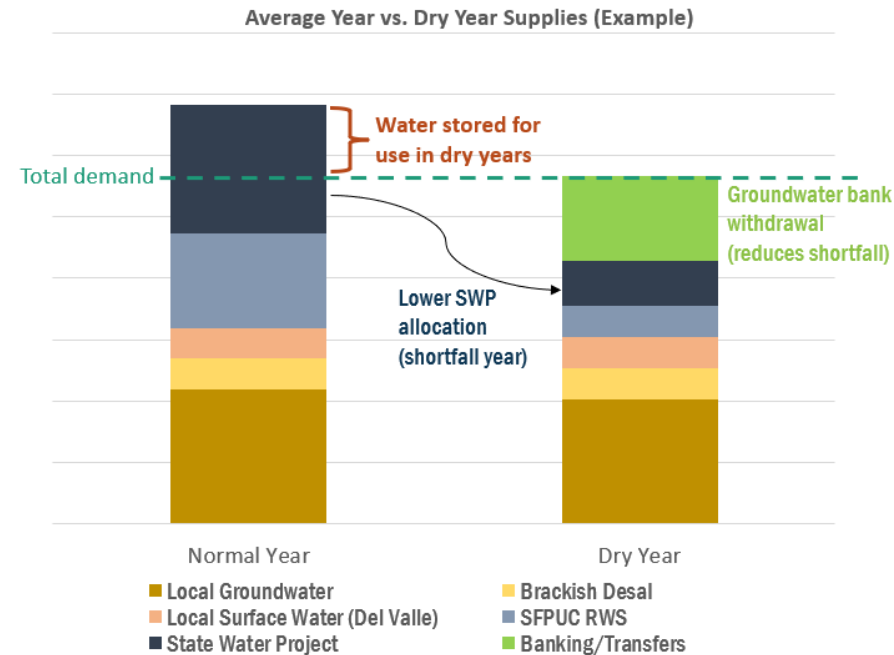
# Storage and operational flexibility enable water agencies to remain reliable in dry years.

## Example successes:

The Los Vaqueros Reservoir Joint Powers Authority, including six of the CUWA member agencies, was formed in 2021 to expand Contra Costa Water District's (CCWD's) Los Vaqueros Reservoir to 275,000 acre-feet and construct a new regional intertie to improve Bay Area and Central Valley water supply reliability and enable more water transfers and exchanges while providing ecosystem benefits.



Alameda County Water District (ACWD) has a diverse supply portfolio that varies by year type. In average years, water can be stored for later use in dry years.



Note: Supplies and demands are approximate and shown for demonstration purposes. Actual quantities vary year to year.

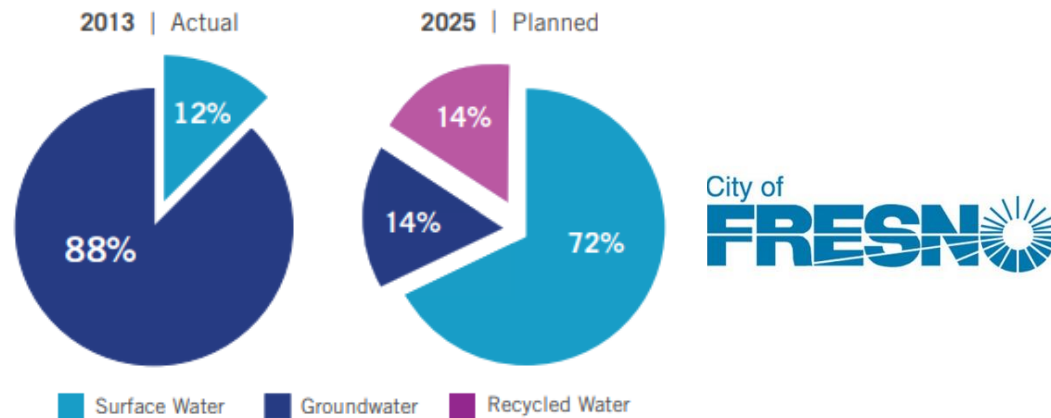
When State Water Project supplies are short, ACWD can withdraw water from the Semitropic Groundwater Bank (via exchange) to compensate. Local and banked groundwater play a key role in offsetting shortfalls in surface water supplies.





# Diverting surface water when available supports supply augmentation, storage, and conjunctive use.

## Example successes:



The City of Fresno, which was solely reliant on groundwater until 2004, has since expanded recycled water and implemented a conjunctive use program (by diverting surface water when available) that enables greater recharge and storage while maintaining groundwater sustainability.



During dry years, EBMUD may complement its robust water conservation program by diverting surface water from the Sacramento River via the Freeport Regional Water Facility (Freeport) – up to 100 million gallons of water per day. Freeport was the result of a cooperative effort between the Sacramento County Water Agency and EBMUD to provide drinking water for customers of both agencies.



# Collaboration is key for advancing drought resilience.

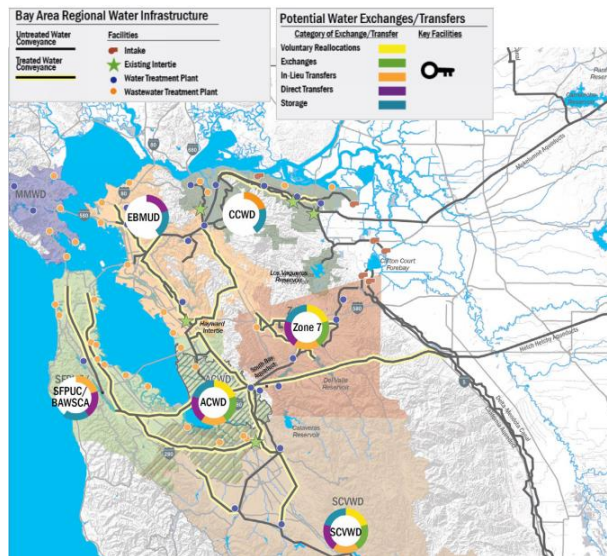
Working together to secure funding, share resources, expedite regulatory compliance, and align messaging creates new opportunities for projects that promote water supply reliability and resilience.



# Regional approaches enable agencies to leverage shared resources and infrastructure for improved reliability.

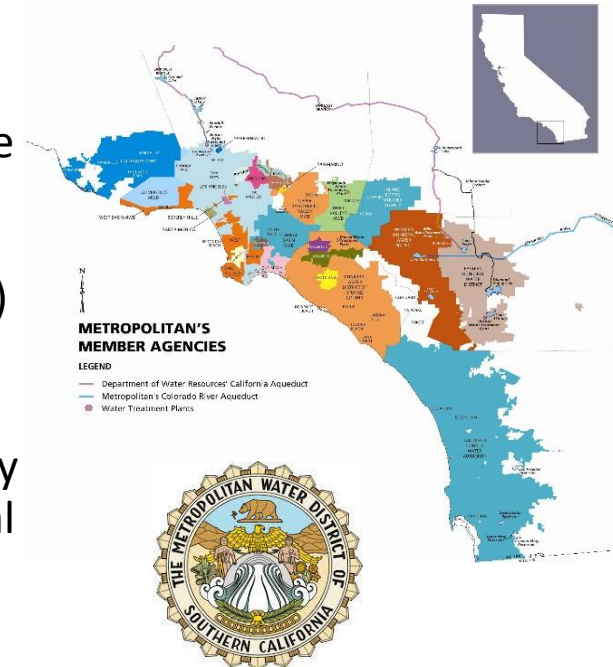
## Bay Area Regional Reliability (BARR) Partnership

- The regional Drought Contingency Plan published in 2017 identified drought mitigation measures, such as the Los Vaqueros Reservoir Expansion Project, that benefit multiple agencies.
- BARR partners are currently piloting water transfers as part of the Bay Area Shared Water Access Program (SWAP), which will establish a framework for future transfers and exchanges.



## Metropolitan Water District of Southern California (MWD)

- MWD plays a key role as the largest regional wholesaler, working with its 26 member agencies to achieve supply reliability throughout the region.
- MWD has invested in regional storage and conveyance infrastructure (including the largest surface reservoir built in the state since the 1960s) as well as local supplies and WUE programs.
- MWD currently has nearly 6 million acre-feet of total storage capacity.

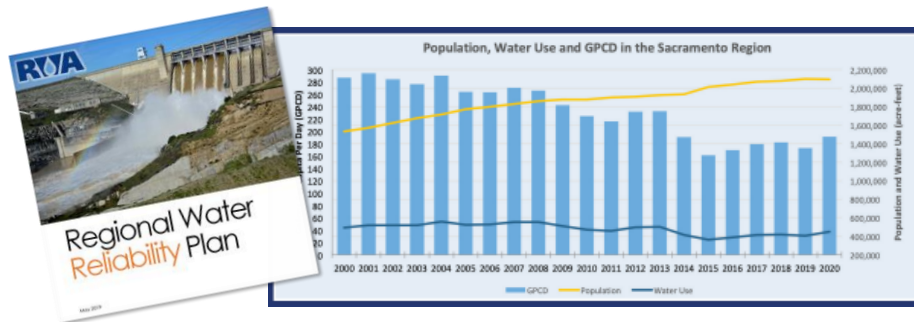




# Regional partnerships help to advance supply and demand management.

## Regional Water Authority

- Through regional coordination in WUE over the last 20 years, the region's water use has remained steady despite a 37 percent increase in population from 1.5 million to 2.1 million people.
- The Sacramento Regional Water Bank is an example of potential conjunctive use through a coordinated regional approach that would optimize water supply, storage, and environmental needs.



## Coachella Valley Water District

- Coachella Valley Water District and partner agencies worked together to develop regional groundwater management and replenishment programs leveraging imported water from the State Water Project and Colorado River.
- Their partnership demonstrates the importance of collaboration to manage shared supplies while also increasing non-potable water use and reducing demands.



# Recommendations: How the State can help with current drought response

## **Expand messaging around non-essential water uses.**

Given variation in local conditions, focus state messaging on general drought awareness and call on Californians to avoid non-essential water uses (e.g., irrigation of ornamental turf, washing hardscapes where not needed for health and safety) rather than a percent reduction.

## **Expedite water transfers and other critical supply projects.**

Prioritize and streamline permitting for urgent water supply projects, such as dam safety improvements, and work collaboratively with project proponents to efficiently move through the permitting process.

## **Enable access to stored water and other dry-year supplies.**

Support local agencies' access to supplies, such as by facilitating recovery of banked groundwater and enforcing illegal diversions. Be aware of policies and regulations that limit access to supplies, such as curtailments and State Water Project allocations.

## **Continue to support local flexibility through existing policy frameworks.**

Empower water suppliers to leverage the tools and policies that are already in place (e.g., UWMP, WSCP, long-term WUE requirements) and activate WSCPs as locally appropriate.

## **Focus on small water suppliers in need of assistance.**

Continue to implement the requirements of SB 552 by helping small water suppliers (not currently required to develop WSCPs) begin planning for drought.



# Recommendations: How the State can help with long-term drought resilience

**Help local agencies achieve the next tier of water use savings, where possible.**

Achieving further demand reductions (beyond the “low-hanging fruit”) requires considerable resources and investments. Consider a state-run rebate program, funding to support implementation of long-term WUE standards, or new development standards to reduce water use statewide.

**Promote investments in new and existing water infrastructure.**

Address aging infrastructure at the state and local level to maintain access to existing supplies. Additionally, streamline permitting and direct funding for new supplies, storage, and conveyance to enhance local and regional resilience.

**Support alternative drought-resilient supplies, such as water reuse and desalination, through funding, regulations, and outreach.**

Make funding available and streamline grant and loan applications to facilitate implementation of new supplies that support drought resilience and climate adaptation. Continue advancing regulations for direct potable reuse and expand public education and outreach to garner support for potable reuse and other alternative water supplies.

**Facilitate long-term water transfers and regional water markets.**

Identify willing sellers and buyers and streamline the approval process to increase opportunities for supply trading, including sharing of wastewater resources, and encourage regional approaches.





## In conclusion, we're all in this together.

While shortage conditions and response actions may vary across the state, we all have a role to play in making California drought resilient. By working together, state and local agencies can build on existing tools and partnerships to advance drought planning and response efforts while encouraging all Californians to use water wisely.

