



*Preparing for Drought  
in a Non-Drought Year*  
**WORKBOOK**  
**July 2023**

The Water Resilience Portfolio (Portfolio), guided by Governor Newsom’s Executive Order N-10-19, calls for a “set of actions to meet California water needs through the 21st century.” Within the Portfolio, Action 26.3 relates to protecting communities and species during drought.

Being able to endure the next severe drought will be dependent upon making smart, preemptive water management decisions during non-drought years. The Commission, at the request of the Secretaries for Natural Resources, Environmental Protection, and Food and Agriculture, is gaining a wide perspective about the potential strategies for managing drought in order to develop a set of investments and policies that would better position the State to prepare for and respond to drought (more information is available at <https://cwc.ca.gov/Water-Resilience-Portfolio>).

Commission staff has interviewed experts from both the United States and abroad, convened a working group of agencies and organizations with special knowledge and interest in the topic, and, with this input, developed a set of preliminary drought strategies. The Commission is now holding three public workshops to hear from interested parties about their views on potential actions the State should be considering.

# AGENDA

## Preparing for Drought in a Non-Drought Year

Wednesday, July 19, Noon to 3 p.m.

Tuesday, July 25, 2 p.m. to 5 p.m.

Thursday, July 27, 9:30 a.m. to 12:30 p.m.

### Session Goals:

1. Share the Commission's deliberation process and introduce preliminary drought strategies.
2. Collect feedback from diverse participants on the strategies.
3. Identify areas of regional interest/concern and any additional considerations.
4. Hear how strategies could impact or benefit interested parties.
5. Create opportunities for Commissioners to hear directly from interested parties.

#	Item
1.	Login, Handouts, and Meeting Logistics <ul style="list-style-type: none"><li>• Where are you from?</li><li>• Welcoming remarks</li><li>• Agenda Review</li></ul>
2.	Drought Overview
3.	Introduction to Drought Strategies Effort
4.	Breakouts: <ul style="list-style-type: none"><li>• Regional Drought Impacts and Approaches</li><li>• Report Back</li></ul>
5.	Presentation & Group Discussion: Preliminary Drought Strategies
6.	Group Discussion: Additional Considerations
7.	Next Steps and Adjourn

**Workshop Order of Discussions**

Agenda Item 1 – Where are you from?

Please take a minute and introduce yourself using the chat function. Please give your name and using the map below, the region you are connected with.



## Agenda Item 2 – Drought Overview

### Introduction

California is a drought-prone state. Since 2000, more than half of the state's water years have been dry or drought years. In addition to California's cyclic droughts, the state's hydrology is changing, intensifying severe weather as we swing from extreme dry to extreme wet situations. Extreme weather patterns not only affect the amount of rain and snow, but also the intensity and timing of precipitation, impacting natural and human systems' ability to capture, store, and distribute water. These changes necessitate modifications to how California prepares for and responds to droughts.

Our warming climate means that a greater share of the rain and snowfall we receive will be absorbed by dry soils, consumed by thirsty plants, and evaporated into the air. This leaves less water to meet our needs. These modern "hot droughts" are particularly notable for creating conditions that lead to large wildfires.

Periods of drought will continue on top of shifts in California's hydrologic baseline. To ensure California's people and environment have sufficient water during times of drought, the State will need to adapt to a new normal of weather extremes.

Drought conditions are not experienced uniformly across the state. While the impacts of severe and/or prolonged drought will undoubtedly be felt across all sectors of California, small, rural communities and the environment are particularly vulnerable to drought, frequently experiencing impacts earlier and longer than other water users. Small, rural communities often suffer from insecure water systems and wells that go dry or are at increased risk of contamination. For fish and wildlife species, lack of water during drought threatens to push them to the brink. Frequently, due to how water is managed, species do not have time to recover between droughts.

In modern California history, droughts have been treated as episodic emergencies: decision-makers, practitioners, and the public have been reactive instead of proactive. There are two timeframes for considering drought: in advance of drought (drought preparedness) and during drought (drought response); taken together, these constitute "drought management." Being able to endure a severe drought is dependent upon making smart, preemptive water management decisions during non-drought years.

### Drought Management Themes

As part of its work on drought, the Commission talked to experts working in California, the Western United States, and other, drought-prone countries. The Commission's interviews and reading illuminated the following overarching themes:

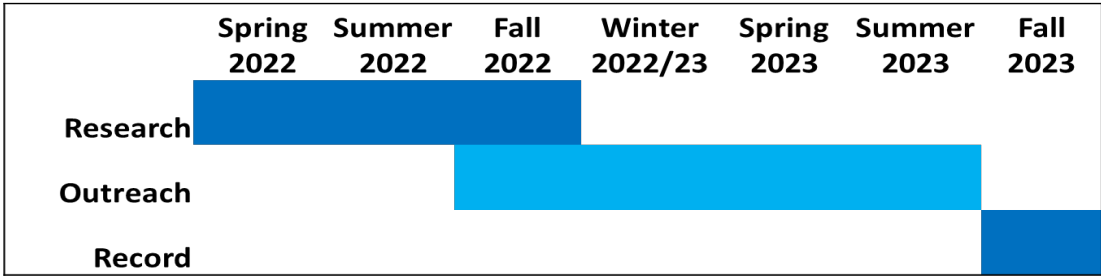
- Leverage drought crisis to take bold action.
- Plan, prepare, and manage for drought during non-drought years.
- Make systemic adaptations to climate change.
- Advance a portfolio approach.
- Collect and use data for drought management.
- Engage the public to shift cultural norms.
- Bring the environment into drought management.

These themes inform the actions the State may consider in responding to drought.

Agenda Item 3 – Drought Strategies Effort

**The Commission’s Work**

To meet the request of the Agency Secretaries, the Commission developed a high level workplan that began with research, has now moved on to outreach, and will conclude with the Commission informing State decision-makers on the results of their investigation and support development of policies and decisions regarding financial investments.



During the first phases of work, Commission staff conducted a small-scale literature review and reached out to thought leaders and practitioners about drought preparedness and response. Over the course of several months, Commission staff spoke with professionals from academia, agriculture, community-based organization, State government, environmental non-profits, think tanks, Tribes, and water management to better understand droughts impacts to communities and species and how to frame drought management given California’s changing hydrology. Commission staff also spoke with multiple representatives from Australia, Israel, and Chile about how they have confronted prolonged drought.<sup>1</sup>

Commission staff then assembled a working group comprised of California-based interested parties and partner agencies. The working group’s vision was to “produce bold, actionable, consensus-driven drought strategies that reflect the needs of California's diverse communities and natural resources, as well as the long-term, overarching needs of the State.” The working group vetted several proposed drought strategies, which were then synthesized, refined, and shared via outreach presentations to a diverse suite of interested parties.

The Commission is now collecting additional feedback via these workshops. Feedback will be used to refine the preliminary strategies the Commission is considering before producing a white paper for the Secretaries that describes a set of strategies to protect communities and fish and wildlife in the event of drought.

<sup>1</sup> For more on the effects of drought on California and internationally, review the Commission’s report: [Long-term Drought in California: Overview and Global Context.](#)



## Agenda Item 5 – Preliminary Strategies and Discussions

### Preliminary Strategies

1. Increase Capacity & Information Needed to Manage Drought
2. Scale Up Groundwater Recharge
3. Conduct Watershed-level Planning to Reduce Ecosystem Impacts of Drought
4. Better Position Communities to Respond to Drought Emergencies

During the workshop, we will have time to discuss what participants like about these strategies and what is missing. Use the information below to understand more about each strategy and to consider how to provide feedback to the Commission.

### Strategy 1 – Increase Capacity & Information Needed to Manage Drought

**Climate change is making droughts more intense. Attention to drought – by the State and the public – needs to be consistent, not sporadic. Drought needs to be dealt with as a chronic problem and not an occasional emergency.**

This strategy proposes sustained drought staffing at State agencies, and State support of data development and communication to help prepare for and respond to drought, support other entities that play a critical role in drought response actions, and increase California’s public awareness of water availability.

To effectively address drought the State must have on-going capacity to:

- Prepare for and respond to drought.
- Invest in on-going drought collaboration between State agencies, with local agencies, and with other interested parties.
- Improve and augment seasonal forecasting – precipitation forecasts that look out two to six months in the future. [By knowing when to expect precipitation, decision-makers can better prioritize and balance water use during times of constrained water supply.]
- Provide State support of other entities that play a critical role in drought response – particularly Tribes, local governments, and NGOs to ensure regions have the “boots on the ground” needed to respond to drought emergencies and protect species and communities.
- Clearly and consistently communicating about current water availability.

Ensuring proper staffing levels allows the State to adaptively managing the State’s drought response – by identifying lessons learned, creating plans in advance of drought, and identifying and responding to communities and species in crisis – and will help address the chronic and evolving nature of droughts in California, better positioning the State to communicate with the public about water.

Communication is a critical component of triggering individual behavioral changes during drought emergencies and will augment efforts to prepare for a more water scarce future. By better communicating water supply and demand in real time during all water year types, the State can foment

a deeper water ethic that will help to leverage support for drought-related policies, investments, and emergency responses. All the above creates a foundation for public support of bold action to protect species and communities from the impacts of drought, as well as individual and collective commitments to sustainable water use.

## Key Actions

- Develop dedicated drought capacity at State agencies to coordinate between agencies and across sectors, to identify lessons learned and generate drought plans, and to collect and share consistent information on communities and species in crisis.
- Support seasonal forecasting to anticipate drought.
- Support Tribes, local government, and NGOs to increase drought response capacity.
- Develop consistent public information campaign by building on work already being done, creating indicators to signal drought status, engaging experts to change water behaviors in California.

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A survey was conducted June 19, 2023 through July 12, 2023 asking participants' views regarding the key actions. Information regarding their responses is being shared during the session.

## Discussion Questions

- Do survey responses resonate?
- What do you like about the strategies and actions?
- What needs to be changed?
- What's missing?

*Notes:*





## Strategy 2 – Scale up Groundwater Recharge

**Making use of groundwater recharge during wet periods augments groundwater supply, and, when paired with sustainable groundwater management, provides water resilience during dry periods.**

Protecting communities and species during times of drought requires looking beyond dry-year emergency relief actions: it requires wisely managing water during wet periods to better provide for communities and species during dry periods. During times of drought – when snowpack is minimal, and reservoirs are low and rivers are dry – California’s people and wildlife increase their reliance on groundwater. Groundwater basins store large amounts of water underground, and that water becomes particularly important when surface water is in short supply. Healthy groundwater basins allow people to use groundwater during times of drought, diverting less from streams and leaving more for ecosystems. When sited thoughtfully, recharge can aid floodplain restoration, improve groundwater levels near drinking water wells at risk of going dry, support groundwater-surface water connections for streams and rivers, and tap into vast, underground storage potential.

The recent succession of atmospheric rivers has spurred support for groundwater recharge, building on past efforts, and creating a wave of momentum for moving on-the-ground projects forward. 2023 will be a critical period for piloting groundwater recharge and extracting lessons to apply to future efforts.

To scale up groundwater recharge, this strategy proposes identifying the physical places where recharge is most efficient, increasing participation in recharge efforts through education, outreach, and financial incentives, streamlining permitting, making investments in retrofitting and constructing physical infrastructure to move water to recharge areas, and developing an adaptive process to learn from current recharge activities. This will ensure that all areas are ready for groundwater recharge in high water events; allow for significant groundwater recharge during flood to support regional water supply, increase baseline groundwater basin support, increase baseflows for aquatic ecosystems, and reduce the need for imported water in dry years.

## Key Actions

- Prepare for recharge by identifying where recharge provides the greatest benefit and where it is possible.
- Promote recharge efforts through on-going education, outreach, and incentives.
- Support efficient permitting to maximize groundwater recharge by clarifying flood triggers, considering impacts to drinking water, and completing timely, comprehensive environmental review.
- Support infrastructure connected to groundwater recharge, including fish screens, conveyance, and surface storage projects that can store water for recharge.
- Review recent actions to clarify lessons learned and identify on-going improvements and efficiencies.

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### Strategy 3 – Conduct Watershed-level Planning to Reduce Ecosystem Impacts of Drought

**Drought stress on native species and the ecosystems that support them is contributing to the decline in native biodiversity.** This is due to a loss of ecological resilience stemming from current and historic water and land use practices, exacerbated by increasing drought intensity. Further, most wildlife management is driven by single-species management. Increasing species' resilience to drought requires looking at ecosystems rather than single species.

Improving ecosystem management during drought requires significant advanced planning at a watershed scale. Multiple types of advanced planning are needed: planning for water management (environmental watering plan), future-looking planning for priority physical habitat restoration and conservation (habitat planning), and planning to abate wildfire impacts (forest management). Marrying water management with habitat conservation will create conditions for species to weather the stress of drought. To protect species – and communities – from wildfire will require integrating forest management into water and habitat planning.

The purpose of this strategy is to move away from ad hoc species protections during drought and to rely instead on coordinated advanced planning. Importantly, planning sets priorities for actions, rather than attempting to meet all objectives all the time. Funding constraints will always be present, and this strategy helps the State set priorities and decide where to focus limited resources. Strategic investments in environmental water, physical habitat, and forest management will make the best use of available resources, given drought intensification.

#### Environmental Watering Plans

An “environmental watering plan” anticipates the potential for drought conditions during the coming water year. This plan, which is fully vetted with regulators, the water user community, and other interested parties, describes and prioritizes ecological objectives for the coming water year, identifying important contingencies. This plan should be structured like a decision tree in which an array of actions (e.g., functional flow timing and magnitude, triggered water trading or curtailment agreements, hatchery actions, species translocations, etc.) are to be taken depending upon existing and projected hydrologic conditions.

The goal of environmental watering plans is to anticipate actions that might take place and to communicate these potential actions in advance. An environmental watering plan allows for negotiating key agreements in advance, clearly identifying regulatory options, evaluating the scientific basis for actions before action is needed, and informing the water user and stakeholder community of actions that could be taken depending on hydrologic conditions. The latter reduces uncertainties for all interested parties since actions are planned in advance and there are fewer controversial surprises. Since this approach is guided by a decision tree based on real-time hydrologic conditions, it is much nimbler and responds to changes that occur on biologically meaningful time scales.

## Key Actions

- Develop environmental watering plans by working at the watershed-scale to identify and plan for ecosystem water needs.
- Conduct watershed-scale habitat planning that inventories, prioritizes, and identifies funding mechanisms for habitat restoration and conservation projects.
- Integrate fire/forest management into drought planning.

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## Strategy 4 – Better Position Communities to Respond to Drought

**California’s Human Right to Water law declares that “every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.” Small, rural communities suffer from insecure water systems and wells that go dry or are at increased risk of contamination during drought.**

Communities often rely on local government, local water agencies, and local organizations to help prepare for and respond to drought emergencies. When disaster strikes, local entities need resources to help community members respond to drought, and these resources need to be deployed efficiently to prevent a delay. Additionally, communities need long-term solutions to water supply reliability problems. This strategy details actions the State can take to ensure communities’ viability during drought by improving the efficient deployment of resources to help communities, expediting long-term water supply reliability solutions, and supporting integrated land and water use planning.

### Recent Responses to Community Drought Impacts

During the five-year drought that ended in 2016 and the recent three-year drought, some rural and small communities saw their wells go dry. As an emergency response to the existing community crises, the State, counties, and other local assistance providers offered bottled water and installed large water storage tanks for homes without water.

In 2018, Assembly Bill (AB) 1668 passed into law, requiring the identification of small suppliers and rural communities at risk of drought and water shortage vulnerability and improvements to water conservation and water shortage planning. In addition to identifying at-risk communities, the new statute (Section 10609.42 of the California Water Code) directed the Department of Water Resources (DWR) to develop recommendations for improving drought contingency planning for those areas.

[DWR’s Recommendations for Drought and Water Shortage Contingency Plans for Small Water Systems and Rural Communities](#) were issued in March 2021. Developed in coordination with multiple State agencies and vetted through an extensive stakeholder process, DWR developed recommendations that would allow small water suppliers and rural communities to meet their drought and water shortage planning needs. One critical recommended action was to provide technical assistance for small community water systems, noncommunity, school water systems, and self-supplied households, to improve the reliability of their water supply. A related recommendation allowed for assistance for Tribes consistent with other government to government considerations.

[The Safe and Affordable Funding for Equity and Resilience \(SAFER\) program](#), administered by the Water Board, has defined processes for the provision of technical assistance that is responsive to many of the AB 1668 recommendations; however, for a variety of reasons, the process to deploy assistance can be lengthy. Many stakeholders have identified delays as a significant barrier to accessing support during emergency situations.

## Key Actions

- For small and/or rural, disadvantaged communities, allow delegation of funding management to local assistance providers with expedited State sign-off for pre-approved categories of activities and dollar thresholds to nimbly address system needs.
- Ramp up efforts to improve water system resiliency and actions to increase supply reliability for communities.
- Support integrated land and water planning, such as multi-benefit land repurposing, at the local level and encourage regional approaches to water resource management.

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## Agenda Item 6 – Additional Considerations

A variety of additional drought management concepts have been offered including:

- Water Recycling
- Stormwater capture
- Desalination
- Protection of Tribal cultural and ceremonial purposes

### **Discussion Questions**

1. What, if anything, would you change?

*Notes:*



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## Agenda Item 7 – Next Steps

See: <https://cwc.ca.gov/Water-Resilience-Portfolio>