



California Drought Resilience Interagency and Partners (DRIP) Collaborative

Virtual Meeting 2

Recap & Framing Synthesis for Discussion at In-person Meeting 3

Working Problem Statement: Domestic Well Preparedness

As California faces a hotter, drier future, drought preparedness for domestic wells is paramount. Domestic wells, reliant on groundwater, face declining levels during prolonged dry periods, compromising both water quality and availability. Despite SB552's requirement for proactive planning and specific actions, the issue of domestic well preparedness affects and may be affected by a broad spectrum of entities and groups that require clarity in the areas of responsibility, funding, and cross-sector coordination.

Key Considerations

- Importance: "This topic is the most important thing DRIP can do." - Andrew Altevogt, SWB
- Dual issue: "There are two pieces of this puzzle: existing wells and future wells." - Sierra Ryan, Santa Cruz County
- Access to funding: "It took two years to execute a contract for urgent response drought funding." - Sierra Ryan; "Money is tight. We're diverting our resources toward rescue missions." - Russ Bryden, LA County Public Works; "We hear from communities that they don't have upfront funding." - Tami McVay, Self-Help Enterprises
- Focus on Resiliency: "We need programs for wells before they go dry." - Suzanne Pecci, Domestic Well Planning Group, South American Subbasin
- Causes of dry wells: "It's not just pumping. Recharge, rain, we need to be clear on the causes." - Sierra Ryan
- Legislation: "Look at legislation that requires data from everyone, sale of homes, GSAs, etc." - Suzanne Pecci

Potential DRIP Role

"Stage setting and mapping of current responsibilities and funding; what currently exists, who has authority both in emergencies and long-term planning." - Andrew

Mapping responsibilities and accountability: connect to municipal code, identify role of housing professionals and impact of growth ("orderly development"), provide guidance on general plan development, connect GSA responsibility and SGMO, provide guidance on Bulletin 74 updates identify consolidation challenges/ opportunities and authority, clarify state agency roles (OPR weigh in), consider a well moratorium.

Funding & technical assistance: Identify pathway for pre-approving emergency contracts for water hauling, secure upfront funding for technical assistance providers, identify funding administration opportunities beyond state agencies, identify resiliency grant opportunities to prevent future dry wells.

Indicators and relevant data to share with drought relevant data focus group: causes of dry wells, data integration (GSPs & SGMO, SAFER, etc.), sphere of influence and orderly development indicators, data from housing professionals.

Focus Area Framing: Drought Preparedness for Domestic Wells

"[For domestic wells], counties are the emergency managers first, last, sometimes always."

– Catherine Freeman, CSAC

"Who is responsible when a domestic well goes dry? How responsible are counties and for what?"

– Sierra Ryan, Santa Cruz County

Introduction to the Focus Area

Drought preparedness for domestic wells is of critical importance as California faces a hotter, drier future. These wells tend to be highly vulnerable to inadequate water supply during and after dry periods. Larger urban water systems, typically have diverse water sources, ample storage, and greater organizational capacity. In contrast, domestic wells and other self-supplied households tend to be rural, predominantly depend on groundwater and by nature have less organizational capacity. This can pose challenges when extended dry periods lead to declining groundwater levels, impacting water availability as well as water quality. Recognizing this, SB 552 underscores the need for more proactive drought planning for these wells.

SB 552 mandates specific actions from counties to consider domestic wells –including through the establishment of standing county task forces, and drought risk assessments, short term interim solutions and plans for long term mitigation of drought impacts. However, the issue of domestic well preparedness affects, and may be affected by, a broad spectrum of entities and groups, among others, residents and communities served by small water suppliers, state small water systems, domestic wells, Tribal Nations, and other local governmental entities like GSAs and LAFCOs.

Framing the Problem Statement

DRIP members have consistently emphasized the opportunity for the Collaborative to address drought preparedness for domestic wells. While SB 552 indicates that the state aims to make progress in this area, there are still many aspects of drought preparedness of domestic wells that require attention and uptake. Input from DRIP members has helped to narrow the focus area into three critical sub-topics under which these challenges or needs have been grouped:

- Responsibility and accountability
 - State authority to review drought resilience plans for compliance and sufficiency
 - GSA responsibility for maintaining groundwater levels for domestic wells
 - County vs private property owners' responsibility and accountability for domestic wells running dry
 - Drought and domestic well considerations for well ordinance and Bulletin 74 guidance
- Funding, financing, and technical assistance
 - State's provision of funding and technical assistance and role of counties
 - Revenue streams and existing capacity for counties to engage with domestic wells
 - Extremely long lead times for emergency funding
 - Equity issues: high income and private landowner's vs low income, tenants and renters
- Coordination and information flow across federal, state, local, tribal, non-state, and NGOs
 - Role and coordination of other players in support of counties acting as emergency response providers in the case of multi-year drought

- Groundwater modeling used by GSAs is often done at spatial scales not suitable for addressing individual domestic wells
- Education and preparedness of current private well owners and domestic well users

Focus Area Pathways

While we aim to center the VM2 discussion around forming a shared understanding of the focus area problem statement, DRIP members have suggested potential pathways to approach these challenges outlined above:

- Develop a process that establishes funding agreements pre-drought to streamline distribution to counties during a drought emergency (e.g., drought relief fund)
- Provide guidance in the update to Bulletin 74 for well ordinance for mitigation of drought impacts on new wells
- Document the responsibility and liability of state, county, domestic well owners and others (e.g., real estate agents, GSAs) as it relates to drought preparedness for domestic wells
- Provide guidance on adoption of SB552 by GSAs/integration of SB552 into future GSPs

Existing and ongoing efforts and resources (not comprehensive)

- State Water Resource Control Board: [Drought funding](#) for [drinking water assistance for households](#), [County-wide and Regional Funding Programs](#), [Drinking Water Needs Assessment](#).
- DWR: [Small Community Drought Relief](#), [Be Well Prepared program](#), [Dry well reporting system](#), [Dry Well Susceptibility Dashboard](#), [Water Shortage Vulnerability Assessment](#), [County Drought Resilience Plan Guidebook](#), [County Drought Resilience Planning Assistance Program](#)
- Self-Help Enterprises: [Safe Drinking Water](#)
- Community Water Center: [Safe Water Projects](#)
- Public outreach and engagement (e.g., Domestic Well Planning Group, South American Subbasin)

Virtual Meeting 2 Recap: Drought Relevant Data

Working Problem Statement: Drought Relevant Data

As California faces a hotter, drier future, a lack of sector-specific metrics and streamlined data coordination hinders timely decision-making, jeopardizing drought resilience. To ensure adaptive, effective, and localized strategies throughout the drought lifecycle, it is crucial to bridge data gaps, unify drought data, and integrate climate change analytics across decision-making tiers statewide.

Subject Matter Experts

- Andrew Altevoigt and Eric Zuniga, SWB. SAFER Clearinghouse and ongoing data collection efforts.
- Julie Ekstrom, DWR. Water Shortage Vulnerability Explorer tool
- Alvar Escriva, UCLA. PPIC/UCLA effort to define drought indicators, funded by NIDIS (NOAA)

Key Considerations

- Multiple, different impacts. "When looking for relevant data, it is important to ask who is impacted and ensure the most vulnerable are represented." - Justine Massey, CWC
- Data has impacts. "Be considerate of how data is used. There can be negative impacts." -Tami McVay, SHE
- Models. "Different issues (i.e., ecosystems) use different frameworks and models." - Redgie Collins, CA Trout
- Iteration needed. "Iterations are needed to zoom in on what is the most important info and how to get that to be more accurate." - Justine Massey, CWC
- Coordination, not just gaps. "I appreciate that we're wanting to define objectives and outcomes before jumping into data gaps." - Katie Ruby, CUWA

Potential DRIP Role

- Shape best available. "Maybe the DRIP role is to help shape best available info to improve day to day management" - Justine Massey
- Coordination. "What DRIP can bring the most value to may be coordination." - Katie Ruby
- Align to decisions. "Arrive on data we all accept and that all agencies can use for decisions." - Redgie Collins
- Decisions at all levels. "Role of DRIP may be to help all of these resources feed up to decision makers at the top and down to local municipalities." - Sierra Ryan, Santa Cruz County
- Education. "We need a data education program to the community about what is available, how to collect good data, how it can be used. Down to boots on ground and then back up." - Emily Moloney, Buena Vista Rancheria of Me-Wuk Indians

Focus Area Framing: Drought Relevant Data

“Drought indicators across sectors are important for understanding how drought impacts individuals. They’re essential for localizing drought response.” – Nancy Vogel, CNRA

Introduction to the Focus Area

As California faces a hotter, drier future, it also faces the challenge that no two droughts are identical. Location, duration, and severity vary, which means our response must be local and flexible as well. To plan and respond to future droughts, we need standardized risk indicators and outcome metrics to ensure the state’s drought resilience. As stated in the recent CA Water Commission drought strategies document: “Drought is defined by its impacts”.

Today, we are challenged to quantify drought risks and impacts at a sector and sub-regional level. Our ability to track drought is not sufficiently specific and actionable at such levels. We also lack useful aggregate statistics to characterize and define what is drought resilience at the highest level (the type of drought resilience metrics that might appear in every DRIP annual report to show our collective effort and progress). To do this, we need to increase our ability to monitor and integrate data while working across all levels including local, regional, state, and federal.

DRIP members agree that we need to make smart, pre-emptive decisions *before* drought occurs. Better data and decision making across the whole drought management framework is needed. In short: actionable tracking throughout the entire drought lifecycle. This will enable greater precision in knowing where and when we can improve preparation to minimize impacts from droughts. It will allow us to improve visibility into where funding can produce the most beneficial impact and improved outcomes. These risk indicators and outcome metrics will also enable improved drought understanding and communication.

Framing the Problem Statement

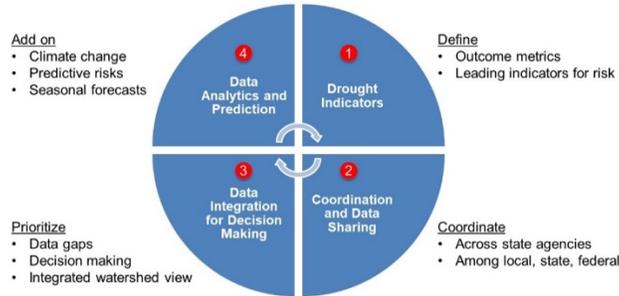
Through our previous DRIP meetings and the most recent Virtual Meeting 1 (VM1’s), we identified four sub-topics:

- Regional and sector-specific drought indicators
- Coordination, data sharing and easier access to water/drought data
- Data collection, integration, and quality assurance for better decision-making
- Incorporating climate change data and projections in water resource planning

Each of the four sub-topics have the potential to build on each other to create a robust set of drought relevant data.

First, defining indicators and outcome metrics will allow us to better prioritize drought actions and understand impacts. Second, these metrics will enable us to be specific on improved coordination and data sharing, while respecting existing metrics that are being tracked by multiple agencies and organizations. Third, the question of data gaps and data quality can be addressed, specific to decisions that most affect the outcome metrics. We need to prioritize, since we can’t solve all data gaps at once. To complete the circle, we can then layer on new innovative data analytics and forecasting techniques to add a predictive component to the drought indicators.

This leads to a virtuous cycle, so we can continually improve and track the most important outcome metrics while solving specific coordination, data gap and analytic challenges.



Existing and ongoing efforts

It is important to note that many existing efforts are already underway and can be leveraged. This includes:

Name	Lead	Focus	Status
Water Shortage Vulnerability Indicators and Explorer Tool	DWR, Water Use Efficiency	Small systems and domestic wells	Initial tool done, to be updated annually
Drought Hazard and Impacts Indicator Project	PPIC/UCLA	Improved drought indicators to represent impacts on communities, ag, ecosystems, and urban systems	In development
Drought Model for Small Systems	SWB, Div of Drinking Water	Small systems that may run out of water in upcoming months	Model exists, but not yet public (internal to SWB)
Dry Well Susceptibility Model and GW Live Tool	DWR	Domestic wells, in future may include public supplier wells	In use by public and state and TA providers; Will be updated once dry period returns
SAFER Clearinghouse	SWB, SAFER	Public water systems, including Drinking Water Needs Assessment and SB200	In use for data collection and reporting
UPWARD	SWB, Div of Water Rights	Surface water use, including digitization of water rights data. Platform to be called CalWATRS	In development, with goal of having launch in mid-2025

This list is not exhaustive and there are many other efforts underway (for example, the CA Water Resilience Portfolio includes vulnerability indicators) and ongoing reporting requirements for public water systems.

Interoperability

As evident in the table above, the level of focus can vary significantly across spatial scales (e.g., domestic well vs public water system vs communities). We also heard from DRIP members that this also must all fit together along temporal scales, including historical and current. It was cited that we need to address near-term future as it relates to risk prediction and sub-seasonal to seasonal forecast, plus long-term future as we consider climate change impacts and climate extremes. The overarching goal is to improve action at all levels, while improving lead-time for proactive decision making.

Other DRIP members reinforced the need for a fuller watershed view, combining surface water/groundwater, supply/ demand, flood/drought, and water/land use. There is also DRIP member interest, reinforced in the CA Water Commission ([Drought Expert Panel Recap - August 2023](#)), on improved data on atmospheric rivers, FIRO, and stream gaging. Ultimately, this will all lead to improved water supply availability and water use/demand estimates via modeling and science.

Virtual Meeting 2 Recap: Drought Definition & Narrative

Working Problem Statement: Drought Definition & Narrative

Because drought has many different definitions, from biophysical to social, people vary greatly in their perception and experience of it. Historically, drought planning has focused on physical definitions, often neglecting (or ignoring) more nuanced social aspects and indicators that often play out over varying timescales. The narratives people form around drought offer varied interpretations of drought effects and suitable adaptation strategies, making "drought resilience" a debated and nuanced term, often different for different audiences.

Subject Matter Expert

Jeanine Jones, DWR shared a 20-minute presentation. Key points:

- Drought is driven by impacts. Most felt when it is personal. What does drought mean to me?
- Many legal drought definitions, that trigger processes (e.g., emergency declarations) at state and local level.
- Spatial: Statewide but need sub-region. Most of state can be 'green', but some areas in 'red,' severe but local.
- Focus on concept of water shortage to meet a specific purpose; Avoid "one size fits all."

Potential DRIP Role¹

There are three subtopics of the focus area with varying approaches:

- Definition. Understand mix of existing drought definitions so we can effectively communicate.
- Narrative and communication. Establish audience specific messaging that ensures we're all on the same page.
- Education. Raise understanding of the nuances of drought and the action needed at all levels.

Suggested first step: Create a white paper that outlines current definitions and processes. Use that to educate everyone, including the public, to link to impacts and timely action. Once paper done, we then:

- Link to actions. "Point to it and tell people what they can do. Link definitions to action" - Andrew Altevogt; "Pinpoint impacts, then link to many different resilience resources" - Jeanine Jones
- Education. "We need a campaign, education. Wrap that into existing programs." - Tami McVay
- Tie to local. "Continue to document what has worked well. Build on what we've each seen." - Katie Ruby
- Drive toward resilience. "The goal is a vision for a resilient future. Once we're clear on that, we can back into that and identify steps we can take to get there. Disaster preparedness is key." - Elea Becker Lowe; "We need to weigh into the 'resiliency' portion of our DRIP charge." - Andrew Altevogt
- Ensure no confusion. "We struggle with the media. Would be good to point this out. We'll need good communication." - Jeanine Jones

¹ Note: There was no framing document for this focus area VM2