

## REFERENCE BRIEF · THE PROJECT

## The COEQWAL project

What the Collaboratory for Equity in Water Allocation is, and how it works

COEQWAL — the Collaboratory for Equity in Water Allocation — is a publicly funded, community-engaged research project that opens up the water planning tools used for California's Central Valley. Using CalSim, the same model state and federal agencies use for actual planning, the project simulates a broad range of water management strategies under a range of modeled climate conditions, and makes the resulting scenarios and their results public.

This brief describes the COEQWAL project itself: why it exists, how it works, and what it produces. It is a reference brief, part of the project's background material, and it carries no modeled results. For modeled results, see the summary briefs on the [Data page \(https://coeqwal.org/data\)](https://coeqwal.org/data).

## §2 WHY THE PROJECT EXISTS

The water planning tools used by the State of California have been inaccessible to most communities, especially those historically excluded from water decision-making. The models are technical, the data are large, and the results have circulated mainly among agencies and specialists. COEQWAL's founding purpose is to open that information up.

The project's stated goals are to make the data used in water planning and decision-making more accessible, to help users understand the nature of trade-offs among management objectives, and to provide data that communities can use in shaping water decisions. The project does not advocate for any particular strategy: it reports what the model produces under each scenario and leaves evaluation to the reader.

## §3 THE APPROACH: PARTICIPATORY SCENARIO PLANNING

COEQWAL's work is structured around a participatory scenario planning approach. It is an iterative process. The team develops a set of alternative water management strategies and runs each one through CalSim, simulating how the strategy shapes the patterns and amounts of water allocated to different water users and the environment under a range of modeled climate conditions.

The results are then brought to community partners in workshops, and feedback on the scenarios — which ones were run, and how they are interpreted — shapes the next round of work. The scenario library is the product of this loop, not a one-time modeling exercise. The process has involved engagement with over 60 representatives from state and federal agencies, water districts, non-governmental organizations, community-based organizations, academic institutions, and Native American Tribes.

CalSim is the water resources planning model used by the U.S. Bureau of Reclamation and the California Department of Water Resources for planning the Central Valley water system. It represents the system as a network: how much water flows into reservoirs, how much is stored or released, and where it is delivered — from the Sacramento and San Joaquin rivers, through the Delta, to cities and farms across the Valley and along the coast.

COEQWAL runs CalSim 3 many times, changing two things between runs: the management strategy (the rules, priorities, and policies for allocating water) and the hydroclimate (the temperature, rain, and snow that determine how much water there is). Five hydroclimates are used: a historical hydroclimate, and four projected climates named by their level of stress on the water system, carrying flow changes of +3.5%, -1%, -6.5%, and -19.2%. Each of those four figures is an average change in total annual flow across California's major water supply basins, over a 30-year period centered on 2043. The five hydroclimates and the modeling behind them are documented in the companion reference brief, [The five COEQWAL hydroclimates](#)

([https://coeqwal.org/documents/Background/hydroclimates\\_brief.html](https://coeqwal.org/documents/Background/hydroclimates_brief.html)). Each strategy-and-hydroclimate pairing is one scenario, simulated over a 100-year period. How the pairings are constructed is described in the companion reference brief, [The COEQWAL scenario library](#)

([https://coeqwal.org/documents/Background/scenario\\_library\\_brief.html](https://coeqwal.org/documents/Background/scenario_library_brief.html)).

## §5 WHAT THE PROJECT PRODUCES

The project's central product is the scenario library: 28 water management strategies, each simulated under five hydroclimates, making up over 100 scenarios. On the COEQWAL website, visitors can learn how water in the Central Valley is managed, explore how modeled results shift across scenarios, and share scenarios of interest.

The website reports the CalSim results at three levels of detail. The first level is the outcome levels: the explore tools report every result on a four-level scale, Optimal, Acceptable, At-risk, and Critical, that places each of nine key outcomes of the water system, and the individual locations of interest (LOIs) within each key outcome, on a common scale. The outcome-level summarization was developed by the COEQWAL project, and it is the most compact of the three levels: it is the path to a general reading of the patterns and trade-offs across scenarios, and to comparing one scenario with another. How outcome levels are computed is described in a methodology brief for each key outcome, on the [Data page](https://coeqwal.org/data) (<https://coeqwal.org/data>).

The second level is the In-depth section, which reports selected model variables at the model's monthly time step, summarized in views such as exceedance plots and year-to-year variability. It serves part of the model record, not all of it; variables and detail beyond what the In-depth tools expose are in the downloads.

The third level is the raw model output. The Data and Downloads section provides the CalSim output files themselves, in two forms: the model's native DSS files, which carry the complete record and require specialized tools to read, and CSV files, which are easier to work with and carry a subset of what the DSS files contain. The same results are also available through the COEQWAL data API, which serves scenario metadata, outcome-level results, and summary statistics in machine-readable form for users building their own analyses.

Briefs, which are curated and printable summaries like this one, sit alongside these levels and report either background, in the reference briefs, or modeled outcome levels, in the summary briefs.

## §6 WHAT THIS DOESN'T SAY

COEQWAL reports modeled results from specific simulations. It does not predict what will happen, evaluate whether results are acceptable, or recommend any course of action.

COEQWAL does not advocate for any specific policy, water allocation strategy, or action.

Scenarios are exploratory model runs, not forecasts and not policy proposals, and they are not intended for direct use in legal or regulatory proceedings. The outcome-level framework provides definitional categories; the meaning of those categories for any individual reader, community, or decision is not specified by COEQWAL.

## §7 WHERE TO GO NEXT

For how the scenarios are constructed, meaning the strategies, the hydroclimates, and the model runs behind them, see the companion reference brief, [The COEQWAL scenario library](#)

([https://coeqwal.org/documents/Background/scenario\\_library\\_brief.html](https://coeqwal.org/documents/Background/scenario_library_brief.html)). For any single strategy, see its documentation brief, linked from that strategy's row in the scenario matrix of that brief. For modeled results, see the summary briefs on the [Data page](#) (<https://coeqwal.org/data>).

**[Open the data explorer → \(https://coeqwal.org/explore\)](https://coeqwal.org/explore)**

---

COEQWAL • Collaboratory for Equity in Water Allocation

Supported by the California Climate Action Initiative • UC Grant R02CM7222 Brief v0.2

Updated August 31, 2026

---

[COEQWAL \(https://coeqwal.org\)](https://coeqwal.org)

[Return to COEQWAL Documentation \(https://coeqwal.org/data\)](https://coeqwal.org/data)