

COMMITTEE ON WATER, PARKS, AND WILDLIFE

BAUER-KAHAN, Chair

INFORMATIONAL HEARING

Tuesday, February 28, 2023
9:30 am – State Capitol, Room 444

Adapting Water Rights to our 21st Century Climate

The origins of the legal framework for California’s water rights system date to the 19th century when California first became a state and the predominant economic activity was gold mining. This legal framework protects private rights to water and encourages water right holders to put water to “beneficial use.”¹ Later, as the state developed in the 20th century, an enormous system of water infrastructure was built to capture water and store it for later use, including during times of scarcity and for conveyance to arid parts of the state.

While in many ways this legal framework served the societal needs of that era and, arguably those of the 20th century, reasonably well, there are signs that this original system is not meeting today’s challenges arising from California’s dramatically larger population and the impacts of global climate change. Recent droughts have harmed communities, the economy (especially agriculture), and the environment. In response, water regulators and water managers have taken unprecedented actions including curtailing water rights, issuing temporary urgency change petitions for the management of the State Water Project and federal Central Valley Project, restricting water use in urban and suburban communities, and trucking water to communities that have lost access to water.

In response, some, [including Governor Newsom](#), have called for “modernization” of the water rights system. Through this informational hearing, the Committee will explore the challenges facing California’s water rights system today and some perspectives on what should, and should not, be changed to address them.

California’s climate and climate change

California’s predominantly Mediterranean climate has always posed challenges for water management in the state. This climate is characterized by hot, dry summers and wet, moderately cool winters. Annual precipitation varies greatly across the state with the majority of precipitation falling north of Sacramento. Year-to-year variability in precipitation is another hallmark of California’s climate with swings between prolonged wet and dry periods (Figure 1).

¹ “Beneficial use” refers broadly to uses of water that benefit society and the environment and includes uses for domestic, irrigation, power generation, municipal, industrial, fish and wildlife preservation and enhancement, recreational, and water quality purposes, among others.

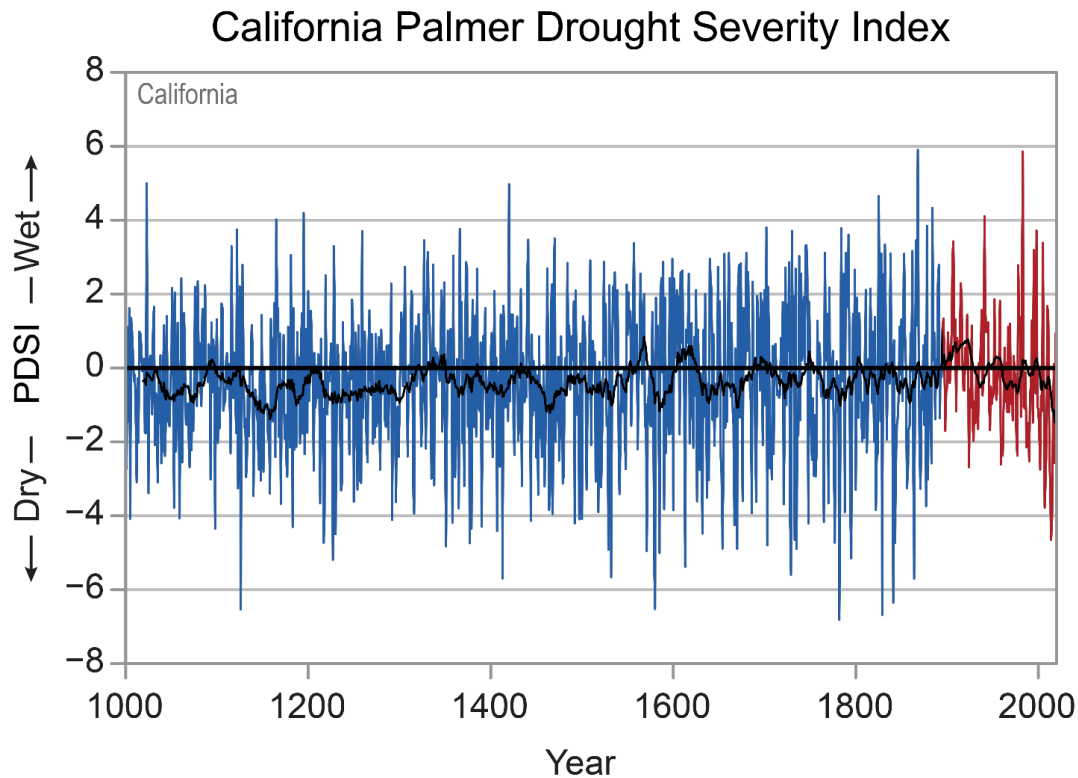


Figure 1. Time series of the Palmer Drought Severity Index for California from the year 1000 to 2020. Values for 1895–2020 (red) are based on measured temperatures and precipitation. Values prior to 1895 (blue) are estimated from indirect measures such as tree rings. The fluctuating black line is a running 20-year average. The extended record indicates prolonged wet and dry periods. In the modern era, the wet period of the 1900’s and the recent dry period of the 2000’s are clearly evident. Sources: CISESS and NOAA NCEI. Data: nClimDiv and NADAv2.

Today, evidence overwhelmingly reveals that the modern California climate is already different than the climate of a century ago when California’s water law first developed. Since the beginning of the 21st century, average temperatures have risen almost 3°F in California with the hottest six years on record occurring since 2014 (2014, 2015, 2016, 2017, 2018, and 2020).² Likewise, California has experienced its two most severe dry periods on record since 2000 (2012–16 and 2020–present) and researchers now report that the state has, in fact, been experiencing a “megadrought” since the turn of the century. Indeed, this “megadrought” appears to be the worst such drought since the year 800 and its severity is due, in large part, to climate change.³ Climate change is undeniable and models indicate it will drive temperatures higher in the future (Figure 2).

² Rebekah Frankson, Laura E. Stevens, and Kenneth E. Kunkel *et al*, “California State Climate Summary 2022,” NOAA Technical Report NESDIS 150-CA, (2022): 6, <https://statesummaries.ncics.org/chapter/ca/>.

³A. Park Williams, Edward Cook, and Jason Smerdon *et al*, “Large contribution from anthropogenic warming to an emerging North American megadrought,” *Science* 368, 6488 (2020): 314-318, DOI: 10.1126/science.aaz9600.

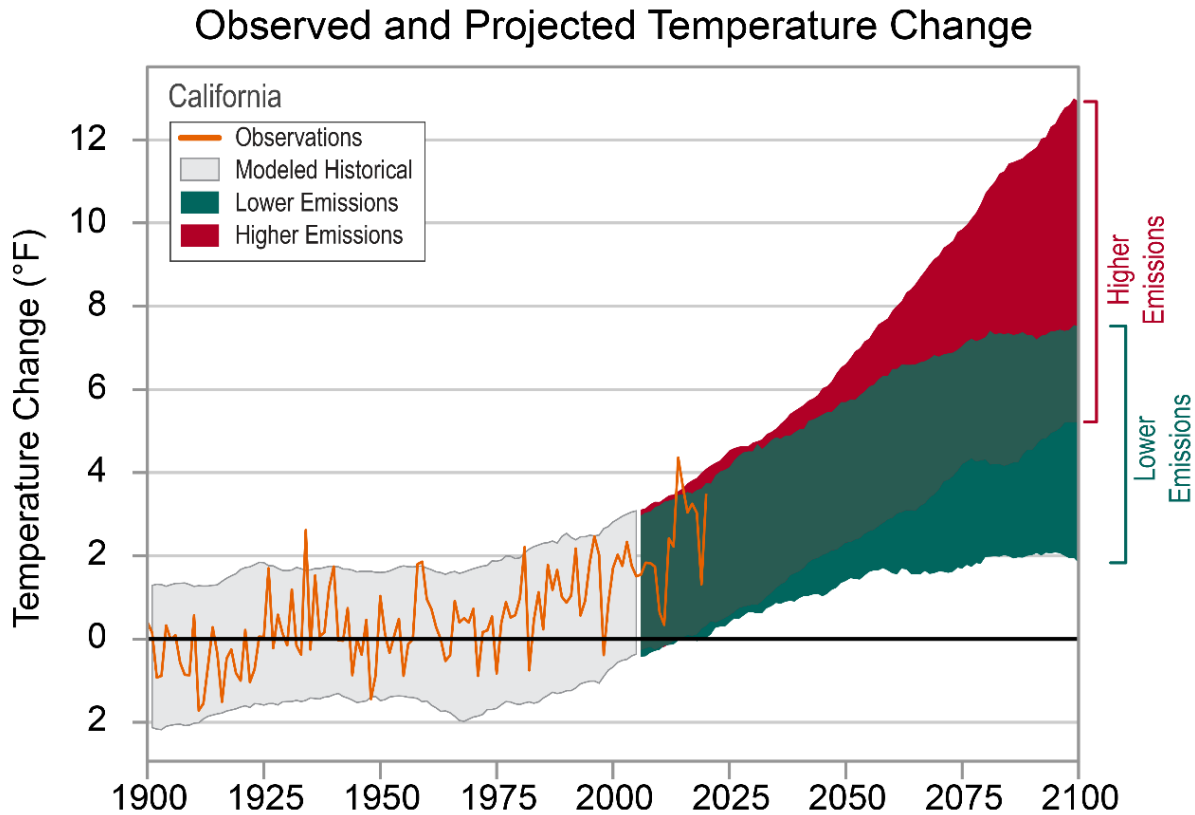


Figure 2

Along with “megadrought,” concepts like low-to-no-snow future,⁴ “aridification,” and “megaflood”⁵ have entered the lexicon of California water management. It is increasingly clear that climate change will stress water resources and its management like no other time in recorded history.

Development of California’s water rights system

Some scholars have dubbed California’s legal framework for surface water rights the “California doctrine”⁶ and it is unique among all other states in that it recognizes both riparian and appropriative rights. The coexistence of the two types of surface water rights dates to the very beginning of California’s statehood and was affirmed by the California Supreme Court in the 1886 landmark case *Lux v. Haggin* that recognized the legitimacy of both types of rights but determined “that riparian rights have priority over appropriative rights in most instances.”⁷

⁴ Erica Siirila Woodburn, Alan Rhoades, and Benjamin Hatchett *et al*, “A low-to-no snow future and its impacts on water resources in the Western United States,” *Nature Reviews Earth & Environment*, 2 (2021): 800—819, <https://www.nature.com/articles/s43017-021-00219-y>.

⁵ Xingying Huang and Daniel Swain, “Climate change is increasing the risk of a California megaflood,” *Science Advances*, 8, 31 (2022): eabq0995, <https://www.science.org/doi/10.1126/sciadv.abq0995>.

⁶ Donald Worster, *Rivers of Empire*, (New York: Oxford University Press, 1985), 107.

⁷ Arthur Littleworth and Eric Garner, *California Water Law*, 3rd Edition, (Point Arena: Solano Press Books, 2019), 41.

Riparian rights are attached to land that is contiguous to a river, stream, or other natural water course and permit a landowner to put the water to beneficial use on their land. Riparian rights derive from English common law which the California Legislature adopted in 1850.⁸

Appropriative rights, in contrast, are not tied to land ownership and do not require the holder to use the water on land adjacent to the body of water. Appropriative rights “arose in mining camps on public lands where no one could own the land and thus no one could get a riparian right.”⁹

The doctrine of prior appropriation (also known as “first in time, first in right”) applies to appropriative rights and is a seniority system that still applies today. Under prior appropriation, a junior water right holder (*i.e.*, one that claimed a right a date after a senior water right claimant) will have their right curtailed, or cut back, in times of shortage before the next claimant has their right curtailed. Like riparian rights, appropriative rights were recognized shortly after California became a state: first in the 1855 California Supreme Court case *Irwin v. Phillips* and later by an act of the Legislature in 1872.¹⁰

The fundamental principle in California water law is the “reasonable use doctrine” that is enshrined in Article X, Section 2 of the California Constitution. This provision was amended into the Constitution in 1928 to clarify that “the right to water or to the use or flow of water in or from any natural stream or watercourse in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served [...]” This amendment was made in response to the 1926 California Supreme Court ruling in *Herminghaus v. Southern California Edison* that found that a riparian user (Herminghaus) had no obligation to use water reasonably in relation to an appropriative right holder (Southern California Edison) so long as the use by the riparian was “beneficial.”¹¹ “Beneficial use” refers broadly to uses that benefit humans and the environment and include domestic use, irrigation, power generation, municipal use, industrial, fish and wildlife preservation and enhancement, recreational, and water quality, among others.

In 1913, the Legislature passed the Water Commission Act that established today’s framework for obtaining a permit and license for the appropriation of surface water resources. Under the Water Commission Act, the Water Commission (the predecessor to the State Water Resources Control Board) had sole jurisdiction to issue a right to use unappropriated surface waters. The Act recognized that water rights obtained prior to its passage were still valid; this established another important distinction in appropriative surface water rights: pre-1914 rights and those obtained thereafter. There is limited information regarding pre-1914 surface water rights as

⁸ *Ibid.*, 40.

⁹ *Ibid.*, 50.

¹⁰ *Ibid.*, 51.

¹¹ *Ibid.*, 42.

pre-1914 rights holders did not obtain a permit or license from the State Water Board, and until recently, did not report volume of use to the State Water Board.¹²

Groundwater is a critical source of supply that meets more than 35 percent of water demand in an average year and in excess of 50 percent of demand during drought years. There are three types of groundwater rights: overlying, appropriative, and prescriptive. The most common of these is the overlying right that entitles “an owner of land overlying groundwater to drill a well and pump groundwater for use of that land, within the basin or watershed.”¹³ Overlying groundwater rights are analogous to riparian rights and no permit is required to obtain them; they attach to the land and are transferred with the land if ownership changes.¹⁴ The Sustainable Groundwater Management Act (SGMA) of 2014 put in place a statewide framework for groundwater management for the first time, but also stipulated that it did not alter surface or groundwater rights.¹⁵

Tribal water rights and federal reserved rights

Another important type of water right are federal reserved rights. The United States Supreme Court first recognized these rights in the 1908 case *Winters v. United States* finding that when the federal government reserves land for tribes, it implicitly reserves sufficient water on that land to accomplish the purposes of the reservation. Due to subsequent rulings, federal reserved rights apply to all lands held by the federal government and to both surface and groundwater; however, in many cases federal reserved rights are not quantified. The realization of these rights for tribes requires adjudication by a court or a settlement authorized by Congressional action. Despite having 110 tribes in California, only a handful of settlements have developed.

California’s Water Supply Strategy - Adapting to a Hotter, Drier Future

In August 2022, Governor Newsom released this strategy to address a projected 10 percent decrease in water supply (6 million to 9 million acre-feet of water per year) by 2040 due to climate change. To address this shortfall, the strategy sets targets and outlines actions for increased water recycling, desalination, stormwater capture, and water conservation as well as an expansion of surface and underground storage by 4 million acre-feet. Achieving the targets laid out in the strategy would “close the evaporative gap.”

One of the actions outlined in the strategy relevant to the topic of this hearing is to “modernize water rights administration for equity, access, flexibility, and transparency.” Most of the

¹² Theodore Grantham and Joshua Viers, “100 years of California’s water rights system: patterns, trends and uncertainty,” *Environmental Research Letters*, 9 (2014): 3, <https://iopscience.iop.org/article/10.1088/1748-9326/9/8/084012>.

¹³ Arthur Littleworth and Eric Garner, *California Water Law*, 3rd Edition, (Point Arena: Solano Press Books, 2019), 78.

¹⁴ *Ibid.*, 79.

¹⁵ Water Code § 10720.5.

implementation steps described under this action involve improving data on water rights and associated water use. The Governor has followed up in this area by proposing \$31.5 million in his 2023-24 Budget proposal to complete the State Water Board's ["Updating Water Rights Data for California Project" \(UPWARD\)](#). Some of the other implementation steps hint at further reforms, but it is not clear if the Administration intends to pursue any of these concepts at this time.

Previous reform discussions and recent recommendations

Following the 1976–77 drought (at the time the second worst on record), Governor Jerry Brown created a commission to review California's water rights law. The commission released a final report in 1978 that outlined a number of reform recommendations pertaining to both surface and groundwater rights. No immediate action was taken on the commission's recommendations. Given this lack of action, calls for reform seem to have quieted over the next two decades, though this does not mean the issues identified by the 1978 Commission report were resolved. Writing in 2000, the historian Norris Hundley was critical of California's body of water law, describing it as a "badly fragmented water management system that, along with the patchwork of laws, has emerged from the cauldron of legislative and court battles over a century and a half."¹⁶ Since the year 2000, in no small part due to the unprecedented water conditions that California has faced, a number of reports have noted challenges with California's water laws and offered recommendations for reform.

In preparation for this hearing, the Committee reviewed a number of these reports including the following:

- *Governor's Commission to Review California Water Rights Law: Final Report*, Wright, D. R., et al. (1978)
- *The Uncertain Future of Water Rights in California: Reflections on the Governor's Commission Report*, Brian Gray (2005)
- *Managing for Change: Modernizing California's Water Governance*, Little Hoover Commission (2010)
- *Allocating California's Water: Directions for Reform*, Public Policy Institute of California (2015)
- *Tapping Water Markets in California: 6 Policy Reforms*, Watson, R. (2016)
- *Water Rights Drought Effort Review*, State Water Resources Control Board (2021)
- *Updating California Water Laws to Address Drought and Climate Change*, Lee, C., Harder, J., Frank, R. et al (2022)
- *Governor's Report: California's Water Supply Strategy* (2022)
- *Recommendations: Updating Water Rights Data in California*, Water Foundation (2022)

¹⁶ Norris Hundley, *The Great Thirst*, Revised Edition, (Berkeley: University of California Press, 2001), 527.

Authors of these reports believe that California's water laws need to be reassessed to address today's challenges; safeguard the health, safety, and livelihoods of California's 40 million residents; support its economy; and protect California's ecosystems. Water crises, like drought and flood, further highlight aspects of California's water rights and governance that could perform better to promote equity, access, flexibility, and transparency.

Proposed recommendations in the reviewed reports roughly fall into four categories: streamlining the oversight of water rights, improving accuracy and transparency of information, addressing environmental water needs, and increasing flexibility in preparation for an uncertain water future.

Streamlining oversight. The disjointed system of water rights (*i.e.*, riparian, pre-1914 appropriative, post-1914 appropriative) and the separate management of hydrologically-connected ground and surface water, quickly complicate water rights oversight in California. Recommendations to streamline management include bringing all surface water users under the State Water Board's permitting system, establishing more equitable fees across water rights holders, and restructuring current governance by clarifying the roles of different water agencies and bringing them under a single water authority.¹⁷ Many proposals also suggest streamlining the administrative processes of water transfers and permits by reducing review periods and shifting responsibilities for reporting environmental impacts to the objecting parties. To close gaps in State Water Board authority, proposed reforms suggest giving the State Water Board the ability to issue orders to stop water usage in the time between a notice and hearing for misused water (*i.e.*, interim or injunctive relief orders) and investigate whether water rights claimants or diverters have verifiable water rights. These additional responsibilities and labor would need to be accompanied by sufficient funding. To streamline water dispute adjudication, some suggest appointing regional water law experts to navigate the complicated system, similar to the water courts systems in Montana, Colorado, and Idaho.

Improving accuracy and transparency of information. Meaningful water oversight is a historical challenge because of the lack of timely and useful data. Proponents of water rights modernization agree that high-quality, real-time tracking of water diversions and agile regulation and enforcement (*e.g.*, curtailments, cease-and-desist orders) are critical for water rights administration and environmental protection. This approach requires additional instrumentation, funding, and human resources to be effective, but will facilitate better understanding of the tradeoffs in water allocation decisions as California goes forward into an uncertain water future. Tracking the possession and quantity of the current water rights in California is challenging as these data are not consolidated on a single, well maintained electronic management system; as a result, an unknown number of water rights are uncounted. Currently, the State Water Board has invested \$30 million to digitize existing paper records and rebuild the California's water right data management system, including pilot projects to track

¹⁷ Little Hoover Commission, *Managing for Change: Modernizing California's Water Governance* (2010).

diversions and tools to implement the water right priority system.¹⁸ In addition to this technical data, some proposals suggest compensating non-profit, non-governmental organizations, and tribes for their reasonable and necessary expenses in proceedings before the State Water Board where their expertise contribute significantly to the State Water Board's decision.

Addressing environmental water needs. Several of the reports reviewed recommend that environmental water allocations be protected. Increasing environmental allocations may be achieved by streamlining the review process for environmental water trades and short-term transfers that have the goal of preserving or enhancing wetlands habitat, fish and wildlife resources, or recreation. Some suggest that conducting comprehensive environmental reviews for a specific geographic area, hydrological zone, or conveyance system instead of individual reviews for each trade would expedite water transfers.

Increasing flexibility under changing conditions. Minimal steps have been taken to update the law in the face of increasing variability of water driven by climate change. Most reports agree that part of the solution is to facilitate both water sharing and water storage to safeguard against drought. However, current California law does not encourage water storage investments if the party storing the water cannot identify a specific end use, so several reforms have suggested explicitly including underground storage (aquifer recharge) as a beneficial use. An additional recommendation includes providing greater specificity for determining water availability in the issuance and administration of water right permits and licenses, which would include consulting climate change experts in water planning decisions.¹⁹

The common thread in these proposals is to increase coherence, transparency, and flexibility, while protecting water right-holders and public values. These changes are intended to reduce uncertainty, lower administrative costs, and enable more nimble water management. Water rights reform has been suggested before, although it has been largely ignored because of a lack of political will, public support, or sense of urgency (*i.e.*, no current water crisis).²⁰ The reports reviewed by this Committee largely agree that targeted, incremental changes will be less disruptive, more legally defensible, and easier to implement than a major overhaul of the state's complex water rights system.

¹⁸ Governor's Report, *California's Water Supply Strategy, Adapting to a Hotter, Drier Future* (2022).

¹⁹ The passage of SB 1205 (Allen) in 2022 is anticipated to address this concern.

²⁰ Harrison Dunning, *Water Allocation in California: Legal Rights and Reform Needs*, Institute of Governmental Studies (1982).