WATER MARKET INSIDER

Q1, 2026

FORECASTING CALIFORNIA'S WATER MARKET

Climate Change and Reliability Investment

AUTHOR

Helena Holmberg
Analyst

California's water market is defined by extremes. The State has the most variable and geographically concentrated precipitation patterns in the United States, but a limited ability to store or convey that water. These dynamics lead to spot-market prices that can spike dramatically during droughts and then collapse in a subsequent wet year. The State has proposed investing billions of dollars in projects to increase the capacity to store and convey water throughout the State. However, there is little research on how these investments would impact spot-market prices for water in California. Using transaction data from WestWater's proprietary Waterlitix™ Database, the largest database of water rights transactions in the western United States, we estimate an econometric model of water market spot prices and show how these investments in conveyance and storage infrastructure would reduce peak spot-market prices for water in California.

WestWater RESEARCH

CALIFORNIA'S WATER MARKET

California's water system exists to solve a geographic mismatch: water falls in the north, while demand is concentrated in the south. Roughly 75% of the state's precipitation occurs north of Sacramento, yet nearly 80% of water demand is located in the southern two-thirds of the state. Conveyance through the Sacramento-San Joaquin Delta is the linchpin of this system, and its primary constraint, dividing California into two distinct water regions.[1] To match supply to demand, California has two major "projects" of dams, canals, and aqueducts that convey supplies north to south: The State Water Project ("SWP") and the Central Valley Project ("CVP"). These projects deliver to contractors (irrigation districts and municipalities) that manage the last mile, delivering to individual customers. The projects are key to maintaining the economic productivity of California's agricultural hub in the Central Valley and drinking water to the majority of Southern California.

Figure 1

Key Infrastructure and Regions

The SWP includes Lakes Oroville and Shasta in the north and the California Aqueduct, depicted in purple, running along the western side of the Central Valley.

The CVP, depicted in teal, includes the Tehama Colusa canal in the north, and, in the Central Valley, the Friant Kern Canal to the east , and the Delta Mendota Canal to the west.

The projects share facilities in the south, which are depicted by purple and teal dashes on the map.

Source: California Department of Water Resources and United States Bureau of Reclamation

In combination with local surface and groundwater supplies, the projects generally enable contractors to meet their customers' demands. Since 2014, project deliveries averaged 56% of contracted supply, with annual averages ranging from 18% to 97%. When demand is unmet due to drought or low reservoir storage, contractors can lease additional supplies from each other. Prices in California's water market vary by location and year. Contractors in the Sacramento Valley generally have surplus supplies that can be transferred as far south as San Diego, forming one of the geographically largest water markets in the United States.

[1] *California Department of Water Resources, The California Water System*

CALIFORNIA'S WATER MARKET

A defining feature of California's plumbing is the Sacramento – San Joaquin Delta ("the Delta"). Water conveyed from the North of Delta ("NOD") region to the South of Delta ("SOD") region must pass through this estuary, incurring natural and environmentally-mandated reductions in volume. While California's water market is made of multiple sub-regions, the Delta forms a natural split between the northern and southern markets.

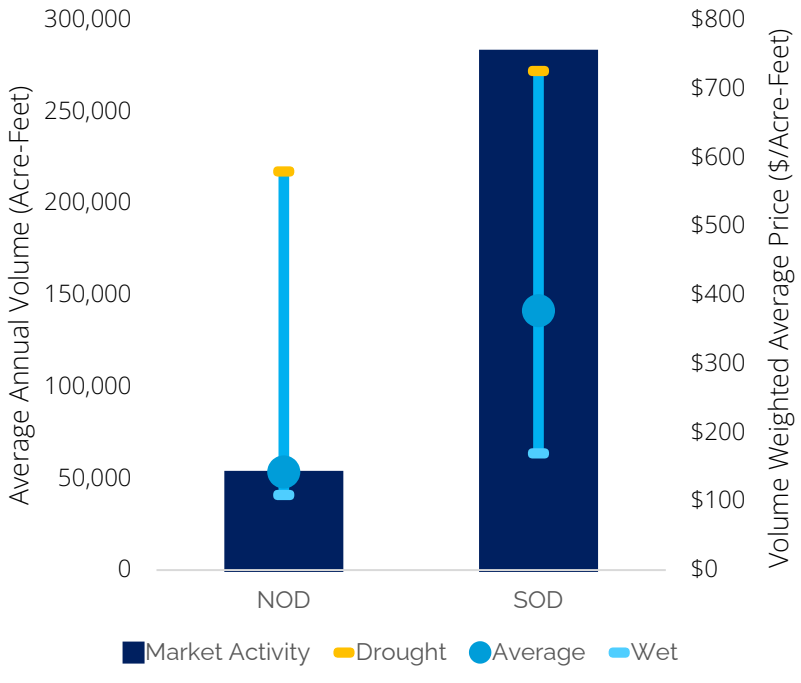
The NOD region, both wetter and less populated, is sporadically active in the Sacramento Valley and San Francisco Bay Area market sub-regions. The region averaged 43,500 acre-feet per year ("AFY") of water trades between 2015 and 2025 with average prices ranging from $110/AF in wet years to $580/AF in dry years. The SOD region is frequently active with more arid conditions, higher populations, and irrigated acreage. Buyers in the region purchase an average of 273,000 AFY with average annual prices ranging from $170/AF in wet years to $730/AF during dry years. Prices in the SOD region are more responsive to drought conditions with single spot-market prices as high as $2,000/AF occurring during the 2020-2022 drought.[2]

Figure 2

Average Price and Volume, 2015-2025

Wet year prices between the two regions are similar and reflect fixed costs with a minimal premium. In average and wet years, prices in the SOD region reflect an additional premium driven by demand.

Source: WestWater Research Waterlitix™ Database



WestWater RESEARCH

[2] *Values are adjusted to 2025.*

MODEL DEVELOPMENT AND APPLICATION

To forecast future market prices and evaluate the economic impacts of projects, WestWater maintains a multivariate econometric model of California's water market. Utilizing WestWater's proprietary Waterlitix database, the model pairs 1,870 transfers with measures of annual supply and demand, location, and water type. The annual quantity of water allocated through the SWP and CVP measures supply. [3] Statewide hydrology and reservoir storage levels determine allocations (the percentage of a contractor's project entitlement satisfied each year) and mirror statewide supply availability. The California Department of Finance annual population estimates measures demand. [4] The model includes interactions allowing prices and price volatility to vary based on ten distinct market regions. [5] Water type identifies the kind of water transferred, classifying the supply as SWP, CVP, or non-project.

Table 1
Variable Descriptions

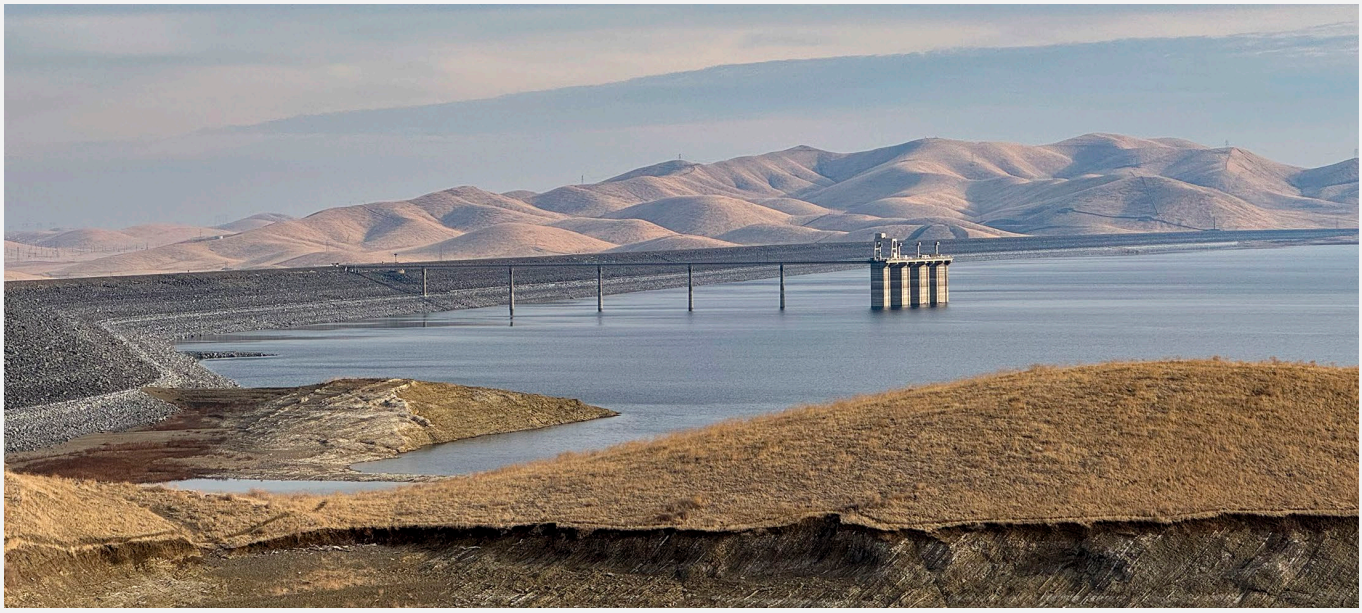
WestWater RESEARCH

Dependent Variable	Description
Price	Spot-market prices in 2025 values based on WestWater's Waterlitix Database
Independent Variable	
Supply	Combined annual SWP and CVP allocations.
Demand	California Department of Finance population estimates.
Location	10 different water market regions based on local watersheds and conveyance infrastructure.
Water Type	SWP, CVP, or non-project.

[3] Note: The CVP allocates supply based on contract type (NOD, SOD, urban, agricultural, etc.) while the SWP provides a single allocation. To calculate a combined allocation, each individual allocation is multiplied by its contracted total volume and summed together to determine a net supply. The combined volume of each contract then divides net annual supply resulting in a combined allocation metric.

[4] Note: Population estimates measure changing urban demands. Prior model iterations include a measure of agricultural demand using the cropland data layer. Results were not statistically significant.

[5] Note: Regions are identified based on the USGS Hydrologic Unit Codes for sub-watersheds (HUC4) and key project infrastructure in the Central Valley.



The dam at San Luis Reservoir near Los Banos, California – the largest off-stream reservoir in the United States

MODEL DEVELOPMENT AND APPLICATION

Using the model's results, market locations, historic water supply types, and projections of supply and demand, WestWater estimated future prices in the NOD (Sacramento Valley) and SOD (San Joaquin Valley) regions through 2035. Key factors influencing current and future supply availability include climate change (which will decrease snowpack, cause earlier snowmelt runoff, and increase risk of flooding and drought), and impacts to conveyance infrastructure from land subsidence. In the last 30 years the average SWP allocation decreased from 75% between 1996 and 2010 to 45% between 2011 and 2025. Looking forward, the California Department of Water Resources ("DWR"), which manages the SWP, expects the long-term average allocation to be between 41% and 46%.[6] Future supply is estimated using DWR's allocation projections for wet, average, and dry years with additional reductions to account for decreasing in groundwater supply through 2040 as California implements groundwater pumping restrictions because of the Sustainable Groundwater Management Act.

Prices, in 2025 values, are calculated within each region for different water year types: wet, average, dry and critical.[7] For each independent variable the model provides a coefficient measuring its correlation with the dependent variable, spot-market price. To calculate a price forecast, each independent variable's coefficient is multiplied by a historic or projected measure of the variable.

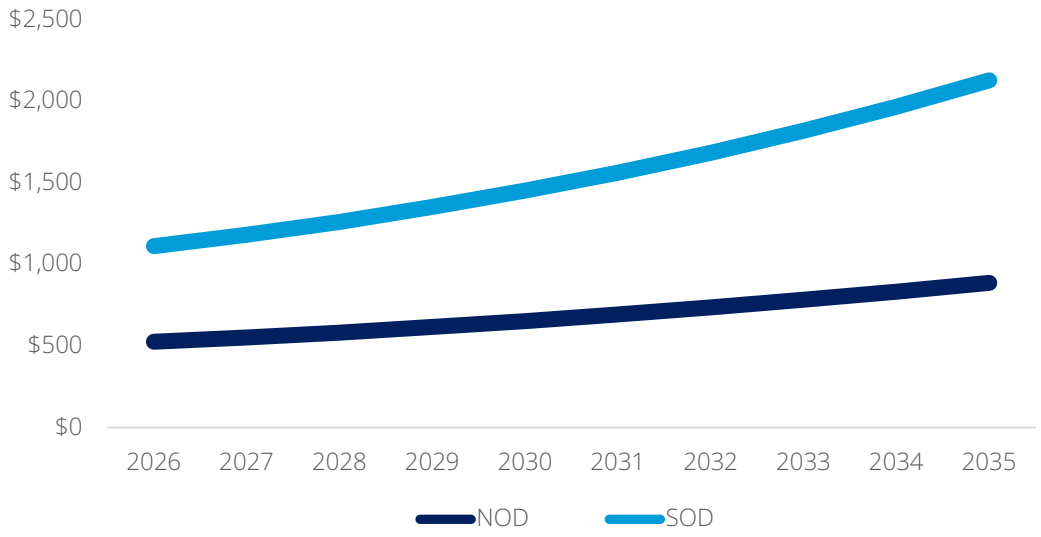
---

[6] Final State Water Project Delivery Capability Report 2023, Department of Water Resources, July 2024.

[7] Note: DWR classifies year types into five bins, including above normal and below normal. For this analysis, above and below normal types are combined into an "average" year.

Figure 3

Critical Year Price Forecasts, 2026 - 2035



WestWater RESEARCH

Results

In wet and average years, forecasted prices are similar to observed transactions and range between $200-$500/AF in the SOD region and $100-$300/AF in the NOD region. Projected prices deviate from historic trends in dry and critical years when decreasing supply reliability is most acute. In the SOD region, market participants consistently pay the most expensive market transfer costs due to their greater reliance on imported supplies from the NOD region. Without a strong local supply, SOD market participants are willing to pay higher prices to bring additional supplies into their region, especially in critical years. In contrast, the NOD region is not dependent on imported supplies to meet demands and is less impacted by drought. While the NOD region becomes active during droughts, market participants do not import SOD supplies and prices remain comparatively low. The difference between the NOD and SOD market regions is evident as the gap in critical year price projections between the regions grows significantly, from $585/AF in 2026 to $1,241/AF in 2035. The price gap grows as supply reliability diminishes, reflecting the higher price volatility occurring in the SOD region.

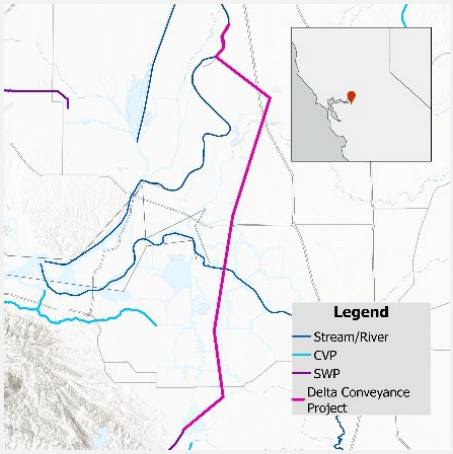
WATER STORAGE PROJECT COST SAVING EXAMPLES

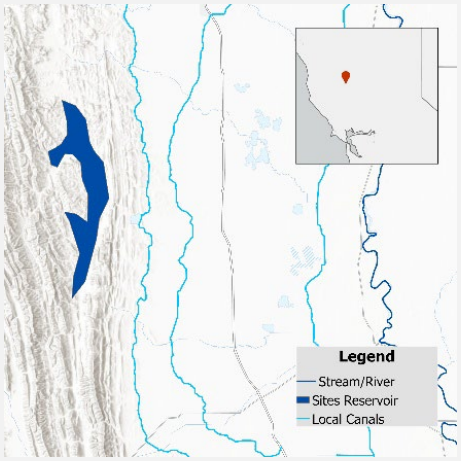
To improve water supply reliability, the State has proposed billions of dollars of investments in new water storage and conveyance projects. This report examines three such projects covering conveyance, surface water storage, and groundwater storage to model the reduction in market prices that an increase in supply reliability provides in critical years.[8] For each project, the estimated annual supply from the project is added to the measure of net annual supply when calculating critical year price forecasts for 2035. 2035 price forecasts without the additional supply are then compared to price forecasts with supply to estimate the impact on spot-market prices. While these projects may not be operational in 2035, they exemplify the options available to increase supply reliability through infrastructure in California.

The **Delta Conveyance Project** ("DCP") is primarily a 45-mile tunnel under the Delta proposed by DWR to increase SWP reliability. The tunnel would bypass the Delta, mitigating current conveyance constraints from North to South. The DCP may provide an average supply increase of 403,000 AFY for participating SWP Contractors.

Source: Benefit-Cost Analysis of the Delta Conveyance Project, Prepared by Berkeley Research Group, May 2024.

WestWater RESEARCH





The **Sites Reservoir** ("Sites") is a proposed off-stream surface water reservoir located in the NOD region. Sites will store up to 1.5 million AF of water captured during high flow periods in the Sacramento River.[9] Participants may receive an estimated average of 300,000 AFY with delivery through the SWP

Source: Sites Reservoir Project Overview, Sites Project Authority, May 2024.

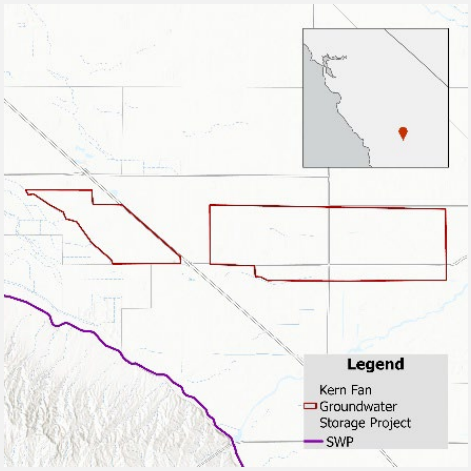
WestWater RESEARCH

[8]Note that WestWater has not directly worked in any of these projects. This report is independent of Westwater's client work. This analysis is limited to water market prices and does not constitute a comprehensive economic analysis of the benefits or costs for any of the discussed projects.

[9] Sites Reservoir 2024 Fact Sheet, Sites Project Authority.

The **Kern Fan Groundwater Storage Project** ("Kern Fan") is a groundwater recharge project under development west of Bakersfield. Kern Fan will have a storage capacity of 100,000 AF, of which 25% is dedicated to ecosystem benefits while the remaining 75% is split between Rosedale Rio Bravo Water Storage District ("RRB") and Irvine Ranch Water District ("IRWD"). The project has 50,000 AFY of recovery capacity.

Source: Sites Reservoir Project Overview, Sites Project Authority, May 2024.



WestWater RESEARCH

Table 2

2035 Critical Year Price Reduction from Additional Supply Reliability (2025 $/AF)

	Delta Conveyance Project	Sites Reservoir	Kern Fan Groundwater[10]
NOD	$177	$138	$0
SOD	$538	$423	$62

WestWater RESEARCH

Price reduction skews based on project scale and location of impact. Kern Fan provides the smallest increase to supply reliability and thus has a small impact. The DCP, with the largest annual increase to supply reliability, provides the greatest impact. In the NOD region, supplies are lower in cost and higher in reliability making the region less reactive to marginal changes in supply. In critical years SOD price reductions are triple those seen in the NOD region. Unlike the NOD region, local supply in the SOD region is limited compared to demand. An inflexible demand then drives up competition, and prices, to import supply. Increasing reliable supply in critical years to this region, decreases competition to purchase imported supply, driving prices down significantly.

[10] *Note: The Kern Fan project does not provide additional supply reliability to NOD contractors.*

CONCLUSION

Water-market spot prices in California are expected to rise and become more volatile as population grows, groundwater regulations tighten, and climate variability increases. Our results show that proposed investments in water storage and conveyance would reduce spot-market prices where and when they are currently highest: in the South-of-Delta region and during dry years. Together, these results highlight the role of storage and conveyance investments in addressing California's dry-year reliability challenge.

FURTHER READING

- "Climate Change and California's Water" - Public Policy Institute of California
- "Seasonal Forecast of the California Water Price Index" - Journal of Water Resources Planning and Management

CONTACT

Helena Holmberg
Analyst
Sacramento Office (916) 426-6386
holmberg@westwaterresearch.com

WHY PARTNER WITH **WESTWATER** RESEARCH?

California's water market is becoming increasingly complex and volatile as climate change intensifies, groundwater regulations tighten, and infrastructure ages.

WestWater Research helps you navigate this uncertainty.

We're a specialized economic consulting firm that combines proprietary market intelligence with rigorous econometric modeling to provide actionable insights for water supply challenges. Our Waterlitix™ Database - the largest collection of water rights transactions in the western United States - gives us unparalleled visibility into market dynamics that others simply can't match.

Whether you're evaluating a major infrastructure investment, planning for drought contingency, or seeking to optimize your water portfolio, WestWater Research provides the expertise and market intelligence to make confident, informed decisions in one of the world's most challenging water markets.

Contact us at info@westwaterresearch.com or (208) 433-0255 to discuss how we can support your water strategy.

WestWater RESEARCH