From:	Dashiell Leeds
To:	Kirsten Struve; Jing Wu; Nai Hsueh; Shiloh Ballard; Richard Santos
Cc:	Stephanie Simunic; Sue Chow; miquel.miquel@sierraclub.com; James Eggers; Gita Dev
Subject:	2/23/26 Water Supply and Demand Management Committee Item 5.1. Sierra Club comments on demand scenarios for 2025 Urban Water Management Plan
Date:	Friday, February 20, 2026 2:38:17 PM
Attachments:	Dec 4 2025 Sierra Club BAWSCA demand model letter (1).pdf Sierra Club Feb 2026 letter to SCVWD re UWMP demand projections.pdf

Dear Valley Water Staff and Water Supply and Demand Management Committee,

The Sierra Club is concerned about water supply planning in the San Francisco Bay Area. Specifically, we are bringing to policymakers' attention how historic overestimation of future water demand has justified investment in unnecessary projects designed to increase imported water supplies. These supplies and projects come at the expense of the Bay-Delta ecosystem and the in-stream flows it needs to survive. They are also likely to come at the expense of ratepayer affordability. Therefore, we suggest Valley Water reconsider its demand scenario outcomes and also include an additional demand scenario in the 2025 Urban Water Management Plan (UWMP).

Please read the attached February 2026 letter for our full comments. For reference, we have also attached our previous letter from December 2025.

Sincerely,

Sue Chow, Chapter Chair
Sierra Club Loma Prieta Chapter

Miguel Miguel, Director
Sierra Club California

Email sent from account of
Dashiell Leeds
Conservation Coordinator
Sierra Club Loma Prieta Chapter

SIERRA CLUB
LOMA PRIETA CHAPTER

SIERRA CLUB CALIFORNIA

February 20, 2025

To: Kirsten Struve, Jing Wu, Nai Hsueh, Shiloh Ballard, Richard Santos
Cc: Stephanie Simunic

Subject: 2/23/26 Water Supply and Demand Management Committee Item 5.1. Sierra Club comments on demand scenarios for 2025 Urban Water Management Plan

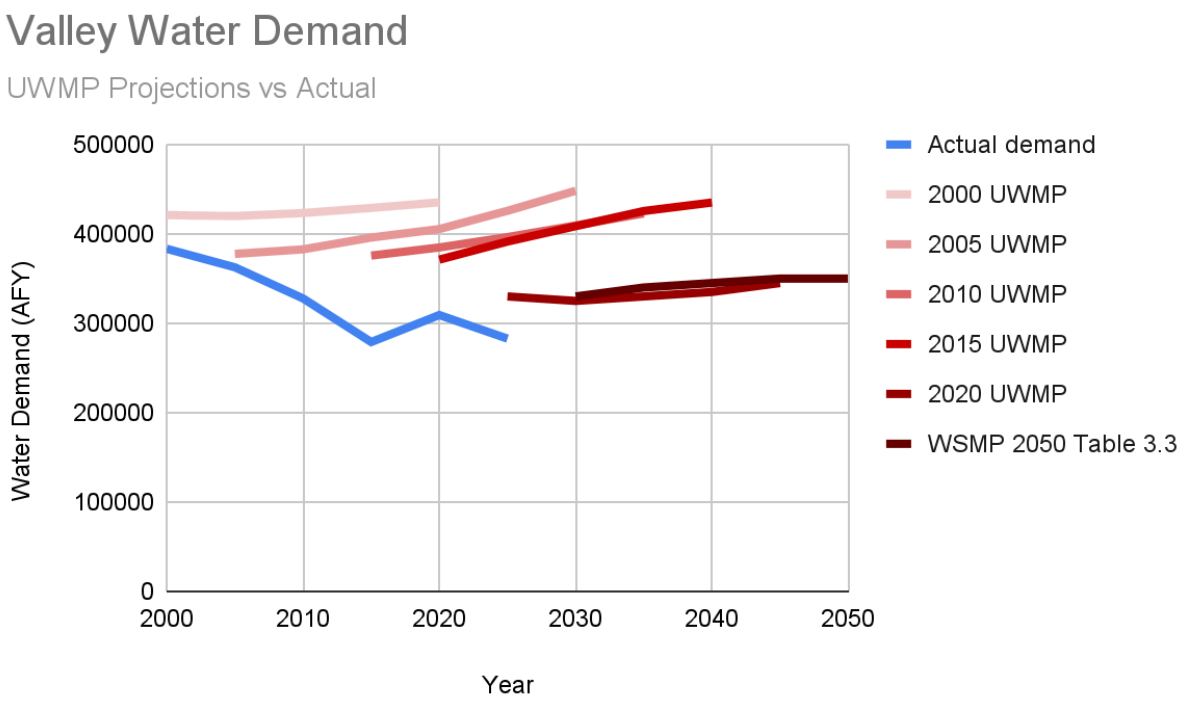
Dear Valley Water Staff and Water Supply and Demand Management Committee,

The Sierra Club is concerned about water supply planning in the San Francisco Bay Area. Specifically, we are bringing to policymakers' attention how historic overestimation of future water demand has justified investment in unnecessary projects designed to increase imported water supplies. These supplies and projects come at the expense of the Bay-Delta ecosystem and the in-stream flows it needs to survive. They are also likely to come at the expense of ratepayer affordability. Therefore, we suggest Valley Water reconsider its demand scenario outcomes and also include an additional demand scenario in the 2025 Urban Water Management Plan (UWMP).

The Sierra Club has modeled water use in Santa Clara County and also taken a deep dive into the Bay Area Water Supply and Conservation Agency (BAWSCA) water demand model, which covers a significant portion of Santa Clara County. Please refer to the attached letter the Sierra Club sent to BAWSCA on December 4, 2025.

1. **Valley Water's UWMP demand projections have consistently overestimated future water demand.**

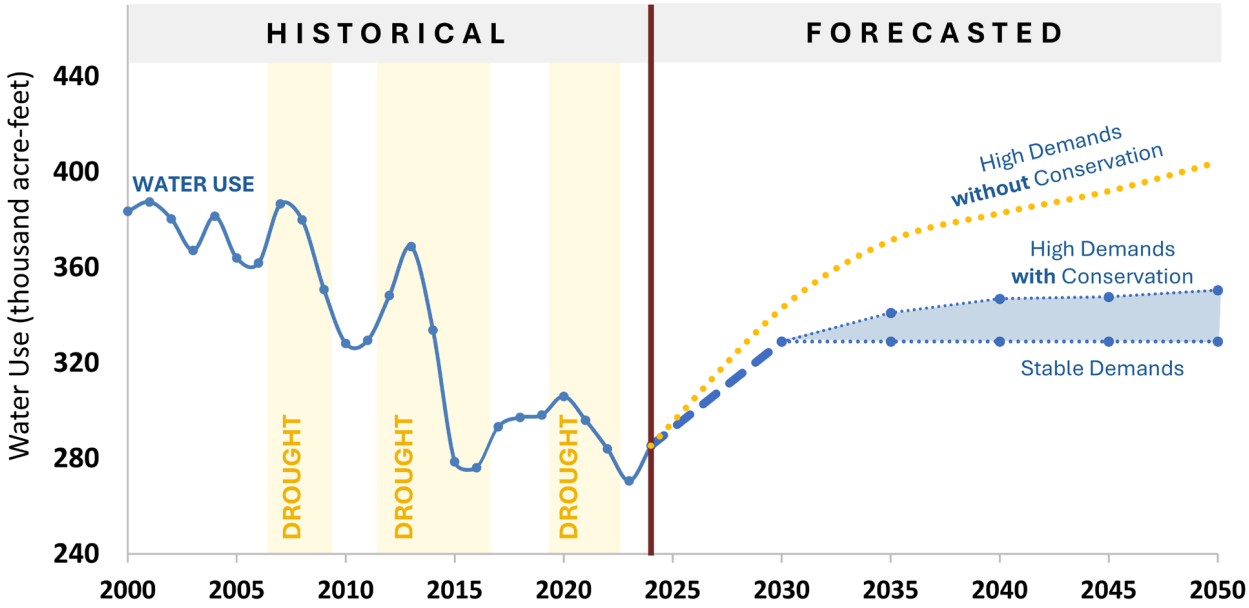
More recently, Sierra Club conducted a similar analysis of Valley Water's countywide demand projections for Santa Clara County. The chart below shows the history of Valley Water's UWMP demand projections vs. actual use during the past 25 years.



Furthermore, demand projections in the Water Supply Master Plan 2050 (WSMP), which Valley Water plans to use for the 2025 UWMP, do not appear to align with the projections from the model discussed in Appendix D of the WSMP. The drought rebound between now and 2030, the stable demand curve and the high demand with conservation curve all seem to be arbitrary and are not supported by the model. **The UWMP should use model results for demand projections, not these arbitrary values.**

The forecasted Santa Clara County water demands through 2050 (WSMP Table 3-3) show demand starting at 330,000 AFY in 2030 with conservation. This seems to be unreasonably high given current demand is less than 300,000 AFY and demand has not reached 330,000 AFY since 2014. WSMP Figure 3-4 (see chart below) illustrates this well, with the steep demand curve increase between now and 2030. **The assumption that the drought rebound will continue does not appear to be supported by the model so should be updated in favor of using model outcomes for changes in demand**.

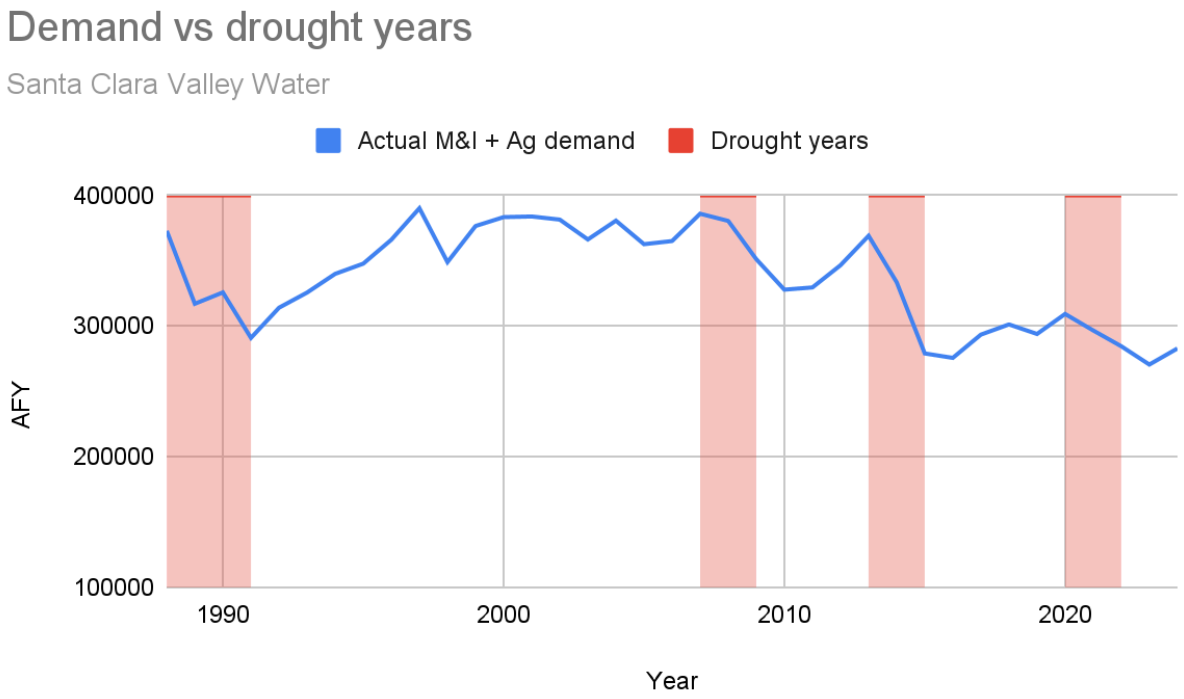
Figure 3-4 Historical and Forecasted Water Demands



2. **The Drought-Demand Model: A statistical model based on the Standardized Evapotranspiration-Precipitation Index (SPEI) drought index is a better predictor of water demand.**

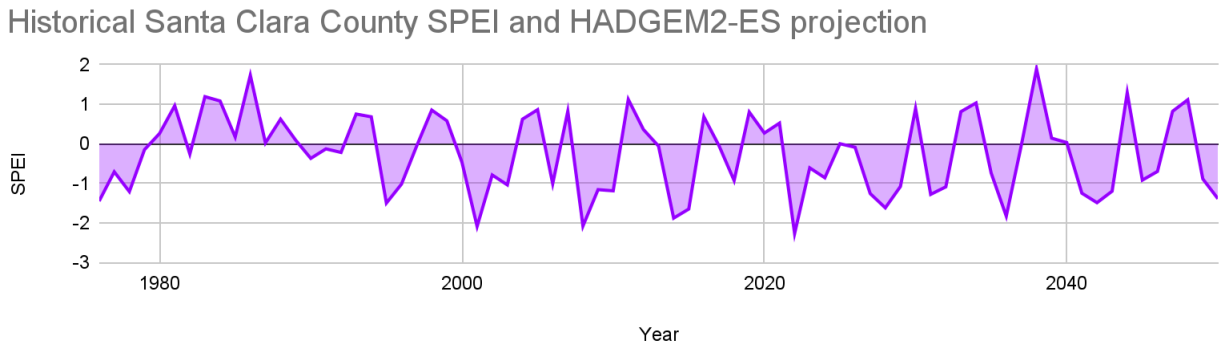
The standard water agency approach to modeling droughts is to assume that hotter, drier weather increases water use. This appears to be what the Valley Water model does in its climate modeling.

However, this approach is not supported by the historical record. In fact, droughts and higher temperatures over the past 20 years have suppressed water demand among Valley Water retailers. Every drought has resulted in large demand reductions, and post-drought demand has not rebounded to previous levels. Droughts have a long-term impact on demand by causing both behavioral changes (e.g. replacing lawns) and policy changes (e.g. the ban on watering ornamental turf with potable water). See figure below for a timeline of droughts and consumption in Santa Clara County.

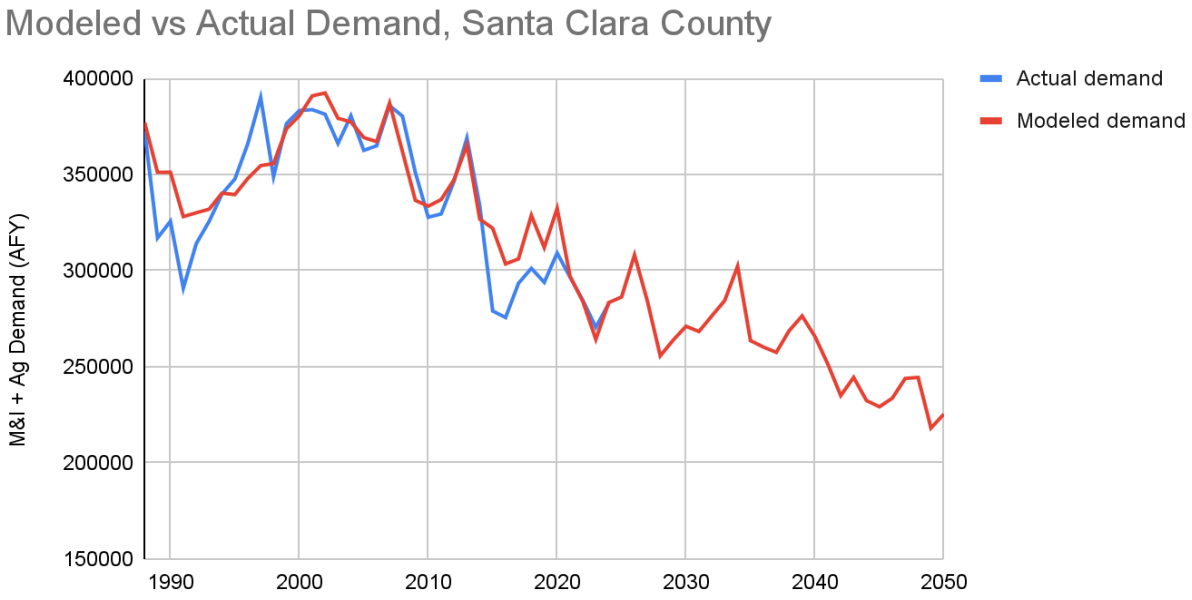


Using this insight, the Sierra Club built a curve-fitting model. This Drought-Demand Model uses a common drought measure to predict future water use. This drought measure, the Standardized Precipitation and Evapotranspiration Index (SPEI), coupled with population data and historical water use from the year 1976 to today, shows high predictive value when tested against out-of-sample test data. Essentially we created a water use curve that responds to a drought index and then tested it against years that we held back from the model. Our Drought-Demand Model's in-sample Mean Absolute Percentage Error (MAPE) is 3.4% and out-of-sample MAPE is 8.7%. In other words, our Drought-Demand Model has a 8.7% forecast error, compared to the 50% historical forecast error of Valley Water's WSMP projections.

The key to our model is the assumptions around future droughts. We pulled drought (SPEI) predictions for Santa Clara County from the world's leading climate models, and settled on the HadGEM2-ES365 (Historical +rcp45) as our baseline model. This model is used by CalAdapt to test against future droughts and runs slightly warmer and drier than other models. For our population inputs, we used the California Department of Finance population projections for Santa Clara County, which project 0.11% annual population growth to 2050. Below is a chart that shows the future drought projection we used for a baseline. Negative numbers are drier and/or hotter than normal and positive numbers are wetter and/or cooler than normal.



The Drought-Demand Model shows continuing reductions for the next 20 years. We find in our base case that 2050 Santa Clara County demand for potable water could be about 225,000 acre-feet per year (AFY) in 2050. In this case, the 350,000 AFY predicted by the WSMP 2050 “High Demand with Conservation” projection could be a 55% overestimate.



We believe the Drought-Demand Model uses reasonable alternative assumptions that should be considered and tracked to avoid over-investment, leading to increased unit-costs and increased water rates, thus resulting in additional conservation, etc.

A word about population projections: Valley Water uses relatively aggressive population growth numbers based on projections of the Association of Bay Area Governments. The growth rate chosen by Valley Water for its projections has not been attained for the past 25 years and far exceeds historical population growth rates. The Department of Finance

projections we use have generally been accurate within 3% on a 10-year basis, with errors tending toward overestimation of growth.

3. **Conclusion**

We ask that Valley Water's 2025 UWMP consider our Drought-Demand Model demand projections for Santa Clara County, and inform retailers in the County about this alternative for consideration in their UWMPs.

The potential for reduced demand provides an opportunity to further reduce reliance on the Sacramento/San Joaquin Delta and return much-needed flows to the ecosystem as mandated by the Delta Reform Act. This is also in line with Valley Water's 2026 Legislative Guiding Principles which support "efforts to address all Delta stressors, including … in-Delta and upstream diversions."

In particular, the Sierra Club is concerned about Valley Water's participation in mega-projects such as Sites Reservoir and the Delta Conveyance Project. In addition to the great environmental harm these projects will have on the Delta, these projects will have ever-rising costs resulting in unplanned water rate increases and impacts on water affordability. Decreasing demand would also result in increased water rates per unit. These rate increases would likely encourage further demand reduction. Although we did not analyze affordability for Valley Water ratepayers as part of these comments**, the potential impacts of decreasing demand on affordability should be analyzed and understood.**

In summary, utilizing more realistic demand projections improves planning, reduces the need for rate increases, reduces the need to invest in water supply projects, and helps to address affordability.

Thank you for considering our input and making sure the 2025 UWMP includes modeling scenarios that capture the potential for continued reduction in demand. We would welcome the opportunity to meet with staff to discuss our Drought-Demand Model and the importance of these alternative demand projections in the context of the UWMP.

Sincerely,

Sue Chow, Chapter Chair
Sierra Club Loma Prieta Chapter

Miguel Miguel, Director
Sierra Club California

SIERRA CLUB
LOMA PRIETA CHAPTER

SIERRA CLUB
SAN FRANCISCO BAY

SIERRA CLUB
CALIFORNIA

December 4, 2025

To: Policy Committee Chair Karen Hardy <khardy@santaclaraca.gov>
cc: BAWSCA Board of Directors <bawscaboardofdirectors@bawsca.org>; bawsca@bawsca.org

Subject: DSS water demand model – comments for December 10 Board Policy Committee meeting

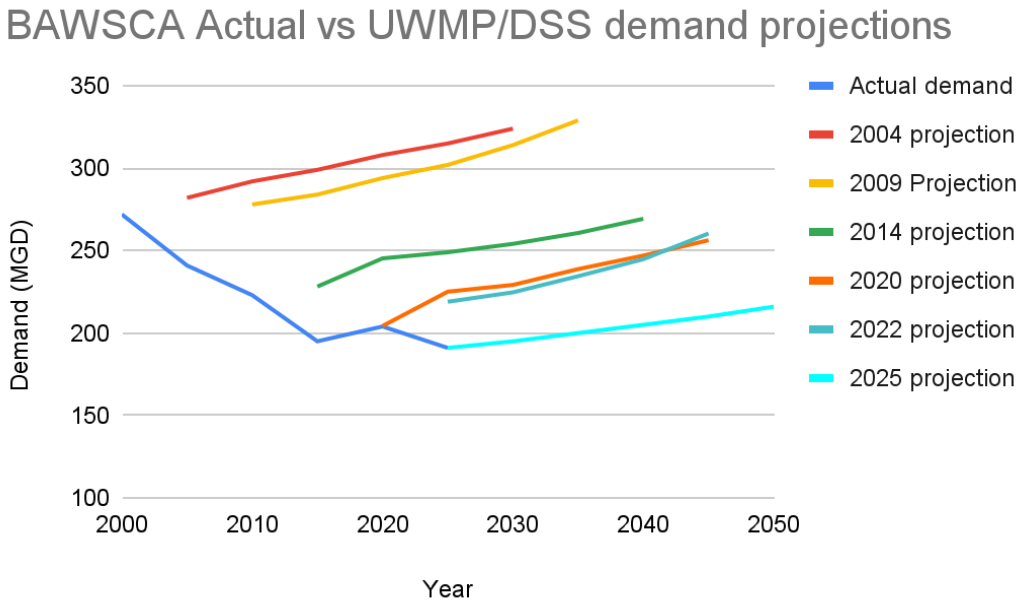
Dear Chair Hardy and BAWSCA Board Members,

Thank you for this opportunity to comment to the Policy Committee on BAWSCA's water demand model (the Decision Support System, or DSS). While much work by experienced industry professionals has gone into developing the DSS model, we strongly believe that past performance data needs to be recognized and included in the model. The current DSS ignores BAWSCA members' track record of conservation. We believe a more nuanced, evidence-based view of demand will allow better management of the Tuolumne River and its ecosystem—as well as preserve water affordability for ratepayers. This memo outlines our concerns and presents opportunities for collaboration.

1. **BAWSCA's DSS models have consistently overestimated future water demand**

BAWSCA has for decades put thought and energy into helping its members model demand for drinking water.

However, the projections have historically been very inaccurate, overestimating water demand by more than 50% on a 15-year horizon when examined retrospectively. This overprojection has not improved over time – the 2022 DSS projection overestimated the 2025 water use by 15%. This graphic below illustrates the trend.

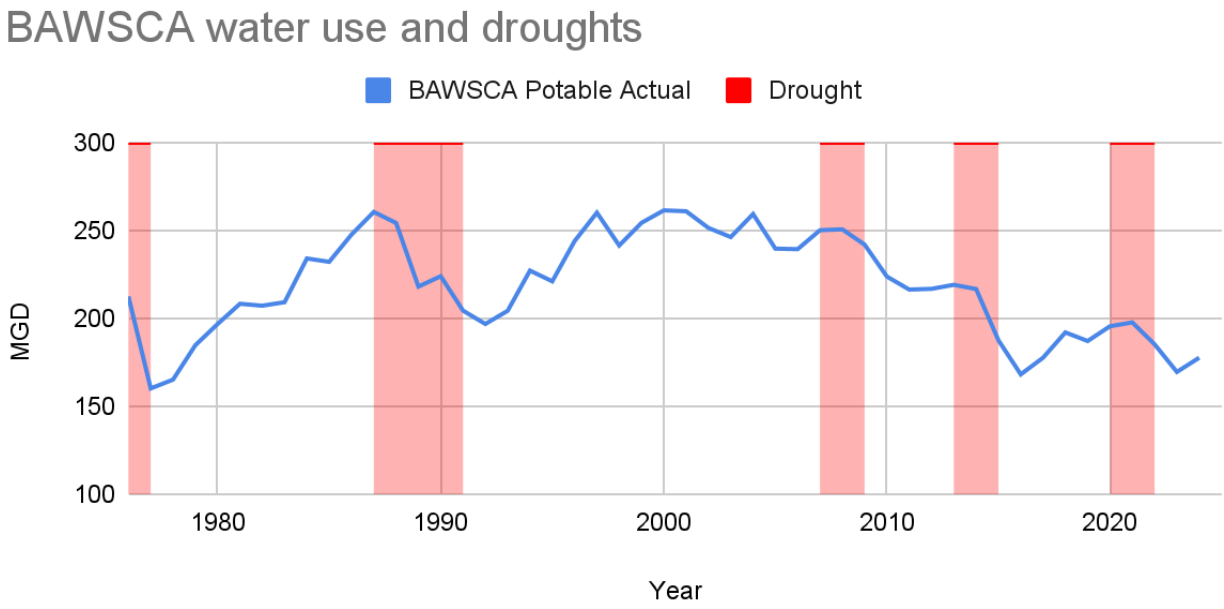


The current (2025) DSS appears to suffer from the same issue, projecting ever-increasing demand despite long-term historical trends of ever-decreasing demand. Without access to the model inputs, it is hard to understand what is driving this result. However, in our brief conversation with the consulting team building the model, it appears that they are assuming in their model that the coefficients they derive from past correlations carry on into the future unchanged. These coefficients govern, for example, calculations of water use per measure of economic activity or water use per multifamily unit. They also appear to be incorrectly interpreting what happens to water use in a hotter, drier future climate. Finally, they have not yet taken droughts into account, and our understanding of their previous work around droughts is that it has not substantially changed the outcome of the modeling.

2. **The Drought-Demand Model: A statistical model based on the SPEI drought index is an extremely good predictor of water demand.**

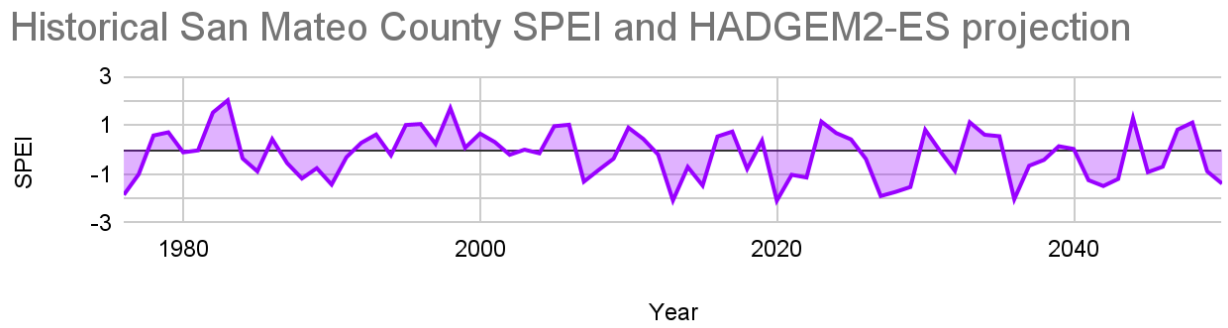
The standard water agency approach to modeling droughts is to assume that hotter, drier weather increases water use. This is what the DSS model does in its climate modeling.

However, this approach is not supported by the historical record. In fact, droughts and a hotter, drier climate in the past 20 years have actually served to suppress water demand among BAWSCA members. Every drought has resulted in large demand reductions, and post-drought demand has not rebounded to previous levels. Droughts have a long-term impact on demand by causing both behavioral changes (e.g. replacing lawns) and policy changes (e.g. the ban on watering ornamental turf with potable water). See figure below for a timeline of droughts and consumption:



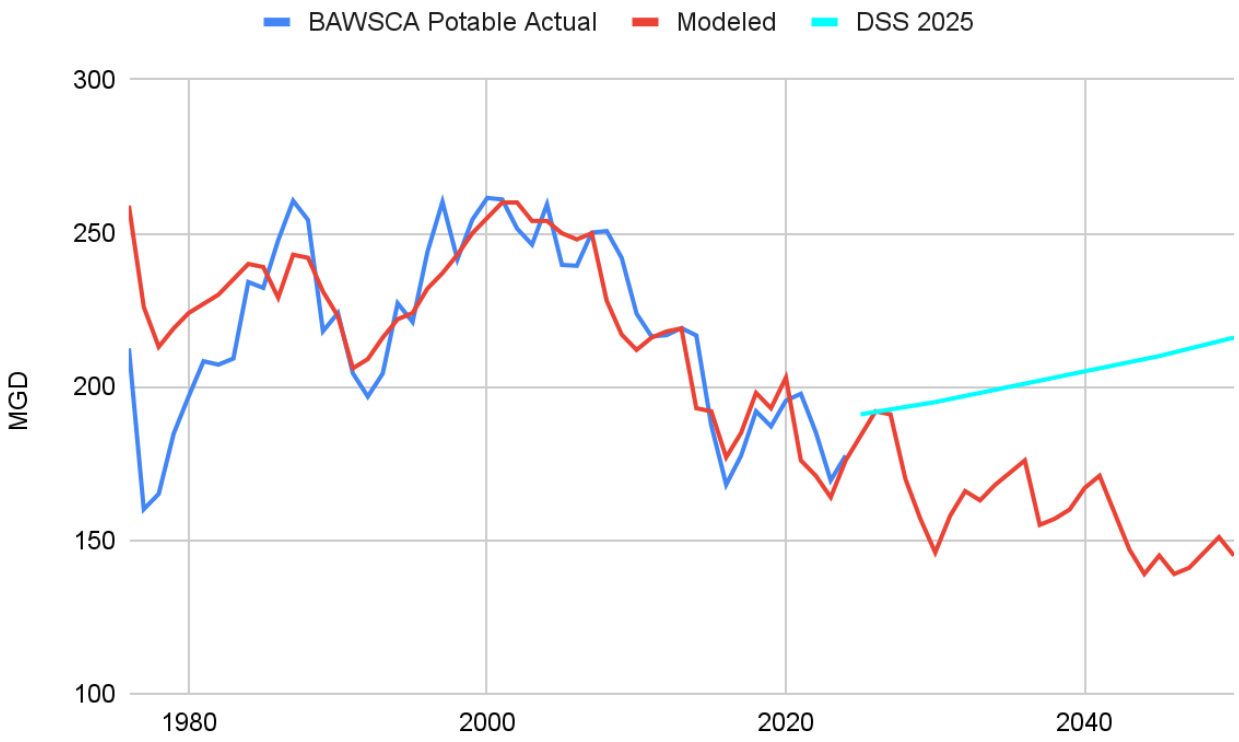
Using this insight, we have built a curve-fitting model. This Drought-Demand Model uses a common drought measure to predict future water use. This drought measure, the Standardized Precipitation and Evapotranspiration Index (SPEI), coupled with population data and historical water use from the year 1976 to today, shows extremely high predictive value when tested against out-of-sample test data. Essentially we created a water use curve that responds to a drought index and then tests it against years that we held back from the model. Our Drought-Demand Model's in-sample Mean Absolute Percentage Error (MAPE) is 4% and out-of-sample MAPE is 4.5%. In other words, our Drought-Demand Model has a 4.5% forecast error, compared to the 50% historical forecast error of the DSS. This is not to denigrate the DSS model, but to show that our results are well within the bounds of what has been considered accurate in the past. We are available to discuss our model in detail.

The key to our model, of course, is the assumptions around future droughts. We pulled drought (SPEI) predictions for San Mateo County from the world's leading climate models, and settled on the HadGEM2-ES365 (Historical +rcp45) as our baseline model. This model is used by CalAdapt to test against future droughts and runs slightly warmer and drier than other models. For our population inputs, we used the California Department of Finance population projections for San Mateo County, which project 0.12% annual population growth to 2050. Below is a chart that shows the future drought projection we used for a baseline. Negative numbers are drier and/or hotter than normal and positive numbers are wetter and/or cooler than normal.



3. **The Drought-Demand Model shows a decline in water demand of about 30 MGD over the next 25 years, indicating the DSS model is overestimating demand by about 50%**

The chart below shows the results of our baseline Drought-Demand Model. The dark blue line is historical potable water use, the red line is Drought-Demand modeled historical and future use, the light blue line is the BAWSCA DSS model baseline results.



We find in our base case that 2050 BAWSCA demand for potable water will be about 145 MGD. This indicates the 216 MGD predicted by the baseline DSS is a roughly 50% overestimate.

Various scenarios we ran show a range of 2050 potable demand from 126 MGD in an extreme drought scenario (using the very hot/dry model IPSL-CM5A-MR (Historical +rcp45)) to 177 MGD

(flat from today), using both the somewhat wetter CanESM2 (Historical +rcp45) and a population growth rate 4x higher than the DOF numbers. The table below lays out these scenarios:

Scenario	2050 demand (MGD)*	Inputs
Baseline	145	HADGEM2-ES + 0.12% annual pop. growth
Severe Drought	126	IPSL-CM5A-MR + 0.12% annual pop. growth
Wet + High population	177	CanESM2 + 0.48% annual pop. growth
DSS Baseline	216	
*2050 demand is total BAWSCA potable demand		

4. The consequences for the environment of over-estimation are severe

The over-estimation of demand leads to a posture toward managing riverine ecosystems that is, to put it mildly, bad for riverine ecosystems. It's an approach focused on the control of nature rather than adaptation.

The lynchpin of environmental sustainability in the Tuolumne River ecosystem – the ecosystem that supplies BAWSCA members with most of their water – is the Bay Delta Plan. The Bay Delta Plan assures enough water for continued recovery of salmon and other species and for improved health of the ecosystem. As the State Water Resources Board stated, "Fish habitat quantity and quality on the Tuolumne River is primarily controlled by flows."

The DSS's overprojections put BAWSCA on a wholly unnecessary path opposing the Bay Delta Plan. Instead of seizing the future of declining demand, BAWSCA and its members have used the DSS as justification to argue that the Bay Delta Plan would deprive their customers of the water they need.

Indeed, in Tom Smegal's letter to the State Water Resources Control Board, dated November 7, 2025, about the Scientific Basis Report on the Bay Delta Plan, Mr. Smegal cited the Urban Water Management Plan (UWMP) projections as the reason he was concerned about water availability during a drought. He wrote this despite knowing that the most recent DSS model that underlies the UWMPs had overprojected 2025 water use by 18% just five years into the future.

Projected future high demands will always point to the necessity of more supply. The SFPUC's Alternative Water Supply (AWS) plan is an example of this. Supply now comes in the form of expanded reservoirs that destroy terrestrial ecosystems or water purification schemes that explode the greenhouse gas budgets and wallets of our communities. It's a choice to spend billions of dollars pouring concrete. We urge you to choose a different and more reasonable path, supported by historical data.

The Bay Delta Plan is a stand-in for the proposition that people and ecosystems can co-exist, and for the idea that people do not have to remove every drop of life from an ecosystem. It's a stand-in for the environmental values that Californians hold at their core. Each and every year of this unnecessary battle means poorer ecosystems and poorer people.

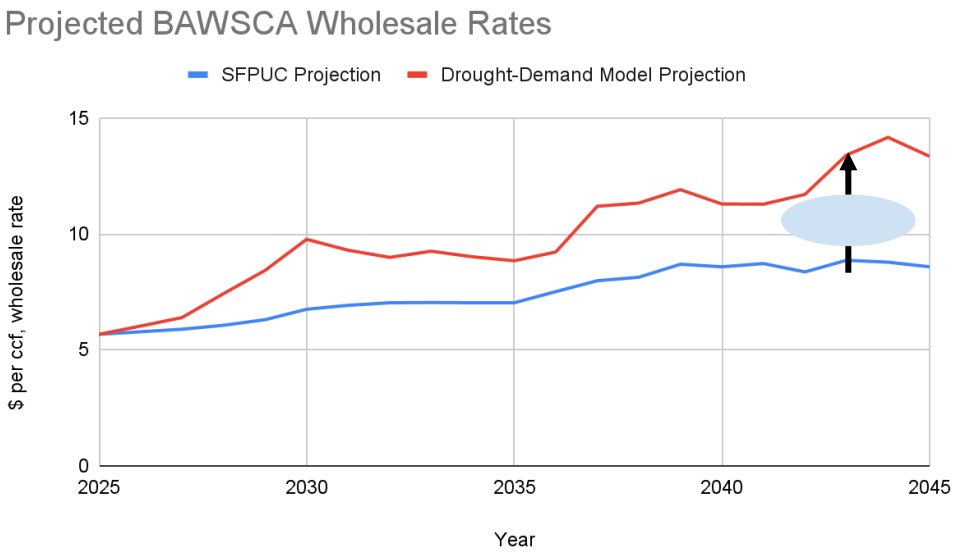
5. **The affordability consequences for BAWSCA ratepayers are likely to also be severe**

BAWSCA's ratepayers are likely to pay more for their water during the next 25 years as a result of BAWSCA's overly high demand projections.

First, the high demand projections encourage capital spending. For example, the new, nearly half-billion dollar headquarters building being built by the SFPUC (the Millbrae Campus) is something for which BAWSCA ratepayers will have to pay their proportional share. This new water temple is a symbol of agency bloat justified by BAWSCA's ever-increasing demand and revenue projections over the years.

The high demand projections have also led the SFPUC to put forward various capital projects to increase supply under the Alternative Water Supply (AWS) plan. These AWS projects, if they go forward, will raise both the capital and operational costs BAWSCA members will pay for wholesale water over the next 25 years.

Second, high demand projections lead to misleadingly low cost projections. Our chart below compares the SFPUC's current wholesale water cost projections, based on demand numbers from BAWSCA. Our modeling indicates that wholesale rates will increase 135% over the next 20 years because fixed infrastructure costs will have to be spread over fewer gallons sold.



This rapid acceleration in rates, especially over the next five years, will be difficult for BAWSCA customers to absorb. Less wealthy customers, especially, will struggle to pay for low-flow

plumbing, leak fixes and drought-resistant landscaping. Wealthier homeowners and businesses will be able to adapt, but will be upset to see the annual increases in their water rates.

Overestimating demand has significant financial consequences particularly in the SFPUC's situation: Wholesale water rates are already high (doubling since 2015), its Regional Water System (RWS) is a fixed cost system (costs don't vary with volume), and the SFPUC is heavily laden with debt it took on to fund its capital projects (such that roughly 50% of wholesale water rates go to servicing debt).

Should demand not materialize as forecasted, the SFPUC has no choice but to increase rates above what was projected. It has little ability to reduce costs to adapt to a lower demand scenario. In addition, higher water rates cause further reductions in demand, which has contributed to the decline in per capita demand that's been experienced during the past 20 years.

BAWSCA agencies have already experienced unplanned rate increases. In May 2022 the SFPUC projected the FY 2026 wholesale rate to by $5.25/ccf. Today that rate is $5.80, 10% higher than projected. The unplanned increase is in part due to demand not growing as forecasted and in part due to a large increase in capital spending.

Based on current demand projections and due to high median household incomes in most cities served by BAWSCA, most cities' combined water and sewer bills appear unlikely to exceed local affordability thresholds for a decade or more. However if California's median household income were used as the basis for calculating affordability, almost all BAWSCA member cities would see their combined water and sewer bills already exceeding affordability thresholds. This bodes poorly for cities trying to attract a mix of residents, including teachers, firefighters and other public servants.

Local agencies have little ability to absorb the cost of unexpected SFPUC rate increases. Cities are already facing their own financial challenges both from the need to upgrade aging infrastructure and recent court cases that point to reducing or eliminating water rate billing tiers due to Proposition 218. The elimination of these tiers typically increases rates further for lower-volume, and, usually, lower-income water users.

The San Diego County Water Authority is a good example of an agency that has experienced some of these issues. San Diego's struggles include a deteriorating financial condition and large rate increases after a large capital program designed to address demand that never materialized.

Utilizing more realistic demand projections improves planning, reduces the need for unplanned rate increases, reduces the need for alternative water supplies and helps with addressing affordability thresholds.

6. Summary and proposed actions

In summary, BAWSCA staff and members have set themselves up for a choice: They can acknowledge the members' track record of winning on water use efficiency – and couple that with sensitive habitat management – or they can continue to overpredict demand, and the environment and ratepayers will suffer for it.

We suggest concrete actions to move the discussion forward:

A) Create a working group with BAWSCA staff, interested members' representatives, the Hazen consulting team and outside stakeholders to work to reconcile the various projections of demand. The previous stakeholder group was somewhat unsatisfactory and did not substantially change the baseline scenario. This new group should operate on the principle of full data and model transparency.
B) Set a January board agenda item to reassess demand projections ahead of the UWMP process.
C) Budget for work with outside stakeholders in 2026 to alter BAWSCA's approach to the Bay Delta Plan

Katja Irvin, Guadalupe Group Conservation Chair
Sierra Club Loma Prieta Chapter

John J. Bauters, Chair
San Francisco Bay Chapter

Miguel Miguel, Director
Sierra Club California

Attachment: *Letter from Tom Smegal to SWRCB, dated November 7, 2025*