BAY AREA WATER SUPPLY AND CONSERVATION AGENCY
BOARD OF DIRECTORS MEETING

November 13, 2025

Correspondence and media coverage of interest between October 9, 2025 and November 12, 2025

From:	Peter Drekmeier, Policy Director, Yosemite Rivers Alliance (formerly Tuolumne River Trust)
To:	BAWSCA Board of Directors
Date:	November 12, 2025
Subject:	Water Symposium

From:	Dave Warner
To:	BAWSCA Board Members and Tom Smegal
Date:	November 10, 2025
Subject:	A Contrasting Result on Affordability

From:	Tom Smegal, BAWSCA, CEO/General Manager
To:	Courtney Tyler, Clerk to the Board, State Water Resources Control Board
Date:	November 7, 2025
Subject:	Comment Letter – Draft TVA Scientific Basis Report

From:	Tom Smegal, BAWSCA CEO/General Manager
To:	Joint Legislative Audit Committee Alfred E. Alquist Seismic Safety Commission Division of Drinking Water
Date:	October 9, 2025
Subject:	BAWSCA Comments on Wholesale Regional Water System Security and Reliability Act 2024 Notice of Changes to the San Francisco Public Utilities Commission Water System Improvement Program

From:	Tom Smegal, BAWSCA CEO/General Manager
To:	Joint Legislative Audit Committee Alfred E. Alquist Seismic Safety Commission Division of Drinking Water
Date:	October 9, 2025
Subject:	BAWSCA Review of the SFPUC Fiscal Year (FY) 2024-25 Annual Report, Water System Improvement Program (WSIP)

From:	Tom Smegal, BAWSCA CEO/General Manager
To:	The Honorable Kate H. Stacy, President and Members of the Commission
Date:	October 9, 2025
Subject:	BAWSCA Review of the SFPUC Fiscal Year (FY) 2024-25 Annual Report, Water System Improvement Program (WSIP)

Water Policy:

Date: November 9, 2025
Source: Mercury News
Article: New ballot measure push aims to overhaul California's landmark environmental law

Date: November 5, 2025
Source: Department of Water Resources
Article: Senate Bill 72 Bolsters California Water Plan and Advances Long-Term Water Supply Goals

Water Supply Management:

Date: November 5, 2025
Source: Brookings
Article: Future of Data Centers

Date: October 21, 2025
Source: San Francisco Chronicle
Article: California has struggled to track water use. A new system should fix this

Water Infrastructure

Date: November 3, 2025
Source: Maven
Article: SGMA Implementation: Open-Source Tools, Shared Success: White Paper Highlights Groundwater Innovation in Action

Date: October 24, 2025
Source: SmartWater Magazine
Article: EPA unveils new tools to bolster cyber resilience and safeguard water systems

Water Quality:

Date: October 22, 2025
Source: Sustainability magazine
Article: How is California Phasing Out the Use of Forever Chemicals?

From: Peter Drekmeier
To: bawscaboardofdirectors
Subject: Water Symposium
Date: Wednesday, November 12, 2025 9:09:14 AM

Dear Chair Chambers and BAWSCA Directors,

Last month the League of Women Voters hosted a Water Symposium in Palo Alto. BAWSCA and the SFPUC were invited to participate, but declined.

If you would like to watch my presentation, I start at 1:04:20 here — https://www.youtube.com/watch?v=4CjxVPujyeQ

-Peter

Please note my new email address.

Peter Drekmeier
Policy Director
Yosemite Rivers Alliance
(Formerly Tuolumne River Trust)
peter.drekmeier@yosemiterivers.org

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November 10, 2025

Re: A Contrasting Result on Affordability

Dear BAWSCA Board Members and CEO Smegal,

The BAWSCA affordability results state that, "Findings from the affordability assessment indicate that water is broadly affordable for most households, with 97% of typical households paying less than 1.5% of income on water."[1]

The analysis here found a different result when applying the SFPUC's affordability policy to four cities, Palo Alto, East Palo Alto, Menlo Park, and Millbrae. Findings include:

- **In the current fiscal year 3 of the 4 cities, East Palo Alto, Menlo Park, and Millbrae are in a worse affordability position than San Francisco[2]**
- **Two of the cities are likely to exceed the SFPUC's affordability thresholds by 2040 and substantially exceed the thresholds by 2045 when using either each city's own projected water and wastewater rate increases or a long-term growth rate of 5% per year.**
- **Menlo Park reaches 87% of its threshold by 2045.**
- **While Palo Alto over time moves closer to its affordability threshold, its high household income means Palo Alto residents can afford large bills. However, if Palo Alto's affordability threshold were set using Santa Clara County incomes, Palo Alto too would exceed its affordability threshold by 2045. This does not bode well for attracting teachers, firefighters and others to live in Palo Alto.**

If these four cities are a reasonable cross section of BAWSCA, then affordability should be a significant concern for the BAWSCA Board, not only for the 1.8 million residents BAWSCA represents, but also for those potential residents that BAWSCA agencies are trying to attract.

Below are details of the analysis that led to these results.

The SFPUC's Affordability Policy

The SFPUC's affordability policy[3] is based on the Environmental Protection Agency's "Water Affordability Needs Assessment."[4] Please note that the SFPUC and EPA provide affordability

[1] Taken from the summary section of agenda item 6A materials (page 29) for the October 8th, 2025 Policy Committee meeting.
[2] As measured by current bills as a percentage of affordability targets.
[3] The SFPUC affordability policy can be found at: https://www.sfpuc.gov/sites/default/files/about-us/policies-reports/Affordability-Metrics-Policy-1123.pdf
[4] The EPA's report can be found at: https://www.epa.gov/waterfinancecenter/water-affordability-needs-assessment

thresholds for combined water and wastewater bills, which this analysis follows. Neither agency has an affordability metric for just water.

The SFPUC defines its average single-family residence (SFR) affordability threshold as 3% of the 40th percentile household income.

The chart in figure 1 shows how the SFPUC applies its affordability policy in San Francisco.

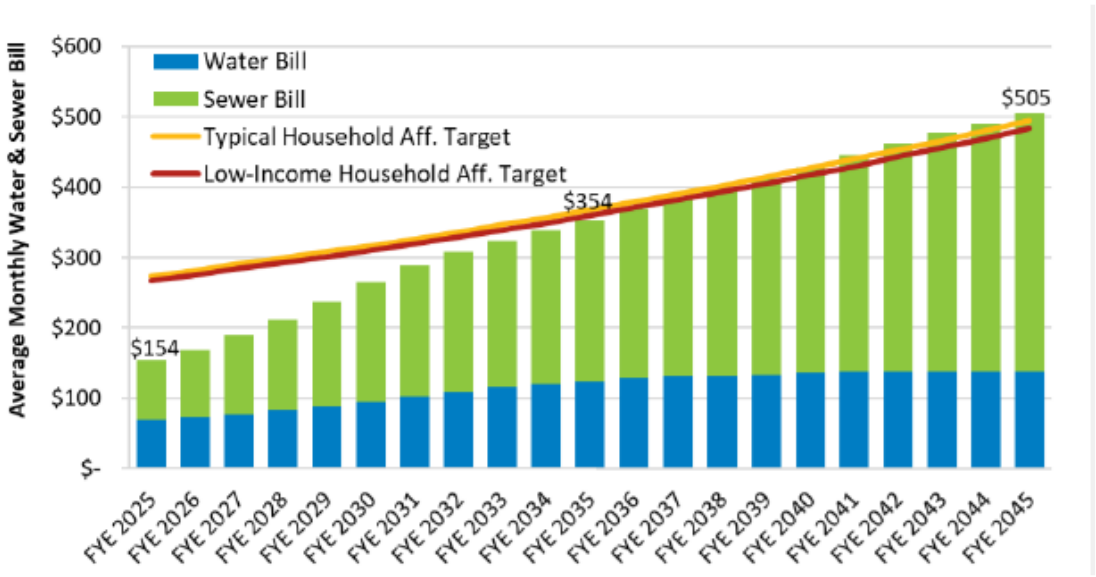

Figure 1: The SFPUC's most recent (February 2025) affordability projections.

The SFPUC's affordability chart shows that it is currently expecting that San Francisco's single-family residents' average combined water and sewer bill will exceed its typical household affordability target by 2037. For reference, San Francisco's current average monthly combined bill is $169 and is 60% of the FY 2026 typical household affordability threshold of $282.

Methodology

Current FY 2026 residential water and wastewater rates are taken from each city's website, or a third party's website when the city references a third party for rates. When available, rate projections are taken from rate studies. For example, Millbrae projects rates to increase 7% annually. Hence this analysis projected rate increases of 7% annually through 2030 and then for 2031 onwards, reduced the increases to 5% annually to lessen the chance of overestimating growth rates.

The 40th percentile household income was generally not available by city. However, when looking at Bay Area income by percentile, the 40th percentile household income was 77% of median household income (MHI). MHI for each city was readily available. 40th percentile income for each city was calculated as 77% of its MHI.

As the MHI data found was for 2023, the analysis assumed MHI grew at 3% per year to 2026. Correspondingly, 40th percentile household income was projected to grow at 3% per year through 2045.

For simplicity, only typical household affordability was calculated. Low-income household affordability was not.

In alphabetical order:

East Palo Alto

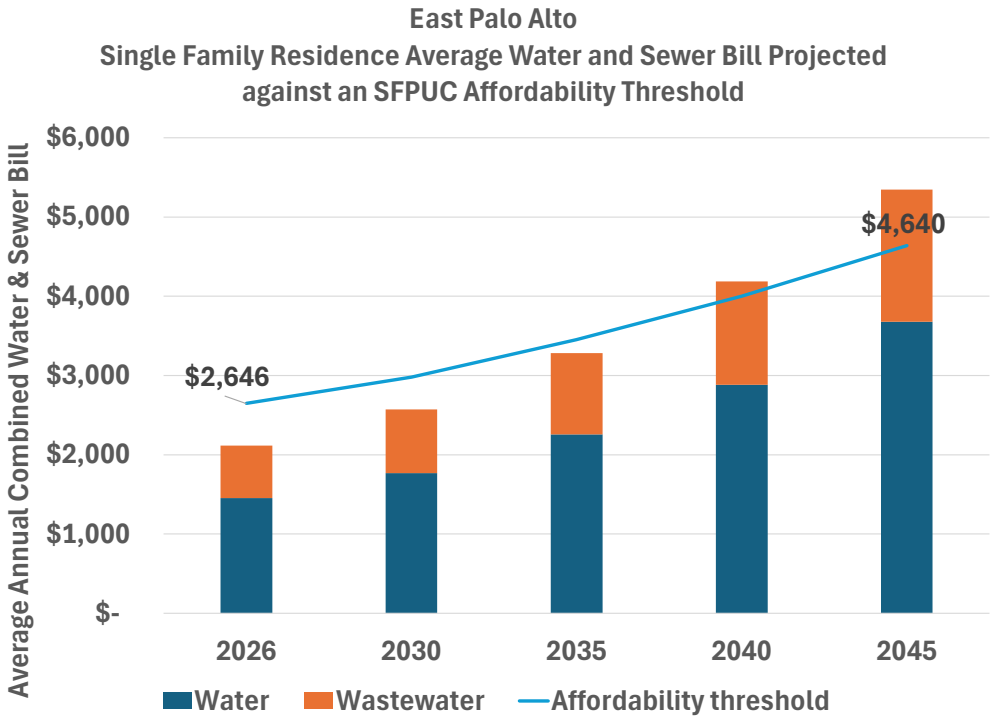

Figure 2: East Palo Alto's affordability projections

Based on estimated 2026 MHI of $114,553, East Palo Alto's FY 2026 affordability threshold is currently $2,646 and grows to $4,640 by 2045. Based on monthly usage of 10 ccf, East Palo Alto's SFR combined annual water and wastewater bill for FY 2026 is $2,115 (80% of threshold) and increases to $5,345 (115% of threshold) in FY 2045, which is shown in figure 2.

Millbrae

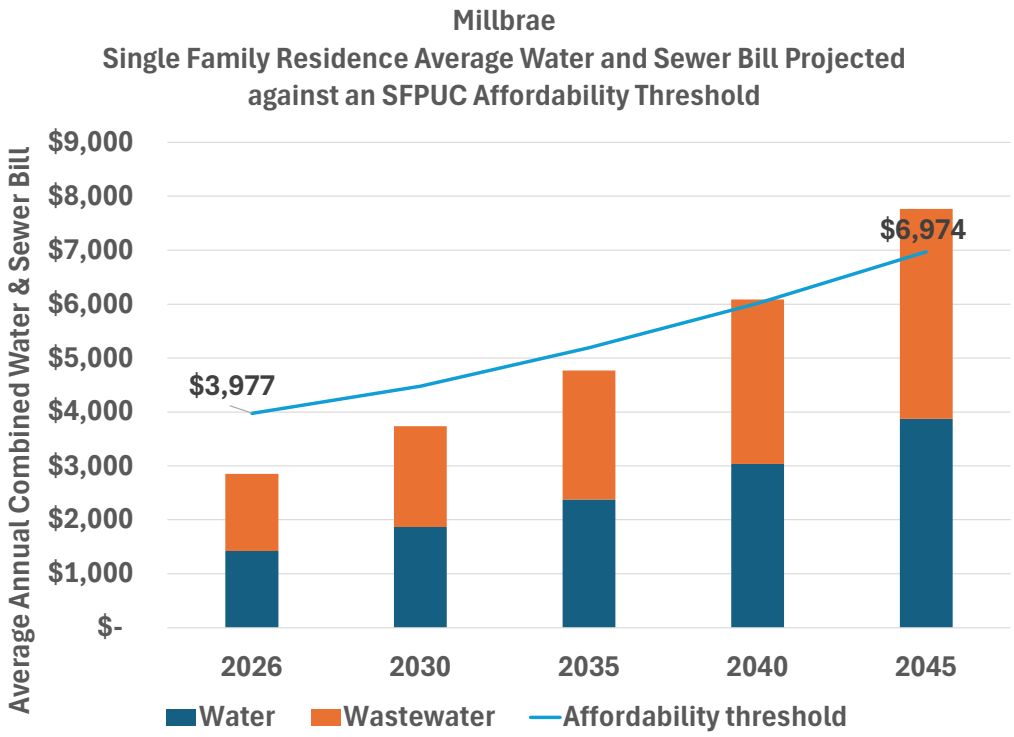

Figure 3: Millbrae's affordability projections

Based on estimated 2026 MHI of $172,178, Millbrae's FY 2026 affordability threshold is currently $3,977 and grows to $6,974 by 2045. Based on monthly usage of 6 ccf, Millbrae's SFR combined annual water and wastewater bill for FY 2026 is $2,850 (72% of threshold) and increases to $7,766 (111% of threshold) in FY 2045, which is shown in figure 3.

Menlo Park

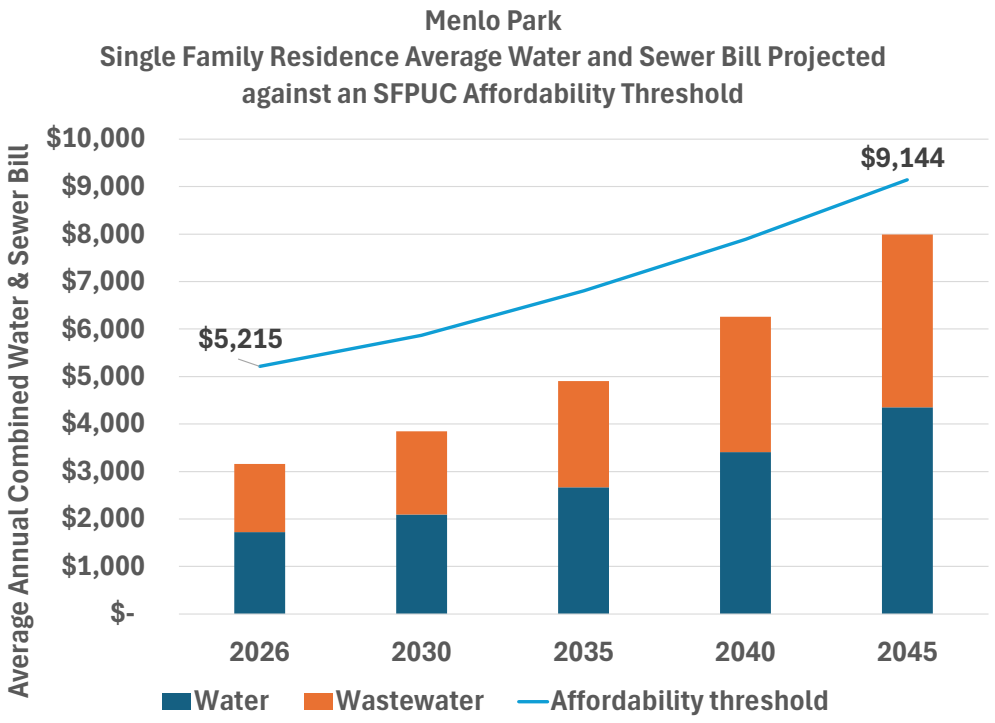

Figure 4: Menlo Park's affordability projections

Based on estimated 2026 MHI of $225,744, Menlo Park's FY 2026 affordability threshold is currently $5,215 and grows to $9.144 by 2045. Based on monthly usage of 12 ccf, Menlo Park's SFR combined annual water and wastewater bill for FY 2026 is $3,161 (61% of threshold) and increases to $7,989 (87% of threshold) in FY 2045, which is shown in figure 4.

Palo Alto

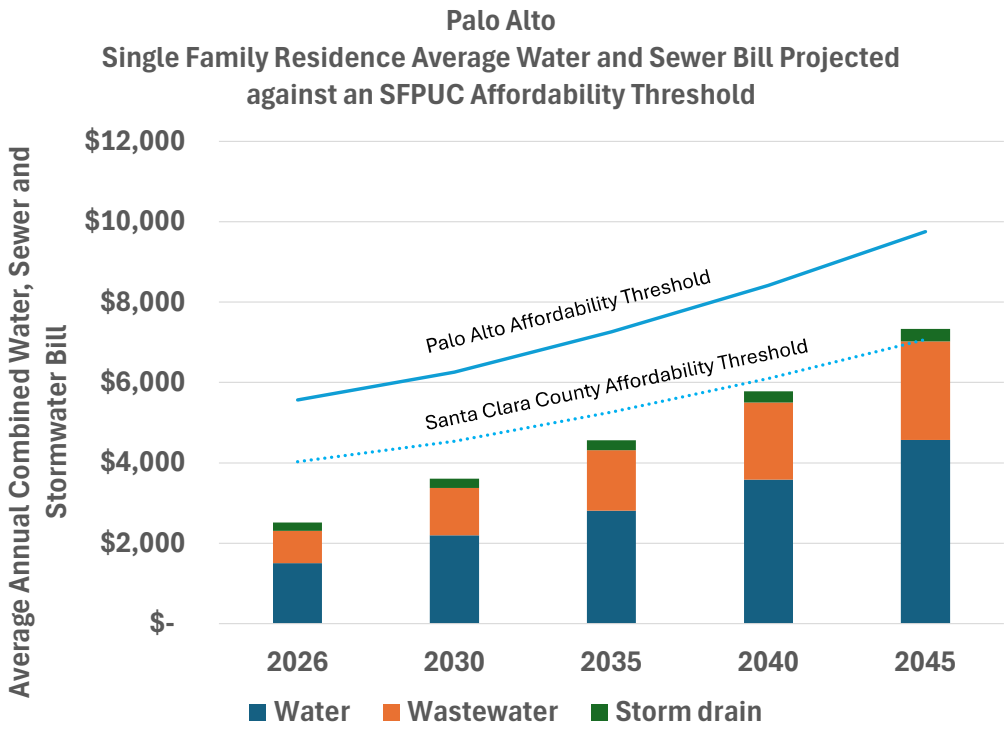

Figure 5: Palo Alto's affordability projections

Based on estimated 2026 MHI of $240,846, Palo Alto's FY 2026 affordability threshold is currently $5,564 and grows to $9.756 by 2045. Based on monthly usage of 9 ccf, Palo Alto's SFR combined annual water and wastewater bill for FY 2026 is $2,519 (45% of threshold) and increases to $7,332 (75% of threshold) in FY 2045, which is shown in figure 5.

However if the affordability threshold were based on Santa Clara County household incomes (also shown on figure 5), then Palo Alto's SFR combined water and wastewater bills would be unaffordable by 2045.

And worse yet, if the affordability threshold were based on California household incomes, Palo Alto's SFR combined water and wastewater bills would be unaffordable today. In fact, this would also be true for Menlo Park and Millbrae, and likely for most BAWSCA agencies.

Having water and wastewater bills unaffordable for the average California SFR household does not portend well for attracting new residents.

Additional Affordability Risks

This analysis was done without considering the risks to wholesale water rates. Should wholesale water rates increase more than the SFPUC is currently projecting, this would have an adverse impact on affordability. Overestimated demand and increased SFPUC costs are two immediate risks to rate projections.

An Example of How Projected Water Rates are Underestimated

Change in FY'26 Wholesale Water Rate Projections
(per acre foot)

Date projected	FY'26
May 2022	$ 2,287
May 2025	$ 2,526

% Change in Projected FY26 rate in 3 years: **10.5%**

Note: The FY'22 wholesale rate was $1,786/acre foot. Today's price is 41.4% higher

Figure 6

As shown in figure 6, in May of 2022, the SFPUC projected that the FY 2026 wholesale price of water would be $2,287 per acre foot. Today it is 10.5% higher, at $2,526 per acre foot. The two drivers of the increase were demand coming in lower than projected and SFPUC spending coming in higher than projected.

Other risks include the cost of building alternative water supplies, not factored in current projections, or building alternative water supplies that aren't needed or underutilized (a San Diego County Water Authority problem).

Recommended Actions

Please consider asking the BAWSCA team to revisit its affordability analysis both to understand differences to this one and to expand its scope to look at future affordability risk, not just affordability today. The sooner actions are taken to understand and address affordability risk, the easier it will be to reduce that risk.

Kind regards,

Dave Warner

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Bay Area Water Supply & Conservation Agency

November 7, 2025

Courtney Tyler, Clerk to the Board
Division of Water Rights Mail Room
Attn: San Joaquin Unit
State Water Resources Control Board
1001 I Street, 2nd Floor, Sacramento, CA 95814
Transmitted via e-mail to: LSJR-SD-Comments@waterboards.ca.gov

Re: Comment Letter – Draft TVA Scientific Basis Report

Dear Ms. Tyler:

The Bay Area Water Supply and Conservation Agency (BAWSCA) submits the following comments regarding the Draft Scientific Basis Report Supplement for the Tuolumne River Voluntary Agreement Proposal (Draft SBR). The Draft SBR is a necessary prerequisite before the State Water Board considers the proposed voluntary agreement for the Tuolumne River, which is also referred to as the Tuolumne Healthy Rivers and Landscape Plan or Tuolumne HRL. Incorporation of the Tuolumne HRL will require potential updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan or Plan), most recently adopted by the State Water Board in 2018.

BAWSCA has expressed its support of a thorough, robust and defensible analysis of the Tuolumne HRL. A robust review would help to bring all parties together and potentially move forward a unified approach to meeting the needs of all Tuolumne River parties and beneficiaries. BAWSCA is pleased to see that the Draft SBR provides sufficient documentation to warrant moving the Tuolumne HRL forward as part of an updated Bay-Delta Water Quality Control Plan.

The Tuolumne HRL is designed to provide tangible environmental benefits, including new floodplain and rearing habitat, restored spawning areas, and increased flows in all hydrologic year types. It is also predicted to result in a 150% increase in juvenile salmon compared to current conditions. The San Francisco Public Utilities Commission (SFPUC) together with the Modesto Irrigation District and Turlock Irrigation District are self-funding the implementation of the Tuolumne HRL, committing over $80M. This will deliver immediate results without delay by reliance on State or Federal funding.

The Draft SBR confirms that the Tuolumne HRL proposal is a holistic and integrated approach to improving the Bay-Delta ecosystem for fish and wildlife by aligning a broad spectrum of habitat, science, and adaptive management tools. The State Water Board now has the scientific basis it needs to move the Tuolumne HRL proposal forward without delay so that it can be considered as an alternative update to the Bay-Delta Plan.

BAWSCA represents the twenty-six wholesale customers of the SFPUC, who collectively contribute to the funding of the Tuolumne HRL through water rates, totaling more than $320M annually, paid to San Francisco. For the BAWSCA agencies, the Tuolumne HRL helps ensure a continuing reliable supply of high-quality water at a fair price for the health, safety, and economic well-being of BAWSCA's water users in the Bay Area.

BAWSCA's Interest in the Draft SBR and Tuolumne HRL

BAWSCA represents the wholesale water agencies that purchase two-thirds of the water delivered by the San Francisco Regional Water System (Regional Water System) and pays for two-thirds of its costs. The Regional Water System relies on the Tuolumne River for 85 percent of its water supply. The BAWSCA member agencies, in turn, provide water to 1.8 million residents, 40,000 businesses, and hundreds of community organizations in Alameda, San Mateo, and Santa Clara counties. It is important to understand that BAWSCA was created 22 years ago by the California legislature (AB 2058) to protect and assure a reliable water supply for its constituents (Water Code § 81300 *et seq*.). Attachment 1 illustrates the BAWSCA service area and member agencies.

BAWSCA has been engaged in the process to update the Bay-Delta Plan and continues to support its objectives. However, BAWSCA cannot support the Plan adopted by the State Board in December 2018 due to the significant negative impacts to the water customers BAWSCA represents. The Plan adopted in 2018 would result in a very serious loss of up to 90 million gallons of water every day during times of drought from the Regional Water System. These are the same unacceptable impacts that BAWSCA described to the State Board in detailed written and oral comments[1] when it adopted the Bay-Delta Plan update and Substitute Environmental Document (SED) in 2018.

Of particular concern for BAWSCA member agencies is how reduced supplies resulting from implementation of the Bay-Delta Plan adopted in 2018 will impact housing needs in the Bay-Area. The Porter-Cologne Water Quality Control Act requires that the State Board evaluate "the need for developing housing within the region" when establishing water quality objectives (Water Code § 13241(e).). Furthermore, the State's Housing Accountability Act declares: "The availability of housing is of vital statewide importance" (Gov. Code § 65580(a)) and "California has a housing supply and affordability crisis of historic proportions" (*id*. § 65589.5(a)(2)(A)). And the housing crisis is particularly acute in the Bay Area.[2] See Attachment 2 for a discussion of SF Bay Area housing requirements.

BAWSCA member agencies have adopted State-required UWMPs that show they would suffer up to a 50-percent loss of water supply from the Regional Water System during multi-year droughts if the adopted Bay-Delta Plan was in force. The UWMPs provide the long-term resource planning of each agency and ensure that adequate water supplies are available to meet existing and future needs (Water Code §§ 10610.2, 10610.4.). BAWSCA member agencies' most recent UWMPs can be found on BAWSCA's website at https://bawsca.org/members/urban_water_management.

BAWSCA member agencies' foreseeable responses to a water shortage derived from the UWMPs include, but are not limited to:

- Increased reliance on local groundwater, increasing the probability for groundwater basin overdraft, saltwater intrusion, and land subsidence.

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[1] https://www.waterboards.ca.gov/public_notices/comments/2016_baydelta_plan_amendment/nicole_sandkulla.pdf

[2] https://www.sfchronicle.com/bayareahousingcrisis/

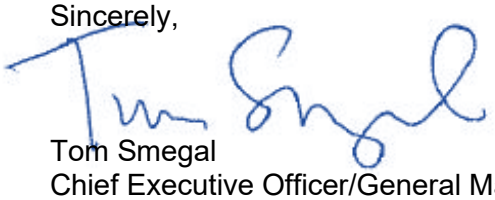
- Expanded use of local surface water supplies, which could be greatly depleted or completely unavailable during times of drought.
- Seeking to acquire new water supplies through transfer or alternative supplies.
- Implementing a development (e.g., "no new hook up") moratorium which would cause environmental and economic impacts and impacts from displaced growth and urban sprawl.

Based on the history of BAWSCA member agencies' actions during past droughts, it can be reasonably assumed that agencies would require increasing levels of rationing and they may need to impose moratoria on new development if the Bay-Delta Plan flow requirements reduce water supplies. Moratoria on new development will exacerbate the existing Bay Area housing crisis and cause affordability issues that will cripple Bay Area communities.

BAWSCA member agencies already have some of the lowest residential per capita water users in the State. Specifically, nine of the twenty-six member agencies have average residential indoor and outdoor water use at or below 47 gallons per person per day, the State's standard for efficient indoor residential water use. For these agencies, a 50% reduction in water supplies equates to an average per person water use of 25 gallons per day or less. Such water restrictions may be impossible to achieve without punitive and prescriptive measures and would certainly result in unacceptable negative impacts on job growth, a slowdown in the economy, and health, safety and economic risks for people, businesses and communities. Importantly, the adopted Bay-Delta Plan could limit the ability for cities to approve State-mandated construction of new affordable-housing for residents and employees of vital businesses and institutions.

The Bay-Delta Plan must take into account these substantial impacts to the Bay Area. The 2018 adopted Plan did not do so, which is why BAWSCA could not support the 2018 adopted Plan. The Tuolumne River HRL, however, can reduce these substantial impacts and thus is better aligned with Water Code section 13241, requiring the State Board to evaluate the need for developing housing when establishing water quality objectives. That is why BAWSCA appreciates the work by the State Water Board in developing the Draft SBR for amending the Bay-Delta Plan. While BAWSCA opposed the 2018 adopted Plan, it has consistently supported voluntary agreements. These voluntary agreements can reduce the impacts to the Bay Area's water supply while providing tangible environmental benefits and improving the fisheries. This balanced outcome is of vital importance to BAWSCA. A thorough, robust and defensible analysis of the proposed Tuolumne River HRL is critically necessary to bring all parties together and in moving forward with a solution that meets our shared objectives. The Draft SBR is a reasonable alternative that balances the beneficial use of water on the Tuolumne and, the State Board should continue to advance the Tuolumne River HRL forward so that it can be implemented as soon as possible.

Sincerely,



Tom Smegal
Chief Executive Officer/General Manager

Enclosures

cc: San Francisco City Attorney's Office
Mr. Steve Ritchie, SFPUC, Assistant General Manager, Water Enterprise

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ATTACHMENT 1
BAWSCA Service Area Member Agencies

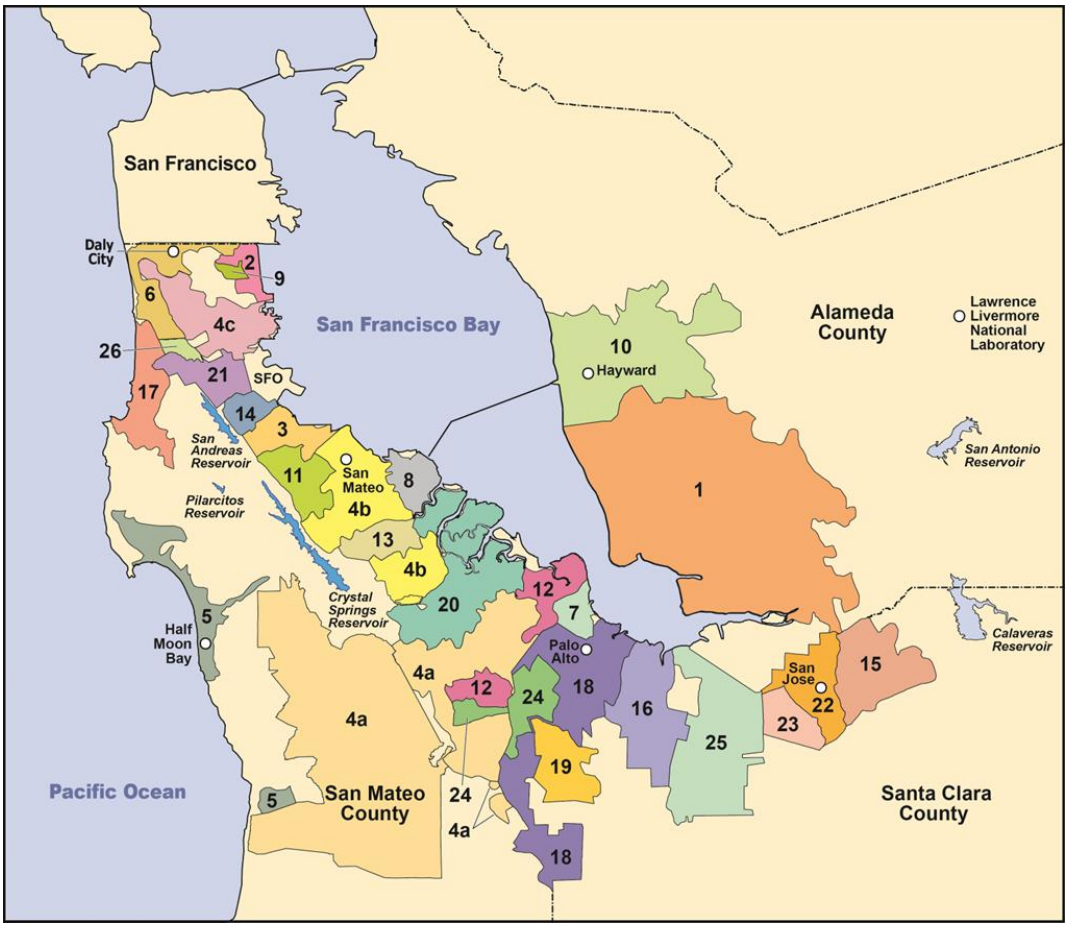

Figure 1: BAWSCA Member Agency Service Area

Legend

1	Alameda County Water	9	Guadalupe Valley	19	Purissima Hills Water
2	City of Brisbane	10	City of Hayward	20	City of Redwood City
3	City of Burlingame	11	Town of Hillsborough	21	City of San Bruno
4a	CWS – Bear Gulch	12	City of Menlo Park	22	San Jose Municipal Water
4b	CWS – Mid-Peninsula	13	Mid-Peninsula Water	23	City of Santa Clara
4c	CWS – SSF	14	City of Millbrae	24	Stanford University
5	Coastside County Water	15	City of Milpitas	25	City of Sunnyvale
6	City of Daly City	16	City of Mountain	26	Westborough Water
7	City of East Palo Alto	17	North Coast County		
8	Estero Municipal	18	City of Palo Alto		

Source: BAWSCA FY 2023-24 Annual Survey

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ATTACHMENT 2
SF Bay Area Housing Requirements

The California Sustainable Communities and Climate Protection Act of 2008 (California Senate Bill 375, Steinberg) requires the Bay Area to plan for housing that can accommodate all projected growth, by income level, so as to reduce the pressures that lead to in-commuting from outside the nine-county region (Plan Bay Area 2050, adopted on October 21, 2021, by the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC))[3]. Plan Bay Area 2050 encompasses the entire Bay Area, including the nine counties and the 101 cities and towns that make up the region. Plan Bay Area 2050 provides a roadmap for accommodating projected household and employment growth in the nine-county Bay Area by 2050 as well as a transportation investment strategy for the region. It details how the Bay Area can make progress toward the region's long-range transportation and land use goals. As detailed in Plan Bay Area 2050, the Bay Area has 2.5 million homes and counting throughout its nine counties. To accommodate a growing population expected to reach 10 million by 2050, more housing will need to be built throughout the region.[4]

The consideration of the Plan Bay Area housing requirements is not optional. The Regional Housing Needs Allocation program, or RHNA, (Gov. Code § 65584 *et seq*.) addresses the housing crisis by assigning each local jurisdiction a number of housing units that represents its share of the state's housing needs for an eight-year period. (Gov. Code § 65588.) The California Department of Housing and Community Development allocates the state's anticipated housing needs on a regional basis at different levels of affordability based on data involving household demographics. (Gov. Code §§ 65584(a)(1); 65584.01; 65588.) The housing needs are distributed to individual localities by a regional council of governments. (Gov. Code § 65584.05.) Once the housing needs allocations are final, each locality must update its general plan's housing element to provide an inventory of sites available for residential development, and identify any constraints to development. (Gov. Code §§ 65583; 65583.2; 65585.) Any locality that does not adopt a compliant updated housing element is subject to accelerated rezoning and penalties. (Gov. Code §§ 65583(c)(1)(A); 65583.2(c); 65588(e)(4)(C); 65755(a)(1),(4).) Accordingly, cities and counties *must* comply with the RHNA numbers; participation is not optional.

It is critical that the State housing laws be considered when developing water quality control plans, especially when water supplies are impacted, such as with the Bay-Delta Plan. As a condition of tentative map approval, for instance, residential housing subdivisions require verification of a "sufficient water supply." (Gov. Code § 66473.7(b)(1).) By further example, large residential housing projects require water supply assessments that consider whether the applicable Urban Water Management Plans (UWMP) consider the added demand the project will impose and confirm whether water supplies can meet the housing project's current and future demand. (Water Code § 10910.) These verification and assessment requirements each require that local agencies consider whether a public water system's total projected water supply available during normal, single dry, and multiple dry water years during a twenty-year project will meet the proposed housing project's water demand. (Gov. Code § 66473.7(a)(2); Water Code § 10910(c)(3).) Disrupting water supply availability thus has a direct impact on the Bay Area cities' ability to develop housing.

[3] https://planbayarea.org/plan-bay-area-2050

[4] https://planbayarea.org/2050-plan/final-plan-bay-area-2050/chapter-2-housing

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Bay Area Water Supply & Conservation Agency

October 9, 2025

Via E-Mail Transmittal

Assembly Member John Harabedian- Chair
Senator John Laird - Vice Chair
Joint Legislative Audit Committee
1021 O Street, Suite 4350
Sacramento, CA 94249-0041

David Rabbitt, Chair
Debra Garnes, Vice-Chair
Alfred E. Alquist Seismic Safety Commission
3650 Schriever Avenue
Mather, CA 95691

Mr. Stefan Cajina, Chief
North Coastal Section, Division of Drinking Water
State Water Resources Control Board
850 Marina Bay Parkway, Bldg P, Second Floor
Richmond, CA 94804

SUBJECT: BAWSCA Comments on Wholesale Regional Water System Security and Reliability Act 2024 Notice of Changes to the San Francisco Public Utilities Commission Water System Improvement Program

Dear Assembly Member Harabedian, Chair Rabbitt, and Chief Cajina,

On April 8, 2024, the San Francisco Public Utilities Commission (SFPUC) held a public hearing to consider proposed changes to the Water System Improvement Program (WSIP). A hearing was required to comply with the Wholesale Regional Water System Security and Reliability Act (AB 1823, Water Code Section 73500 et seq.). The Commission approved the proposed changes at the close of the hearing. Following approval, and in accordance with AB 1823, the SFPUC was required to provide documentation of the changes to the State of California legislature in a timely manner. That documentation, termed a Notice of Change (NOC), was submitted to the State on September 9, 2025. BAWSCA is using this letter to provide primary comments, observations and suggestions as related to this most recent WSIP NOC.

Primary Comments -- Timeliness and Transparency:

1. **This NOC was submitted to the State 17 months after adoption of the changes by the SFPUC. The SFPUC should submit notices within a few months of adopting changes.** In the past, NOC reports were generally issued between 4 to 6 months after adoption of changes by the SFPUC's Commission. Even with acknowledgement of the delay due to internal administrative changes, an organization the size of the SFPUC should be able to comply with the regulatory requirement to promptly furnish the State with the NOC.

2. **Prior NOC reports have contained a section discussing Level of Service (LOS) goals. Such a discussion is not included in the body of this current NOC report. Future NOCs should include such a discussion.** Prior NOCs included a section in the text of the main body of the reports (for example, such a discussion was included as Section 7 in the 2022 NOC). While this current NOC does contain LOS discussion in appendices, BAWSCA believes that for clarity there is a need in the report's main body to discuss (and share SFPUC's perspective on) if and how delays to the WSIP impact SFPUC's progress in meeting LOS goals. This narrative could offer information about mitigating features and context for understanding the significance of the WSIP's schedule changes on public health and safety.

Observations and Suggestions for Clarification:

1. **The third paragraph in the introduction section of the NOC notes that there are two projects in construction. A similar statement is made in Section 2 of the NOC in the Alameda Creek Recapture Project (ACRP) status discussion. BAWSCA observes that this is not accurate since the ACRP is now back in the planning phase and is not under construction.**

   Details: The substantial WSIP change documented in the NOC relates the schedule and cost changes to the ACRP. The NOC indicates a 96.5-month extension to complete the ACRP. This results in a roughly 5-year extension for completing the WSIP. Even though this is a substantial increase in the project and program schedule, BAWSCA believes this schedule extension is reasonable considering that the ACRP project is back in the planning phase due to identified constructability concerns that required revisiting the proposed ACRP design. BAWSCA continues to believe the project is viable and important. BAWSCA notes that other sections of the NOC indicate that the ACRP is back in the planning phase (for example, page 13 of the Report under CUW35201 ACRP notes that it is in the planning phase).

2. **Page 14 of the NOC, first paragraph, discusses the status of the Regional Groundwater Storage and Recovery Project (RGSRP). BAWSCA suggests that the SFPUC's decision to remove and store well pump systems requires additional planning by the SFPUC**.

   Details: On page 14 of the NOC, the SFPUC notes their plan for the removal and long-term storage of well pump systems installed at the Hickey, Funeral Home and Treasure Island sites. BAWSCA is concerned that long-term storage of pump systems may prove problematic. It is BAWSCA's understanding that pumps stored long-term are not easily maintained nor easily put back into operation. During times of drought, it may be necessary to quickly reinstall well pumps. There could be an impact on the ability of the SFPUC to achieve its LOS goals if the pumps are not operable. BAWSCA has suggested that the SFPUC develop a plan detailing how the well pumps would be maintained during their storage. That plan should also include the procedures that would be followed for their reinstallation (one that includes the steps and their approximate timeline necessary to bring the wells into service). Further NOC reports, if required, could incorporate a commitment to develop that plan.
   .

3. **Page 15 of the NOC, Bioregional Habitat Restoration (39-Month Change). BAWSCA is concerned that mitigation credits, if necessary, may prove difficult to identify**

and secure, and suggests that the SFPUC consider providing an update when and if a future NOC is required.

Details: The schedule change for this project is to allow more time for mitigation banks to develop so that SFPUC can purchase required mitigation credits. BAWSCA suggests that the SFPUC provide an update, in any subsequent NOC if required, as to the need for and likelihood of purchasing credits.

4. **Page 25, Table 6-1 of the NOC. Since the ACRP is back in the planning stage, BAWSCA believes that a future NOC may be required. If so, the SFPUC should submit an NOC notice to the State within a few months, as noted in Primary Comment 1.**

   Details: Table 6-1 notes the current budget for the ACRP is $48.97M. However, as of the end of Q3 FY24-25, approximately $37.2M of this amount has been expended on previous planning and for the terminated construction contract. While the SFPUC remains optimistic that additional WSIP funding may not be required, BAWSCA is hesitant to reach that same conclusion until a full redesign and cost estimate is developed. If a subsequent NOC is needed, BAWSCA believes that the recommendations given in this letter regarding the content and timely submittal of any future NOC be considered by the SFPUC.

BAWSCA continues to support the SFPUC's efforts to implement the WSIP in accordance with the schedule, budget and scope as documented in their NOC. The WSIP's implementation is of vital importance for the protection of the 1.8 million residents and associated businesses in Alameda, San Mateo, and Santa Clara Counties that BAWSCA represents and who rely on the San Francisco Regional Water System for a reliable supply of high-quality water.

Sincerely,

Thomas F. Smegal
Chief Executive Officer/General Manager

TS/TF/le

cc: Wesley Opp, JLAC Chief Consultant
Sara K. McBride, Executive Director, Alfred E. Alquist Seismic Safety Commission
Jia Wang-Connelly, Senior Structural Engineer, Alfred E. Alquist Seismic Safety Commission
Vlad Rakhamimov, Staff Engineer, North Coastal Section, Division of Drinking Water, State Water Resources Control Board
Marco Pacheco, San Francisco District Engineer, Division of Drinking Water, State Water Resources Control Board
Darrin Polhemus, Deputy Director, Division of Drinking Water, State Water Resources Control Board

Daniel Newton, Assistant Deputy Director, Northern California Drinking Water Field Operations Branch, State Water Resources Control Board
The Honorable Kate H. Stacy, President, SFPUC Commission
The Honorable Joshua Arce, Vice President, SFPUC Commission
The Honorable Avni Jamdar, Commissioner, SFPUC Commission
The Honorable Steve Leveroni, Commissioner, SFPUC Commission
The Honorable Meghan Thurlow, Commissioner, SFPUC Commission
Dennis Herrera, SFPUC, General Manager
Steven Ritchie, SFPUC, Assistant General Manager, Water Enterprise
Stephen Robinson, SFPUC, Assistance General Manager of Infrastructure
Katie Miller, SFPUC, Director, Water Capital Programs
Alison Kastama, SFPUC, BAWSCA Liaison
BAWSCA Board of Directors
BAWSCA Water Management Representatives
Allison Schutte, Hanson Bridgett, LLP, Legal Counsel

Bay Area Water Supply & Conservation Agency

October 9, 2025

Via E-mail Transmittal

Assembly Member John Harabedian, Chair
Senator John Laird, Vice Chair
Joint Legislative Audit Committee
1021 O Street, Suite 4350
Sacramento, CA 94249-0041

David Rabbitt, Chair
Debra Garnes, Vice-Chair
Alfred E. Alquist Seismic Safety Commission
3650 Schriever Avenue
Mather, CA 95691

Mr. Stefan Cajina, Chief
North Coastal Section, Division of Drinking Water
State Water Resources Control Board
850 Marina Bay Parkway, Bldg. P, Second Floor
Richmond, CA 94804

RE: BAWSCA Review of the SFPUC Fiscal Year (FY) 2024-25 Annual Report, Water System Improvement Program (WSIP)

Dear Assembly Member Harabedian, Chair Rabbit, and Chief Cajina,

BAWSCA has reviewed the San Francisco Public Utilities Commission (SFPUC) Water System Improvement Program (WSIP) Annual Report for Fiscal Year 2024-25, dated September 1, 2025 (Annual Report). Attached is BAWSCA's comment letter to the SFPUC, which includes a request that the Commission direct staff to implement the identified recommendations.

As detailed in the Annual Report, the overall WSIP program has had significant achievements associated with project completion since its' inception. However, there remain two key projects that have yet to be completed: the Alameda Creek Recapture Project (ACRP), located in the Sunol Valley Region; and the Regional Groundwater Storage and Recovery Project (RGSR Project), located in the San Francisco (Regional) Region.

The ACRP's construction was halted in April 2023 due to the need to revisit the project's overall design. The RGSR Project, which was broken into three phases, has proven to be a difficult project to construct. The SFPUC is committed to addressing the challenges associated with completing those two key projects yet admits that the time required to complete the WSIP has increased significantly. Specifically, the WSIP is now scheduled to be completed by June 30, 2032, as documented in the Notice of Change (NOC) that was sent to the State on September 9, 2025.

Both the ACRP and RGSR Projects are key components of the WSIP, in that each is needed to achieve the WSIP Level of Service (LOS) Goals for Water Supply Reliability.

BAWSCA provided the following recommendations to the SFPUC Commission regarding the status and progress of the WSIP for the State's consideration:

Recommendation 1: The Commission should direct Staff to prioritize future Notice of Change (NOC) submissions, such that future NOCs are submitted to the State within a few months of Commission action.

Recommendation 2: The Commission should direct Staff to include the full text of the currently adopted Water Enterprise Levels of Service (LOS) Goals and Objectives in future annual reports.

Recommendation 3: The Commission should direct Staff to prepare a WSIP Program Completion report when all WSIP projects have achieved final construction completion. That commitment should be noted in future Annual Reports.

Recommendation 4: The Commission should direct Staff to prepare a plan, associated with the Regional Groundwater Storage and Recovery Project (RGSRP), to cover the deactivation, storage, and reactivation of wells and associated pumps (note that several RGSRP are proposed to be deactivated). Once completed, the plan could be included as an appendix to future Annual Reports.

BAWSCA's comment letter to the SFPUC Commission provides additional details as to why these recommendations were given. The letter also identifies minor errors in the Annual Report as well as shares two questions that BAWSCA staff intend to pose to SFPUC staff surrounding the information provided in the Annual Report.

Please feel free to reach out to BAWSCA if we can provide further assistance in the State's review of the SFPUC's FY 2024-25 Annual Report, or if you would like to discuss BAWSCA's comment letter to the SFPUC. I can be reached by phone at (408) 640-6490 or via email at tsmegal@bawsca.org

BAWSCA sincerely appreciates the time and attention given by the State in helping ensure the SFPUC's progress in completing the critically important WSIP continues.

Sincerely,

Thomas F Smegal
Chief Executive Officer/General Manager

TS/TF/le

Enclosure

cc: SFPUC Commissioners
Dennis Herrera, General Manager, SFPUC

Stephen Robinson, Assistant General Manager - Infrastructure, SFPUC

Steven Ritchie, Assistant General Manager - Water Enterprise, SFPUC

Katie Miller, Director, Water Capital Programs, SFPUC

Alison Kastama, BAWSCA Liaison, SFPUC

Vlad Rakhamimov, Staff Engineer, North Coastal Section, Division of Drinking Water, State Water Resources Control Board

Marco Pacheco, San Francisco District Engineer, Division of Drinking Water, State Water Resources Control Board

Darrin Polhemus, Deputy Director, Division of Drinking Water, State Water Resources Control Board

Daniel Newton, Assistant Deputy Director, Northern California Drinking Water Field Operations Branch, State Water Resources Control Board

Sara K. McBride, Executive Director, Alfred E. Alquist Seismic Safety Commission

Jia Wang-Connelly, Senior Structural Engineer, Alfred E. Alquist Seismic Safety Commission

BAWSCA Board of Directors

BAWSCA Water Management Representatives

Allison Schutte, Legal Counsel, Hanson Bridgett, LLP

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Bay Area Water Supply & Conservation Agency

October 9, 2025

Via E-mail Transmittal

The Honorable Kate H. Stacy, President
and Members of the Commission
San Francisco Public Utilities Commission
525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102

RE: BAWSCA Review of the SFPUC Fiscal Year (FY) 2024-25 Annual Report, Water System Improvement Program (WSIP)

Dear President Stacy and Members of the Commission,

BAWSCA has reviewed the State required WSIP FY 2024-25 Annual Report and presents four recommended actions for the Commission to direct SFPUC staff to implement. BAWSCA notes three minor errors in the report that SFPUC Staff should take note of for future Annual Reports (assuming a similar section is copied forward). Finally, BAWSCA shares two questions that BAWSCA Staff will pose to SFPUC Staff directly, that dependent on the response, may suggest that future Annual Reports be updated.

Recommendations:

Recommendation 1: The Commission should direct Staff to prioritize future Notice of Change (NOC) submissions, such that future NOCs are submitted to the State within a few months of Commission action.

Discussion: Paragraph 4 of the Executive Summary references the adoption of the WSIP's latest baseline scope, budget and schedule on April 9, 2024. The NOC Report was submitted to the state legislature 17 months after adoption of the changes by the SFPUC (September 9, 2025). In the past, the NOC reports were generally issued between 4 to 6 months after adoption of changes by the SFPUC Commission. Even with acknowledgement of the delay due to internal administrative changes, an organization the size of the SFPUC should be able to comply with this Water Code regulatory requirement to promptly furnish the State with the NOC. Future NOCs, if required, should be submitted within a few months of adoption.

Recommendation 2: The Commission should direct Staff to include the full text of the currently adopted Water Enterprise Levels of Service (LOS) Goals and Objectives in future annual reports.

Discussion: WSIP LOS Goals and Objectives are referenced in Section 3.1 of the Annual Report (pages 5-6). The FY23-24 Annual Report contained the full text of the 2023 Amended Water Enterprise LOS Goals and Objectives in this section. Doing so helped clarify their extent and intent.

Recommendation 3: The Commission should direct Staff to prepare a WSIP Program Completion report when all WSIP projects have achieved final construction completion. That commitment should be noted in future Annual Reports.

Discussion: A WSIP Program Completion report is needed to document actual project performance against planned project performance with respect to the LOS goals. The report could also document how the SFPUC's 10-Year CIP program achieves/supports these goals into the future. BAWSCA's Board and its member agencies are particularly interested in the development of such a report.

The WSIP PEIR identified the LOS as guiding the identification, design and implementation of the WSIP projects facilities. As the WSIP nears completion, nearly all of the WSIP facilities are in operation. A final assessment of the actual performance of the projects with respect to these goals is integral and critical information to the definition of completeness. If an LOS shortfall is identified, the SFPUC will need to implement alternative projects to make up the difference via the implementation of their Alternative Water Supply Plan.

Recommendation 4: The Commission should direct Staff to prepare a plan, associated with the Regional Groundwater Storage and Recovery Project (RGSRP), to cover the deactivation, storage, and reactivation of wells and associated pumps (note that several RGSRP are proposed to be deactivated). Once completed, the plan could be included as an appendix to future Annual Reports.

Discussion: To address operational and maintenance concerns, the SFPUC intends to remove pumps installed in several wells that are a part of the RGSRP, storing the pumps in a warehouse setting until the time (during a drought) when said wells would be put into service. A formal plan for that activity is needed, one that identifies the staffing, technical requirements and timeframe needed such that deactivated wells can be brought online to support dry year supply needs. Steps needed to keep the pumps in good condition during storage should also be covered in the plan.

Minor Report Errors:

Table 3-4: Progress Towards Meeting LOS Goals (page 7)

Discussion: Alameda Creek Recapture needs to update the expected Substantial Completion date to be consistent with the construction phase completion date of 6/30/31 shown in Appendix A.

Table 3-4: Progress Towards Meeting LOS Goals (page 9)

Discussion: Regional Groundwater Storage and Recovery needs to have updated Substantial Completion dates for Contract C and Contract D consistent with the dates shown in the WSIP Q4 FY24-25 Report (Appendix B). Also, the percent progress towards LOS goals needs to be made consistent with Appendix B.

Section 7.2 – Status of Risk to Active Construction Projects (page 32)

Discussion: The last paragraph states the top ten risks are 8 for RGSR Phase 2A, and 2 for RGSR Phase 2B. Table 7-2 shows 7 for RGSR Phase 2B, and 3 for RGSR Phase 2A. These tallies need to be reconciled

Questions BAWSCA Intends to Pose to SFPUC Staff:

Section 3.2 – Progress Towards Meeting LOS Goals (page 10) – Question about LOS status

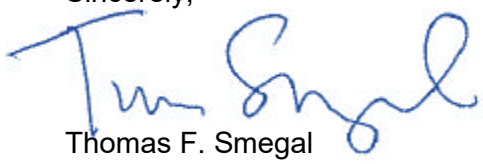
Discussion: For the RGSRP, three well sites will have their rehabilitated pumps stored rather than be re-installed. Since the LOS status assumes all constructed facilities to be in-service, it is essential to confirm that the assets can be utilized if needed. Does the LOS status require revision (assuming that a plan is prepared as noted in Recommendation 4 indicates a delay of sorts could result from this practice)?

Table 4-1 – Project Schedule Forecast and Variance (page 15) – Question about the need for a contingency plan.

Discussion: The schedule for the Bioregional Habitat Restoration Project shows completion at the end of 2027. However, this project relies entirely on purchase of mitigation credits from banks that have not yet been developed or approved. Is this schedule realistic? Does SFPUC have a contingency plan should no bank be developed?

BAWSCA appreciates the work of the SFPUC staff, its contractors, and its consultants as the WSIP progresses towards completion. BAWSCA also appreciates the SFPUC Commission's consideration of BAWSCA's recommendations provided in this letter.

Sincerely,



Thomas F. Smegal
CEO/General Manager

TS/TF/le

cc: Assembly Member John Harabedian- Chair, Joint Legislative Audit Committee
David Rabbitt, Chair, Alfred E. Alquist Seismic Safety Commission
Mr. Stefan Cajina, Chief, North Coastal Section, Division of Drinking Water, State Water Resources Control Board
Dennis Herrera, General Manager, SFPUC
Steven Ritchie, Assistant General Manager - Water Enterprise, SFPUC

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Jia Wang-Connelly, Senior Structural Engineer, Alfred E. Alquist Seismic Safety Commission

BAWSCA Board of Directors

BAWSCA Water Management Representatives

Allison Schutte, Hanson Bridgett, LLP, Legal Counsel

New ballot measure push aims to overhaul California's landmark environmental law
Chamber of Commerce seeks to cut red tape; environmental groups vow to fight
Mercury News | November 9, 2025 | Paul Rogers

Work continues on UC Berkeley's People's Park Housing Project as seen from this drone view in Berkeley, Calif., on Tuesday, Oct. 14, 2025. (Jane Tyska/Bay Area News Group)
Paul Rogers, environmental writer, San Jose Mercury News, for his Wordpress profile. (Michael Malone/Bay Area News Group)

One election just ended, but another potentially major voter battle has already started in California.

No, not the governor's race, but a proposed ballot measure that could make significant changes to one of the state's landmark environmental laws — the California Environmental Quality Act.

Late last month, the California Chamber of Commerce announced it had filed paperwork to place a measure on next November's statewide ballot that would overhaul the law, commonly known as CEQA, with the goal of cutting red tape, lowering housing and energy costs, and making construction easier.

If the Chamber and its supporters collect 546,000 valid signatures by next spring, as expected, the "Building an Affordable California Act" would impose a 365-day limit on environmental reviews for a wide range of projects, including new reservoirs, desalination plants, forest thinning to reduce wildfire risk, apartments, housing subdivisions, senior housing, student housing, roads, bridges, public transit, hospitals, medical centers, broadband internet, solar farms, wind farms and battery storage facilities.

It would also require courts to rule within 270 days when CEQA lawsuits are filed challenging those projects.

“For decades, oversight has too often been co-opted by obstruction, threatening the common good,” said Jennifer Barrera, president and CEO of the California Chamber of Commerce, in a statement.

“Modernizing that law won’t just ease California’s affordability crisis and boost our economy,” she said. “It will prove the naysayers wrong about our state.”

The measure is likely to spark a multimillion-dollar political showdown next year over one of California’s oldest and most contentious environmental laws. Likely players include business groups, cities, counties, labor unions, environmentalists and potentially Gov. Gavin Newsom, who hasn’t yet announced a position.

Some environmental groups are already lining up against it.

“There’s been an effort for a long time to scapegoat CEQA for being the cause of all of California’s problems and make it the boogeyman in ways that are just not true,” said Frances Tinney, an attorney with the Center for Biological Diversity in Oakland. “Those arguments have been used to support attempts to roll back accountability for developers. This is an extreme and radical proposal. It’s disappointing.”

CEQA (pronounced “see-quah”) has been one of the most influential environmental laws in California for half a century. Former Gov. Ronald Reagan signed it in 1970.

The law requires state and local agencies to study and publicly disclose the effects that significant new projects will have on wildlife, noise, air pollution, greenhouse gas emissions, traffic and other factors. The studies create an environmental impact report, and developers must offset or reduce those impacts.

The law has been hailed by environmentalists as a cornerstone of public participation that helps ensure everything from power plants to new highways are built in the least environmentally harmful way.

But over time, opponents have increasingly filed CEQA lawsuits to block and delay all kinds of projects, often having little to do with environmental issues. Unions have threatened to sue to force solar power developers to use union labor. Neighbors in Berkeley delayed construction of a new UC dormitory for three years, claiming the students would create noise pollution. Bike lanes in Oakland, San Diego and Los Angeles have faced CEQA lawsuits. Neighbors sued to block construction of a food pantry last year in Alameda, saying it was on a “historic parking lot” — it later was dismissed. In San Jose in 2012, the owner of a gas station sued under CEQA when a competing gas station across the street attempted to add four new pumps, delaying the project for three years and costing its owner thousands of dollars in legal fees.

Critics, including Newsom and former Gov. Jerry Brown, have said it has contributed to California’s housing shortage and high prices.

In 2021, in San Francisco, the board of supervisors used a CEQA challenge to hold up plans for 500 new homes on a vacant lot near Market Street, one block from a BART station, after neighbors claimed it would cause gentrification.

In July, Newsom signed bills from Assemblywoman Buffy Wicks, D-Oakland, and Sen. Scott Wiener, D-San Francisco, to waive or streamline CEQA to build housing in already developed urban areas, and for other projects like farmworker housing, day care centers, food banks and plants to build semiconductors, biotechnology and nanotechnology on land zoned for industrial uses.

“We’ve got to get out of our own damn way,” Newsom said last summer.

Under another law he signed in 2023, the governor is allowed to select certain individual water and renewable energy projects for some CEQA streamlining. Newsom has used it to speed court decisions on construction of Sites Reservoir, a huge new reservoir planned for Colusa County, for example.

But the ballot measure would go further.

The measure would likely be the biggest change to CEQA since 1970, said Amy Hoyt, an attorney and CEQA expert in Riverside County.

“It could result in faster approval for housing projects, and it would eliminate the ability of project opponents to dump last-minute comments on the public agency that often cause delays,” she said. “But there could be negative impacts because the very accelerated timelines that the measure creates would strain the court system and local governments. It could also result in less rigorous environmental review for some potentially environmentally harmful projects.”

Environmentalists have worried the measure could speed construction of a $20 billion tunnel under the Delta to move water more easily from Northern to Southern California. John Myers, a spokesman for the Chamber, said Friday the ballot measure does not apply to the tunnel project, and the Chamber will be drawing up “amended language” soon to clarify that issue.

Big questions politically include which side unions, which have deep pockets and lots of campaign volunteers, will take, or whether Newsom endorses it as he prepares to run for president.

“A lot will depend on how it is framed for the electorate,” said Jack Pitney, a professor of political science at Claremont McKenna College in Los Angeles County. “If people perceive it as an attack on environmental regulation, it will be a difficult battle. But if they see it as a reform that will improve the economy and help the state create jobs, that could be different.”

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Senate Bill 72 Bolsters California Water Plan and Advances Long-Term Water Supply Goals

Department of Water Resources | November 05, 2025

A drone view of a section of the California Aqueduct within the California State Water Project

In 2022, Governor Gavin Newsom released California's Water Supply Strategy, outlining necessary actions for the state to adapt to a hotter, drier future where the changing climate leaves less water to meet California's needs.

Since then, California water managers have been looking at ways to address the fact that the warming climate means that when storms do come, a greater share of that rain and snow will be absorbed by dry soils, consumed by thirsty plants, or evaporate into the air. As a result, the state will see less water going into our streams, rivers, and reservoirs, creating a new strain on our water supply, especially during the dry summer months.

In October, Governor Newsom and the legislature gave the California Department of Water Resources (DWR) an important opportunity to tackle this problem.

Governor Newsom signed Senate Bill 72, which gives DWR the green light to build a data-driven playbook to guide and secure California's water future. It sets a target of identifying 9 million acre-feet of additional water supply by 2040 to offset the anticipated loss from warmer ambient temperatures in the future.

DWR is grateful for this new partnership with the legislature and administration to find solutions to this looming threat to California's water supply. SB 72 will allow DWR's scientists, engineers, and water managers the opportunity to dig into the data, look at opportunities and challenges, and come up with a path forward to meet the water supply target.

While SB 72 does not provide new funding, DWR has evaluated the costs of implementing the measures outlined in the legislation and will work closely with the Department of Finance to identify and explore potential funding options for developing long-term water supply targets. SB 72 includes opportunities for more expansive engagement with water agencies when developing the Water Plan. DWR looks forward to embarking on a more robust engagement process once the funding component is worked out.

As DWR develops an implementation plan for SB 72, the Department will continue to advance California's resilience through the established California Water Plan Update 2028 public workshops and advisory processes. These venues will provide opportunities to discuss SB 72 implementation and assess priorities, ensuring that DWR continues to use transparent, collaborative pathways to move California forward in building a more resilient water future.

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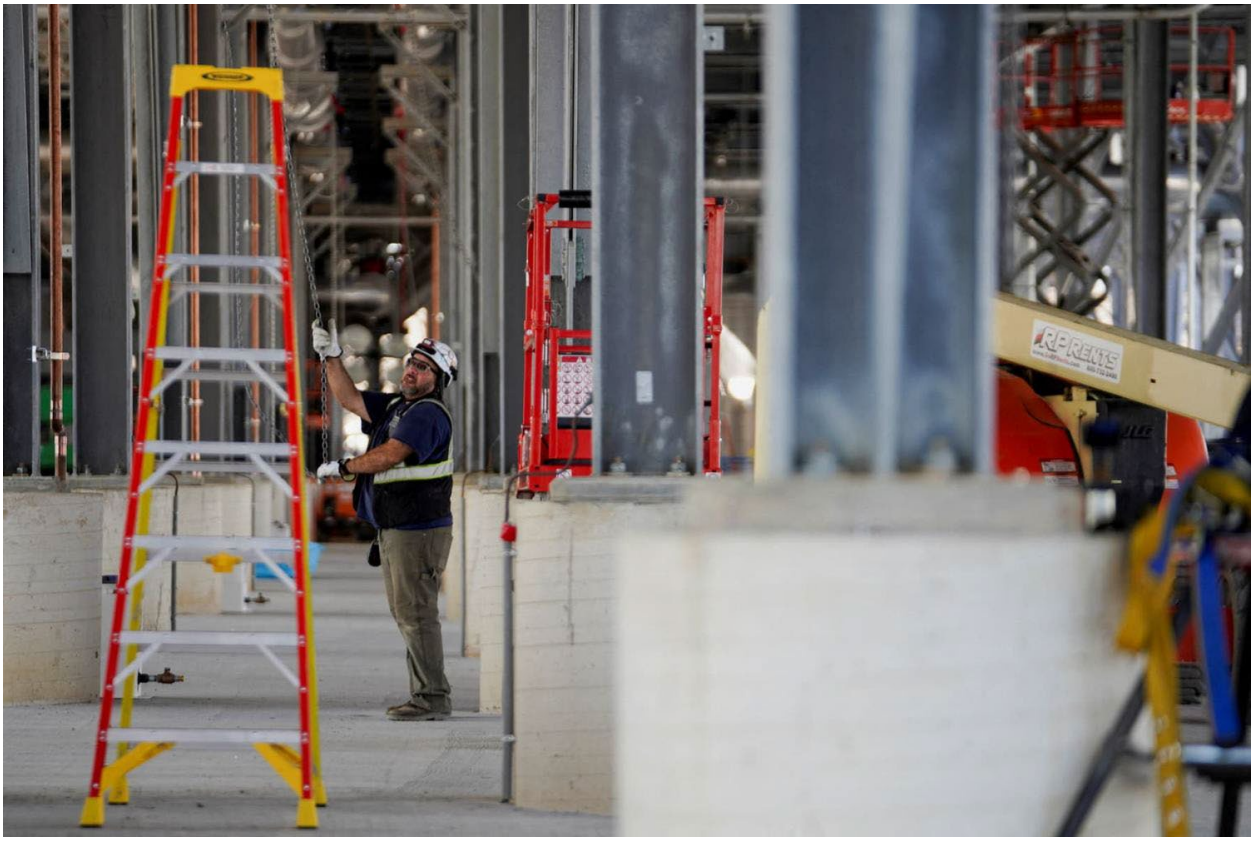
The future of data centers
Brookings | November 5, 2025 | Nicol Turner Lee and Darrell M. West



A person works at the Microsoft data center campus, currently under construction, after Microsoft's Vice Chair and President Brad Smith announced a plan to spend $4 billion on an additional artificial intelligence data center, in Mount Pleasant, Wisconsin, U.S., on Sept. 18, 2025. REUTERS/Audrey Richardson

- Data centers undergird the growing use of AI by storing and processing data, text, images, code, and other information sources.
- Varying considerations need to be addressed as demand increases, including energy and water consumption, critical mineral requirements, permitting, investment in the electric grid, costs, and the impact on the job market.
- Improvements in these areas will be crucial to the United States' international competitiveness and future economic prosperity.

Artificial intelligence is the transformative technology of our time. As argued in the Brookings Press book, "Turning Point: Policymaking in the Era of Artificial Intelligence," it is powering applications in finance, health care, education, transportation, defense, and e-commerce, among other sectors. AI's ability to process large amounts of information and act independently on that basis is altering communications, service delivery, financial transactions, administrative processing, and a host of other areas.

Undergirding this growing use of AI is the need for state-of-the-art data centers. This paper examines the future of these entities. It examines what they are, their numbers and distribution, the different types of centers, financial investments, barriers to development, workforce impacts, economic implications, and considerations for guiding their future growth. Briefly, we argue for a framework for data centers that addresses challenges such as access to critical minerals, workforce shortages, community benefits, permitting reforms, energy and water needs, electric grid investment, national security considerations, and geographical placement. Improvements in these areas will be crucial to ensuring a smooth transition to a digital economy.

What are data centers?

Data centers host a large number of file servers and networking equipment that can store, process, and analyze text, images, code, and other information sources. Guided by large language models (LLMs) and machine learning, data centers can parse through these materials and act autonomously upon the derived insights. The applications that are hosted at these facilities can summarize text, edit photos or videos, examine data, code software, and perform many administrative and financial tasks in real time. These applications offer tremendous convenience, efficiency, and effectiveness to consumers, businesses, and governments.

“Hyperscale” data centers typically have more than 5,000 file servers within their facilities and can house equipment utilized by many different organizations. With the large-scale growth of generative AI, there is tremendous reliance on data centers that process information quickly and with low latency to enable the use of a wide range of AI services and agents. It is estimated that the generative AI market is accelerating around 40% a year and is projected to increase from $43.9 billion in 2023 to nearly $1 trillion in 2032. This high AI growth rate, generated by skyrocketing digital demand, makes it imperative to expand data centers.

Types of data centers

There are different kinds of data centers. One type is data centers for generative AI, which are based on graphics processing units (GPUs) that can deal with vast amounts of information. These facilities process extraordinary amounts of data in text, numeric, or graphic forms and power LLMs and machine learning. They scour the internet, find logical patterns, summarize information, and act on these insights in real time. AI-directed data centers require high computing power and are energy-intensive. As interest in generative and agentic AI has skyrocketed and major tech companies roll out new AI products, there has been a substantial growth in these types of operations. Data center facilities can be enterprise systems operated on behalf of a specific organization or co-location centers that host the platforms of multiple organizations.

One of the most sensitive developments has been high-security centers for military and intelligence gathering. Governments have substantial security needs and require online platforms that house their most confidential secrets, including information on defense applications, battlefield logistics, foreign adversaries, or domestic terrorists, as well as proprietary systems provided by private firms. Processors need to be super-fast to analyze incoming material and super-secure from hackers, malcontents, and enemies. President

Trump's recently launched AI Action Plan directs the Department of Defense and the National Institute of Standards and Technology (NIST) to develop new technical standards for government entities.

"Edge centers" are situated close to particular activities they support, in order to reduce the latency of computation and networking. Applications such as autonomous vehicles, stock trading, or manufacturing facilities with widespread use of robots need fast communications. These systems don't want too much of a lag between a query and its implementation. Human lives may also depend on speed in analyzing certain risks, so these kinds of centers need to be very close to where people are utilizing their services.

Energy and water requirements for data centers powering AI

Data centers supporting AI applications require a considerable amount of electrical power and water for their computer storage and processing. In particular, LLMs and other forms of generative AI need a tremendous amount of power. In 2023, data centers consumed around 4.4% of America's electrical power, and that percentage is expected to rise substantially in the next years. According to the Lawrence Berkeley National Laboratory, energy growth is likely to increase between 6.7-12% by 2028. Around the world, it is projected that AI's energy needs could account for as much as 21% of all electricity usage by 2030. According to McKinsey, American data centers will utilize 35 gigawatts of electricity by the end of this decade.

Water is a problem as well. Some data centers consume as much as 500,000 gallons per day, making them a substantial draw on what is a limited resource in many communities. Data centers require a lot of water to cool the buildings and the computers inside. Electronic devices heat up during processing, and when thousands of file servers are grouped in a small area, the cooling needs increase dramatically.

Clean water is in short supply in a number of places. This is especially a challenge in the Rocky Mountain states and on the West Coast. In numerous cities and communities, water rates are rising substantially to deal with short supply and increasing demand. One county in Georgia is raising its rates by 33%, far higher than the usual low single-digit increase, which critics attribute to data center needs. New advances in microfluidics, where coolants are applied directly to chips, may improve our ability to cool semiconductors and make data centers more sustainable and less energy-reliant, but much is still unknown about the efficiency of such advances.

As data centers expand, the question is how to generate the energy and water they need. The bulk of American electricity currently comes from fossil fuels such as natural gas (43%) and coal (16%), followed by wind, solar, and thermal (21% together), and nuclear energy (18%). Diversifying energy sources will be essential to meeting the growing demands of data centers, which cannot operate reliably without significant improvements in U.S. energy production.

Nuclear power appears to be rising as a possible energy source, with AI companies planning to open or reopen new plants in the United States. It offers the advantage of not generating the byproducts of fossil fuel consumption while being available all the time once facilities go online.

The Three Mile Island plant suffered a partial meltdown in 1979, but it is planned to reopen in 2028 to power Microsoft's data centers, provide 3,400 jobs, and generate billions in new tax revenue.

This increase in energy needs is occurring against the backdrop of rollbacks on clean energy sources. One organization estimates there will be 344 gigawatts of lost generating power over the next decade linked to the 2025 federal budget bill. Provisions in the bill, particularly changes to tax credits, undermine the financial viability of solar and wind generators and make it harder for consumers to afford the electricity they generate. At a time of dramatically rising energy needs, it is short-sighted for the Trump administration to cut back on renewable energy sources, especially those that will be needed to operate data centers.

Overall, it is clear that the United States will need a substantial boost to electrical production to meet the increased demand of AI and data centers. Companies may mitigate these needs by developing more efficient cooling, lighting, and semiconductor processors. Greater transparency about their energy and water use would also enable policymakers and researchers to better understand the scope of the challenge and plan for sustainable growth.

Number and distribution of data centers

It is hard to get complete information on the number of data centers because of the ambiguities in how they are both defined and perceived by the market. Since there is no central clearing house regarding the numbers in operation, under construction, or in the planning stage, it is imperative that some type of future dashboard be developed. But according to the available data shown below, there are now an estimated 11,800 data centers around the world, powering AI and the digital economy. The United States leads the world in the number of centers as of June 2025, followed by Germany, the United Kingdom, China, and France. Around two-thirds of existing data centers are located in the United States, China, or Europe, and only a small number are found in Africa, Latin America, India, or other regions in the Global South. As is outlined later in the paper, geographic inequities will be crucial in assessing the global impact of data centers.

Table 1 – *Next page*

Number of data centers by country

United States	**5,426**
Germany	**529**
United Kingdom	**523**
China	**449**
France	**322**
Australia	**314**
Netherlands	**298**
Russia	**251**
Japan	**222**
Brazil	**196**
Mexico	**173**
Italy	**168**
Poland	**144**
Spain	**143**

Source: Brightlio

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Table 2 breaks down data center numbers by U.S. state, based on two different sources: DataCenterMap.com and Aterio. As with the global estimates, the overall numbers vary considerably depending on how data centers are defined, the stage of construction and operations, and the time period being covered. Some inventories appear to include small-scale centers, while others stick to larger facilities.

The state of Virginia has the largest number of data centers, followed by Texas and California. Northern Virginia has emerged as the “Silicon Valley” of data centers because of its proximity to

federal government agencies, which make extensive use of data storage and processing, in addition to the availability of land, energy, and water sources that support data center operations.

Table 2

Number of US data centers by state from two different sources

State	Number in Operation (DataCenterMap)	Number in Operation (Aterio)	Number Under Construction (Aterio)	Number Announced (Aterio)
Virginia	641	311	122	468
Texas	392	200	107	336
California	319	170	4	37
Illinois	223	77	10	111
Ohio	191	99	37	69
Arizona	162	78	32	118
Georgia	160	62	36	246
New York	142	46	--	2
Oregon	137	95	5	10
Washington	128	63	4	5
Florida	125	53	2	13

Source: Data Center Map and Aterio.

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Table 2 also makes clear that the number of newly announced data centers continues to grow. States and localities are actively competing to attract these facilities in pursuit of economic growth. Several states view data centers as essential to establishing themselves as digital hubs for AI and other emerging technologies.

Copper, steel, and aluminum requirements

Some of the most important barriers to data center expansion involve the critical components used for their construction and deployment. These facilities need a considerable amount of copper, steel, and aluminum for the building and equipment, as well as semiconductors, electronics, fiberoptics, and wiring for file servers, storage devices, and networking equipment.

President Trump's decision to impose tariffs on many commodities has dramatically raised the price tag of data centers. This year, the administration imposed tariffs of 50% on copper and raised rates from 25 to 50% on steel and aluminum. These measures dramatically increase the construction and operating costs for data centers.

The costs of semiconductors and electronic equipment imported into the U.S. have also increased by 25%. These increases are meant to boost domestic production and reduce trade deficits with major trading partners. This could eventually happen, but it is hard to construct new facilities and redirect supply chains in a short period of time, especially simultaneously with the expansion of data centers. While tariff negotiations with individual countries continue, the uncertainties associated with this policy remain a drag on data center construction in the United States.

One worrisome policy concern is that while President Trump's AI Action Plan prioritizes data center construction, his approach to tariffs makes this effort far more expensive. Alternative U.S. suppliers that could reduce costs are also limited, highlighting the inconsistencies between AI national goals and policy implementation. If the United States is to sustain its global leadership in AI, any barriers to data center development (whether stemming from trade policy or supply chain) will impact the timing and sustainability of construction. Despite billions in investments, logistical and permitting obstacles continue to delay data center buildout and operations, as discussed later in this paper.

The need for critical minerals

A major limiting factor in semiconductor manufacturing is China's control over critical minerals needed for their production. Materials such as gallium, germanium, antimony, tungsten, tellurium, bismuth, indium, and molybdenum are vital for many products and are not readily available from domestic sources.

Furthering the problem is that getting mining permits in the U.S. and Europe can take many years, while countries such as Canada, Australia, and China have far shorter timelines. The length of time required for U.S. and European mining permits limits domestic production of semiconductors and electronics and harms the ability to expand data centers. In the U.S., there is a growing urgency to expedite mining permits and justify the domestic expansion and construction of data centers. Without reliable access to prime materials, overbuilding is a possibility, and in the absence of long-term commitments from AI companies, vast amounts of land could become "data center deserts" if cheaper alternatives emerge elsewhere.

Workforce shortages

Data centers will spur labor demand, particularly in construction and engineering, where there might be a groundswell in job opportunities and subcontracts. However, the current workforce simply does not have the necessary supply of technical workers. The Trump administration's current immigration and deportation policies compound this workforce problem, especially when it comes to the software engineers needed to power data centers. While the lack of homegrown talent could be resolved with workers from other countries, the current administration has moved in the opposite direction, deporting workers and slowing the supply of foreigners coming into the U.S.

There aren't enough electricians in the U.S. to meet the demand for laying wires and construction workers to build data centers. There are also shortages of construction workers, which typically include a large number of immigrant workers. It has been estimated that roughly 30% of construction workers in the U.S. are immigrants, including some who are undocumented. However, mass deportations limit the growth of data centers by draining the supply of individuals needed to build and wire such facilities. In every sector involved in data center development, from tech to blue-collar and trade, the Trump administration's immigration crackdown works against its stated goals of furthering American leadership in AI and expediting the construction of the data centers supporting it. This approach contradicts an early commitment made to the major AI companies, which expect reciprocity for their support of the broader Trump agenda.

To redress the labor shortages threatening data center expansion, the U.S. should expand its job training and vocational education programs. More flexible licensing of workers in the trades should be encouraged across states; for example, electrician certifications could be made easily transferable, allowing for more geographic mobility of workers with the necessary skills. The U.S. Department of Labor, in coordination with state workforce agencies, could support a temporary or flexible labor initiative tailored to large-scale data center construction. A stronger national commitment to the skilled trades overall would go far toward closing existing workforce gaps.

When workers can be found, housing problems are an additional concern. Housing costs have skyrocketed in many places, and trade workers will need affordable and reasonable accommodations, especially in expensive areas where data centers are concentrated, like Northern Virginia. Some firms already provide mobile homes as temporary housing for these individuals; based on the expeditious and lofty agenda to build data centers, this could be a viable option.

Finally, most states require inspectors in construction with the duty to keep workers safe. Many places don't have enough inspectors, slowing down facility development. Even if completed, projects will be stalled until inspectors certify each facility. This is yet another sign that greater coordination between state and local agencies to address these worker shortages is necessary.

Permitting reforms

Obtaining state and local permitting for data centers can take a long time. There are mandated checks for the environment, worker safety, and community well-being. Companies need to get easements and right-of-way privileges to move forward. Some community groups have organized to stop construction. In Northern Virginia, for example, which is home to a sizeable percentage of the world's data centers, neighbors of adjoining properties have complained in recent years about water shortages, light pollution, and air conditioning noise. Companies need to make sure their sites are safe and clean, and do not endanger community residents.

In its AI Action Plan, the Trump administration is pushing for expedited permitting. Republican lawmakers have repeatedly voiced that current processes are unnecessarily slow and more needs to be done to help companies that want to build technology facilities. The administration is likely to authorize building sites on federal lands under a fast-track system designed to reduce approval times, freeing up unused terrain for large-scale data centers and helping companies move more quickly from permitting to construction.

Another proposal is to exempt data center projects from certain review requirements dictated by the National Environmental Policy Act, the Clean Water Act, and the Clean Air Act. Another is to have national permits for data centers as opposed to locally required ones. While these measures might expedite construction, communities may still oppose the projects, especially if residents are not involved from the beginning.

Electric grid and transmission line investment

Among the most critical infrastructure priorities are modernizing transmission lines and ensuring that the electric grid can operate at the required scale, stability, and reliability. With the dramatic increase in electricity needed for data centers, upgrades to the grid will be necessary. It can sometimes take up to 10 years to build the transmission lines that move electricity from region to region. Such transmitters rely upon steel and aluminum, but researchers say materials such as carbon fiber would be lighter and could move larger amounts of electricity. The U.S. Department of Energy intends to upgrade 100,000 miles of new transmission lines this decade, though AI companies are seeking to build many of these data centers on a much shorter timeframe.

With the growth of AI and the design of new materials, there are new tools that will make transmission lines operate more efficiently. AI can improve operations and facilitate a more efficient and sustainable electrical system, preventing loss of power as electricity is moved geographically. In addition, data centers can use "closed cooling systems" that require less water and keep file servers at the temperatures needed for effective operation. These measures will reduce energy costs and keep water and energy demands down.

It is also possible that there will be improved efficiencies in other areas. The Chinese firm DeepSeek, for example, claims it can process tremendous amounts of information with reduced processing power, lower costs, and fewer electrical requirements. A recent peer-reviewed Nature article co-authored by a company leader said DeepSeek's "reasoning-focused R1 model cost $294,000 to train and used 512 Nvidia H800 chips," which is a fraction of what most

Western models require to operate. While it is not clear how seriously to take such claims, digital technologies have a tradition of becoming more efficient over time; it is possible that design and processing improvements will increase financial and energy sustainability, thereby easing the current pressures facing data centers. AI companies will face many of the same regulatory and state-level hurdles that energy companies do, as was the case in the expansion of 5G technology, when colocation of radios and power generators became a concern. Securing access to modern and resilient power systems may prove one of the stickier points for AI companies.

Data center costs

Many factors go into the costs of data centers, including acquiring land, construction, equipment, labor, heating and cooling, security, power consumption, permitting, operations, and more. Jeff Howell of Encor Advisors has examined this issue in-depth and found that "construction costs for data centers are estimated to average at approximately $9.5 million per megawatt" in the U.S., and once facilities are built, annual operating expenses can range from $50,000 to $100,000 for a small center to $10 to $25 million for a larger facility.

Recent hyperscale data centers that feature thousands of servers were found to cost $1 billion or more to build. They can cover more than a million square feet of land and feature sophisticated computer processing power. In addition to being very expensive, such facilities have huge upfront costs. Many of these expenditures, such as land and construction labor, vary tremendously within the United States, and the same is true for different places around the world. How close installations are to supply chains affects overall costs, as do transportation, logistics, energy, and taxes.

Billions of dollars are currently being invested in AI, cloud computing, and the data centers that power digital applications. Money is flowing from the top tech firms, investment funds, sovereign wealth funds from other countries, financial institutions, industry partnerships, and more. As of 2024, the financial investment required for data centers reached hundreds of billions of dollars, and that number is expected to increase into the trillions by 2030.

Who pays?

Barring major advances in efficiency, the big question is who pays for the increased data center capacity. Right now, ratepayers shoulder some of these costs. Consumer bills have risen in a number of places, fostering resentment about the additional expenses. David Klaus and Mark MacCarthy have argued that since the major technology companies are building data centers and will benefit from their services, they should shoulder more of the costs. They note that the top AI firms have a market value "seven times that of the entire S&P 500 Utility Sector" and therefore have the financial means to pay for the increased electrical power. As an illustration of how this could work, the Public Utilities Commission of Ohio has proposed that firms operating data centers larger than 1 gigawatt should pay 85% of their electricity costs, up from the current 60%. This change would shift a greater share of financing to technology firms with the capacity to absorb it.

To guard against the consumer backlash over rising electrical bills, several companies are using bonds to finance their long-term investments. Meta, for example, has floated $26 billion in bonds to pay for its new data centers. That allows the company to gain access to capital upfront, with expected revenue gains from AI applications paying for the bonds overtime. That model puts the payment onus more on companies but also assumes the cash flow from new AI revenue will be sufficient to cover bond repayments. If AI accelerates as currently are projected, that should be a relatively safe bet.

Because of the high investment costs, many of the current hyperscale data centers are set up by the large technology firms themselves. According to the scholars at Vanderbilt University, platforms such as Amazon Web Services, Microsoft Azure, and Google Cloud Platform own around two-thirds of the cloud computing market, which serves as the digital infrastructure for the data center sector. Data centers rely upon cloud storage and processing facilities to power AI and other emerging applications, making it essentialy to ensure these markets function efficiently and effectively.

Who benefits?

Consumers, businesses, and government actors will likely benefit if the development of large-scale data centers spurs advancements in AI applications, machine learning, data analytics, and robotics, which in turn could lead to more efficient manufacturing, autonomous transportation systems, the development of new drugs, personalized learning, and much more. There will be faster broadband for ordinary consumers and greater processing power for businesses, governments, and health and educational institutions, especially if the assets of telecommunications companies are effectively leveraged.

Our goal should be to extend the benefits of the digital revolution to everyone, allowing people to share in technological innovation without facing exclusion or harm.

This is where the question of community benefits for residents living near data centers must be made clearer. For example, can local electrical grids be upgraded as part of the broader infrastructure improvements needed to power these facilities? Could irrigation systems be modernized in areas slated for data center construction? Who decides what community investments are made, and how are tech companies and the government working to support local education and workforce development so that residents can access new trade and professional opportunities?

As more data centers are built, multiple stakeholders, spanning AI companies to civil society organizations, should consider the risks of accelerated growth. There should be community surveys to understand people’s concerns and ways for public utility commissions to gather feedback from affected neighbors and incorporate that information into their rate decisions. In other words, communities should not view these buildings as isolated entities, but rather as valued assets that bridge local dynamics with global concerns, as well as an opportunity for local development.

Job impact
One area of community benefit that might be less promising is job creation. Even in large-scale centers, construction jobs often total around 1,500 skilled trade workers and 100 operational jobs. Since centers largely consist of file servers and networking equipment, it does not take a lot of employees to staff them. Hyperscale data centers may comprise a million square feet of space and cost a billion dollars to build, but they are not likely to create a large number of jobs outside of construction, which is why other community benefits may be more salient for regions expanding their data center footprint.

Climate and environmental risks
Natural disasters are major threats to data centers. The prevalence of U.S. data centers in places such as Texas, California, and Virginia makes them susceptible to hurricanes in the Southeast, floods in Texas and Virginia, and earthquakes along the West Coast.

As climate change fuels more destructive floods and storms, companies must carefully select the construction sites of new data centers. In disaster-prone areas, it is also crucial to build in data and operational redundancy in case particular centers go down due to weather problems.

National security considerations
Increasingly complicated geopolitical dynamics are affecting data centers. Shifting alliances and the polarization of global relations alter the United States' risk profile. Competition with China has intensified, and so have concerns about national defense, cybersecurity, and international competitiveness. Decisions about where to build data centers carry national security implications, raising questions about the nature of a host nation's relationship with the United States and its level of democratic governance. Careful deliberation about these subjects is necessary, as the implications on intelligence gathering and defense are significant.

On the hardware side, the Biden administration dealt with some possible security threats by limiting chip exports to adversarial countries. It imposed controls on the kind and sophistication of semiconductors that American firms could sell to Chinese entities, for example. It invested in domestic manufacturing capabilities through the CHIPS and Science Act, in order to boost American capabilities and make sure U.S. companies had access to chips in case of any disruptions in production in Taiwan and South Korea, where the most advanced chips are made.

Trump has altered that strategy in two ways. He has weakened support for CHIPS Act funding and loosened restrictions on chip sales to China. The administration's argument is that it is better to have foreign competitors reliant on American products than for them to develop their own domestic capabilities. The belief is that these actions will protect American security, while still maintaining export markets to China and elsewhere.

Data portability
It is important for organizations to avoid data center "lock-in" and have the means to move their information and models from platform to platform. While this was a problem in the early days of

some social media sites, companies can now export their data and switch to another platform if they choose.

There should be a similar mechanism for convenient data migration so that individuals and organizations are not locked into individual sites with limited migration options. Both the General Data Protection Regulation (GDPR) of the European Union and the California Consumer Privacy Act (CCPA) give people control over their own data and mandate the data portability rights of any individual or organization. This requirement should be extended throughout the U.S. to give people more choices and greater control over their personal information and applications. In the future, more interoperability could be built into data centers to ensure more seamless data coordination.

Europe's distinctive challenges

Europe faces some distinctive challenges in building out data centers, owing to the inadequacy of its current power grid, permitting obstacles, and poor access to capital in order to scale its businesses.

It is expensive to build data centers in many European nations. There are high land costs, cumbersome permitting procedures, high labor and tax costs, and infrastructure development barriers. Similar to the U.S., the members of the European Union must address these obstacles and ensure their businesses have access to the data centers that will power the AI economy.

In general, the European Union has been slow to overcome barriers to data center development and is building these facilities at a far slower rate than the United States. A similar challenge could emerge domestically if U.S. states diverge in how they support data center construction. However, as Table 2 indicates, state-level approaches in the United States have so far remained consistent, enabling effective coordination with federal initiatives to advance these projects.

Investing in the US hinterland and Global South

Most data centers now reside in American states on the East or West coasts or in developed countries that already have ample financial resources. There is a real risk that the U.S. hinterland will be left behind, as well as the Global South, including substantial parts of Africa, Latin America, and Asia. Table 1, for example, shows that there are no African countries with a substantial number of data centers, and the only Global South nations among the top 16 places were Brazil and Mexico.

The problem with the narrow geographic scope of data center locations is that it reinforces existing inequities and accelerates the gap between digital “haves” and “have-nots.” Data centers are crucial for future economic development. It will be hard for nations to be competitive if they do not have their own data centers or if their AI applications lag due to insufficient infrastructure. We need a geographical distribution of data centers that promotes economic growth in the Global South and enables AI for the public good around the world.

To deal with equity issues, Daniel Goetzel of Harvard University has discussed “AI economic zones” as ways to diversify the geography of AI and data centers. The idea is that cities could establish areas similar to urban economic zones where public and private investment could facilitate technology developments and make it easier for those without much access to capital to develop their ideas. Similar approaches may work globally through the World Bank or other international development agencies.

Conclusion

In summary, several obstacles and barriers must be addressed to enable data centers—and, by extension, AI applications—to reach their full potential and support economic flourishing. Challenges involving critical minerals components, workforce shortages, permitting reforms, energy and water needs, electric grid investment, national security, and geographical distribution are all critically important. Improvements in all these areas will be crucial to the international competitiveness and economic prosperity of the United States. This paper is part of a broader research effort to monitor these and other emerging areas and track community benefits and risks, while measuring progress toward national and international goals.

# # #

California has struggled to track water use. A new system should fix this
San Francisco Chronicle | October 21, 2025 | Kurtis Alexander,

The California Aqueduct flows through the Central Valley near Tracy in 2001. California now has a clearer accounting system for surface water rights. Michael Macor/San Francisco Chronicle

How much water is used in California?

Well, the answer can be murky, owing to old, often ill-defined water rights and a flawed system for tracking water use.

On Tuesday, state water regulators unveiled the results of a two-year effort to better identify who has claims on California's water and better measure consumption. The new state product is called CalWATRS, and it's a massive data platform that holds thousands of water-rights records and makes it easier for water-rights holders to report what they use.

Officials at the State Water Resources Control Board say the new system will ensure that water is used more appropriately in California, particularly during dry times when state officials have to ration supplies and cut off users. In past droughts, a lack of information has made it difficult to regulate water.

"We (sometimes) don't really have a good idea of what demand is, and we (sometimes) don't really have a good idea of what supply is," said Erik Ekdahl, the state water board's chief deputy

directory, who spearheaded the accounting cleanup. “We’re going to start having the data that really lets us understand it at a much finer resolution.”

California has about 43,000 water rights, generally held by water agencies, landowners, farms and other entities, all of which have permission to draw water from a surface supply — for example, a river or creek — based on seniority and proximity to a water source. Some water rights date back well over a century, and their legitimacy and scope is not clearly documented.

One major obstacle for state water regulators has been getting water-rights holders to accurately report their water use. The new data system replaces the state’s early 2000s-era reporting platform, called eWRIMS, known for being hard to navigate and riddled with bad information. CalWATRS, officials say, is far more user-friendly and flags potential errors — such as alerting people if they incorrectly report gallons instead of acre-feet.

CalWATRS, which stands for California Water Accounting, Tracking and Reporting System, was completed within its budget at a cost of $61.5 million and met its 2025 deadline, officials say. Business consultant Deloitte was hired to help integrate the system, and a Salesforce data platform was used.

State Water Board officials caution that there still may be bugs in the product and say they’re taking input from water-rights holders on what improvements should be made. Officials are still digitizing older water records as well.

Beyond the new data system, the state has been working to improve water accounting by requiring water-rights holders to more frequently report water use and expanding the state water board’s authority to investigate questionable water rights.

Some people, primarily in the agricultural community, have criticized the push to tighten the tracking, expressing concerns about violating privacy and forcing longtime water-rights holders to unnecessarily defend their water claims.

About 80% of the surface water consumed in California is estimated to serve farms while the remainder goes to cities and towns. Groundwater, which long went unreported in the state, is in the process of being better tracked through the Sustainable Groundwater Management Act.

# # #

SGMA IMPLEMENTATION: Open-Source Tools, Shared Success: White Paper Highlights Groundwater Innovation in Action
Maven | November 3, 2025 | Guest Contributor

Six California Groundwater Sustainability Agencies (GSAs) outline how shared infrastructure, user feedback, and transparent data are turning groundwater management plans into action.

The California Water Data Consortium, Environmental Defense Fund, Environmental Science Associates, and Olsson have released a new white paper documenting how the California Department of Water Resources' (DWR) investment in open-source groundwater tools is accelerating implementation of the Sustainable Groundwater Management Act (SGMA) across diverse basins in the state.

As GSAs transition from SGMA planning to implementation, they face several common challenges: how to make complex water data accessible to growers, how to build trust while introducing new policies, and how to avoid reinventing tools that other agencies have already developed. "Groundwater Accounting Platform — Real-World Impact from DWR Investment in Open, Scalable SGMA Tools" provides concrete solutions drawn from six diverse pilot deployments spanning different basin types, governance structures, and management priorities.

Real-World Solutions to SGMA Implementation Challenges
The pilots showed how public investment in shared, open-source infrastructure can spark scalable, lasting impact. Through DWR's pilot program, agencies across California configured a single open-source platform to fit their unique needs rather than starting from scratch with their own unique new tool. The white paper features the experiences of the Merced Irrigation-Urban GSA, Merced Subbasin GSA, East Turlock Subbasin GSA, Rosedale-Rio Bravo Water Storage

District, Yolo County Flood Control and Water Conservation District, and Pajaro Valley Water Management Agency.

"The Platform integrates key elements of the GSA's programs. It's become a practical, day-to-day system that supports decision-making at all levels, transparency, and strong relationships," said Mike Tietze, General Manager of East Turlock Subbasin GSA.

Key findings documented in the white paper include:

- Flexible Tools for Local Priorities: The Platform's modular design enabled agencies to customize for their specific contexts, from evapotranspiration-based tracking to metered data, from well registration modules to Proposition 218 fee calculators and multibenefit land repurposing scenario planning.
- Growing a Community of Practice: User and advisory groups created forums where agencies troubleshoot policy rollouts, share lessons learned, and build on one another's work—accelerating timelines and avoiding duplicated effort.
- Enabling Action and Collaboration: By making relevant data accessible and digestible, the Platform helped GSAs move from policymaking to implementing the projects and management actions identified in their Groundwater Sustainability Plans, while fostering more constructive conversations with communities.
- Unlocking Unexpected Benefits: GSAs discovered creative applications beyond water accounting, including tracking land fallowing and cover crop practices, estimating groundwater use fees, streamlining parcel-based tax assessments, automating well log data extraction, and exploring scenarios for multibenefit land repurposing.

Operational Tools That Build Trust

The white paper outlines how agencies use the Platform not just for water accounting, but also as a tool to build trust with groundwater users and explore policy options. GSAs use the Platform to trial program rules, share them with impacted communities, and refine approaches before full implementation. Several agencies tested specific proposed policy changes with actual data before adoption, identifying and fixing issues early while reducing confusion and improving community engagement.

"This pilot program demonstrated that public investment can spark scalable, lasting impact," said Hannah Ake, senior program manager at the California Water Data Consortium. "The public-private-nonprofit partnership behind the Platform proved to be an effective model to coordinate state investment with local expertise and private sector technical capacity."

The Platform is now operational across multiple California basins and generating interest beyond the state, with agencies in Oregon, Nebraska, and Kansas exploring applications for their water challenges. Read the full white paper at groundwateraccounting.org/platform-library.

About the Groundwater Accounting Platform

Developed collaboratively by Environmental Defense Fund, the California Water Data Consortium, Environmental Science Associates, and Olsson, the Groundwater Accounting

Platform offers a robust, user-friendly tool for tracking water availability and use with accessible dashboards and workflows, providing water managers, growers, and landowners with essential data down to the parcel level. By integrating information from diverse data sources like satellite imagery, flow meters, and sensor networks, the Platform supports precise water budgeting and scenario planning, helping California's Groundwater Sustainability Agencies and other partners plan and respond to fluctuating water conditions.

Points of Contact

- Request a Platform Demo | John Burns – jburns@esassoc.com
- U.S. Platform Coordination and Outreach | Kait Bieber – kbieber@edf.org
- California Platform Coordination and Outreach | Hannah Ake – hake@cawaterdata.org
- Modeling, Scenario Planning, and Groundwater Evaluation Toolbox | Jim Schneider – jschneider@olsson.com
- General Platform Questions | info@groundwateraccounting.org

# # #

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EPA unveils new tools to bolster cyber resilience and safeguard water systems
SmartWater Magazine | October 24, 2025 |

U.S. Environmental Protection Agency (EPA) released new and updated planning tools that water systems across the country can use to help prevent and respond to cybersecurity incidents. These tools will help all public water systems protect access to safe water and aid systems conducting risk and emergency planning for cybersecurity.

“Strengthening cybersecurity for the U.S. water sector is critically important because cyber resilience and water security are key to national security. Water systems across the country are facing cyberattacks that threaten the ability to provide safe water. As part of advancing the Powering the Great American Comeback Initiative, EPA is committed to ensuring every American has access to clean and safe water. Guarding against cyberattacks is central to this mission,” said EPA Assistant Administrator for Water Jess Kramer.

To better address potential vulnerabilities and ensure all water systems have the best information and emergency safeguards available to maintain protections for drinking water and wastewater treatment operations, EPA has developed the following resources:

- Emergency Response Plan (ERP) Guide for Wastewater Utilities: This updated plan describes strategies, resources, plans, and procedures utilities can use to prepare for and respond to an incident, natural or man-made, that threatens life, property, or the environment.
- Template for Developing an Incident Response Plan: This new template assists drinking water and wastewater systems with developing a Cybersecurity Incident Response Plan (CIRP).

- Incident Action Checklists: EPA is publishing two new checklists, as requested by the water sector, to help drinking water utilities prepare for, respond to, and recover from specific emergencies such as wildfires, power outages, floods, and cybersecurity incidents.
- Cybersecurity Procurement Checklist: This checklist will help water and wastewater utilities incorporate cybersecurity into the procurement process. It will help utilities generally assess the cybersecurity practices of suppliers, including vendors and manufacturers, and their products during procurement.
- Cybersecurity for critical infrastructure is a human health and a national security priority. EPA will continue to fulfill its core mission of protecting human health and the environment by working with the Cybersecurity and Infrastructure Security Agency, state programs, and water associations to help reduce cyber risks at water systems. The agency will also continue to collaborate with water systems to implement best management practices to swiftly address any cybersecurity concerns as they arise.

Background

In August, the Trump EPA announced over $9 million in grant funding for midsize and large water systems to help protect drinking water from cybersecurity threats and improve resiliency for extreme weather events. The agency also published a report highlighting 10 recommendations to strengthen resiliency to cyberattacks in the water sector.

Cyberattacks against water systems have increased several-fold in recent years and can disrupt or contaminate drinking water and compromise the treatment of wastewater. EPA, federal partners, and utilities have a collective responsibility to ensure that cyber threats do not imperil the critical lifeline of clean and safe water. Clean and safe water is central to strengthening the American workforce; powering industries — from auto manufacturing to Artificial Intelligence; and advancing energy dominance. In communities, it supports small businesses, hospitals, military bases, and schools.

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How is California Phasing Out the Use of Forever Chemicals?
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Forever chemicals can be released from manufacturing facilities, landfills and wastewater treatment plants

California adopts strict new PFAS health goals and legislation to phase out 'forever chemicals', protecting drinking water and public health

California has taken another major step in protecting public health and the environment by adopting strict new health goals for perfluoroalkyl and polyfluoroalkyl substances (PFAS), commonly known as "forever chemicals" due to their persistence in nature.

The move, led by the Office of Environmental Health Hazard Assessment (OEHHA), sets science-based limits for PFAS in drinking water and complements new legislative measures to phase out their use in consumer products.

What are Forever Chemicals?

Safeguarding drinking water
The OEHHA has established public health goals (PHGs) for two of the most studied PFAS compounds: perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS).

These goals set non-enforceable targets of 0.007 parts per trillion (ppt) for PFOA and 1 ppt for PFOS, levels deemed safe for lifetime exposure without significant health risk.

“OEHHA’s adoption of these public health goals for PFOA and PFOS is an important step toward addressing the long-term effects of forever chemicals,” says Darrin Polhemus, Deputy Director for the State Water Board’s Division of Drinking Water.

“The PHG values will enable us to develop standards that water systems will have to achieve to help minimise these chemicals in our drinking water.”

The announcement follows five years of scientific review and public consultation, underscoring California’s commitment to evidence-led environmental protection.

Phasing out PFAS in everyday products

Assembly Bill 347 by former Assemblymember Phil Ting, complements OEHHA’s initiative by addressing PFAS contamination at its source.

The bill strengthens enforcement powers for the Department of Toxic Substances Control (DTSC), allowing product testing, compliance certification and administrative penalties.

It also supports a broader shift towards an “essential use” model, ensuring PFAS are only used where absolutely necessary for health or safety.

“We know PFOA and PFOS can be harmful at low levels and California is leading by adopting these scientifically rigorous and health protective goals to inform how water suppliers treat these chemicals in drinking water,” says Lauren Zeisse, former OEHHA Director.

Understanding the impact of PFAS

PFAS are synthetic chemicals prized for their resistance to heat, water and oil.

However, these same properties make them nearly indestructible once released into the environment.

They accumulate in soil, water and living organisms, leading to widespread contamination, with 45% of US tap water containing PFAS and 98% of Americans carrying detectable levels in their blood.

Health studies link PFAS exposure to cancer, hormonal disruption, reduced immunity, liver damage and developmental issues.

PFAS are particularly persistent in groundwater near industrial facilities, landfills and firefighting training sites, posing long-term challenges for clean water access.

Balancing innovation, cost and sustainability

While public health organisations such as the Environmental Working Group and the Natural Resources Defense Council support the ban, industry representatives have raised concerns about feasibility and cost.

Manufacturers argue that some fluoropolymers used in non-stick cookware are stable and safe, approved by the US Food and Drug Administration for food contact.

Regulators, however, maintain that treating PFAS as a single chemical class is essential to avoid harmful substitutes and ensure lasting environmental protection.

California's PFAS cleanup costs already exceed US$500m, with more than US$1bn in planned projects, underscoring the urgency of preventive measures.

By combining scientific rigour with phased legislation, the state aims to reduce exposure, safeguard ecosystems and lead the nation toward a cleaner, more sustainable future.

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