

Putting Data to Work: Executive Summary

Why Investing in Water and Ecological Data in California Matters

Water is an essential resource for California's 40 million residents¹ and vital in sustaining the state's ecological biodiversity, enabling a vibrant agricultural sector, and supporting the state's economy by providing water necessary to support communities, businesses and industry. But, as the State's water infrastructure ages and climate change strains California's water resources, it is critical that State and local agencies, and communities have the information and tools necessary to manage irregular and unpredictable water supplies. The Open and Transparent Water Data Act (Assembly Bill [AB] 1755, Dodd), passed in 2016, helps address the demand for high-quality public natural resource data statewide. The California Water Data Consortium (Consortium), a section 501(c)(3) nonprofit organization founded in 2019, supports the State and its Partner Agency Team in implementing AB 1755.² Improving California's water data infrastructure is an ongoing effort that ultimately will form an indispensable foundation for water resource stewardship statewide and support sustainable and equitable water supply access.

In addition to The Open and Transparent Water Data Act, the State has passed seminal water planning legislation to address water management challenges, including the Integrated Regional Water Management (IRWM), a collaborative effort to support regional water management planning and projects,³ and the Sustainable Groundwater Management Act (SGMA), and more.⁴ Despite the monumental progress that California has made to support sustainable and equitable water management, there remain challenges that have hindered the implementation of existing efforts and slowed implementation.⁵

¹ See: <https://www.census.gov/quickfacts/CA>

² See: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/AB-1755/Letter_from_CNRA_and_CalEPA_Secretaries_related_to_the_Water_Data_Consortium_a_y19.pdf

³ See: <https://water.ca.gov/programs/integrated-regional-water-management>

⁴ See: <https://water.ca.gov/programs/groundwater-management/sgma-groundwater-management>

⁵ Hanak E, Lund J, Dinar A, Gray B, Howitt R, Mount J, Moyle P, and Thompson B. 2011. Managing California's Water: From Conflict to Reconciliation. San Francisco (CA): Public Policy Institute of California. 503 pp. Available at: http://www.ppic.org/content/pubs/report/R_211EHR.pdf.

Missing or inaccessible data hinder the ability of local, State, and federal agency employees to effectively manage our water systems. As water availability becomes more unpredictable because of climate change and natural disasters, the impacts of these data gaps will be exacerbated. California's current water data systems are not built to enable the data access, integration, and synthesis required to transition to a more resilient water future.⁶ Federal, State, and local water managers, as well as growers, communities and non-profit organizations, presently rely on water data and information from a variety of sources that are difficult and time-consuming to access.⁷ These data are often subject to errors and are reported in inconsistent formats that limit their functionality.⁸ In addition, data necessary for critical water management decisions are not available in the timeframes required to support timely management decisions, particularly during periods of water scarcity or excess when critical, time-sensitive decisions are necessary. These data challenges create inefficiencies and inequities in water management, hinder proactive water management, and leave human and ecological communities vulnerable.⁹

To provide a better understanding of the data challenges facing California's water planners and managers, this report summarizes interviews with water leaders from a variety of sectors across the state. These leaders articulated how California's existing data infrastructure issues are hindering their ability to make informed water management decisions and thus plan for long-term supply reliability under extreme conditions. Critical

data gaps and inaccessible, inconsistent, and poor data quality are affecting a range of management outcomes—from an inability to proactively identify and mitigate drying wells, to maintaining surface water flows, to protecting endangered species, to planning for infrastructure investments in urban and agricultural communities. Insufficient water data quality



Photo Credit: CA Department of Water Resources

⁶. Cantor, A, M. Kiparsky, R. Kennedy, S. Hubbard, R. Bales, L. C. Pecharroman, K. Guivetchi, C. McCreedy, and G. Darling. 2018. Data for Water Decision Making: Informing the Implementation of California's Open and Transparent Water Data Act through Research and Engagement. Center for Law, Energy & the Environment, UC Berkeley School of Law, Berkeley, CA. 56 pp. Available at: <https://doi.org/10.15779/J28H01> or <https://www.law.berkeley.edu/research/cee/research/wheeler/data/>

⁷. See: <https://stacks.stanford.edu/file/druid:cb612zf3515/Evaluating%20the%20Use%20of%20Water%20Data%20Platforms%20Summary%20Report.pdf>; <https://www.law.berkeley.edu/wp-content/uploads/2018/01/DataForWaterDecisionMaking.pdf>

⁸. See: <https://waterinthewest.stanford.edu/sites/default/files/GW-DataSurveyReport.pdf> and https://www.waterboards.ca.gov/board_info/agendas/2021/feb/warder_projectrpt_v2_508drft_210205.pdf

⁹. Hanak E, Lund J, Thompson B, Bowman Cutter W, Gray B, Houston D, Howitt R, Jessoe K, Gary B, Libecap G, Medellin-Azuara J, Olmstead S, Sumner D, Sunding D, Thomas B, and Wilkinson R. 2012. Water and the California Economy. San Francisco (CA): Public Policy Institute of California. 32 pp. Available at: http://www.ppic.org/content/pubs/report/R_512EHR.pdf.

and quantity are severely affecting communities and sustainable water planning statewide. This report outlines six recommendations to improve the quality, accessibility, and dissemination of water data and the infrastructure supporting it. Although data alone will not solve California's future water uncertainties, it provides a basis for outcome focused decision-making, which will enable communities to plan for and meet the growing demands being placed on water resources by climate change, population growth, and other factors. The recommendations in this report, although informed by interviews with a range of water leaders, are made by the Consortium and are listed below.

1. **Invest in water data infrastructure.** State and local agencies should continue to prioritize and invest in water data infrastructure to modernize California's data systems.
2. **Continue empowering cross agency collaboration.** State and local agencies should be encouraged to work collaboratively across all agencies and with interdisciplinary teams that include data experts.
3. **Create open data standards and protocols.** State agencies, in partnership with non-State partners, should create and facilitate the adoption of open data standards and protocols.
4. **Automate data collection and reporting of critical water datasets.** State agencies should automate data collection and reporting systems for critical water datasets, including groundwater elevation data, diversion data, and stream gage data.
5. **Streamline procurement processes to enable innovation.** State agencies, in partnership with non-State partners, should simplify procurement processes to encourage more small business applications and reduce burden.
6. **Expand public awareness and accessibility of water data.** State agencies, in partnership with non-State partners, should expand public awareness, bolster public engagement, and improve community access to data and decision-making spaces to promote transparency and support more equitable water stewardship.

These recommendations highlight opportunities to leverage existing water data programs and governance structures to continue improving the quality, use, and functionality of water data. They build on existing data efforts and research, including the following reports and documents: *Strategic Plan for Assembly Bill 1755*,¹⁰ *Protocols for Assembly Bill 1755*,¹¹ *Sustainable Governance and Funding for Open Water Data in California*,¹² *Water Data*

¹⁰ See: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/AB-1755/Strategic_Plan_for_AB1755_a_y19.pdf

¹¹ See: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/AB-1755/Protocols_for_AB1755_a_y19.pdf

¹² See: <https://www.redstonestrategy.com/publications/ca-open-water-data/>

Advisory Council Recommendations,¹³ the Aspen Institute's *Internet of Water: Sharing and Integrating Water Data for Sustainability*,¹⁴ *Toward a Resilient Water Future for California*,¹⁵ the Environmental Data Summit Organizing Committee's *Enhancing the Vision for Managing California's Environmental Information*,¹⁶ *Data for Water Decision Making*,¹⁷ and many other efforts.

Including critical water data in decision-making will empower leaders with the tools to promote consensus and support the development of equitable and sustainable solutions.¹⁸ Incorporating these recommendations into local and State water management initiatives will help California utilize the full potential of data and data infrastructure, and demonstrate the value of data-informed problem-solving to build water resource resiliency under changing conditions.



Photo Credit: Katie Bonilla, unsplash.com

¹³ See: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/AB-1755/Water_Data_Advisory_Council_Recommendations.pdf/

¹⁴ See: <https://www.aspeninstitute.org/publications/internet-of-water/>

¹⁵ Feldman, D. and S. Roback. 2022. *Toward a Resilient Water Future for California: A Science to Action Forum*. Water UCI.

¹⁶ See: <https://www.sfei.org/documents/enhancing-vision-managing-californias-environmental-information>

¹⁷ See: <https://www.law.berkeley.edu/wp-content/uploads/2018/01/DataForWaterDecisionMaking.pdf>

¹⁸ Hanak E, Lund J, Dinar A, Gray B, Howitt R, Mount J, Moyle P, and Thompson B. 2011. *Managing California's Water: From Conflict to Reconciliation*. San Francisco (CA): Public Policy Institute of California. 503 pp. Available at: http://www.ppic.org/content/pubs/report/R_211EHR.pdf.