

LONG-STANDING CHALLENGES OF WATER DATA MANAGEMENT IN CALIFORNIA

The past decade, which has included a five-year drought, has seen increased recognition that access to and management of the state's water data will be critical for managing the state's water resources. Complementing efforts by the state, a series of reports by CCST in 2011 and 2014 highlighted the economic importance of managing the state's water supply and recommended that the state develop and implement an integrated water information management system. This is no small task, as the state's existing water datasets are housed in a number of places and managed by various entities including local, state, and federal agencies as well as non-governmental organizations and universities.

THE OPEN AND TRANSPARENT WATER DATA ACT

In 2016, AB 1755 (Dodd), known as the Open and Transparent Water Data Act, was approved by Governor Brown. AB 1755 requires the California Department of Water Resources (DWR) along with the California Water Quality Monitoring Council, the State Water Resources Control Board (Water Board), and the California Department of Fish and Wildlife (CDFW) to create an open water data platform that integrates state and federal water data by 2020 (see timeline).

- **Shared, open data:** AB 1755 required these agencies to develop a range of protocols for data sharing, documentation, and quality control as well as for public access and the promotion of open-source platforms. The bill also created the Water Data Administration Fund and required recipients of state funds for water data projects to adhere to those protocols.
- **State and federal data:** In addition to data on water transfers and exchanges, the platform must integrate data from DWR's State Water Project reservoir operations, groundwater use and levels, urban water and land use, the Water Board's data on water rights, water diversions, and water quality, CDFW's data on fish abundance and distribution, as well as federal data from the US Geological Survey, the US Bureau of Reclamation, the US Fish and Wildlife Service, the US Forest Service, and NOAA Fisheries.

IMPLEMENTATION OF AB 1755

State agencies are working together (Figure 1) to create a *federated network of data platforms*, aimed at providing decision makers with data that are *sufficient, accessible, useful, and used*:

- **Data platform:** Where databases are accessed (through a data portal) and stored
- **Federated network:** A group of independent data platforms that have adopted common standards and practices in order to enable the compatible exchange of data from different sources (interoperability)
- **Sufficient:** Data are appropriate and substantive enough to support water resources management and answer water-resource related questions
- **Accessible:** Data are both available for use and easily discoverable
- **Useful/Used:** Data are provided in common formats enabling their applied use in models, figures, or reports and are used to support data-driven decision making and innovation



SELECT EXPERTS

The following can advise and share insights on water data management in California.

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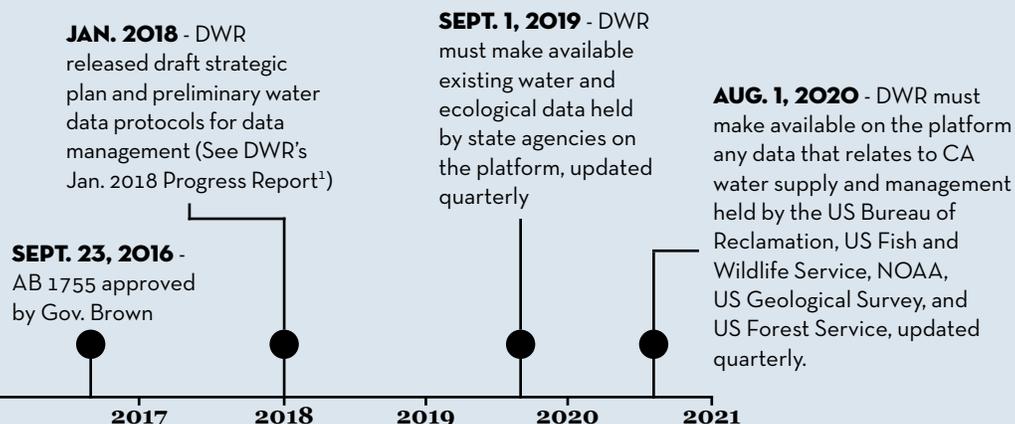
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AB 1755 IMPLEMENTATION TIMELINE

Progress to date and important deadlines for the platform development process.



SOURCE: Timeline modified from "Data for Water Decision Making," UC Berkeley Wheeler Water Institute, Jan. 2018²

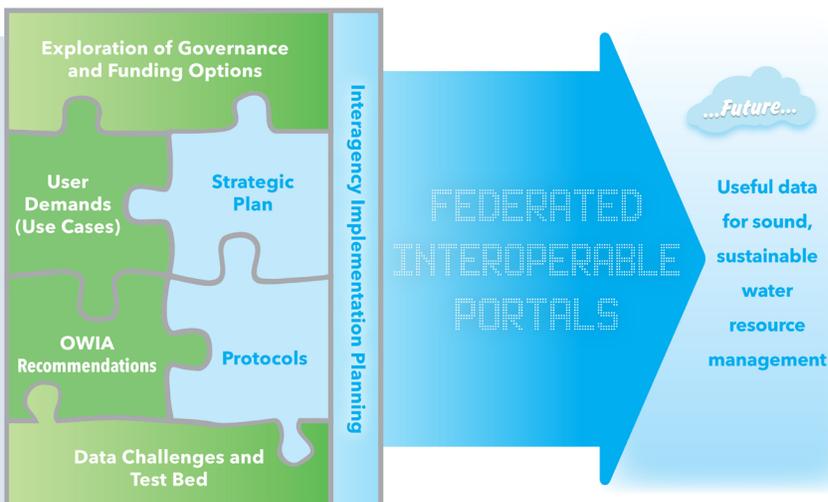
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FIGURE 1. A VISUALIZATION OF THE IMPLEMENTATION OF AB 1755 (DODD, 2016).

AB 1755 requires state agencies to produce a strategic plan and protocols for data sharing, quality control, etc. (blue puzzle pieces). The contributions of voluntary partners and engaged stakeholders (green pieces) include the development of use cases, an Open Water Information Architecture (OWIA), exciting data challenges and test beds that harness creativity and innovation in addressing California's most pressing water management issues, and recommendations for long-term governance and funding of the statewide integrated water data platform³. These pieces, taken together, are the essential components that will enable California to realize the vision of useful data for sound, sustainable water resource management through federated interoperable portals.



Source: California Department of Water Resources, as included in their progress report, "Implementing the Open and Transparent Water Data Act," 2018.

WAYS THAT AN OPEN WATER DATA PLATFORM CAN ENHANCE CALIFORNIA WATER MANAGEMENT:

In their Jan. 2018 report, *Data for Water Decision Making: Informing the Implementation of California's Open and Transparent Water Data Act through Research and Engagement*, the Center for Law, Energy and the Environment (CLEE) at the UC Berkeley School of Law included a list of 20 use cases that they developed and analyzed in collaboration with a multi-institution group of collaborators. Below is a subset of example use cases and their objectives, as provided in the report:

- **Planning a groundwater recharge project:** Determine when, where, and how to recharge groundwater, and with what water, in order to avoid undesirable results including declining groundwater levels.
- **Management of environmental flows to protect salmon habitat:** Manage environmental flows for winter run Chinook Salmon in the Upper Sacramento River through reservoir management.
- **Groundwater basin water budgets:** Quantify inputs, outputs, and changes in storage (i.e., water budget) within the basin, at appropriate spatial and temporal scale and resolution, with accuracy sufficient to inform groundwater management and pumping.
- **Wetland and riparian mitigation and monitoring:** Provide regional estimates of the ecological integrity and biological conditions of wetlands, to ensure no overall net loss and achieve a long-term gain in the quantity, quality, and permanence of wetlands acreage in California.
- **Urban Water Efficiency Explorer tool:** Provide a data visualization and scenario planning tool to help California water retailers estimate residential water efficiency targets in order to visualize the changing water conditions to enable effective decisions about adaptations.
- **Water shortage contingency planning vulnerability assessment:** Conduct a vulnerability assessment of a rural community in the San Joaquin Valley to determine the extent to which water shortage puts it at risk of not having sufficient clean water supplies for household use, including consumption.
- **Decision support system to track and evaluate mercury control actions:** Implement mercury control actions to maximize effectiveness of reducing exposure to humans and wildlife. Evaluate the potential of wetland restoration, salmonid population restoration, and other on-the-ground projects to increase mercury exposure to humans and wildlife.
- **Agricultural water management plan:** Improve water management and water use efficiency, as well as plan and prepare for periods of limited water supply and severe drought by developing an Agricultural Water Management Plan (AWMP) to serve as a water management planning tool within an agricultural water supplier's service area.

HELPFUL RESOURCES:

1. [Implementing the Open and Transparent Water Data Act](#), DWR Progress Report, Jan. 31, 2018
2. [Data for Water Decision Making: Informing the Implementation of California's Open and Transparent Water Data Act through Research and Engagement](#), Cantor *et al.*, Center for Law, Energy and the Environment, UC Berkeley School of Law, Jan. 2018
3. [Governance and Funding for Open and Transparent Water Data: Implementing AB 1755](#), Redstone & Water Foundation, May 10, 2018



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