

# AB 1755

*The Open and Transparent Water Data Act*

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Integrated Data & Analysis Branch (DSIWM)  
California Department of Water Resources

# Assembly Bill 1755 (Dodd)

## Assembly Bill No. 1755

### CHAPTER 506

An act to add Part 4.9 (commencing with Section 12400) to Division 6 of the Water Code, relating to water data.

[Approved by Governor September 23, 2016. Filed with Secretary of State September 23, 2016.]

#### LEGISLATIVE COUNSEL'S DIGEST

AB 1755, Dodd. The Open and Transparent Water Data Act.

Existing law imposes on the Department of Water Resources various duties with respect to water in the state. Under existing law, the State Water Resources Control Board administers a water rights program pursuant to which the state board grants permits and licenses to appropriate water.



# Assembly Bill 1755 (Dodd)

## Article 2. Statewide Integrated Water Data Platform Creation

12410. (a) The department, in consultation with the California Water Quality Monitoring Council, the state board, and the Department of Fish and Wildlife, shall create, operate, and maintain a statewide integrated water data platform in accordance with Section 12415 and the following schedule:

(1) By January 1, 2018, the department shall do both of the following:

(A) Make public the protocols developed pursuant to Section 12406.

(B) Publish a strategic plan for data management to guide the implementation of this part.

(2) By April 1, 2018, the department shall release any request for proposals necessary for the development of a statewide integrated water data platform.



# Assembly Bill 1755 (Dodd)

(3) (A) By September 1, 2019, the department shall make available existing water and ecological data held by state agencies on the platform.

(B) The department shall quarterly add the information described in subparagraph (A) not available as of September 1, 2019, that becomes available at a later date.

(4) (A) By August 1, 2020, the department shall make available on the platform available water and ecological data related to California water supply and management that is held by the following agencies:

- (i) The United States Bureau of Reclamation.
- (ii) The United States Fish and Wildlife Service.
- (iii) The National Oceanic and Atmospheric Administration.
- (iv) The United States Geological Survey.
- (v) The United States Forest Service.

(B) The department shall quarterly add the information described in subparagraph (A) not available as of August 1, 2020, that becomes available at a later date.

(5) By August 1, 2020, the department shall make available on the platform any other existing information listed in Section 12415.



# Assembly Bill 1755 (Dodd)

## Article 3. Statewide Integrated Water Data Platform Features

12415. The statewide integrated water data platform created pursuant to Section 12410 shall, at a minimum, do all of the following:

(a) Integrate existing water and ecological data information from multiple autonomous databases managed by federal, state, and local agencies and academia using consistent and standardized formats.

(b) Integrate the following datasets, as available:

(1) The department's information on State Water Project reservoir operations, groundwater use, groundwater levels, urban water use, and land use.

(2) The state board's data on water rights, water diversions, and water quality through California Environmental Data Exchange Network (CEDEN).

(3) The Department of Fish and Wildlife's information on fish abundance and distribution.



# Assembly Bill 1755 (Dodd)

(4) The United States Geological Survey's streamflow conditions information through the National Water Information System.

(5) The United States Bureau of Reclamation's federal Central Valley Project operations information.

(6) The United States Fish and Wildlife Service's, United States Forest Service's, and National Oceanic and Atmospheric Administration Fisheries' fish abundance information.

(c) Provide data on completed water transfers and exchanges, including publicly available or voluntarily provided data on the volume, price, and delivery method, identity of the buyers and sellers, and the water right associated with the transfer or exchange.

(d) Provide documentation of data quality and data formats through metadata.





# What is Open Data?

liberal terms of use

***attribute and sharealike***

for any purpose

*freely used, re-used and redistributed by anyone*

freely used, modified, and shared

**public domain**

*minimal restrictions*

# Assembly Bill 1755 (Dodd)

- AB 1755 is an opportunity to integrate and increase access to water data collected by governmental agencies, which will:
  - Foster collaboration among state agencies
  - Create opportunities to share and integrate datasets
  - Minimize duplicate data gathering and reconciliation of diverse datasets
  - Improve water resources management and operations through data-driven decision-making
  - Improve transparency and accountability





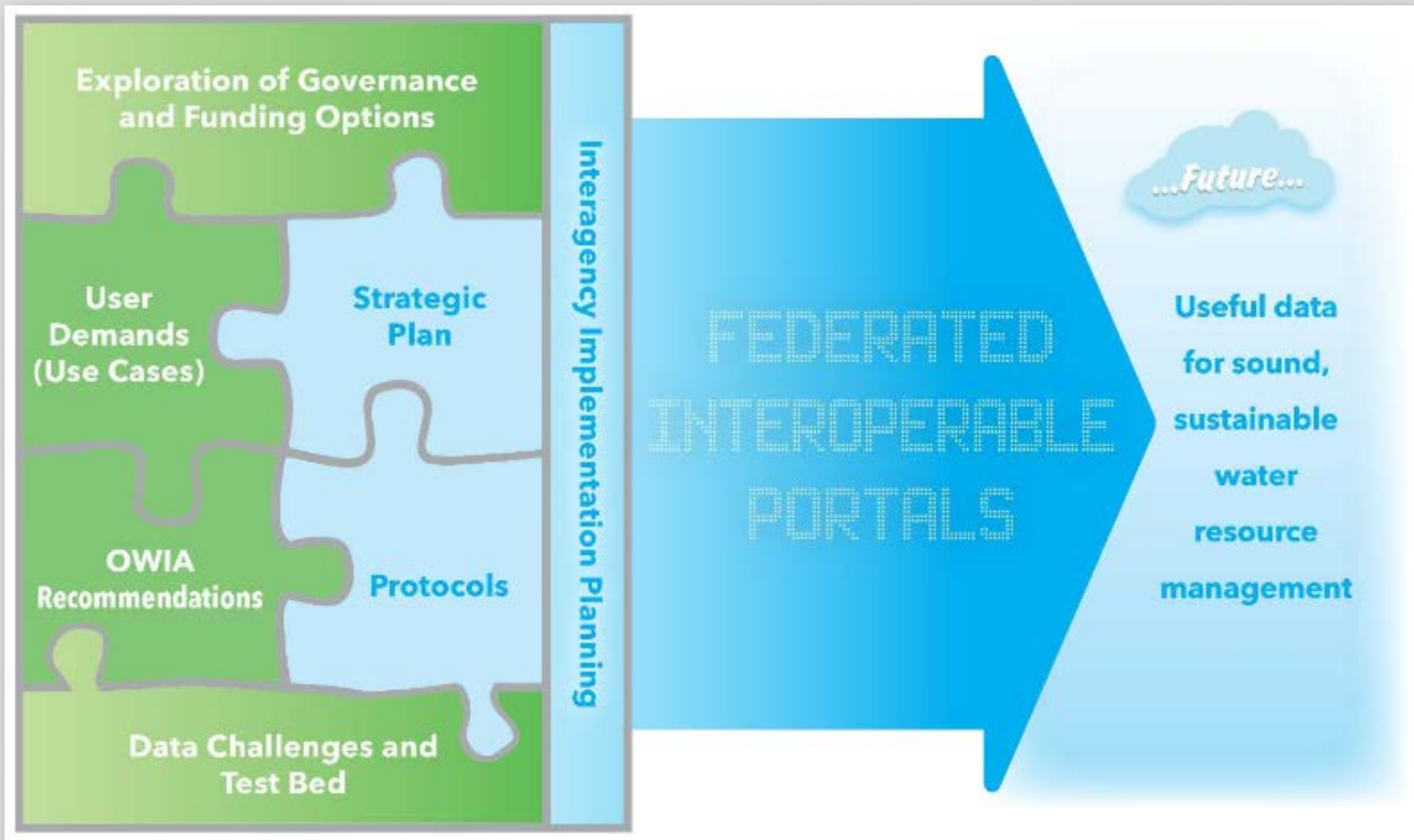
# Assembly Bill 1755 (Dodd)

Implementation partners include:

- Department of Water Resources
- State Water Resources Control Board
- California Department of Fish and Wildlife
- California Water Quality Monitoring Council
- Governor's Office of Planning and Research
- California Natural Resources Agency
- Government Operations Agency (GovOps)
- Delta Stewardship Council
- Research sector (e.g., California Council on Science and Technology, UC Water, national labs)



# AB 1755 Implementation



# Strategic Plan

## Vision

- Useful data for sound, sustainable water resource management

## Goals

- Data are sufficient
- Data are accessible
- Data are useful
- Data are used

**Strategic Plan  
for Assembly Bill 1755,  
the Open and Transparent Water Data Act**

**April 2018**



# Initial Protocols

Iterative, user-based approach

Develop only what is necessary

## 3 initial protocols

- Identify a data steward
- Publish and document on an open data platform
- Access data

### Initial Minimum Protocols

As discussed in the Progress Report, the approach to implementation of AB 1755 involves starting with accessible products and adapting in response to user feedback, changing program needs, and policy decisions. To support the initial implementation of AB 1755, DWR has consulted with the partner agencies and others to outline three initial minimum protocols, consistent with available open data platforms, to guide early implementation of the program (Table 1). The intent is to develop only what is necessary to facilitate early implementation to avoid creating barriers to sharing of data through an open data portal. These protocols will necessarily adapt over time in response to both changing software capabilities and the needs of the users of the open data portals to support a more efficient and transparent use of data. The section "Continuing Development of Protocols – Long Term," highlights a tentative process by which these protocols, and others developed in the interim, might be changed.

Table 1 Three Initial Protocols Developed to Support Early Implementation of AB 1755

Protocol	Business Requirement
1. Identify a data steward	All datasets published by Partner Agencies on the open platform have Partner Agency 'owners,' whom are responsible for maintaining and curating them for users.
2. Publish and document on an open data platform	All datasets published by Partner Agencies on the open platform have a place where they can be discovered.
3. Access data	All datasets published by Partner Agencies on the open platform are machine readable, well documents and accessible to users.

A detailed description of each of the three minimum initial protocols follows.

### Identify a Data Steward

To facilitate dissemination of information and avoid orphaned datasets, each dataset on the open data platform must have a data steward assigned to it from the appropriate agency. The data steward is responsible for the data and for meeting any related data requests. This protocol allows for multiple levels of data stewardship, such as a data creator or author (originator of the data), data caretaker (inheritor, or external sponsor of the data), data sub-steward (person responsible for a subset of the data), and other roles beyond what is defined here. This protocol does not define specific roles for data stewards, it simply indicates the need to have at least one accessible person identified, and prescribes minimum required information for each data steward:

- Name of steward.
- Contact information.
- Organization.
- Roles.
- Dataset(s).

Only data stewards can publish, update, maintain, or remove datasets published on the platform, and each dataset that is published must be assigned to an active data steward from the appropriate agency. The next protocol addresses publication in more detail.



# Open Water Information Architecture

Led by UC San Diego  
Supercomputer Center

System requirements  
document that will inform  
additional AB 1755  
protocols

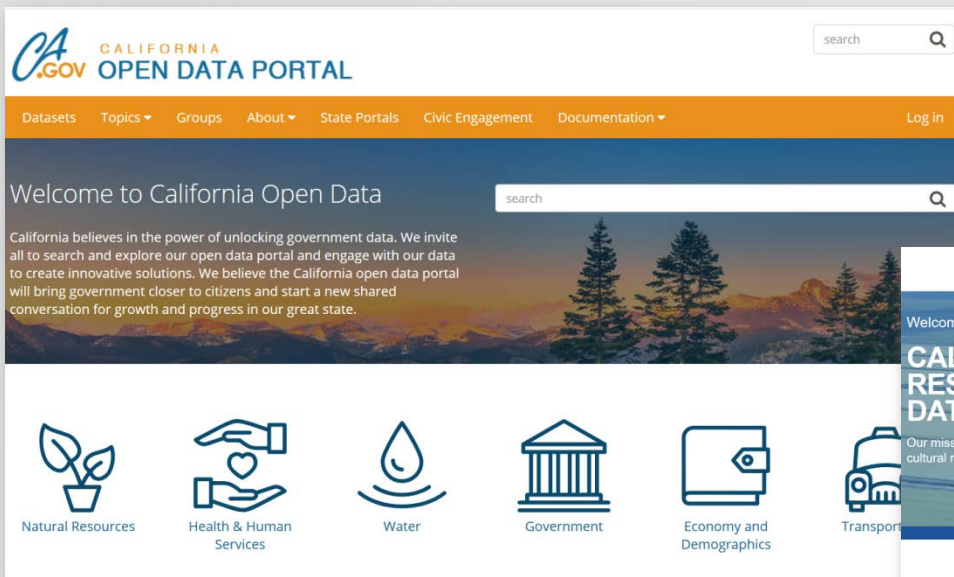
Goal of increasing  
interoperability of  
systems

1	<b>Open Water Information Architecture</b>		
2	System Requirements Document		
3	Version 2.0 <b>Draft</b>		
4	OWIA Technical Working Group		
5	November 26, 2017		
6	<b>Contents</b>		
7	<b>1</b>	<b>Introduction</b>	<b>1</b>
8	<b>2</b>	<b>Project Management Approach</b>	<b>3</b>
9	2.1	The Differences Between Objectives, Functional Requirements, Technical Requirements and Design Alternatives . . . . .	3
10			
11	<b>3</b>	<b>Concept of Operation</b>	<b>3</b>
12	3.1	Definition of the OWIA System . . . . .	4
13	3.2	Governance . . . . .	5
14	3.2.1	Technical Working Group (TWG) . . . . .	5
15	3.2.2	Stakeholder Working Group (SWG) . . . . .	5
16	3.3	Use Cases from Stakeholder Workshops and Follow-on Submissions . . . . .	5
17	3.4	Existing Reporting Requirements . . . . .	5
18	3.5	Information Gaps . . . . .	5
19	<b>4</b>	<b>Functional Requirements</b>	<b>5</b>
20	4.1	FR-100-100: Data Acquisition . . . . .	5
21	4.1.1	FR-100-110: Manual . . . . .	5
22	4.1.2	FR-100-120: Automated . . . . .	6
23	4.2	FR-200-100: Quality Control . . . . .	6
24	4.2.1	FR-200-110: Verification . . . . .	6
25	4.2.1.1	FR-200-120: Documentation . . . . .	6
26	4.2.1.2	FR-200-130: Reproducibility . . . . .	6
27	4.2.1.3	FR-200-140: Data Traceability . . . . .	6
28	4.2.2	FR-200-150: Standardization . . . . .	6
29	4.2.2.1	FR-200-160: Metadata Conventions . . . . .	6
30	4.2.2.2	FR-200-160: File-naming Conventions . . . . .	6
31	4.2.3	FR-200-170: Interoperable Transformation . . . . .	6
32	4.2.3.1	FR-200-180: Separation of Data and Computation . . . . .	6
33	4.2.3.2	FR-200-190: Data Interoperability . . . . .	6
34	4.2.3.3	FR-200-200: Products or Resources . . . . .	7
			i

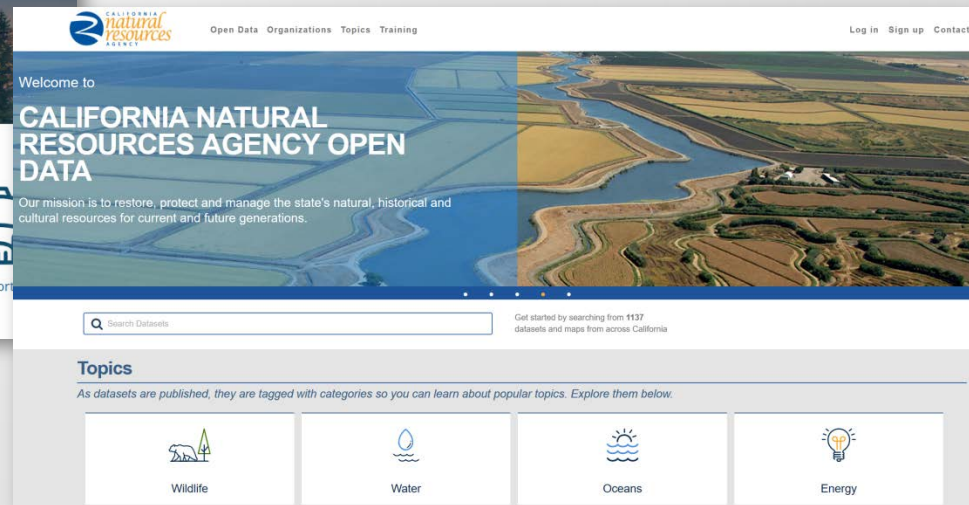


# Federated Interoperable Portals

data.ca.gov



data.cnra.ca.gov



CALIFORNIA DEPARTMENT OF  
WATER RESOURCES

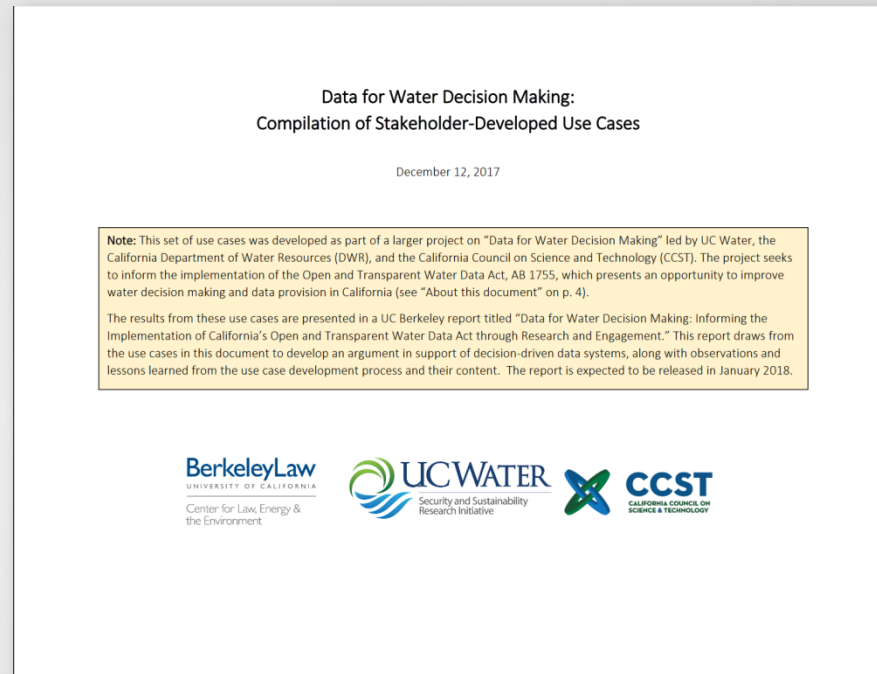


# State-hosted portals

- Tools to help SMEs address business needs
- Data discovery, interoperability, visualization  
→ Maximize **value** of data



# Use Cases (User Demands)



<https://www.law.berkeley.edu/research/cee/research/wheeler/data/>



CALIFORNIA DEPARTMENT OF  
WATER RESOURCES

# Use Cases (User Demands)

## USE CASE TOPICS

- |   |  |
|---|--|
| ● 1. Planning a groundwater recharge project              | ● 11. Sacramento River real-time fishery decision platform |
| ● 2. Financing groundwater recharge under Proposition 1   | ● 12. Water availability analysis for curtailments         |
| ● 3. Management of environmental flows for salmon         | ● 13. Water rights licensing process                       |
| ● 4. Groundwater basin water budgets                      | ● 14. Water shortage vulnerability assessment              |
| ● 5. Delta hydrographs                                    | ● 15. Decision support system for harmful algal blooms     |
| ● 6. Water transfers for environmental purposes           | ● 16. Decision support system for mercury control          |
| ● 7. Capital investment in headwaters restoration         | ● 17. Groundwater basin water budgets (SWRCB)              |
| ● 8. Wetland and riparian mitigation and monitoring       | ● 18. Agricultural water management plan                   |
| ● 9. Central Coast Ambient Monitoring Data Navigator tool | ● 19. Urban water r  |
| ● 10. Urban Water Efficiency Explorer tool                | ● 20. Source-water   |



# Data Challenges and Testbeds

## Safe Drinking Water Data Challenge

## Testbed Activities

**Safe Drinking Water Data Challenge**  
#CAWaterDataChallenge

Home Data & Resources The Challenge Get Involved FAQ Media

**WEST BIG DATA INNOVATION HUB** **WATER FOUNDATION** GOVERNOR'S OFFICE OF PLANNING AND RESEARCH STATE OF CALIFORNIA **IMAGINE | H<sub>2</sub>O** **BAY AREA COUNCIL**

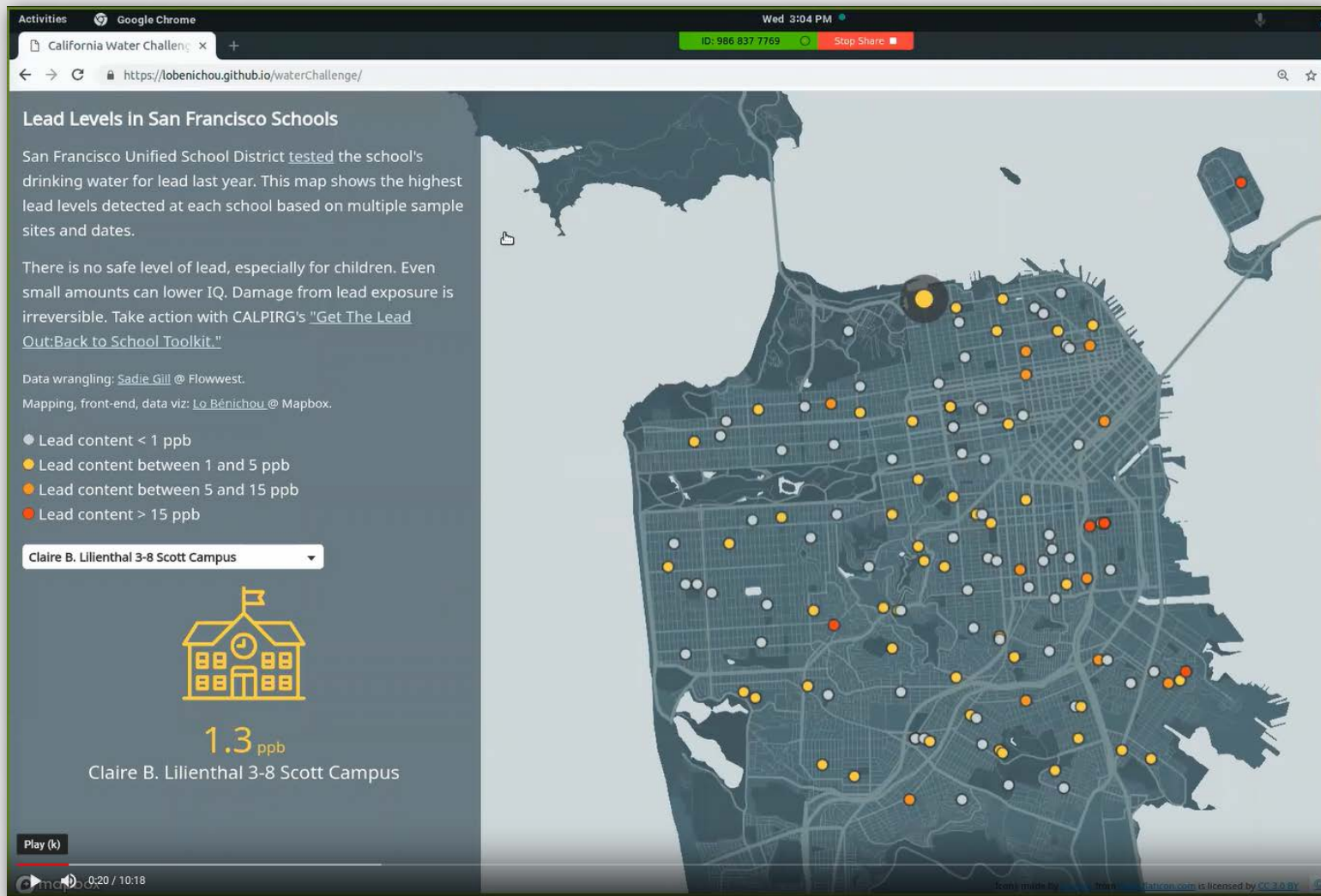
**2018 Safe Drinking Water Data Challenge**

This series of events and community-led activities includes engagements such as National Day of Civic Hacking, online tutorials, fireside chats, and hackathons. They will all culminate in a summit and awards ceremony recognizing teams and partners that have worked hard throughout the summer to ensure every Californian has access to safe drinking water. Submissions are due by October 1 and the Summit and Award Ceremony will be October 18.





# Safe Drinking Water Data Challenge



# Safe Drinking Water Data Challenge

Domestic Well Vulnerability to Drought in California's Central Valley

Analysis | Vulnerable Communities | About | Appendix | Source Code

Climate change, drought, and the overexploitation of aquifers lowers groundwater levels and increases the risk of domestic well failure.

A spatial model driven by open data from public agencies was used to assess the vulnerability of domestic wells in California's Central Valley to failure.

The modeled **2012-2016** drought caused nearly 2,500 domestic well failures in the Central Valley, with most of the impact experienced by households in the Tulare Basin.

The **2012-2016** drought affected low-income areas more than areas at or above the median income. More than half of well failures in severely disadvantaged areas were less than 1 mile from a water system.

A **future 1-4** cause **thous** failures, affe- people in the

**BACKGROUND & MOTIVATION**

- California's Central Valley is the state's most agriculturally intensive region and heavily dependent on groundwater. It is also home to nearly half of state's domestic well reliant individuals.
- During the 2012-2016 drought, the state received nearly 2,500 domestic wells failure reports. The majority of which were in the Central Valley, leaving thousands of people without a reliable source of drinking water, which drew **national attention** and **state intervention**.
- Hundreds of thousands to more than 1.4 million Californians rely on domestic wells for drinking water.

**QUESTIONS**

- How will a future drought affect domestic well failure in California's Central Valley?
- Are well failures more associated with particular social drivers of vulnerability, like income?
- Can machine learning models explain the climatic drivers of domestic well failure and extrapolate failure probability across the Central Valley?

Play (k) 0:35 / 14:59

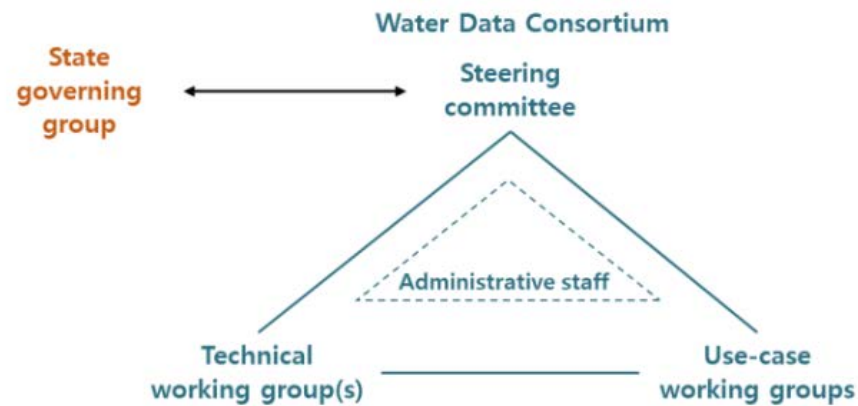
(Left) Domestic well owner, 70, (l) fills pallets of bottled water from the back of her truck during her daily delivery run to residents whose wells have run dry, with resident Gabriel Rojas, 31, in Porterville, California, October 14, 2014. Picture taken October 14, 2014. Photograph: Reuters/Lary Nicholson. (Right) One of the many emergency water tanks in the Tulare Basin, CA during the 2012-2016 drought. https://github.com/richpauloo/cawdc





# Exploration of Governance/Funding

**Figure 4**  
**Proposed governance structure for AB 1755**



## Governance and Funding for Open and Transparent Water Data

Implementing Assembly Bill 1755

May 10, 2018

REDSTONE

WATER  
FOUNDATION



# Discussion

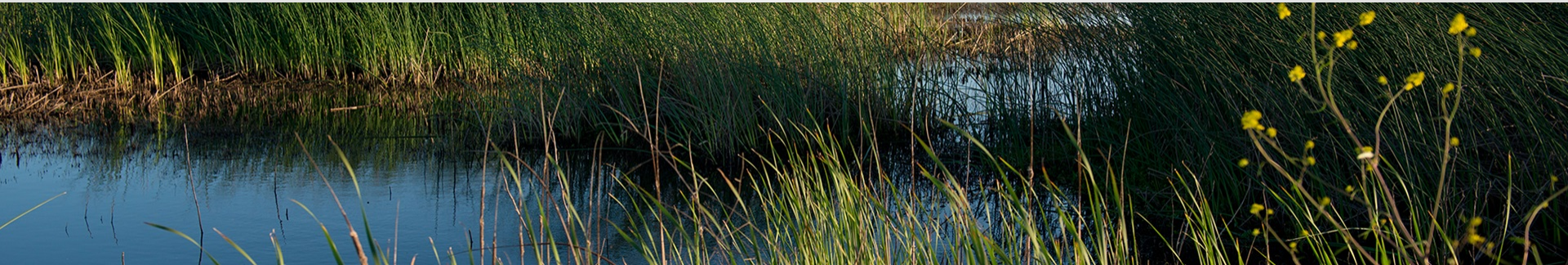


<https://water.ca.gov/Programs/All-Programs/AB-1755>  
[AB1755@water.ca.gov](mailto:AB1755@water.ca.gov)

# Portal federation

CNRA Link: <https://data.cnra.ca.gov/dataset/climate-change-projections-wsip-2030-2070>

California Open Data Portal Link: <https://data.ca.gov/dataset/climate-change-projections-water-storage-investment-program-wsip>





# What is Open Data?

- Many definitions exist
  - Open Knowledge International  
<http://opendatahandbook.org/guide/en/what-is-open-data/>
  - European Data Portal  
<https://www.europeandataportal.eu/elearning/en/module1/#/id/co-01>
  - World Bank  
<http://opendatatoolkit.worldbank.org/en/essentials.html>
  - Open Definition  
<http://opendefinition.org/>
  - Open Definition 2.1  
<https://opendefinition.org/od/2.1/en/>



# What is Open Data?

World Bank calls out two dimensions of data openness:

- **legally open**—placed in the public domain or under liberal terms of use with minimal restrictions
- **technically open**—published in electronic formats that are [machine readable and non-proprietary](#), so that anyone can access and use the data using common, freely available software tools. Data must also be publicly available and accessible on a public server, without password or firewall restrictions. To make Open Data easier to find, most organizations create and manage [Open Data catalogs](#)

