Water Data Legislation Options

Examples from New Mexico, California, and Oregon

BASIC COMPONENTS OF A WATER DATA ACT

California's and New Mexico's water data acts share several core features.

- **Water data integration** by several named state agencies
- Creation of a **water data platform**
- **Identification of water data**
- Development of **common standards/protocols for water data**
- Incentives for **standardized data collection**
- Creation of a **water data fund** to receive appropriations, donations, and grants

WATER DATA LEGISLATION

Many water data systems in the United States are antiquated and increasingly inadequate for addressing the growing list of water management challenges. Fragmented data infrastructure often leaves water resource managers unable to answer basic questions. Meanwhile pressures on water systems are increasing - climate change, population growth, drought, aquifer depletion, water quality risks like harmful algal blooms and PFAS, are just some examples. All the time that is spent finding, cleaning and aligning data, is time not spent putting data to work for management. States need sound policy that supports modern water data infrastructure to improve cost-efficiency, real-time decision making, transparency, and planning now and in the future.

While most state water agencies do have data available for public consumption, these data are often not interoperable across or even within agencies. This fragmentation obstructs region-wide analysis. For example, in Utah, there are at least 8 agencies that provide water data across more than 60 different individual portals. Each agency can have its own way of recording, reporting, and storing data. Without legislation, agencies often lack the motivation, responsibility, and resources to undertake the collaboration necessary to integrate public water data.

Two states, New Mexico and California, have existing water data legislation: New Mexico's 2019 Water Data Act and California's 2016 Open and Transparent Water Data Act. Oregon's legislature also passed funding packages in 2021 for its water agencies to design a new integrated water data portal.

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Internet of Water COALITION

IMPLEMENTING A WATER DATA ACT

LEAD AGENCY

NEW MEXICO

New Mexico's water data act named the Bureau of Geology and Mineral Resources of the New Mexico Institute of Mining and Technology as the lead agency to oversee implementation.

CALIFORNIA

California's act put the Department of Water Resources in charge of developing common standards and creating the water data portal, but shared the responsibility of integrating water data among three agencies.

This key difference resulted in distinct governance structures that have shaped the ongoing data integration processes in each state.

OREGON

Oregon's Department of Environmental Quality was tasked by the legislature with initial scoping and design of the statewide water data portal.

GOVERNANCE AND INTERAGENCY COLLABORATION

NEW MEXICO

The Water Data Initiative was established within the Bureau of Geology and Mineral Resources. A steering committee of representatives from partner agencies decided on a tripartite implementation structure, with specific responsibilities assigned to various work groups:

- Directing agencies team - goals, priorities, metrics, and reporting
- Technical work group – data standards, software, data inventory, and data maintenance
- Data users work group – stakeholder needs, recommendations, feedback, and use cases

Frequent meetings and conference calls among work groups ensures timely collaboration between the participating agencies.

Participating agencies in Oregon have similarly formed a steering committee, a subject-matter-expert team, and a technical work group to guide the planning of the water data portal project.

CALIFORNIA

A Partner Agency Team was formed with representatives from eight state organizations mentioned in the bill. Based on consultant and stakeholder recommendations, a new nonprofit organization was also created, the California Water Data Consortium, to facilitate collaboration between participating agencies.

The California Water Data Consortium comprises a similar set of three working groups (steering committee, technical, data users) to guide implementation.

STAKEHOLDER ENGAGEMENT

User engagement is a critical element of any water data initiative and should guide the development of public-facing data platforms. Usability must be part of the initial design to ensure the platform meets its intended purpose for the general public or other audiences. Meaningful public access is an important metric for success. Both New Mexico and California have formal and informal channels to incorporate stakeholder feedback through conferences, third-party visualization tools, and pilot projects to demonstrate the ability of integrated water data to address specific, use-case questions.

DATA INVENTORY

An inventory of existing public water data is the starting point for a successful water data initiative. Data inventories help states to assess how discoverable, accessible, and usable their data is and can reveal data fragmentation across and within agencies. The Internet of Water offers an inventory tool, as well as some completed state inventories to provide examples (e.g. AZ, CA, CO, NM, NC, OR, TX, UT, and WY.)

NEW MEXICO

New Mexico combined an IoW inventory with a state inventory from its state water plan, and then prioritized a subset of identified datasets for initial inclusion on the water data platform.

In prioritizing key water data, the Water Data Initiative considered policy needs – especially overlap between partner agencies, management requirements, input from data users and other stakeholders, relevance to the New Mexico Water Plan, and the potential for improved decision-making and cost savings.

CALIFORNIA

Several agencies in California have conducted their own individual data inventories (Department of Fish and Wildlife, Department of Water Resources, State Water Resources Control Board). Unifying these inventories is still underway.

OREGON

Oregon agencies are required to conduct biennial data inventories as part of the state's Open Data Program. The water data portal project is using these completed inventories to survey the state's water data.

DATA PLATFORM

A water data platform integrates multiple databases, presenting a single interface to the public and other systems. A persistent, unified hub increases accessibility and reduces barriers to analysis. The "one-stop shop" enables users and applications to easily discover and retrieve interoperable water data.

NEW MEXICO

New Mexico chose CKAN as the platform provider due to its open source nature and launched newmexicowaterdata.org with the following data categories: Water Quantity, Water Planning, Natural Hazards, Water Quality, Energy, Infrastructure, Water Use, Ecosystems and Wildlife, and Climate Data.

CALIFORNIA

California chose not to build a unified data platform, but rather to align standards so that all water data on two existing platforms (the CNRA Open Data Platform and California Open Data Portal) can be federated.

FUNDING WATER DATA INTEGRATION

Oregon's legislature devoted one-time funding of $350,000 to the Department of Environmental Quality for initial planning of the water data portal project, as well as $820,000 to Oregon Water Resources Department for modernization of IT systems and tools.

The legislation in both California and New Mexico established water data accounts to receive appropriations, donations, and grants.

California's Water Data Administration Fund disperses $1.615 million annually to DWR for staffing costs. Full implementation requires additional significant costs to several other agencies to consult with DWR on required protocols, required reports, and the data platform.

The California Water Data Consortium is supported through In-kind contributions from state agencies in the form of facilitation services, administrative assistance and communication support, and financial contributions from the Water Foundation and various state water districts. Its 2019-2020 revenue totaled $810,535.

Initial funding for New Mexico's Water Data Initiative supported a small team of part-time staff at the lead agency and a few contract services:

- $110,000 recurring appropriation from legislature
- $75,000 philanthropic donation from Healy Foundation
- $300,000 federal cost-share funding from Bureau of Reclamation WaterSMART grant over three years to support a single pilot project.

The funding request for full implementation over 3-4 years was approximately $600,000 annually recurring to fully support the IT and operations team with up to four full-time dedicated staff to develop and maintain the cyberinfrastructure and connections to data producers and data users.

New Mexico's participating agencies also estimated their budgetary requirements for implementing the water data act:

Agency	Activities	One Time Funding Estimate	Recurring Funding Estimate	FTEs
Environment Department	Database improvements, dashboard and portal development, legacy data digitization, API implementation	$1.5M	$2.5M	4-6
Office of State Engineer	Database and monitoring network improvements, legacy data digitization	$280,000	$300,000	3
Interstate Stream Commission	Database and monitoring network improvements, legacy data digitization	$500,000	$300,000	3
Energy, Minerals, and Natural Resources Department	Planning and technical support	$500,000	$250,000	2
Bureau of Geology and Mineral Resources	Database and data collection improvements, API implementation	$300,000	$250,000	2
	Totals:	**$3,080,000**	**$3,600,000**	**14-16**

WHAT'S IN THE BILL?

	NEW MEXICO	CALIFORNIA	OREGON
DATA PLATFORM	"Integrated water data and information platform"	"Statewide integrated water data platform"	"database framework of water and infrastructure data"
LEAD AGENCY	Bureau of Geology and Mineral Resources of the NM Institute of Mining and Technology	Dept of Water Resources - for developing protocols only	Dept of Environmental Quality
PARTNER AGENCIES	Interstate Stream Commission, Office of the State Engineer, Dept of Environment, Energy, Minerals and Natural Resources Dept	State Water Resources Control Board, Dept of Fish and Wildlife, Water Quality Monitoring Council	Not Specified
FUNDING	Water Data Account at NM Institute of Mining and Technology	Water Data Administration Fund to receive appropriations, donations, and grants	One-time appropriation
STANDARDIZED DATA COLLECTION INCENTIVES	Yes	Yes	No
REGIONAL & FEDERAL COLLABORATION	Required	Not Required, but prioritizes data from specific federal agencies for inclusion on the platform	Not Required
DATA TYPES	Streamflow, Precipitation, Reservoir and irrigation system operations, Ground water use and levels, Municipal and industrial water use and land uses, Water rights, Water diversions, Water quality, Data on fish, Aquatic and riparian systems, Ecological data	Reservoir operations, Groundwater use, Groundwater levels, Urban water use, Land use, Water rights, Water diversions, Water quality, Fish abundance and distribution, Streamflow conditions, Water transfers and exchanges	Not Specified
COMMON WATER DATA STANDARDS	Required	Required	Not Required
PLANNING & REPORTING	Required	Required	Required

WHAT CAME OUT OF THE PROCESS?

	NEW MEXICO	CALIFORNIA	OREGON
STAKEHOLDER ENGAGEMENT	Water Data Workshop, Pilot Projects	Stakeholder developed use cases, California Water Data Consortium, annual Water Data Challenge events	TBD
INITIAL FUNDING	$425,000 (+ $2,465,000 to partner agencies)	$750,000 - $1,500,000 (+ unknown amount to partner agencies)	$350,000
RECURRING FUNDING	$520,000 (+ $2,528,000 to partner agencies)	$1,600,000 (+ unknown amount to partner agencies)	TBD
GOVERNANCE STRUCTURE	Water Data Initiative (lead agency staff) + Partner Agency Steering Committee and Work Groups	Partner Agency Team + California Water Data Consortium (external non-profit)	Steering Committee of Partner Agencies + Work Groups
INVENTORY	Acquired inventory from IoW, expanded existing inventory from State Water Plan, identified key initial datasets for inclusion on platform	Individual agencies conducted and published inventories, a unified inventory of state-held water and ecological datasets is currently underway	Modified inventories from the Oregon Open Data Program
DATA TYPES	Key water data: Evaporation/ evapotranspiration, Soil moisture, Precipitation, Ecosystem health/biological health, Surface water location, Surface water flow (river or conveyance), Well locations, Well depths, Groundwater levels, Aquifer parameters, Aquifer or geologic formation, Permit for use (type), Permit for use (quantity), Measured diversions/extraction, Water in storage, Water return/ injection, Water quality	Agencies published over 1,700 water and ecological datasets, the majority related to wildlife	TBD
DATA PLATFORM	newmexicowaterdata.org (CKAN platform)	Agencies opted to leverage two existing portals: CNRA Open Data Platform and California Open Data Portal	TBD