

Water Data Advisory Council Recommendations



Photo: Kelly M. Grow/Department of Water Resources

Advisory Council Members

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Note: Advisory Council affiliation is listed for reference and should not be construed as organizational endorsement of the contents of this report.



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The Governor's Office of Planning and Research thanks the Advisory Council for sharing their expertise, perspectives, and vision for the Water Data Consortium. The final version of the recommendations will be posted on the [DWR AB 1755 web page](#).

These recommendations will inform the process of actually forming the Consortium. The formation will require a group of individuals and/or organizations to collaborate to found the new organization. The Water Foundation convened a Funders' Table in parallel with the Advisory Council. The Water Foundation will continue discussions with that group to develop commitments to fund the Consortium and will determine the best process to begin development of a founding board of directors and initial organizational documents. As agreed in the third Advisory Council meeting, there will be opportunity for the public to engage and to provide feedback on the initial formation of the Consortium. Once the Consortium is operational it will have ample opportunity for people to plug-in according to their interests and expertise.

The Advisory Council members agreed to continue serving in an advisory capacity until the Consortium is up and running. They may expect to receive direct inquiries soliciting advice and feedback on an as needed basis and to be invited to group phone calls occasionally. Their advice is desired, in particular, to guide the development of recommendations to streamline data submission to the state.

The contributions of the Advisory Council members and of everyone who participated in the process were essential to building the foundation to form the Consortium. Special thanks to the Water Foundation and Department of Water Resources for funding consultants to assist in the process of developing these recommendations and thanks to the consultant team: Nancy Saracino, Meghan Roberts, and Ariel Ambruster. The provision of meeting space by the Water Foundation, Moulton Niguel Water District, and East Bay Municipal Utilities District and the provision of food by Moulton Niguel Water District and Water Foundation was also much appreciated.

Contact Debbie Franco, Governor's Office of Planning and Research, for more information.

Introduction

Reliable and readily available data are fundamental to managing California's water resources. The importance of data that can be easily deployed in water management decisions will only increase as we contend with the effects of climate change, aging infrastructure, a growing population, and other stressors. Data can expand and align understanding, suggest alternative actions, allow comparison between different options, and contribute to collaborative learning environments in which monitored projects yield new knowledge that informs future decisions—an iterative, knowledge-gathering process known as adaptive management. To achieve these results, data must be available and comprehensible, not only to decision-makers and public agencies, but also to the public.

In 2016, during one of the most severe droughts on record, California passed the [Open and Transparent Water Data Act](#), Assembly Bill 1755 (Dodd), a call to action for a renewed approach to accessing water data that builds trust, supports planning, improves operations, and produces exponential benefits. To chart a successful path forward, the Department of Water Resources mobilized a team of eight partner agencies, called the Partner Agency Team, and quickly launched an impressive effort to collaborate with and learn from a broad range of data experts, data providers, and data consumers.

The early results of this work are a [Strategic Plan for Assembly Bill 1755](#) released in January 2018 and finalized in April 2018 and a [progress report](#) released in April 2018. The Strategic Plan establishes an ambitious strategy to integrate and accelerate efforts to make water data useable through a federated open data platform by ensuring that data are machine-readable, easily accessible, curated, and useful to water management decisions. In the Strategic Plan, the Partner Agency Team recognizes that it will take broad collaboration inside and outside of state government to achieve this vision and implement AB 1755 statutory requirements, and it has collaborated with external partners to convene workshops and other opportunities for stakeholder engagement on a variety of related topics.

The Water Foundation assisted the Partner Agency Team by convening multiple water data experts and stakeholders and facilitating a series of collaborative workshops focused on data governance. The Water Foundation and Redstone Strategies made recommendations stemming from these discussions in the [Governance and Funding for Open and Transparent Water Data, Implementing Assembly Bill 1755](#) (Redstone Report). The Partner Agency Team considered the recommendations and issued a state governance document, [Governing California's Open Water Data Infrastructure](#), in June 2018 (updated March 14, 2019). The State Governance Document contains recommendations that are closely aligned with those of the Redstone Report.

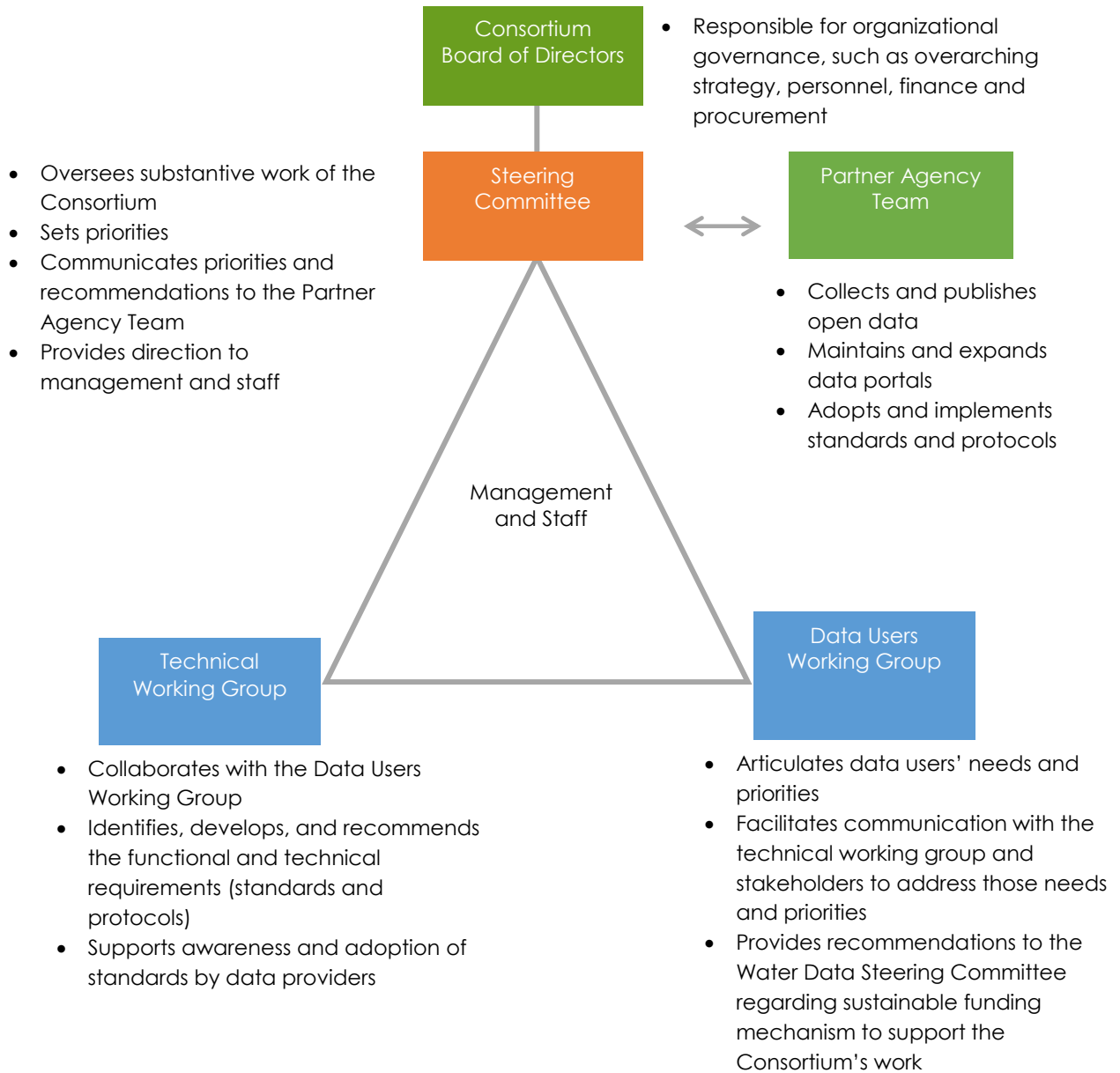
The State Governance Document and Redstone Report both recommended the creation of an organization external to the state and referred to as the Water Data Consortium. The Governor's Office of Planning and Research convened a Water Data Advisory Council for a focused engagement to seek further advice on how to structure an external organization to complement and inform the Partner Agency Team's implementation of AB 1755 and facilitate a renewed approach to providing and using water data.

This report describes the Water Data Advisory Council's deliberations and recommendations. The recommendations are independent from, but supportive of the state's AB 1755 Strategic Plan. The Advisory Council reached the recommendations summarized here, and described in more detail below, about a governance structure and areas of focus for a Water Data Consortium. The Advisory Council also provided guidance on other essential aspects necessary to succeed, which follow this introduction.

The Advisory Council members were pleased to have the opportunity to engage in this focused effort. The Advisory Council submits this document setting forth its recommendations to the Governor's Office of Planning and Research.

Summary of Recommendations

This figure, reviewed by the Advisory Council, depicts the proposed governance structure for the Consortium and generally describes the recommended roles of its board, committees and working groups, as well as coordination with the Partner Agency Team:



The Advisory Council makes the following recommendations discussed in more detail in the Recommendations section below:

Recommendation 1 – Organization Type

1.1 The Consortium should be a new nonprofit organization.

Recommendation 2 – Governance Structure

2.1 A small Board of Directors should be responsible for organizational governance such as overarching strategy, personnel, finance, and procurement, with a Water Data Steering Committee overseeing the substantive work of the Consortium.

2.2 Working groups should be set up to augment core organizational functions and provide additional venues for open participation.

2.3 The Consortium's governance structure should be designed to facilitate public participation and promote transparency.

2.4 An Executive Director and staff should be hired to lead and manage the work of the Consortium.

Recommendation 3 – Early Activities

3.1 The Consortium's early programmatic activities should reflect the organization's key objectives to demonstrate its value.

3.2 The Consortium should focus on data curation activities and resource prioritization.

Advisory Council Guidance

In addition to the structural recommendations summarized above, the Advisory Council elected to offer overarching guidance for consideration as the Consortium is being created.

Mission Statement

The Advisory Council advises that a clear mission statement be developed for the Water Data Consortium and considered the following draft mission

statement to accurately represent how the Advisory Council sees the high-level purpose of the Water Data Consortium.

The Water Data Consortium is a nonprofit organization formed to support more informed decision-making in California about water in the face of climate change and other pressures on water resources. The Water Data Consortium amplifies efforts to improve water data infrastructure by creating a neutral organizational space to build trust and facilitate collaboration across sectors. This neutral forum also fosters entrepreneurship, innovation, and scientific discovery.

While there is general agreement among Advisory Council members on this draft mission statement, there is also an understanding that it will need to evolve as the founders embark on forming the organization to more precisely reflect the function of the Consortium.

The Advisory Council also agreed that the Water Data Consortium's early programmatic activities should be defined from the onset to inform governance structure decisions. These activities are incorporated into Recommendation 3.

Guiding Principles

At its second meeting, the Water Data Advisory Council validated its recommendations using the following guiding principles and advises that these principles inform creation of the Consortium.

The Consortium does:

- Provide an open and transparent foundation to understand California's water system
- Foster trust through public engagement
- Build alignment around use of data to inform decision-making
- Complement but does not duplicate related efforts
- Provide sustainable value.

The Consortium is not:

- A regulatory body
- A taxing authority
- A repository for data

- Responsible for setting water policy
- Responsible for coordination across state entities.

Conditions Critical to Success

The Advisory Council identified actions it considers critical to the Water Data Consortium's success and to designing a governance structure to accomplish its mission.

- Define clear goals and objectives for the Consortium and spell out its role and authority.
- Design the structure in a manner that avoids duplication of other efforts and ensures alignment with ongoing work by state agencies to implement AB 1755.
- Create early performance metrics, including those regarding impact, to drive the focus of the organization.

The Advisory Council also discussed and advises that the following circumstances will be evidence of success.

- Diverse stakeholders recognize and use the Consortium as a neutral space for active and sustained collaboration around the role of data in water and water-related decisions.
- Water agencies move forward with more streamlined reporting processes for water users and regulated entities.
- Best-in-class open data practices and tools are integrated into the state's open water data systems and processes.
- The public has easily accessible and transparent ways to understand and influence the Consortium's work.
- Open water data is used in critical water resource management decisions made by federal, state, and local government entities.
- The Consortium creates and implements a plan for sustainable funding.
- Partnerships form around water data, including open water data, and deliver better services or outcomes for Californians.

Alignment

The Advisory Council suggests that the Water Data Consortium should be structured to align with and complement the work of the state agencies responsible for implementing AB 1755, providing a collaborative venue that can be used to amplify the work of the state agencies.

The Partner Agencies agree that the highest benefits of open data infrastructure can only be achieved if there is broad support and investment in the infrastructure. The State Governance Document asserts that “[a] shared governance space will provide the organizational infrastructure to support broad engagement, investment, adoption, and persistence of open data infrastructure” (p. 2). The State Governance Document agreed with the Redstone Report that an external consortium, working in concert with an internal state agency governing body, could provide the necessary organizational infrastructure to implement AB 1755.

The Advisory Council advises use of The State Governance Document table, which follows, to guide development of the working relationship between the Water Data Consortium and the Partner Agency Team.

Consortium-Partner Agency Team Relationship

	Consortium	Partner Agency Team
Tasks	Gather feedback from stakeholders and make recommendations to improve data collection and publication.	Collect, federate, and make available water and ecosystem data.
	Gather feedback from stakeholders and make recommendations to improve federation of existing and new data portals.	Maintain and expand federation of existing and future data portals.
	Create a venue for developing agreements on standards and protocols encouraging voluntary adoption by organizations external to the state.	Adopt and implement standards and protocols.
	Solicit input on and develop recommendations to improve the process of data submission to the state.	Consider and act upon recommendations, as appropriate.
	Develop a pathway to solicit and leverage external (to the state) resources.	Submit budget change proposals using existing state budget processes to assure adequate state funding for state responsibilities related to AB 1755.
	Promote innovation and lay the groundwork for pursuit of new opportunities.	Consider new opportunities developed by the Consortium and implement as appropriate and feasible.
	Build trust with data producers, providers, users, and consumers.	Build trust with data producers, providers, users, and consumers.
	Create a venue for stakeholders that includes state agencies to identify shared benchmarks and performance measures to ensure that water and ecological data are sufficient, accessible, useful, and used.	Evaluate progress on the implementation of the open water data infrastructure towards achieving identified shared benchmarks and performance measures.
	Develop, collect, and recommend use cases to increase effective decision making.	Prioritize data transformation to serve use cases, as appropriate and feasible.
	Recommend strategic direction for data standards, federation, and operation and maintenance of the data platform.	Collaborate with the Consortium on updates to the AB 1755 Strategic Plan, as needed to support water management decision-making, and implement strategic direction.

Source: State Governance Document: [Governing California's Open Water Data Infrastructure](#) – DRAFT, v. 3/14/19

Assessment

The Advisory Council encourages the Consortium to create metrics aligned with objectives so that the organization's performance and achievements can be tracked and evaluated over time. Stakeholders should have a role in establishing the metrics and how they will be evaluated. The Advisory Council also recommends that after a set period of time (three years may be a reasonable target), the value of the Consortium should be evaluated in an open and transparent process, and a decision made by the Consortium's governing bodies (described below) whether the organization, as structured, provides benefit, and if it should be restructured or phased out. A third-party could assist with this assessment. This is described further below, under Recommendation 1.1.

Recommendations

The Advisory Council recommends that a free-standing Water Data Consortium be created with a board, staff, steering committee, and working groups.

Organization Type

Recommendation 1.1: The Consortium should be a new nonprofit organization.

There is agreement among the Advisory Council that the Consortium should ultimately be a free-standing, non-profit organization. Advisory Council members identified the following reasons as supporting the recommendation that a free-standing organization is the appropriate structure.

- The Consortium will need to be nimble and flexible to adapt to new opportunities and to be on the leading edge of innovation.
- The Consortium's success relies on its ability to establish itself as a neutral space for collaboration.

The Advisory Council reached general agreement that setting up the Water Data Consortium as an independent organization initially, rather than using an incubation model, was the preferred approach, since the goal is to ultimately set up an independent organization.

During its deliberations, the Advisory Council did consider whether to initially incubate the Consortium within academia or an existing organization. Advisory Council members identified the following possible benefits of incubation.

- Incubation allows for further development of the value proposition and a better understanding of what the organization will need to do.
- Incubation may make start-up easier by providing access to the existing organization's resources and organizational structure.

The Advisory Council identified the following reasons why the incubation model may not work for the Water Data Consortium.

- There is less need for an incubator to provide initial organizational infrastructure since the current goal is to obtain financing for the first two or three years of operation prior to formation.
- Transitioning out of the incubating entity could become complicated.
- The Consortium would be associated with the reputation and agenda of the incubating entity, which could hamper the Consortium's ability to be a neutral place.
- Overhead charged by the incubating entity could be costly.

The Advisory Council discussed the value of building in a planned review period, requiring a careful assessment of the value of the Water Data Consortium and whether its continuation is beneficial. This automatic review could be conducted by the governing bodies, in consultation with stakeholders and possibly with the assistance of an independent third party. The Water Data Consortium could be dissolved or restructured if it completes its mission, becomes obsolete because of shifts in other organizations or agencies, or no longer provides sufficient value.

Board, Committee, and Working Group Structure

Recommendation 2.1: A small Board of Directors should be responsible for organizational governance, such as overarching strategy, personnel, finance, and procurement, with a Water Data Steering Committee overseeing the substantive work of the Consortium.

The Advisory Council recommends a Board of Directors of five to seven individuals responsible for organizational governance, such as overarching strategy, personnel, finance, and procurement. The Advisory Council recommends the Board of Directors serve as a public forum to set Consortium priorities and actions, resolve disagreements, and act as ambassadors for the Consortium.

The Advisory Council recommends that potential members of the Board of Directors demonstrate:

- Expertise in areas essential to organizational health, including leadership, communications, finance, and fundraising
- Representation of state government, local agencies, NGOs, and academia
- Influence and professional recognition in areas related to water and ecological data
- Enthusiasm for expanding the use of water and ecological data to inform decision-making.

The Advisory Council recommends a Steering Committee of nine to eleven individuals who will guide the substantive activities of the Consortium. This includes coordinating with the Board of Directors to establish goals and performance metrics. In addition, the Steering Committee should coordinate and direct the activities of the technical and data users working groups, including establishing and dissolving working groups as needed and assuring alignment across all working group activities. The Steering Committee should ensure that its work is aligned with those of the state agencies and not duplicating efforts.

The Steering Committee should also provide a periodic report to the Board of Directors and, in collaboration with staff, solicit the assistance of the Board of Directors as needed to manage conflict, exert influence, and provide feedback on programmatic strategies.

The Advisory Council recommends that potential members of the Steering Committee demonstrate:

- Representation of state and local agencies, regional planning entities, NGOs, and academia
- Technical expertise, including data science and water expertise
- Balance of data providers, data users, decision-makers, and funders.

Given the state agencies' role and authority to implement AB 1755, the Advisory Council recommends that a majority of the representatives on the Steering Committee be state agency representatives. Finally, to ensure the distinction between the Steering Committee, Board and Working groups is clear, the Advisory Council recommends that clear descriptions be established for the roles and responsibilities, chain of command and leadership within the Consortium's structure.

Recommendation 2.2: Working groups should be set up to augment core organizational functions and provide additional venues for open participation.

The Advisory Council recommends the Consortium establish two standing working groups—the Data Users Working Group and the Technical Working Group. Recognizing the crucial importance of communications and finance, the Advisory Council recommends that these areas receive adequate resources and attention, either as part of the two standing working groups or as sub-groups.

The Steering Committee, Data Users Working Group, and Technical Working Group should serve as the main venues for engagement, collaboration, and testing of new ideas, concepts, and strategies. The working groups should provide regular reports to the Steering Committee and look to the Steering Committee for guidance on how to align efforts across working groups. Working groups should also consult with the Steering Committee in instances when stakeholder interests may conflict on priorities or decisions.

The Advisory Council recommends working groups designate representatives responsible for coordinating efforts and making recommendations to the Steering Committee. The Advisory Council recommends that the Steering Committee set a clear charge, scope of work, and expectations for both working groups, and establish a process for appointing representatives to the working groups. State agency participation in both working groups will be important to their success. The Advisory Council also recommends that the Steering Committee assign Consortium staff to support the working groups to ensure continuity.

The Data Users Working Group should articulate data user needs and priorities, facilitate communication with the technical working group and stakeholders to address those needs and priorities, and provide recommendations to the Steering Committee. While not an exhaustive list, the Advisory Council recommends considering the following:

- Representation of federal, tribal, state and local agencies, regional planning entities, NGOs (with a focus on conservation and environmental justice), and academia
- Agricultural and urban water interests
- Communications and finance experts
- Data providers and data users.

The Technical Working Group should identify, develop, and recommend the functional and technical data requirements (standards, protocols, and standard operating procedures) for the federated open water data platform, and support awareness and adoption of standards by data providers. Again, without foreclosing other options, the Advisory Council recommends the following be considered in selecting members to serve on the Technical Working Group:

- Representation of federal, tribal, state and local agencies, regional planning entities, NGOs, and academia
- Technical expertise in data and library science, information technology and architecture, programming and graphic design
- Data providers and data users.

Recommendation 2.3: The Consortium's governance structure should be designed to facilitate public participation and provide transparency.

The Advisory Council discussed the importance of a robust public engagement framework to the Water Data Consortium's governance. The Consortium should consider models for transparent operations and decision-making discussed during the course of the Advisory Council's three meetings and incorporate best practices from those models to facilitate effective public engagement in the Consortium's activities and governance.

Recommendation 2.4: An executive director and support staff should be hired to lead and manage the work of the Consortium.

The Advisory Council also recommends that an Executive Director familiar with data, California water policy, and strong organizational and engagement skills lead the Consortium staff. Programmatic staff will also be needed to jump-start the working groups and provide ongoing support. Staff should act as liaisons between the Executive Director, working groups, Steering Committee, and Board of Directors, and they should serve as liaisons between the Consortium and the Partner Agency Team.

Early Programmatic Activities

Recommendation 3.1: The Consortium's early programmatic activities should reflect the organization's key objectives to demonstrate its value.

To demonstrate the Consortium's value, the Advisory Council recommends initial Consortium activities be focused on both core functions and an initiative to streamline data reporting to the state.

At its first meeting, the Advisory Council discussed the benefits and value that a water data consortium could bring, including collaborative procurement to reduce costs, focused analysis and decision-making support, and working with data providers to establish protocols and standards for the federated platform. In its second and third meetings, the Advisory Council specifically focused on two key areas of initial Consortium activities, agreeing that the Consortium should provide recommendations related to the design and operation of the state's federated water data platform.

Specifically, the Advisory Council recommends providing advice on the following topics:

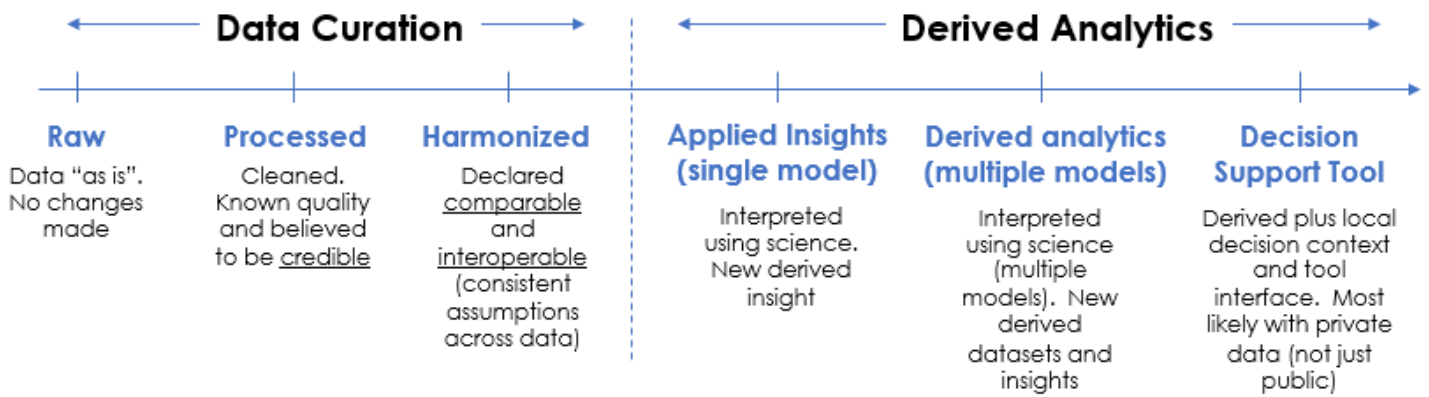
- Priority water and ecological data sources to be accessible from the federated data platform
- Protocols for data standardization and quality control
- Data access points that support display of data in an intuitive and useable format.

In addition, the Advisory Council felt that the Consortium should develop and recommend protocols for streamlining data that are reported to state agencies to reduce reporting redundancies and increase transparency and efficiency. Primary tasks might include:

- Build from and expand existing assessments of water data reporting requirements
- Identify reporting redundancies
- Advise on the development of a federated data platform that allows state and federal agencies to access required data in an efficient manner, without requiring the reporter to submit the data multiple times
- Provide recommendations for new state agency processes and protocols to access required data.

Recommendation 3.2: The Consortium should focus on data curation activities and resource prioritization.

In forming their recommendation for the Consortium's role in early programmatic activities, the Advisory Council discussed the spectrum from data curation to derived analytics, illustrated in the diagram below. Advisory Council members agreed that the role of the Consortium should be to support curation of data at the "harmonized" point of the spectrum, and they recognized that certain use cases may require the data be available in different forms. The Advisory Council discussed that the Consortium may demonstrate value by applying data and demonstrating how it informs decision-making. The Consortium should do so only after deliberation and consideration of the political implications of any use case it decides to demonstrate.



Next Steps

The Advisory Council provides these recommendations to the Governor's Office of Planning and Research and expresses its appreciation for the opportunity to engage in this effort. The Advisory Council recommends that steps be taken to establish a Water Data Consortium within the first six months of 2019, with the above general structure and guiding principles leading its activities.

Appendix A

Water Data Advisory Council Meeting Highlights

Water Data Advisory Council Meetings

The Water Data Advisory Council met during three focused, publicly-noticed meetings in late 2018 and early 2019 to evaluate a proposed governance framework for a Water Data Consortium.

Meeting Highlights

Meeting 1 – November 15, 2018

- Validated the concept of the Water Data Consortium as envisioned in the Water Foundation and draft State Agency reports
- Agreed upon the fundamental purpose of improving accessibility and utility of data for better informed decision-making
- Discussed funding requirements, as well as value the Consortium could provide
- Conducted preliminary review of governance structures and organizations that may provide successful models on which to pattern governance of the Consortium

Meeting 2 – January 16, 2019

- Agreed upon the guiding principles for the Consortium and what the Consortium is not intended to become
- Reviewed the proposal for streamlining data submission as an initial substantive focus for the Consortium
- Evaluated options of where best to house the Consortium
- Assessed attributes of successful governance models

Meeting 3 – February 15, 2019

- Reviewed and agreed upon Advisory Council recommendations
- Provided input on composition of the Governing Board, Water Data Steering Committee, as well as the Data Users and Technical working groups
- Discussed the spectrum of data curation to data analytics, and the role the Water Data Consortium may play along that spectrum

Appendix B

References

References

[Assembly Bill 1755 – The Open and Transparent Water Data Act](#)

[Water Foundation Report: Governance and Funding for Open and Transparent Water Data, Implementing Assembly Bill 1755, published by Redstone](#)

[State Agency Report: Governing California's Open Water Data Infrastructure – DRAFT, v. 6/28/18](#)

[Strategic Plan for Assembly Bill 1755, the Open and Transparent Water Data Act, April 2018](#)

Governance Examples

California ISO

[Board of Governors](#)

[Technical Advisory Committee](#)

[Energy Imbalance Market Governing Body](#)

[Reliability Coordinator Oversight Committee](#)

[Public Participation Model](#)

[International Organization for Standardization](#)

Internet Engineering Task Force

[IETF Administration LLC](#)

[Internet Society](#)

[Internet Architecture Board](#)

[Internet Engineering Steering Group](#)

[Working Groups](#)

[Open Geospatial Consortium](#)

Southern California Coastal Water Research Project

[Southern California Coast Water Research Project Commission](#)

[Technical Advisory Group](#)