California produces immense amounts of water-related data. Yet, California also struggles to adapt its water systems to pressures such as climate change and population growth. To meet these challenges in an informed way, decision makers need data that supports their needs.

In 2018, spurred by the [Open and Transparent Water Data Act of 2016 (AB 1755)](#), [we engaged stakeholders to learn how to make water data more useful](#). Since then, California state agencies have worked hard to plan and implement more effective water data systems. The nonprofit [California Water Data Consortium](#) is working to foster collaboration among water data experts and stakeholders. These initiatives strive to maximize data-informed decision making.

In our latest issue brief, we focus on civic engagement in water data, which we define as participation of public, private, nonprofit, and community water data users and decision makers in issues around data availability and system design. We ask:

- What is the ideal role for civic engagement in California's water data systems?
- How can civic engagement inform investments in water data?

We interviewed water data experts from California and elsewhere to answer these questions. Here, we sum up our findings.

Civic engagement in water data matters—but there are different understandings of what it means.

The experts we interviewed all articulated a deep commitment to the importance of civic engagement. At the same time, they had different understandings of what it entails. We identified two approaches, which we term an 'open data approach' and a 'user centered approach.' Each results in different strategies for civic engagement.

The primary focus of the **open data approach** is on making data available, accessible and transparent so that developers, community members, and water data users can analyze it and develop tools to answer important questions. Flexibility and efficiency are key advantages. Yet, outcomes are not guaranteed without a dedicated funding source or regulatory requirement.

Civic engagement is needed to inform both data provision and data analytics throughout the data lifecycle.

In contrast, a **user centered approach** involves developing a comprehensive understanding of data users' needs. Then data sets and tools can be prioritized, developed according to user standards, and made available. This approach directly links data with decision-making processes. However, public engagement requires time and money.

Use cases can help center decision makers' needs in data systems.

In our interviews, we asked experts to reflect on the utility and limitations of 'use cases' as a strategy for civic engagement. Use cases, as described in our 2018 report, are short examinations of how water management decisions employ data. A use case addresses "*who* needs *what data* in *what form* to answer *what question?*" to guide effective data provision.

While some interviewees were concerned that use cases represent subjective, 'political' decisions that can unduly influence resource allocation, others argued that use cases can increase equity and transparency. Use cases can provide an opening for engagement of multiple constituencies, leading to more open and transparent data systems by creating a mechanism for prioritization of data needs.

Interviewees also expressed concern that use cases take too many resources to develop. On the other hand, others noted that use cases can encourage efficiency by identifying which existing data sets are frequently used across different questions and topics. Frequently used

data sets can then be prioritized in the process of making data available and accessible.

Takeaways on using civic engagement to link data to problem solving

Data must ultimately aid problem solving. Achieving this outcome hinges upon data availability as well as consideration of user needs. Civic engagement is crucial for enabling efficiency and equity in water data provision.

The open data and the user centered approaches each represent useful strategies for civic engagement. The approaches are not mutually exclusive, and we recommend that those steering California's water data efforts blend the positive elements of each approach.

We caution against short-termism in investment in data provision. Specifically, a rush to publish data may generate visible public milestones, but the state should analyze the extent to which doing so without consideration of user needs risks allocating resources by convenience rather than importance.

Ultimately, improving California's water data is an experiment in progress. This uncertainty makes the case for an iterative portfolio of activities, including those based on both open data and user centered approaches. The current momentum on water data is encouraging, and thoughtful civic engagement strategies can help ensure that data systems are effective and useful, with the ultimate goal of improving the informed management of California's water.