BUILD AN INTERNET OF WATER

THE WATER (DATA) CHALLENGE

In the face of multiple water crises, decision-makers across the United States are forced to make judgments without the benefit of a complete, up-to-date picture about their water resources. To build climate resilience and water equity and face the serious challenges posed by flood, drought, and water pollution, decision-makers need quick and accurate information about the water resources they manage: How much water is there? How is it being used? What is its quality? Is there enough water of suitable quality for present and future needs? At what cost? Which communities can afford their water bills, and which cannot?

While vast amounts of water data are publicly available, they are collected by different public, state, and federal agencies and non-governmental and private organizations, for different purposes, at different spatial and temporal scales, and are scattered across multiple platforms. As a result, these data are often inaccessible or not formatted in a way that is easy to understand and use. The time that must be invested to find, clean, and standardize public water data leaves little time and resources to put the data to work to generate insights and inform policy and decision-makers.

AN INTERNET OF WATER

To improve decision-making and ensure equitable, sustainable, and resilient water resources protection, development and management, the United States must build an effective Internet of Water. This involves modernizing water data infrastructure and improving coordination across public agencies, while also creating new technical and cultural norms for sharing and integrating water data that follow common Internet of Water Principles. This will unlock and synergize public water data currently held in hard-to-access systems, enable its reuse to create innovative water information solutions and tools, and facilitate the widespread integration of such tools into water

management and governance nationwide, at both local and national scales.

INFRASTRUCTURE INVESTMENT AND JOBS ACT (IIJA) RECOGNIZES THE INTERNET OF WATER

The Internet of Water Principles were specifically called out in the bipartisan Infrastructure Investment and Jobs Act (IIJA), which includes a new EPA grant program that will initiate state-based water data sharing pilot programs (Section 50213). This new program will give States resources and guidance for implementing data-sharing initiatives, an essential step to improve decision-making and enable more equitable, sustainable, and resilient water management. Moreover, the Act requires that the Internet of Water principles guide any water data sharing efforts under the pilot program.

FROM PRINCIPLES TO PROTOTYPE: THE INTERNET OF WATER START-UP AND COALITION

The Internet of Water project was formed in 2018 at Duke University's Nicholas Institute for Environmental Policy Solutions to bring these principles to life. After a successful three-year start-up phase, demonstrating the power of integrated water data in four states and building lightweight new technologies to support the goal, the IoW project expanded.

The Internet of Water Coalition, formed in 2021, is led by the Center for Geospatial Solutions at the Lincoln Institute of Land Policy in partnership with Duke University, the Western States Water Council, the Water Data Collaborative, and the Consortium of Universities for the Advancement of Hydrologic Sciences, Inc. The Coalition is supported by grants from multiple private foundations and public agencies.

Internet
of Water
COALITION

FROM PROTOTYPE TO ACTION
FOUR ACTIONS TO ACHIEVE AN INTERNET OF WATER BY 2030

An Internet of Water can only be achieved through a partnership between philanthropy, research institutions, and the Federal government. These four actions will make an Internet of Water possible:

1 **Water Data Sharing Pilots Grant Program at EPA:** The new grant program authorized in the bipartisan Infrastructure Investment and Jobs Act (IIJA) at $75 million would initiate state-based water data sharing pilot programs (Section 50213) focused on clean water objectives to protect communities and the environment from water pollution.

2 **Water Data Sharing Grant Program at USGS:** A corresponding grant program at USGS, modeled on the IIJA Clean Water Data Sharing Pilot program authorized at EPA, would accelerate water data sharing for natural resources management. The grant program should include specific provisions to support tribes in the management and modernization of water data.

3 **Establish a New Water Data Sharing Framework at USGS:** A new national water data sharing and integration framework at USGS would form the cornerstone of an Internet of Water. This new framework should: (a) integrate water data and other related data sets furnished by non-federal data sources with those managed by USGS, while protecting data privacy, security, and quality; (b) establish a new shared geospatial system for publishing and linking water data for persistent, easy discovery on the web; and (c) support the adoption of new technologies by states and tribes.

4 **Encourage Federal Agencies to Adopt Internet of Water Principles:** Federal water agencies should, to the fullest extent practicable, be guided by Internet of Water Principles for the management of water data, and should integrate Internet of Water Principles as criteria for Federal contracts and grants pertaining to the collection and management of water data.

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