

Agenda

2022 National Water Use Data Workshop

August 16-18, 2022

Salt Lake City, Utah

Utah Department of Environmental Quality Building

195 North 1950 West, Salt Lake City



What are water use data?

Water use data represent reported or estimated site-specific water withdrawals or consumptive use at daily, monthly, or annual scales for the USGS use categories of public supply, domestic, irrigation, thermoelectric power, industrial, mining, livestock, and aquaculture from surface or groundwater sources.

Workshop Goals

- ❖ Provide a platform for state agencies' staff to learn from each other about the latest state and federal efforts related to water use data management and sharing.
- ❖ Engage state IT and water resources management staff regarding the USGS National Water Use/Water Use Data and Research (WUDR) Program and the WSWC Water Data Exchange (WaDE) Programs.
- ❖ Present the latest technological developments on water use data collection, storage and data Findable, Accessible, Interoperable, Reusable (FAIR) sharing methods and how States can benefit from them.
- ❖ Identify challenges related to States' data collection, storage and sharing efforts and potential solutions to consider
- ❖ Share strategies for enhanced data quality assurance and quality control.

Focus Areas

- Programs or initiatives related to improving FAIR data collection, sharing, and access
- Historic annual/monthly/weekly/daily site-specific water withdrawals and use data reporting and sharing efforts.
- Data gaps and ways that have been developed to fill them. Present on metadata for water use information.

Day 1: Tuesday, August 16, 2022

Location: DEQ Board Room 1015 (First Floor)

12:30 pm: Workshop Registration and Refreshments

1:00 pm – 1:30 pm: Welcoming Remarks

- **WELCOME AND THE WATER DATA ACT: U.S. REP. MELANIE STANSBURY (NM)** (video)

Workshop Co-Sponsor Remarks:

- Tony Willardson, Western States Water Council (WSWC)
- Beth Callaway, Interstate Council on Water Policy (ICWP)
- Melinda Dalton- U.S. Geological Survey (USGS)
- Peter Colohan - Internet of Water Coalition (IoW), Center for Geospatial Solutions at the Lincoln Institute of Land Policy

1:30 pm – 2:00 pm: Future Vision

- USGS Water Use Vision: Jaime Painter, USGS Water Mission Area (virtual)
- WSWC Water Data Exchange (WaDE) Program Water Use Data Sharing: Adel Abdallah, WSWC

2:00 pm – 2:30 pm: Water-Use Data and Research (WUDR) Grants – Feedback, Discussion, and Lessons-Learned

- Erik Smith, USGS: Discussion on the obstacles, perceived or real, to getting WUDR grants, and regional grant ideas and strategies

2:30 pm – 2:45 pm: Break

2:45 pm – 3:45 pm: National, Regional, and State Water Use Data Collection and Modeling Efforts Moderator: Tony Willardson

- USGS Water Use Modeling: Richard Niswonger, USGS
- OpenET Update (Utah, California, and Oregon pilot study): Forrest Melton, NASA Western Water Applications Office
- Oregon's Statewide ET project to Update Irrigation Consumptive Use Data: Jordan Beamer, Oregon Water Resources Department

3:45 pm – 4:00 pm: Break

4:00 pm – 5:00 pm State Water Data Initiatives Moderator: Tony Willardson

- California Water Data Consortium: Advancing Urban Water Use Data Sharing and Access: Tara Moran, California Water Data Consortium
- New Mexico Water Data Initiative: Stacy Timmons, New Mexico Bureau of Geology and Mineral Resources
- Developing the Texas Water Data Hub: Taylor Christian, Texas Water Development Board

5:00 pm: Wrap Up and Adjourn

Day 2: Wednesday, August 17, 2022

Location: DHS Room 1020 C (First Floor)

8:00 am: Refreshments

8:30 am – 9:50 am: Software Tools to Share, Visualize, Query, and Download Water Use

Data Moderator: Nancy Barber

- Internet of Water Geoconnex Update – New Mexico Pilot Study: Kyle Onda, Internet of Water Initiative, Center for Geospatial Solutions at the Lincoln Institute of Land Policy
- Utah's Open Water Data Website: Aaron Austin, Utah Division of Water Resources and James Reese, Utah Division of Water Rights
- Real-time Groundwater Management with Big Data and the Internet of Things - Examples from the Twin Platte Natural Resources District Water Data Program: James Schneider, Olsson, and Kathleen Elmquist, Environmental Science Associates Sitka
- How Colorado's Decision Support Systems (CDSS) Hosts and Shares Water Data: Brian Macpherson, Colorado Water Conservation Board

9:50 am – 10:20 am: Break

10:20 am – 12:00 pm: States Data Collection and Sharing Efforts Moderator: Erik Smith

- USGS Data Insights: Cheryl Dieter, USGS Water Mission Area
- New Jersey's Methods in Estimating Water Use and Sharing Data: Kent Barr, New Jersey Department of Environmental Protection
- Wyoming Data Sharing Efforts: Melinda Fegler, Wyoming State Engineer's Office
- The Great Lakes Regional Water Use Database - Data Collection, Analysis and Reporting Protocols: James Polidori, Great Lakes Commission
- Reported Water Uses in the Potomac River Basin: Stephanie Nummer-Fantozz, Interstate Commission on the Potomac River Basin. (virtual)

12:00 pm – 1:30 pm Lunch (Boxed Lunch)

1:30 pm – 3:00 pm: Data Collection and Sharing Efforts Moderator: Beth Callaway

- Kansas Water Use Data Collection and Database Migration: David Engelhaupt and Andy Terhune, Kansas Department of Agriculture (virtual)
- Alaska Water Use Data System: Kevin Petrone, Alaska Department of Natural Resources (virtual)
- New Mexico Water Use Data: Collection, Reporting, and Sharing: Julie Valdez, New Mexico Office of the State Engineer (virtual)
- Susquehanna River Basin Cumulative Water Use and Availability Study: John Balay, Susquehanna River Basin Commission
- Upper Colorado River Basin Consumptive Use and Loss Reporting: James Prairie, Upper Colorado Region Office, Bureau of Reclamation (virtual)

3:00 pm – 3:15 pm Break

3:15 pm – 4:00 pm Short break out session (3-4 groups, one virtual) ~5 min per question
Prompting questions

- What are ways your state has improved their capability to share water data such as tools/databases/APIs or others?
- What can we do to improve data sharing or make it easier? What hinders states from sharing data? How can we encourage data sharing?
- What are the two biggest take-away?

4:00 pm – 5:00 pm States Water Use Data Collection and Reporting Moderator: Tony Willardson

- Washington Data Sharing Efforts: Andrea Lauden, Washington State Department of Ecology
- Water Use Data Improvements for Nebraska: Jennifer Schellpeper, Nebraska Department of Natural Resources
- Water Use Reporting in Oklahoma and Future Goals: Jason Tutkowski, Oklahoma Water Resources Board

5:00 pm: Wrap Up and Adjourn

Day 3: Thursday, August 18, 2022

Location: IT Training Room 2125 (Second Floor) ID or driver's license needed to get in

8:00 am: Refreshments

8:30 am – 9:30 am: States Water Use Data Reporting and Sharing Efforts Moderator: Beth Callaway

- Major Water Users in Missouri: Trevor Ellis, Missouri Department of Natural Resources
- Indiana's Water Use Registration and Reporting Program: Mark Basch, Indiana Department of Natural Resources, Division of Water (virtual)
- Water Withdrawal and Consumptive Use Estimates for the Delaware River Basin (1990-2017) With Projections Through 2060: Michael Thompson, Delaware River Basin Commission (virtual)
- Virginia's Approach to Addressing Water Use Data Gaps: Ryan Green, Virginia Department of Environmental Quality (virtual)

9:30 – 9:45 am Refreshment Break

9:45 am – 11:15 am: Breakout sessions 3 or 5 groups (see prompting questions below)

11:15 am – 11:30 am Break

11:30 am – 12:15 pm: Breakout Session Reporting (Day2 and Day3) - about 5-10 min each

12:15 pm: Wrap Up and Adjourn

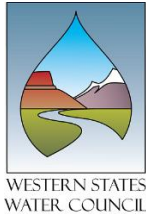
Questions to consider answering during the talks and breakout sessions:

1. What data related assessments (QA/QC) do you use such as identification of gaps, ways/tools for evaluating data, analysis to identify outliers or overcome data latency issues?
2. What are the challenges in getting the data you need to meet your water rights regulatory needs, water planning and other obligations? Do you have adequate information/data on surface/groundwater uses to make more informed decisions that are not here now? If not, do you have plans for a solution to those challenges? What data are missing now?
3. What is your state's water use reporting systems and are there gaps in technical support, and methods? What future updates/plans for data collaboration, models, data services do you have? If water use data are reported voluntarily by water users, does your agency provide guidelines for reporting?
4. What can WaDE (WSWC), WUDR (USGS), ICWP, and IoW do to help your state meet its challenges?

2022 National Water Use Data Workshop Planning Committee*

- Adel Abdallah, Western States Water Council
- Tony Willardson, Western States Water Council
- Beth Callaway, Interstate Council on Water Policy
- Amy Shallcross, Interstate Council on Water Policy
- Peter Colohan, Internet of Water Coalition, Lincoln Institute of Land Policy
- Lucas Stephens, Internet of Water Coalition, Nicholas Institute for Environmental Policy Solutions at Duke University
- Kristin Linsey, U.S. Geological Survey
- Erik Smith, U.S. Geological Survey
- Nancy Barber, U.S. Geological Survey
- Dieter Cheryl, U.S. Geological Survey
- Jaime Painter, U.S. Geological Survey

* In no particular order



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Pre-Registrants List

(Green Font Color = Attending Remotely)

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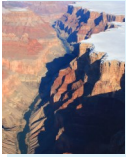
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► WHO WE ARE AND WHAT WE DO

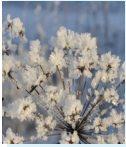
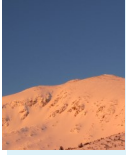
► ADVISING WESTERN GOVERNORS ON WATER POLICIES, PROGRAMS AND LAWS

► RAISING WATER AS A HIGHER, PUBLIC POLICY PRIORITY

► PROTECTING STATES' WATER RIGHTS AND MANAGEMENT PREROGATIVES

► FOSTERING STATE AND FEDERAL COOPERATION

► PROMOTING SOUND SCIENCE AND DATA SHARING AND NETWORKS



2022



WESTERN STATES WATER COUNCIL

Since its creation in 1965, the Western States Water Council (WSWC) has served as a resource and advisor on water policy issues for the governors. The Council now includes 18 western states. The governors are ex-officio WSWC members and appoint members to represent their individual states. Members serve at the pleasure of their respective governors and include state natural resource department directors, water resource agency directors, state engineers, state water quality managers, assistant attorneys general, private practice attorneys, and other western water experts. WSWC members are key decision-makers with access to their governor.

Water in the West

is an increasingly scarce and precious resource. Population growth, competing economic and ecological demands, and changing social values have left surface and ground water supplies stressed in many areas. This has increased the number and complexity of conflicts among users and uses. A secure water future is becoming more costly and increasingly uncertain given our unpredictable climate, aging and often inadequate infrastructure, data limitations regarding water supplies and demands, competing or poorly defined water rights, and a constantly evolving regulatory landscape. Effectively addressing these challenges requires stronger collaboration and cooperation that transcends political and geographic boundaries between states, federal agencies, tribes, and local communities.

The Council serves a number of governmental purposes on behalf of western states, with members advising the governors on planning, conservation, development, management, and protection of their water resources — to ensure that the West has an

adequate, sustainable supply of water of suitable quality to meet its diverse economic and environmental needs now and in the future. The Council fosters cooperation among member states and provides a forum for expressing a collective voice on federal water issues. It also facilitates the exchange of state views and experiences, fostering better state laws, management practices and policies. It assists states in monitoring and evaluating the impact of federal laws, programs and policies. It strives to elevate water as a higher public policy priority, impacting the economy, environment, public health, and the West's way of life.

State primacy is fundamental to a sustainable water future. States should be engaged early in meaningful consultation on federal policies and regulations, and federal actions should support state water laws, plans, policies, programs, water rights adjudications, court decrees, compacts and settlements.

Drought Management

The WSWC promotes coordinated drought planning and preparedness, with an emphasis on sharing data and improving drought forecasting. The National Integrated Drought Information System (NIDIS), led by the National Oceanic and Atmospheric Administration (NOAA), was created to develop an inter-agency, multi-partner approach to improving drought monitoring, early warning systems and forecasting. The WSWC has been an integral partner in helping implement NIDIS, as well as supporting NOAA's efforts to improve earth observations, drought prediction, and seasonal forecasting.



What We Do...



- **STATE WATER RIGHTS:** Numerous WSWC activities are designed to preserve the primary authority of the states to allocate and manage their waters, protect private property rights, and maintain water quality.
- **WATER TRANSFERS:** The WSWC supports voluntary, intrastate water rights transfers and has identified tools that states and others can use to avoid or mitigate the impacts of transfers on agricultural economies, rural communities, and the environment.
- **INDIAN WATER RIGHTS:** For over 30 years, the WSWC and the Native American Rights Fund (NARF) have worked together as part of an Ad Hoc Group on Indian Water Rights with Congress and the Administration to settle Indian reserved water rights claims through negotiation. The WSWC and NARF hold a biennial symposium on settlements, and the WSWC maintains a summary table of Congressionally-authorized settlements. Frequent interactions build relationships and trust, leading to results.
- **WATER REUSE:** Working with its members, the WSWC has published a comprehensive reference report describing the water reuse programs in 17 western states.
- **GROUNDWATER:** The WSWC has actively worked to protect the role of the States in allocating, managing and protecting groundwater resources and promoting recharge and conjunctive use.
- **WATER-RELATED DATA:** The WSWC has long worked with Congress and the Administration to secure adequate federal funding for data programs that support state water management, such as U.S. Geological Survey' stream-gaging system, Natural Resources Conservation Service' Snow Survey program, National Aeronautics and Space Administration's Landsat satellites, and various National Oceanic and Atmospheric Administration programs.

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- **INFRASTRUCTURE STRATEGIES:** The WSWC has sponsored symposia on strategies to meet our present and future water infrastructure needs. The WSWC has promoted the expenditure of Reclamation Fund receipts for their authorized purposes, as well as EPA's State Revolving Funds and other federal water infrastructure development programs.
- **SYMPOSIA AND WORKSHOPS:** The WSWC sponsors a variety of symposia and workshops to bring together stakeholders from around the West to discuss water challenges. The WSWC has held meetings on improving and advancing sub-seasonal to seasonal precipitation forecasting, drought planning and preparedness, Federal water rights/needs, the energy/water nexus, water quality and water quantity protection and management, and other topics.
- **OTHER ORGANIZATIONS:** The WSWC collaborates with many academic, public and private, state and interstate organizations, and coordinates with a Western Federal Agency Support Team (WestFAST).

Demands on the West's limited water resources are growing and are complicated by population growth, extreme weather, and increasingly complex federal laws and regulations. These forces magnify the importance of regional cooperation to address common water problems and achieve solutions.

THE WATER DATA EXCHANGE (WADE) PROGRAM: TRANSFORMING WESTERN WATER PLANNING, MANAGEMENT, AND POLICY BY SHARING STATES' WATER DATA SINCE 2011

States allocate and administer rights to the use of water in the West and are therefore in the best position to provide data on water rights and water use. Water rights, uses, and associated data are managed separately and distinctly by each state which makes regional analysis cumbersome. Analyses across regions and multi-state basins are becoming increasingly relevant, especially given the unprecedented drought and population growth that the West is experiencing. The WSWC Water Data Exchange (WaDE) Program is designed to share WSWC member states' water rights, allocation, supply, and use data through a common streamlined, and standardized service. It enables regional and local analyses to transform water resources planning, management, and policies.

Initiated with the support of Western Governors, state natural resource and water agency directors, state engineers, and their staff, the WaDE Program is celebrating its 10th anniversary with new advancements focused on building a user-friendly dashboard called the Western States Water Data Access and Analysis Tool (WestDAAT).



The WaDE Program's initial concept and creation phase (2011-2018) established working relationships with states agencies and created data sharing protocols while building and populating a collaborative data management system, in response to interest and funding from the WSWC States, federal agencies (DOE, EPA), and philanthropic groups. In its second phase (2019-2021), the WaDE Data System has been upgraded to a cloud-based database that shares a variety of water data for WSWC's eighteen member states and has become one of the major data hubs within the Internet of Water project <https://internetofwater.org/resources/hubs/>.

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<http://www.westernstateswater.org>

For more information about WaDE, please visit
<https://westernstateswater.org/wade>



BACKGROUND

The Western States Water Council (WSWC) has long-supported water data programs at federal and state levels, advocated for increased funding for essential water science and monitoring data programs, and encouraged greater data-sharing and transparency among its members. The Water Data Exchange (WaDE) Program began in 2011 under a subcontract with the Western Governors Association (WGA), as a cooperative effort between WSWC and the Sandia National Labs, with funding from the Department of Energy made available under the American Recovery and Reinvestment Act (ARRA) of 2008. It was subsequently sustained with WSWC funds and in-kind support through participation from our member States that committed staff and resources, as well as sharing their water data, without which WaDE would not be possible. Other early funding came from the Environmental Protection Agency's Exchange Network (EN), as well as funding from the Cynthia and George Mitchell Foundation, the Water Funders Coalition, and the Gordon and Betty Moore Foundation, through the Internet of Water and Duke University.

The WaDE Program is committed to assisting WSWC member states in publicly sharing water rights, allocation, supply, and use data through a common streamlined and standardized service that enables regional analyses to inform water resources planning and policies.

WHY WADE?

States allocate and administer rights to the use of water in the West and are therefore in the best position to provide data on water rights and water use. However, water rights, uses, and associated data are managed separately and distinctly by each state which makes regional analysis cumbersome. Analyses across regions and multi-state basins are becoming increasingly relevant, especially given the unprecedented drought and population growth that the West is experiencing. With changing and ever-greater demands on limited water resources, complicated by an increasingly complex overlay of federal laws and regulations, the importance of cooperative efforts and exchanges by and among states has likewise been magnified.

To address this challenge, the WaDE program created a database platform to streamline water rights and water use data into standardized and machine-readable formats. Making this data accessible enables users to answer regional and national questions about water availability, scarcity, and resilience in a cost-effective, sustainable, and consistent way.

The WaDE Program's initial concept and creation phase (2011-2018) established working relationships with states agencies and created data sharing protocols while building and populating a collaborative data management system. In its second phase (2019-2021), WaDE created a template for transforming disparate state water-related data systems into a functional

regional and cloud-based data system with standards and metadata. Under this phase, WaDE has become one of the major data hubs within the Internet of Water project <https://internetofwater.org/resources/hubs/>. In addition, the WaDE metadata dictionary with its controlled vocabularies is considered the standard method for sharing state agency water use data between WaDE and the U.S. Geological Survey (USGS) Water Use Data Research (WUDR) Program (<https://www.usgs.gov/mission-areas/water-resources/science/water-use-data-and-research-wudr-program>).

The current WaDE 2.0 Data System focuses on sharing the following four major categories of water data, further divided into nine subcategories: (1) Water Rights data: (a) Points of Diversions (POD) and (b) Places of Use (POU); (2) Regulatory Data; (3) Site-Specific Time Series Data: (c) Reservoirs and (d) Gages and Water Use; and (4) Aggregated Water Budget: (e) Consumptive Use, (f) Delivered Water

Use, (g) Demand, (h) Supply, and (i) Withdrawal. The goal is to share these datasets for as many of the states as possible, as some states do not produce one or many of these data types or they do not have such data publicly available yet. All WSWC member states are participating in the WaDE program as of December 2021, a major achievement since the program was launched in late 2011.

NEXT STEPS

With this continuous support of the Western States' Governors, natural resource agency directors, state engineers, and their staff, the WaDE Program is celebrating its 10th anniversary and entering an exciting third phase (**Figure 1**). In this third phase, we are developing a user-friendly dashboard called the Western States Water Data Access and Analysis Tool (WestDAAT), an operational decision support and planning tool that will streamline the sharing of water data for western states. WestDAAT is expected to be complete by the end of 2022.

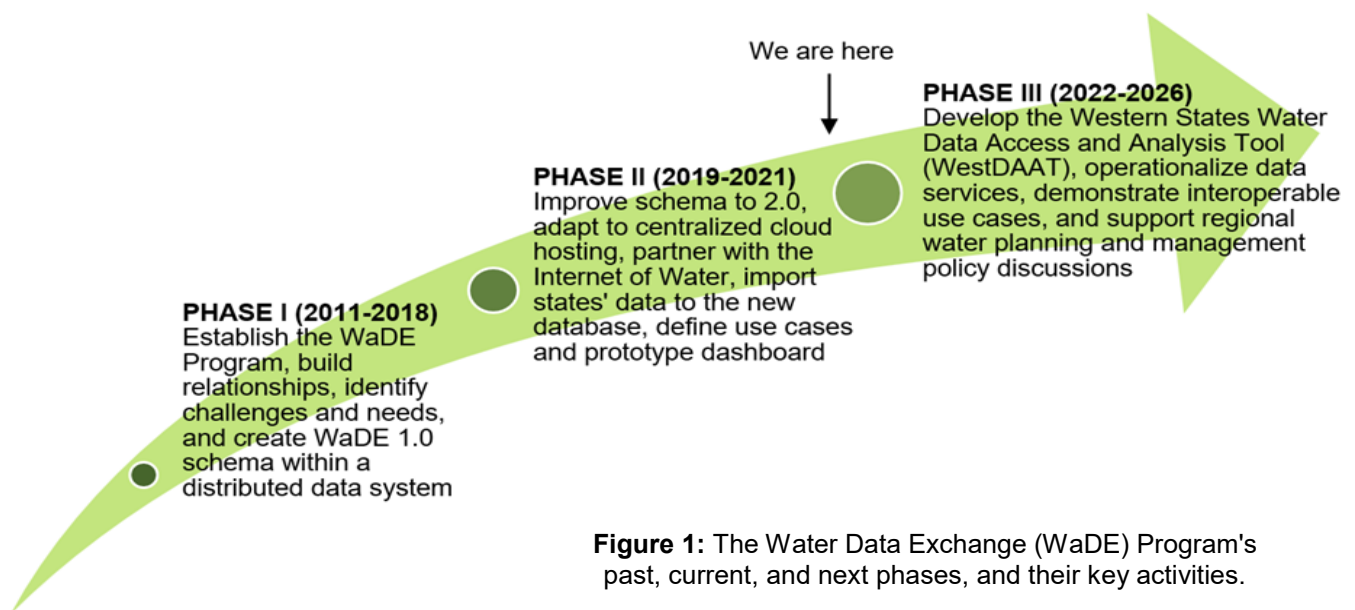


Figure 1: The Water Data Exchange (WaDE) Program's past, current, and next phases, and their key activities.

For more information about WaDE, please visit <http://westernstateswater.org/wade> and reach out to the WaDE Program Manager, Adel Abdallah adelabdallah@wswc.utah.gov.



Who We Are

The Interstate Council on Water Policy is a national organization that provides a voice for regional, state, and local water resources agencies and entities regarding diverse water policy issues that affect real-world decisions.

The ICWP was founded in 1959 to promote integrated water resources management and address water quality issues. Today's strategic priority issues include national water policy development, integrated water planning for sustainable resource development and management, and vital water data and water science tools to inform policy and planning.

What Our Members Value

*Members value being part of a professional community with opportunities to **network and collaborate** with colleagues across the nation, **converse face-to-face** with key federal officials and Congressional committee leadership, **stay informed** about emerging technologies, and **engage** in national policy discussions.*

ICWP members are thought leaders who share their expertise and experience regarding water resources policy, technical issues, funding approaches, and collaborative partnership. The ICWP maintains ongoing communications with administrators from key federal agencies, including the U.S. Army Corp of Engineers (USACE), Geological Survey (USGS), National Oceanic and Atmospheric Administration, Environmental Protection Agency, Department of Agriculture, and others.

Why Your Membership Counts

ICWP is the nationwide forum for the exchange of ideas and information on today's water management issues. Each member has a unique set of regional issues and brings expertise and perspective integral to ICWP's collective voice!

Member Benefits

Join ICWP through an organizational membership and all individuals on your team may access full benefits.

Annual Meeting

The ICWP's Annual Fall meeting is typically a 2-3 day event that kicks off with a field trip showcasing innovative water projects in the host region and features panels on topics such as drought management, water planning strategies, and federal agency updates and legislation.

Washington DC Roundtable

ICWP's Spring Washington, D.C. Roundtable features updates from federal agencies, Congressional appropriations and natural resources committees, Hill visits with key Congressional staff, and leadership meetings at federal agency headquarters.



ICWP Board members on a tour of Oklahoma's Arbuckle-Simpson Aquifer region during the 2018 Annual Meeting.

Committees and Webinars

Members have access to meetings and webinar offerings of several standing committees, where most of ICWP's substantive work occurs.

Legislation and Policy Committee Federal legislation and program implementation is the core focus of this committee. Topics have included USACE cost sharing agreements; Planning Assistance to States authority and funding, federal program consistency across regional offices, USGS streamgaging programs and National Integrated Drought Information System reauthorization.

Data and Science Committee This committee is currently focused on the USGS Water Use Data and Research (WUDR) Program, particularly on data compatibility and access across platforms, and offers webinars on new research and tools.

Water Planning Committee Although water plans vary from state to state, there are many commonalities. This committee focuses on sharing ideas related to content, scope, public participation, political support, and funding strategies.

Interstate Water Management Committee Several of the nation's interstate compact commissions are ICWP members. This committee provides a forum to discuss issues unique to the management of interstate water resources.

Members

Alabama Office of Water Resources
Alabama Water Institute
Arkansas Natural Resources Commission
Atlanta Regional Commission
Barr Engineering
CDM Smith
Chester County Water Resources Authority, PA
Delaware River Basin Commission
Georgia Water Policy Center/Albany State University
Hazen and Sawyer
In-Situ
Indiana Department of Natural Resources
Illinois DNR-Water Resources
Interstate Commission on the Potomac River Basin
Kansas Water Office
Kisters
Minnesota Department of Natural Resources
Missouri Department of Natural Resources
New England Interstate Water Pollution Control Commission (NEIWPCC)
Nebraska Department of Natural Resources
Ohio River Valley Water Sanitation Commission (ORSANCO)
Oklahoma Water Resources Board
Olsson
OTT/Hydromet
South Carolina Department of Natural Resources
Susquehanna River Basin Commission
Tri-State Water Resources Coalition
U.S. Army Corps of Engineers, Civil Works
Upper Mississippi River Basin Association
West Virginia Department of Environmental Protection
Wyoming State Engineer's Office/Water Development Office
YSI/Xylem Analytics

Contact Information

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Membership Levels

Voting membership is available to state agencies, interstate organizations, and intrastate agencies with water resource management responsibilities.

Affiliate membership is reserved for individuals, small not-for-profits organizations, watershed groups, and academic institutions. **Sustaining partner membership** is reserved for individuals, non-government organizations, and consulting firms. **Emeritus membership** is available for those who have retired from state, interstate, or intrastate agencies, or non-profit organizations after having served as a contributing ICWP member.

Small states (population < 5 million)	\$4,500
Large states (population > 5 million)	\$6,500
Interstate/Intrastate Agencies and Regional Water Commissions	\$4,500
Sustaining Partners - Gold	\$7,500
Sustaining Partners - Silver	\$5,500
Sustaining Partners - Bronze	\$3,500
Affiliates	\$2,000
Emeritus Affiliates	\$35

Member Testimonials

"The ability to speak directly to the USGS, USACE, BoR personnel as well as state representatives is so valuable. Personal relationships and being able to build those are key."

--Jodee Pring, Wyoming Water Development Office

"ICWP is an invaluable link to water professionals from states across the U.S. The information provided through meetings is first-class, the connections to federal agencies is superior to what we could put together on our own, and the people are great!"

--Gail Melgren, Tri-State Water Coalition

"It's really exciting to see so many states that share the resources of a watershed meeting on such good terms and developing the relationships that facilitate collaborative solutions."

--Peter Evans, Past Executive Director, ICWP; Riverswork, LLC

"I value ICWP's water infrastructure planning and data focus and access to federal leadership as a result of its long-standing presence in advancing U.S. water policy and forecasting tools."

--Julie Cunningham, Oklahoma Water Resources Board

"Leveraging knowledge and voices of states and interstate organizations across the country is incredibly powerful."

--Kirsten Wallace, Upper Mississippi River Basin Association

"I value the ICWP network for reaching federal agencies and state water managers. At every meeting I am reminded of the expertise of members and the unique issues that makes the exchange essential for addressing today's water management challenges."

--Timothy Feather, Ph.D. CDM Smith

Water Availability and Use Science Program

Water Use Science in the USGS Water Resources Mission Area

How are we using water? Do we have enough water for future needs? How have we changed the way we use water and why? What impacts do land use, climate, and socio-economic changes have on where, when, and how much water is used? How might our ways of using water change in the future, and how would that be affected by changes in water quality and quantity? The USGS Water Mission Area responds to these questions by being the steward of the Nation's only comprehensive program for reporting national water use. Water use information enables water managers to plan more strategically and enables the analysis of trends over time.

Existing Capability

National Water Use reporting has been a component of USGS scientific information delivery since the 1950s. These information products have been in cooperation with other Federal, State, and Local water resource partners and have provided periodic annual county scale estimates of withdrawals for various sectors and descriptions of national water use trends. The USGS is building capacity for an integrated operational system for estimating and forecasting water use and water transfers nationally with sufficient spatial scale to resolve variability in withdrawal amounts and their associated impacts on water supplies in individual streams, reservoirs, and aquifers.

Planned Water Use Science

USGS aims for comprehensive near-real time estimates of consumptive and non-consumptive water use for both groundwater and surface water that can be easily integrated with other water budget components to identify spatial and temporal patterns of use and impact to water supply. The USGS water use information strategy is focused on these four areas that build on existing capabilities:

Enhance the collection and completeness of water use information

- Increase spatial and temporal scales of water use data
- Collect information that describes the when, where, and how much water is used at a given time and location
- Understand uncertainties in the data
- Invest in automated collection and transfer of water use information

Establish a nationally consistent estimation method

- Develop combined data driven and process-based approaches for estimating water withdrawals and consumption
- Associate uncertainty with water use estimates
- Evaluate the worth of datasets toward accurate water use estimates
- Prioritize use sectors of highest national withdrawals
- Deliver seasonal and sub-seasonal estimates in near-real time.

Quantify and trace the movement of water over the landscape

- Quantify the movement of water from place of withdrawal, to place of use, and return to a water source
- Develop a geospatial dataset of interbasin transfers (target HUC12), detect and quantify the timing of flow through the transfers.
- Incorporate and account for water deliveries, sales, and possible losses into reported water use

Integrate forecasting targets into water use models

- Develop capability for fit-for-purpose water-use predictions
- Consider the impacts that changes in climate, land use, and social and economic decisions have on water use.

For Additional Information on Water Use Science in the USGS Water Resources Mission Area

Water Use Program Manager—Jaime Painter, jpainter@usgs.gov

Water Availability and Use Science Program Coordinator—Mindi Dalton, msdalton@usgs.gov

Water Availability and Use Science—<https://www.usgs.gov/water-resources/water-availability-and-use-science-program>

Water Use in the United States—<https://www.usgs.gov/mission-areas/water-resources/science/water-use-united-states>



U.S. Geological Survey (USGS) Water-Use Data and Research (WUDR) Program Overview and Status as of March 31, 2022

What is the WUDR Program?

The USGS Water-Use Data and Research Program (WUDR) is an appropriated program and is authorized under the SECURE Water Act (Sec. 9508 (c)). WUDR provides financial assistance through cooperative agreements to State water resource agencies.

The WUDR Program has two main goals:

- To improve the availability, quality, compatibility, and delivery of water-use data that are collected and/or estimated by States to support national water-use assessments; and
- To integrate the water-use data into USGS databases in electronic or machine-readable formats.

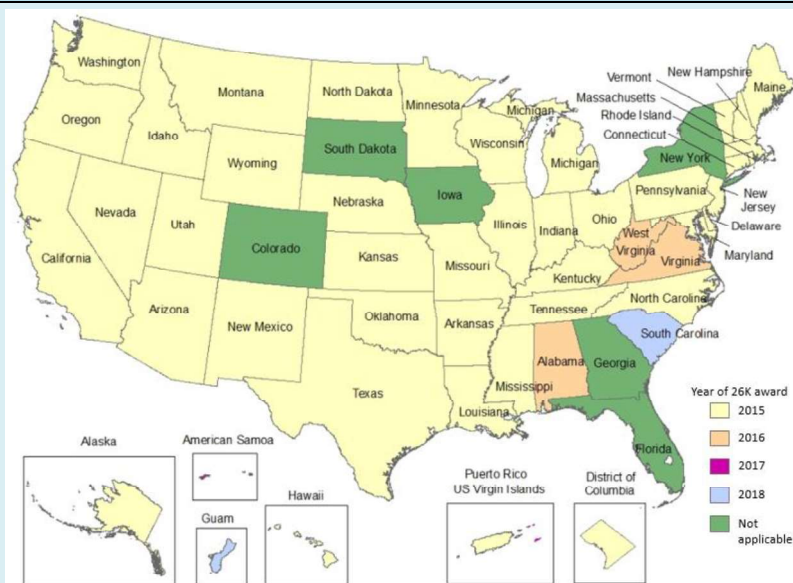
At a glance:

- Each State can apply for up to \$250,000.
- States apply for awards through *grants.gov*.
- Competitive awards are for 1 to 2 years.
- States can have more than one project at a time.
- Final technical report is due 120 days after the project completion date.

Non-competitive WUDR awards for workplans

During Federal fiscal year 2015 (FY15), the first-year funding was awarded, States were awarded non-competitive awards to develop workplans to better understand the water-use data collection in each State, identify water-use data gaps, and prioritize work to reduce water-use data gaps. Between 2015–2021, 50 States and territories completed final workplans, with more than 1.2 million dollars awarded for workplans.

States must have an approved workplan prior to a competitive award application but can opt to write their workplans without non-competitive award funds (for example, Georgia completed their workplan in 2021 without WUDR funds). In these cases, the workplan funding amount is instead available for competitive awards. Completed workplans and the baseline standards table are available on the WUDR home page at <https://water.usgs.gov/wausp/wudr>.

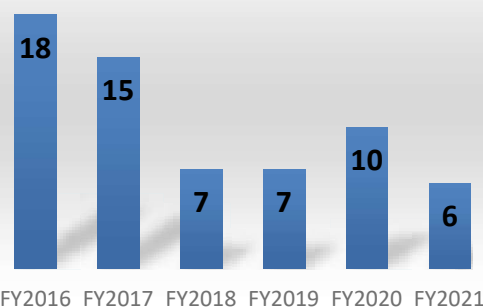


Competitive WUDR projects

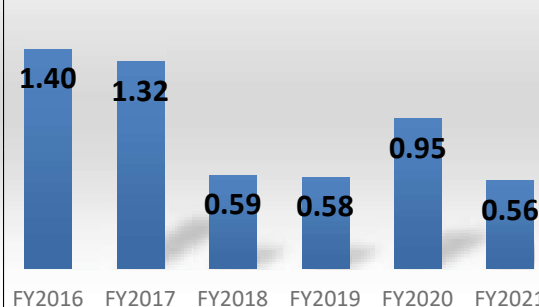
The USGS WUDR started providing competitive awards in fiscal year 2016 and has awarded 63 projects to 35 states between fiscal years 2016 and 2021 for a total of about 5.4 million dollars.

Projects can range from one to two years. In recent years most States have opted for 2-year projects.

Number of Water-Use Data and Research Competitive Awards awarded per fiscal year (FY)

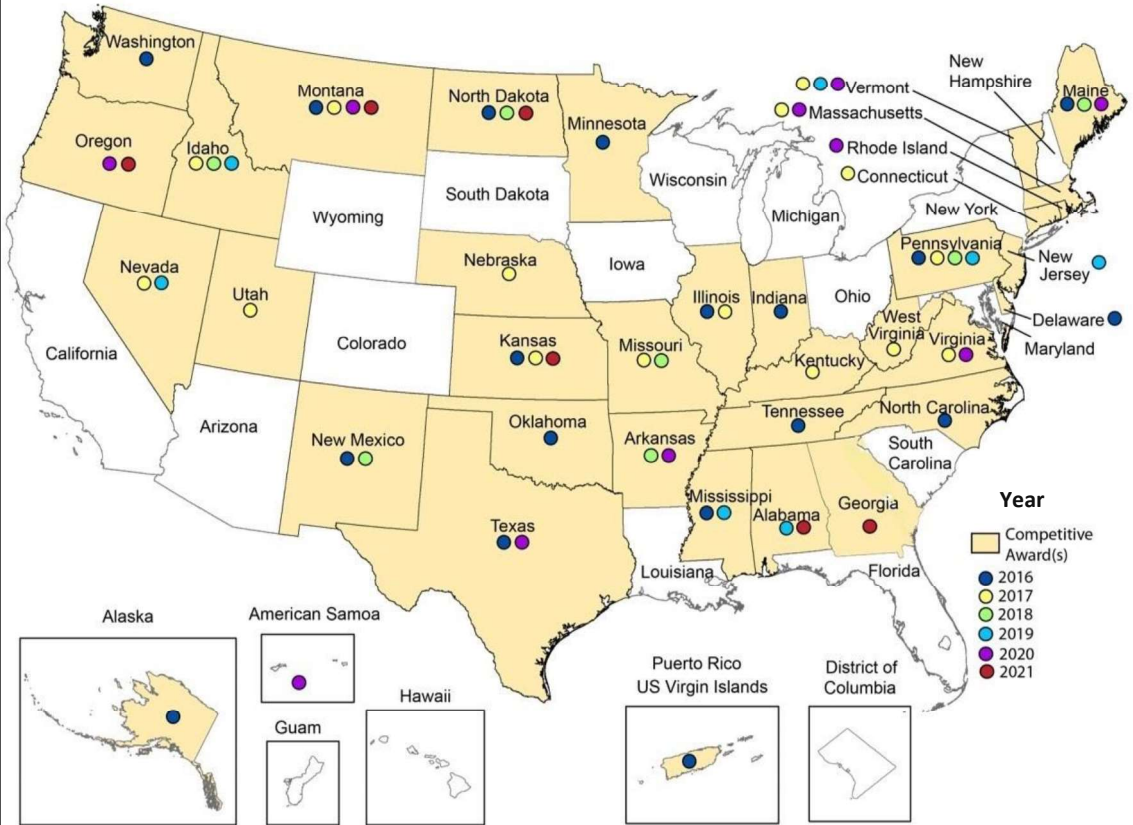


Water-Use Data and Research Program Funding awarded per fiscal year in millions of dollars



States awarded competitive WUDR projects, 2016-2021

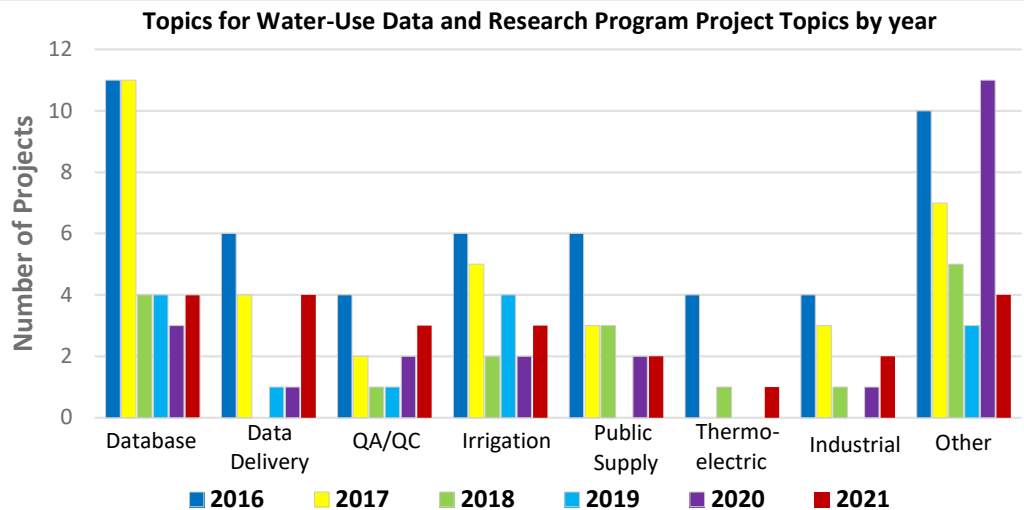
Alabama: 2019, 2021
 Alaska: 2016
 American Samoa: 2020
 Arkansas: 2018, 2020
 Connecticut: 2017
 Delaware: 2016
 Georgia: 2021
 Idaho: 2017, 2018, 2019
 Illinois: 2016, 2017
 Indiana: 2016
 Kansas: 2016, 2017, 2021
 Kentucky: 2017
 Maine: 2016, 2018, 2020
 Massachusetts: 2017, 2020
 Minnesota: 2016
 Mississippi: 2016, 2019
 Missouri: 2017, 2018
 Montana: 2016, 2017, 2020, 2021
 Nebraska: 2017
 Nevada: 2017, 2019
 New Mexico: 2016, 2018
 New Jersey: 2019
 North Carolina: 2016
 North Dakota: 2016, 2018, 2021
 Oklahoma: 2016
 Oregon: 2020, 2021
 Pennsylvania: 2016, 2017, 2018, 2019
 Puerto Rico: 2016
 Rhode Island: 2020
 Tennessee: 2016
 Texas: 2016, 2020
 Utah: 2017
 Vermont: 2017, 2019, 2020
 Virginia: 2017, 2020
 Washington: 2016
 West Virginia: 2017



Priority topics for competitive projects include:

- Improve the collection process or quality assurance of water-use data or improve the transfer of water-use data to the USGS.
- Improve water-use data for irrigation, public supply, or industrial water-use categories.
- Conduct studies to develop methods and/or coefficients to improve water-use estimates for categories of use where measured or reported data are not available.

[In chart: QA/QC short for quality assurance / quality control]



States with WUDR project topics for irrigation, public supply, and thermoelectric water-use categories

	Irrigation:		Public Supply:		Thermoelectric:
Irrigation, public supply, and thermoelectric power account for 90 percent of water withdrawals in the United States.	Alaska	New Jersey	Alaska	North Dakota	Alaska
	Georgia	New Mexico	American Samoa	Rhode Island	Georgia
	Idaho	Oregon	Georgia	Tennessee	Illinois
	Illinois	Pennsylvania	Idaho	Texas	Minnesota
	Maine	Puerto Rico	Kentucky	Utah	Missouri
	Massachusetts	Tennessee	Maine		Tennessee
	Missouri	Vermont	Mississippi		
	Montana	Virginia	Montana		
	Nevada		New Mexico		

Internet of Water Coalition

Better Water Data for Better Water Management

What is the Internet of Water Coalition?

The Internet of Water (IoW) Coalition is a group of organizations working together with federal, state, and local government partners to build foundational water data infrastructure across the US and create a community of people and organizations using water data to make better decisions. The Internet of Water Coalition is co- led by five non-profit organizations: the Lincoln Institute of Land Policy's Center for Geospatial Solutions (CGS), Duke University's Nicholas Institute for Energy, Environment & Sustainability (Nicholas Institute), the Consortium of Universities for the Advancement of Hydrologic Sciences, Inc. (CUAHSI), the Water Data Collaborative (WDC), and the Western States Water Council's Water Data Exchange (WaDE).

Our History

The idea of an Internet of Water was first conceived at the Aspen Institute Dialog Series on Water Data and formalized in the 2017 report "The Internet of Water: Sharing and Integrating Water Data for Sustainability." In 2018, the Nicholas Institute launched the IoW project as part of their Water Policy Program, and in 2022 this project expanded to become the IoW Coalition.

Our Vision

The IoW Coalition envisions a nation engaged in equitable, sustainable, and resilient water planning, management, and stewardship.

Our Work



BUILDING DATA INFRASTRUCTURE

Enabling integrated and shared water data from public agencies (state, local, and tribal governments) and NGOs by providing the essential, missing technology to make an internet of water possible.



EMPOWERING COMMUNITIES

Demonstrating the value of integrated water data through projects and products that address near-term water management problems.



BUILDING A SUSTAINABLE NETWORK

Building a network of water data producers, users, and decision-makers across the nation to advance the uptake of modern technologies and improve water management outcomes.



Internet
of Water
COALITION