

AGENDA
WATER RESOURCES COMMITTEE

The Cliff Lodge
Snowbird, Utah

June 11, 2025

Call to Order at: 8:45 a.m. (Mountain Daylight Time)
Conducting: Anna Pakenham Stevenson, Montana

Room: Superior

TABS

1. **Welcome and Introductions**
2. **Approval of Minutes**
- C 3. **Sunsetting Resolutions –**

Position #482 - Preservation of Radio Frequencies necessary for Weather forecasting and Water Management

Position #483 - supporting Strengthening the Resiliency of Our Nation to the Impacts of Extreme Weather Events

Position #485 - urging the Administration and Congress to Support Water Research and Development Programs at the Department of Energy National Laboratories
- H 5. **WaDE/WestDAAT/WestCAT Update –** Ryan James and Tony Willardson
- I 6. **Landsat Next Update –** Tim Newman
- J 7. **Instream Flow Council Training Center –** Christopher Estes
- G 8. **FY2025-2026 Committee Work Plan –** Anna Pakenham Stevenson
- XYZ 9. **Sunsetting Positions for Fall 2025 Meetings:**

Position #487 - urges the Administration and NASA to enhance focus on research for water resources applications and promote long term engagement with the WSWC

Position #488 - expressing support for implementation of the SECURE Water Act
10. **Other Matters**
- K WSWC Testimony - House Natural Resources Sub. on Water, Wildlife and Fisheries

Adjourn by 10:00 a.m.

Tab C – WSWC Policy Positions



**RESOLUTION
of the
WESTERN STATES WATER COUNCIL
on the
PRESERVATION OF RADIO FREQUENCIES
NECESSARY FOR WEATHER FORECASTING AND
WATER MANAGEMENT**

Polson, Montana Snowbird, Utah

August 5, 2022 June 12, 2025

WHEREAS, the Western States Water Council (WSWC) is a government entity representing eighteen states, with members appointed by their respective governors; and

WHEREAS, the WSWC's mission is to ensure that the West has an adequate, secure, and sustainable supply of water of suitable quality to meet its diverse economic and environmental needs now and in the future; and

WHEREAS, in 2021, Congress created the Broadband Equity, Access, and Deployment (BEAD) program under the Infrastructure Investment and Jobs Act (P.L. 117-58) to expand Americans' access to high-speed internet the Administration has launched a \$45 Billion "Internet for All" Initiative to Connect Everyone in America; and

WHEREAS, National Telecommunications and Information Administration (NTIA) carries out the BEAD program, sets policy regarding allocations and regulations governing the federal spectrum use, assigns frequencies, and participates in all aspects of the Federal government's communications related emergency readiness activities; and

WHEREAS, the Federal Communications Commission has been aggressively engaged in efforts to make as many frequencies of the radio spectrum as possible available for commercial broadband and wireless technologies, licensed and unlicensed; and

WHEREAS, legislation has been introduced that would require an estimation of the value of the electromagnetic spectrum assigned or otherwise allocated to federal entities, between 3 kHz and 95 GHz; and

WHEREAS, a proposed basis for estimation is "the value that the electromagnetic spectrum would have if the spectrum were reallocated for the use with the highest potential value of licensed or unlicensed commercial wireless services that do not have access to that spectrum as of the date of the estimate...while preserving the spectrum access necessary to satisfy mission requirements and operations of Federal entities;" and

WHEREAS, much of the nation's data for emergency and administrative information on weather, river and streamflows, groundwater and forest fires are transmitted from remote platforms to satellites (GOES and POES) and then to "direct receive or downlink" stations on the 1675-1710 MHz range of the spectrum; and

WHEREAS, Earth-observation satellites use several radio frequency bands tied to the physical properties of the scientific measurements, including water vapor (23.8 GHz), rain and snow (36-37 GHz), atmospheric temperature (50.2 – 50.4 GHz), clouds and ice (86 – 92 GHz) and others; and

WHEREAS, sharing bandwidth, or noise from adjacent bands on the spectrum with inadequate controls, has the potential to interfere with the quality, accessibility, and utility of Earth-observation satellite data and data collected and transmitted from remote platforms on earth to satellites; and

WHEREAS, significant public and private funds have been invested to establish our satellite and ground networks, many of which would be costly to replace, and some of which are irreplaceable; and

WHEREAS, the serious, unintended consequences of data interference may include degradation in short-term weather forecasts; loss of data for streamgaging and water monitoring networks; ability of state and federal agencies to prepare for and respond to floods, fires, and extreme weather events; the ability of western states to administer and manage their scarce water resources and water quality programs; and risks of loss to human life, health, welfare, property, and environmental and natural resources.

NOW, THEREFORE, BE IT RESOLVED that the ~~Western States Water Council~~WSWC supports efforts to preserve frequencies needed for weather forecasting, streamgaging, and related water and emergency management information needs.

BE IT FURTHER RESOLVED that the ~~Council~~WSWC supports interagency coordination between the NTIA, FCC, NOAA, USGS and other state and federal agencies, to quantify and analyze the effects of commercial broadband use on satellite observation data and transmissions.

BE IT FURTHER RESOLVED that the ~~Council~~WSWC supports a meaningful evaluation of the existing government and potential alternative uses of the electromagnetic spectrum without discounting the costs of natural disasters and degradations in data needed for water management decisions, and with input from the States as appropriate.

*(See also Position No. 482, August 5, 2022,
and No. 434, July 18, 2019)*



**POSITION STATEMENT
of the
WESTERN STATES WATER COUNCIL
in support of
STRENGTHENING THE RESILIENCY OF OUR NATION
TO THE IMPACTS OF EXTREME WEATHER EVENTS**

**Snowbird, Utah
June 12, 2025**

WHEREAS, the Western States Water Council (WSWC) is a government entity representing eighteen states, with members appointed by their respective governors; and

WHEREAS, the WSWC's mission is to ensure that the West has an adequate, secure, and sustainable supply of water of suitable quality to meet its diverse economic and environmental needs now and in the future; and

WHEREAS, the West and the Nation continue to suffer the effects of increasingly extreme weather events, including tornadoes, hurricanes, extreme precipitation, flooding and drought, resulting in the loss of life and economic, social, and environmental damages; and

WHEREAS, Western States ~~have recently~~ continue to experienced extreme seasonal and year-to-year weather volatility that has brought ~~record or near-record events with~~ floods, followed by drought and wildfires, as well as devastating tornadoes, all threatening public safety and property, and often taxing the capacity of our aging water infrastructure; and

WHEREAS, ~~widespread flooding along many western rivers and streams, including the Clark Fork, Flathead, James, Tanana, Yellowstone, and others,~~ extreme precipitation events have demonstrated the continuing need for more flood control capacity and early warning systems, with timely and accurate forecasts; and

WHEREAS, there is a need for developing new monitoring technologies such as remote sensing that provide more timely data availability and better spatial coverage for assessing flooding and drought impacts; and

WHEREAS, prolonged drought increasingly afflicts the West and the Nation, and affects the performance of interstate compacts and international treaties; and

WHEREAS, extreme prolonged drought has ~~plagued led to the cooperative development and implementation of the Drought Contingency Plans (DCPs) by the Seven~~ Colorado and Rio Grande River Basin States, the United States and Mexico, ~~prompting and calls by the Department of the Interior~~ for further reductions in water use; and

WHEREAS, flood control, drainage and other water resource issues also involve relations with Canada, including negotiations over renewing the Columbia River Treaty; and

WHEREAS, present water resources planning and sound decision-making depends on our ability to understand, monitor, predict, and adapt to droughts, floods, extreme storms, and other weather events; and

WHEREAS, in the West, sound decisionmaking demands accurate and timely data on precipitation, temperature, soil moisture, snow depth, snow water content, streamflow, and similar information; and

WHEREAS, investments in observations, research, forecasting, and monitoring the development of extreme weather events provide an opportunity to significantly improve real-time water rights administration, planning and project design, and operations to maximize storage, avoid or minimize the loss of life and property, as well as mitigate economic and environmental damages; and

WHEREAS, the Weather Research and Forecasting Innovation Act of 2017 was reauthorized in 2019, together with the National Integrated Drought Information System Act, ~~and but reauthorization of both are soon due for reauthorization~~ failed to clear the Senate in the last 118th Congress; and

WHEREAS, the FY2026 Office of Management and Budget “Passback” for the National Oceanic and Atmospheric Administration (NOAA) and Oceanic and Atmospheric Research (OAR) eliminates all funding for climate, weather, and ocean research and related programs, essentially eliminating OAR as a line office; and

WHEREAS, the ~~Council~~ WSWC continues to support NOAA’s National Integrated Drought Information System, and reauthorization and implementation of the Weather Research Act, ~~and emergency drought response authorities for the Bureau of Reclamation and other federal agencies~~; and

WHEREAS, a National Academy of Sciences’ report suggests a pathway and 10-year research agenda for advancing our capabilities with a vision of a decade from now using subseasonal to seasonal (S2S) forecasts as widely as we now use 5-10 day weather forecasts; and

WHEREAS, the ~~Council~~ WSWC has urged NOAA to implement the western and midwestern pilot projects for improving S2S precipitation forecasting contained in its 2020 report to Congress pursuant to the Weather Research Act; and

WHEREAS, NOAA has allocated minimal resources for improving the skill of S2S forecasts (forecasts extending from 3 weeks to 2 years); and

WHEREAS, western states’ precipitation originates as storms moving over the Pacific Ocean and Gulf of Mexico, and the absence of key ocean observations constrains the ability to improve the skill of precipitation forecasting at near-term weather and S2S timescales; and

WHEREAS, advances in weather forecasting and research, such as that of NOAA’s Hydrometeorological Testbed program on West Coast atmospheric rivers, demonstrate the potential for improving extreme event forecasting at the operational time scale; and

WHEREAS, the ~~Council~~WSWC has supported development of an improved observing system for western extreme precipitation events, to aid in monitoring, prediction, and climate trend analysis associated with extreme storms; and

WHEREAS, there is a need for maintaining and improving existing monitoring networks that help provide early warning as well as tracking impacts of extreme events; and

WHEREAS, there is a need for improving precipitation forecasting at all time scales to support implementation of Forecast-Informed Reservoir Operations (FIRO); and

WHEREAS, there is a continuing need for greater collaboration between and among federal agencies, state agencies, local governments, non-governmental organizations and public/private organizations and businesses.

NOW THEREFORE BE IT RESOLVED, that the ~~Western States Water Council~~WSWC supports as a high priority appropriate federal appropriations and actions to plan, prepare for and avoid, minimize or mitigate the impacts of extreme weather events, including implementing the S2S forecasting pilot project^s recommended in NOAA's report to Congress and implementing NOAA's proposed Precipitation Prediction Grand Challenge.

BE IT FURTHER RESOLVED that the ~~Western States Water Council~~WSWC also supports legislation advancing the goals of: (1) minimizing the loss of life and property and economic, environmental and social cost from extreme weather events; (2) improving collaboration and coordination among agencies and organizations at all levels; (3) increasing consultation with state, local and tribal governments; (4) maintaining and enhancing data gathering and monitoring, as well as communication capabilities, identifying and addressing gaps and overlap; (5) identifying and addressing federal agency responsibilities, as well as regulatory and other preparedness and response barriers, (6) recognizing and addressing regional differences; and (7) advancing research within the physical sciences, and dynamical and statistical modeling to improve our S2S forecasting capabilities.

BE IT FURTHER RESOLVED that the ~~Western States Water Council~~WSWC pledges to work with the Administration and the Congress to appropriately address current and future needs to improve ~~S2S forecasting and~~ extreme events response and resiliency and S2S forecasting.

*(See also Position No. 483, 8/5/22; No. 435, 7/18/19;
No. 392, 7/15/16; and No. 352, 6/26/13)*



**RESOLUTION
of the
WESTERN STATES WATER COUNCIL
urging the
ADMINISTRATION AND CONGRESS
TO SUPPORT WATER RESEARCH AND DEVELOPMENT PROGRAMS
at the
DEPARTMENT OF ENERGY NATIONAL LABORATORIES**

**Snowbird, Utah
June 12, 2025**

WHEREAS , the Western States Water Council (WSWC) is a government entity representing eighteen states, with members appointed by their respective governors; and

WHEREAS, the WSWC's mission is to ensure that the West has an adequate, secure, and sustainable supply of water of suitable quality to meet its diverse economic and environmental needs now and in the future; and

WHEREAS, the ~~Western States Water Council~~ WSWC has long recognized that water and energy resources are interdependent – using one requires the other – and this presents a particular challenge in the West, where energy demand continues to rise while water supplies are increasingly stressed; and

WHEREAS, integrating, protecting, and wisely managing our national water and energy resources for the benefit of our present and future generations, is increasingly important; and

WHEREAS, one purpose of the ~~Western States Water Council~~ WSWC is to accomplish effective cooperation among western states (and our federal partners) in the conservation, development and management of water resources; and

WHEREAS, a second purpose of the ~~Western States Water Council~~ WSWC is to maintain vital state prerogatives, while identifying ways to accommodate legitimate federal interests; and

WHEREAS many watersheds are already fully-appropriated, and new stresses are emerging from climate, population growth, land use changes and water needs for energy development and production; and

WHEREAS, there is growing concern, particularly in the Arid West, over our ability to continue to supply water of adequate quality in quantities needed to sustain current and future uses, including energy, as well as agricultural, municipal and environmental uses; and

WHEREAS, the failure to provide for such needs would have significant regional and national consequences; and

WHEREAS, the Presidential Memo on the Recission of Useless Water Pressure

Standards issued on May 9, 2025 directs the Secretary of Energy to rescind regulations relating to energy efficiency and water conservation requirements for household water use, including the potential elimination of the Energy Star program; and

WHEREAS, more than 1,000 hyperscale (>10,000 sq. ft.) data centers have been built in the U.S. to accommodate the recent expansion of artificial intelligence, with an additional 120-130 new centers expected each year, each presenting a significant demand on water resources; and

WHEREAS, there is growing interest in renewable geothermal energy, and hydrothermal resources are primarily found in arid western states; and

WHEREAS, present water and energy resources planning and sound future decision-making depends on our ability to understand, monitor, anticipate and adapt to changing conditions; and

WHEREAS, electricity generation and other energy development is a significant driver of present and future water demands and the expertise and research of the national labs can supplement and enhance the ability of state, local and tribal water managers to understand and develop adaptation strategies; and

WHEREAS, water-related research at the Department of Energy's Office of Energy Efficiency and Renewable Energy, Office of and National Laboratories has included:

- exploring the energy-water nexus;
- highlighting energy-water-carbon nexus challenges and opportunities;
- developing unique multisector and multiscale model frameworks to address critical planning and operational decisions at the energy-water-land nexus;
- evaluating synergies between energy and water infrastructure to improve reliability and resiliency;
- understanding interactions among atmospheric particles, clouds, the land surface, and human activities;
- providing decision science, support and informatics for balancing water supply and demands;
- developing domestic water use projections;
- decreasing water and energy demands through efficient use;
- promoting sustainable groundwater management and storage opportunities while reducing cost and energy demands and insuring water quality;
- advancing next-generation hydropower and pumped storage systems;
- modernizing irrigation;
- increasing the safety, security, and sustainability of water infrastructure through the development of advanced technologies that create new water supplies;
- improving desalination membranes;
- managing water in a low-to-no snow future; and
- conducting research and development in hydrogen production, delivery, and storage for multiple end uses.

WHEREAS, such research should be guided by state needs as expressed in state water

and energy planning documents and through state planning processes with a focus on water resource demands and water quality impacts; and

WHEREAS, in the West, States in compliance with State law have exclusive authority over the appropriation and adjudication of water rights for all uses, and the allocation of water for energy development, including the determination of whether or not there is any unappropriated water available for use.

NOW, THEREFORE, BE IT RESOLVED that the ~~Western States Water Council~~WSWC urges the Administration and the Congress to recognize the value of Department of Energy hosted energy-water programs and research conducted at National Laboratories undertaken in collaboration with state water resources agencies, including but not limited to work at: the Idaho National Laboratory (INL); Lawrence Berkeley and Lawrence Livermore National Laboratories in California; Los Alamos and Sandia National Laboratories in New Mexico; the National Renewable Energy Laboratory (NREL) in Colorado; and Pacific Northwest National Laboratory (PNNL) in Washington, that collaboratively links federal energy research programs and water issues of concern to the western states.

BE IT FURTHER RESOLVED that the ~~Western States Water Council~~WSWC urges the Administration and the Congress to encourage collaboration and cooperation between the National Laboratories and other federal agencies, including but not limited to the National Oceanic and Atmospheric Administration (NOAA), U.S. Bureau of Reclamation (USBR) and U.S. Geological Survey (USGS) to leverage federal expertise and resources (including supercomputing power; climate and precipitation site sensitivity analysis; systems analysis, integration, and security, etc.) in addressing the Nation's water-related challenges.

BE IT FURTHER RESOLVED that the ~~Western States Water Council~~WSWC urges the Administration and the Congress to recognize the primary role of the States in allocating water for energy.

(See also Positions No. 485, 8/5/22; No. 437, 7/18/19; No. 395, 7/15/16; No. 355, 6/26/13; and No. 324, 7/23/10)

Tab H – WaDE/WestDAAT/WestCAT Update

Western States Water Council

Water Data Exchange (WaDE) Program Update

Ryan James, WaDE Data Analyst / Hydroinformatics Specialist

Tony Willardson, Executive Director

The Water Data Exchange (WaDE) Program is committed to assisting the Western States Water Council (WSWC) member states in publicly sharing water rights, allocation, supply, and use data through a streamlined and standardized service that enables regional analyses to inform water resources planning and policies¹. Since 2011, the WSWC has nurtured the WaDE Program development with financial support from federal agencies and philanthropic organizations. The WaDE Program's overarching goal is to provide a standardized water data-sharing platform for state and other public agencies, as well as private individuals, academic, consulting and non-profit organizations, which makes state data findable, accessible, interoperable, and reusable (FAIR).

This report provides a brief update of the WaDE Program's status over the period from April through June 2025 in the following areas: (1) Current WaDE Water Data Sharing; (1) WaDE/WestDAAT Improvements; and (3) the Western States Water Conservation Application Tool (WestCAT).

WestCAT and WestDAAT 2.0 are now operational (production stage) and future engagement and outreach with potential users, including public and private conservation organizations, state agencies, and others will be scheduled to encourage their use and gather feedback that can be used to further refine the tools.

Of note, WaDE is currently funded by three grants to assist in modernizing western water data and infrastructure as an Internet of Water Coalition hub. The funds come from: (1) a Broken Hill Proprietary (BHP) Foundation grant through Duke University; (2) a subcontract with the Center for Geospatial Solutions at the Lincoln Institute of Land Policy funded by the Bureau of Reclamation; and (3) a Bureau of Reclamation Applied Science WaterSmart grant and financial assistance agreement.

Current WaDE Water Data Sharing

The WaDE Program's database offers data access originating from 229 unique datasets across eighteen Western States for the following three categories of state water data in a consistent format and terminology where one state may have multiple datasets: (1) water rights data; (2) water supply data,

¹ WaDE: <https://westernstateswater.org/wade>

which includes (a) site-specific historical reservoir and streamgage data, (b) data on groundwater pumping, and (c) available aggregated water supply estimates at a watershed scale; (3) water use data, including (a) historical site-specific withdrawals related to water rights, (b) site-specific state public-supply water use, and (c) aggregated withdrawal, demand, delivered water, and consumptive use at a watershed scale; and (4) administrative and regulatory overlays data (Table 1). See **Appendix A**.

Table 1: Summary of WaDE-supported datasets that are shared through the APIs and WestDAAT

#	Data Type	Data and key metadata	# States Sharing	# Datasets Shared	WaDE Database / API	WestDAAT
1	Water Rights	Owner, priority date, point of diversion, place of use, purpose of use, permitted flow or volume, and water source name and type.	18	43	Yes	Yes
2	Water Supply	Site-specific historical reservoir and streamgages or groundwater pumping	12	46	Yes	Yes
		Aggregated water supply, such as runoff in streams, reservoirs, or groundwater	2	4	Yes	Yes
3	Water Use	Site-specific historical withdrawals related to water rights	4	5	Yes	Yes
		Site-specific state public-supply water use	5	34	Yes	Yes
		Aggregate withdrawal, demand, delivered water, consumptive use	9	68	Yes	Yes
4	Overlay	Administrative & Regulatory Overlays	17	29	Yes	Yes

WaDE/WestDAAT 2.0 Improvements

WestDAAT 2.0 improvements include access to all WaDE recorded data (1). This includes: (1) querying historical water supply/water use data available in the WaDE database; and (2) visualizing how administrative and regulatory overlay information relates to water rights. In addition, WestDAAT's existing water right visuals have been expanded to include new filter options, and the WaDE APIs capabilities and services have been redeveloped to follow Open Geospatial Consortium (OGC) Standards.

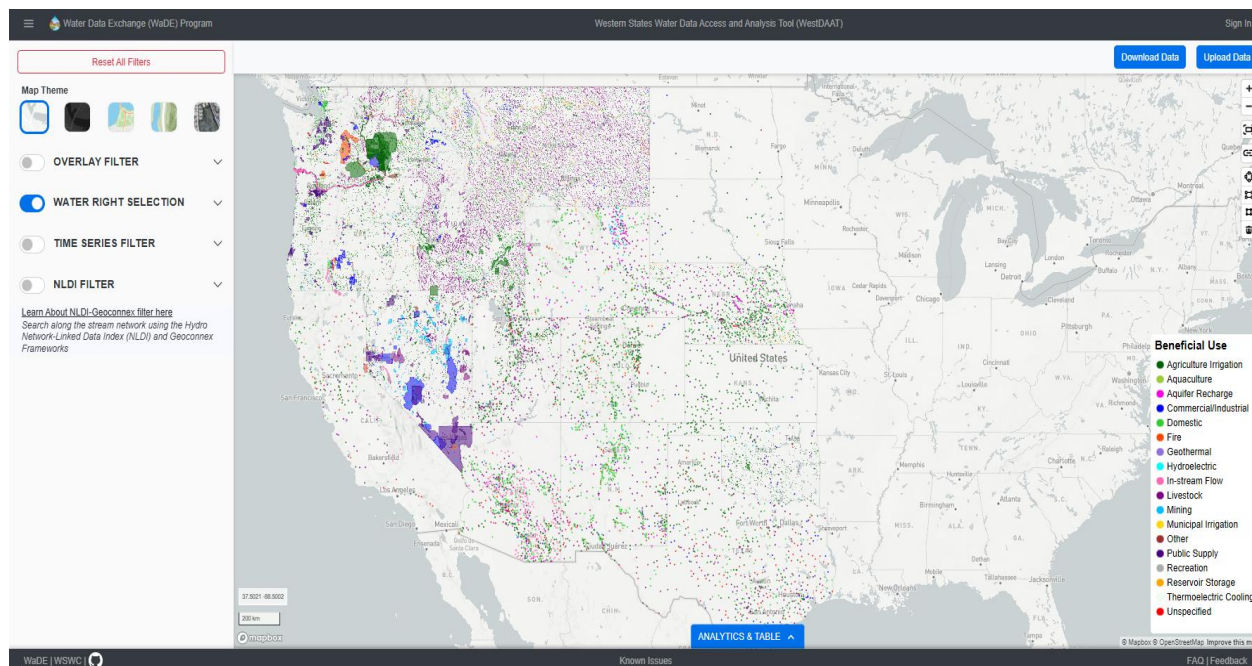


Figure 1: Screenshot of the new WestDAAT 2.0 Layout

The following is a breakdown of the new features being included.

- New Data Type Time Series Data:** WestDAAT 2.0 is now capable of showing state-based historical time series records on water supply and use, alongside the existing water right site information (and listed geospatial overlay data mentioned above). Such water supply records include site-specific historical reservoir releases, streamgage flow, and groundwater level or pumping measurements. Water use records include site-specific historical withdrawals related to an existing water right, and public-supply use related to geospatial areas. Existing site landing pages of WestDAAT have been updated to include both the site and time series information. Users of this data will be able to more easily answer questions like the following: (1) Where are related points of diversion/return and their actual volume or flow values in a hydrologic system? (2) What is the annual time series for a given set of sites with known beneficial use categories, water source types, and/or methodologies? and (3) What responses may be appropriate given real-time changes to reservoir levels, streamgage heights, or longer-term changes such as groundwater levels.
- New Data Type Administrative and Regulatory Overlays:** WestDAAT 2.0 is now capable of displaying geospatial overlays paired with water right site information. The two types of overlays deployed are administrative (boundaries of districts or offices with authority over water use) and regulatory (geographic areas that may follow basin or aquifer boundaries where specific rules or

requirements apply to water use) (of note, WestDAAT is geared to expand up available overlay types as they are available). Each overlay has a geospatial boundary, name, type of overlay, the water source type it applies to, an oversight agency, and a hyperlink that points to online documentation provided by the oversight agency. In the WaDE database, each overlay is mapped to water rights. Thus, administrative and regulatory overlays are geospatial metadata related to water rights that provide context to surface and groundwater water rights and water use across the West. Each overlay has a landing page with its metadata and a hyperlink to the oversight agency. Users of this overlay information will be able to answer questions like the following: (1) What are the administrative or regulatory agencies or districts with authority over groundwater or surface water use across the West? (2) What local or regional regulations exist in an area of interest? and (3) What water rights or water uses could be impacted by an administrative or regulatory decision?

- **New Water Right Filter Options:** WestDAAT's ability to filter and query for water right data has been expanded to include the following new data filters. A description of each filter type is described as follows: (1) **Allocation Type:** description of the type of water right (e.g., surface water right, underground water claim, state-recognized federal reserved water rights, etc); (2) **Legal Status:** the state- recognized legal status of the water right (e.g., proven, approved, perfected, adjudicated, etc.); and (3) **Site Type:** the high-level description of the site type recognized by the data provider (e.g., well, spring, reservoir, river, ditch, etc.).
- **New Site Selection Drawing Tools:** New drawing tools for both water right and time series sites have been included. New tools include expanding upon the existing drawing tools to include a draw circle, draw square, or draw an irregular polygon, and a new custom input file select from the user. Accepted file types include Shape files (shp) and GeoJSON files.
- **New Water Right Analytic Visuals:** Existing analytic visuals for water rights have been expanded. New visuals include the option to use a bar chart, and the ability to group results beneficial use (existing), water source type, owner type, allocation type, legal status type, site type.
- **New WaDE API Data Delivery:** WaDE is expanding its existing APIs data retrieval service to better follow the data retrieval guidelines set down by the Open Geospatial Consortium (OGC)² for retrieving and finding geospatial data. Specifically, WaDE will be using the OGC Features³ standard which is a modern, web-friendly standard developed for accessing and interacting with geospatial feature data over the web. It enables users to query, retrieve, and filter collections of geographic features (such as rivers, parcels, or monitoring stations) while using familiar web

² OGC: <https://ogcapi.ogc.org/>

³ OGC API Features: <https://ogcapi.ogc.org/features/overview.html>

technologies (e.g., RESTful URLs) and industry standard data formats (e.g, shp, GeoJSON). One of OGC’s strengths is its modular, interoperable design, allowing for lightweight, flexible data access across different systems and devices without requiring specialized GIS software.

Western States Water Conservation Application Tool

A new service has been launched, called the Westwide Western Water Conservation Application Tool (WestCAT), which is an extension of the existing WestDAAT tool, and is a water conservation program application tracking service to be used to streamline implementation of voluntary, compensated, in-state, and temporary water conservation measures (see Figure 3). WestCAT integrates two foundational data sets for water conservation: WestDAAT water rights data and evapotranspiration (ET) data as a proxy for consumptive use estimates relying on OpenET (a satellite-based imagery service that can computationally estimate the total amount of water transferred from both land surfaces and vegetation to the atmosphere through or ET). WestCAT will be used to help facilitate evaluation of applications to participate in compensated conservation programs through measures that might include full-season fallowing, alternative irrigation strategies, such as split season irrigation, and crop switching, etc.

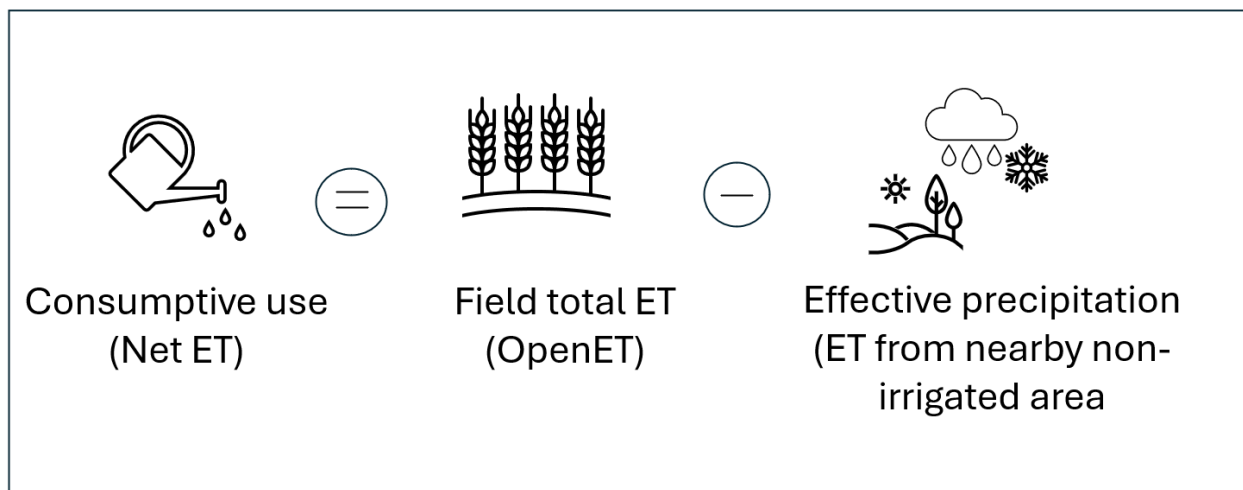


Figure 2: Consumptive Use (NET ET) Breakdown.

Consumptive Use (Net ET) is calculated based on the amount of estimated total ET from an irrigated field using OpenET, minus the Effective Precipitation falling on that area estimated using OpenET to measure ET from a non-irrigated control point (Figure 2). Western water laws and rights are based on reasonable beneficial use as the measure and the limit of a state-granted use right. This may be defined differently by each State, but for purposes of WestCAT, Net ET as a measure of consumptive use is a proxy for

reasonable beneficial use. Western water law also prohibits waste (of water), and thus promotes water conservation. However, heretofore, calculating consumptive use has been a complicated and laborious process taking into account cropping patterns, soil type, estimated or metered applied water and related runoff, etc. OpenET accurately estimates Net ET and is used to derive the actual amount of water consumptively used by the crop compared to water applied via irrigation, subtracting any water available to a crop from natural precipitation. It should be noted that a state water right may also include an amount for carriage losses from canals and laterals related to deliver of water to a headgate for diversion. Therefore, such losses may be accepted as reasonable, not just consumptive crop water use.

OpenET uses an ensemble of satellite-driven models to estimate evapotranspiration (ET). The models currently included are: ALEXI/DisALEXI, eeMETRIC, geeSEBAL, PT-JPL, SIMS, and SEEBop. These models use Landsat satellite data and other sources to calculate ET at a 30-meter by 30-meter spatial resolution.

WestCAT was designed to work with three main user types in mind: Conservation Organizations, Users, and Technical Reviews.

- Conservation Organizations are the funding source for a compensated conservation program and may involve a state agency, interstate commission, or other public or private organization with a desire and means to sponsor a program. The first step in WestCAT is to have these organizations reach out to the WSWC staff and register for the use the WestCAT service. The Conservation Organization will set application rules, sign up criteria, select an OpenET model(s) used for evaluating consumptive use, and set their offered reimbursement dollar amount or range of compensation. They will be the ones that make final decisions and announce award results for participants. A Conservation Organization will have different dashboards and tools available to evaluate and compare proposals. An individual applicant will not have access to information on proposals by other applicants.
- A User (e.g., farmers, ranchers, producers, canal companies, and holder of water rights) is an individual or group of water users that the Conservation Organization has contacted and encouraged to consider participating in the voluntary conservation program. They will use WestCAT to estimate consumptive water use on their fields/lands and consider potential offered compensation for conservation saving, evaluate the savings from selected conservation measures of interest, and submit applications for consideration of an award.
- The Technical Reviewer may be Conservation Organization staff or third-party consultants that check, and review User submitted applications for accuracy and completeness. This includes reviewing boundary measurements for proposed fields, checking OpenET model estimates, and the feasibility of selected conservation practices. Technical Reviewer may coordinate with any additional parties, such as state water rights administration agencies, or those agencies could be

granted access to review applications. A canal company or irrigation district that may hold the water right and distributes water to shareholders, might also be consulted and involved in the review and could possibly imposed restrictions on the amount of land enrolled in a program to protect operational and fiscal interests in the system.

The screenshot displays the 'Water Conservation Estimation Tool' interface. The top navigation bar includes the 'Water Data Exchange (WaDE) Program' logo, the tool name 'Western States Water Data Access and Analysis Tool (WestDAAT)', and a user email 'rjames+applicant@wswc.utah.gov'. A 'Back to Water Right Landing Page' link is on the left.

The main content area is divided into two sections. The left sidebar contains several input fields, each with a question mark icon for help:

- CALCULATED SHAPE AREA FOR ALL IRRIGATED FIELDS:** 0.00 Acres. A note states: 'Note: Polygons must be smaller than 50,000 acres.'
- FUNDING ORGANIZATION:** A text input field.
- OpenET MODEL:** A dropdown menu.
- MAP LAYER:** A selection of map styles (satellite, topographic, etc.).
- ESTIMATED CONSUMPTIVE USE:** A text input field.
- AVERAGE HISTORICAL TOTAL CONSUMPTIVE USE (DEPLETION):** A text input field.
- CONSERVATION ORGANIZATION COMPENSATION RATE:** A text input field.
- DESIRED COMPENSATION (\$):** A text input field.
- CONSERVATION ESTIMATE:** A text input field.

A 'Continue to Application' button is located below these fields. A disclaimer text reads: 'If you own this water right or have legal authority over the use of its water, you may apply to a water conservation program for compensated, temporary, and voluntary measure. Pending verification and approval by appropriate parties.'

The right section, titled 'Estimate consumptive use through OpenET for an irrigated field', provides instructions: 'Click once to begin drawing a polygon around your land by using the shape tool. Then, use the panel on the left to review estimates and potential compensation as part of a voluntary and temporary measure. [How does this work?](#) Or, you can upload a file from your device. [Upload File](#)'.

The main map area shows a satellite view of a field with a blue location pin. A green banner at the top of the map reads 'Estimate Consumptive Use for the Drawn Polygon(s)'. A 'DATA TABLE' button is at the bottom right of the map. The footer includes 'WaDE | WSWC', 'Known Issues', and 'FAQ | Feedback'.

Figure 3: Water Conservation Estimation Tool

WestCAT and WestDAAT 2.0 are now operational (production stage) and future engagement and outreach with potential users, including public and private conservation organizations, state agencies, and others will be scheduled to encourage their use and gather feedback that can be used to further refine the tools.

Appendix A: WaDE Infrastructure

The WaDE 2.0 Data System is a centralized cloud-based system where the WaDE team maps and imports Western States' water data into a SQL Server Database hosted in Microsoft Azure web services. The WaDE database is based on a standardized and scalable data dictionary for water rights, water supply, and water use data in the Western U.S. The WaDE data dictionary has the following seven fundamental metadata elements.

- Water right metadata - priority date, owner name, and permitted diversions by flow or volume
- Sites are the spatial location of a point of diversion or place of use associated with water data
- Variables reported or measured – water source, water use, beneficial use, and units
- Water source types - generally surface or groundwater
- Beneficial use includes agricultural, municipal, industrial, etc.
- Methods used to estimate or model the data value
- Organizations or data providers

WestDAAT 2.0, as a front-end user-friendly tool, is deployed as part of the WaDE system in three independent environments (development, staging and production), which also include the Microsoft SQL Server database, APIs, and the web-browser-based front-end dashboard (i.e., WestDAAT). These separate environments allow the WaDE team to test any changes or data updates before going into the final product. First, the Quality Assurance (QA) or development environment is used to test how the system performs following new design changes using a sample of data. Second, the User Acceptance Testing (UAT) or staging environment is used to test the quality of data and user experience. Finally, the third or Production environment is the live service that is available to users (see Figures A1 & A2).

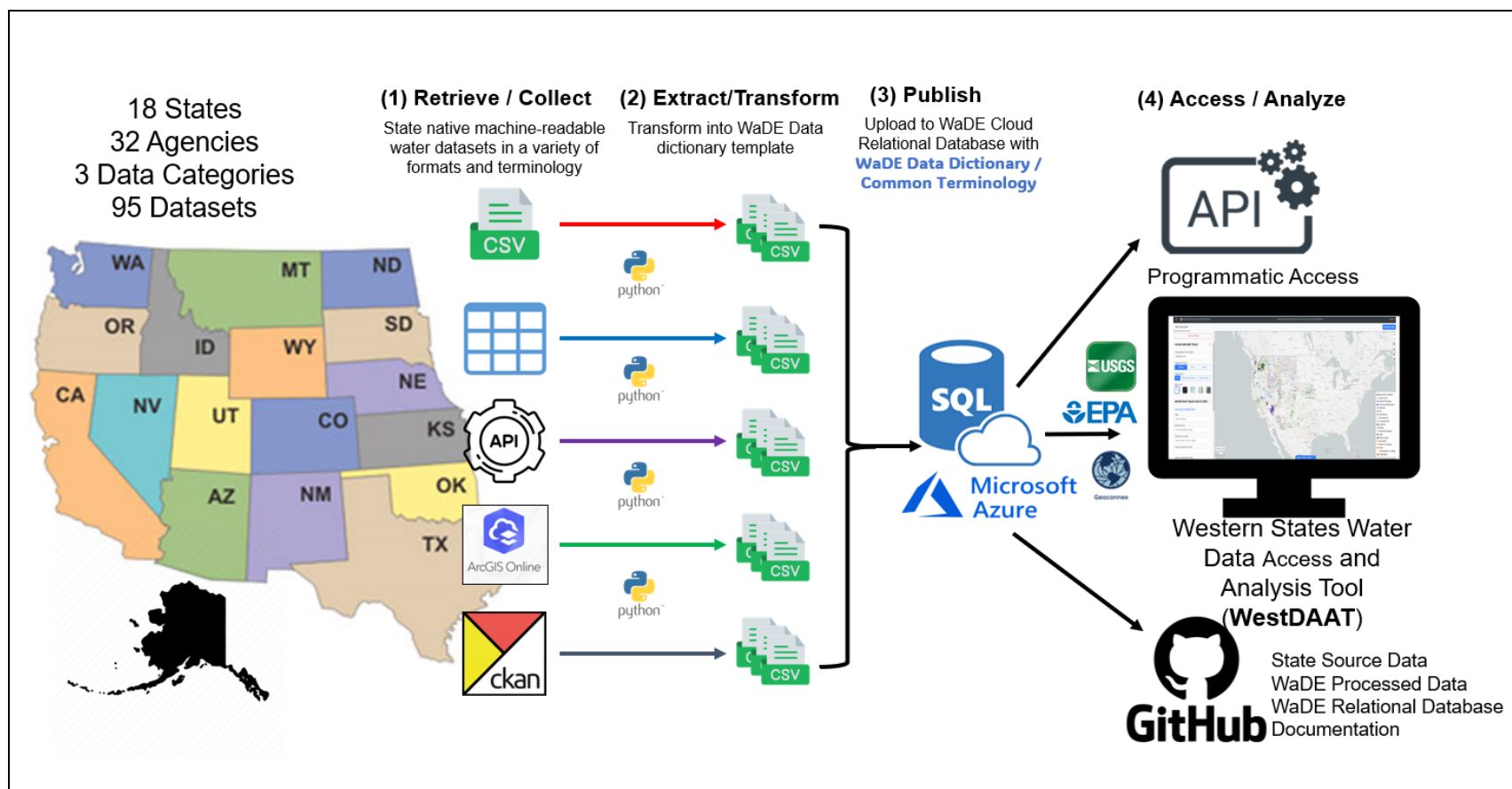


Figure A1: WaDE 2.0 architecture to streamline access to western states water rights, water use, and water supply data as FAIR through a streamlined and standardized service.

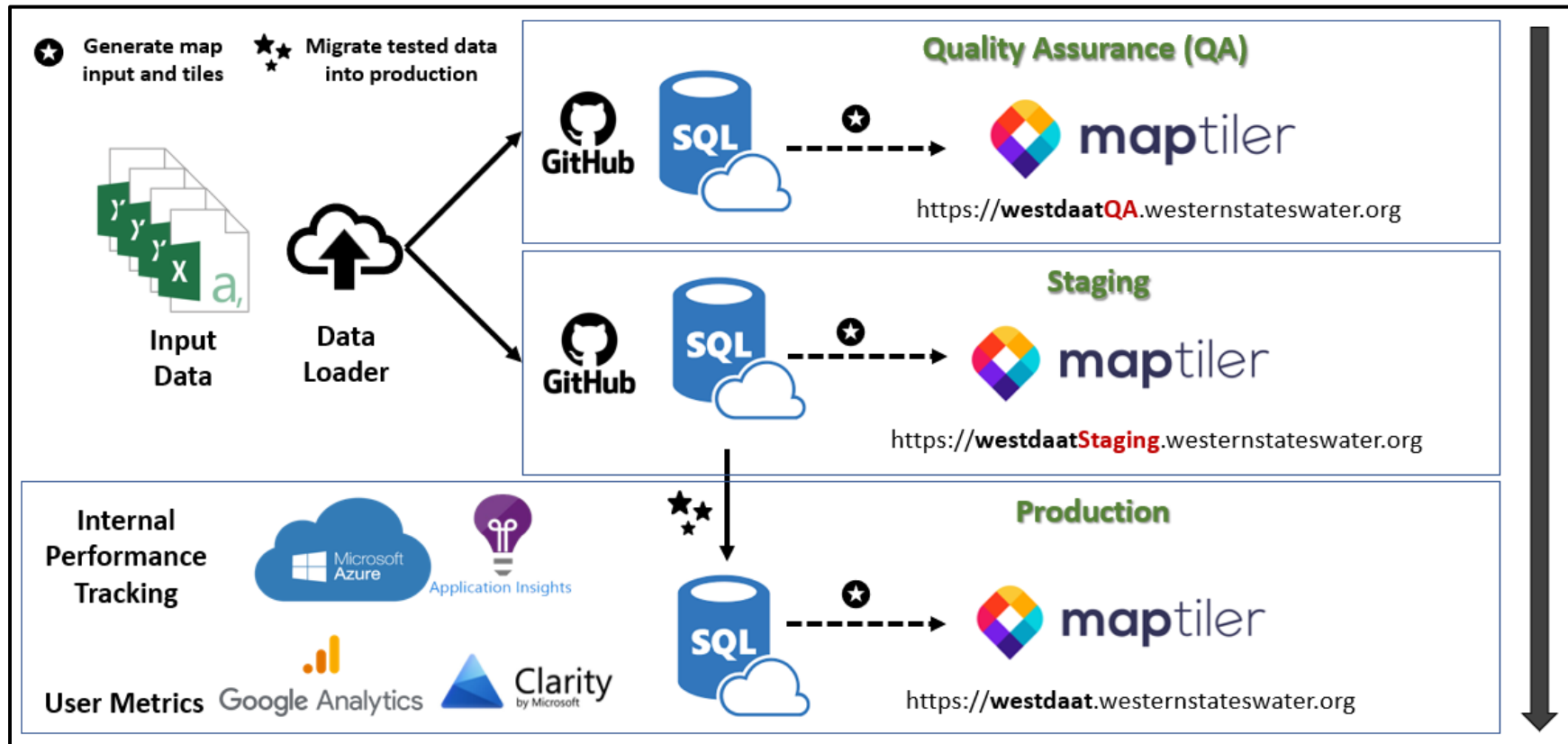


Figure A2: State-of-the-art scalable WaDE Data System based on the best IT practices deployed in three environments: Quality Assurance; Staging; and Production with open-source code tracked in GitHub at <https://github.com/WSWCWaterDataExchange>.

Tab I – Landsat Next Update



WESTERN STATES WATER COUNCIL

682 East Vine Street, Suite 7 / Murray, Utah 84107 / (801) 685-2555 / FAX (801) 685-2559

Web Page: www.westernstateswater.org

June 11, 2025

The Honorable Doug Burgum, Secretary
U.S. Department of the Interior
1849 C Street, NW
Washington, D.C. 20240

Ms. Janet Petro, Acting Administrator
National Atmosphere and Space Administration
300 E Street, SW
Washington, D.C. 20240

Dear Secretary Burgum, and Acting Administrator Petro,

The Western States Water Council (WSWC) is a bi-partisan government entity created by Western Governors in 1965 that represents eighteen states. Our members are appointed by and serve at the pleasure of their respective Governors, advising them on water policy issues. Our mission is to ensure that the West has an adequate, secure, and sustainable supply of water of suitable quality to meet its diverse economic and environmental needs now and in the future.

As we address the results of decades of drought in the West and continuing hydrologic uncertainty, adequately and expeditiously funding preparations for the launch of Landsat Next and its operations is critical. We are particularly concerned that the President's "skinny" budget calls for "...restructuring the gold-plated, two-billion-dollar Landsat Next mission while NASA studies more affordable ways to maintain the continuity of Landsat imagery, which is used by natural resource managers, States, and industry." The delay restructuring would threaten the continuing growth in the use of Landsat data for myriad water and other natural resources-related uses for many high value purposes.

The U.S. Geological Survey contracted for a report on the *Economic Valuation of Landsat and Landsat Next* in 2023, which was delivered on August 30, 2024. The report found the annual direct economic value to public and private users to be \$25 billion in 2023, and well over \$1 billion for indirect benefits. By way of comparison the estimated annual value in 2017 was \$3.45 billion. Landsat data enable monitoring water use, including unmetered irrigation diversions and withdrawals (counting groundwater wells), monitoring water quality and harmful algal blooms, reducing crop insurance fraud and lowering crop flood insurance rates, wildfire management and restoration, as well as the discovery of mineral reserves.

The multi-spectral trio of Landsat Next satellites scheduled for launch in the early 2030s, is estimated to create over \$33 billion in annual economic value from applications related to agriculture, water resources and water quality management, monitoring snowpack and water supplies, mitigating natural disasters, including drought, floods and wildfires, and many more applications. The driving force behind Landsat's dramatic gain in total value is the increase in scene-equivalent imagery accessed by users, estimated at 18.1 million in 2017 and rising to 65.6 million in 2023, through both computer downloads and cloud-based usage. We urge you to maintain funding for Landsat Next as designed, with an early 2030s launch date. The benefit-cost ratio for the Landsat Next program is apparently roughly 1:16.5 – a considerable annual economic return on the federal investment over the life of the mission. Moreover, no other private or public source can replace these benefits now or in the foreseeable future.

The Western Governors Association specifically noted their support for the Nation's Land Imaging Program and Landsat in a June 2024 Policy Resolution on Water Resources Management in the West (2024-07). The WSWC has long been an active advocate for the Landsat program and its thermal infrared (TIR) imaging capability as an increasingly essential tool for measuring, monitoring and managing water use in the western United States. Landsat is the only operational satellite having both thermal data and a spatial resolution fine enough to map and monitor water-resources use at the level of agricultural fields.

Typical applications include mapping irrigated lands, as well as crop type, measuring and monitoring evapotranspiration and consumptive water uses, mapping the extent of surface and groundwater use, allocating and administering rights to the use of water, including approval of water rights transfers and evaluating beneficial consumptive use, facilitating water marketing opportunities, administering negotiated interstate agreements and monitoring interstate compacts, estimating water-use by invasive species, monitoring water and food sustainability and security, forecasting and moderating commodity market fluctuations, as well as helping monitor and evaluate forest health and wildfire risks that directly impact our water resources.

The WSWC and western water community worked hard to secure a place for the TIR imager on both Landsat 8 and Landsat 9, given these aging satellites, accelerating deployment of Landsat Next is urgently needed to guarantee TIR imagery remains available and there are no future data gaps, maintaining data integrity. Uncertainty regarding future data availability is an obstacle to expanding operational water resources conservation, planning, monitoring and management programs and limits the potential future value of the National Land Imaging Program.

We are currently working with the OpenET Coalition to measure and monitor evapo-transpiration as a representation of consumptive agricultural water use. Under a WaterSMART grant, we have developed and are deploying a Western States Water Conservation Application Tool (WestCAT) that integrates OpenET data with our regional Water Data Exchange (WaDE) and Western States Water Data Access and Analysis Tool (WestDAAT 2.0). Together these tools can be used to measure reasonable consumptive use and facilitate voluntary, compensated, water conservation programs promoting leasing and market transfers. The Colorado River Systems Conservation Pilot Program (SCPP) is one example of an effort that could benefit from these new tools. Landsat spectral measurements – both thermal and reflected – are essential for this work. Landsat Next will provide more frequent observations, as well as improved measurement accuracy and quality.

An Aesop's fable comes to mind about the farmer that "killed the goose that laid golden eggs!" Any short-term gain from restructuring Landsat Next will be at the expense of long-term economic and environmental benefits. The WSWC strongly supports Landsat Next and we urge you to give this investment a high priority. Effective and efficient conservation, development, and management of our Nation's water and related land resources depends on it.

Sincerely,

Tony Willardson
Executive Director



LANDSAT NEXT

<https://landsat.gsfc.nasa.gov/satellites/landsat-next/>



Landsat Next: A New & Revolutionary Mission

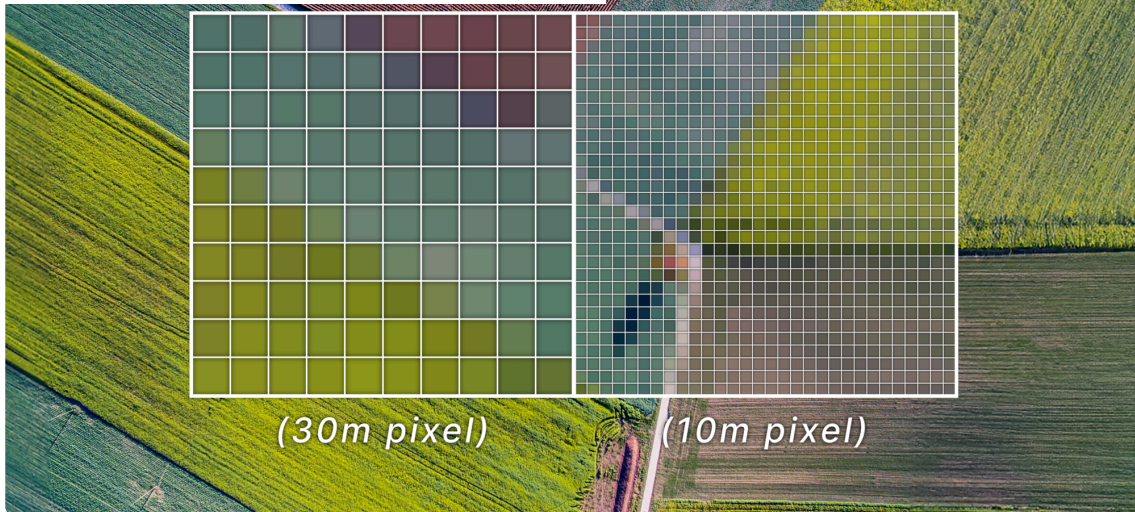
Landsat Next, expected to launch no earlier than 2031, is an innovative Landsat mission that represents a quantum leap in measurement capabilities with improved spatial and spectral resolutions. The mission will satisfy global Landsat data user needs and support evolving and emerging applications, all while maintaining Landsat data continuity and quality of the longest space-based record of Earth's land surface.

QUICK FACTS

- Temporal revisit: Under Review
- Spatial resolution: 10-20 meters (VSWIR), 60 meters (atmospheric VSWIR/TIR)
- Spectral bands: 26 (21 VSWIR, 5 TIR)
- Orbit: Sun-synchronous at 653 km (406 miles)
- Orbital inclination: ~98 degrees
- Equatorial crossing time: 10:10 am $\pm$ 5 minutes
- Global reference grid system: WRS-3
- Scene size: 164 km (102 miles) x 168 km (104 miles)
- Field of view: $\pm$ 7.2 degrees from nadir
- Expected launch date: No earlier than 2031
- Mission design life: 5 years
- Mission Category: 2
- Mission Class: B

Enhanced Spatial Resolutions

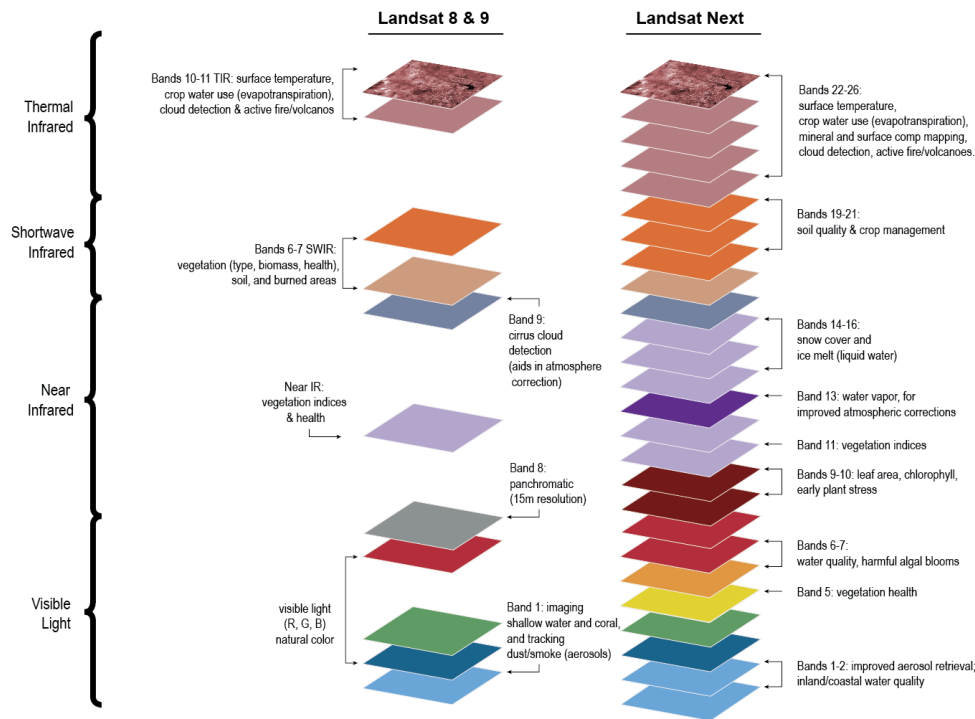
Each satellite observatory will consist of a spacecraft with a Landsat Next Instrument Suite (LandIS) that will collect 21 VSWIR and 5 thermal infrared bands. All bands will have higher spatial resolutions than prior Landsat missions, with ground sample distances of 10 to 20 meters for visible, near infrared, and shortwave infrared bands and 60 meters for atmospheric VSWIR and thermal infrared bands.



Superspectral Observations

Landsat Next will collect 26 bands—15 more than the currently operational Landsat 8 and Landsat 9 missions. The LandIS on each observatory will acquire refined versions of the 11 Landsat “heritage” bands to maintain data continuity, five new bands with similar spatial and spectral characteristics to the European Space Agency’s Copernicus Sentinel-2 mission to allow for improved data synergy and fusion, and 10 new spectral bands to support data user needs and emerging applications. Landsat Next will also have a water vapor band that will provide for atmospheric correction without ancillary data from other satellites.

LandIS will acquire all bands nearly simultaneously. This will minimize illumination change between bands, facilitating both cloud screen detection and products derived from multispectral surface reflectance and thermal emission data (e.g., evapotranspiration).



Spectral comparisons between Landsat 8/9 and Landsat Next. Spectral bands refer to the wavelengths of light that Landsat instruments measure. When an instrument measures a range of wavelengths, it provides details about different features on the ground. Landsat Next will acquire 26 bands, 15 more bands than the two previous satellite observatories. Image credit: NASA Landsat Communications and Public Engagement Team.

Data Quality and Integrity

The historical record of highly calibrated Landsat data has served as a gold standard of global land imaging. Landsat Next will preserve the robust radiometric and geometric accuracy requirements associated with the Landsat program to ensure long-term data consistency and facilitate critical time-series analyses. The radiometric accuracy will be comparable to the signal-to-noise ratios and noise equivalent differential temperatures of Landsat 8 and Landsat 9. The geometric accuracy of previous Landsat missions will match the finer ground sample distances of Landsat Next. Rigorous radiometric and geometric calibration and validation methods will be employed to provide band-to-band and image-to-image registration. Top of atmosphere and surface reflectance data products will be comparable with those from previous Landsat missions.

Landsat for the New Generation

Landsat Next will build upon the Landsat legacy of observing, managing, and adapting to Earth's changing surface, and will provide expanded capabilities to support evolving and emerging user applications. The enhanced spatial resolution and new 26-band superspectral capabilities of Landsat Next will enhance existing Landsat applications and unlock new applications that support:

- Water quality and aquatic health assessments (e.g., harmful algal blooms)
- Crop production and soil conservation (e.g., crop residues and non-photosynthetic vegetation)



Landsat Next will continue the Landsat program's decades-long data record of spaceborne multispectral imagery, which affords global, synoptic, and repetitive coverage of Earth's land surfaces at a scale where natural and human-induced changes can be detected, differentiated, characterized, and monitored over time.

Why Landsat Next?

Landsat Next will help us live sustainably on Earth. Landsat Next will propel us into the next half century of scientific discovery and informed decision making. Long-term Earth observations have become more valuable due to growing populations and increased pressures on resources such as food, water, housing, and energy. Tracking global environmental change and natural resources is important for sustaining human needs in the future.

Landsat Next will provide continuity, improve understanding, and support decision making. Landsat Next will continue to provide an unbiased, freely-available, and continuous record of changes on Earth. The longevity of Landsat's data record enables long-term characterization of environmental changes. Harmonization of Landsat Next data with similar observatories (e.g., Sentinel-2), improving data access through cloud storage and computing, and developing new algorithms will offer the ability for more rapid analyses and decision making.

Landsat Next will result in breakthrough science. New measurements will allow Landsat data users to identify features and patterns that were missed in previous Landsat images due to insufficient spatial or spectral resolutions. This may include features too small to detect (e.g., farm field, deforestation, urban structures) or objects with indistinguishable spectral attributes (e.g., land plants and algal pigments). These scientific discoveries are led by developments in engineering and technology that were not previously available and reflect the overall evolution and improvement in imaging capabilities.

The value of the Landsat program will be magnified with the expanded capabilities of Landsat Next. The new mission will continue to add to the indispensable and extensive data record. It will provide land and ecosystem change data and trending information that would otherwise not be available. With the revolutionary spectral and spatial enhancements, Landsat Next will bestow new capabilities to support evolving and emerging applications, and it will assist land managers and policymakers in making more informed decisions about global, regional, and local natural resources and the environment.

FEATURED STORY

Landsat's Economic Value increases to \$25.6 Billion in 2023

A New Report Details Additional Billions of Indirect Benefits

By [Communications and Publishing](#)

October 9, 2024

A new report about the Landsat satellite program – a partnership between the U.S. Geological Survey and National Aeronautics and Space Administration – calculates its 2023 value at \$25.6 billion—a marked increase from its 2017 estimate of \$3.45 billion.

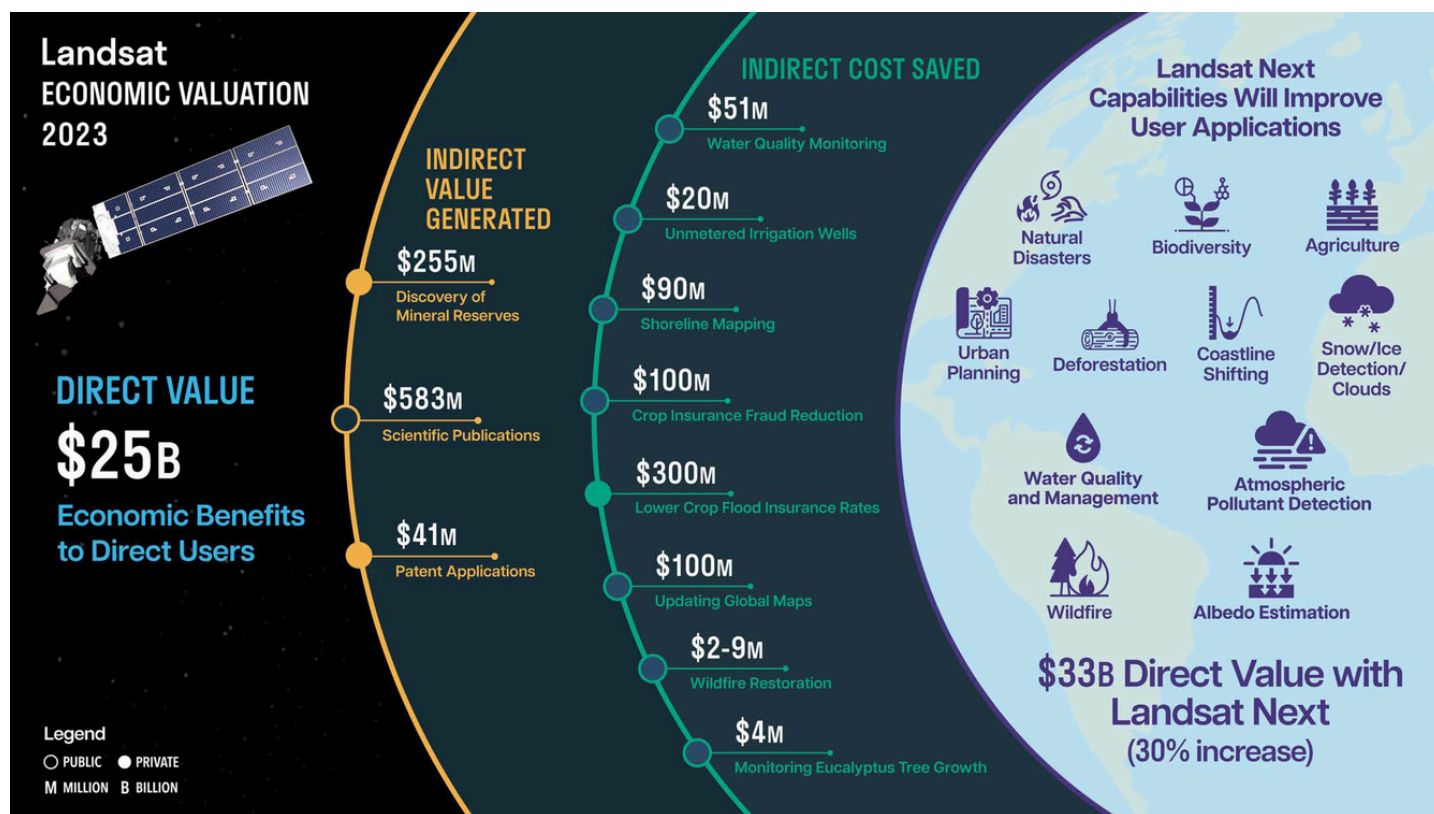
Landsat is the only U.S. satellite system designed and operated to collect essential data on Earth's geologic formations, natural habitats, farmlands, cities, lakes, glaciers, coastlines and other surface features. It provides imagery at landscape-scale resolution that can be used to support efforts to improve environmental sustainability, climate change resiliency, and economic growth – all while expanding an unparalleled record of Earth's changing landscapes.

The “Economic Valuation of Landsat and Landsat Next 2023” study also highlights additional benefits, including more than a billion dollars’ worth of indirect benefits. The report estimates that Landsat Next, the multi-spectral trio of satellites scheduled for launch in early 2030s, could bring in over \$33 billion in annual economic value.

“Our nation’s multi-decadal commitment to the Landsat series of satellites has made—and continues to make—foundational public services and research contributions to the U.S. economy that far exceed their cost,” said Tim Newman, Program Coordinator for the USGS National Land Imaging Program.

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Newman added, “The results of this latest study underscore the urgent need to continue the timely development of Landsat Next—a true national priority. Timely development of this revolutionary new Landsat mission can deliver additional billions of dollars in annual economic benefits, supporting sectors as varied as agriculture, forestry, wildfire response and recovery, and water resource monitoring.”



Sources/Usage: Public Domain. [View Media Details](#)

This infographic is from the report "Economic Valuation of Landsat and Landsat Next 2023," which shows that Landsat's direct value in 2023 was \$25.6 billion. The report and infographic also show well over \$1 billion in estimated indirect economic value.

Direct vs. Indirect Value

The driving force behind Landsat’s dramatic gain in total value is the increase in scene-equivalent imagery accessed by users, estimated at 18.1 million in 2017 and rising to 65.6 million in 2023

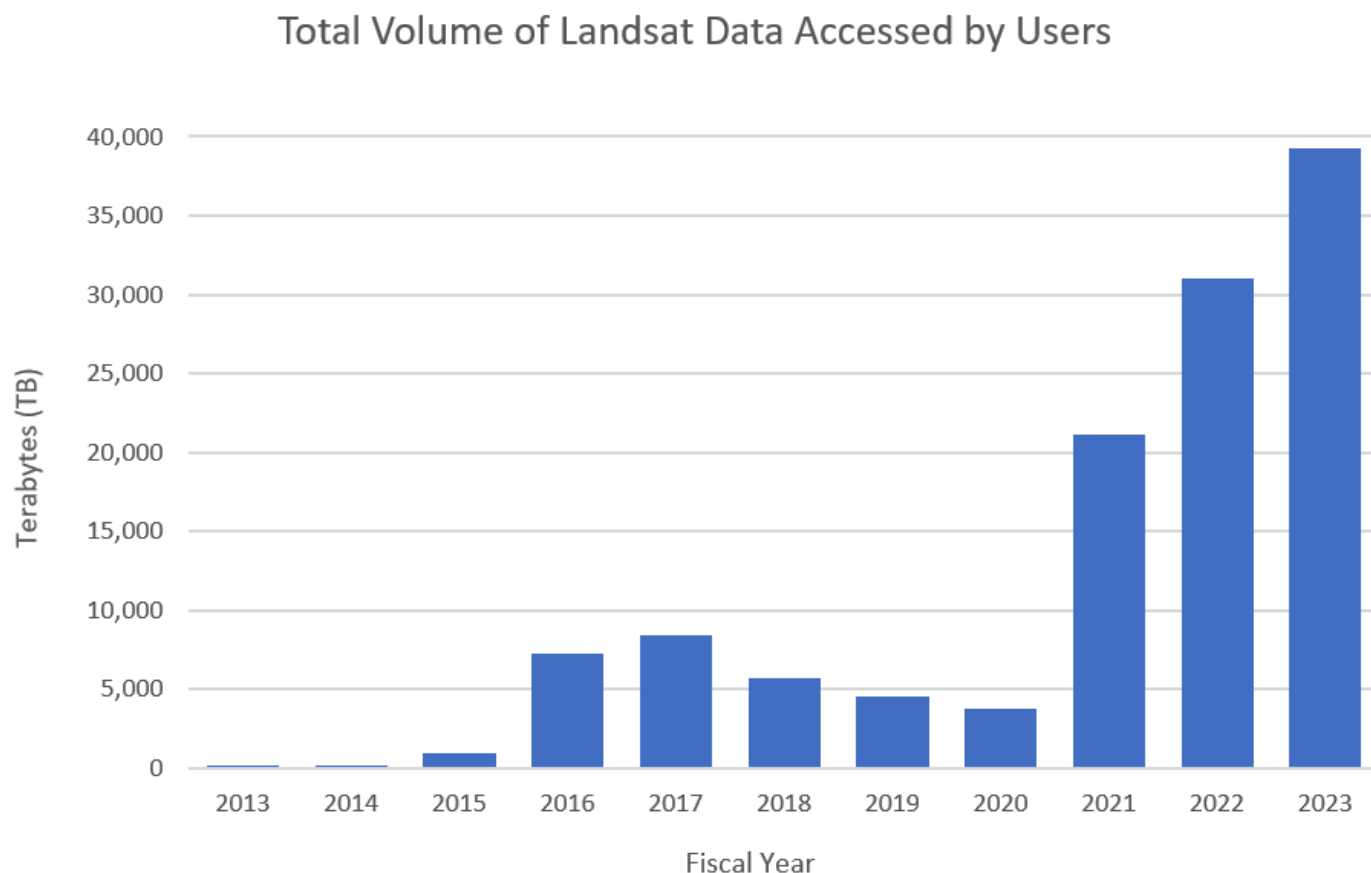
The authors calculated that 65.6 million Landsat scene-equivalents were accessed by users in 2023. This figure was derived by measuring the total volume of Landsat data accessed through both computer downloads and cloud-based usage, and then dividing it by the average size of a Landsat scene.

Using the same methods employed in the 2019 report that evaluated 2017 data, the new study estimated that the cost per scene had increased from \$183–\$203 in 2017 to \$390 in 2023. Despite this rise, the primary reason for the significant jump in Landsat’s overall economic valuation—now estimated at \$25.6 billion—is the increase in Landsat imagery accessed. This direct value was determined by analyzing historical costs per scene, user surveys, current commercial costs for satellite data, and other relevant variables.

Landsat use has continued to increase over the years, thanks to the landmark 2008 decision by the USGS to make Landsat data available at no cost to users. And beginning in late 2020, the availability of Landsat data in the cloud

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further improved access by enabling faster downloads and analysis, reducing latency and increasing availability for users worldwide.



Sources/Usage: Public Domain. [View Media Details](#)

This graph illustrates the annual volume of Landsat data accessed by users, including all data types, collections, and dissemination pathways. Notable increases in data demand occurred in FY2016 with the introduction of Collection 1 and in FY2021 with the start of Collection 2, which marked the transition to cloud-based access, offering enhanced product variety and improved accessibility.

The \$25.6 billion figure does not include the value derived from indirect users accessing Landsat data through commercial, cloud-based, data providers and Geographic Information System providers, and other commercial firms.

Real-World Benefits

To understand the full impact of how Landsat data are used to benefit the United States and the world, the report's authors compiled examples that add up to cost savings of well over a billion dollars.

They also noted that these savings are not necessarily directly related to the researchers or agencies who downloaded the data in the first place. In other words, these examples show the indirect value of Landsat data—what could be called a ripple effect.

Examples of this ripple effect of cost savings and economic efficiencies included the \$41 million in patents that cite Landsat data in their applications and the \$255 million in gold reserves estimated to

data. International uses include \$4 million saved in one area of Brazil by improved monitoring of eucalyptus plantations.

- **Flood Insurance Savings:** The U.S. Department of Agriculture saves \$300 million annually in flood insurance premiums for farmers through better mapping.
- **Water Usage Monitoring:** The Idaho Department of Water Resources saves nearly \$20 million annually by using Landsat to estimate water usage from unmetered wells.
- **Post-Wildfire Restoration:** The U.S. Forest Service and Bureau of Land Management save between \$2 million to \$9 million annually using Landsat for post-wildfire restoration activities.
- **Crop Insurance Fraud Prevention:** Landsat data is used to prevent crop insurance fraud, saving the U.S. government \$100 million annually.
- **Water Quality Monitoring:** Using Landsat to monitor water quality for chlorophyll saves \$51 million annually in lab costs.

In addition, the report details a multitude of Landsat benefits that are difficult to quantify in dollar value. These include measuring carbon emissions, analyzing how wetlands and lakes benefit people, estimating agricultural water use, tracking biodiversity and wildlife, monitoring deforestation, and gauging economic activity and urban growth.

Forecasting Landsat Next Benefits

With advanced capabilities like 10-meter resolution, 26 spectral bands, and a six-day revisit time, the upcoming Landsat Next satellite mission is projected to provide even more value than Landsat 8 and 9.

The study estimated potential benefits across sectors resulting from improved Landsat Next observations to be between \$33.3 billion and \$34.7 billion annually, representing a 30–35 percent increase in value per scene. These figures were based on the number of downloaded scenes from 2023, which came to 65.5 million. Given the 10-year trend of increased use of Landsat data, the total economic value can be expected to grow beyond the nearly \$35 billion.

With these capabilities, Landsat Next will carry the Landsat legacy into the future and continue to support a wide range of industries, from agriculture to urban planning, and provide critical data for addressing some of the world's most pressing challenges, including disaster response and climate change resiliency.

Find the full report at: <https://www.usgs.gov/media/files/economic-valuation-landsat-and-landsat-next-2023>

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Communications and Publishing

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Tab J – Instream Flow Council Training Center



WESTERN STATES WATER COUNCIL

682 East Vine Street, Suite 7/Murray, Utah 84107/(801) 685-2555 / FAX (801) 685-2559

Web Page: www.westernstateswater.org

June 11, 2025

RE: Instream Flow Council/American Fisheries Society Project Steering Committee
National Center for Ecologically Sustainable Water Conservation & Management

The Western States Water Council (WSWC) is a government entity representing eighteen states, with members appointed by their respective governors. The WSWC's mission is to ensure that the West has an adequate, secure, and sustainable supply of water of suitable quality to meet its diverse economic and environmental needs now and in the future.

Water in the West is an increasingly scarce and precious resource. Western States have and will continue to face unique hydrologic, legal and infrastructure challenges. 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. Effectively addressing these challenges requires a knowledgeable and capable workforce trained in sound science and water law and policy.

Western governors recognize the need to align education and workforce training with opportunities for students and workers to secure good jobs and to build a skilled workforce that can support our present and future economic and environmental needs. Access and training related to the use of data on streamflow, snowpack runoff, soil moisture, groundwater levels, evapotranspiration, and water-related forecasts are important aspects of effective water and related resources management, including quantifying needs related to protecting, developing and managing our water and related resources, including fish and wildlife resources.

Western States are primarily responsible for management of water, fish and wildlife resources, which requires balancing public and private interests, rights and responsibilities. Sustainable water resource management and development should yield long term economic growth, enhanced protection and restoration of significant aquatic ecosystems, and improved economic and environmental security and quality of life. The WSWC supports [or] creation of the National Center for Ecologically Sustainable Water Conservation & Management [is consistent with this principle] and [we] look[s] forward to future collaborative efforts to further its purposes.

Sincerely,

Executive Director
Western States Water Council



National Center for Ecologically Sustainable Water Conservation & Management Updates Page

You are here: INSTREAM FLOW COUNCIL > National Center for Ecologically Sustainable Water Conservation & Management Updates Page

IFWLC CENTER* PROJECT UPDATES PAGE (updated April 28, 2025)

*The original Center name: the 'Instream Flow and Water Level Conservation (IFWLC) Training Center' used in the original [Feasibility Assessment Report](#) has been updated to:

National Center for Ecologically Sustainable Water Conservation and Management (Center)

Page Contents:

- [Project Background](#)
- [Letters of Support](#)
- [Published Articles](#)



Center Updates

- [April 2025 Update](#)
- [March 2025 Update](#)
- [February 2025 Update](#)
- [January 2025 Update](#)
- [December 2024 Update](#)
- [November 2024 Update](#)
- [October 2023 Update](#)



Project Background

For nearly two decades, interdisciplinary instream flow related conservation (protection, restoration and enhancement) training, research and development services were provided under the direction of the federal Cooperative Instream Flow Service Group (CIFSG) in Fort Collins, Colorado. After that group ceased to exist in 2001, no equivalent centralized uniform source of instream flow and water level conservation (IFWLC) training and support services has been established.

Many who received training by the CIFSG have subsequently retired or moved to other jobs. As a result, this interdisciplinary water conservation field has been losing a central focus, potentially leading to diminished knowledge, mentorship, and leadership for quantifying the effects of water uses, management, and research on effective conservation of instream flow and water levels on fish, wildlife, and habitat. Collectively these services contributed to achievement of ecologically sustainable water conservation and management (integration of anthropogenic and ecological water uses).

These and related concerns are being addressed by the [Instream Flow Council](#) (IFC) and [American Fisheries Society](#) (AFS) through a Multistate Conservation Grant (MSCG) project to first assess the needs and support for establishing a new IFWLC training, research, and development center (Center), and contingent on positive outcomes of the assessment, develop strategies and pathways forward to establish and operate the Center.

As part of this process, the IFC and AFS established a steering committee (SC)** to execute this project. The SC is comprised of experts representing governmental, non-governmental, academic, and private sectors with extensive experience in integration of the interdisciplinary development, training, and application of IFWLC methods, and who have remained actively involved in water resource allocation issues.

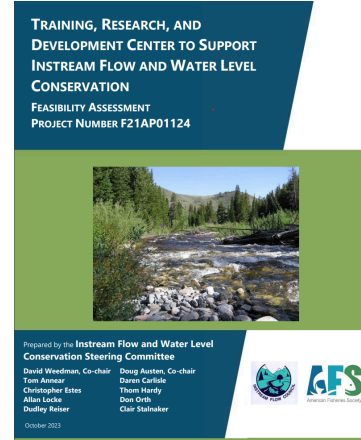
October 2023 Update

Instream Flow and Water Level Conservation Center Feasibility Report Completed

After extensive engagement, the [IFWLC Center Feasibility Assessment Report](#) was completed in October 2023 and established the need, support, strategies, expectations, and pathways forward to develop the Center. This document serves as the guiding document through the next steps of development of the Center.

Citation:

Weedman, D., D. Austen, T. Annear, D. Carlisle, C. Estes, T. Hardy, A. Locke, D. Orth, D. Reiser, and C. Stalnaker. 2023. Training, research, and development center to support instream flow and water level conservation: Feasibility assessment. Multistate Conservation Grant Project Number F21AP01124, Wildlife and Sport Fish Restoration. Instream Flow and Water Level Conservation Steering Committee. [Instream Flow Council](#) and [American Fisheries Society](#). 78 p.



[IFC Home Page](#) | [Center Project Updates-Home Page \(Top of Page\)](#) | [RFIQ Process Page](#)

Last Updated May 6, 2025

Tab G – Draft FY25-26 Committee Work Plan
Water Resources / Executive /
Water Quality / Legal

WATER RESOURCES COMMITTEE
WORK PLAN
July 1, 2025 to June 30, 2026

1. WATER AVAILABILITY & USE - WATER DATA EXCHANGE (WaDE)

Background/Work-to-date: The Council continues to work with member states and federal agencies through the Western States Federal Agency Support Team (WestFAST) to build a robust and performant architecture for accessing and sharing water data – Phase 2. WaDE 2.0 is a cloud-based schema centered around supporting use cases for data queries to support decision making within and across state boundaries. Along with the development of the WaDE 2.0 system, WSWC have been working on connecting publicly available water rights and water use datasets as published by our member state agencies into the WaDE SQL database. WSWC is working towards a user-friendly portal to access, filter, and analyze water rights and water use data.

With WSWC assistance, Member States are developing WaDE-compliant data services that will feed directly into the new WaDE platform. Some eastern states have expressed interest in deploying to the WaDE platform also, with a proto-type completed for New Jersey. WSWC will work with ICWP and through the USGS Water Use Data and Research (WUDR) program to engage states and other entities that wish to serve data in the WaDE platform.

WaDE is collaborating with and seeking to help integrate other national efforts, including the Water Availability and Use Program (WAUSP), which is led by the U.S. Geological Survey (USGS), as well as federal and non-federal open water data initiatives. WaDE supports these efforts by laying the groundwork for exchanging the core state data. The WSWC serves as a foundational hub for the Internet of Water, and promotes related FAIR data standards (Findable, Accessible, Interoperable and Reproducible). Greater interoperability and consistent data standards to facilitate decisionmaking are goals of the program.

The WSWC co-hosted a Water Information Management System (WIMS) workshop with NASA's Western Water Applications Office (WWAO) in 2018 and in September 2019 cohosted a WIMS workshop with USGS. Other events were planned, before meeting and travel restrictions were imposed due to the Covid-19 pandemic. In August 2023, the WSWC hosted a National Water Use Data Workshop in Salt Lake City, Utah.

On April 25, 2023, the WSWC publicly released its Western States Water Data Access and Analysis Tool (WestDAAT) with data for over 1.7 million water rights, including where available, in a machine-readable format, ownership, point of diversion, place of use, purpose of use, and priority date. For the first time, such information was presented in a user-friendly format across state lines. Work continues to add data to the tool, including state time series data related to state streamgages, wells and reservoirs. A significant amount of outreach with various state and federal agencies, and public and private stakeholders was involved in the development and production phases of WestDAAT's release. Such outreach continues.

In June 2025, the Council launched a new service called the Westwide Western Water Conservation Application Tool (WestCAT), which is an extension of the existing WestDAAT tool,

and is a water conservation paper application tracking service to be used to streamline implementation of voluntary compensated, in-state, and temporary water conservation measures. WestCAT integrates two foundational data sets for water conservation: WestDAAT water rights data and evapotranspiration (ET) data as a proxy for consumptive use estimates. WestCAT can be used to help facilitate voluntary, temporary, in-state, and compensated conservation programs which might include full-season fallow, alternative irrigation strategies, and crop switching.

2025-2026: WSWC is working to support specific use cases of the data, including a streamlined, spatially and temporally consistent water budget implementation for selected states. WSWC will also continue assisting participating member states to refine their data, find optimal ways to publish those data that are compatible with WaDE.

The Council will also continue working with member states, USGS, NASA and various federal agencies to gather and disseminate water resources data using WaDE and other resources. The Council continues to discuss with USGS ways of facilitating funding to states for water data through the WUDR program.

The Committee, through the Water Information and Data Subcommittee (WIDS) and various other work groups, will continue to gather information on state water availability and use data and summarize existing state capabilities. Work to help states develop, disseminate, visualize and review data on water availability will continue. The WSWC is seeking resources to maintain current efforts. A number of philanthropic foundations have provided support, as has the U.S. Bureau of Reclamation through its WaterSMART program

The WSWC working with an IT contractor has also completed scoping the effort and resources needed to incorporate OpenET (evapotranspiration data) into WestDAAT in order to tie measurable consumptive use with water rights and field boundaries. Such capabilities would help facilitate efforts to conserve water for various private and public purposes. The WSWC is working with the Upper Colorado River Commission and other interests to help expedite and simplify initiatives such as the UCRC's System Conservation Pilot Program.

Subcommittee: Sam Hermitte (TX), Lisa Williams, Natalie Mast (AZ), Mat Weaver, Linda Davis (ID), Ken Stahr (OR), Julie Cunningham, Kent Wilkins (OK), Gary Darling (CA), Todd Adams, Candice Hasenyager (UT), Lane Letourneau, Ginger Pugh (KS), Nancy Barber (USGS), Allison Danner (USBOR), Dwane Young (USEPA), Forrest Melton (NASA)

Timeframe: Ongoing

2. WESTERN WATER OBSERVING SYSTEMS

Background/Work-to-date: The Council has a long history of working to support federal programs to maintain and improve the observation, measurement, monitoring and management of western water resources and related data, including related Interior, NASA, NOAA and USDA programs (see Positions #522 Oct. 2024; #487 Oct. 2022; and #500 May 2023). Such programs include but are not limited to USGS cooperative streamgaging and groundwater monitoring, NRCS snow survey and water supply forecasting, NASA/USGS Landsat, and EPA water quality

monitoring. These data are important for a number of applications. Some examples include, but are certainly not limited to: (a) state and regional water planning and water rights administration; (b) local watershed and urban planning and development; (c) analyzing water balances and water budgets; (c) siting of electric power generation and other energy production facilities; and (d) enabling a better understanding of the links between energy, water quantity, and water quality.

2025-2026: The WSWC will communicate the critical need for federal water data related programs and will revise and renew its message to better bring attention to water data needs and develop strategies to meet those needs. Consistent reliable future funding will be one major focus. There are a number of items under this functional area. Part of this effort will be to highlight critical measuring and monitoring “tools” for any water management “toolbox,” and communicating their value for enhancing our ability to wisely manage water resources. This includes working with Congress on authorizations and appropriations, as well as with the Administration on budget requests and program implementation.

Subcommittee:

Timeframe: Ongoing

3. SUB-SEASONAL to SEASONAL PRECIPITATION FORECASTING

Work to date: The Council and California Department of Water Resources (CDWR) have entered into a number of agreements to assist with efforts to improve sub-seasonal to seasonal (S2S) forecasting skill (2 weeks to one year). Workshops have been held almost annually since 2015. The Council prepared a report on these meetings and an outreach publication with recommendations to NOAA on improvements regarding sub-seasonal to seasonal precipitation forecasting. Additional information about the S2S workshops may be found here: <https://westernstateswater.org/topical-resources/s2s/>.

In 2020, NOAA released a report to Congress on efforts to improve S2S forecasting, as required by the Weather Research Act of 2017. The report recommended NOAA develop four pilot projects. Since 2022, the WSWC has worked with its members and congressional staff to encourage support for appropriations to initiate work on a western pilot project.

2025-2026: Additional S2S workshops have and will be held, and the Council will otherwise work to support federal efforts to improve our predictive capabilities and skill. The Council will support efforts to acquire sufficient federal appropriations for appropriate programs. The WSWC will also work to promote federal funding to implement the 2017 Act, and the recommended S2S pilot projects in the West.

Subcommittee:

Timeframe: Ongoing

4. RESEARCH to OPERATIONS (R2O)/TECHNOLOGY TRANSFER

Background: Too often promising water resources related discoveries and scientific advances fail to lead to widespread improvements, for a variety of reasons, some technical, but often institutional, financial, economic or political. Research to Operations (R2O) and technology transfer success requires advance planning and effective partnerships that are often lacking. Academic and government research agencies may focus on important basic research, but even applied research organizations are generally not designed and staffed to bridge the so-called “valley of death” between researchers and those entities and individuals that can successfully envision and leverage resources to add value to that research through management, policy and operational changes.

Work to date: In August 2019, in cooperation with NASA’s Western Water Applications Office (WWAO), the Council sponsored a workshop intended to identify and begin to address the challenges inherent in effectively moving research advances towards improvements in water resources management and project operations. The workshop brought together partners from federal and state agencies that have experience with technology transfer, or that have programs that could be adopters of new technology and remotely sensed information products. Next steps were outlined in the workshop summary report.

A second planned WSWC/NASA workshop was postponed due to the pandemic. Future workshops would build upon the insights identified and connections established to: (1) strengthen agency partnerships and continue building an inter-agency community to facilitate R2O in water resource management; (2) develop WSWC’s WestFAST network to help transition new technologies and information products for water resources management to operational federal programs, including, but not limited to, remote sensing-based measurement technologies and sub-seasonal to seasonal (S2S) weather forecasting; and (3) develop a strategy for raising awareness and support within state and federal government agencies for R2O.

2025-2026: The Committee will consider holding another workshop to identify best practices to transfer applied research to operational programs working with western federal, state, and local water agencies and tribes.

5. DROUGHT, NIDIS and EXTREME WEATHER EVENTS

Work to Date: Drought is a recurring natural phenomenon, the effects of which can be minimized through appropriate planning and preparedness activities. The Council has expressed its support for federal applied research and hydroclimate data collection programs to assist water agencies at all levels of government in adapting to weather extremes and climate variability and change (Positions #500 May 2023 and #522 October 2024). The Council also supports development of an improved western observing system for extreme precipitation events and research to better understand hydroclimate processes (Position #483 Aug. 2022). The Council’s Executive Director serves as Co-Chair of the National Integrated Drought Information System (NIDIS) Executive Council with NOAA and USDA.

2025-2026: The Committee will continue working to improve preparedness and response to drought, floods and other extreme events in cooperation with member states, the WGA and

WestFAST. The Council will also continue to support and advise WGA and NOAA with respect to NIDIS, and other weather/climate monitoring and adaptation efforts (including RISAs work). The Council will work to evaluate proposed climate, drought and weather legislation and drought related authorities and programs of federal agencies, and support appropriate authorizing legislation and appropriations.

Subcommittee:

Time Frame: Ongoing

6. GROUNDWATER RECHARGE PROJECT PROGRAMS & POLICIES

Work to Date: The Council has in the past addressed groundwater management programs and policies, including recharge and aquifer storage and recovery projects. The Council prepared a number of reports covering financial feasibility, legal and institutional issues, and water reuse for recharge (1990-2012). Much of the work is now dated, and many changes have taken place.

2025-2026: Working with the Legal Committee and the Council, the Committee will update past reports on state groundwater management programs and especially efforts to promote conjunctive use of surface and groundwater resources through artificial aquifer storage and recovery projects. This may include the use or reuse of waters of impaired quality.

Subcommittee:

Timeframe:

7. WESTERN WATER INFRASTRUCTURE PROJECTS AND PROGRAM FUNDING

Work to date: Many western states face overwhelming infrastructure financing needs, as well as declining budgets for ongoing services. The Council's origins are associated with challenges to augment and better manage the West's water supply, which continues to be a priority. The Council has in the past prepared reports on state water resources programs and project cost sharing and financing and analyzed state water use fees. The Council has also convened symposia and workshops and summarized the proceedings. The Council has compiled summaries of western state infrastructure financing authorities, funding sources, policies and programs. Further, the Council has supported expenditures from the Reclamation Fund for authorized project purposes, including specifically authorized rural water supply projects and authorized projects as part of negotiated Indian water rights settlements.

2025-2026: The Council will continue to call on Congress to ensure that revenues raised from the development of western resources, specifically revenues accruing to the Reclamation Fund, are appropriated and expended as intended for the development and management of western water resources (consistent with Position #501, May 2023). The Council will otherwise support efforts to secure adequate federal funding to meet growing western water demands, and work to develop a strategy to communicate important infrastructure needs. The Council will promote development of public-private partnerships to support this effort. As conditions permit, the Council will sponsor

a symposium on infrastructure needs, strategies, and federal and state programs, under the direction of the Executive Committee, with WestFAST's assistance and in cooperation with other non-federal and federal interests. Regulatory streamlining is also important for water resource projects. The Council will work with the Administration and Congress towards successful water project development. Finally, the Council will provide a summary of western state water financing authorities and programs, as time and resources permit.

Subcommittee:

Time Frame:

8. ENERGY & WATER RESOURCES – INTEGRATED MANAGEMENT

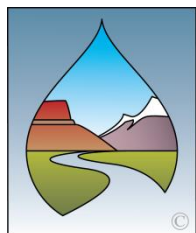
Work to date: The increase in demand for water to meet energy needs is raising interest in the interrelationship between water and power resources, including opportunities to better understand the energy-water nexus and maximize efficiencies. The Council has addressed various aspects of energy issues as they relate to water resources as part of its regular meetings, including the demand for water resources created by new energy development. Hydraulic fracturing has been an issue and long-standing practice with which the states have considerable experience. The use of water produced by energy development has also been discussed. The Council has also urged the Administration and Congress to support Department of Energy hosted energy-water programs conducted at national laboratories (**Position #485, Aug. 2022**). The Council has in the past participated with the Western Electric Coordinating Council (WECC) and related State Provincial Steering Group and Environmental Data Work Group. In 2023, the Council and WestFAST coordinated together to host a pumped storage hydropower webinar series: <https://westernstateswater.org/topical-resources/pumped-storage-hydropower/>

2025-2026: As resources permit, the Council will continue to compile existing information through WaDE addressing water availability and anticipated demands for energy resources development (and the implications for water use in the West). Further, the Council will consider and evaluate any federal legislation and other potential collaborative efforts in addressing energy and water needs, as well as related water quality concerns. The Council will evaluate as appropriate specific energy and water-related issues as they arise, such as hydraulic fracturing, hydropower licensing, pumped hydropower projects, Clean Water Act Section 401 certification, [the growing number of data centers for artificial intelligence](#), and other practices.

Subcommittee:

Timeframe: Ongoing

Tab XYZ – Sunsetting Positions for Fall 2025
Meetings (#486 - #489)



**POSITION
of the
WESTERN STATES WATER COUNCIL
regarding
NASA'S APPLIED SCIENCE RESEARCH PROGRAM
Sulphur, Oklahoma
October 21, 2022**

WHEREAS, the Western States Water Council is a policy advisory body representing eighteen states, and has long been involved in western water conservation, development, protection, and management issues, and the member states and political subdivisions have long been partners in cooperative federal water and climate data collection and analysis programs; and

WHEREAS, in the West, water is a critical, vital resource (much of which originates from mountain snows) and sound decision making demands accurate and timely mapping of, and data on, altimetry, topography, precipitation, temperature, snow water content, groundwater, land use and land cover, water use, water quality parameters, and similar information; and

WHEREAS, the demands for water and related climate data continue to increase along with the West's population, and this information is used by federal, state, tribal, and local government agencies, as well as private entities and individuals to: (1) forecast flood and drought occurrence; (2) project future water supplies for agricultural, municipal, and industrial uses; (3) estimate streamflows for hydropower production, recreation, and environmental purposes; (4) facilitate water management and administration of water rights, decrees, interstate compacts, and international water treaties; (5) assist in disaster response; (6) assess impacts of climate variability and change; and

WHEREAS, thermal infrared imaging data available from Landsat 8 and Landsat 9 is used to measure and monitor agricultural and other outdoor water uses and needs, and is increasingly important for present and future management of our scarce water resources, and is an example of the application of basic science pioneered by the National Aeronautics and Space Administration (NASA); and

WHEREAS, the ability to use interferometric synthetic aperture radar (InSAR) to measure land subsidence due to groundwater extraction has already been demonstrated, and there are promising research approaches for developing a method to directly measure snow depth using Lidar measurements from the Ice, Cloud, and Land Elevation Satellite-2 (ICESat-2);¹ and

WHEREAS, NASA research has enabled operational use of airborne snow observations; and

WHEREAS, additional airborne and spaceborne remote sensing research and observations have a potential to provide other information on varied temporal and spatial scales that could with sustained engagement focus on transition of research to operations and ultimately be useful for water resources planning, management and decision-making; and

WHEREAS, NASA has identified the "water and energy cycle" and "water resources" as topics to support in the agency's research and applications programs respectively; and

WHEREAS, NASA's demonstration project on California applications for use of remote sensing information has illustrated that the potential exists for repurposing data collected from certain present NASA

¹ [NASA Scientist Discovers New Means to Measure Snow Depth from Space | NASA](#)

missions for water management applications, and that additional potential exists for research applications with sensors planned in future Decadal Survey missions such as the NASA-ISRO Synthetic Aperture Radar (NISAR), which is designed to observe and take measurements of the planet's crust and disturbances, including subsidence due to groundwater pumping; and

WHEREAS, the successful transfer of technology from the research domain to the applications domain or research to operations (R2O) is dependent, in part, on on-going communication between researchers and those responsible for resource management and policy decisions and a long-term commitment to maintain such communication.

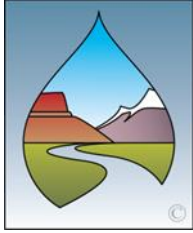
NOW THEREFORE BE IT RESOLVED, that the Western States Water Council urges the Administration and NASA to enhance the agency's focus areas on research for water resources applications, and to promote long-term engagement with the Council and the state and regional agencies in the western United States responsible for water management and water policy to maximize benefits to the public from NASA's existing and future investments in Earth observations, Earth system models and systems engineering.

BE IT FURTHER RESOLVED, that the Council supports efforts to advance linkages between NASA's capabilities and water managers' needs, such as NASA/JPL's Western Water Applications Office (WWAO).

BE IT FURTHER RESOLVED, that the Council urges the Administration and NASA to plan and provide for long-term continuity of observations from key sensors such as the thermal infrared sensor and InSAR used in water management.

BE IT FURTHER RESOLVED, that the Council strongly supports a continuing National Land Imaging Program, including existing thermal imaging capabilities, and expresses its strong support for the expedited approval and construction of the Landsat Next mission – while exploring the potential for medium and longer-term advances in technology, design and future capabilities to meet existing and future uses.

BE IT FURTHER RESOLVED, that the Council supports and strongly encourages interagency cooperation, including collaborative efforts between NASA, NOAA, and USGS to move research towards operational applications that inform and improve State water resources management and decisionmaking.



**POSITION
of the
WESTERN STATES WATER COUNCIL
regarding
THE DEPARTMENT OF THE INTERIOR's WATER SMART PROGRAMS
Sulphur, Oklahoma
October 21, 2022**

WHEREAS, the Western States Water Council is a policy advisory body representing eighteen states, and has long been involved in western water conservation, development, protection, and management issues, and the member states and political subdivisions have long been partners in cooperative federal water programs; and

WHEREAS, in the West, water is a critical, vital resource and “...States bear the primary responsibility and authority for managing the water resources of the United States,” as recognized in the SECURE Water Act¹ ; and

WHEREAS, Western water law and policy are based on the reality of scarcity and the need to use water wisely, and Western states have made great strides in increasing efficiency and reducing water use, but continued investments and sacrifices are needed to maintain our quality of life in the West and to protect our environment; and

WHEREAS, the Act also recognizes that “the Federal Government should support the States, as well as regional, local and tribal governments...” and authorizes a number of important programs to provide this much needed support; and

WHEREAS, the Council supports technical and financial assistance to states and local watershed groups and water districts as an appropriate federal role, consistent with authorized federal programs; and

WHEREAS, the Council has long supported watershed and basin-wide coordination that involves all governmental entities and stakeholders interested in finding solutions to present and future water management challenges; and

WHEREAS, Section 9504 of the Act authorizes the Secretary of the Interior to provide grants or enter into cooperative agreements to assist states and other non-federal entities in carrying out a range of water use efficiency improvements to address crucial water supply issues, stretch limited water supplies, and improve water management; and

WHEREAS, the Act authorizes a variety of activities to enhance the Department of the Interior’s water data efforts with significant progress made on these activities, including the development of a national groundwater monitoring program, a brackish water assessment, and the establishment of a national water availability and use assessment; and

¹ See Section 9501, SECURE Water Act, which Congress passed as Subtitle F of the Omnibus Public Lands Management Act of 2009 (Public Law 111-11).

WHEREAS, real-time water resources data are critical for timely actions in response to droughts, flooding, and other extreme weather events, and the lack of federal capital investments in water data programs has led to the discontinuance, disrepair, or obsolescence of vital equipment needed to maintain existing water data gathering activities; and

WHEREAS, the lack of timely and accurate streamflow information threatens to put human life, health, welfare, property, and environmental and natural resources at a considerably greater risk of loss; and

WHEREAS, the U.S. Geological Survey's (USGS) National Streamflow Information Program (NSIP) facilitates an improved national backbone focused on national needs and interests; and

WHEREAS, the Groundwater and Streamflow Information Program (GWSIP), as well as USGS' cooperative matching funds within the Water Availability and Use Science Program (WAUSP), together provide vital water data that States and other public and private entities and individuals rely on in making day-to-day planning and management decisions; and

WHEREAS, substantial advances in water science, together with emerging breakthroughs in technical and computational capabilities, have led the USGS to develop a Next Generation Water Observing System (NGWOS); and

WHEREAS, USGS provides "grants to State water resource agencies to assist in developing water use and availability datasets" under the Water-Use Data and Research (WUDR) program, in support of the Water Use Data for the Nation publication and the National Water Census; and

WHEREAS, USGS' NSIP, GWSIP, NGWOS, WAUSP, and WUDR programs together provide vital water data that States and other public and private entities and individuals rely on to make day-to-day planning and management decisions; and

WHEREAS, authorization and funding for some of these WaterSMART programs have expired or appropriations have largely been depleted and some have gone unfunded or underfunded or remain dependent on year-to-year appropriations, as opposed to a dedicated line item.

NOW THEREFORE BE IT RESOLVED, that the Western States Water Council expresses our continuing strong support for authorization and implementation of the SECURE Water Act and related programs; and

BE IT FURTHER RESOLVED, that Western States recognize that too often program authorization and appropriations have not kept up with the need, limiting program participation and benefits; and

BE IT FURTHER RESOLVED, that the Council encourages the Administration to request and the Congress to ensure that the Act's authorized activities receive support and appropriations that are adequate to fulfill their stated purposes as a dedicated line item, as well as focus existing resources on these important programs.

Tab K – WSWC Testimony
House Natural Resources Sub. on
Water, Wildlife and Fisheries

**Testimony of the
WESTERN STATES WATER COUNCIL**

**Submitted to the
House Committee on Natural Resources
Water, Wildlife and Fisheries Subcommittee Hearing**

Advancing Federal Water and Hydropower Development: A Stakeholder Perspective

April 30, 2025

My name is Michelle Bushman, and I am the Deputy Director and General Counsel for the Western States Water Council (WSWC), a bi-partisan government entity created by Western Governors in 1965, representing eighteen states. Our members are appointed by and serve at the pleasure of their respective Governors, advising them on water policy issues, working closely with the Western Governors' Association (WGA). Our mission is to ensure that the West has an adequate, secure, and sustainable supply of water of suitable quality to meet its diverse economic and environmental needs now and in the future.

Water is an increasingly scarce and precious resource and should continue to be a public policy priority. Western States have and will continue to face unique hydrologic, legal and infrastructure challenges. Population growth, competing economic and ecological demands, and changing social values have stressed surface and groundwater supplies 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 will require stronger collaboration and cooperation that transcends political and geographic boundaries between states, federal agencies, tribes, and local communities.

State Water Authority

Western states have primary authority and responsibility for the appropriation, allocation, development, conservation and protection of water resources, both groundwater and surface water, including protection of water quality, instream flows and aquatic species, while acknowledging international treaties, interstate agreements, and judicial decrees. States are primarily responsible and accountable for their own water development, management, and protection challenges, and are in the best position to identify, evaluate, and prioritize their needs and plan and implement strategies to meet those needs. Each Western State has developed comprehensive systems for the appropriation, use and distribution of water tailored to its unique physiographic, hydrologic and climatic conditions found within that state.

Congress has historically deferred to state water law as embodied in Section 8 of the Reclamation Act, Section 10 of the Federal Power Act, Section 101(g) and 101(b) of the Clean Water Act, and myriad other statutes. Federal deference to state water law is based on sound principles for the protection of private property rights and the collective public interest in

managing our water resources and the environment. Western states value their partnerships with federal agencies as they operate under this established legal framework.

Federal water planning, policy development, regulation, protection, and management must recognize, defer to, and support state water laws, plans, policies, programs, water rights administration, adjudication and regulation, compacts and settlements. Rather than attempt to dictate water policy, the federal government should engage states early in meaningful consultation and contribute funding to support implementation of state water planning and management, thus avoiding, or at least minimizing, the need for federal regulatory mandates.

Hydropower

The WSWC has long supported federal legislative and administrative actions to authorize and implement reasonable hydropower projects and programs that enhance our electric generation capacity and promote economic development, through efficient permitting processes, while appropriately protecting environmental resources and respecting States' Clean Water Act §401 certification authority, States' authority over water allocation within their borders, the obligations of interstate compacts, and the rights and preferences of existing water and power users.

Hydropower is a clean, efficient source of energy that is a vital part of meeting our present and future energy demands. It represents about 27% of total renewable electricity generation, with approximately 103.4 gigawatts of capacity and nearly 5.7% of total electricity generation. The potential exists for further public and private development of hydropower, including upgrading existing generators, developing small hydro and the power potential from low-head hydro on existing man-made conduits and canals, development of tidal power energy systems, as well as hydroelectric pumped storage projects. Aside from projects requiring review by the Federal Regulatory Commission (FERC), such development can often be undertaken with little impact on environmental and ecological resources, requiring minimal further environmental review. Permitting requirements may be appropriately minimized and streamlined to promote reasonable development while avoiding unnecessary costs.

WSWC supports the development and implementation of appropriate energy and water conservation programs at all levels to minimize demands placed on our natural resources and ecosystems.

Energy-Water Nexus

The West enjoys diverse and abundant renewable and non-renewable energy resources. Water is often a necessary component of energy development and production, which can present significant challenges in States where water resources are already scarce. Similarly, water management can be energy intensive, including the extraction or movement of water, or desalination, recycling, and reuse of water resources. An integrated approach to water and energy resource planning, development, diversification, management and protection is necessary to achieve a thriving and sustainable future for the West. This includes integrating water and energy policies to maximize effectiveness and efficiencies; supporting research and gathering data to improve our understanding of water-energy supplies and demands; ensuring that decisions related to the siting, construction, and operation of water and energy development projects include an

evaluation and appropriate consideration of the interrelated impacts of such development; and that the use of alternative cooling technologies or other energy-related options are tailored to the availability of water and the related opportunity costs of other water uses.

Reclamation Fund

Under the Reclamation Act of 1902, the Reclamation Fund was envisioned as the principal means for financing federal western water and power projects with revenues from western resources. Reclamation Fund receipts are largely derived from water and power sales, project repayments, and receipts from public land sales and leases, as well as oil and mineral leasing and related royalties, from western lands adjacent to rural and tribal communities. The unobligated balance of the Reclamation Fund continues to grow and is expected to exceed \$25.2B. However, these receipts are only available for expenditure pursuant to annual appropriation acts, and the fund receipts are mostly spent elsewhere contrary to Congress' original intent.

WSWC recommends that Congress investigate the advantages of converting the Reclamation Fund from a special account to a true revolving trust fund with annual receipts to be appropriated for authorized purposes in the year following their deposit (similar to some other federal authorities and trust accounts).

WestFAST

The Western States Federal Agency Support Team (WestFAST) was formally organized in 2008 in response to the Western Governors' Association's recommendation to facilitate correlation of federal activities and to develop and enhance collaborative partnerships among state and federal agencies working on priority water-resource issues. Today, WestFAST is a collaboration of more than sixteen federal agencies with water management responsibilities in the West.

WestFAST works closely with the Western States Water Council striving to accomplish effective cooperation among western states, and their partners, in the understanding, conservation, development and management of water resources. The WestFAST federal agencies form a dynamic, flexible team that provides the opportunity for interaction initiated by WSWC, individual states, or the federal government. WestFAST supports a continued commitment on the part of federal and state organizations to work with local, tribal, and other stakeholders to improve the effectiveness of collaboration and seek solutions to water issues across Western States. Federal layoffs, massive staff reductions, and the closure of local federal agency offices across the West, have created uncertainty about the future of federal support for water management and related disaster mitigation.

Water Data

All levels of government must prioritize the collection, analysis and open sharing of reliable data regarding water availability, quality, and usage given its importance to research for sound science and data driven decisionmaking. This includes actions related to hydropower development and Forecast Informed Reservoir Operations (FIRO). Sound decisionmaking for

water resource management requires accurate and timely data on precipitation, streamflow, evapotranspiration, soil moisture, snow depth, snow water content, droughts, and water quality. In addition to state, tribal, and local data, many federal programs provide critical data.

For example, the U.S. Geological Survey's (USGS) Groundwater and Streamflow Information Program (GWSIP) and National Streamflow Network provide data on water supply availability and water levels. Landsat thermal data is archived and distributed by the USGS. The former National Hydrography Dataset (NHD) and 3D Hydrography Program (3DHP) provide map locations of water features and streamgages. The National Water Information System (NWIS) provides surface water data.

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) provides water supply data through the Snow Survey and Water Supply Forecasting Program, based primarily on data from SNOTEL weather stations that measure snowpack through winter and early spring. The National Water and Climate Center (NWCC) provides soil moisture data through the Soil and Climate Analysis Network (SCAN). The USDA's National Agriculture Imagery Program (NAIP) is used in water right transactions (e.g., water right transfers, instream leases) to confirm or support assertions of beneficial use of water on subject lands.

The National Atmospheric and Space Administration (NASA) and its water-related missions provide remotely-sensed data, and WGA has specifically expressed support for the Landsat program and its use of thermal infrared imagery for monitoring water use.

The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service, Climate Programs Office, Office of Atmospheric Research (OAR), National Environmental Satellite Data and Information Service (NESDIS), National Centers for Environmental Information (NCEI), and National Integrated Drought Information System (NIDIS), another program specifically supported by WGA, all conduct research and provide forecasting data, supporting water management and preparation for the extremes of drought and flooding.

The Bureau of Reclamation's (USBR) Agrimet system is an agricultural weather station network that collects site-specific data that, among other things, is often used to ground truth and calibrate remotely sensed satellite data. It also provides data for improving agricultural water planning and water use efficiency, conserving water, improving crop yields, reducing pesticide and fertilizer application, and reducing energy costs for growers.

The Environmental Protection Agency's National Environmental Information Exchange Network (NEIEN) facilitates environmental data sharing among state, federal, tribal, and local governments to improve timeliness for decisionmaking.

Many of these programs operate very efficiently on lean budgets, yielding public safety and water supply benefits much greater than the cost of their operation. WSWC recently asked our Western states how they are using some of these federal datasets. While not all of these responses will be specifically relevant to this Subcommittee, nor is this an exhaustive list, the complexity of the responses below underscores the many critical roles that federal data play in water management

across the West:

California has a long history of collecting its own data to meet its water needs, and also relies on federal data to make informed water infrastructure operations and management decisions. California's State Water Project and Reclamation's Central Valley Project, the two largest water projects in California, rely on a mix of state and federally collected and served water and weather data to support project operations, including hydropower generation. The NWS California-Nevada River Forecast Center has been co-located with CDWR's State Flood Operations Center for decades, and the two entities partner closely in flood forecasting and flood emergency operations. State and local agencies use USGS streamflow and groundwater level measurements for water project operations, water rights compliance, and groundwater management. Following the 2016 Open and Transparent Water Data Act, California's Department of Water Resources (CDWR) created an integrated water data platform, which includes water and ecological data related to California water supply and management and collected or held by USBR, USGS, NOAA, U.S. Forest Service, and the U.S. Fish and Wildlife Service. NWS watches and warnings support emergency responders in preparing to issue evacuation warnings and orders, such as the high wind and extreme fire risk warnings leading up to and through the recent 2025 LA fires, and the 2023 flood warnings during the atmospheric river events prior to the breach of levees on the Pajaro River.

Colorado's Water Conservation Board uses NRCS SNOTEL and streamgage data to conserve, develop, protect, and manage Colorado's water. Many federal data programs are even more beneficial in the long term (decadal scale) as they provide robust statistical information through variable climate conditions. Discontinuing these data programs can disrupt the long-term benefits.

Kansas uses USGS streamgage data for water rights administration, and reservoir data for reservoir operations. Landsat and OpenET data provide information for irrigated acreage analysis. They use USGS Real Time Water Quality Sensors to monitor ambient water quality and for tracking plumes and relating pollutant levels to stream flows. USACE and USBR reservoir data enables them to manage reservoir release decisions for mitigating instream water quality impacts from harmful algal blooms (HABs). USACE reservoir data provides information on drought or low flow operations and informs interstate water compact compliance. USACE Missouri River data and projections help determine the impacts to Kansas reservoir operations. USACE water quality data supplement state data for TMDL analysis and development. EPA water quality data supplements state data for water quality planning and evaluation. The NOAA-NIDIS drought monitor is used to determine gubernatorial declarations of drought emergencies. The USDA Risk Management Agency (RMA) supports the PRISM project that Kansas uses to update the Republican River Compact Administration groundwater model, and to do other historical analyses with its gridded precipitation and temperature data.

Idaho's Department of Water Resources relies extensively on the USGS stream gaging program for water resource management, to carry out the priority administration of surface water (Snake River, Bear River, Big Lost River, Big Wood River, Payette River, and Upper Salmon River), for dam operations (Priest Lake Outlet), and to ensure compliance with interstate compacts (Upper Snake and Bear River) and tribal water rights settlements (Nez Perce and Shoshone-

Bannock). Idaho also relies on the USGS Landsat program for the remote sensing of evapotranspiration data across the Snake River Plain and tributary basins. Landsat data is used to map irrigated lands and to calculate data needed both annually and in real-time to carry out conjunctive surface and groundwater administration; to calibrate and validate groundwater models; to evaluate and approve new water appropriations via permitting, licensing, transfers, and water supply bank transactions; and to recommend historical water use in adjudication processes. Idaho relies on NRCS SNOTEL data for water supply forecasting, tracking the state's water resources, and informing management decisions. These data allow IDWR and water users to plan for potential water shortages. SNOTEL forecasts allow Idaho to maintain statutorily prescribed water levels in Priest Lake, and to determine whether summer flows will meet the hydropower minimum streamflow requirements in the Swan Falls Settlement Agreement. The Idaho NRCS office manages 119 of the 900 national SNOTEL sites. The NRCS State Snow offices have 27 of 71 positions vacant, and the Idaho office has 4 of 10 positions vacant due to recent federal terminations, threatening SNOTEL network maintenance and forecasting capabilities.

Montana's Department of Natural Resources and Conservation relies on several federal water datasets to actively manage the water resources. As a headwaters state, Montana relies heavily on streamgage data, SNOTEL data, and weather data that are used daily during the winter and spring to forecast anticipated runoff and water availability for their state reservoir management, flood risk assessment, and water compact agreements including international, interstate, tribal and federal compacts.

New Mexico heavily relies on water data developed by or in consultation with federal agencies for several different purposes collaboratively integrates several sources of federal and non-federal water data under the authority of New Mexico's Water Data Act, NMSA 72-4B-1, et seq.. New Mexico and other states rely on federal water data to track reservoir levels, gauging and stream flow measurements, and forecasts for water management operations in intrastate and interstate basins. For example, in connection with the current severe drought conditions, New Mexico has utilized the NRCS monthly SNOTEL data and current and historic precipitation data, NOAA monthly soil moisture measurements, NIDIS interactive drought maps, and the U.S. Drought Monitor, and Climate Assessment for the Southwest (CLIMAS), an interdisciplinary NOAA program that is a collaboration between the University of Arizona and New Mexico State University. Federal water data is also useful in connection with implementation of the technical elements of interstate and Indian Water Rights Settlement Agreements. Federal water data also has been utilized recently in New Mexico in connection with coordinated responses across several agencies to flooding and channel capacity constraints.

In Nevada, the NRCS water supply forecasts, based primarily on SNOTEL data, are the principal indicator used by irrigators in the Walker River Basin to set pumping thresholds to prevent chronic groundwater depletions. Such local efforts to manage groundwater use for the benefit of the community helps prevent the need for state-mandated curtailments of water rights by priority date. During record-breaking precipitation in the winter and spring of 2023, Nevada relied on those monthly forecasts to notify dam owners of potential runoff volumes that could exceed dam spillway capacity. They relied on NOAA weather predictions to determine flood control reservoir releases during a near-failure event at the Echo Canyon Dam in 2023; two of the three subsurface grade check structures in the downstream outlet channel were breached by

headcutting, and the third and final structure held up. USDA's RMA PRISM Climate Data is an extremely valuable gridded geodatabase to estimate climate parameters in the many remote regions of Nevada where there is little ground-based weather data. It is commonly used for hydrologic modeling to estimate water budgets and groundwater availability. They widely rely on the U.S. Drought Monitor to gauge drought severity, which is easily communicated and often drives water conservation efforts at the local level.

North Dakota relies heavily on precipitation data provided through NOAA and NRCS. NOAA's Atlas 14 program was a gargantuan shift on the understanding of precipitation patterns and statistical probability of those patterns. The recent development of Atlas 15, a spatially continuous national precipitation frequency atlas, is expected to be an equivalent leap forward in understanding when, where, and how much precipitation is to be expected. NRCS precipitation distribution publications, such as Technical Papers 40 (1961) and 49 (1964) (then-U.S. Soil Conservation Service) help in the construction of water-related infrastructure. Data from Atlas 15 will help North Dakota to ensure that its water infrastructure projects are designed accurately and efficiently, making the most efficient use of taxpayer dollars.

Oregon uses federal data for almost all major functions for characterizing and managing surface and groundwater, including water distribution, forecasting, monitoring, modeling, allocation, regulation, management, public safety, water right transactions (permits, transfers, evidence of beneficial use, forfeiture of non-use), reservoir monitoring, basin studies, municipal water supply planning, agricultural water supply needs, and meeting the needs of ESA-listed aquatic species. Data include USGS NWIS groundwater monitoring network, streamgage network, water chemistry, and maps; USBR Hydromet and Agrimet; U.S. Fish and Wildlife Service threatened and endangered aquatic species lists; NOAA precipitation data; USDA soil surveys, NRCS snow surveys, CREP-enrolled lands, and Ag Census.

South Dakota's Department of Agriculture and Natural Resources relies heavily on USGS stream flow, Mesonet datasets, and other USGS and NOAA publications when investigating water right or water quality permit applications. These data are also used during droughts, floods, responding to pollution spill situations, and to verify hydrologic modeling for dam spillway sizing. On the water quality side, streamflow gages are critical in determining allowable pollutant discharges. Federal water chemistry data impact water quality permit decisions. Mesonet data help inform their beneficial use analysis of waterbodies. On the water resources side, streamflow data informs decisions about bypass requirements and water shut off orders. The state dam safety program is waiting for NOAA to complete its updated probable maximum precipitation (PMP) study (last completed in the 1970s) to provide updated numbers for designing and rehabilitating dams. NOAA's Atlas 15 is needed to update the National Precipitation Frequency Standards for designing infrastructure to the best available information and current storm data.

Utah's Department of Natural Resources relies heavily on USGS streamgages for accurate real-time flow measurements and historical data that inform decisions about diversions, withdrawals and compliance for the fair and transparent allocation of water rights. Streamflow data help optimize reservoir operations, groundwater management, and other water projects. This can lead to more efficient water use, reduced conflicts, and better environmental outcomes. Accurate data allows for complex Great Salt Lake management, from flow modeling to salinity

forecasting. Streamgage data supports early warning systems and informs emergency response strategies. Having access to near real-time conditions aids in flood forecasting, drought planning, informing agricultural decisions, minimizing risks to communities and infrastructure, and supports recreational and ecological needs. Historical records enable trend analysis, helping detect changes in flow regimes over time, which helps with modeling and state planning efforts. Such insights guide policy development, water resources planning, and future infrastructure investments.

Washington's Department of Ecology relies on NOAA and USGS flood forecasts for predicting peak flood elevations, severity, and inundation areas days in advance, which helps identify potential road closures or evacuations before flood events occur. NOAA's precipitation gauges and cameras in wildfire-affected areas help monitor and predict post-wildfire debris flows and flood risks, improving responses and mitigation efforts. The staff of NRCS's regional Snow Survey and Water Supply Forecasting Program has been decimated – only 5 of 12 staff remain to cover both Washington and Oregon, and the northwest SNOTEL system will not be maintained without sufficient staff, and is expected to fail as soon as this summer. The U.S. General Services Administration has proposed cancelling the lease for the NRCS facility that houses the SNOTEL equipment, and listed the vehicles and supplies used to maintain the monitoring network as potentially being put up for sale as soon as June. Without snowpack data, Ecology will not be able to accurately forecast water supplies, and may not be able to issue timely drought declarations. This means that farmers and water managers will not be able to plan for and mitigate drought impacts. The Bureau of Reclamation's determinations regarding Yakima basin water allocation rely on NRCS data. Ecology's Office of Chehalis Basin noted that without the integrated federal system for collecting, analyzing, and reporting data, every aspect of the work they do and fund would be impaired or impossible. Their Flood Warning System relies on a combination of federal, state, and local funding to build, upgrade, and maintain the system. The system includes data from USGS gages, NOAA's GOES satellite system, NWS weather forecasts, and NOAA's River Forecast Center – all of those elements need to be working and communicating with one another for the flood warning system to operate. The system provided thousands of residents with advance notice of a major flood event in 2022, enabling them to protect lives and property. NIDIS is the sole source of collaboration between Washington and other states on drought response and resilience. The NIDIS data analysis is in a format that is accessible to the public and allows Ecology and other water managers to evaluate drought conditions, including the impacts on irrigation districts in the Yakima Basin. Ecology is concerned about proposed cuts to OAR where NIDIS is housed; the data collected and analyzed there is critical to their understanding of and forecasts for seasonal climate trends, including drought. USGS gages and historical weather data are essential in creating and operating the hydrologic and hydraulic models used for reducing flood damage and protecting aquatic species, and to assess the potential impact of future infrastructure and conveyance improvements.

Data and forecasting provide early warning that can help water and power suppliers, communities, and businesses to take action to mitigate loss of life, property damage, and economic impacts. Examples of recent billion-dollar disasters in the West include: flooding and mudslides, severe weather and wildfires (2023); extensive West and Midwest drought, heatwave, and wildfires, as well as severe Central weather and North Central and South Central hail (2022); Western drought, heatwave and wildfires, with California flooding, as well as Central and South Central severe storms and cold wave (2021); continued drought, heatwave, wildfires, as well as

severe storms and hail (2020); Missouri River and northern Great Plains flooding (2019); Colorado hail storms (multiple years), drought in the southern Great Plains (2018); California and Nevada flooding (2017); severe multi-year drought in California and much of the West (2012-16); Texas and Oklahoma flooding (2015); and flooding in Texas resulting from Hurricane Harvey (2017); drought across the southern Great Plains (2011); Missouri River and northern Great Plains flooding (2011). Such disasters are not isolated occurrences in the West and are likely to continue.

Water agencies depend on NOAA forecasting to be the early warning for extreme weather events. Unfortunately, the skill of NOAA precipitation forecasting is poor more than a week in advance. Reliable forecasts with longer lead times would allow water managers to operate infrastructure more efficiently and allocate resources to mitigate and manage impacts. WSWC urges Congress to prioritize the needed research funding to improve precipitation forecasting at subseasonal to seasonal (S2S) lead times. Public Law 115-25 directed NOAA to improve its S2S forecasts and to submit a report to Congress with recommendation for doing so. NOAA submitted its report in 2020 but has not taken action on its recommended pilot projects for water management and agriculture.

Western water agencies also rely on streamflow water supply products produced by NOAA's three western River Forecast Centers. The services the river forecast centers provide to federal, state, and local reservoir operators in the West are unique to the West; NOAA's National Water Center in Tuscaloosa does not have the capability to prepare water supply forecasts. WSWC urges Congress to require NOAA to keep the centers operational and to continue providing the water supply products used by federal, state, and local agencies, including the critical modeling needed to support Colorado River water and power operations.

WSWC urges Congress to prioritize the appropriation of sufficient funds to maintain, modernize, expand, and improve these federal data programs, ensuring that they remain accessible to a growing and diffuse number of decisionmakers and stakeholders. The erosion or loss of these programs and the disruption of data may have significantly adverse consequence for our economic and environmental future.

WSWC further urges Congress to invest in additional research and data sharing to help resolve state and regional water problems, including support for water resources research institutes and the Water Resources Research Act program, transitioning from research to operations and technology transfers, forecast informed reservoir operations, hydroclimate data collection, and seasonal to subseasonal forecasting.

Water Infrastructure

A secure and sustainable water future will be determined by our ability to maintain, replace, expand and make the most efficient use of critical water infrastructure. We must preserve and improve existing infrastructure, as well as encourage and support innovative water supply strategies and new storage options to better balance supplies with demands.

The West depends on an intricate and aging system of weirs, diversions, dams, reservoirs, pipelines, aqueducts, pumps, canals, laterals, drains, levees, wells, stormwater channels, and water

and wastewater treatment and hydroelectric power plants. These systems are financed and maintained under a complex network of state, tribal, local, private, and federal ownership, benefitting a broad segment of water users and other stakeholders.

Aging federal water infrastructure has deteriorated due to underfunded and deferred maintenance, repair, and replacement needs. In many cases, this infrastructure had exceeded its designed lifespan, raising public safety issues. Other authorized federal infrastructure projects have not been started or remain incomplete for decades due to inconsistent, incremental, or insufficient appropriations; permitting and licensing backlogs; and oversight by multiple federal agencies with inadequate interagency coordination.

Maintaining and delivering sufficient supplies of water of suitable quality is key to maintaining the West's economic prosperity, meeting our environmental needs, and sustaining our quality of life, both now and in the future. Appropriate water-related infrastructure investments ensure our continued ability to store, manage, conserve, and control water during both floods and droughts, as well as protect and treat our water resources. Existing and new infrastructure is critical to meet drinking water, wastewater treatment, irrigation, hydropower, flood control, interstate compact, tribal and international treaty, fish and wildlife habitat needs.

The WSWC supports collaboration and leadership at all levels of government and within the private sector to address the nation's infrastructure needs, including hydropower. WSWC urges Congress to work with the Administration to ensure adequate appropriations for constructing, maintaining, and replacing critical federal water projects and to assist states and local governments as they address their water infrastructure needs. The WSWC encourages Congress to work with the Administration and with States to streamline permitting processes and coordinate environmental and other regulatory reviews to eliminate duplicative procedures. WSWC urges Congress further to develop a method of budget scoring that considers the unique timing of the costs and benefits of water infrastructure investments and accounts for long-term public health and safety, economic and environmental benefits, with fair and appropriated discounting.

Rural Water Systems

Many of our rural communities are struggling to meet existing and future water supply needs and compliance with present regulatory mandates. Over 90% of the public water supply systems in the United States are small systems serving 10,000 or fewer people. These small systems face unique challenges, including financial constraints, aging infrastructure, limited technical operations and managerial administrative expertise, reduced or contaminated water supplies, and lack of access to alternative water supplies. Small system infrastructure consolidation poses significant challenges, particularly for geographically isolated communities. However, regionalization of sharable technical, financial, and managerial resources across multiple small systems may present opportunities for small systems to make meaningful improvements.

For nearly twenty years, the Bureau of Reclamation's Rural Water Program has been focused on the completion of authorized rural water projects that have long been needed in Montana, New Mexico, North Dakota, and South Dakota. The program is also authorized to work with rural communities, states, and tribes to assess potable water supply needs, and to undertake

additional appraisal investigations or feasibility studies for new rural water projects. The WSWC supports the use of this program to identify smaller scale opportunities for small public water supply systems, including the appropriation of sufficient funds directed toward that effort. WSWC also supports the work done by USDA Rural Development to bring clean, safe drinking water and sanitation to rural communities.

Indian Water Rights Settlements

WSWC has long supported the negotiated resolution of Indian water rights claims, which can achieve the final determination unquantified reserved water rights for tribes in a manner that is the least disruptive to existing water uses with younger priority dates. This leads to greater water security across the West and an increased ability to plan for the future. Some advantages of negotiated settlements include: (i) the ability to be flexible and to tailor solutions to the unique circumstances of each situation; (ii) the ability to promote conservation and sound water management practices; and (iii) the ability to establish the basis for cooperative partnerships between Indian and non-Indian communities. The successful resolution of certain claims may require “physical solutions,” such as development of federal water projects and improved water delivery and application techniques. The federal government has trust obligations toward tribes, and water rights settlements often involve a waiver of some portion of tribal water right claims and breach of trust claims that could otherwise result in court-ordered judgments and increased costs for federal taxpayers. These settlements have a regional impact and are not and should not be considered earmarks or community projects. WSWC urges Congress to expand opportunities to provide funding for settlements, and to ensure that authorized settlements will be funded without a corresponding offset to other essential tribal or Department of Interior programs.

An integrated, collaborative, and grassroots approach to water resources management is critical to the environmentally sound and efficient use of our water resources. States, federal agencies, tribes, and local communities should work together to identify water problems and develop optimal solutions at the lowest appropriate level. Striving for cooperation rather than litigation, we must recognize and respect national, state, regional, local and tribal differences in values related to water resources.

Thank you for the opportunity testify.

FORMALLY ADOPTED POSITIONS OF THE WESTERN STATES WATER COUNCIL

2025

- [Position #531](#) – Regarding Clean Water Act Jurisdiction (4/25/25)
- [Position #530](#) – Supporting Migratory Birds and the Management of State Water Rights and Resources (4/25/25)
- [Position #529](#) – Supporting Renewable Hydropower Development (4/25/25)
- [Position #528](#) – Supporting Rural Water Infrastructure Needs & Projects (4/25/25)
- [Position #527](#) – Regarding the Extension of NPDES Permit Terms (4/25/25)

2024

- [Position #526](#) – Regarding Abandoned Hardrock Mine Cleanup (10/23/24)
- [Position #525](#) – Regarding States’ Water Rights and Natural Flows (10/23/24)
- [Position #524](#) – Regarding Bureau of Reclamation Drought Response Program (10/23/24)
- [Position #523](#) – Regarding Drought Preparedness, Prediction and Early Warning Programs (10/23/24)
- [Position #522](#) – Regarding Federal Water and Climate Data Collection and Analysis Programs (10/23/24)
- [Position #521](#) – Supporting State Clean Water Act Section 401 Certification Authority (10/23/24)
- [Position #520](#) – Regarding the Endangered Species and State Water Rights (7/26/24)
- [Position #519](#) – Supporting Water Transfers and NPDES Discharge Permits (7/26/24)
- [Position #518](#) – Supporting Rural Water Supply Project/Infrastructure Needs (7/26/24)
- [Position #517](#) – Regarding State Nutrient Reduction Strategies (7/26/24)
- [Position #516](#) – Supporting the *Dividing the Waters* program for judges (March 14, 2024)
- [Position #515](#) – State Primacy over Groundwater (3/14/24)
- [Position #514](#) – Access to Reliable, Clean Drinking Water for Federally Recognized Indian Tribes (3/14/24)
- [Position #513](#) – Supporting Federal Research on Climate Adaptation (3/14/24)
- [Position #512](#) – Regarding Integrating Water and Energy Planning and Policy (3/14/24)
- [Position #511](#) – Supporting Water Infrastructure Funding (3/14/24)
- [Position #510](#) – Supporting Weather Station Networks (3/14/24)

- [Position #509](#) – Supporting the use of Forecast Informed Reservoir Operations and Innovations (3/14/24))
- [Position #508](#) – Regarding Probable Maximum Precipitation Standards Position (3/14/24)

2023

- [Position #507](#) – Actions Federal Agencies Should Take to Expedite State General Stream Adjudications (9/14/23)
- [Position #506](#) – Asserting State Primacy on Protecting Ground Water Quality (9/14/23)
- [Position #505](#) – Supporting USDA Conservation Programs and Water Resources (9/14/23)
- [Position #504](#) – Supporting Indian Water Rights Settlements (9/14/23)
- [Position #503](#) – Regarding Water-Related Federal Rules, Regulations, Directives, Orders and Policies (5/24/23)
- [Position #502](#) – Supporting the Water Resources Research Institutes and USGS Water Resources Research Act Program (5/24/23)
- [Position #501](#) – Regarding the Reclamation Fund (5/24/23)
- [Position #500](#) – Supporting NOAA Data, Forecasting, and Research Programs (5/24/23)
- [Position #499](#) – Regarding Preemption of State Law in Federal Legislation (5/24/23)
- [Position #498](#) – Supporting National Dam Safety Programs (5/24/23)
- [Position #497](#) – Regarding Rural Water and Wastewater Project/Infrastructure Needs and USDA Programs (5/24/23)
- [Position #496](#) – Regarding the Clean and Drinking Water State Revolving Funds and State and Tribal Assistance Grants (5/24/23)
- [Position #495](#) – Regarding the National Levee Safety Act of 2007 and Levee and Canal Structures (5/24/23)
- [Position #494](#) – Regarding the Transfer of Federal Water and Power Projects and Related Facilities (5/24/23)
- [Position #493](#) – Regarding the Reclamation Safety of Dams Act of 1978 (5/24/23)
- [Position #492](#) – Regarding Bureau of Reclamation Maintenance, Repair and Rehabilitation Needs (5/24/23)
- [Position #491](#) – Supporting Subseasonal to Seasonal Weather Research, Forecasting, and Innovation (5/24/23)
- [Position #490](#) – Regarding Water Quality and Federal Reserved Treaty Rights for Tribes (5/24/23)

2022

- [Position #489](#) – supporting legislation requiring the federal government to pay state filing fees in state general stream adjudications (10/21/22)
- [Position #488](#) – expressing support for implementation of the SECURE Water Act (10/21/22)
- [Position #487](#) – urges the Administration and NASA to enhance focus on research for water resources applications and promote long term engagement with the WSWC (10/21/22)
- [Position #486](#) – related to EPA exercise of authority under Section 404(c) of the Clean Water Act (10/21/22)
- [Position #485](#) – supports Water Research and Development Programs at the Department of Energy National Laboratories (8/5/22)
- [Position #484](#) – regarding Hydraulic Fracturing (8/5/22)
- [Position #483](#) – strengthening the Resiliency of Our Nation to the Impacts of Extreme Weather Events (8/5/22)
- [Position #482](#) – regarding Radio Frequencies Bandwidth (8/5/22)
- [Position #481](#) – regarding Clean Water Act Jurisdiction (4/6/22)
- [Position #480](#) – supporting Migratory Birds and the Management of State Water Rights and Resources (4/6/22)
- [Position #479](#) – supporting Renewable Hydropower Development (4/6/22)
- [Position #478](#) – supporting Rural Water Infrastructure Needs & Projects (4/6/22)