

RECLAMATION

Managing Water in the West

RWIS and RISE Update for Subcommittee on Spatial Water Data

September 22, 2017



U.S. Department of the
Interior

Bureau of Reclamation

What is Reclamation Doing to Make Data Open?

May 2013
Open Data
Executive
Order
&
OMB M-13-13:
Open Data
Policy

Spring 2014
Appropriation to
assist with the
funding for
OWDI

Drought in the Colorado River Basin
Insights using open data

**October 2015 -
December 2015**
OWDI Drought
Use Case on
Colorado River
Basin Drought

**April 2016-
April 2017**
RWIS Pilot

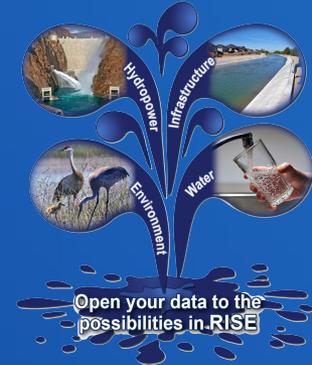
**March 2017-
September 2018**
RISE Project: RWIS
Enhancement and
RISE Expansion

2013 2014 2015 2016 2017 2018

**Summer
2014**
Open Water
Data Initiative
Developed
(SSWD)

**April 2015-
Present**
Reclamation
Open Data
Team

**March 2016 -
present**
Reclamation
Data Council



Reclamation has received \$2M in 2016 and 2017 appropriations supporting OWDI activities; 2018 request includes \$1M.

Before RWIS: Decentralized, inconsistent data sharing

Hydromet Data Collection System Realtime Data

These reports provide selected "real-time" Hydromet data. River basins may contain other Hydromet reports at sites not listed. Please note that all data are considered PROVISIONAL, and subject to revision.

Current "Real-Time" Data

Select PN/Region Index: [GO] -OR- Select Basin Index: [GO]

Query a specific Hydromet site

Other Pre-Configured River Basin Reports:

- Powder River Basin, OR
- Umatilla River Basin, OR
- Snake River above Idaho Falls, ID/WY
- Conowilly Dam near Conak, WA
- Henry's Fork above Rexburg, ID
- Deschutes River Basin, OR
- Crooked River Basin, Oregon
- Deschutes and Crooked River Canals, OR
- Rogue River Basin Flows and Storage, OR
- Rogue River Basin Canals, OR
- Tualatin River Basin, OR
- Wasco Dam near Gov't Camp, OR
- Burnt River Basin, OR

Other Realtime Data Reports

- Upper Snake River Basin Canals, Idaho
- Grand Coulee Water Quality Data, Washington

Water Operations and Information

Mid-Pacific Region

- Central Valley Operations (CVO) Office
- Klamath Basin Area
- Lahontan Basin Area
- MP SNOTEL Summary

Reservoir Levels (Real-Time)

- Daily Reservoir Storage Summary
- Daily Reservoir Data
- More...

Additional Regional Water Information

- Other California Reservoir Levels
- California Streams, Creeks, Rivers Real-Time Data
- Current California River Conditions
- Water Deliveries
- Water Quality
 - Temperature
- California Water (DWR)
 - CDEC - California Data Exchange Center (Hydrologic data collection network)

Reclamation-wide

- Water Operations Within the Bureau of Reclamation
- Water Conservation Program



Lower Colorado River Operations

Current Conditions	Ongoing Programs & Activities
Hourly Conditions Present Day Past 4 Days Daily Reservoir Conditions Current Month Past Month Other Operational Data Geographic-based River & Reservoir Operations Reports Upper Basin Information USGS Data USGS Water Data USGS Water Alert Climate & Weather Data Colorado Basin River Forecast Center NRCS Snow/Precipitation Data, Upper Basin NRCS Snow/Precipitation Data, Arizona	Wear Supply Weekly LC Water Supply Report Wear Accounting Forecasted Water Use - 2019 Actual Water Use - 2019 Forecasted Water Use - 2018 Actual Water Use - 2018 Water Accounting Reports & Activities Wear Contracting Wear Contractors & Contracts Information Annual Operating Plans AOP for the Current Year

Water Operations: Reservoirs, Dams & Hydropower

Water is at the core of what we do. This page provides information about recreation, water supply, dams, projects and power plants managed by Reclamation's Great Plains Region.

WaterSMART is Reclamation's new initiative that recognizes the need for a vigorous public discussion over water issues. WaterSMART is a commitment to moving forward using the appropriate tools to minimize or prevent future water conflict and crises in the West.

Hydropower plays a vital role in fulfilling our nation's energy needs. The Great Plains Region operates 20 hydroelectric power plants, producing enough electricity to meet the demands of more than 250,000 homes each year. Hydropower is the country's largest and most efficient source of renewable energy.

KEY: Snowpack & Reservoir Levels

Snowpack & Reservoir Levels: At a glance status of lakes & reservoirs with live updates.

KEY: Power Levels

Power Levels: At a glance status of power plant generation.

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Water Operations

Reservoir Data	Operational Data
Data Retrieval (recreation, storage, inflows, & releases) 60-Day Data Historic Data Current Conditions System Overview Weekly Hydrology Summary Storage National Diagrams Seasonal Notices Snowpack Map Reports and Studies Reports 24-Month Study Monthly Summary Reports Annual Operating Plans Consumptive Use and Loss Reports Studies Colorado River Basin Water Supply & Demand Study Climate Research & Development in the Colorado River Basin Colorado River Basin Hydrology Flow & Soil Data Legislation and Guidance Colorado River Interim Guidelines Law of the River	Upper Colorado River Aerial View Planning Groups Forecastable Navajo Little Power Other Operational Data Lower Colorado River Basin General Info & Links USGS Data USGS Water Data USGS Water Alert Climate & Weather Data Colorado Basin River Forecast Center NRCS Snow/Precipitation Data Drought Monitor State Engineer's Office Colorado Division of Water Resources New Mexico Office of the State Engineer Utah Division of Water Resources Wyoming State Engineer's Office

After RWIS Pilot: Time-series water data in one portal



Demo: water.usbr.gov

RECLAMATION
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Reclamation Water Information System (RWIS)

Reclamation / RWIS

- RWIS**
- Home
- Map
- Query Tool
- About RWIS
- Help
- Contact Us

Reclamation Water Information System

The Reclamation Water Information System (RWIS) is a pilot version of a Reclamation-wide system for viewing, accessing, and downloading Reclamation's data via a centralized data portal. The RWIS pilot serves representative time-series water data from each Reclamation region. With the RWIS pilot you can:

- Locate Reclamation sites and access current and historical water data by browsing an interactive map.
- Search for water data by location or data type with the query tool.
- Get machine readable water datasets to use as input for your models and analyses via manual downloads or automated data exchange via web service. Use the web service/API URL to feed data to your own applications.

This is a pilot system. Please notify us about any errors, bugs, feature recommendations, or other feedback so we can improve the site.

[Contact Us](#)

Identify Data Sites

Use the interactive map to filter and find

Display and Download Data

Use the query tool to access data by

FACT SHEETS

What could I do with RWIS?

What general questions can RWIS answer?

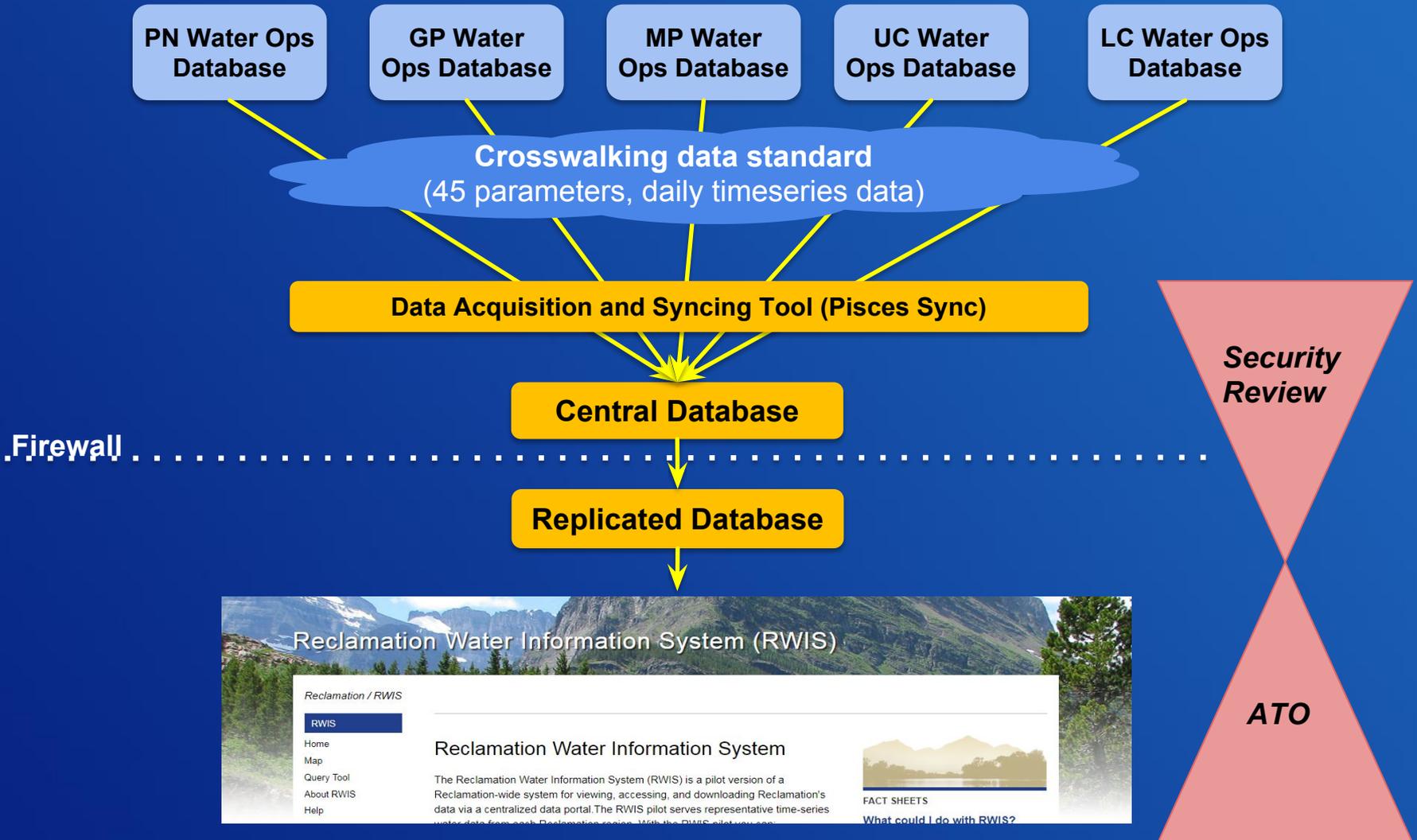
How can I create tools with RWIS?

How can I use RWIS data in my analyses?

What are some next steps for RWIS?

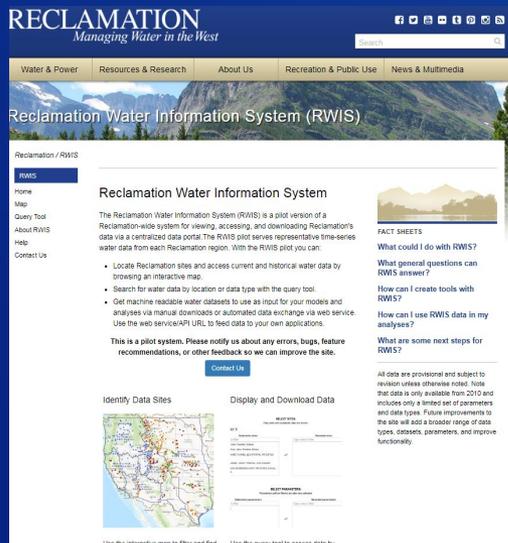
All data are provisional and subject to revision unless otherwise noted. Note that data is only available from 2010 and includes only a limited set of parameters and data types. Future improvements to the site will add a broader range of data types, datasets, parameters, and improve functionality.

RWIS Pilot Architecture & Tasks



Next Step: Enhance RWIS and Expand to RISE

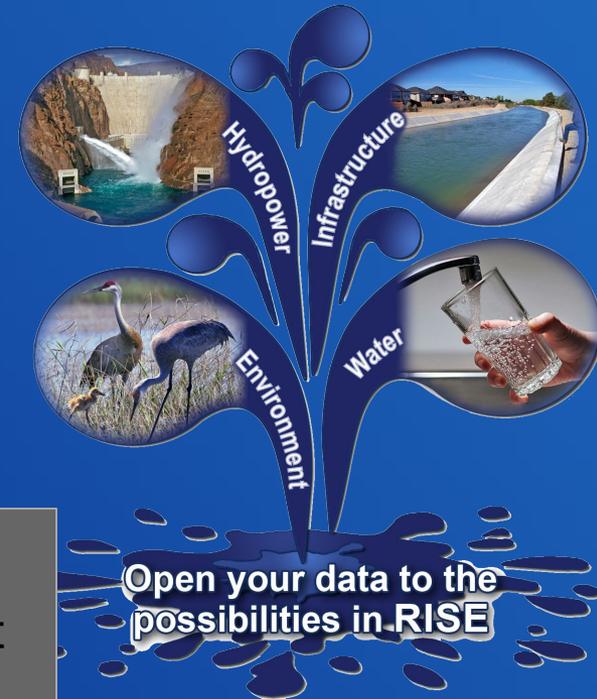
Reclamation Water Information System (RWIS)



- Add water data parameters
- Extend water data record lengths
- Improve portal functionality
- Add portal features
- Add hydropower data
- Add environmental data
- Share spatial data and other data types

- Form domain communities
- Perform security assessment
- Create online forum
- Plan for sustainability

Reclamation Information Sharing Environment (RISE)



RISE Vision and Goals

Share Reclamation's data in accordance with open data policy

Support data access and use for Internal and External Users

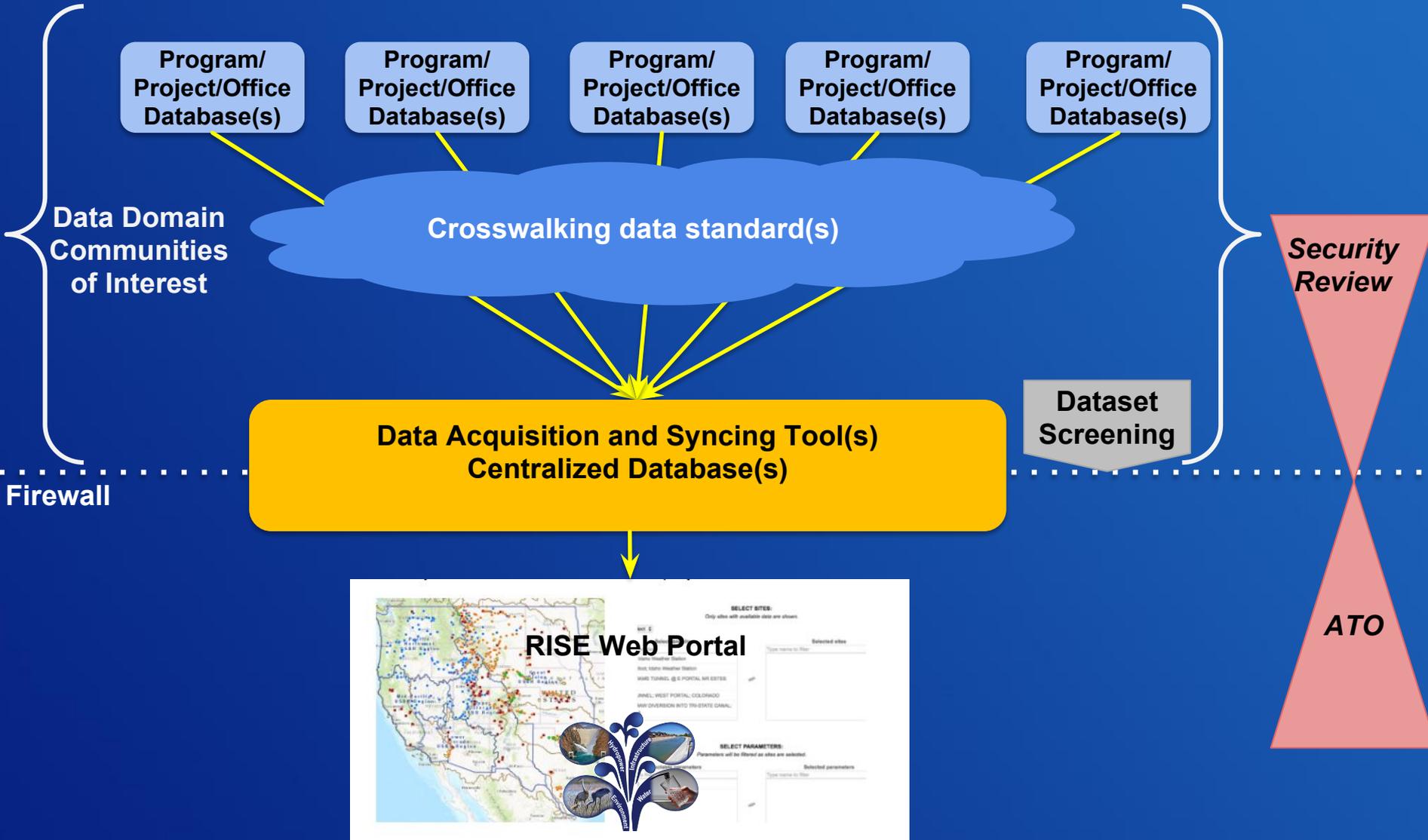
- Reclamation Staff
- Stakeholders
- Researchers, Media, Public
- Federal, State, and Local Agency Partners

Standardize and centralize Reclamation's data publication

- Data from multiple offices and programs in a single portal
- Easily compare and combine different datasets to make decisions
- Access Reclamation data from a single portal

Coordinate with other open data and data management efforts

RISE Approach



RISE Teams: Reclamation-wide, collaborative, cross-regional, interdisciplinary

- Planning Team
- Water Domain Team
- Environmental Domain Team
- Hydropower Domain Team
- Infrastructure/Assets Domain Team
- IT Infrastructure Team
- Metadata Team
- Data Acquisition and Storage Team
- Web Portal Team
- Security Team
- Screening
- Open Reclamation Forum Team
- Sustainability Team
- Communications Team



Partners: Reclamation Data Council, Regions & Program offices

Getting Datasets into RISE

- **Gather a community with similar datasets or common purposes**
- **Identify the data to share**
 - Priorities
 - Needs for centralized, open data
 - Available data types and datasets
- **Make the data open to share internally and/or externally**
 - Develop cross-walking data standards
 - Identify and/or develop tools to acquire and aggregate datasets
 - Meet RISE data and metadata requirements
 - Screen data for IT security and privacy risks prior to release
- **Share and use data**
 - Add datasets to the central database
 - Work with web developers to create portal features to support new data

RISE Requirements

- **System Tiers**
 - Client
 - Application
 - Infrastructure
- **Requirements Document Elements**
 - Functional and Non-Functional Requirement description
 - Access control considerations
 - Security implications/PII needs
 - Mobile considerations/compatibility
 - Status, priority, implementation timeline

Discussion Topics

- Methods for sharing large volumes of data
- Query performance challenges - multiple sites, multiple parameters
- Mapping tool desired functionality
- Privacy/PII
- COTS products vs custom software development
- Production databases vs. publication databases
- Core metadata schema vs. data standardization per domain
- Dataset screening processes for confidentiality, security, privacy

Colorado River Basin Data Visualization Challenge

WATER
PRIZE COMPETITION CENTER

\$60,000 in prize \$\$\$



Can you help us improve data visualization of the Colorado River?

usbr.gov/research/challenges/datavis.html



Colorado River Basin Data Visualization Challenge

TAGS: [Computer Science/Information Technology](#) [Engineering/Design](#) [Environment](#) [Math/Statistics](#) [Physical Sciences](#)
[Water](#) [Theoretical/Economic](#)

AWARD: \$60,000 USD DEADLINE: Nov 17 2017 23:59 EST
ACTIVE SOLVERS: 69 POSTED: Sep 07 2017
SOURCE: InnoCentive

The Bureau of Reclamation (Reclamation), the Seeker for this Challenge, plays a significant role in managing the Colorado River. Reclamation relies on a broad range of Colorado River Basin (CRB) data to support short-term water management and long-term planning, including data on historical, current, and projected weather and climate conditions, reservoir storage and releases, streamflows, and diversions. Reclamation is currently working to make CRB data more easily accessible to both Reclamation staff and non-Reclamation users such as other Federal, State, and local agencies, water users, recreationists, researchers, and other stakeholders.

As Reclamation works to improve data access, better approaches to visualizing CRB data are needed to improve data exploration, analysis, interpretation, and communication by Reclamation and non-Reclamation users. In particular, better visualization approaches are needed to improve understanding and communication of current and projected conditions in the basin and the water management actions that affect those conditions. Reclamation and its Collaborators seek innovative, interactive, and user-driven visualizations to improve understanding of past, present, and projected conditions in the CRB and to support analysis and decision making by Reclamation and non-Reclamation users.

This Theoretical Challenge requires submission of a data visualization and corresponding written description.

Challenge Orientation Video: <https://youtu.be/MQxajyG0k>

PRIVACY ADVISORY

This web site is hosted by a private entity and is not a service of the Bureau of Reclamation or the Department of the Interior (DOI). The solicitation and collection of your personal or individually identifiable information is subject to the host's privacy and security policies and will not be shared with Reclamation or DOI unless you win the Challenge. Challenge winners' personally identifiable information must be made available to Reclamation in order to collect an award. Please consult the Challenge Specific Agreement.

ELIGIBILITY REQUIREMENTS

This Challenge is being conducted by the Seeker under the authority of 15 USC 3719, as amended, which states that cash prize purse awards for this prize competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States, subject to verification by the Seeker before cash prize purses are awarded.

Cash prize purse payments Payments will be paid in full to the eligible registered individual, entity, or team selected as a winner.

Registering as a team Teams must register to compete by having the Team Leader form a Team Project Room (<https://www.innocentive.com/our-solvers/faq#tr>). The Team Leader must be a U.S. citizen, permanent U.S. resident, or representing a U.S. entity eligible to receive a cash prize. In the case of a team registration, the cash prize purse can be split and paid directly to eligible team members as directed by the registered eligible team leader. The

Login to View Details

Register for Free

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in Share 5

Challenge Data (others/This)

Solvers

Submissions

Solver Map

Questions?

Contact Us

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