

Overview of the Reclamation Information Sharing Environment (RISE) Project

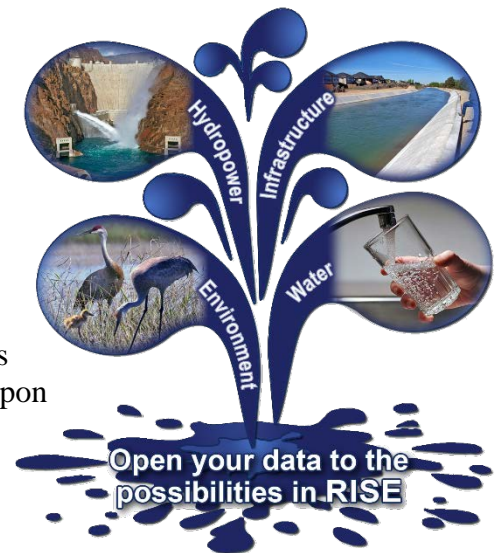
Project Summary

The Reclamation Information Sharing Environment (RISE) Project is a multi-disciplinary, multi-office effort to create a system for sharing Reclamation's data in machine-readable, interoperable formats for use by internal and external users. The project builds on the success of the Reclamation Water Information System (RWIS) project. RWIS, which launched as a pilot in April 2017, is a web portal that makes Reclamation's water-related daily time series data available in human and machine-readable open formats at water.usbr.gov. RISE aims to enhance and expand upon the pilot system.

The RISE Project is funded through two Science & Technology (S&T) Program research projects: the RWIS Enhancement ([S&T Project 1627](#)) to improve the features and functionality of the pilot system and add additional water data and RISE ([S&T Project 7127](#)) to expand to include more Reclamation datasets in the environmental, hydropower, and infrastructure/assets domains. Though funded as two separate projects, RISE is being managed as a single project to coordinate Reclamation's ongoing efforts to share data in open formats.

Need

Data is central to Reclamation's core mission responsibilities of delivering water and power in an economically and environmentally sound manner. Reclamation relies on many datasets to track river flows, reservoir operations, and power deliveries, which drive Reclamation's real-time operations and future planning. State, regional, and local partners use Reclamation's data to support operations, planning, and forecasting efforts, and the educational community and general public have broad and varied interests in Reclamation's data. While Reclamation shares some of its data via public websites, data users must know who to contact within Reclamation to access available datasets, and many other datasets are not readily available or discoverable.



Overview of the Reclamation Information Sharing Environment (RISE) Project

The RWIS pilot was a first step toward a sustainable open data platform within Reclamation, but many needs remained:

- Address feedback on usability and desired functionality
- Expand the breadth and extent of data
 - Extend beyond the 2010-present data range in the RWIS pilot to include full period of record for time series datasets
 - Add other types of data such as geospatial datasets, point measurements, records of intermittent or irregular events, documents, and images
- Expand beyond water data to environmental, infrastructure/assets, and hydropower
- Develop screening procedures for potential data sets
- Plan for long-term platform sustainability by addressing funding, resource availability, and governance
- Support the development of data communities of interest
- Bring data stewards, mission specialists, and IT personnel together to develop solutions to data and program management challenges through the creation of the Open Reclamation Forum

Benefit

Open data generally provides the following benefits:

- Enhancing Federal transparency and accountability
- Encouraging civic engagement in resource issues
- Enabling innovation to improve Reclamation's mission fulfillment
- Supporting economic development and entrepreneurship through the mobilization of datasets

RISE is intended to benefit both internal Reclamation users as well as external users.

External Users

Reclamation's customers and stakeholders will benefit from this project by gaining open access to Reclamation datasets that were not previously available to them, or that were only available in limited formats or dispersed across Reclamation websites. Providing access to Reclamation data via a Reclamation-

Overview of the Reclamation Information Sharing Environment (RISE) Project

wide data portal with interactive tools and web services for downloading data offers an array of benefits. As a one-stop shop, users can easily download and use Reclamation's wealth of data. Searches can be done in seconds rather than spending days finding who owns what data and in developing work-arounds to compare non-standardized datasets. This will help support more informed decision making by Reclamation, its partners, and other organizations by providing efficient and timely access to data.

Reclamation Regions, Programs, and Users

RISE will also enhance Reclamation's efficiency in sharing data and communicating with internal and external stakeholders, partners, and the public. It will support mission needs for data and improving efficiency of data access by mission staff and will reduce costs by decreasing the staff time required to fulfill data requests through the development of a standard data-sharing framework. RISE will also help minimize duplication of efforts by providing a forum for Reclamation-wide sharing of solutions to address program data management needs (e.g., data management processes, software tools, and applications). The screening process developed through RISE will help data stewards ensure the privacy and security of Reclamation's data and physical and IT assets. Finally, RISE will contribute to bringing Reclamation closer to the level of data access already possible at other Interior, Federal, state and local entities.

Moreover, RISE will help Reclamation staff be more effective and efficient. Access to historical and real-time data will improve situational awareness and historical context. Access to datasets from multiple subject areas or offices will allow analysts to find patterns and interactions, show the bigger picture and understand complex interrelationships. Automated web services will provide data for dynamic visualizations for management briefings, stakeholder presentations, and other enhanced communications.

Project Tasks

RISE project tasks are divided into overarching tasks to build the capacity for data sharing within Reclamation and domain-specific tasks for each of the data domains. Work on RISE began in March 2017 and the system is expected to launch in Fiscal Year 2019.

Overarching tasks include:

- Developing a database schemas and metadata requirements for centralizing and publishing data
- Revising or developing mechanisms to acquire data from regional or program sources
- Enhancing the functions of the data portal

Overview of the Reclamation Information Sharing Environment (RISE) Project

- Developing a dataset screening process
- Satisfying security and privacy requirements for publicly accessible data
- Identifying and pursuing steps to sustain the system long-term
- Publicly launching the modified portal
- Tracking analytics to determine what future actions might be needed for the site

Domain-specific tasks include:

- Establishing communities of practice around the data domains to be incorporated into RISE
- Identifying candidate data types to include for each domain
- Developing a cross-walking data standard for Reclamation's data in the domain
- Providing support for regional and program efforts to meet system data and metadata requirements
- Identifying and/or developing tools to acquire and aggregate datasets
- Identifying domain-specific needs to be met by the multi-domain data portal
- Screening data for IT security and privacy risks prior to release
- Adding datasets to the central database and portal
- Envisioning a long-term sustainability framework for the RISE system

Project Team

The RISE project is a collaborative effort involving Reclamation data stewards, regional and Denver IT staff, and regional and Denver technical experts and support staff. Reclamation is coordinating with our partners, stakeholders, and other agencies to identify areas of collaboration and partnership to expand ways to use Reclamation's data.

Overview of the Reclamation Information Sharing Environment (RISE) Project

RISE Teams are:

- **Hydropower Domain, Infrastructure/Assets Domain, and Environmental Domain Teams**—perform domain-specific tasks such as gathering stakeholder input, developing the data standard for their data domain, performing data cleansing, developing metadata, screening datasets, and linking regional data sources to the central database. The data domain teams also support overarching work that applies across domains by identifying representatives to participate in other project teams. Team members include one or more data stewards/domain subject matter experts from each region and may also include domain/subject matter experts from Denver.
- **Metadata**—create database schemas and identify metadata requirements
- **Data Acquisition and Storage**—conduct overarching data centralization activities, including development of data acquisition systems and implementation of central data storage.
- **IT Infrastructure Configuration/Development**—perform work to develop and/or expand the underlying IT infrastructure for central data storage and the web portal.
- **Web Portal Programming**—perform web programming, application development, GIS development, writing, and other tasks to accomplish the enhancements to the web portal.
- **Security and Privacy**—evaluate the security and privacy requirements and update or supplement security and privacy authorizations.
- **Communication and Outreach**—prepare communication materials for sharing information about project activities, including regular project updates, fact sheets, press releases, social media posts, and audiovisual materials.
- **Open Reclamation Forum**—develop a forum for discussion, information exchange, and resource identification for Reclamation staff with expertise or needs in areas such as data collection, management, visualization, and publication. This team is jointly operated with the Reclamation Data Council.
- **Screening**—develop a screening process for evaluating the privacy, security, and confidentiality risks associated with releasing datasets. This team is jointly operated with the Reclamation Data Council.

Overview of the Reclamation Information Sharing Environment (RISE) Project

- **Sustainability**—plan, coordinate, and implement strategies to sustain the RWIS/RISE system beyond the availability of the Research and Development funds including both Denver and regional support, staffing, and funding.
- **Planning**—oversee the project as a whole by performing coordination, planning, and project management activities.

Prior Work

In FY 2016 and FY 2017, the Science & Technology program funded the RWIS Pilot project to develop a pilot version of a centralized system for sharing Reclamation’s water data in open formats via a public data portal. The pilot system, launched in April 2017, consists of a public website with a query page, map interface, and web service for automated data retrieval. Reclamation and non-Reclamation users can now use the RWIS system to view, access, and download Reclamation’s water data in widely used, machine-readable formats at <https://water.usbr.gov>.

The RWIS Pilot Project showed that it is possible for Reclamation to aggregate, warehouse, and serve its data to the public using a centralized system—despite the differences in data accessibility levels, database technologies, metadata, and data formats between databases. This portal is supported by a unifying data standard that allows data to be harvested from regional sources, a data acquisition program that copies regional data to a central database, and IT infrastructure and security procedures. The RWIS Pilot Project successfully formed subject-matter-expert workgroups composed of personnel from each regional office and Denver, constructed the underlying IT infrastructure and tools for facilitating the transfer of data from regional operational databases, and developed the public data portal for Reclamation water data.

Related Efforts

RISE is just one of Reclamation’s ongoing efforts to improve data management and sharing. The RISE project also connects to work on other Reclamation open data efforts. The Reclamation Data Council serves in an advisory role to the project leads and helps connect the project team with Reclamation staff and resources. Lessons learned from the Colorado River Basin Open Data Tool Project ([S&T Project 5541](#)) and the RWIS pilot project inform work on RISE.

Other related efforts within Reclamation include:

- Reclamation Data Council Asset Inventory Pilot Project
- Colorado River Basin Open Data Tool Project
- Mussel Database Project
- Rio Grande Operating Agreement Database Project

Further Information:

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