United States Environmental Protection Agency

Fiscal Year 2018 National Environmental Information Exchange Network Grant Program

Solicitation Notice

U.S. Environmental Protection Agency
Office of Environmental Information
Office of Information Management
Information Exchange and Services Division
Information Exchange Partnership Branch
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Fiscal Year 2018 National Environmental Information Exchange Network Grant Program Solicitation Notice

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Fiscal Year 2018 National Environmental Information Exchange Network Grant Program Solicitation Notice

Overview Information

Agency Name and Office: U.S. Environmental Protection Agency (EPA), Office of Environmental Information (OEI)

Funding Opportunity Title: FY 2018 National Environmental Information Exchange Network Grant Program

Announcement Type: Availability of Funding Solicitation

Notice Funding Opportunity Number: EPA-OEI-18-01

Catalog of Federal Domestic Assistance (CFDA) Number: 66.608

Dates: January 26, 2018 - Deadline for submitting applications to EPA
July 31, 2018 - Tentative expected award of FY 2018 Exchange Network Grants

I. Funding Opportunity Description

For the FY 2018 competitive grant process, the EPA Exchange Network Grant Program is soliciting project proposals that use the Environmental Information Exchange Network (EN) to:

- Facilitate sharing environmental data, especially through shared and reusable services.
- Streamline data collection and exchanges to improve its timeliness for decision making.
- Increase the quality and access to environmental data through discovery, publishing, outbound, and analytical services so it is more useful to environmental managers.
- Develop foundational EN shared services (e.g., network security or corporate portals) to reduce burden and avoid costs for co-regulators and the regulated community.
- Expand and improve participation in the EN by strengthening the requisite information management and technology capabilities for interested parties to fully participate in the EN.

Section I-E summarizes specific priorities for the FY 2018 Exchange Network grants and associated activities that are eligible for funding through the EPA EN Grant Program.

I-A. Background

The National Environmental Information Exchange Network (EN) is an inter-governmental partnership to foster better environmental management and decision-making through increased access to timely and high quality environmental information. The EN, launched in 2002, uses a standards-based approach to facilitate environmental data sharing among EPA, states, tribes and territories. This framework allows organizations to exchange and share data over the Internet regardless of the specific information technology used. (See http://www.exchangenetwork.net/) The EN is the foundation for the E-Enterprise Initiative, also a joint state, tribal, territory and EPA partnership, launched in 2013. Its goals include expanding access to environmental data, personalizing the access experience through customized portals and re-engineering and

streamlining regulatory information collection and reporting processes to achieve burden reduction and cost avoidance.

Phase 1 of EN implementation focused on transforming the regulatory reporting processes of eight national data flows, by moving them from out-of-date reporting methods to standardized electronic reporting approaches based on EN data standards and technology. Phase 2, initiated in 2013, focuses on expanding the availability of published data and making the process of sharing data more efficient. This is done by developing data analysis and display services, making those services available to all partners; implementing innovative data collection, monitoring and analytical systems; and enabling more electronic reporting.

The EN Phase 2 Goals and associated strategies and action items documented in the ***Implementation Plan for Phase 2 of the Exchange Network (2013)*** along with the joint goals shared with the E-Enterprise Initiative, form the basis for the program priorities in Section 1-E. The FY 2018 EN program priorities should be considered by states, tribes and territories when they develop their grant proposals.

I-B. Grant Program Funding History and Results

FY 2018 is the seventeenth year EPA will award competitive funding to eligible partners for projects through the Exchange Network Grant Program. Between FY 2002 and FY 2017, EPA provided approximately $219 million for state, tribal and territorial awards and associated program support through the grant program. As of May 2016, all 50 states, 74 tribes and 5 territories have received Exchange Network grants.[1] These grants support better environmental decisions by promoting the use of more timely and consistent data which is shareable by partners across the Exchange Network data for environmental professionals and the public.

I-C. Assistance Activities

This Solicitation Notice requests that states, tribes, inter-tribal consortia, and territories submit applications with goal(s) that support the Exchange Network priorities in Section I-E and explained further in Appendices A-E). Applicants may propose projects that include activities other than those listed as examples, provided they are consistent with EN priorities and conform to EN technologies, services and specifications.

EPA will determine the eligibility of each applicant (see Section III-A). EPA will then evaluate applications from eligible applicants based on the evaluation criteria in Section V. Applicants are responsible for reading and complying with the instructions and criteria described in this Notice.

I-D. Environmental Results Supported by Assistance Activities

It is EPA policy to link work supported by assistance agreements directly to the Agency's mission to protect human health and the environment as articulated in EPA's Strategic Plan. EPA's Strategic Plan is available at https://www.epa.gov/planandbudget/strategicplan. The activities to be funded under this announcement will be linked to EPA's strategic plan consistent with EPA's current priorities for:

- Improving air quality to ensure more Americans are living and working in areas that meet high air quality standards.
- Ensuring clean and safe water by improving water infrastructure and supporting drinking water,

[1] For descriptions of previously awarded Exchange Network Grants, please see: https://www.epa.gov/exchangenetwork/previous-exchange-network-grant-projects

aquatic ecosystems, and recreational, economic, and subsistence activities.
- Cleaning up contaminated sites and returning land back to communities.
- Ensuring the safety of chemicals in the marketplace.
- Improving permitting and reducing reporting burdens that impede economic growth.
- Improving environmental protection through joint governance, state/tribal primacy efforts, and compliance assistance.
- Increasing transparency, public participation, and collaboration with communities.
- Creating consistency and certainty for the regulated community.

Applicants must explain in their proposal how their project will further these current priorities.

EPA also requires that grant applicants adequately describe environmental outputs and outcomes to be achieved under assistance agreements (see EPA Order 5700.7A1, Environmental Results under Assistance Agreements, https://www.epa.gov/sites/production/files/2015-03/documents/epa_order_5700_7a1.pdf). Applicants must include specific statements describing the environmental results of the proposed project in terms of well-defined outputs and, to the maximum extent practicable, well-defined outcomes that will demonstrate how the project will contribute to the goals and objectives described above.

I-E. Program Priorities

This section presents specific funding priorities for FY 2018. Each priority is associated with the relevant EN Phase 2 goal and strategy. Details on the purpose, background, available services, and funding ranges for funding opportunities are contained in the appendices listed at the end of the funding opportunity entry.

There are five program priorities for the FY 2018 EPA Exchange Network Grant Program:

1. Integrate foundational EN services into environmental business processes.
2. Increase the number of co-regulator data flows involved in e-reporting.
3. Expand data access and availability.
4. Improve environmental management business processes through advanced data monitoring and transmittal processes.
5. Augment the data and technology management capacity of potential EN partners.

High-level descriptions of FY 2018 funding opportunities associated with each of these 5 program priorities are found in the remaining text of section I-E. Additional information on most opportunities are found in Appendices A and B.

Funding Opportunities under Priority 1: Integrate Foundational EN Services into Environmental Business Processes

The ‘build once, use many times” philosophy of the EN is demonstrated in the services available to all EN users. These services enable each individual organization to avoid costs associated with building, securing and maintaining the data and technology infrastructure that support the implementation of their program missions. Usage of the foundational services related to reference look-up tables and upfront data validation services also result in more consistent and better quality data for use in program implementation. A short summary of each foundational EN service is contained in this section. Additional information to consider before proposing integrating the services into your project, cost estimates for integrating each foundational

service into a project, and additional activities to consider when proposing projects for this opportunity are found in Appendix B.

Applicants applying for resources under Priority 1 may propose projects in three categories:

1. **Integrate one or all the following foundational EN services, into their business processes:**

   - **Virtual Exchange Services (VES) (Individual Opportunity)**
     EPA invites applicants to propose projects with the goal of transitioning a state, tribe or territory from using a physical node on their own servers to using the shared, scalable, cloud-based EN virtual exchange services (VES) for existing data flows or new EN data flows. Applicants may also apply to implement data flows on VES as needed while keeping their existing nodes and flows. Investigating various ways of interconnecting from the partner staging tables or database servers (backend) to the VES in the cloud environment should also be goal of the proposal. A shift to VES decreases resource needs for data exchanges by avoiding the software licensing, procurement, and node administration costs of traditional EN node servers; allowing focus to be on data flow configuration and publishing new services and data. **Appendix B contains additional VES information, including systems or services already using VES solutions, implementation costs by system or service, and technological options available for implementation.**

   - **Enterprise Security Bridge (Identity Management) (Partnership Opportunity)**
     Applicants are encouraged to propose projects that use the EN Enterprise Security Bridge to integrate enterprise security services into their existing websites, web applications and portals or new ones being implemented as part of the FY 2018 grant cycle. The EN Enterprise Security Bridge is an open standards-based, unified interface that enables access to the hundreds of portals, applications, websites, and services in EN partners' domains. Use of the EN Enterprise Security Bridge eliminates the need for multiple registrations and identity management processes across user accounts. The standards used by the EN Enterprise Security Bridge are widely supported in almost all platforms. There are also many toolkits available for integrating with the Enterprise Security Bridge allowing identity federation, a process of sharing user identities and user authentication processes between two parties. **Appendix B contains additional background information on the Enterprise Identity Management Bridge, types of enterprise security integration permitted with grant funds and cost estimates for the various approaches to Enterprise Security Bridge adoption.**

   - **Shared CROMERR Services (Individual Opportunity)**
     EPA's Cross-Media Electronic Reporting Rule (CROMERR) sets technology-neutral, performance-based standards for systems used by states, tribes, and local governments to receive electronic reports and documents from entities regulated under EPA-authorized programs. These standards cover a variety of system functions (e.g., security, user identification, etc.) designed to make electronic reports as legally defensible as paper submittals. EN Partners with a need to implement CROMERR-compliant systems for their electronic reporting programs may apply to leverage EPA's centralized shared CROMERR services (SCS) to meet their organizational and system needs. Many standard and advanced

CROMERR services may be independently implemented or combined together, and/or integrated with Virtual Exchange Services (VES) for greater efficiency. **Appendix B contains additional background information on information SCS, specific activities that can be supported with grant funds, and cost estimates for SCS activities covered under the grant.**

- **Substance Registry Service (SRS) (Individual Opportunity)**
  The Substance Registry Service (SRS) is EPA's centralized resource for sharing basic information about chemicals, biological organisms, and other substances that EPA and/or other organizations (e.g., state agencies, tribal agencies, other federal agencies) track or regulate. FY 2018 grant funds are available to integrate several SRS services into EN partner systems. Web services are available to pull information from SRS and transfer it to an organization's system for integration into online reporting forms, other tools, or for displaying their substance lists on their websites. States, tribes, and territories also can improve public access to health and safety information by creating direct links from their websites to individual SRS records. SRS also has a widget that states, tribes, and territories can incorporate into their web pages. **Appendix B contains additional information on the features of SRS and the types of activities that should be considered when developing a grant proposal for integrating the SRS into an organization's system.**

- **Facility Registry Services (FRS) (Individual Opportunity)**
  EPA's FRS integrates facility information from EPA program systems, other federal agencies, and state environmental systems. Applicants for this opportunity should consider integrating FRS data using FacID, FRS query REST services, the FRS front-end integration widget, or error correction services into their data flows or programmatic data to reduce reporting burden and provide more accurate and timely facility information. **Additional background information on FRS and suggestions for potential projects are provided in Appendices A and B.**

2. **Establish partnerships for completing two additional EN foundational services under development**

- **E-Enterprise Portal (Individual or Partnership Opportunity)**
  As part of the E-Enterprise effort, EPA, states, tribes, and territories are jointly designing and implementing a customer-centric portal that is envisioned as the future e-business entry point for the EN. User profiles will enable co-regulators, regulated entities, or public users to customize pages tailored to information of interest that is integrated across EPA, state and tribal programs, and geographies. This funding opportunity is a chance for applicants to partner with EPA and other states, tribes, or territories to identify and provide new information/data, new functionality or business tools retrievable through the E-Enterprise Portal to improve access to information and reduce access burden for both co-regulators and the regulated community. Applicants are also encouraged to propose projects to develop applications or components within states, tribes, and territories' portals that publish, visualize and/or exchange data and are designed in a way that can be shared across the entire EN use community. **Additional background information on the E-Enterprise Portal, active E-Enterprise projects and suggestions for specific FY 2018 projects activities are in Appendix B.**

- **Law and Regulations Service (Partnership Opportunity)**
  EPA is cataloging environmental laws, the regulations that implement those laws, and the EPA programs that oversee those regulations. This Laws and Regulations Service (LRS) will not only help EPA improve information management and discovery, but will also help states and tribes discover which regulations may be applicable to a given substance or industry. This opportunity allows applicants to participate in a cooperative agreement with EPA to compile information about their state, tribal, or territorial laws and regulations, which can help to build a more comprehensive picture of how substances or industry sectors are regulated. EPA will work with co-regulators to catalog their laws and regulations and identify the state programs that manage them. The ultimate goal is to design and develop a single interface, or portal, (which might be the e-enterprise portal) for industry, other communities, and the public to discover potentially applicable regulations whether at the state, tribal, or federal level. **More information about this opportunity is in Appendix B.**

3. **Develop a new e-Permitting or e-Reporting Shared Service (Partnership Opportunity)**
   The focus of this opportunity is to enable states, tribes, or territories to develop and implement a service related to reporting or permitting from the regulated community for use across the entire EN community. This is a partnership opportunity and will be a cooperative agreement with EPA. The application must clearly explain the roles of all partners including EPA. The proposed service should not be duplicative of an existing EPA shared service and demonstrate the inclusion of requirements from multiple EN partners within a same line of business. The applicant must demonstrate the scalability and share-ability of the proposed service.

   Potential activities could include but are not limited to:
   - Working with Exchange Network partners to identify common processes in e-Reporting and e-Permitting that span across environmental programs and agencies.
   - Proposing the establishment of an e-Reporting/e-Permitting team of EPA and partners under the EE/EN governance to address process requirements and common approaches that could result in or inform the development of shared services.
   - Develop and test minimally viable products that will automate increments of e-Reporting and e-Permitting processes for both external and internal parties.
   - Develop guidance, starter kits, and outreach materials for these shared services to ensure wide adoption as applicable.

   This opportunity encompasses the design, development, testing, and at a minimum, limited deployment of the service. Creation of a prototype, pilot, or other limited-type functioning IT product, is an acceptable example of limited deployment of the service. For this proposal to be eligible for funding, applicants must agree to include mechanisms for the maintenance and sustainability of this service and include a Service Level Agreement that outlines what expectations service users can have.

Funding Opportunities under Priority 2: Increase Number of Co-Regulator Data Flows Involved in e-Reporting

- **Data Flows (Individual Opportunity)**
  Submitting data to priority data systems continues to be an Exchange Network grant priority. This

includes many of the original priority systems (prior to 2012) and systems developed since 2012. If you are new to one of the following programs on the EN, proposals are still being considered for many of the original priority systems or building out a new exchange identified more recently by a program. Applicants must commit to putting an exchange into production to receive funding for establishing a new exchange.

The original priority systems still being considered for funding in FY 2018 are as follows:

- Air Quality System (AQS)
- eBeaches
- Emissions Inventory System (EIS)
- Facility Registry Service (FRS)
- Integrated Compliance Information System – National Pollutant Discharge Elimination System (ICIS-NPDES)
- Resource Conservation and Recovery Act Information (RCRAInfo)
- Toxic Release Inventory System (TRIS)
- Underground Injection Control Database (UIC)
- Water Quality Exchange (WQX)

New priority systems include:

- Assessment TMDL Tracking and ImplementatioN System (ATTAINS)
- Compliance Monitoring Data Portal (CMDP)
- Electronic Notice of Intent (eNOI) flow to Integrated Compliance Information System – National Pollutant Discharge Elimination System (ICIS-NPDES)
- Integrated Compliance Information System – Air (ICIS-Air), which replaces the Air Facility System or AFS
- Radon
- Safe Drinking Water Information System (SDWIS) Prime

Applicants establishing new data flows should consider reusing existing components where appropriate (i.e., Virtual Exchange Services). Many of these services will reduce the cost and time required to implement a new exchange.

***Appendix A** provides additional information from EPA Program Offices related to many of these priority systems, including activities grant applicants should consider.*

Funding Opportunities under Priority 3: Expand Data Access and Availability

- **Data Availability Projects (Individual Opportunity)**
  Development of reusable and discoverable (or reuse of existing) tools and applications that deliver automated access to environmental data continues to be a priority in FY 2018. These tools include, but are not limited to:
  - Desktop, laptop and tablet/smartphone applications that provide access to and analyze/display environmental data.
  - Websites that provide users access to data sets and a range of analytical and display tools.
  - Dashboards that provide real time program status information to program managers and executives.

Applicants should consider opportunities to share data across programs within their organization, across agencies within a state or tribe, across states, or with EPA. EPA is especially interested in applications/websites that support cross-program data integration and support more efficient environmental business processes such as permit writing, compliance inspections, cross-jurisdictional data comparisons, analyses or integration.

Applicants should also consider opportunities to build applications/websites that support EPA's open data and transparency goals https://www.epa.gov/open and that serve interested non-governmental organizations, research institutions, other communities of interest and the public.

Choosing the appropriate technology approach for a data availability project is one of the key decisions in preparing a grant application. The project narrative should explain how the project and technology choice (e.g., RESTful services or SOAP) meet the applicant's business needs and how the project complies with Exchange Network guidance and standards. Applicants should review governance-developed guidance and standards for an explanation of RESTful web services, APIs and other options available for building EN-compliant services (www.exchangenetwork.net/rest-guidance).

Grantees should make data available in eXtensible Markup Language (XML) format or, as business needs dictate, another machine-readable format such as JavaScript Object Notation (JSON) or Comma Separated Values (CSV or flat file). Additionally, the data should be of regional and/or national interest. Example datasets of interest include institutional controls at contamination sites, data on cleanup sites, data sets of national significance to tribes (such as open dumps), Underground Storage Tank data, and data that support environmental management of multi-state or regional airsheds, watersheds, and water bodies of priority concern. See Appendix A for more detail on specific project opportunities. Information on the Exchange Network's technical standards and design guidance are available on the Exchange Network website (http://www.exchangenetwork.net/knowledge-base).

- **Enabling Geospatial Data: Open Data Services (Individual Opportunity)**
  Applicants should consider opportunities to publish geospatial data sets critical to their missions, including, but not limited to administrative boundaries such as those at Superfund national priority list sites, cadastral data, and facility and compliance related data that are regularly updated and can be integrated with the Facility Registry Service. In addition, applicants are encouraged to review the list of 176 geospatial datasets designated as National Geospatial Data Assets by the Federal Geographic Data Committee (FGDC) Steering Committee (https://www.fgdc.gov/ngda-reports/NGDA_Datasets.html) to ascertain if there are any additional publishing opportunities for these data sets that support the mission goals of multiple federal, state, and local agencies. Data should be published as open, standards compliant data services that are accessible through REST APIs and can be easily integrated into applications by EPA, state, tribal or territorial partners, and the public, and can be registered in EPA's Environmental Dataset Gateway (EDG), data.gov, and geoplatform.gov.

Funding Opportunities under Priority 4: Improve Environmental Management Business Processes

- **Continuous Water Quality Monitoring (Partnership Opportunity)**

  Continuous water quality monitoring (monitoring performed with a sensor that measures a particular parameter or suite of parameters automatically at set intervals) is becoming more common. This project takes advantage of current thinking on the publishing approaches defined under Phase 2 of the Exchange Network, and makes use of the Exchange Network REST specification. As a Phase 2 project, partners should consider approaches to make water quality sensor data available via a publishing service and make it searchable from a central portal that would be operated by EPA or by a project partner. The EPA Office of Water (OW) completed a pilot to enable this type of data exchange (outcomes from the pilot are available here: https://www.epa.gov/sites/production/files/2017-01/documents/iwn_lessonslearned_final_201612.pdf).

  The pilot projects developed a demonstration portal that is integrating data from 8 different partners, and adding additional partners is straight forward, but does require partners to be able to publish data using the approved Open Geospatial Consortium WaterML 2.0 standard and the Sensor Observation Service. More information on this opportunity can be found in Appendix A.

- **Field Data Collection Collaborative Pilots (Partnership Opportunity)**

  Proposals are requested to develop mobile applications built on technology-neutral services that leverage Facility Registry Service (FRS) and Substance Registry Service (SRS) API's for field data collection, review and correction of locations, sub-facility features, facility details, and substance identities. Through cooperative agreements, pilot partners will work with EPA to develop standard data templates and data formats.

Funding Opportunities under Priority 5: Augment the Data and Technology Management Capacity of Potential EN Partners

- **Territory and Tribal Capacity Building**
  - **Individual Capacity Building Proposals-** Territories, tribes, and inter-tribal consortia are eligible to apply for individual capacity building grants that will enhance the applicant's environmental programs and the applicant's ability to share environmental data electronically with EN partners. Proposals must identify outputs that will increase the applicant's ability to share environmental information electronically with EPA or other EN partners, (for example, developing a backend database for a priority data system or implementing an intra-tribal data exchange). Proposals may include developing a data management plan, provided they are part of a broader proposal that leads to the development of, at a minimum, a test, pilot, or prototype system/IT product. Applicants may apply for an individual capacity building grant up to $200,000.

  - **Collaborative Capacity Building Proposals-** Additionally, territories, tribes and inter-tribal consortia are eligible to apply for partnership grants. These proposals must include multiple partners and identify an experienced EN partner that can serve as a mentor. Collaborative capacity building proposals may include funding requests for the mentoring partner's personnel costs and travel. To serve as a mentor for a capacity building application, an experienced partner must currently report or

publish data for one or more environmental programs using its own node or Virtual Exchange Services. A proposal must include a commitment letter from the mentor tribe, intertribal consortium, territory, or state. In the case that a territory, tribe, or intertribal consortium applying for a capacity-building grant can demonstrate past experience implementing an Exchange Network data flow, **the requirements for identifying a mentor will be waived**. Applicants may apply for a collaborative capacity building grant up to $400,000.

II. Award Information

The Catalog of Federal Domestic Assistance number for the Exchange Network Grant Program is 66.608 (http://www.cfda.gov).

II-A. General Information

In FY 2018, EPA expects to award about $6,000,000 for 20-25 assistance agreements of up to $400,000 each. The exact number of grants will depend on the final amount of EPA's appropriation for the grant program, the number of applications submitted to EPA by the application deadline, the amounts of proposed budgets, and the outcome of application reviews.

Most awards will be in the $50,000 to $300,000 range. **Awards for an individual assistance agreement cannot exceed $200,000. EPA may make a limited number of awards to collaborative, partnership assistance agreements. Budgets for these projects cannot exceed $400,000.** EPA remains committed to, at a minimum, awarding tribal assistance agreements equal to approximately 10 percent of the appropriated funds. The amount awarded to tribes may be greater than this minimum level, depending on the merit of tribal applications and on the competitive review of all applications. The standard period of performance for each project is three years. EPA tentatively expects to announce the FY 2018 Exchange Network Grant program selections in June 2018 and award the grants by July 31, 2018.

Additional Awards. EPA reserves the right to make additional awards under this announcement, consistent with Agency policy, if additional funding becomes available after the original selections. EPA will make any additional selections for awards no later than six months from the date of the original selections.

Partial Funding. In appropriate circumstances, EPA reserves the right to fund applications partially by funding discrete portions or phases of proposed projects. If EPA decides to partially fund a proposal/application, it will do so in a manner that does not prejudice any applicants or affect the basis upon which the application, or portion thereof, was evaluated and selected for award, and therefore maintains the integrity of the competition and selection process.

II-B. Types of Assistance

EPA may award assistance agreements funded through the Exchange Network Grant Program as grants or cooperative agreements, in-kind services or performance partnership grants. EPA will consider an applicant's preferences when the Agency decides what type of assistance to award.

EPA uses assistance agreement vehicles to transfer funding and services to a recipient to accomplish a public purpose. Unlike contracts, grants are structured and managed to ensure the project primarily benefits

the recipient toward the identified public purpose. Exchange Network assistance agreements allow recipients to develop infrastructure, systems and capacity to electronically report environmental information and participate fully on the Network. Applicants should identify and justify requests for the various structural elements available within their assistance agreement to best achieve their project goals. EPA will consider the following options for awarding EN resources:

- **Grant or Cooperative Agreement**. Grants represent direct funding to a recipient to support an identified project with defined environmental results. A cooperative agreement anticipates substantial involvement from EPA, in collaboration with the recipient, to achieve project results. EPA will negotiate the precise terms and conditions of "substantial involvement" as part of the award process. If the recipient does not identify a preference, EPA's default award will be a grant.
- **Direct Funding or In-Kind Services**. EPA will consider grantee requests to use all or a portion of awarded grant funds to provide in-kind services to the recipient through an EPA contract vehicle. Applicants should request and justify project efficiencies they expect from this approach.
- **Single Grant or Performance Partnership/Consolidated Grants**. An applicant whose organization has an existing Performance Partnership Grant (PPG) with EPA may request any new grant recommended for funding be incorporated into the PPG. Similarly, a territorial applicant whose territory has a Consolidated Grant (CG) with EPA may request that new awards be incorporated into the CG. Absent a request from the recipient for inclusion within a PPG or CG, EPA will award the grant in a stand-alone vehicle.

II-C. Funding Restrictions

Applicants may propose EN project funding for costs associated with personnel salaries and fringe benefits, Intergovernmental Personnel Act Agreements (IPAs) travel, travel related to Exchange Network activities, equipment, supplies, contractual costs, in-kind services provided by EPA, and indirect costs. Applicants may propose EN project funding for development, modernization, and enhancement activities. Applicants may *not* use EN funding for the following functions (see Appendix J for definitions):

- **Construction costs.**
- **Operations and maintenance** including previously developed and implemented EN projects.
- **Workshops and Conferences** that are not initiated, advertised, and conducted for the benefit of the recipient and other state, tribal, territorial, or local representatives or public participants or are conducted primarily for EPA's benefit.
- **Pre-Award Costs** not previously requested to cover pre-award costs incurred 90 days or less before the award date.
- **Management Fees** in excess of the direct costs and indirect costs at the rate approved by the applicant's cognizant audit agency, or at the rate provided for by the terms of the agreement negotiated with EPA.
- **Development and deployment of partner nodes** – Instead, EPA makes available and encourages all applicants to request funds to configure/use the Agency's new Virtual Exchange Services.
- **Operations and maintenance of flows**, including minor updates to schema for an existing flow.
- **Expansion of existing data flows** to include historical data or new geographic regions.

III. Eligibility Information

III-A. Eligible Applicants

Eligible applicants for the Exchange Network Grant program include states, U.S. Territories (i.e., American Samoa, the Commonwealth of the Northern Mariana Islands, the District of Columbia, Guam, Palau, Puerto Rico, the U.S. Virgin Islands), federally recognized Indian tribes and native Alaska villages, and inter-tribal

consortia of federally recognized tribes (e.g., the Northwest Indian Fisheries Commission).

Examples of Eligible Project Leads:

- State Department of Environmental Quality
- Territorial Environment Division
- Tribal Council on behalf of two or more tribal environmental and/or health agencies
- State Department of Public Health
- Tribal Water Quality Administration
- State Office of the Chief Information Officer
- Regional Air Quality Board delegated authority for the air program
- State university where the university or the university system is formally designated as an instrumentality of the state

Other entities, such as regional air pollution control districts and some public universities may apply for assistance if they are agencies or instrumentalities[2] of a state under applicable state laws. These entities, as well as other entities that submit applications asserting they are agencies or instrumentalities of a state, must provide with the application a letter from the appropriate state Attorney General certifying that the applicant is an agency or instrumentality of the state. EPA will not consider an application that does not contain the required documentation.

EPA recognizes that the delegation for some programs extends to local governments, which are responsible for reporting data to EPA. Local governments that can demonstrate that they are instrumentalities of the state by providing the documentation described in the preceding paragraph are eligible to apply for Exchange Network Grants. Most local governments that implement EPA programs, however, are not agencies or instrumentalities of the state (i.e., a true agency or instrumentality is under the direct control of the state and the management of a state agency or instrumentality may generally be changed by the state executive or other state officials) and, therefore, are not eligible to apply. EPA encourages such entities to partner with a state applicant to allow for their data to be reported and shared through the Exchange Network. Interstate commissions and other interstate entities, likewise, are not eligible to apply and are encouraged to partner with a state applicant.

EPA will only evaluate applications from eligible entities (see above). EPA will notify applicants that are ineligible for funding within 15 calendar days of the ineligibility determination. Applicants with questions about eligibility can contact Salena Reynolds, Exchange Network Grants Program Manager, at (202) 566-0466 or reynolds.salena@epa.gov. They may also attend Exchange Network User meetings to learn about and discuss Exchange Network projects and technology. Applicants not meeting the eligibility criteria may consider collaborative work with eligible organizations. EPA will only evaluate applications with eligible entities identified as the lead implementing agency for the project.

III-B. Threshold Criteria for Funding Goals

Applications are only eligible for Exchange Network funding if they meet the following requirements:

1. Application includes goal(s) that lead to completion of activities listed in the Priorities Section (I-E), additional activities identified in Appendix A and B, or others that are consistent with

[2] A true agency or instrumentality is under the direct control of the state, and the state executive or other state officials may generally determine or change its management.

EN priorities. Completion in the context of the Exchange Network means placing a data flow, data publishing, web service, or other eligible projects into production. Applicants should demonstrate their commitment to complete projects as one or more specific outputs.

2. a. Applications must substantially comply with the application submission instructions and requirements set forth in Section IV of this announcement or else they will be rejected. However, where a page limit is expressed in Section IV with respect to application, pages in excess of the page limitation will not be reviewed.

   b. In addition, initial applications must be submitted through Grants.gov as stated in Section IV of this announcement (except in the limited circumstances where another mode of submission is specifically allowed for as explained in Section IV) on or before the application submission deadline published in Section IV of this announcement. Applicants are responsible for following the submission instructions in Section IV of this announcement to ensure that their application is timely submitted.

   c. Applications submitted after the submission deadline will be considered late and deemed ineligible without further consideration unless the applicant can clearly demonstrate that it was late due to EPA mishandling or because of technical problems associated with Grants.gov or relevant SAM.gov system issues. An applicant's failure to timely submit their application through Grants.gov because they did not timely or properly register in SAM.gov or Grants.gov will not be considered an acceptable reason to consider a late submission. Applicants should confirm receipt of their or application with Salena Reynolds at 202-566-0466 or reynolds.salena@epa.gov. as soon as possible after the submission deadline—failure to do so may result in your application not being reviewed.

3. Applications must not have:
   a. project periods longer than three years.
   b. budgets greater than $200,000 for single applicant applications.
   c. budgets greater than $400,000 for partnership applications.

4. Applicants may not have more than **four** active Exchange Network assistance agreements with the Agency. EPA will determine whether an applicant meets this threshold criterion on December 31, 2017, prior to the final scoring of applications. EPA considers an assistance agreement active if the Agency has not yet approved the final technical report. EPA will consider an agreement closed if the Regional Project Officer approves the applicant's final technical report on or before December 31, 2017.

5. Applications must not request funds for activities or deliverables for which the applicant has previously received funds. If a proposed goal is similar to one previously funded, the application must describe how previously funded activities differ from those currently proposed or how the current application will complement past or ongoing work.

Additionally, if an application includes any ineligible tasks or activities (e.g., is not a priority, previously funded), that portion of the application will be ineligible for funding and may, depending on the extent to which it affects the application, render the entire application ineligible for funding.

III-C. Eligibility Criteria for Partnership Applications

EPA will consider the higher funding limit ($400,000) for projects that include more than one Exchange Network partner. The lead partner for a partnership application must demonstrate the project's support for the identified Exchange Network priorities and explain how the partnership components justify additional funding. **EPA will not consider partnerships formed from within a single state, territorial, or tribal government as eligible. For instance, a partnership between an environment and a health department within a state is not an eligible partnership. EPA will limit funding for intrastate projects to the maximum funding for a single-jurisdiction grant for an Exchange Network application, which in FY 2018 is $200,000.**

III-D. Cost Sharing or Matching

Grants for Exchange Network projects do not require applicants to share cost or match funds.

IV. Application and Submission Information

Applicants for the FY 2018 Exchange Network Grant program must submit an application package to EPA through the grants.gov website by January 26, 2018. Application package requirements are available in Appendix E, including format requirements for the project narrative (10-page limit), detailed application instructions, and procedures for obtaining a waiver for the requirement to submit applications through grants.gov. Appendix H provides a checklist of required documents to submit. Fillable versions of these forms are available at https://www.epa.gov/grants/epa-grantee-forms.

EPA may require applicants to submit additional or updated documents if the project is selected for funding to complete the funding package. EPA will provide further instructions for submittal of additional or updated documents at that time.

IV-A. Submission Date and Time

Signed and completed application packages as described in Appendix E must be sent electronically via grants.gov (or by an alternative method for those applicants with an approved waiver) **no later than 11:59 PM Eastern Standard Time, January 26, 2018**. EPA will return application packages to the sender without further consideration if they are submitted ***after*** the published closing date and time.

IV-B. Intergovernmental Review

Executive Order 12372, Intergovernmental Review of Federal Programs, may be applicable to awards resulting from this announcement. EPA implemented the Executive Order in 40 CFR Part 29. EPA may require applicants selected for funding to provide a copy of their application to their State Point of Contact (SPOC) for review as provided at 40 CFR 29.7 and 40 CFR 29.8 as applicable. The SPOC list can be found at https://www.whitehouse.gov/omb/grants_spoc/
EPA may require successful applicants from states that do not have a SPOC to provide a copy of their application for review to directly affected state, area-wide, regional and local government entities as provided at 40 CFR 29.7 and 40 CFR 29.8 as applicable. These reviews are not required before submitting an application.

IV-C. Partnership Agreements

EPA awards funds to one eligible applicant as the recipient even if other eligible applicants are partners or members of a coalition or consortium. The awardee is accountable to EPA for the proper expenditure of

funds, programmatic and administrative reporting and attainment of program and environmental results.

Grantees may provide subgrants or subawards to fund partner work within the overall project, provided the recipient complies with applicable requirements for subawards or subgrants including those contained in 2 CFR Part 200. Successful applicants cannot use subgrants or subawards to avoid requirements in EPA grant regulations for competitive procurement by using these instruments to acquire commercial services or products from for-profit organizations to carry out its assistance agreement. For more detailed information on partnership agreements, contracts and subawards, please see Appendix G.

EPA panels will review applicants' qualifications, past performance and reporting history and will consider, as appropriate and relevant, the **qualifications**, expertise and experience of formal partners. Applicants should detail their own project roles and responsibilities, experience and past performance and those of their formal partners. Section V, below, describes in detail the evaluation criteria and process EPA will use to make selections under this Notice.

IV-D. Additional Provisions For Applicants Incorporated Into the Solicitation

Additional provisions that apply to this solicitation and/or awards made under this solicitation, including but not limited to those related to confidential business information, contracts and subawards under grants, and proposal assistance and communications, can be found at EPA Solicitation Clauses. These, and the other provisions that can be found at the website link, are important, and applicants must review them when preparing proposals for this solicitation. If you are unable to access these provisions electronically at the website above, please communicate with the EPA contact listed in this solicitation to obtain the provisions.

V. Application Review Information

V-A. Evaluation Criteria

EPA will review only those applications, submitted by eligible entities that meet the threshold eligibility criteria in Section III of this Notice according to evaluation criteria below. The EPA Selection Official makes final funding decisions based on an applicant's score and other factors discussed in section V-B.

EPA will look for four elements in an application's project narrative. The applicant must:

1. Define each project goal. (e.g., publishing air quality data)
2. Explain how each project goal meets programmatic or administrative business needs.
3. Describe how it plans to implement the project, demonstrating that it has a technical understanding of the work it is proposing to perform.
4. Explain how the project enhances data sharing and data availability among Exchange Network partners, providing value to both the applicant and network partners.

To receive full points, the applicant must clearly incorporate these four elements into their application. It is not sufficient merely to repeat the terminology used in this notice.

EPA scores and ranks applications, with a highest possible score of 100. The possible point totals for the five major evaluation criteria are listed in the "Points" column in the table below. Point values for each sub-component within the five criteria are listed in bold text before the relevant criterion.

Goals, Outputs, and Outcomes in Exchange Network Grant Applications

Each application must include goal(s), outputs for each goal and at least one outcome for each goal. Please be mindful that the proper use of the terms "goals," "outputs" and "outcomes" will facilitate application review and scoring. Using terms such as "objective," "target," "task" or "milestone" will make it more difficult for reviewers to understand and properly score the application.

Appendix F provides an example of how to demonstrate goals, outputs and outcomes clearly. EPA encourages applicants to follow this example when applying.

Criteria	Points
1. Project Outputs and Outcomes Leading to Environmental Results **For each goal,** EPA uses the following criteria to evaluate project outputs and outcomes: ➢ **(10 Points)** Does the proposal clearly describe how the proposed project outputs will lead to environmental outcomes? These might include outcomes such as those listed in Section I-D.	**15**
➢ **(5 points)** Does the proposal describe and provide a plan for tracking, evaluating, and measuring its progress toward achieving expected outputs and outcomes? Each goal should have several outputs scheduled over the project period.	
2. Project Feasibility and Approach EPA evaluates the feasibility of proposed projects using the following criteria: **A. (5 points)** Does the application clearly describe individual project roles and responsibilities for the applicant and, for collaborative projects, each partner?	**12**
B. (5 points) Does the project, if it involves programmatic data, describe programmatic involvement in project development and management. This description must include the names, positions and roles of all who are involved in the project. For example, "Jane Doe, multimedia inspector, will advise the Project Manager and contractor on the Compliance Dashboard design and take part in end user testing." Some projects may not need programmatic participants. In this case, the proposal should explain why programmatic involvement was unnecessary.	
C. (2 points) Does the applicant **explicitly** commit to register any new tool or resource they develop in RCS or any new node, data flow or EN service in ENDS? Registration in both RCS and ENDS is a grant condition. For innovative flows, applicants must demonstrate that the project will result in reusable tools and services for the Exchange Network.	
3. Exchange Network Priorities EPA will evaluate the consistency of proposed work with EN priorities and FY 2018 EN Grant Program Priorities (Section I-E). The overall EN priorities are to: ➢ Improve the timeliness and accuracy of environmental data. ➢ Reduce the burden and costs associated with reporting data. ➢ Enhance data access for environmental professionals and the public.	**48**

➢ Support better decisions on environmental and health issues. More details on specific activities that fall under each EN Grant Program priority are in Appendices A through D-or the EN website. EPA evaluates the consistency of proposed projects with EN priorities using the following criteria: **A. (5 points)** Does the proposal clearly define the project goal or goals?	
B. (10 points) Does the proposal include at least one *Exchange Network* priority as a goal?	
C. (5 points) Does the applicant clearly connect each goal to a business or administrative need of its organization?	
D. (5 points) Does the applicant demonstrate sufficient technical understanding to perform the work?	
E. (10 points) Does the proposal explain how the project enhances data sharing and data availability among Exchange Network partners and provides value to both the applicant and network partners?	
F. (8 points) Does the applicant identify which existing project-appropriate EN tools, resources, and/or services, such as those listed in Appendix B, and/or code, widgets, applications and services developed by other EN partners, that will be incorporated in the project? If none are identified, does the applicant clearly explain why reusable EN tools, resources, and services cannot be used? This requires searching Reusable Component Services (RCS) for resources such as data flows, code, widgets, software, web services, XML schema, or EN services.	
G. (5 points) Does the applicant plan to use more than one shared service?	
4. Budget, Resources, and Key Personnel EPA will evaluate: (1) the budget's appropriateness including the amount allocated to each goal and its adequacy to support and complete the proposed work; and (2) the qualifications of the project manager and other key personnel to perform the project. **A. (4 points)** Does the application include a total budget amount for each goal in the project narrative?	**15**
B. (3 points) Does the application document the qualifications of the project manager and other key personnel who would perform the proposed work? In the case of an applicant who proposes to use a portion of this grant to hire key personnel, has the applicant submitted a statement of knowledge, skills, abilities, and qualifications from the recruitment package for that position?	

C. (3 points) Does the application describe why the proposed costs are appropriate to support and complete project outputs and goals?	
D. (5 points) Does the applicant identify their approach, procedures, and controls for ensuring that awarded grant funds will be expended in a timely and efficient manner?	
5. Past Performance EPA will evaluate the past performance of an Exchange Network grant applicant with one or more previous EN grants based on the percentage of semi-annual reports they have submitted historically. **A. (5 points)** Has the applicant made sufficient progress toward achieving the expected results in the prior assistance agreements?	**10**
B. (3 points) Has the applicant submitted at least 90% of the progress reports required in the terms and conditions of the prior assistance agreements by their due dates?	
C. (2 points) Has the applicant registered tools, resources, services, and/or data flows produced as a result of previous EN grants in RCS and/or ENDS?	

Please note that in evaluating applicants under the Past Performance criteria, the Agency will consider the information provided by the applicant (including semi-annual report submissions) and may also consider relevant information from other sources (including agency files and prior or current grantors to verify or supplement the information supplied by the applicant).

If an applicant does not have any relevant or available past performance or reporting information, the application should state this and will receive a neutral score for this criterion of 5 points. If the applicant does not provide any response for these items, the application will receive a score of zero for this criterion.

EPA's monitoring of Exchange Network grant performance indicates that the majority of grantees are making steady progress. The work under some grants, however, is falling behind schedule or has stopped altogether. Although unliquidated obligations (ULO's – also known as unspent balances) are not a perfect indicator of grant progress, they can serve as a useful proxy to indicate if there are performance problems. Consequently, EPA established the following criteria for grants with excessively high ULO's or unspent balances:

Figure 5-1: Criteria for Identifying Excessive ULOs

Period of Performance Milestone	Criteria – Unspent Balance as Percent of Awarded Funds
End of year two	Greater than or equal to 95 percent
End of year three	Greater than or equal to 70 percent
End of year four	Greater than or equal to 40 percent
End of year five	Greater than or equal to 10 percent

EPA may include consideration of ULOs in making final funding decisions. Specifically, for any grant that

meets the appropriate excessive ULO criterion in Figure 5-1, unless the applicant can explain that the excessively high ULO was not due to action or inaction on the part of the applicant. For example, an adequate explanation would be delays in the grant's project schedule resulting from delays on the part of EPA. EPA will post lists of grants that meet these criteria on its Exchange Network website during the first week of October 2017, and will request that the Environmental Council of the States (ECOS) notify Exchange Network partners via an EN Alert. (Potential grant applicants may sign up for EN Alerts by sending a request to ExchangeNetwork@ecos.org or http://www.mailermailer.com/u/signup/24479w). EPA will make the final determination of whether previously awarded Exchange Network grants meet the excessive ULO threshold based on the first quarter FY 2018 report, which EPA will make available during January 2018.

An applicant will not be penalized for past performance due to EPA's delayed implementation of a program component critical to them being able to make sufficient progress liquidate funds or close out grants. In this case, there will not be a negative scoring impact on future EN grant applications.

V-B. Review and Selection Process

EPA will first evaluate all applications against the threshold eligibility criteria listed in Section III of this announcement. EPA review panels will then evaluate and rank eligible applications based on the criteria listed in section V-A. The EPA reviewers will submit comments and rankings and make funding recommendations to the selection official, the Assistant Administrator of the Office of Environmental Information (OEI) or his or her designee, who will make the final funding decisions. The EPA selection official may decide to partially fund a project to focus limited resources only on those demonstrated goals and results of each project that support the stated Exchange Network priorities within this Solicitation Notice.

Other Evaluation Factors: The Selection Official will make final funding decisions based on the rankings and preliminary recommendations of the EPA review panel. In making the final funding decisions, the EPA Selection official may consider one or more of the following factors:

- EPA programs' ability or readiness to support proposed project activities.
- Geographic distribution of funding.
- Excessive unliquidated obligations (ULOs).
- Selection of higher priority activities over other assistance activities.
- Ensuring participation in the Exchange Network by federally recognized Indian tribes, inter-tribal consortia and Native Alaska Villages.
- EPA's capacity to provide any requested in-kind services.

V-C. Anticipated Award Dates

EPA anticipates that it will announce selection decisions in or around June 2018. EPA tentatively plans to issue the awards by July 31, 2018.

V-D. Additional Provisions For Applicants Incorporated Into the Solicitation

Additional provisions that apply to this solicitation and/or awards made under this solicitation, including the clause on Reporting and Use of Concerning Recipient Integrity and Performance can be found at EPA Solicitation Clauses. These, and the other provisions that can be found at the website link, are important, and applicants must review them when preparing proposals for this solicitation. If you are unable to access these provisions electronically at the website above, please communicate with the EPA contact listed in this solicitation to obtain the provisions.

VI. Award Administration Information

VI-A. Award Notices

EPA tentatively anticipates notification to successful applicants will be made via telephone or electronic or postal mail by June 2018. The notification will be sent to the original signer of the proposal or the project contact listed in the proposal. This notification, which informs the applicant that its proposal has been selected and is being recommended for award, is not an authorization to begin work. The official notification of an award will be made by GIAMD. Applicants are cautioned that only a grants officer is authorized to bind the Government to the expenditure of funds; selection does not guarantee an award will be made. For example, statutory authorization, funding or other issues discovered during the award process may affect the ability of EPA to make an award to an applicant. The award notice, signed by an EPA grants officer, is the authorizing document and will be provided through electronic or postal mail. The successful applicant may need to prepare and submit additional documents and forms (e.g., work plan), which must be approved by EPA, before the grant can officially be awarded. The time between notification of selection and award of a grant can take up to 90 days or longer.

VI-B. Administration and National Policy Requirements

Each assistance agreement will include a set of Administrative Terms and Programmatic Conditions, such as requirements for electronic funding transfers, additional financial status reporting, limitations on payments to consultants and application of indirect cost rates. These terms and conditions form the basis for the final award of Exchange Network grant funding. Failure to concur with the included terms and conditions will invalidate the award.

In accordance with the Exchange Network Interoperability Policy, applicants must commit, in writing, to reuse existing data flows and EN services registered in Exchange Network Discovery Services (ENDS), and other IT resources such as widgets and RESTful web services registered in Reusable Component Services (RCS). For information on reuse, please see Appendix C. Applicants must also commit to register any newly developed resources in ENDS or RCS as appropriate. Information about ENDS can be found at http://www.exchangenetwork.net/exchange-network-discovery-service-ends, information about RCS can be found at www.epa.gov/rcs. EPA requires all grant recipients issued under this solicitation notice to meet these conditions.

EPA will include a grant condition in the assistance agreement requiring the recipient to submit a tailored Quality Assurance Project Plan (QAPP) to the EPA Regional Project Officer within 90 days of the award issuance date. This tailored QAPP must describe for each goal and task:

- the relevant task-specific Quality Assurance (QA) criteria.
- how the recipient will ensure adherence with the QA criteria.
- how the recipient will confirm and document that the project deliverables meet the QA criteria.

Completion of the Exchange Network Quality Assurance Reporting Form (QARF) satisfies the requirements for a tailored QAPP. The QA criteria information specified above must be documented for each goal and task under the Quality Assurance Measures section of the Exchange Network QARF. The template for the Exchange Network QARF can be found at:http://www.epa.gov/exchangenetwork/exchange-network-grant-program and in Appendix I of this notice.

VI-C. Reporting

Semi-Annual Performance Progress Reports: Reporting is an important obligation that award recipients agree to undertake when they sign an assistance agreement. Both EPA and recipients are accountable to Congress and to the public for the proper and effective use of Exchange Network assistance funds. All grantees, regardless of the funding vehicle, are expected to submit semi-annual progress reports in a timely fashion. Award recipients will submit semi-annual and final technical reports electronically through EPA's Central Data Exchange (CDX) using a web form. EPA will provide successful applicants with detailed instructions for registering with and reporting through CDX at the time of award.

VI-D. Additional Provisions for Applicants Incorporated into the Solicitation

Additional provisions that apply to this solicitation and/or awards made under this solicitation, including but not limited to those related DUNS, SAM, copyrights, disputes, and administrative capability, can be found on the EPA Solicitation Clauses page. These, and the other provisions that can be found at the website link, are important, and applicants must review them when preparing proposals for this solicitation. If you are unable to access these provisions electronically at the website above, please communicate with the EPA contact listed in this solicitation to obtain the provisions.

VII. Agency Contacts

The primary EPA Headquarters point of contact is:

Salena Reynolds
Exchange Network Grant Program Manager
Office of Information Management
Office of Environmental Information
Phone: (202) 566-0466
Facsimile: (202) 566-1684
Email: reynolds.salena@epa.gov

Mailing Address:	**Physical Address** (*for overnight, or courier deliveries*):
Salena Reynolds U.S. Environmental Protection Agency 1200 Pennsylvania Ave., NW (2823T) Washington, DC 20460	Salena Reynolds U.S. Environmental Protection Agency 1301 Constitution Avenue, NW (Rm 6416Y) Washington, DC 20004

Appendix A

Programmatic Data Exchange Opportunities

This appendix highlights individual data exchanges and related Exchange Network activities for which EPA is soliciting grant applications. Each section highlights EPA Program Office activities related to each exchange and provides suggested activities for applicants to consider when developing their application. Those activities must align with EPA's priorities found in Section I-E. Applicants can propose to implement 1 or more of these data exchanges.

Air

Air Quality System (AQS) A-2

Emission Inventory System (EIS) A-3

Radon A-4

Enforcement and Compliance

ICIS (Integrated Compliance Information System) Shared Services A-6

Electronic Reporting of National Pollutant Discharge Elimination System (NPDES) Data A-8

Waste

Resource Conservation and Recovery Act Information System (RCRAInfo) A-10

Open Dump A-11

Water

eBeaches A-13

Safe Drinking Water Information System (SDWIS) A-14

Water Quality Exchange (WQX) A-16

Assessment TMDL Tracking & ImplementatioN System (ATTAINS) A-18

Other Data Exchanges

Toxics Release Inventory System (TRIS) A-21

Facility Registry Services (FRS) A-23

Air Quality System (AQS)

Description:
AQS is the official EPA repository of ambient air quality monitoring data, and related location and measurement metadata, collected by state, tribal, territorial, and local governments. It is used for regulatory purposes to determine compliance with the Clean Air Act, and for scientific and health effects research. Presently state, local, and tribal agencies are submitting data to AQS using version 3.0 of the AQS flow. This flow was updated in 2014 to add new quality assurance data elements to the schema.

Status and Plans:
EPA anticipates that in FY2018 the schema will be revised to include additional elements related to quality assurance data. This schema revision will contain only optional elements. It will not be required for submitters to use any schema revisions in FY 2018.

EPA does not anticipate any major changes to AQS affecting EN flow requirements or milestones in FY 2018.

Cost Estimates:

Activity	Cost Estimate
Implement AQS data exchange	$50,000-$100,000
Modify existing schema/migrate to new schema	$20,000-$40,000

Emissions Inventory System (EIS)

Description:
The Emissions Inventory System (EIS) is the system for storing all current and historical emissions inventory data. EPA uses it to receive and store emissions data and generate annual and triennial National Emissions Inventory.

The National Emissions Inventory (NEI) is EPA's compilation of estimates of air pollutants discharged on an annual basis and their sources. EPA uses the NEI to track emissions trends over time, develop regional pollutant reduction strategies, set and analyze regulations, perform air toxics risk assessments including inhalation risks and multi-pathway exposure, model air pollutant dispersion and deposition, and measure environmental performance as required by the Government Performance and Results Act.

Status and Plans:
The Combined Air Emissions Reporting (CAER) project, under E-Enterprise, seeks to streamline multiple point source air emissions reporting processes by creating a coordinated approach for regulated entities to provide the latest facility attributes and emissions data once, using technology and shared system applications to route the appropriate data to the relevant regulatory programs. Currently, air emissions information is collected by EPA and state/local or tribal air agencies through numerous separate regulations, in a variety of formats per different reporting schedules, and using multiple routes of data transfer. In the proposed future state, the CAER project is expected to reduce the cost to industry and government for providing and managing important environmental data and to improve decision-making capacity through more timely availability of data. This project will address electronic reporting of both facility data (FRS) as well as emissions data (EIS, GHG, TRI). Initiating or improving electronic reporting of facility (FRS) and emissions data (EIS) between industry and state/tribal/territorial agencies should be considered.

Activities Grant Applicants Should Consider:
In addition to the submission of emissions data to the EIS, grant applicants should also consider activities reusing existing shared services such as:

- Support the transition from locally installed code tables to web services such as Source Classification Code and Substance Registry System.
- Support the transition from locally installed facility configurations to the Facility Registry Service.
- Support the transition from locally installed nodes to the EPA hosted Virtual Exchange Node.
- Develop shared services that facilitate online collection of emissions inventory data.

Cost Estimates:

Grant Activity	Cost Estimate
Support the transition from locally installed code tables to web services such as Source Classification Code and Substance Registry System.	$50,000 - $150,000
Support the transition from locally installed facility configurations to the Facility Registry Service.	$50,000 - $200,000
Support the transition from locally installed nodes to the EPA hosted Virtual Exchange Node	$50,000 - $200,000
Develop shared services that facilitate online collection of emissions inventory data	$50,000 - $200,000

Radon Data Exchange

Description:
Radon remains a leading cause of lung cancer. EPA, states, tribes, and several national and regional consortia all collect radon data. These programs have differing data needs, reporting requirements, thresholds, calculation protocols and approaches to validation and verification of data.

Despite these differences, each of these data collections share the common purpose of improved tracking and understanding of radon exposure. Data are information and information is the programmatic foundation for effective radon risk reduction. The officials leading these programs need access to data that are reliable, consistent, flexible and comparable across programs. While a significant amount of radon data exists today, there are currently no systems that allow for the examination of data from multiple sources, or to draw larger conclusions about radon at a regional or national level. EN partners have an opportunity to use the Network to improve access to radon data and promote better management of exposure risks.

Status and Plans:
For the past couple of years, the Centers for Disease Control and Prevention Environmental Public Health Tracking Network (CDC EPHTN), EPA and states have worked collaboratively and developed the capability for receiving standardized radon test and mitigation data from state and local health and environmental departments, made the data available on the Tracking Network for secure access by participating partners, documented lessons learned from the pilot programs, and ascertained the practicality of scaling up to a national level database. EPA and CDC are expanding this approach to 6-12 additional states and at least one private laboratory. A key goal of the project is to explore Nationally Consistent Data and Measures (NCDM) to ensure compatibility and comparability of data and measures useful for understanding the impact of our environment on our health.

Initially, New Jersey Department of Environmental Quality developed an XML schema and a set of web services for publishing radon data that the state's health department securely accesses. Other states, tribes and territories can replicate this model using the resources that New Jersey created. More information on these resources, including the XML schema and Flow Configuration Document, is available on the Exchange Network website.

The majority of the data included in NJ's database are similar to that identified as "core radon data elements" by the Radon State Data Exchange work group. CDC's Radon Task Force developed "Radon Monitoring and Data Collection in the United States" to investigate the merits (opportunity, cost and value) of developing public health indicators associated with residential exposure to naturally occurring radon gas. In early 2014, CDC created the Radon Workgroup to pilot test the feasibility for States to submit radon data into a national radon database and to standardize previously non-systemized data sources into a nationally consistent radon information resource. In 2015, CDC expanded the workgroup to include additional states and labs, re-examined data elements, created a national database of radon (in air) test data, refined the data dictionary and schema, and revised the data validation protocol. This work is ongoing with the number of states participating increasing and getting ready for another data call in Fall 2017.

Grantees may also want to explore the use of Virtual Exchange Services (VES) as an option for exchanging

data. The VES minimizes data exchange burden using standard templates, simple configuration, standardized data mapping, and powerful data import wizards. VES uses a centralized, scalable server that supports any file format including XML and JSON and automatically generates REST and SOAP services. VES requires a database person for staging table management. See Appendix B for more information on VES.

EPA and CDC hope to subsequently scale the pilot to a national level database for public access. Both agencies will advance existing partnerships and promote new collaborations to obtain radon test/mitigation data, offer scientific expertise to determine NCDMs, and provide technical support to modify the infrastructure and functionality needed to host the database.

Activities Grant Applicants Should Consider:

- Participate in the CDC EPHTN Work Group to discuss radon data exchange needs and collaboratively coordinate on implementing standardized web services.
- Evaluate the Radon XML schema previously created by the New Jersey Department of Environmental Quality and CDC EPHTN Work Group.
- Map radon data:
  - to the Radon XML schema and build the capacity to generate and share those XML files via Network web services.
  - to standard staging tables instead of dealing with the complexities of data formatting, data flow logistics, notifications through Virtual Exchange Services.
- Implement Exchange Network web services that make radon test data available to other stakeholders and the public as appropriate.

Cost Estimates:

Grant Activity	Cost Estimate
Map radon data: • to the Radon XML schema and build the capacity to generate and share those XML files via Network Web services. • to standard staging tables instead of dealing with the complexities of data formatting, dataflow logistics, notifications through Virtual Exchange Services.	$50,000 - $200,000
Implement Exchange Network Web services that make radon test data available to other stakeholders and the public as appropriate. Grantees may also want to explore the use of virtual exchange services (VES) as an option for exchanging data.	$5,000 - $10,000

ICIS (Integrated Compliance Information System) Shared Services

Description:
ICIS supports National Pollutant Discharge Elimination System (NPDES) wastewater discharge program functions (e.g., permitting, compliance monitoring, enforcement, and special regulatory programs), as well as compliance and enforcement data about Clean Air Act (CAA) stationary source emissions. The ICIS data flow accepts XML formatted submissions of NPDES and CAA data from states, tribes, territories, and local environmental agencies via the Exchange Network.

Status and Plans:
EPA released the ICIS data flows in four parts: batch discharge monitoring reports (DMR) (May 2008), DMRs (via CDX) from facilities that had electronically signed and submitted them using NetDMR (June 2009), NPDES electronic data transfer (EDT) (December 2012), and CAA stationary source EDT (October 2014). To expand upon electronic reporting capabilities, EPA is developing *service-based reporting* that enables accessing, updating, replacing and deleting data via shared services. States/tribes/territories may want to develop user interfaces which take advantage of these services to support their own reporting. The data exchanged via shared services would support the flow of a common facility construct, and/or compliance and enforcement data related to NPDES and the CAA stationary source programs.

Activities Grant Applicants Should Consider:
The applicant might explain key themes of the services, their functional specifications, as well as the security, implementation, and long-term operational considerations necessary to integrate and use the shared services best suited for their organization. The applicant might also include plans for converting from using a traditional Exchange Network node to developing and using shared services.

ICIS grant applicants should consider, but not limit themselves to the following activities for obtaining grant funding:

- Upgrade of a state, tribal, or territorial data system and/or data flow to meet the requirements of EPA's NPDES Electronic Reporting Rule. Activities might include support for states to modify their state NPDES database systems to ensure that they can capture, store, and transmit to EPA any new data elements that are required under Appendix A of 40 CFR 127 as part of the NPDES eReporting Rule. Applicants could discuss the costs and milestones associated with upgrading their state system to ensure it can send the required data to ICIS-NPDES using shared services.

- Modify state, tribal, or territorial systems to provide or consume shared services.

- Develop and/or consume shared services for a **user registration process, credentials generation, authorization**, **login and user authentication** including signing signature agreements, identity proofing, retrieving security questions related to user authentication, validating passwords, checking User ID availability, and/or authenticating a user's credentials.

- Develop and/or consume shared services that enable **entering data and viewing human readable data, submitting forms for signature, signing forms, and validating signatures,** including: retrieving blank forms, checking form eligibility, filtering forms based on search criteria, creating new forms, deleting forms, saving forms, enabling attachments to a form, exchanging forms between users, and routing forms.

- Develop and/or consume shared services that **create, maintain, and archive** a copy of record, including viewing, repudiating and editing a copy of record.

- Develop and/or consume shared services that **retrieve reference values**, such as: states, counties, permit types, permit status, chemicals, pollutants, form status, form types, titles, and roles/user types.

- Develop and/or consume shared services that **facilitate search functions** for data elements such as: zip code, state, county, chemicals, pollutants, receiving waters, air quality control district, enforcement action type, compliance monitoring type, violation, and activity dates.

- Develop application program interfaces that **send, receive and process notifications and data** related to NPDES or CAA-stationary source programs, such as: list of forms, documents, user registration information and functionality, confirmation codes from user registration, email availability, and account confirmation emails.

- Extract and convert the data from State NPDES and air systems into the XML format needed to submit data to ICIS electronically; modify state, tribal, or territorial systems to accommodate the data requirements for ICIS-NPDES and ICIS-Air; and install and configure ICIS-NPDES and ICIS-Air plug-ins available on the Exchange Network.

Note: Proposals for the ICIS-NPDES activities supporting the requirements of the NPDES eReporting Rule and proposals for ICIS-Air activities are eligible for funding provided that the proposal commits to putting the upgrades or new services into production.

Cost Estimates:

Grant Activity	Service	Cost Estimate
Upgrade a state data system and/or data flow to meet the requirements of EPA's NPDES Electronic Reporting Rule	ICIS-NPDES	$35,000 - $200,000
Modify state, tribal, territorial systems to provide or consume shared services	ICIS-NPDES or ICIS-Air	$35,000 - $200,000
Develop application program interfaces that send, receive and process notifications and data related to NPDES or CAA-stationary source programs	ICIS-NPDES or ICIS-Air	$35,000 - $200,000
Extract and convert the data from State NPDES and air systems into the XML format needed to submit data to ICIS electronically; modify state/tribal/territorial systems to accommodate the data requirements for ICIS-NPDES and ICIS-Air; and install and configure ICIS-NPDES and ICIS-Air plug-ins available on the Exchange Network	ICIS-NPDES or ICIS-Air	$35,000 - $200,000

Electronic Reporting of National Pollutant Discharge Elimination System (NPDES) Data

Description:
Electronic reporting of NPDES general permit forms, program reports, and Discharge Monitoring Reports (DMRs) lowers burden for permittees and regulators; improves data quality, availability, and timeliness; and ultimately improves compliance. In support of these goals, EPA promulgated the NPDES Electronic Reporting Rule ("NPDES eRule) in September 2015, which requires permittees to electronically report DMRs and Part 503 biosolids/sewage sludge annual program reports where EPA implements the Part 503 program beginning in December 2016 and general permit forms and program reports beginning in December 2020.

Status and Plans:
To support implementation of the NPDES eRule, EPA currently has two tools to accomplish these goals: NetDMR for DMRs and NeT for general permits and program reports.

Version 4.0 of the National NetDMR system, deployed May 2017, supports DMR reporting by permittees within 22 states and territories, and all 10 EPA Regions. The Agency can readily deploy additional instances or program services to support other states, territories or tribes.

States that have unique business requirements may prefer to develop and deploy their own electronic DMR (eDMR) system within their state computing environment. These states will use their own eDMR systems to ensure timely and accurate reporting of DMRs by permittees to the regulatory authority, then send this data to EPA's ICIS-NPDES system, using CDX and the Exchange Network.

Currently, the fully service-based instance of NeT supports electronic reporting by permittees for the federal Construction General Permit for stormwater discharges. EPA is developing a service-based version of NeT for the federal Gulf of Mexico offshore oil and gas extraction General Permit, and plans to develop service based versions of NeT for the Multi-Sector stormwater discharge General Permit, and the Biosolids program report during FY 2017-18. Electronic reporting capabilities for additional federal permits and reports to be developed after that include: concentrated animal feeding operations (CAFOs), combined sewer overflow (CSO) event, annual pretreatment, separate sewer overflow (SSO) event, industrial user compliance, other general permits, and municipal separate storm sewer system (MS4) storm water program notices of intent (NOI) and annual reporting information. New web services for these areas will be developed and shared with states, tribes, and territories.

States may want to develop user interfaces which take advantage of these services and deploy them within their own electronic tools for reporting NPDES permit forms (e.g., Notices of Intent) and program reports. EPA will share its Java-based solution with states who want to use it as a model, or states may choose to develop their own versions.

Activities Grant Applicants Should Consider:

- **Development, Testing and Implementation of eDMR System within a State/Tribal/Territorial Environment:**
  Some states have specific business reasons why EPA's NetDMR cannot meet their programmatic requirements and, therefore, need a state-specific eDMR system. For states with these requirements, this area can provide support for technical activities that lead to successful implementation of an

eDMR system within the state computing environment that is fully CROMERR compliant. In these cases, applicants might explain why it is advantageous to develop and deploy their custom system (which requires state operation and maintenance). Applicants could discuss costs and milestones associated with developing, testing and deploying the application to ensure it works properly and sends required data to ICIS-NPDES using the approved schema and methodology. Applicants could also provide a plan for providing outreach, training and support to members of their regulated community that will use their eDMR system, and discuss their adoption rate goals and milestones.

- **Development, Testing, and Implementation of a system for reporting electronic NPDES permit forms (e.g., Notices of Intent (NOI)) for individual or general permit coverage or program reports:**
  States may develop their own CROMERR-approved tools for electronic submission of NPDES permit forms (e.g., NOIs) and program reports using shared services such as: CDX account registration, authentication, and copy-of-record services; ICIS services for information such as reference values; ATTAINS services for impaired waters and TMDL records. Applicants could discuss costs and milestones associated with deploying and testing the application to ensure it works properly and sends required data to ICIS-NPDES using the approved XML schema and methodology. Applicants could also provide a plan for outreach, training and support to members of their regulated community, and discuss their adoption rate goals and milestones. Applicants should highlight shared services that they will develop or consume, and how they will benefit their NPDES electronic reporting program.

- **Development, Testing, and Implementation of new Shared Services:**
  If a necessary shared service is not available, states, tribes, and territories may propose to develop, test, and implement new service(s) that they will need to enable electronic reporting, such as a service for the collection of application fees. Applicants could specify the set of additional services needed, the permits and use cases and numbers of permittees to which they apply, and the methods they will use to enable other EN stakeholders to discover the new shared services.

These activities are eligible for funding provided that the project proposal commits to deploying the new system, upgrade(s), or shared service(s) into production.

Cost Estimates:

Function	Service	Cost Estimate
Development, Testing and Implementation of eDMR System within a State Environment	ICIS-NPDES	$35,000 - $200,000
Development, Testing, and Implementation of a system for reporting electronic NPDES permit forms (e.g., Notices of Intent (NOI)) for individual or general permit coverage or program reports	ICIS-NPDES	$35,000 - $200,000
Development, Testing, and Implementation of new Shared Services	ICIS-NPDES	$35,000 - $200,000

Resource Conservation and Recovery Act Information (RCRAInfo)

Description:
RCRAInfo is a national, web-based system which provides data entry, data management, and data reporting functions used to support the implementation and oversight of the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984 as administered by EPA (through its regions) and authorized states. RCRAInfo identifies and categorizes hazardous waste handlers, and includes high quality information about regulated activities, permit/closure status, compliance with federal and state regulations, and cleanup activities. Only those that are a delegated authority under RCRA Subtitle C can submit data to RCRAInfo, however, non-delegated states or tribes can receive data from RCRAInfo via RCRAInfo outbound services.

Status and Plans:

Exchange Network Program Office Activities	
Milestone	**Target Completion Date**
User Specified Outbound Services	As requested
Supportive Outbound Services	As requested
RCRAInfo upgrade/enhancements including schema revision	As requested

Activities Grant Applicants Should Consider:
EPA encourages recipients to evaluate and explore the use of outbound web services and to partner with EPA to identify outbound service needs and requirements. Additionally, states that are currently performing double-data entry should seek to use either RCRAInfo inbound or outbound services to eliminate that double-data entry.

Cost Estimates:

Activity	Cost Estimate
Identify, document requirements and create outbound web services	$50,000-$80,000
Migrate to either RCRAInfo inbound or outbound services to eliminate double data entry.	$50,000-$80,000

Open Dump Data Exchange

Description:
The open dump problem facing tribes is immense and needs to be characterized. The EPA's Office of Resource Conservation and Recovery (ORCR) and the DOI-Indian Health Service (IHS) need updated and timely information on open dumps on Indian Country. The Exchange Network is in a unique position to assist and promote the timely, accurate sharing of key information on open dumps to a vast set of partners. Tribes are encouraged to develop the data requirements that will meet ORCR and IHS data needs, develop the appropriate schema and flow configuration to meet these data needs, and put the Open Dump data exchange into production. Key steps in implementing an Open Dump flow are:

- Test existing schema found at http://www.exchangenetwork.net/data-exchange/open-dump-data-exchange/.
- Develop web services.
- Complete end to end testing by tribes with CDX.
- Flow configuration document completed.
- Convene an IPT on the data flow.
- Mentor other tribes on the data flow.

Activities Grant Applicants Should Consider:
- Determining the need to develop specific data standards for Open Dumps.
- Establishing if developing or enhancing the Fac ID 3.0 schema might fit the data exchange needs of this data flow. However, a new schema might be necessary for the data flow.
- Participating in Integrated Project Teams to assist in building out the schema for Open Dumps.
- Defining, vetting and building a comprehensive standard set of web services for Open Dump data flow to advance the Network and serve as a model for other data service publishing.
- Documenting the data flow.

This activity is eligible for funding provided that the project plan commits to putting the Open Dump data exchange into production. The applicant must coordinate with the Exchange Network Interoperability and Operations Team to ensure technical and data standards review and approval for changes to data standards and schema. Work associated with the schema review and approval process is fundable under this grant program

Cost Estimates:

Activity	Cost Estimate
Determining the need to develop specific data standards for Open Dumps.	$5,000-$20,000
Establishing if developing or enhancing the Fac ID 3.0 schema might fit the data exchange needs of this data flow. However, a new schema might be necessary for the data flow.	$5,000-$30,000
Participating in Integrated Project Teams to assist in building out the schema for Open Dumps.	$10,000-$30,000

Defining, vetting and building a comprehensive standard set of web services for Open Dump data flow to advance the Network and serve as a model for other data service publishing.	$35,000-$80,000

eBeaches

Description:
eBeaches is the electronic data transmission system that allows EPA to receive and display state beach water quality and swimming advisory data securely two hours after state and local agencies send the data. eBeaches supports the Beaches Environmental Assessment and Coastal Health (BEACH) Act requirement to collect, store, and display beach public right-to-know pollution occurrence data. States should submit spatial representations of the beaches reported in the Beach Notification (PRAWN) and monitoring stations in Beach Monitoring (WQX) submissions using the NHDEvent data flow.

Activities Grant Applicants Should Consider:
Applicants should consider the following steps prior to data submissions.

- Read all support documentation at https://www.epa.gov/beach-tech/submitting-data-epa. ***(This activity is not eligible for funding)***
  - Consider publishing Beach closure data in real time, even though the EPA currently updates data on a two-hour cycle.
  - Map systems to the approved national XML schemas. http://www.exchangenetwork.net/communities-of-interest/water/
  - Implement NHDEvent data flow for BEACON beach locations to be geo-referenced to the NHD. Link beach locations consistent with the NHD and the Geospatial One Stop Hydrography Standard.
  - Verify in WQX/STORET organization name (org_id) to sample station (station_id) to beach name (project _id aka beach_id and national project id (EPABEACH) relationship/links to ensure correct stations are linked to corresponding beach.
  - Check with other internal offices for existing Node capability and Virtual Exchange Services access before developing Node capability for each beach data flow. ***(This activity is not eligible for funding)***
  - Validate XML instance documents prior to submission via CDX (node or ENSC).
  - Participate in biweekly/monthly Beach conference calls. ***(this activity is not eligible for funding)***

Note: This activity is eligible for funding provided that the project proposal commits to deploying the eBeaches data flow into production.

Cost Estimates:

Activity	Cost Estimate
Implement eBeaches data exchange	$40,000-$80,000
Publish Beach closure data in real time, even though the EPA currently updates data on a two-hour cycle.	$10,000-$20,000
Map systems to the approved national XML schemas. http://www.exchangenetwork.net/communities-of-interest/water/	$10,000-$30,000
Implement NHDEvent data flow for BEACON beach locations to be geo-referenced to the NHD. Link beach locations consistent with the NHD and the Geospatial One Stop Hydrography Standard.	$10,000-$20,000
Verify in WQX/STORET organization name (org_id) to sample station (station_id) to beach name (project _id aka beach_id and national project id (EPABEACH) relationship/links to ensure correct stations are linked to corresponding beach.	$20,000-$40,000

Safe Drinking Water Information System (SDWIS)

Description:
SDWIS State is an EPA-provided system designed to assist primacy agencies in managing their Public Water System Supervision (PWSS) programs under the Safe Drinking Water Act (SDWA). Currently, SDWA 3.5 data flows use XML files to exchange data between the Primacy Agency's SDWIS State system (or comparable system) and EPA for quarterly reporting. SDWIS Prime, a new system replacing SDWIS State, includes a centralized, CROMERR-compliant collection site (the Compliance Monitoring Data Portal, or CMDP) for electronic reporting of laboratory samples data, laboratory and public water system information updates and water utility operational data reports to the primacy agencies from regulated entities.

Status and Plans:
EPA completed development of CMDP and began deployment in October 2016. Several primacy agencies are scheduled to move to the portal, many replacing their legacy portals, over the next two years. SDWIS Prime is currently in development and the drinking water community has been actively involved in testing. The SDWIS Prime project team has identified several candidate web services (ReST APIs) and testing of these services is anticipated to start by fall of 2017. Primacy agencies can begin transitioning to SDWIS Prime beginning in April 2018 after system development is completed.

Activities Grant Applicants Should Consider:
- Participating in monthly SDWIS Prime/CMPD update calls (send an email to sdwisprime@epa.gov if not already on the contact list.) (***this activity is not available for funding***)
- Adopting and deploying CMDP and SDWIS Prime – including but not limited to developing a transition plan, data migration and training to move a drinking water primacy agency from their legacy systems to SDWIS Prime and CMDP. Eligible activities also include but are not limited to training of agency, public water system and laboratory personnel in system usage and system testing.
- Developing shareable/reusable tools supporting data migration to SDWIS Prime and for transitioning business processes to SDWIS Prime.
- Developing shareable/reusable tools supporting bulk data transfer from SDWIS Prime to primacy agencies for use of data in state business systems and tools.
- Modifying primacy agency business systems to interact with SDWIS Prime with web service calls.
- Repurposing the legacy SDWIS State database as a local data store serving as an intermediary between SDWIS Prime and the primacy agency's interfacing applications, including a mechanism for synchronizing data with SDWIS Prime, possibly leveraging Virtual Exchange Services for this data exchange.

Cost Estimates:

Activity	Cost Estimate
Modifying primacy agency business system to interact with SDWIS Prime using ReST API calls instead of ODBC	$20,00 - $40,000 for the first application, decreasing cost for additional applications
Developing primacy agency specific transition plan for CMDP	$5,000 - $15,000
Developing primacy agency specific user training for CMDP	$2,500 - $10,000
Developing primacy agency specific transition plan for SDWIS Prime.	$5,000 - $15,000
Developing primacy agency specific user training for SDWIS Prime.	$2,500 - $10,000
Repurpose legacy SDWIS State database as a local data store as an intermediary between SDWIS Prime and primacy agency interfacing applications – for primacy agencies currently using SDWIS State	$15,000 - $30,000
Repurpose legacy SDWIS State database as a local data store as an intermediary between SDWIS Prime and primacy agency interfacing applications – for primacy agencies using a system other than SDWIS State	$40,000 - $60,000
Mapping non-SDWIS State compliance system to SDWIS Prime	$75,000 - $100,000
Mapping non-SDWIS State compliance system to CMDP	$30,000 – $50,000

Shared Services/Reusable Components Available:

- CMDP ReST API (available now) and SDWIS Prime ReST APIs for data access and uploading data.
- EPA furnished legacy SDWIS State 3.33 to SDWIS Prime/CMDP data mappings available fall 2017.

Water Quality eXchange (WQX)

Description:
Water Quality eXchange (WQX) defines the framework by which EPA compiles water quality monitoring data (physical, chemical, biological, habitat, metrics, and index) into the STOrage and RETrieval (STORET) Data Warehouse. Network Partners collect water quality monitoring data and submit it to STORET via WQX. (http://www.exchangenetwork.net/exchanges/water/wqx.htm) More information on the Warehouse and on WQX can be found at: https://www.epa.gov/waterdata/storage-and-retrieval-and-water-quality-exchange.

In addition, data from STORET can be queried using the EPA and USGS co-hosted Water Quality Portal. The Water Quality Portal provides standard REST services that provide access to the water quality monitoring data. These services provide access to the data in tab, comma separated, Excel, and WQX format. Data submitted through WQX are published to the Water Quality Portal. The Water Quality Portal provides standard REST services that provide access to the water quality monitoring data. These services provide access to the data in tab, comma separated, Excel, and WQX format. Data submitted through WQX are published to the Portal.

Status and Plans:
The STORET/WQX team are currently evaluating a series of recommended changes to the WQX schema to promote QA/QC and data consistency. Once these changes are compiled, EPA plans to make edits to the schema to accommodate these changes. EPA makes every effort to ensure backward compatibility with prior versions of WQX, and intends WQX v3.0 to be the same.

EPA is also exploring approaches for sharing continuous monitoring data. Demonstration projects are underway. For more information on this effort, see section I-E of this document.

Exchange Network Program Office Activities	
Milestone	**Target Completion Date**
Develop biological web services for use in the Water Quality Portal	Complete
Develop habitat, metrics and index web services for use in the Water Quality Portal	Fall 2017
System readiness to receive test and production data to EPA WQX v3.0. The new v3.0 will include minor field updates. (note WQX v1.0, 2.0, and 2.1 will still be accepted)	December 2018

Activities Grant Applicants Should Consider:
- Develop applications that use Water Quality Portal web services (data and spatial) for data integration and analysis. This could include collaborating with EPA on the development of open-source tools for discovering data and performing water quality analyses (e.g., establish links to water impairment, water permit facilities, watershed resource planning).
- Partner with ineligible entities that collect monitoring data (e.g., local governments, watershed groups) to assist them in putting the WQX data flow into production.

Cost Estimates:

Activity	Cost Estimate
Mapping state/tribal/territorial data system to WQX Schema	$40,000-$80,000
Integrating data from Water Quality Portal using outbound REST Services	$20,000-$60,000
Upgrading to WQX 3.0 Schema from WQX 1.0 or WQX 2.0	$40,000-$80,000

Assessment TMDL Tracking And ImplementatioN System (ATTAINS)
(Integrated Reporting (303(d)/305(b))

Description:
Clean Water Act (CWA) Sections 303(d) and 305(b) requires states to submit to EPA by April 1 of all even numbered years:

- Section 303(d) – a list of impaired and threatened waters still requiring TMDLs; identification of the impairing pollutant(s); and priority ranking of these waters, including waters targeted for TMDL development within the next two years.
- Section 305(b) – a description of the water quality of all waters of the state (including, rivers/stream, lakes, estuaries/oceans and wetlands). States may also include in their section 305(b) submittal a description of the nature and extent of ground water pollution and recommendations of state plans or programs needed to maintain or improve ground water quality.

EPA and the states invest significant resources to meet these requirements using a combination of paper and electronic submissions. In the most recent Information Collection Request for the CWA Sections 303(d) and 305(b) programs, EPA estimated that the state burden alone is $193 million annually.

Status and Plans:
The Assessment TMDL Tracking and Implementation System (ATTAINS) allows EPA to streamline and improve the process for preparing the biennial CWA Section 305(b) Report to Congress by providing electronic access to the national and state summaries and the detailed waterbody-specific assessment status reported by states. Under EPA's new Water Quality Framework[3], one activity being pursued is a redesign of ATTAINS. Under this redesign effort, EPA will replace the distributed Assessment Database (ADB) and the current OWIR-ATT flow.

The new ATTAINS data flow will allow states/tribes/territories to:

- Report water quality assessment information. (including use support, causes, and probable sources)
- Provide and receive TMDL information.
- Provide references to water quality monitoring location data relevant to the water quality. Assessments. (submitted via the Water Quality Exchange [WQX])
- Identify activities that states/tribes/territories are performing that lead to water quality restoration.

The data available in ATTAINS will reside in a web-based application that states, territories, tribes[4], and EPA can use to track water quality assessment decisions, TMDLs, priority areas, and report on performance measures. A goal of this redesign is to transition Integrated Reporting (IR) to a paperless process as envisioned by EPA's E-Enterprise initiative. This redesign will also include the capability to publish IR data

[3] **The Water Quality Framework (Framework)** is a new way of thinking about how EPA's water quality data and information systems can be better integrated to more effectively support water quality managers and meet program goals. The Framework will streamline water quality assessment and reporting currently performed under ATTAINS, eliminate paper reporting and provide a more complete picture of the nation's water quality. The Framework will start by focusing on better integrating three systems: 1) EPA's water quality monitoring repository (STORET and the Water Quality Exchange [WQX]), 2) EPA's Assessment TMDL Tracking and ImplementatioN System (ATTAINS), and 3) EPA's surface water mapping tool (the National Hydrography Dataset Plus [NHDPlus]). Following the integration of these systems, further integration is possible with other water programs such as: water quality permits, enforcement and compliance, source water protection, and nonpoint source projects.

[4] Tribes can provide water quality assessments as part of their 305(b) reports. Tribes would be able to use this new ATTAINS system for tracking and reporting this information.

via web services that will support the integrated vision of the Water Quality Framework.
EPA will begin the transition to the new ATTAINS during the summer of 2017. The Agency has worked with states and defined the requirements for this new system, and has developed a data model and schema for states to begin using. States, tribes, and territories should plan to transition to the new ATTAINS by the 2018 Integrated Reporting Cycle. To make this transition to the new ATTAINS, states, tribes, and territories can use either the new Exchange Network ATTAINS data flow or the new web-based ATTAINS data system (or some combination of the two). As states make this transition, they may begin as a web-based ATTAINS user in 2018 and transition to an Exchange Network flow for future cycles as they build out capability and are seeking to gain efficiencies. EPA will no longer support, nor award grants for the OWIR-ATT data flow.
Because of the changes that will result from the ATTAINS redesign, for the purposes of the Exchange Network Grant program, the new ATTAINS data flow is considered a new flow. As states/tribes/territories implement the ATTAINS flow, they should consider reusing existing components where appropriate (i.e., ATTAINS node plug-ins or Virtual Exchange services).

Exchange Network Program Office Activities	
Milestone	**Target Completion Date**
Final ATTAINS v1.0 schema and Flow Configuration Document and system ready for testing, including outbound Exchange Network Services	Summer 2017
States, tribes, and territories may begin submitting data to ATTAINS for the 2018 Integrated Reporting Cycle	Spring 2018
EPA completes outbound RESTful services for full integration with state/tribal/territorial systems	Spring 2018

Additional Activities Grant Applicants Should Consider:

- Identify, develop, and implement innovative tools that may enhance the interaction between EPA Regions and states during the 303(d)/IR review and approval process (e.g., web-based services and applications).
- Identify, develop, and implement innovative ways to integrate water quality monitoring and assessment information, including developing innovative, reusable tools that make use of web services to both discover and make use of water quality monitoring data in a more automated way.
- The ATTAINS web-based application will be using the E-Enterprise Portal as the single-sign-on tool. States, tribes, and territories may consider innovative approaches for integrating with the E-Enterprise Portal for authorization into the ATTAINS system (see section I-E of this document).

Note: All activities are eligible for funding provided that the project proposal commits to deploying the ATTAINS data flow into production.

Cost Estimates:

Activity	Cost Estimate
Implement ATTAINS data flow for Assessment Units, Assessments, or Actions	$40,000-$100,000
Build capability to retrieve data from ATTAINS outbound services	$40,000-$60,000
Develop capability for integrating WQX and ATTAINS workflows and making use of monitoring data for automated water quality analyses	$40,000-$80,000
Develop tools to facilitate EPA review of Integrated Reporting Data and transitioning to a fully electronic process	$20,000-$40,000
Build capability to consume outbound ReST services from ATTAINS to incorporate data into state, tribal, or territorial websites or applications	$40,000-$80,000

Toxics Release Inventory System (TRIS)

Description:
TRI is an annual reporting requirement for industries with toxic chemical releases (deadline is July 1st of every year). The TRI Data Exchange (TDX) enables these industries to submit simultaneously TRI reports to both EPA and States/Tribes via CDX. Benefits of the TRI Data Exchange include:

- Elimination of duplicative data entry, reducing burden for reporting facilities.
- Reduction of State/Tribe data reconciliation.
- Faster access to the data.

Status and Plans:

Exchange Network Program Office Activities	
Milestones	**Target Completion Date**
Load/Update XML Schema (if necessary) for FY 2018	As needed
Continue to investigate use of additional web services for further application functionality	Ongoing
Test and Support Operational Node-to-Node data exchanges between CDX and States/Tribes	Ongoing

Activities Grant Applicants Should Consider:
Work with the TRI Program to test XML schema on the state node to accept TRI data from EPA.

- States/Tribes should develop procedures that enable the import of TRI data into their systems. The procedures should support data in XML format received via their state node.
- Encourage environmental State/Tribal program office employees at TDX states to take advantage of the benefits offered by the TDX Viewer tool. More information about the TDX Viewer
- Use the TRI XML schema to develop loading/converter tools to populate the state database directly from incoming data sources via CDX.
- Leverage existing tools and services developed by States/Tribes already on the TRI Data Exchange. A map displaying current TDX participants can be accessed at http://www.epa.gov/toxics-release-inventory-tri-program/tri-data-exchange.
- Collaborate with states/tribes on the TRI Data Exchange and other states interested in joining (i.e., participate in quarterly TDX conference calls, develop sharable code).

Note: These activities are eligible for funding provided that the project proposal commits to deploying the outbound data flow into production.

Cost Estimates:

Grant Activity	Cost Estimate
States/Tribes should develop procedures and support that enable the import of TRI data into their systems. The procedures should support and align with the TRI XML format received via their State/Tribal node. This would also include updating the XML to include new data elements and structure when applicable.	$50,000 - $150,000
Use the TRI XML schema to develop load/parse/converter tools to populate the State/Tribal database directly from EPA incoming data sources via CDX.	$40,000 - $60,000

Facility Registry Service

Description:
The Facility Registry Service (FRS) is EPA's centrally managed database that integrates facility data across over 90 EPA and other federal systems, as well as numerous state, tribal and territorial databases. FRS provides access to the names, locations, associated program IDs, industrial classification, corporate and contact affiliation, and other information for facilities subject to environmental regulations and for other sites of environmental interest.

These integrated facility identification records allow EPA, its state, territorial, and tribal partners, web application owners, and the public to access integrated environmental information reported from and about facilities and sites.

Status and Plans:
Facility Identification (FacID) flow allows Partners to share their integrated facility/site data with EPA's Facility Registry Service (FRS). Partners can use the Exchange Network to share information on facilities, sites, monitoring stations, and other place-based areas subject to environmental regulation or of environmental interest. FRS was the first project to exchange data with states through the Central Data Exchange (CDX) - EPA's node on the Network, with FacID. The schema for FacID 3.0 is available and allows EN partners to publish and access facility identification information more easily. FacID 2.3 is still available and supported for those partners not yet ready to move to the most recent version of FacID. Grant applicants can obtain information about FacID topics at http://www.exchangenetwork.net/data-exchange/facility-identification/

Applicants that wish to take advantage of FRS web services can access a listing of data resources: https://www.epa.gov/enviro/frs-data-resources and should periodically check RCS (see Appendix J for a description), a catalog of IT resources from EPA and its state and tribal partners. Applicants should check RCS frequently because EPA and its partners register new resources in RCS regularly.

Activities Grant Applicants Should Consider:
Applicants are encouraged to leverage existing FRS's FacID data flow to:

- Integrate state/tribal/territorial facility data into FRS.
- Integrate FRS facility data into state/tribal/territorial systems.

Cost Estimates:

Function	Service	Cost Estimate
Integrate state/tribal/territorial data into FRS	FacID	$50,000-$100,000
Integrate FRS data into state/tribal/territorial system	FacID	$50,000-$100,000

Appendix B

Foundational Exchange Network Shared Services

The Exchange Network Grant Program encourages projects that promote efficiency through the reuse of shared systems and resources. Services are software that enable the sharing of business logic, data, and processes across a network. Shared services are the delivery of a service, developed once and then managed centrally by one party, for use by other parties with agreed upon customer-service levels. This approach allows resources to be leveraged across an entire enterprise, and organizations to focus limited resources on activities that support their business goals and is the premise of the Exchange Network.

The EN can provide the underlying network for computers managed by EN partners to access, use, and combine shared information as well as shared service components either managed centrally by EPA or provided by a state, tribal or territorial partner for users across the EN. From an EN perspective shared services include technological services, such as CROMERR and the Virtual Exchange, and the Enterprise Identity Management, data services, such as facility identification and substance identification and publishing or shared analytical and visualization services such as found in the Geospatial Platform.

By fostering implementation of shared services, the EN partners expect to improve the exchange, timeliness, and quality of the environmental information shared between co-regulators resulting in reduced burden and improved environmental management decisions. This appendix provides information and opportunities for projects related to the foundational EN shared services which applicants can integrate into their own data flows and business processes.

The cost estimates that appear in the following appendix were made by the Subject Matter Experts who manage the featured service. Acknowledging that each state, tribe, and territory has different IT configurations and solutions for the programs they manage, it is permissible for proposal cost estimates associated with any individual suggested activity to exceed the estimates included in this notice. If your estimate exceeds the estimate in this notice, you must provide an appropriate justification for the variation.

Virtual Exchange Service (VES) B-2

Shared CROMERR Services (SCS) B-5

Enterprise Identity Management B-8

Facility Registry Service (FRS) B-11

Substance Registry Service (SRS) B-14

E-Enterprise Portal B-16

Laws and Regulations Service (LRS) B-18

Virtual Exchange Service

Funding Opportunity Purpose:

To increase the use of Virtual Exchange Services (VES) by supporting new EN partner data flows or migrating existing data flows from a physical node. The desired outcome is decreased or avoided costs for EN users/partners related to maintaining and operating a node on the Exchange Network.

Service Background and Description:

In 2012, the Exchange Network governance team established an integrated project team (IPT) consisting of states, tribes, and EPA to develop a cloud-based service for creating data exchanges on the Exchange Network. VES provides the same robust services as the traditional Exchange Network node, but eliminates the need for Partners to create and maintain a node server. EPA developed this new model in response to requests from Exchange Network partners that needed more cost-efficient ways to manage and maintain their nodes. In addition to cost savings, EN partners can leverage the Internet Service Bus (ISB), which offers application level connectivity - connecting applications and services in the cloud or on-premises without opening ports or changing firewall configurations.

The VES approach simplifies development and maintenance of data exchanges using inheritance features and plug-in support. It eliminates software licensing costs, server costs, and much of the administration costs for partners, while providing a simplified development model and greater economies of scale. State, tribal or territorial administrators retain complete control of all aspects of their VES, their data flows, and access to their staging tables or databases. VES can be used for some or all an organization's data flows as appropriate.

The VES/Exchange Network Services Center Decision Tree helps partners decide whether or not the VES option is right for their organization. If you still have questions about your organization's readiness to use this VES option, contact Chris Clark at clark.chris@epa.gov. VES can be used for some or all an organization's data flows as appropriate. VES can also be used for staging tables.

Status and Plans:

VES is currently in production with large and small states, tribes, and air districts. Some states are converting all their exiting flows to VES while others are using VES for new flows and keeping their physical nodes for existing flows. The following table summarizes flows for which VES is currently being used by states, tribes, or territories**.**

Data Flow	Data Flow	Data Flow
AQS 3.0	ICIS-NPDES	UIC
ICIS-AIR	SDWIS	WQX v2.1
FACID v3 FRS	ATTAINS	CROMERR
E-Beaches	CAFO	OWIR_ATT
EIS	ICIS-DA	RCRA 5.2,5.3
EMTS v3.0	TRI (OUT)	Radon

EPA is interested in working closely with partners to leverage this new model for a shared node implementation (partners sharing a common scalable cloud platform). Installations of this type would provide a simplified solution for any partner (particularly partners lacking adequate resources for a dedicated node environment). EPA performs much of the basic administration centrally, allowing partners to concentrate on configuring data flows and publishing new services and data instead of administering node application servers. The VES Support team is available to help you be successful with VES.

Activities Grant Applicants Should Consider:

There are several activities associated with this funding opportunity:

- Cover the transition cost for partners to move from a physical node implementation to the VES multi-tenant (shared) implementation. Applicants may also apply to implement data flows on VES while keeping other data flows on their existing node.
    - Configure data flows on the new centrally hosted cloud environment.
    - Partner staging databases could stay in place or be hosted in the VES Cloud.
    - Local staging tables will connect to VES via a New Virtual Exchange Communication Model described below.
    - Grant applications for transitioning to the virtual exchange services focus on development activities such as:
        - Transitioning existing data flows to VES – mapping data if required.
        - Building new data flows in VES.
        - Testing.
        - Security plan requirements.
        - Virtual Exchange training.
- Use the new Virtual Exchange Communication Model for local staging tables; **e**xplore various ways of interconnecting from the partner's staging tables or database servers to the VES in the cloud environment. The following technical options are currently available:
    - Internet Service Bus (ISB): The partner installs a component on a Windows machine in its environment that can communicate with their staging database, this an encrypted tunnel with the ISB in the cloud for relaying network activity to/from their VES services in the cloud. The component is supplied by CDX and installed as a Windows Server service. Additional documentation and installation instructions are available at: http://www.exchangenetwork.net/virtual-exchange-service/
    - Secure Virtual Private Network (VPN): This is a secure network connection from the partner's node in the cloud to its backend database environment. Once the connectivity is established, the node can make direct database connections through the secure channel. This is the traditional VPN approach and the partner must open a firewall for VPN access.

Partners are encouraged to evaluate one or more of these options with their security team and select the option that the security team can approve for their VES implementation. Partners should include their target models in their grant.

Cost Estimates:

Funding awarded for VES adoption will not exceed $80,000. Actual award amounts will be based upon the complexity of data flows selected for migration to this environment.

Data Flow	Services	Implementation Difficulty	Estimated VES Implementation Cost
AQS 3.0	10	Medium	$20,000-$30,000
ICIS-AIR	64	Medium	$40,000-$80,000
FACID v3 FRS	10	Medium	$40,000-$80,000
E-Beaches	9	Medium	$20,000-$30,000
EIS	6	Medium	$20,000-$30,000
EMTS v3.0	10	Medium	$40,000
ICIS-NPDES	280	High	$40,000-$80,000
SDWIS	8	Medium	$20,000-$30,000
ATTAINS	6	Medium	$20,000-$30,000
CAFO	2	Low	$5,000-$10,000
ICIS-DA	3	Medium	$20,000-$30,000
TRI (OUT)	6	Medium	$20,000-$30,000
UIC	4	Medium	$20,000-$30,000
WQX v2.1	4	Medium	$20,000-$30,000
CROMERR	1	Low	$5,000-$10,000
OWIR_ATT	2	Low	$5,000-$10,000
RCRA 5.2,5.3	13	Medium	$20,000-$30,000
Radon	2	Low	$5,000-$10,000

Shared CROMERR Services

Funding Opportunity Purpose:

To expand the use of shared CROMERR services by EN partners to minimize customized solutions, reduce development and maintenance cost for electronic signatures and identity proofing, make the most efficient use of limited resources, and eliminate paper-based reporting by the regulated community.

Service Background and Description:

EPA's Cross Media Electronic Reporting Regulation (CROMERR) sets technology-neutral and performance based standards for systems used by states, tribes and local governments to receive electronic reports and documents from entities regulated under EPA-authorized programs. These standards cover a variety of system functions (e.g., user identification, data integrity, security) designed to make electronic reports as legally defensible as paper submittals.

EN partners and co-regulators can leverage CDX shared CROMERR services (SCS) which are managed centrally to meet the CROMERR requirements within their own reporting programs.
Some of the benefits derived by co-regulators adopting Shared CROMERR Services include:

- **Cost Savings-** integrating SCS as opposed to building, operating and maintaining independent systems.
- **User Friendly Experience-** SCS reduced burden on the regulated community with consistent and simplified reporting processes.
- **Reduced Barriers for Compliance** – SCS will reduce development and operational complexities to meet CROMERR requirements.
- **Improved CROMERR Compliance Assistance-** Adoption of Shared CROMERR Services will facilitate better responses to CROMERR compliance auditing activities.
- **Common Support Model-** States and tribes can leverage a common pool of resources, services and knowledge to assist with implementation.
- **Proven Audit and Enforcement Practices-** SCS provides co-regulators with a strong legal foundation and more consistent practices in civil and criminal enforcement proceedings.

Status and Plans:

EPA has implemented a set of CROMERR shared services and deployed these services with an initial group of co-regulators. States and tribes can select the range of services they need and implement them to meet their organizational and system needs. Categories of the SCS services available include:

- **Online Registration and Help Desk**- Centralized web/mobile platform services for shared user registration that builds upon shared CROMERR web services for user management and identity-proofing to offer administrative tools for credential management, role-based access, and CROMERR sponsorship.
- **Identity Management –** Identity-proofing individuals to meet CROMERR minimum criteria and at minimal cost to co-regulators.
- **User Management-** Creating, validating and maintaining accounts of reporting entities.

- **Electronic Signature-** Validating user credentials, verifying user intent, and electronically signing submissions from regulated entities in a way that is as legally defensible as a paper-based approach.
- **Copy of Record (COR) Management- S**toring, maintaining, and retrieving data submissions at the level of legal integrity required by CROMERR.
- **Advanced CROMERR Services-** Single sign-on authentication and web user redirects between regulated entity websites and https://encromerr.epa.gov to support navigation to advanced CROMERR registration, e-signature functions, administration and record-keeping.
- **Organization Management Services-** Creating and updating Organization profiles for Advanced CROMERR Registration.

Many co-regulators have established plans for implementing the necessary business processes and technical environments to consume these services. More information is available on the status of the services at the EN website. Detailed information on SCS may be located at http://www.exchangenetwork.net/shared-cromerr-services-ipt/ and https://encromerrdev.epacdxnode.net/about

Activities Grant Applicants Should Consider:

EN partners implementing SCS for their electronic reporting programs can choose to leverage EPA's centralized CROMERR services with support from the Grant Program.
Acceptable activities include but are not limited to the following:

- Integrating SCS into electronic reporting flows.
- Documenting technical and security requirements.
- Testing and deploying SCS.
- Administrative process to coordinate procurement of third party vendor identity-proofing (currently Lexis Nexis).
- Project planning and management.

Many standard and advanced CROMERR services may be independently implemented or combined together, and under separate agreement integrated with Virtual Exchange Services (VES) for greater efficiency. Actual award amounts will be based upon the integration and documentation for service functions, service categories, and number of reports (first, and subsequent) as well as the number of security roles provisioned for advanced services for regulated reports.

Cost Estimates:

The costs for developing an electronic reporting data flow can vary depending on the complexity of the environmental program, volume of data requirements and magnitude of implementation. While independently developed CROMERR applications are eligible for consideration, applicants who propose the maximum use of SCS functions across multiple or enterprise-wide reporting will be given priority consideration for funding. The following are cost estimates directly associated with SCS integration.

Cost Estimates (continued):

Grant Activity	Estimated Implementation Cost
Integrate a single set of service functions (e.g., user registration)	$10,000-$25,000
Integrate the entire suite of service functions	$25,000-$40,000
Document technical and security requirements associated with SCS (based on using all services)	$10,000
Testing and deployment of SCS	$10,000
Project planning and management	$10,000
Administrative process to coordinate procurement of third party vendor identity-proofing	$5,000

Note: If the EN applicant proposes to implement the third-party identity-proofing service, the applicant will enter into agreement directly with the service vendor prior to production release and be responsible for fees associated with the ongoing identity-proofing of users.

Enterprise Security Bridge (Identity Management)

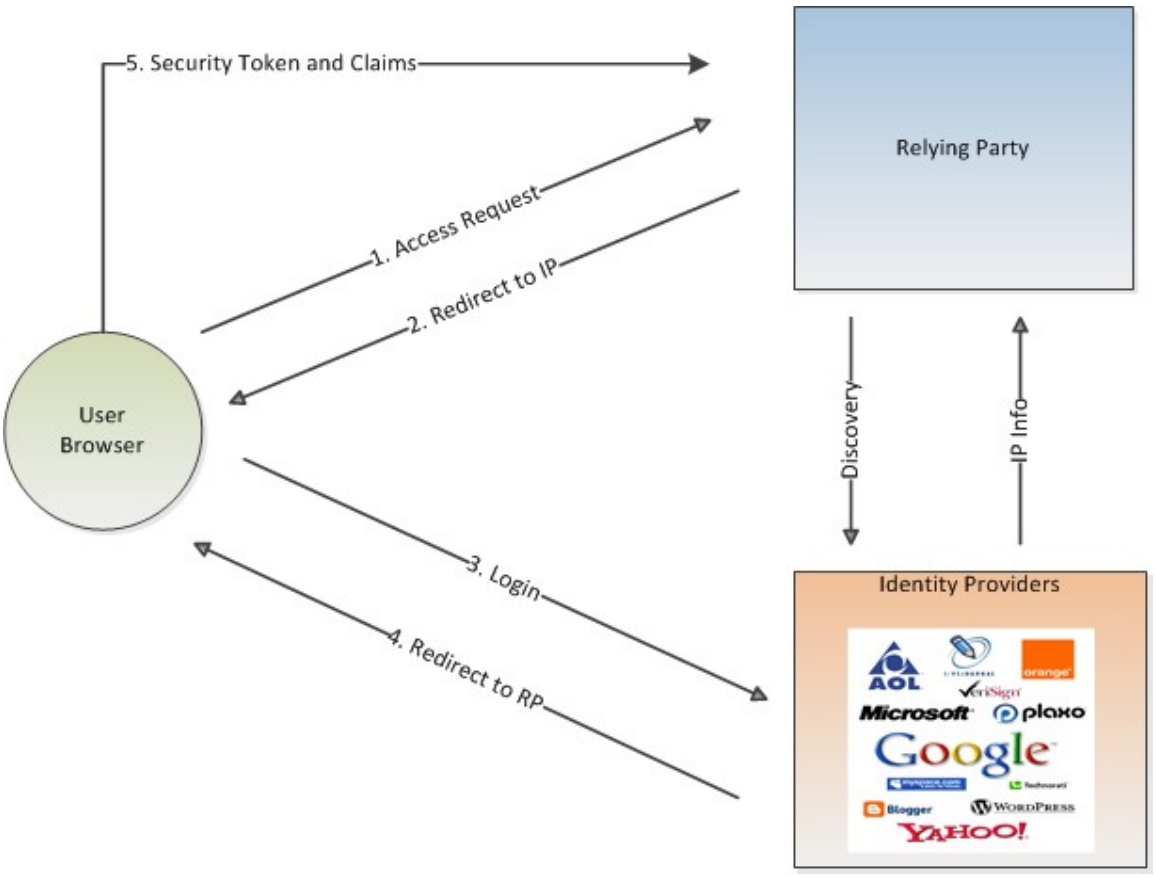
Funding Opportunity Purpose:

To increase the number of EN partner domains that individual EN users can access using their own identity to enter portals and applications. The objective is to augment access to data, services and applications in the domains outside the user's organization.

Service Background and Description:

Web applications need to be secured using authentication and authorization mechanisms often requiring users to create multiple, different, passwords and registrations when entering portals or applications in domains that are not in their organization. The Enterprise Security Bridge offers a standards-based, unified interface to enable EN partners to use hundreds of thousands of user accounts (state accounts, CDX, NAAS, social media, etc.) without having to register and manage the new identities.

The Exchange Network Enterprise Security Bridge is based on open standards such as WS-Federation, WS-Trust, OpenID, oAuth and OpenID Connect. The standards are widely supported in almost all platforms, and there are many toolkits available that make it even easier to integrate to the Enterprise Security Bridge. Identity federation is a process of sharing user identities and user authentication processes between two parties: The relying party (RP) and the identity provider (IdP). The following diagram depicts the general process of federated authentication:



Status and Plans:

The E-Enterprise Portal is currently using the Enterprise Security Bridge (Identity Management) services in production. New Mexico, Wyoming and North Dakota have test implementations that they plan to push into production. More EN partners are expected to be use this service in 2017.

Activities Grant Applicants Should Consider:

Several types of enterprise security integration can be done with grant funds:

- Enable Single Sign On (SSO) in your website by integrating the Secure Token Services to accept Enterprise tokens.
- Integrate applicant web applications to leverage the Enterprise bridge and third party Identities.
- Integrate applicant's existing SAML/Open ID /Open ID Connect Identity provider interface into the Enterprise Security Bridge.

A description of each way to integrate enterprise security follows:

- **Enable Single Sign On for your users across the enterprise using the Secure Token Services**
  After users are authenticated, a call to the Secure Token Services will create a standard enterprise token for the user. The token can then be used to access any enterprise relying party (web sites), however the web sites will continue to authorize users.
- **Integrating the Enterprise Security Services into Your Web Applications**
  When using the bridge, it will present a list of trusted identity providers to the user. It then redirects the user to the identity provider after a selection is made. If a relying party has made a choice of OpenID provider already, it can direct the user to the provider. The E-Enterprise Portal has already integrated this way.

  The process of integrating the Enterprise Security Bridge into a relying party in the .NET platform is configuration driven; no programming, scripting or web designing is needed. The integration can be done through editing the web configuration file: web.config.

  1. When a user tries to access a protected resource at the relying part web site.
  2. The user is offered a choice of identity providers and redirected to the selected identity provider.
  3. The user authenticates by providing login information at the identity provider's login page.
  4. After successful authentication, the user is redirected to the relying part web site along with a signed security token and other claims.
  5. The relying party validates the security token and allows access if the token is valid (signed by trusted issuer).

- **Integrate your own existing Open ID / Open ID Connect Identity provider interface into the Enterprise Security Bridge**
  Registration of your Interface with the bridge so that it can be used across the enterprise. This involves governance approval and interface documentation at the enterprise bridge.

Cost Estimates:

Integration costs vary by the programming environment. Funding for Enterprise Security Bridge adoption will not exceed the following amounts:

Programming Environment		Estimated Integration Cost
PHP	Identity Provider	$25,000
	Relying Party	$25,000
.NET	Identity Provider	$10,000
	Relying Party	$10,000
Java	Identity Provider	$25,000
	Relying Party	$25,000

Facility Registry Service

Funding Opportunity Purpose:

To improve the quality of facility-related data being flowed across the EN and expand association of state and EPA facility information across environmental programs.

Service Background and Description:

The Facility Registry Service (FRS) is EPA's centrally managed database that integrates facility data across over 90 EPA and other federal systems, as well as numerous state, tribal and territory databases. FRS provides access to the names, locations, associated program IDs, industrial classification, corporate and contact affiliation, and other information for facilities subject to environmental regulations and for other sites of environmental interest.

These integrated facility identification records allow EPA, its state and tribal partners, web application owners, and the public to access environmental information reported from and about facilities and sites. FRS data is available as web services, prepackaged downloads, and custom downloads.

Applicants that wish to take advantage of FRS web services can find a listing of data resources here: https://www.epa.gov/enviro/frs-data-resources and should periodically check RCS (see Appendix J for a description), a catalog of IT resources from EPA and its state and tribal partners. Applicants should check RCS frequently because EPA and its partners register new resources in RCS regularly.

FRS exposes several REST services that allow developers to utilize a live feed of data from the FRS database (https://www.epa.gov/enviro/frs-rest-services). The FRS Lookup service is used to access facility profile information containing name, address and geospatial coordinates. Watershed boundaries and congressional district information is also available. Environmental program reporting information is also available by facility. For example, you can query the Superfund facilities within specified geographic boundaries.

FRS has jointly developed a reusable web-based module that leverages the FRS lookup service to improve data collection and quality. This tool provides the ability to look up, retrieve, and prepopulate facility information tied to existing known permit IDs and EPA's FRS Registry ID to reduce data duplication, ambiguity, and redundancy. The widget also provides capabilities for validating and standardizing address fields, along with providing a geocoding service and map preview for visual verification of facility locations. The map tool can also allow users to provide precise locations via dragging and dropping a pin on aerial imagery or by entering lat/long data, and generates locational metadata for QA/QC. This tool has already been implemented in over a half dozen EPA data collection interfaces such as TRI and TSCA to yield significant internal and external burden reduction, along with significant improvements in data quality.

The Facility Linkage Application (FLA) is EPA's data curation tool that is available to states/tribes/local municipality co-regulators. This data quality tool allows state/tribal data stewards to suggest changes/corrections to FRS data, such as deduplication of facilities, correcting mislinkages, and updating/correcting facility name/address. To register to become a steward of FRS data, please visit: https://frsfla.epa.gov/

Status and Plans:

Through the work of the E-Enterprise Facility Integrated Project Team, detailed requirements for facility data integration and joint data curation have been documented. This information is a useful resource for states and tribes interested in expanding facility information for their master data management systems or for leveraging EPA's facility information resources: https://e-enterprisefortheenvironment.net/our-projects/program-modernization-projects/ee-facility-team/.

FRS enhanced the facility data model in December 2016 to include sub-facility components, providing additional granularity for facility information. EPA plans to continue development of FRS's facility model to enable management of sub-facility component data; examples include detailed information about stacks, outfalls, or processes. Web services to retrieve sub-facility component data should be developed in the next six to 12 months.

Activities Grant Applicants Should Consider:

- Use of the FRS web services by state, tribal, and territorial programs to integrate data by FRS ID.
    - This activity can also include integrating other state, tribe and territory programs to incorporate additional environmental interests (e.g., air, water, waste, etc.) or sub-facility information for partner use.
    - Partners that integrate their facility information can use this service to develop tools for retrieving additional value-added data fields into their facility records, including geocoded addresses, NAICS codes, applicable census information, hydrologic unit codes (HUC), and congressional boundary information.
    - Partners that integrate their facility information can also use this service to develop tools for retrieving FRS data for comparative analysis and reconciliation.
- Use FRS Lookup service and/or reusable FRS widget for front end data entry for burden reduction as well as supporting entry of data integrated on FRS ID.
    - This activity can also include integrating other state, tribe and territory programs in order to incorporate additional environmental interests (e.g., air, water, waste, etc.) for partner use.
    - Partners that integrate their facility information can use this service to develop tools for retrieving additional value-added data fields into their facility records, including geocoded addresses, NAICS codes, applicable census information, hydrologic unit codes (HUC), and congressional boundary information.
    - Partners that integrate their facility information can also use this service to develop tools for retrieving FRS data for comparative analysis and reconciliation.
- Use of the Facility Linkage Application (FLA) for data stewardship to reconcile and analyze data and assess data quality prior to projects requiring the use of facility information.

Cost Estimates:

Grant Activity	Service	Cost
Use FRS web services to integrate data by FRS ID	EnviroFacts FRS REST service	$50,000-$100,000
Use FRS Look-up service to support facility information collection	FRS Look-up	$100,000-$150,000

Substance Registry Services (SRS)

Funding Opportunity Purpose:

To improve the quality of chemical and biological data being flowed across the EN and increase its discoverability by the public.

Service Background and Description:

SRS is EPA's centralized service for sharing basic information about chemicals, biological organisms, and other substances that EPA and/or other organizations (e.g., state agencies, tribal agencies, other federal agencies) track or regulate. SRS:

- Enables data integration by substances (chemicals and biological organisms).
- Increases data quality of substance names and other identifiers in systems and online forms.
- Promotes information management of individual substances and regulatory substance lists.
- Helps the public and other users discover which systems and programs have data for a substance and under which substance name.

Each substance has a record that contains basic information about the substance, such as Chemical Abstract Service (CAS) Name and CAS number. SRS records include synonyms, which can help the public or other users discover substances of interest. There are also links to health and safety fact sheets developed internally at EPA or externally by states, other federal agencies, and/or international organizations. In addition, SRS catalogs substances into programmatic and statutory lists.

There are several services available for use by partner systems. To promote information management of chemical identification, SRS can register state and tribal programmatic lists. States and tribes also can improve public access to health and safety information by creating direct links from their websites to individual SRS records. SRS also has a widget that states and tribes can incorporate into their web pages.

Status and Plans:

Web services are available for partners to pull information from SRS for use in their system for integration into online reporting forms or other tools, or for displaying their substance lists on their websites. The Toxics Release Inventory and the Chemical Data Reporting (CDR) are two examples of programs that have incorporated SRS web services into their online reporting forms. When entering chemical names on the reporting forms, a submitter searches for a chemical using a synonym or other identifier. The submitter then selects the appropriate chemical, which the service retrieved from SRS. Integration of SRS web services into the online reporting form saved the CDR program hundreds of thousands of dollars in reduced data quality errors. SRS can be accessed at www.epa.gov/srs.

Activities Grant Applicants Should Consider:

- Work with the SRS team to add state or tribal programmatic or statutory substance lists to SRS for improved management of those lists or to make it possible to crosswalk chemicals, regardless of synonym, between states, tribes, and EPA.
- Add SRS identifiers to state or tribal systems to promote the ability to link across datasets by

substance, regardless of which synonyms are used.

- Encourage state or tribal programs to integrate SRS web services into online reporting forms or other tools to improve the data quality of substance identities or to help submitters report for the correct substance.

Cost Estimates:

Grant Activity	Estimated Cost to Implement
Add state or tribal programmatic or statutory substance lists to SRS	$5,000
Add SRS identifiers to state or tribal systems to promote the ability to link across datasets	$5,000
Integrate SRS web services into online reporting forms or other tools to improve the data quality and reporting of the correct substance	$30,000 - 40,000

E-Enterprise Portal Interoperability Opportunities

Funding Opportunity Purpose:

To develop portal applications that meet the environmental business needs of multiple EN partners. EPA is pursuing a distributed approach for application development and maintenance. Applications must be built to ensure interoperability. They will be managed directly by originating states, tribes, and territories and shared with participating partners to meet the needs of the maximum number of users. This is a partnership opportunity to inform and standardize portal application design approaches among the E-Enterprise and EN community partners.

Service Background and Description:

As part of the E-Enterprise for the Environment Strategy, states, tribes, territories and EPA are collectively developing an interoperable E-Enterprise Portal for joint collaboration and innovation. The portal will provide consolidated and personalized entry points for regulators, businesses and citizens to locate and interact with environmental information and services relevant to their business needs.

The E-Enterprise Portal is intended to:

- Decrease the time and effort needed to perform transactions with EPA, tribal, state, and local governments by providing smart tools to help regulated entities:
    - Understand their environmental obligations and associated permitting and reporting requirements.
    - Streamline their preparation and submittal of information.
- Provide a more consistent way for environmental agencies to interact with regulated entities and the public by using shared services to:
    - Facilitate access to comprehensive information to inform decision-making.
    - Standardize and improve the quality of information available.
- Allow the regulated community and the public to discover the information that is important to them by:
    - Personalizing the user experience by establishing informed identities and profiles.
    - Leveraging the contextual information in the profile to anticipate an end user's needs and proactively offer enriched, situation-aware and usable content, functions and experiences.

Status and Plans:

EPA launched a prototype for the E-Enterprise Portal in 2015, with an intent to expand service offerings and participation from partners over time. During the next several years, new portal features and functions will be added. Ultimately, the portal will contain a broad suite of resources for co-regulators, the regulated community and the public. The E-Enterprise team is also considering how to align and interoperate partner portals and web applications to enable portal-to-portal information exchange at the state, tribal, and territorial level. Additional information is available at https://www.epa.gov/e-enterprise/e-enterprise-portal.

Activities Grant Applicants Should Consider:

Portal applications that accomplish the following may be considered for funding:

- Coordinate with EPA and other partners through integrated project teams to align with and inform existing E-Enterprise interoperability approaches.
- Design applications where the grantee can take operational ownership while maintaining interoperability or seamless consumption with the E-Enterprise Portal.
- Meet the environmental information or service needs of multiple partners' user communities.
- Design for easy expansion/scalability to additional partner user communities and with responsive design for display on either web or mobile devices.
- Make best use of shared EN and E-Enterprise services, such as substance, laws and regulations, and facility lookups for data entry or searching and Shared CROMERR Services for environmental reporting by the regulated community.
- Result in the implementation of applications that are shareable to the maximum extent (build, host, maintain once and use many times) across multiple partner communities.

Cost Estimates:

Since portal application design approaches are in the conceptual stages, EPA will consider grant opportunities that are low in complexity with an upper limit of approximately $75,000. It is expected that they will inform and be informed by the E-Enterprise governance under the E-Enterprise's Interoperability and Operations Team.

Laws and Regulations Services

Funding Opportunity Purpose:

To increase the ability of the states, tribes, territories and the public to discover the regulations that may be applicable to specific chemical and biological substances or industry sector. The desired output is a more comprehensive picture of how substances or industry sectors are regulated at both the state and federal levels.

Service Background and Description:

As part of the E-Enterprise initiative to help the public, including industry, discover potentially applicable regulations, EPA is cataloging federal environmental laws, their implementing regulations, and the EPA programs that oversee those regulations, and then making this information available via a future regulatory portal, a component of the E-Enterprise Portal. EPA envisions making it possible for the public also to discover state and tribal laws, regulations, and programs as well, with the aim of making a seamless experience for users of this portal.

The Law and Regulations Service will contain the following basic information (metadata) about the laws and regulations:

- Citation: The formatted reference to the specific state/tribe regulation. (E.g., the citation for the federal Toxic Chemical Release Reporting regulation is 40 CFR 372, which refers to Title 40, Part 372 of the Code of Federal Regulations)
- Title - The title of the specific regulation. (E.g., Toxic Chemical Release Reporting: Community Right-to-Know)
- URL to document (PDF, HTML) * - The link to the PDF or HTML document that provides the information about the law or the regulation.
- Publication Date - The date the document (see above bullet) was made available to the public.
- Authority (Statute/Law) * - The authority for the regulation as published. (E.g., the state/tribe law or statute)
- Program / Office - The state/tribe program/office responsible for the regulation.
- Associate NAIC Codes or SIC codes to the regulations.
- Associate Chemicals or other Substances to the regulations.

Status and Plans:

The Laws and Regulations Service is in the development phase. EPA is cataloguing the Federal environmental laws, the regulations that implement those laws, and the EPA programs that oversee those regulations. The Laws and Regulations Services (LRS), which will be part of the EPA System of Registries, is important for EPA to better understand how its information (e.g., grants, systems, regulated entities) support specific laws and regulations. This opportunity allows applicants to participate in a cooperative agreement with EPA to compile information about their state, tribal or territorial laws and regulations, which can help to build a more comprehensive view of picture of how substances or industry sectors are regulated at both the state and federal levels. EPA will work with co-regulators to catalog their laws and regulations and identify the state programs that manage them.

The ultimate goal is to design and develop a single interface, or portal, (which might be the e-enterprise portal) for industry, other communities and the public to discover potentially applicable regulations whether at the state, tribal, or federal level.

Activities Grant Applicants Should Consider:

Cataloging state or tribal laws, the associated regulations, and implementing programs, as a first step towards sharing and possibly linking this information with other state, tribal, and federal laws and regulations.

Making information compiled available via an API or in a format that would make it available via an API (or otherwise, electronically) so that the information could easily be shared with EN partners.

Cost Estimates:

Grant Activity	Grant Sub-Activities	Estimated Implementation Costs
Cataloging Laws	Cataloging laws	$5,000
	Creating automated process to keep catalog current	$10,000
Cataloging Regulations	Cataloging regulations and associating them with appropriate sections of laws	$5,000
	Creating automated process to keep catalog current	$10,000
Cataloging Programs	Cataloging state/tribal programs and associating them with regulations	$25,000
Web Services	Integrate EPA's LRS web services into a local portal	$30,000-$40,000

Appendix C

Reusability: Reusable Component Services and Exchange Network (EN) Discovery Service

What is Reusability?

For FY 2018, EPA is placing a greater emphasis on grant applications reusing EN tools and registering new tools to promote reuse across the Exchange Network. Therefore, all applications for 2018 EN grant funds should identify: (a) the components created by others that they intend to reuse and (b) those products and services that they have developed and registered for others' use.

A goal of the Exchange Network is to share information about available services and reuse existing services whenever possible. Some reusability examples relevant to the EN include:

- using Shared CROMERR Services.
- modifying existing java code to perform a similar function.
- learning best practices in the development of your new REST web service from someone who has developed similar services.
- pooling resources to develop a software tool that will benefit multiple states, tribes, and territories.
- using existing web services to authenticate access to CDX instead of developing your own.
- new or updated map templates, geospatial data web services or geoprocessing tools that address commonly occurring challenges.

Having a central repository or catalog of services helps promote dialogue, sharing knowledge, and enabling service reuse. The Reusable Component Services (RCS) is both a catalog of EPA, state and tribal services as well as a registry of XML schema, web services, widgets, and many other types of services. To view RCS, visit: www.epa.gov/rcs.

Benefits of Reusability

- Cost Avoidance: adapting and integrating costs less than building. Saves taxpayer dollars.
- Speed: faster than building from scratch. Reusable assets have been implemented before and comply with requirements and security restraints.
- Quality: reuse leads to the discovery and correction of defects and overall product improvement.
- Environmental: reusing tools and building tools for future reuse saves resources.

Tips for Creating Reusable Tools

The extent to which a resource is considered reusable varies widely. However, when developing a new resource, there are certain principles one can follow to make the resource more available for reuse:

- comprehensive documentation.
- portable in that it does not rely heavily on a specific hardware or technology.
- flexible and can perform multiple functions.
- compliant with existing standards.
- reliable and free of defects.

Please visit www.epa.gov/rcs to begin searching for reusable resources.

What should be registered in RCS?

- Programming Code - pieces of programming code that perform a specific function that can be used completely or in part, as-is or modified, in developing software. GitHub projects should be registered as Programming Code but remember to include the link to the GitHub repository in the Resource Location field. (Access tab)
- Software Tool- any piece of software (utility, application, etc.) that performs one or more functions.
- System- software that performs one or more specific tasks. *Example: The Integrated Compliance Information System (ICIS)*
- Widget Tool- a software tool that uses a small graphical interface to provide a function or service to a web application or web page. *Example: the UV Index widget*
- Web Service- software system designed to support machine-to-machine interaction over a network. These can be either SOAP (Simple Object Access Protocol) or REST (Representational State Transfer). *Examples: the FRS Facility Search REST web service; the Convert Lat/Long SOAP web service*
- XML Schema- XML language description of the structure and content of a document or data set.
- Mobile App- a software tool that runs on a portable device such as a Smartphone or tablet.

**The types of IT resources listed above are some of the most common and important types to add to RCS. However, other types of resources can be registered; please check in RCS to see a full list.*

What should be registered in ENDS?

- Exchange Network nodes used to deploy services.
- Data Flows – Processes used in the exchange of information between two or more network partners.
- Exchange Network Services – Web services that implement data flows are special services that need a Flow Control Document and other special documents to describe the service. Please refer to the Discovery Users Guide V3 at http://www.exchangenetwork.net/node/DiscoveryUserGuidev3.doc.

The following table shows where the different resources should be registered:

Service or Component Type	Register in ENDS	Register in RCS
Network nodes	X	
Data Flows	X	
EN services (related to data flows)	X	
XML Schema		X
Custom Tools		X
Web services not related to data flows, SOAP or REST		X
Widget tools		X
Programming Code (routines, classes, etc.)		X
GitHub Project – included in Programming Code		X
Code Libraries		X
Others	PLEASE DISCUSS WITH YOUR REGIONAL COORDINATOR	

How to Register in RCS:

Searching RCS for reusable resources

Anyone can search RCS by going to www.epa.gov/rcs. All resources designated as publicly viewable can be found here. To see resources marked as only available to EPA and partners, you must login to RCS. Please see below for instructions on accessing the non-public version of RCS.

For step-by-step guidance on searching RCS, please see the reference materials located at https://ofmpub.epa.gov/sor_internet/registry2/reusereg/trainingandeducation.

Requesting Access to the non-public version of RCS

1. Go to www.epa.gov/sor.
2. On the left side menu, select "Login for EPA & Partners."
3. If you have an EPA LAN ID and password, you may enter it now. If not, select the link below the login box that says: "CLICK HERE to register for access to the EPA Portal."
4. Enter the requested information on the next screen.
5. Click "continue." Another fillable screen displays. For EPA sponsor, enter Lico Galindo, galindo.lico@epa.gov. For Community of Interest, select "System of Registries." If a different community is selected, you will not have access to RCS and correcting it will take considerable effort. For Reason for Access, select "RCS access."
6. Click "submit." You will receive an approval email in 1-2 days.

Registering an IT Resource in RCS

1. Log in to RCS – go to www.epa.gov/rcs and log in with your EPA LAN ID and password.
2. Click on the "Add Resource" tab. (near the middle of the page)
3. Fill out the requested information. The RCS administrator will receive an email advising of your submission and will review and approve the resource. He will contact you if he has any questions.

******Please contact Lico Galindo (galindo.lico@epa.gov, 202-566-1252) if you have any questions regarding problems accessing RCS, what or how to register, or if you would like some hands-on help or a demo of RCS.***

Registering new Exchange Network resources to ENDS:

To register new resources in ENDS, the grant recipient will need a NAAS account with node administrator access rights. A request to create a NAAS account needs to be requested from the Exchange Network help desk at 888-890-1995 or nodehelpdesk@epacdx.net. Registering EN resources in ENDS cannot be done without assistance, contact the Node Help Desk to register.

Appendix D

Strengthening Partner Information Management Capabilities

The Network's sustainability depends on partners' capacity to manage their information in a way that allows them to create and maintain Network data flows as well as enabling the discovery, publication, and usefulness of their information. Some existing and potential EN partners have limited experience with managing data in a way that facilitates electronic reporting and its sharing via services. They also often do not have an operational knowledge of the Exchange Network or its relevance to their environmental management programs. This hinders them from taking advantage of the many EN features that could be useful to their environmental program planning and decision making in more cost-effective ways.

This opportunity will enable tribal and territorial governments to benefit from a coordinated effort to identify the most valuable ways to participate in the EN given their unique regulatory responsibilities and relationships, data needs, capacity, funding, and comfort with data sharing.

Territory and Tribal Capacity Building (Individual or Partnership Opportunity)

- **Individual Capacity Building Proposals**- Territories, tribes and inter-tribal consortia are eligible to apply for individual capacity building grants that will enhance the applicant's environmental programs and the applicant's ability to share environmental data electronically with EN partners. Proposals must identify outputs that will increase the applicant's ability to share environmental information electronically with EPA or other EN partners, (for example, developing a backend database for a priority data system or implementing an intra-tribal data exchange). Proposals may include developing a data management plan, but the plan must lead to the development of a test or prototype system.
    - Applicants may apply for an individual capacity-building grant up to $200,000.

- **Collaborative Capacity Building Proposals**- Additionally, territories, tribes and inter-tribal consortia are eligible to apply for partnership grants. These proposals must include multiple partners and identify an experienced EN partner that can serve as a mentor. Collaborative capacity building proposals may include funding requests for the mentoring partner's personnel costs and travel.
    - To serve as a mentor for a capacity building application, an experienced partner must currently report or publish data for one or more environmental programs using its own node or Virtual Exchange Services.
    - Furthermore, a proposal must include a commitment letter from the mentor tribe, intertribal consortium, territory, or state.
    - In the case that a territory, tribe, or intertribal consortium applying for a capacity-building grant can demonstrate past experience implementing an Exchange Network data flow, **the requirements for identifying a mentor will be waived**.
    - Applicants may apply for a collaborative capacity-building grant up to $400,000.

Appendix E

Detailed Instructions for Submitting Applications

Applicants for the FY 2018 Exchange Network Grant program must submit an application package to EPA by January 26, 2018. Except as noted below, applicants must apply electronically through Grants.gov under this funding opportunity based on the grants.gov instructions in this announcement. If an applicant does not have the technical capability to apply electronically through grants.gov because limited or no internet access prevents them from uploading the required application materials to Grants.gov, the applicant must contact OGDWaivers@epa.gov or the address listed below in writing (e.g., by hard copy, email) *at least 15 calendar days prior to the submission deadline under this announcement* to request approval to submit their application materials through an alternate method.

Mailing Address:	**Courier Address:**
OGD Waivers c/o Jessica Durand USEPA Headquarters William Jefferson Clinton Building 1200 Pennsylvania Ave., N. W. Mail Code: 3903R Washington, DC 20460	OGD Waivers c/o Jessica Durand Ronald Reagan Building 1300 Pennsylvania Ave., N.W. Rm # 51278 Washington, DC 20004

In the request, the applicant must include the following information:

- Funding Opportunity Number. (FON)
- Organization Name and DUNS.
- Organization's Contact Information. (email address and phone number)
- Explanation of how they lack the technical capability to apply electronically through Grants.gov because of 1) limited internet access or 2) no internet access which prevents them from being able to upload the required application materials through www.Grants.gov.

EPA will only consider alternate submission exception requests based on the two reasons stated above and will respond to the request in a timely manner. All other requests will be denied. If EPA approves an alternate submission method, the applicant will receive documentation of this approval and further instructions on how to apply under this announcement. Applicants will be required to submit the documentation of approval with any initial application submitted under the alternative method. In addition, any submittal through an alternative method must comply with all applicable requirements and deadlines in the announcement including the submission deadline and requirements regarding proposal content and page limits (although the documentation of approval of an alternate submission method will not count against any page limits).

If EPA grants an exception, it is valid for submissions to EPA for the remainder of the entire calendar year in which EPA grants the exception and applicant can use it to justify alternative submission methods for application submissions made through December 31 of the calendar year in which EPA approved the exception. For example, if EPA approved the exception on March 1, 2017, it is valid for any competitive or

non-competitive application submission to EPA through December 31, 2017. Applicants need only request an exception once in a calendar year, and all exceptions will expire on December 31 of that calendar year. Applicants must request a new exception from required electronic submission through Grants.gov for submissions for any succeeding calendar year. For example, if there is a competitive opportunity issued on December 1, 2017 with a submission deadline of January 15, 2018, the applicant would need a new exception to submit through alternative methods beginning January 1, 2018. Please note that if an applicant has already received a waiver for this year, it may submit its application for an Exchange Network grant using the approved alternate submission method.

Please note further that the process described in this section is only for requesting alternate submission methods. All other inquiries about this announcement must be directed to the Agency Contact listed in Section VII of the announcement. EPA will not acknowledge queries or requests submitted to the email address identified above for any reason other than to request an alternate submission method.

EPA encourages applicants who have receive a waiver submit an application via an alternate method also to submit an electronic courtesy copy of the application by email, to Salena Reynolds at reynolds.salena@epa.gov. EPA will confirm receipt of each application with an e-mail to the contacts listed in the cover letter.

EPA tentatively plans to notify applicants of its selection decisions in or around June 2018. The notification letters will include further instructions to successful applicants for submittal of additional or updated documents. EPA tentatively plans to award all grants by July 31, 2018.

The following forms and documents are required under this announcement (fillable forms can be obtained from https://www.epa.gov/grants/epa-grantee-forms):

1. Application for Federal Assistance (SF-424)
2. Budget Information for Non-Construction Programs (SF-424A)
3. Assurances for Non-Construction Programs (SF-424B)
4. Certification Regarding Lobbying Form
5. EPA Key Contacts Form 5700-54
6. EPA Form 4700-4 – Preaward Compliance Review Report
7. Project Narrative
8. Detailed Itemized Budget
9. Disclosure of Lobbying Activities (SF-LLL), if applicable
10. Negotiated Indirect Cost Rate Agreement, if applicable
11. Programmatic Resources and Personnel
12. Cover Letter
13. Additional Information for Inter-Tribal Consortium, if applicable
14. Formal Project Partners Roles and Responsibilities, if applicable
15. List of Federally and/or Non-Federally Funded Assistance Agreements

1. **Standard Form (SF) 424, Application for Federal Assistance**
   Complete the form. Please note that the organizational Dun and Bradstreet (D&B) Data Universal Number System (DUNS) number must be included on the SF-424. Organizations may obtain a DUNS number at no cost by calling the toll-free DUNS number request line at

1-866- 705-5711.

2. **SF-424A, Budget Information for Non-Construction Programs**
   Complete the form. The total amount of federal funding requested for the project period should be shown on line 5(e) and on line 6(k) of SF-424A. If indirect costs are included, the amount of indirect costs should be entered on line 6(j). The indirect cost rate (i.e., a percentage), the base (e.g., personnel costs and fringe benefits), and the amount should also be indicated on line 22. If indirect costs are requested, a copy of the Negotiated Indirect Cost Rate Agreement must be submitted as part of the application package. (See instructions for document 10 below.)

3. **SF-424B, Assurances for Non-Construction Program**
   Complete the form.

4. **EPA Lobbying Form – Certification Regarding Lobbying**
   Complete the form.

5. **EPA Form 5700-54, Key Contacts Form**
   Complete the form.

6. **EPA Form 4700-4, Pre-Award Compliance Review Report.**
   Complete the form.

7. **Project Narrative**
   A. **General Guidelines for Writing a Successful Project Narrative**
      i. **Clarity and Succinctness** - A proposed work plan **must not exceed ten pages**. The EPA grants review panel will not review any work plan elements that appear after the tenth page. Grant panels score proposals on how well they meet the criteria. The narrative should completely describe how the proposal meets each criterion.
      ii. **Completeness and continuity** – Make sure the project narrative fully addresses each criterion. Make sure all items that belong in the work plan are grouped together and that no non-work plan items are included in this portion of the application.
      iii. **Numbering**– Number each page of your work plan from one to ten.
      iv. **Legibility** – Proposals should use fonts (serif or sans serif) that are 11 point or higher. Use 1-inch margins and single line spacing. Small font size across full pages is not necessary (see 1.a) and it makes a reviewer's job harder.
      v. **Limit the Terminology to "Goals, Outputs and Outcomes."** There are no "objectives, milestones, or tasks" in Exchange Network Grant proposals. There is nothing wrong with those terms. In fact, you might find them useful for your internal project planning and tracking. However, limiting and standardizing these terms makes it easier for panelists to score proposals consistently.
   B. **Work Plan Contents** – Include each of the following items in the ten-page project narrative.
      i. **General Introduction** – This should be a narrative description of the proposed work. If the proposal is for more than one project, it may be helpful to organize the introduction by goal. An introduction is not an evaluation criterion but it will help reviewers better understand what is being proposed.

ii. **Describe project goals, outputs and outcomes that lead to environmental results -** Include a plan that allows the applicant to track and report progress toward achieving the project's proposed goals. Reviewers will look for a table similar to the one included below as evidence of a plan to track and report progress. Using the table below as a model will ensure reviewers can see what major project outputs (major deliverables or events) you propose for each goal (a self-contained project), when they are scheduled and what overall outcomes leading to environmental results each proposed goal supports.

Goals, Outputs, Scheduled Completion Dates and Outcomes
Suggested format – expand number of goal and outputs as needed

Goal	Output	Scheduled Completion Date	Outcome(s)
Goal 1: Name the Goal	1.1		
	1.2		
	1.3		
	1.4		
Goal 2: Name the Goal	2.1		
	2.2		
	2.3		

iii. **Roles and responsibilities of project participants for the applicant and any partners -** If the project is not a partnership, list the personnel who are going to work on the project and what they will be doing. If the proposed project includes one or more formal partners, describe their roles within agencies or tribes.

iv. **Programmatic involvement in the development and management of the project, including a listing of programmatic participants, positions and roles in the project –** Any project that is not purely technical must have substantive program participation. Make sure that you describe that contribution.

v. **Applicant's commitment to re-use existing EN tools by searching for existing resources, to share new tools with EN partners or registering any newly developed resources in The Exchange Network Discovery Service (ENDS) or Reusable Component Services (RCS) as appropriate –** Applicants should not spend grant funds on tools already developed and available for EN partner use. The proposal must include a commitment to use or adapt existing tools. Applicants must also commit to registering tools they develop in grant-funded projects.

vi. **Budget amounts for each goal –** For proposals with more than one goal, list the total budget amount allocated to each. Occasionally EPA will decide not to fund an individual goal. This may happen when a proposed goal is not consistent with EN priorities or when

EPA decides the proposal is not adequate for other reasons. Because each goal represents a freestanding project, EPA may decide to fund other proposed goals in the same proposal. Knowing what each proposed project will cost makes it possible for EPA to adjust the total budget in these cases.

vii. Summarized qualifications of the project manager and other key personnel

viii. Statement summarizing past performance

8. **Detailed Itemized Budget**

Applicants should describe ***both the total project budget and the costs associated with each major goal*** in a detailed itemized budget. The budget must include any relevant item listed below:

A. Personnel – List all staff positions by title. Give the annual salary of each person, the percentage of their time devoted to the project, the amount of each person's salary funded by the grant and the total personnel cost for the budget period.

B. Fringe Benefits – Identify the fringe benefit rate and total amount.

C. Travel – Specify the mileage, per diem, estimated number of in state and out of state trips other costs for each type of travel. EPA suggests that applicants include funds for travel to regional and area Exchange Network conferences.

D. Equipment – Identify each item of equipment to be purchased that has an estimated acquisition cost of $5,000 or more per unit and a useful lifetime of more than one year. List the quantity and unit cost per item. Items with a unit cost of less than $5,000 are supplies.

E. Supplies – Supplies include all tangible personal property other than "equipment." The detailed budget should identify categories of supplies (such as laboratory supplies or office supplies). List the quantity and unit cost per item.

F. Contractual – Identify each proposed contract and specify its purpose and estimated cost. Applicants who request in-kind services should list them here.

G. Other – List each item in sufficient detail for U.S. EPA to determine whether the costs are reasonable or allowable. List any item, such as training, not covered elsewhere here. This is also where Subawards should be allocated. Recognize that there is a difference between a procurement (goods and services) and a subaward (performing part of the project).

H. Indirect Charges – If indirect charges are included in the budget, include the approved indirect cost rate with a copy of the Indirect Cost Rate Agreement, a description of the base used to calculate indirect costs and total cost of the base, and the total indirect charges requested. **Before an applicant can incur any costs under the indirect cost category, the Indirect Cost Rate Agreement must be approved and current.** If you do not have a current rate, you may submit a copy of the submitted application to the cognizant fiduciary agency.

I. Management Fees – When formulating budgets for applications, applicants must not include management fees or similar charges in excess of the direct costs and indirect costs at the rate

approved by the applicant's cognizant audit agency, or at the rate provided for by the terms of the agreement negotiated with EPA. The term "management fees or similar charges" refers to expenses added to the direct costs in order to accumulate and reserve funds for ongoing business expenses, unforeseen liabilities, or for other similar costs that are not allowable under EPA assistance agreements. Management fees or similar charges may not be used to improve or expand the project funded under this agreement, except to the extent authorized as a direct cost of carrying out the scope of work.

J. Light Food Refreshments- If any light and/or refreshments are planning to be purchased with federal funds or matching funds, then a separate itemized breakout must be provided to determine whether or not the cost is considered reasonable and necessary.

9. **SF-LLL, Disclosure of Lobbying Activities, if applicable**

This form is required if your organization is involved in lobbying. Complete the form if your organization is involved in lobbying activities. Applicants that do not have to submit this form should state so in their application.

10. **Negotiated Indirect Cost Rate Agreement**

This form is required if indirect costs are included in the project budget. You must submit a copy of your organization's Indirect Cost Rate Agreement as part of the application package if your proposed budget includes indirect costs.

11. **Programmatic Resources and Personnel:**

Briefly describe the programmatic resources and personnel involved in the project for the recipient and any participating partner. Highlight any expertise or past experiences that may be particularly helpful in carrying out the project. Include biographical sketches or resumes of the lead and any partner Project Manager(s). Each biographical sketch should outline the education, work history, and knowledge/expertise of the individual that will be managing the proposed project. **(For proposals seeking funding for tribal capacity building who propose to use funding from this grant to hire key personnel and/or the project manager only -- submit a statement of knowledge, skills, abilities, and qualifications from the recruitment package for that position.)**

12. **Cover Letter**

Applications must include a cover letter signed by an authorized organizational representative (AOR) who, by virtue of their position, is able to obligate staff time on the proposed project (a suggested cover letter template is available at the end of Appendix E) including:

1. recipient information;
2. project title;
3. type of vehicle requested (grant/cooperative agreement/ Performance Partnership Grant);
4. proposed amount of grant (broken down into direct funding and in-kind assistance if relevant);
5. partners on the grant (if applicable);
6. brief project summary including a statement of project goal(s);
7. contact information for the project lead; and
8. signature of executive level Authorized Organizational Representative (AOR).

13. **Additional Information for Inter-Tribal Consortium:** An inter-tribal consortium applying for an FY

2018 Exchange Network Grant must include documentation that shows:

- a formal partnership exists among the Indian tribal governments that are members of the inter-tribal consortium, and the majority of the members are federally recognized Indian tribes; and,
- the consortium's federally recognized tribal members have authorized the consortium to apply for and receive assistance from the Exchange Network Grant Program.

14. **Formal Project Partners – Roles and Responsibilities and Distribution of Funds:** If the proposed project involves formal project partners who will actively participate in implementing the project, provide a description of the roles and responsibilities of each partner in carrying out each of the project goals. Describe how the recipient would coordinate work among the partners using methods such as regular teleconferences, meetings, or written status reports. If the recipient plans to distribute funding to other partners, describe the method for doing so. Exchange Network grant projects that include one or more formal partners can have budgets up to $500,000.

    Partnerships formed from within a single state, territorial or tribal government (e.g., a "partnership" limited to the Environment and Public Health Departments within a state) are not eligible partnerships and are limited to the $250,000 maximum funding for a single-jurisdiction grant and are not eligible for EE assistance agreements.

15. **List of Exchange Network Assistance Agreements**

Provide a list of previously awarded assistance agreements from the past three years.

Submitting an Electronic Application Package through Grants.gov

The Funding Opportunity Number for this announcement is **EPA-OEI-18-01**. Electronic applications must be submitted to this website by 11:59 pm on January 26, 2018. EPA advises applicants to submit their electronic applications early, so that if any technical difficulties arise, there will still be time to address them before the application deadline.

An official representative of your organization who is registered with grants.gov and authorized to sign applications for Federal assistance must submit your application. For more information, on the registration requirements that your representative must complete in order to submit an application through grants.gov, go to http://www.grants.gov and click on "Applicants" on the top of the page then go to the "Get Registered" on the page. ***Note that the registration process may take a week or longer.***

If your organization is not currently registered with grants.gov, please encourage your office to designate an Authorized Organization Representative (AOR) and ask that individual begin the registration process as soon as possible. Please note that the registration process also requires that your organization have a DUNS number and a current registration with the System for Award Management (SAM) and the process of obtaining both could take a month or more. An applicant must ensure that it meets all registration requirements in order to apply for this opportunity. EPA urges prospective applicants to meet all requirements well in advance of the submission deadline. Registration on grant.gov and SAM.gov, is FREE as is DUNS number assignment.

To begin the application process under this grant announcement, go to http://www.grants.gov and click on "Apply for Grants" from the drop-down menu and then follow the instructions accordingly. **Please Note**:

To apply through grants.gov you must use Adobe Reader software and download the compatible Adobe Reader version. For more information about Adobe Reader, to verify compatibility, or to download the free software, please visit http://www.grants.gov/web/grants/support/technical-support/software/adobe-reader-compatibility.html

Please Note: Applications submitted through Grants.gov beginning January 1, 2018 must be submitted through the "Workspace" feature. Information on the Workspace feature can be found at the Grants.gov Workspace Overview Page. You may also be able to access the application package for this announcement by searching for the opportunity on http://www.grants.gov . Go to http://www.grants.gov and then click on "Search Grants" at the top of the page and enter the Funding Opportunity Number EPA-OEI-18-01, or the CFDA number that applies to this announcement (CFDA 66.608), in the appropriate field and click the Search button.

Please be sure to review the additional instructions below before applying electronically under this announcement through use of grants.gov that are available for download on grants.gov . You can also obtain additional instructions on completing and submitting the electronic application package by clicking the "Show Instructions" tab that is accessible within the application package itself.

Application materials submitted through grants.gov will be time/date stamped electronically. If you have not received a confirmation of receipt from EPA (not from grants.gov) within 30 days of the application deadline, please contact Salena Reynolds, Exchange Network Grant Program Manager, at (202)-566-0466 or reynolds.salena@epa.gov. Failure to do so may result in your application not being reviewed.

The forms and documents that comprise the applications will be either completed on-line in grants.gov or submitted as an attachment per **Figure E-1** below.

Figure E-1: Submission Instructions for Application Forms and Documents

Form/Document	Submission Instruction
1. Application for Federal Assistance (SF-424)	Complete on-line
2. Budget Information for Non-Construction Programs (SF-424A)	Complete on-line
3. Assurances for Non-Construction Programs (SF-424B)	Complete on-line
4. Certification Regarding Lobbying Form	Complete on-line
5. EPA Key Contacts Form 5700-54	Complete on-line
6. EPA Form 4700-4 – Preaward Compliance Review Report	Complete on-line
7. Project Narrative	Attach document
8. Detailed Itemized Budget (Budget Narrative Attachment Form)	Attach document
9. Disclosure of Lobbying Activities (SF-LLL), if applicable	Complete on-line
10. Negotiated Indirect Cost Rate Agreement, if applicable	Attach document
11. Programmatic Resources and Personnel	Attach document
12. Cover Letter	Attach document
13. Additional Information for Inter-Tribal Consortium, if applicable	Attach document
14. Formal Project Partners Roles and Responsibilities, if applicable	Attach document
15. List of Federally and/or Non-Federally Funded Assistance Agreements	Attach document

Technical Issues with Submission

1. Once the application package has been completed, the "Submit" button should be enabled. If the "Submit" button is not active, please call Grants.gov for assistance at 1-800-518-4726. Applicants who are outside the U.S. at the time of submittal and are not able to access the toll-free number may reach a Grants.gov representative by calling 606-545-5035. Applicants should save the completed application package with two different file names before providing it to the AOR to avoid having to re-create the package should submission problems be experienced or a revised application needs to be submitted.

2. Submitting the application. The application package must be transferred to Grants.gov by an AOR. The AOR should close all other software before attempting to submit the application package. Click the "submit" button of the application package. Your Internet browser will launch and a sign-in page will appear. **Note: Minor problems are not uncommon with transfers to Grants.gov. It is essential to allow sufficient time to ensure that your application is submitted to Grants.gov BEFORE the due date identified in Section IV of the solicitation.** The Grants.gov support desk operates 24 hours a day, seven days a week, except Federal Holidays. A successful transfer will end with an on-screen acknowledgement. For documentation purposes, print or screen capture this acknowledgement. If a submission problem occurs, reboot the computer – turning the power off may be necessary – and re-attempt the submission.
Note: Grants.gov issues a "case number" upon a request for assistance.

3. Transmission Difficulties. If transmission difficulties that result in a late transmission, no transmission,

or rejection of the transmitted application are experienced, and following the above instructions do not resolve the problem so that the application is submitted to Grants.gov by the deadline date and time, follow the guidance below. The Agency will make a decision concerning acceptance of each late submission on a case-by-case basis. All emails, as described below, are to be sent to Salena Reynolds with the FON in the subject line. If you are unable to email, contact Salena Reynolds at 202-566-0466. Be aware that EPA will only consider accepting applications that were unable to transmit due to Grants.gov or relevant www.Sam.gov system issues or for unforeseen exigent circumstances, such as extreme weather interfering with internet access. Failure of an applicant to submit timely because they did not properly or timely register in SAM.gov or Grants.gov is not an acceptable reason to justify acceptance of a late submittal.
a. If you are experiencing problems resulting in an inability to upload the application to Grants.gov, it is essential to call Grants.gov for assistance at 1-800-518-4726 before the application deadline. Applicants who are outside the U.S. at the time of submittal and are not able to access the toll-free number may reach a Grants.gov representative by calling 606-545-5035. Be *sure* to obtain a case number from Grants.gov. If the problems stem from unforeseen exigent circumstances unrelated to Grants.gov, such as extreme weather interfering with internet access, contact Salena Reynolds at 202-566-0466.

b. Unsuccessful transfer of the application package: If a successful transfer of the application cannot be accomplished even with assistance from Grants.gov due to electronic submission system issues or unforeseen exigent circumstances, send an email message to reynolds.salena@epa.gov prior to the application deadline. The email message must document the problem and include the Grants.gov case number as well as the entire application in PDF format as an attachment.

c. Grants.gov rejection of the application package: If a notification is received from Grants.gov stating that the application has been rejected for reasons other than late submittal promptly send an email to Salena Reynolds with the FON in the subject line within one business day of the closing date of this solicitation. The email should include any materials provided by Grants.gov and attach the entire application in PDF format.

Please note that successful submission through Grants.gov or via email does not necessarily mean your application is eligible for award.

Suggested template for cover letter

[Organizational Letterhead]

Ms. Salena Reynolds
U.S. Environmental Protection Agency
Office of Environmental Information
1200 Pennsylvania Ave., NW, Mail Code 2823-T
Washington, DC 20460

Dear Ms. Reynolds:

I am pleased to submit the [state, tribe or territory name here] [Name of Department or Agency]'s application for a [**type of assistance**: grant, cooperative agreement, PPG], entitled [project name], under the FY 2018 Exchange Network Grant Program. This application is seeking [dollar amount] in direct grants funding and [dollar amount of Funds] in in-kind support. We have ['no' or number of partners] formal partners in this grant application. [Our partners are: name partners].

[Short narrative description of project including a statement of project goal(s)]

The contact for this grant application is:

Name and Title of Project Lead
Name of Office or Division
Name of Department or Agency
Full Mailing Address
Phone Number(s)
Email address

If there are any questions, please feel free to call either myself or the contact named in this letter.

Sincerely,

[Name/Title of Authorized Organizational Representative]

Attachment

Appendix F

Sample Project Goals, Outputs, and Outcomes

Goals

1. **Emissions Inventory System (EIS) & Greenhouse Gas (GHG) Data Flows**

Freedonia DEP has been sending NEI data to EPA using the Exchange Network. However, as EPA moves to a new database, called the Emissions Inventory System, this data flow will need to be upgraded to meet the new schema, CERS.

Freedonia requires Title V facilities to provide Greenhouse Gas (GHG) data to the state, unless they are providing data directly to The Climate Registry (TCR). Currently three Freedonia companies have agreed to supply data to TCR. The remainder of the Title V facilities must supply GHG data to Freedonia DEP annually using the same online system as NEI data. This system is called the **Permitting and Air Reporting System of Freedonia (PARSOF)**.

1.1. **Map EIS & GHG data elements** to the CERS XML Schema.
This includes detailed analysis and specifications for transferring data from PARSOF to CERS schema.

1.2. Implement the **production EIS data flow**. This includes:

- Develop the Extract, Transform and Load (ETL) process to load PARSOF data to staging tables
- Develop an EIS node plug-in to transfer the data from the staging tables to XML
- Configure the node data flow
- Test the data flow and perform quality assessment

1.3. Implement the **GHG data flow** to production.
Repeat step 1.2 with minor adaptations for GHG data.

1.4. Improve **GIS Locations** for emission points from Title V facilities, including preparation of geospatial metadata for the Latitude/Longitude Data Standard and meeting EPA's minimum accuracy of 25 meters for most points. This will improve the accuracy of data in both EIS and GHG.

This includes obtaining and entering locations and stack parameters for approximately 9,500 emission points into the PARSOF database. Some of these data will need to be transformed from the Breeze modeling software, and some obtained from paper maps and checked against aerial photos. Also, if time allows, other locations and associated web applications for environmental assessment/integration may be improved.

1.5. Add **application module** to the Facility Explorer web application **to allow easy access to emission point locations** and associated data. This will be used to evaluate emission rates of surrounding major facilities within a given radius of a proposed construction project.

This is a required assessment under the Prevention of Significant Deterioration (PSD) permitting program.

Currently when a construction project is proposed, the applicant contacts DEP who then queries the database for nearby sites, and manually finds the emission point data for each site to send to the applicant. The proposed web application module will allow the applicant to run a simple query themselves, thus obtaining the data immediately, and eliminating the need for DEP staff to find data.

The proposed application module includes programming to load the emission point locations as sub-entities into Freedonia's Environmental Facilities Database (EFD) warehouse, request the search, do the GIS query, retrieve needed report data from EFD and PARSOF, and build the report using SQL Reporting Services. The report will include:

- **facility** name, address, and plant ID;
- permitted or potential facility-wide **emission rates** in tons per year for: SO_2, NOx, CO, Pb, PM_{10}, and (if available) $PM_{2.5}$;
- a list of **emission point locations** with XY coordinates in UTM;
- permitted or potential **emission rates** and the most recent two years of actual emissions for each emission point for: SO_2, NOx, CO, Pb, PM_{10}, and (if available) $PM_{2.5}$; and
- **stack parameters**, including stack ID, height, diameter, temperature, flow rate, emission point type, bypass stack (Y/N), and obstructed (Y/N).

2. **Water Quality Exchange (WQX) Flow**

The replacement database for STORET, AWQMS (Ambient Water Quality Management System) is being developed by several states and Region 8, including Illinois, Minnesota, Utah, the National Park Service, and possibly Alaska. Freedonia is planning to implement this database to replace Freedonia STORET as the state database.

2.1. **Map** the data elements to the XML Schema. This includes detailed analysis and specifications for transferring data from the state database to WQX schema.

2.2. **Implement** the data flow to CDX (EPA's Node). This includes:

- adapt the 4.1 WQX Windsor node plug-in to transfer the data from the state database to XML;
- set up and configure the node; and
- test the data flow and perform quality assessment.

2.3. **Document the flow implementation** for use by other states using AWQMS and the same type of Node. Illinois and Minnesota use a Windsor .NET node. Other agencies have also mentioned the possibility of using the Windsor Node by the time this is implemented. Freedonia DEP will develop the documentation and provide any applicable code to these other agencies for streamlined implementation.

2.4. Publish a **web service** that will allow applications to pull water quality monitoring data. This web service will allow applications to query water quality monitoring data from the state's database. Initial plans are for at least two staging tables which can be populated using an automated DTS/SSIS or other script.

At a minimum, the staging tables should include the following elements and any other required elements in the WQX schema.

The output will be in WQX standard XML and include all elements in the staging tables. This grant will focus on making this work with Freedonia data. However, this can be extended later in two ways:

- add data to Freedonia's staging tables from other sources, such as USGS, the Freedonia Pesticide Monitoring database (FPEST), and raw water samples from the Safe Drinking Water Information System (SDWIS). This will allow applications to pull easily pull monitoring data from a variety of sources; or
- share the code and documentation with other states using AWQMS.

Figure F-1: Goals, Outputs, Target Dates, and Outcomes

Goal	Output	Target Date[1]	Outcome
EIS & GHG Data flows	1.1 CERS data mapped to XML schema	Jan. 1, 2018	Increased availability of timely, high quality data to other Exchange Network partners will improve environmental decision-making.
	1.2 EIS flow to EPA becomes operational	June 1, 2018	
	1.3 GHG flow to EPA becomes operational[2]	Dec. 31, 2018	
	1.4 Improve GIS locations & geospatial metadata for air release points[3]	Sept. 30, 2019	
	1.5 Add Assessment Module[3] to evaluate air emissions near	Mar. 31, 2020	
WQX [4]	2.1 Data mapped to XML schema[2]	Mar. 31, 2019	Increased availability of data to other Exchange Network partners Electronic availability of standardized, timely, high quality data over the Exchange Network will improve the analysis of water quality monitoring data and lead to better decision-making.
	2.2 Implement WQX Flow[3]	Sept. 30, 2019	
	2.3 Written documentation of implementing WQX with multi-state AWQMS	Jan. 31, 2020	
	2.4 Publish web service	Sept. 30, 2020	

[1] Estimated Grant Period: October 1, 2018 through Sept. 30, 2021. If DEP is notified of the grant award by August 1 or before, dates will be shifted so they fall within the grant period.

[2] These tasks also accomplish the following intermediate outcome:
- **Improved business processes** that facilitate **burden reduction** on the regulated community.

[3] These tasks also accomplish the following two intermediate outcomes:
- **Increased speed and timeliness of data exchange** by allowing data exchanges to happen more frequently, thereby decreasing the lag between partner systems;
- **Increased efficiency** of data exchange by reducing administrative burden, including reducing or eliminating manual intervention for tasks such as scheduling, resubmissions, or security.

[4] This goal also accomplishes the following intermediate outcomes.
- Economies of scale through shared infrastructure to achieve **reduced costs and expanded functionality**.

Please see our attached Detailed Budget which links expected investments under this agreement to each goal to support and complete the proposed work referenced in this Narrative.

Appendix G

Contracts and Subawards

Can funding be used for the applicant to make subawards, acquire contract services or fund partnerships?
EPA awards funds to one eligible applicant as the recipient even if other eligible applicants are named as partners or co-applicants or members of a coalition or consortium. The recipient is accountable to EPA for the proper expenditure of funds.

Funding may be used to provide subawards of financial assistance, which includes using subawards to fund partnerships, provided the recipient complies with applicable requirements for subawards including those contained in 2 CFR Part 200. Applicants must compete contracts for services and products, including consultant contracts, and conduct cost and price analyses to the extent required by the procurement provisions of the regulations at 2 CFR Part 200. The regulations also contain limitations on consultant compensation. Applicants are not required to identify subrecipients and/or contractors (including consultants) in their application. However, if they do, the fact that an applicant selected for award has named a specific subrecipient, contractor, or consultant in the application EPA selects for funding does not relieve the applicant of its obligations to comply with subaward and/or competitive procurement requirements as appropriate. Please note that applicants may not award sole source contracts to consulting, engineering or other firms assisting applicants with the application solely based on the firm's role in preparing the application.

Successful applicants cannot use subawards to avoid requirements in EPA grant regulations for competitive procurement by using these instruments to acquire commercial services or products from for-profit organizations to carry out its assistance agreement. The nature of the transaction between the recipient and the subrecipient must be consistent with the standards for distinguishing between vendor transactions and subrecipient assistance under 2 CFR 200.330 and the definition of subaward at 2 CFR 200.92. EPA will not be a party to these transactions. Applicants acquiring commercial goods or services must comply with the competitive procurement standards in 2 CFR Part 200.317-326 and cannot use a subaward as the funding mechanism.

How will an applicant's proposed subrecipient and contractors be considered during the evaluation process described in Section V of the announcement?
Section V of the announcement describes the evaluation criteria and evaluation process that will be used by EPA to make selections under this announcement. During this evaluation, except for those criteria that relate to the applicant's own qualifications, past performance, and reporting history, the review panel will consider, if appropriate and relevant, the qualifications, expertise, and experience of:

(i) an applicant's named subrecipient identified in the application if the applicant demonstrates in the application that if it receives an award that the subaward will be properly awarded consistent with the applicable regulations in 2 CFR Part 200. For example, applicants must not use subrecipients to obtain commercial services or products from for profit firms or individual consultants.

(ii) an applicant's named contractor(s), including consultants, identified in the application if the applicant

demonstrates in its application that the contractor(s) was selected in compliance with the competitive Procurement Standards in 2 CFR Part 200.317-326. For example, an applicant must demonstrate that it selected the contractor(s) competitively or that a proper non-competitive sole-source award consistent with the regulations will be made to the contractor(s), that efforts were made to provide small and disadvantaged businesses with opportunities to compete, and that some form of cost or price analysis was conducted. EPA may not accept sole source justifications for contracts for services or products that are otherwise readily available in the commercial marketplace.

EPA will not consider the qualifications, experience, and expertise of named subrecipients and/or named contractor(s) during the application evaluation process unless the applicant complies with these requirements.

How can I report information subawards?
To report subaward information is FSRS, you must have an account. To register in FSRS, follow the instructions below:

Step 1: Access the FSRS online home page (https://www.fsrs.gov/)
Step 2: Click on "Awardees" in the "log-in or register now" box on the home page.
Step 3: Click on "Registration Instructions for Awardees" under the returning awardees; login fields.

FSRS also developed an awardee user guide with step-by-step instructions on submitting a report, https://www.fsrs.gov/documents/FSRS_Awardee_User_Guide.pdf

Appendix H

Checklist of Documents to Submit

The following documents are required under this Solicitation Notice and constitute the full application to EPA for assistance agreement funding. Fillable forms can be obtained from http://www.epa.gov/ogd/forms/forms.htm. All applicable forms and documents must be submitted and validated within grants.gov or, for applicants with a waiver, submitted via a method specified in the waiver **at or before 11:59 pm on January 26, 2018**. To confirm applicant eligibility and/or applicability of any of the listed forms or documents below, please contact Salena Reynolds at (202) 566-0466 or reynolds.salena@epa.gov.

- ☐ Standard Form 424, "Applications for Federal Assistance"
- ☐ Standard Form 424A, "Budget Information for Non Construction Programs"
- ☐ Standard Form 424B, "Assurances for Non Construction Programs"
- ☐ Certification Regarding Lobbying Form
- ☐ Standard Form 5700-54, "Key Contacts Form"
- ☐ EPA Form 4700-4, "Preaward Compliance Review Report"
- ☐ Project Narrative
    - o No more than 10-pages, single-spaced.
    - o Must address Evaluation Criteria [Section V-A] and link activities to results/outcomes.
- ☐ Detailed Itemized Budget
    - o Describe both total project budget and the costs associated with each major goal.
    - o If budget includes indirect costs, an approved IDC Agreement is required.
- ☐ Standard Form LLL, "Disclosure of Lobbying Activities", if applicable
- ☐ Negotiated Indirect Cost Agreement, if applicable
- ☐ Programmatic Resources and Personnel
- ☐ Cover Letter
    - o Recipient Information
    - o Indicate Exchange Network priorities
    - o Project Title
    - o Type of Assistance Vehicle identified *[Section II-B]*
    - o Partners, if applicable *[Section III-C]*
    - o Brief Project Summary
    - o Contact Information for Project Lead
    - o Signature of Executive as Authorized Organizational Representative
- ☐ Description of Inter-Tribal Consortium Eligibility, if applicable
- ☐ Formal Project Partners, if applicable
    - o Project Narrative *[above]* details roles and responsibilities of lead and partners in carrying out each project goal.
    - o If lead will distribute funding to partners, describe methodology or state no distribution.
    - o Letters of support and intent included from all proposed partners.
- ☐ List of EN Assistance Agreements

Appendix I

Quality Assurance Reporting Form

OMB No. 2025-0006

Expires 8/31/2018

U.S. ENVIRONMENTAL PROTECTION AGENCY
Quality Assurance Reporting Form
for Use by Recipients of Assistance Agreements

Recipient Organization: **Name:** **Address:**	**EPA Award Number:** **Project/Program Period (starting and ending dates, mm/dd/yyyy):**

Activity Group: (check all that apply)

□ Infrastructure Development
□ Data Exchange, Analysis and Integration
□ Planning, Mentoring, and Training
□ Challenge

Goal	Task	Output	Outcome	Quality Assurance Measures

Instructions:
- **Please submit electronically to your project officer within 90 days of award.**
- **For Quality Assurance Measures, please refer to current Solicitation Notice for Quality Assurance Guidelines.**
- **For Goals, please refer to goals outlined in your assistance agreement work plan.**

Paperwork Reduction Act (PRA) Burden Statement: The public reporting and recordkeeping burden for this collection of information is estimated to average one hour per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Appendix J

Definitions

Application Programming Interface (API)
When used in the context of web development, an API is a set of Hypertext Transfer Protocol (HTTP) request messages, along with a definition of the structure of response messages, which is usually in an Extensible Markup Language (XML) or JavaScript Object Notation (JSON) format. The term web API is virtually synonymous with the term web service.

Central Data Exchange (CDX)
CDX is the gateway through which environmental data enters the Agency and is EPA's point of presence on the Exchange Network and for many EPA shared services. CDX provides the capability for submitters to access their data using web services. CDX enables EPA and participating Program Offices to work with stakeholders - including state, tribal and local governments and regulated industries - to enable streamlined, electronic submission of data via the Internet.

Community of Interest
A community of interest is a group of Exchange Network stakeholders who share an interest in the exchange of a specific set of environmental data.

Construction
Construction is the erection, building, alteration, remodeling, improvement, or extension of buildings, structures or other property. Construction also includes remedial actions in response to a release, or a threat of a release, of a hazardous substance into the environment as determined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980.

Cross-Media Electronic Reporting Rule (CROMERR)
Rule that sets requirements – including performance-based, technology-neutral standards for electronic reporting systems – for states, tribes and local governments implementing electronic reporting under their approved EPA-authorized programs. CROMERR requires that states, tribes, and local governments amend or revise their EPA-authorized program(s) to receive reports from regulated facilities under those programs. Both new and existing electronic reporting programs require EPA approval, and the regulation establishes a process for applying for and obtaining such approval. CROMERR also addresses electronic reporting directly to EPA.

Data Access Services (Publishing)
Network publishing is a term that refers to using Exchange Network technologies, services and specifications for web services to make data available to Network users by querying nodes and returning environmental data in the form of XML or (Json) documents. These services are also called data services. Once these data services are deployed, they can be used in a number of ways such as populating web pages, synchronizing data between sites, viewing data in a web service client, or building new sources of data into an integrated application. In other words, data access services are a specific subset of the many possible

types of web services. Other web service types include data submission, security, quality assurance, notification and status.

Data Element

A data element is the smallest unit of information stored in and exchanged among Exchange Network partners' information systems. Examples of data elements are the facility name, DUNS number, and inspection date.

Data Standard

A data standard documents an agreement on representation, format, and definition of common data exchanged. Exchange Network partners must use data standards that have been approved by the Exchange Network Leadership Council (ENLC). The ENLC has subsumed the activities of the Environmental Data Standards Council (EDSC). See information at http://www.exchangenetwork.net/knowledge-base/

Development, Modernization, and Enhancement (DME)

DME refers to projects and activities leading to new IT assets/systems, as well as projects and activities that change or modify existing IT assets to substantively improve capability or performance. DME includes activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from or significantly greater than those originally intended.

E-Enterprise

E-Enterprise is a joint initiative of states, tribes and EPA to expand access to environmental monitoring data, streamline regulatory information collections, and achieve performance goals for regulatory burden reduction and cost avoidance. The E-Enterprise program will be institutionalized through policies, supported by shared services, coordinated with governmental partners, and overseen by intra-agency and interagency governance structures.

Exchange Network Discovery Services (ENDS)

The Exchange Network Discovery Services (ENDS) is a set of directory services for all nodes in Exchange Network. This central catalog approach supports the automated consumption of services using tools such as the EN Browser and the EN Services Center via an XML document that contains the service metadata. ENDS automates both the discovery and retrieval of service metadata for the Network and supports the Administration and export of node services via the web and web Service interfaces. ENDS is composed of two main components: the first, is a set of services that allows EN partners to submit and query the service descriptions stored in the ENDS repository; the second, is a web interface that simplifies the data entry of service metadata into ENDS. The services all accept or return a common XML schema. This XML schema provides a structured, standard way to represent EN services across all EN Nodes. A second ENDS schema defines the Data Element Description Language (DEDL) that can be used by individual Exchange Network nodes for describing acceptable parameters and valid allowable values, and making them available as services. DEDL further enhances the ability for EN partners to build rich, user friendly applications using EN services. More information on ENDS is available at http://www.exchangenetwork.net/exchange-network-discovery-service-ends/.

Exchange Network Services Center (ENSC)

The ENSC is a browser-based portal that provides Exchange Network partners access to a broad range of Network services. Among the most notable features of the Service Center is the ability to submit data to EPA systems, monitor the status of data submissions, and access a variety of Network administrative data. Essentially, the ENSC offers most of the functionality of a Node, but it is not automated and cannot respond to data requests. It simplifies access to Network services because it requires no software to install or configure. It can be accessed from any computer with a browser and internet access. The ENSC is available at https://enservices.epa.gov/login.aspx.

Environmental Information Exchange Network (Exchange Network)

The Exchange Network is an Internet and standards-based information network among EPA and its partners in states, tribes, and territories. It is designed to help integrate information, provide secure real-time access to environmental information, and support the electronic collection and exchange of high-quality data and information. The Exchange Network provides a more efficient way of exchanging environmental information at all levels of government. It significantly improves the way EPA and its state, tribal, and territorial partners send and receive information.

Extensible Markup Language (XML)

Extensible Markup Language is a flexible language for creating common information formats and sharing both the format and content of data over the Internet and elsewhere. XML is a formatting language recommended by the World Wide Web Consortium (W3C). For guidance on the development of XML schema for the Exchange Network or related activities of the Network Technical Group, see the Exchange Network website at http://www.exchangenetwork.net.

Flow Configuration Documents (FCDs)

FCDs are the principle document that captures the detailed data exchange processing design and roles governing the data exchange using narrative text, diagrams and examples. A standard template for FCDs is available on the Exchange Network website at http://www.exchangenetwork.net/knowledge-base/.

Geographic Information Systems

Geographic Information Systems (GIS) include software and hardware systems that relate and display collected data in terms of geographic or spatial location. GIS allow users to collect, manage, and analyze large volumes of geospatial data and metadata. EPA and its partners use GIS systems to conduct complex environmental analyses.

Geospatial Data

Geospatial data are data that identify, depict, or describe the geographic locations, boundaries, or characteristics of the Earth's inhabitants or its natural or human-constructed features. Geospatial data include geographic coordinates (e.g., latitude and longitude) that identify a specific location on the Earth and data that are linked to geographic locations or have a geospatial component (e.g., socio-economic data, land use records and analyses, land surveys, homeland security information, and environmental analyses). Geospatial data may be obtained using a variety of approaches and technologies, including things such as surveys, satellite remote sensing, Global Position System (GPS) hand-held devices, and airborne imagery and detection devices.

Geospatial Technologies
Geospatial technologies include the computer hardware and software that are commonly used to collect, import, store, manipulate, analyze, and display digital geospatial data. These technologies include GIS, global positioning systems (GPS), remote sensing and visualization systems.

Goal
In EPA grant terminology, a goal is a self-contained project (e.g., implementing WQX, implementing an electronic reporting system using shared CROMERR services). This differs from the more common definition of goal—a desired end. An Exchange Network grant proposal must list one or more goals.

In-Kind Services
Services provided by EPA contractors and consultants on specific parts of the project for the recipient. The recipient can request this type of service as part of the grant application, if the in- kind work is directly related to the recipient's application and the applicant is the primary beneficiary of the work. However, EPA reserves the right to decide whether or not in-kind services will be provided. The recipient may not direct the work provided through in-kind services. These services are managed by EPA.

Integrated Project Team
A group of individuals comprised of partner and EPA staff, support contractors, and technology vendors organized to design and implement a specific exchange.

Maintenance
Maintenance is the activity necessary to keep an IT asset functioning as designed. Maintenance costs include costs needed to sustain an IT asset at the current capability and performance levels including: corrective hardware/software, voice and data communications maintenance; replacement of damaged or obsolete IT equipment; and associated overhead costs. Examples of maintenance projects include operating system upgrades, technology refreshes, and security patch implementations. **Maintenance excludes activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from or significantly greater than those originally intended.**

Metadata
Metadata are data or information that describes other data. Examples include data that describe how or where the data were collected, whether or not the data comply with agreed-upon data standards, or how the data will be used.

Network Authorization and Authentication Services (NAAS)
Network Authorization and Authentication Services (NAAS) are a set of centralized information security services that Exchange Network partners can use to authenticate and authorize their users. NAAS provides an efficient way for Exchange Network participants to exchange data, without having to build and maintain their own security system. NAAS supports many levels of security, from PIN/passwords to public Key Infrastructure. All NAAS operations are conducted over a Secure Socket Layer (SSL) channel using 128-bit encryption.

Node

A Node is a web service enabled server (hardware and software) that provides a point for exchanging information over the Internet. Exchange Network Nodes can gain access to and transmit information using web services. In order to achieve interoperability among Nodes, all Nodes must be set up according to the Exchange Network specifications. Freely available Node software is available at http://www.exchangenetwork.net/exchange-network-products/. Specifications, protocols, tools, code and documentation for building a functioning Exchange Network Node are available at http://www.exchangenetwork.net/knowledge-base/.

Node Client

A Node client is an application (software code) that can generate web service messages for using the Exchange Network. A Node client can do the following:

- Submit data in XML format to EPA or other partners using the Exchange Network and
- Request data in XML format from EPA or other partners using the Exchange Network.

Several Node clients that are very user friendly are available on the Exchange Network website already. More are on the way. A Node client software developer kit (SDK) is also available to help you integrate Node client requests into your applications. Unlike Nodes, Node clients *cannot* publish data on the Exchange Network (i.e., they cannot listen for or respond to data queries from other Exchange Network partners)

Operations

Operations is the day-to-day management of an asset in the production environment and include activities to operate data centers, help desks, operational centers, telecommunication centers, and end user support services. Operations costs include the expenses associated with an IT asset that is in the production environment to sustain an IT asset at the current capability and performance levels including: Federal and contracted labor costs; and costs for the disposal of an asset.

Operations and Maintenance (O&M)

Operations and Maintenance is the phase of an asset in which the asset is in operations and produces the same product or provides a repetitive service. Operations and Maintenance (O&M) is synonymous with "steady state."

Outcome

The term "outcome" means the result, effect, or consequence of carrying out a project leading to an environmental or programmatic goal. Outcomes may be environmental, behavioral, health- related or programmatic in nature, may be quantitative or qualitative, and may not necessarily be achievable within an assistance agreement funding period.

Output

The term "output" means an environmental activity, effort, or associated work products leading to an environmental goal, that will be produced or provided over a period of time or by a specified date. Outputs may be quantitative or qualitative but must be measurable during an assistance agreement funding period.

Phase 1 (of the Exchange Network)

Phase 1 of the Exchange Network is a term that the Network community uses to identify the Ten National and Priority System Flows identified in this Solicitation Notice. The flows are: Air Quality System (AQS); Emissions Inventory System (EIS); Integrated Compliance Information System – National Pollution Discharge Elimination System (ICIS-NPDES), including Net Discharge Monitoring Reports (NetDMR); Resource Conservation and Recovery Act Information System (RCRAinfo); eBeaches; Safe Drinking Water Information System (SDWIS); Underground Injection Control Database (UIC); Water Quality Exchange (WQX); Facility Registry System (FRS); and Toxic Release Inventory System (TRIS).

Phase 2 (of the Exchange Network)

Phase 2 of the Exchange Network is the term that the Network community uses to refer to the second phase of Network development. Phase 1 focused on development of the Network infrastructure and implementation of data reporting to EPA using the Network. In Phase 2, the Network community will expand Network publishing (data owners making their information available to other partners on the Network using automated services), develop applications (both mobile and desktop) and websites (including public sites) that analyze and/or display data accessed using Exchange Network services, expand the use of the Network for data reporting to additional EPA data systems, expand intra-partner data sharing including programs where EPA does not have a central data store (e.g., institutional controls for cleanup sites) and develop new technologies that make using the Network easier and less costly.

Representational State Transfer (REST) / RESTful Web Service

Software system designed to support machine-to-machine interaction over a network. Representational State Transfer (REST) services do not require XML, SOAP, or WSDL (Web Services Description Language) but rely on the exchange of requests and responses between the resources and on their corresponding states. REST-style services facilitate the aggregation of services into more complex services and the development of mashups. REST services are usually accessed via HTTP (like a web URL or link). Guidance on implementing REST services for the Exchange Network is available at http://www.exchangenetwork.net/rest-guidance/.

Reusable Component Services (RCS)

Reusable Component Services (RCS) is a catalog of information technology resources (e.g., XML schema, widgets, REST Web services) from U.S. EPA, states tribes and other partners that provides a central point of access to a broad range of components and services. RCS promotes effective information management by centrally registering these resources, and it enables reuse of those resources for the purposes of reducing cost, speeding development, and producing higher-quality systems. RCS is located at http://www.epa.gov/rcs.

Schema

An XML schema defines the structure of an XML document including data elements and attributes can appear in a document; how the data elements relate to one another; whether an element is empty or can include text; which types of data are allowed for specific data elements and attributes; and what the default and fixed values are for elements and attributes. A set of Network quality assurance web services is available to validate your XML documents against the schemas using a standard parser. A list of procedural and guidance documents related to schema development is available on the Exchange Network website at http://www.exchangenetwork.net/knowledge-base/.

Shared Service

A shared service, as defined by the Shared Services Integrated Project Team in 2016, is a service that is:

- Developed jointly.
- Usable by multiple partners/users.
- Managed centrally, meaning that some entity is overseeing the ongoing evolution and maintenance of the service. The entity might be a state, tribe, territory, EPA, or some other interested party.
- Addresses a common need/concern.

Simple Object Access Protocol (SOAP)

SOAP is a protocol specification for exchanging structured information for the implementation of web services on a computer network. It allows machines to interoperate in a loosely coupled manner using simple standard messages over the Hypertext Transfer Protocol (HTTP or others) and uses Extensible Markup Language (XML) as the mechanisms for information exchange.

Virtual Exchange Service (VES)

VES is a central node server that can host any number of partner nodes: state, tribe, region, agency, etc. Each partner node is simply configured using wizards and forms on the central virtual node cloud server. This eliminates the need for maintaining a local node completely. Each partner node functions like a conventional node, only it is much simpler and less expensive to set up and maintain.

Web Form

A standard interface that can be downloaded from the Internet, a web form contains blank fields for a user to enter data and submit the form (e.g., environmental reports) to the receiver.

Web Services

Web services are a software system designed to support interoperable machine-to-machine interaction over a network. They make it easier to conduct work across organizations regardless of the types of operating systems, hardware/software, programming languages, and databases that are being used.

Widget

A software tool that uses a small (smaller than a page) graphical interface to provide a function or service and that can be added to a web application or to a web page.