Fiscal Year 2016 National Environmental Information Exchange Network Grant Program

Solicitation Notice

U.S. Environmental Protection Agency
Office of Environmental Information
Office of Information Collection
Information Exchange and Services Division
Information Exchange Partnership Branch
September 3, 2015

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Overview Information

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

Funding Opportunity Title: FY 2016 National Environmental Information Exchange Network Grant Program

Announcement Type: Availability of Funding Solicitation

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Dates: November 13, 2015 - Deadline for submitting applications to EPA
July 31, 2016 - Expected Award of FY 2016 Exchange Network Grants

I. Funding Opportunity Description

The Environmental Information Exchange Network (Exchange Network, Network or EN) is a partner-inspired, developed, implemented and governed information network. It facilitates environmental data sharing among EPA, states, tribes and territories. The EN uses a standards-based approach that allows partners to exchange data over the Internet regardless of the specific information technology used. This replaces the need to perform complex and expensive data transformations to move data between systems or to share data on paper, discs or other media or via email. Partners share electronic data more easily and at a lower cost, and environmental decision makers are able to use the data to make timely decisions. More information about the Exchange Network is available at www.exchangenetwork.net.

The Exchange Network Grant Program provides funding for projects that develop the Network and enable timely, on-demand access to environmental data through innovative technologies, improved support systems, and expanded collaboration using shared tools and services.

In FY 2016, the Exchange Network Grant Program continues to focus on implementing Phase 2 of the EN as described in the priorities section (I-E). Additionally, EPA encourages applicants to propose projects that align with the principles of E-Enterprise for the Environment. E-Enterprise is a joint initiative among EPA, states, and tribes to integrate and streamline the way government protects the environment and human health. More information about E-Enterprise is available at www2.epa.gov/e-enterprise.

I-A. Background

EPA and its state, tribal, and territorial partners continue to expand the Exchange Network. Building upon the success of the Network's Phase 1, EPA and its partners are guided by the Exchange Network's Phase 2 implementation plan,[1] which the Exchange Network Leadership Council (ENLC) approved in spring 2013.

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[1] Available online at:
http://www.exchangenetwork.net/wp-content/uploads/2011/07/Phase_2_Implementation_Plan.pdf

The Phase 2 implementation plan contains the following four goals:
1. The Exchange Network Becomes Increasingly Usable, Efficient and Sustainable;
2. The Exchange Network Becomes Increasingly Relevant and Valuable to a Broadening Community of Partners and Consumers;
3. The Exchange Network Enables Better Decisions Through Timely, Accessible and Useful Environmental Information; and
4. The Exchange Network and its Partners Have Adequate Resources for Implementation, Operations and Maintenance.

Transitioning from a paradigm dominated by state/tribal reporting to EPA, Phase 2 emphasizes data exchanges among partners as well as making data readily available and more usable for communities of interest and the public. EPA established the 2016 funding priorities with these goals in mind. The priorities directly support Phase 2's goals 1 through 3. Successful growth and use of the Network is the surest way to sustain resource availability in the future (goal 4).

E-Enterprise Alignment: The E-Enterprise for the Environment (E-Enterprise) strategy is EPA's preeminent joint governance initiative. Under the direction established by this strategy, the Agency and its co-regulator partners are developing a seamless environmental data connection among partners, streamlining programs and applying advanced technology across agencies and programs. The goal is to make business processes more efficient and effective, to enhance services to the regulated community and the public and to improve environmental results over the next five to 10 years.[2] The E-Enterprise FY 2015 Annual Action Plan[3] for EPA's Partnerships Cross Agency Strategy[4] calls for identifying activities in FY 2016 grant workplans, National Environmental Performance Partnership agreements, and processes, projects and/or programs that will be aligned with E-Enterprise goals.[5]

The FY 2016 President's Budget requests State and Tribal Assistance Grants (STAG) funding for E-Enterprise. As of the publication date for this Solicitation, Congress has not appropriated E-Enterprise funding and EPA has not identified other sources of funding to award grants for E-Enterprise activities. EPA cannot solicit grant applications for E-Enterprise activities without expectation that the funds will become available. This Solicitation is not for E-Enterprise activities.

The Exchange Network, however, provides much of the technology that underpins E-Enterprise. This includes data publishing and transport capabilities as well as a variety of shared services that enable more efficient operations and more seamless user experiences. EPA, therefore, encourages applicants to develop project proposals that advance the goals of the Exchange Network and demonstrate close alignment with the

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[2] General E-Enterprise information is at: http://www2.epa.gov/e-enterprise and http://www.exchangenetwork.net/e-enterprise/.

[3] See "A New Era of State, Local, Tribal, and International Partnerships: Fiscal Year 2015 Annual Action Plan at: http://www2.epa.gov/sites/production/files/2015-02/documents/partnerships-action-plan-fy15.pdf.

[4] The Cross-Agency Strategies are part of FY 2014-2018 EPA Strategic Plan, available at: http://www2.epa.gov/planandbudget/fy-2015-cross-agency-strategies-action-plans.

[5] See "About E-Enterprise for the Environment" at: http://www2.epa.gov/e-enterprise/about-e-enterpriseenvironment.

principles of E-Enterprise. These projects will enhance the accessibility and usability of environmental information, improve efficiency, reduce agency and regulated community burden, modernize program operations and business processes, and reach across organizational boundaries.

I-B. Grant Program Funding History and Results

FY 2016 is the fifteenth year EPA will award Exchange Network grants. From FY 2002 through FY 2015, EPA has provided approximately $200 million for state, tribal and territorial awards and associated program support through the grant program. As of May 2014, all 50 states, 74 tribes and 5 territories have received Exchange Network grants[6].

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 in Appendix A. Applicants may propose projects that include activities other than those listed as examples, provided they are consistent with EN priorities and conform to Exchange Network 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

EPA's mission is to protect human health and the environment. Timely access to information supports strong environmental decision-making and better enables EPA, with its state and tribal partners, to carry out that mission.

It is EPA policy to link work supported by assistance agreements directly to the Agency's mission and Strategic Plan. Applications under this Solicitation must clearly demonstrate support for the Cross-Agency Strategy of the EPA 2014-2018 Strategic Plan, "Launching a New Era of State, Tribal, Local, and International Partnerships."[7] Grant applications, assistance agreements, and work plans must have outcomes that lead to or are instrumental in achieving environmental results that support the Agency's mission and Strategic Plan goals.

Goals, Outputs, Outcomes and Environmental Results

Exchange Network grant proposals must include **goals**, **outputs** and **outcomes**. 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.

A goal will have **outputs**, which are intermediate accomplishments necessary to achieve the goal. Examples include completion of a schema or testing a flow. **Outcomes** are the direct effects of the project. Examples include supporting better decision-making by building data access for environmental professionals and the

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[6]   For descriptions of previously awarded Exchange Network Grants, please see: http://www.epa.gov/exchangenetwork/grants/index.html
[7] EPA's 2014-2018 Strategic Plan can be found at: http://www2.epa.gov/planandbudget/fy-2014-2018-strategic-plan

public or facilitating environmentally sound, place-based decision-making through the inclusion of quality locational data.

EPA recognizes that Exchange Network projects do not produce direct environmental results. Application evaluations, therefore, will focus on the major technical and non-technical outputs and outcomes. **Each proposed goal should have at least one outcome that will lead to or be instrumental in achieving an environmental result.**

In developing a project plan, an applicant must ensure that:
- ➢ Each goal results in a major deliverable, such as a sustained data flow;
- ➢ It lists and schedules each major output that leads to achieving a goal; and
- ➢ Each goal has at least one outcome that leads to environmental results.

Figure 1-1 presents examples of goals, outputs and outcomes.

Figure 1-1: Examples of Goals, Outputs and Outcomes

Examples of Goals:

- ➢ Implementation of a production data flow such as WXQ

- ➢ Automated publishing of data to a web site reusing existing Exchange Network web services or other web APIs

Examples of Project Outputs:
- ➢ Development of schema
- ➢ Development of Web services and other web APIs that enable data publishing
- ➢ Establishment of new interagency processes, advanced monitoring systems, portals, or shared services
- ➢ Issuance of Requests for Proposals (RFPs)

Examples of Project Outcomes:
- ➢ Improving the timeliness and accuracy of environmental data
- ➢ Reducing burden and costs associated with data management and reporting
- ➢ Increasing access to environmental data from program systems or real-time environmental data from advanced monitoring systems
- ➢ Supporting better decision-making by building data access for environmental professionals and the public
- ➢ Facilitating place-based decision-making through the inclusion of quality locational data which transcend jurisdictional boundaries
- ➢ Achieving operational efficiencies and reducing burden for regulated entities and citizens through shared services

Figure 1-2 presents an example excerpt from an Exchange Network project narrative that shows the relationship of goals, outputs and outcomes that lead to environmental results.

Figure 1-2: Exchange Network Project Example

Goal 1: **Electronic Notice of Intent (eNOI)** **and eForms**	**Goal 1 Outcome(s)** 1. Increases availability of timely, high quality data to other Exchange Network Partners, which will improve environmental decision-making. 2. Increases efficiency of review and process notice of intent applications, thus reallocating program implementation resources to other environmental priorities.
Output	**Scheduled Date**
1.1 Design and develop Microsoft.Net Web forms/ pages for each NOI.	January 2017
1.2 Design and develop eForms to TEMPO automated data migrations.	February 2017
1.3 TEMPO administrative review and technical review automation and quality verification routines.	March 2017
1.4 Create and Implement GIS active data layers.	December 2017
1.5 Create and implement ICIS-NPDES XML data flows, flow data using State Node to Exchange Network Node.	December 2017

I-E. Program Priorities

EPA expects projects supported by an Exchange Network assistance agreement will improve the accessibility and usability of high-quality environmental data from public and private sector sources. The Agency also encourages applicants to develop project proposals that advance the Network's Phase 2 goals that demonstrate close alignment with E-Enterprise principles.

Where applicable, EPA encourages applicants to integrate registry services (e.g., Facilities Registry Service, Substance Registry Service) into applications to enhance data quality. Examples include using lookup and correction services to validate or fix erroneous data in online forms for e-reporting projects and using the Facility Linkage Application (Facility Registry System data quality tool) to reconcile and correct facility data.

EPA categorizes Exchange Network grant priorities into two tiers: Tier 1 priorities consist of Phase 2 activities; Tier 2 priorities consist of implementing nine of the original 10 priority data exchanges as well as the remainder of Exchange Network related activities. Under evaluation criterion 3, *Relevancy to Exchange Network Priorities*, as described in Section V-A (evaluation criteria), proposals that include at least one Tier 1 goal are eligible to receive 40 points. Proposals that include at least one Tier 2 goal but no Tier 1 goal are eligible to receive 30 points.

It is important to note that EPA looks for four elements in a proposal's project narrative. The applicant must:
1. Define each goal (e.g., publishing air quality data);
2. Explain how each 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; and
4. Explain how the project enhances data sharing and data availability among Exchange Network partners, providing value to both the applicant and network partners.

In order to meet evaluation criterion 3 and to receive full points, the application must include these elements clearly. It is not sufficient merely to repeat the terminology used in this Notice.

EPA and its partners have built the Network on a foundation of common data standards, formats and trading partner agreements for sharing data.

As part of this standardization, grantees must use approved data standards to develop Exchange Network products and services. In most cases, EPA has incorporated the data standards into the major systems and data flows; these data standards can simply be re-used. For detailed information on each ENLC-approved standard, please refer to the Exchange Network website at http://www.exchangenetwork.net/data-standards/. A separate document (located on the same website) assists applicants to understand how these standards are implemented within the specific EPA systems. Please note that, in some cases, applicants may need to identify areas for new data standardization. If so, applications should identify the data standards needed and request funding to develop them.

Furthermore, applicants must search in the Exchange Network Discovery Service (ENDS) or resources in the EPA Reusable Components Service (RCS) for information on existing tools and services before developing and deploying a new product. Applicants that develop and deploy new products are required to register data flows and web services in ENDS and to register tools, applications, schemas and other reusable components in RCS.

Please note that no funds will be available for the following activities:
➢ 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 (i.e., virtual node);
➢ Operations and maintenance of flows, including minor updates to schema for an existing flow; and
➢ Enhancements to existing data flows, including but not limited to, new data elements, expanded geographic scope and addition of historical data. EPA does not consider the following to be enhancements and will fund these activities: implementing the data element changes identified in Appendix A of the proposed NPDES electronic reporting rule, new RCRAinfo modules and new classes of UIC wells.

Tier 1 Exchange Network Activities
Data access projects:
In FY 2016, the Exchange Network community will be fully engaged in Phase 2 development efforts, especially those related to the development of reusable and discoverable (or reuse of existing) tools and applications that deliver automated access to environmental data, such as:
➢ 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; and
➢ Dashboards that provide real time program status information to senior program managers and executives;

Applicants should consider opportunities to share data across programs within their organization, across agencies within a state or tribe, 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 and that serve interested non-governmental organizations, research institutions, other communities of interest and the public.

Choosing the appropriate technology approach for a data access project is one of the key decisions in preparing a grant application. To date, Exchange Network partners have used Exchange Network Node or Node Client software primarily to submit or publish data via Simple Object Access Protocol (SOAP)-compliant web services[8]. Exchange Network partners use web services and standard data formats to electronically report, share, and integrate regulatory and non-regulatory environmental information. These technologies have also powered mobile and desktop applications, supported more efficient business processes, and facilitated implementation of EPA's Open Data Policy[9].

Nodes and Node Clients executing SOAP-compliant web services are important tools for EN partners, particularly in support of secure reporting to EPA data systems. With Phase 2's emphasis on data access and usability, however, the ENLC and the Network Technology Board (NTB) are actively embracing additional approaches to web service development that complement traditional Node-based services.

These additional approaches include Representational State Transfer (RESTful) web services, other types of Web Application Programming Interfaces or WebAPIs, and other shared services (e.g., virtual exchange services). A Web API is a tool that allows a website to communicate with another website; it passes the instruction or request from one to the other and returns the requested information. A RESTful web service, a subset of web APIs, is a simple way of requesting and receiving data between a device (e.g., desktop, tablet, smartphone) and a server. In its simplest form, a RESTful web service can be a URL (web address) that points to data on a website.

RESTful Web services and other web APIs offer partners simpler and more flexible alternatives to the Node-SOAP web service model for meeting certain business needs, such as lightweight data publishing and mobile application development. They provide additional tools to broaden inter- and intra-partner data sharing and meet transparency and open data goals.

The project narrative should explain how the project and technology choice (e.g., SOAP vs. RESTful services) meet the applicant's business needs and how the project complies with Exchange Network guidance and standards. Applicants should review NTB-developed guidance and standards for an explanation of RESTful Web services, APIs and other options available for building EN-compliant services[10].

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[8] http://www.exchangenetwork.net/exchange-network-products/
[9] http://www.epa.gov/digitalstrategy/pdf/EPA_OpenDataPolicy_ImplementationPlan_2013Nov26.pdf
[10] http://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 (such as the Great Lakes or Chesapeake Bay). See appendix A for more detail on specific project opportunities. Information on the Network's technical standards and design guidance are available on the Exchange Network website (http://www.exchangenetwork.net/knowledge-base).

Other types of Tier 1 projects include:

- ➢ **Implementing Virtual Exchange Services.** Applicants should transition from locally installed nodes to the EPA-hosted Virtual Exchange Services and/or create data publishing services and new data flows using Virtual Exchange Services. Appendix B provides a detailed description of Virtual Exchange Services and suggested implementation activities.

- ➢ **Shared CROMERR Services and Components.** Applicants will design systems that use one or more EPA Shared CROMERR Services to reduce or eliminate redundant development by partners, reduce future operations and maintenance costs and streamline CROMERR Technical Review Committee (TRC) application reviews. Appendix C provides a detailed description of the Shared CROMERR Services.

- ➢ **eReporting Collaborative Opportunity.** A partnership proposal that builds an eReporting system integrating one or more Shared CROMERR Services. Applicants must commit to flow data to EPA using the Exchange Network, providing a complete end-to-end electronic reporting solution for environmental data. An example of an e-reporting grant proposal is to develop and host a web-based solution for members of the regulated community to apply for their permit coverage or submit their compliance reports, then transfer the data to EPA's ICIS-NPDES system electronically either directly or from the agency's NPDES database. Under this priority, a partnership could develop a system for consolidated air emissions reporting with the data reported to the National Emissions Inventory via the Exchange Network.

- ➢ **Enterprise Identity Management Integration Collaborative Opportunity:** EPA is seeking partnerships proposals to work with EPA on the evaluation, design, testing and implementation of an identity management model that extends the existing Exchange Network identity services. This identity management model would enable users of Exchange Network partner systems (e.g., industries using an e-reporting system) to authenticate once and then access other partners' systems using the same identity without having to authenticate a second time. Partner grantees would participate on a joint integrated project team, provide technical expertise and alternatives, propose implementations that meet existing opens standards for identity management and identify other implications of enterprise identity management such as compliance with CROMERR requirements. (See Appendix D for a detailed explanation of enterprise identity management.)

- ➢ **Field Data Collection Collaborative Pilots:** Develop mobile applications built on technology neutral services that leverage Facility Registry System (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.

- ➢ **Law and Regulation Registry Collaborative Pilot:** Cooperative agreement proposal to gather and share information regarding state and tribal environmental laws/regulations and how they correspond

to federal statutes and EPA regulations. This pilot should focus on a single environmental program and develop the capability for industry, other communities and the public to identify how that program and its associated laws and regulations link to specific facilities, substances, and environmental events. For example, a facility owner could use this registry and its discovery services to identify the federal and state laws and regulations with which it may have to comply. EPA intends this pilot to be a proof of concept for designing an approach for building a national system that could consist of a single comprehensive registry or interconnected registries.

➢ **Collaborative Tribal Capacity-Building Opportunity.** Tribal governments and inter-tribal consortia applicants are eligible to apply for capacity building grants that enhance environmental programs on tribal lands and a tribe's ability to share environmental data electronically with EN partners. Collaborative capacity building proposals must include multiple tribes and identify tribes with existing capacity that can serve as mentors. Proposals must identify outputs that result in the increased ability to share environmental information electronically with EPA or other EN partners (for example, developing a backend database for a priority data system). To serve as a mentor for a capacity building application, a tribe must be either report or publish data for one or more EPA programs using its own node or Virtual Exchange Services. Furthermore, a proposal must include a commitment letter from the mentor tribe. Collaborative capacity building proposals may include funding requests for mentor tribe personnel costs and travel.

Program-specific Tier 1 projects include:
➢ **New EPA Reporting Data Flows.** Applications will include goals to implement data flows that enable Exchange Network reporting to the following EPA data systems:
- Integrated Compliance Information System – Air (ICIS-Air), which replaces the Air Facility System or AFS;
- Safe Drinking Water Information System (SDWIS) Prime;
- Electronic Notice of Intent (eNOI) flow to Integrated Compliance Information System – National Pollutant Discharge Elimination System (ICIS-NPDES);
- eManifest
- Radon and
- Assessment TMDL Tracking & ImplementatioN System (ATTAINS)

➢ **NPDES eReporting Rule Data Requirements Opportunity**: A partnership proposal that adds and changes the existing ICIS-NPDES XML schema to prepare for the new NPDES eReporting Rule when it becomes final. Individual project goals include: modifying the applicants' NPDES database systems to accommodate the data reporting requirements under Appendix A of the Rule, funding modifications to existing Exchange Network ICIS-NPDES plugins and mapping tables, and submitting data to EPA's ICIS-NPDES system electronically from the agency's NPDES database.

➢ **Collaborative Opportunity:** An application consisting of multiple state, territorial and tribal partners sharing drinking water data with and among other state, tribal, territorial, and federal agencies/organizations using RESTful Web services that consume SDWIS Prime data. Adding functionality to the Compliance Monitoring Data Portal (CMDP - anticipated first release date Q3 2016) to address additional features requested by states, submitting laboratories and utilities.

➢ **Continuous Water Quality Monitoring Collaborative 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. The EPA Office of Water (OW) is exploring options to enable this type of data exchange. Several partners have shared summaries of this type of data using the Water Quality Exchange (WQX). WQX has worked well for sampling data, but the data model for sensor data is inherently different. It uses less metadata for

more results. Consequently, approaches for sharing sensor data may be different. 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. EPA is evaluating approaches that would allow state, tribal and territorial partners to share sensor data by using a publishing service from their node or via a cloud node. As a Phase 2 project, partners should consider approaches to make available water quality sensor data via a publishing service to catalog data and make it searchable from a central portal. Project work plans should include a commitment to evaluate schemas developed for sharing this type of data, such as the recently approved Open Geospatial Consortium WaterML 2.0 standard8 and the Sensor Observation Service9. The partnership would work with EPA to define approaches for integrating this information with sampling data made available from WQX, as well as providing public access to this combined set of information. Through this project, EPA is seeking to represent more fully the complete set of water quality data collected by continuing to support WQX for water quality sampling data while identifying new approaches for sharing sensor data.

Tier 2 Exchange Network Activities:
EPA recognizes that partners have a continuing need to automate reporting to nine of the 10 Phase 1 priority data systems (implementing or upgrading ICIS-NPDES is a tier 1 priority as noted above) as well as to engage in other important activities.

> **Phase 1 EPA Reporting Flows.** Implementation by an Exchange Network partner (or partners) of any of the nine flows, addition of a new class of Underground Injection Control wells, and/or addition of a new RCRAinfo.
> **CROMERR Collaborative Opportunity**. Partnership to develop a multi-program CROMERR application for prospective applicants that do not have an enterprise-wide approach or to adapt CROMERR solutions already approved by EPA that other authorized programs have implemented. (EPA will score applications that propose to use shared CROMERR services as a Tier 1 proposal.) The output must be a complete CROMERR application ready for EPA review and approval.
> **Updating Large National Data Sets.** Schema development effort that enables partners to flow data through the Exchange Network to update large national datasets that fall under Appendix E of OMB Circular A-16: "Coordination of Geographic Information and Related Spatial Data Activities." These datasets can include the National Hydrography Dataset (NHD), National Watershed Boundary dataset, National Wetland Inventory Dataset, National Elevation Dataset, Geographic Names Dataset and others listed in A-16.

In addition to the priority activities above, EPA has identified other activities listed in Appendix A. The tier for these other activities are in bolded, italicized text either directly following the list of activities for each system (if the activities are all in the same tier) or in parentheses after each activity (if the activities within a system are in different tiers).

I-F. Partnership Agreements
Project narratives and budgets should explain specifically why the proposed project requires additional resources available through a partnership assistance agreement. Reasons for additional funding may include project complexity or activities in support of partner collaboration. Partnership applications may fall into Tier 1 or Tier 2; EPA will determine the appropriate tier based on the specific project proposals and the Program Priorities described in Section I-E. See Section III-C, "Eligibility Criteria for Partnership

Applications," before making any financial commitments to project partners or listing these partners in an application.

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 2016, EPA expects to award about $9,000,000 for 40 to 50 assistance agreements of up to $500,000 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 to a single applicant cannot exceed $300,000. EPA may make a limited number of awards to collaborative, partnership assistance agreements. Budgets for these projects cannot exceed $500,000.** 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 expects to announce the FY 2016 Exchange Network Grant program selections in April 2016 and award the grants by July 31, 2016.

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 proposals/applications partially by funding discrete portions or phases of proposed projects. If EPA decides to fund a proposal/application partially, it will do so in a manner that does not prejudice any applicants or affect the basis upon which the proposal/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 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. 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 *not* use EN/E funding for the following functions (see Appendix L 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; and
- ➢ **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.

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 villages and inter-tribal consortia of federally recognized tribes (e.g., the Northwest Indian Fisheries Commission).

Other entities, such as regional air pollution control districts and some public universities may apply for assistance if they are agencies or instrumentalities[11] 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 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.

> ### *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

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 Users 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

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[11] 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.

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, or others that are consistent with 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. Applications comply with all application submission instructions and requirements listed in Section IV and Appendix E of this announcement. Section IV and Appendix E require that a project narrative does not exceed 10 pages. EPA will not review any narrative content after the tenth page.

3. Applications meet the submission deadline published in Section IV and Appendix E of this announcement.

4. Applications must not have:
   a. project periods longer than three years;
   b. budgets greater than $300,000 for single applicant applications; or
   c. budgets greater than $500,000 for partnership applications.

5. 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, 2015, 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, 2015.

6. Applicants must not have unaddressed compliance issues with prior federal assistance agreements. Unaddressed compliance issues may include: open programmatic findings (programmatic baseline reporting), open administrative findings (administrative baseline reporting), high risk, or Inspector General audits. To be eligible for a new EN grant, the applicant either must either have: 1) no issues identified in the IGMS Grantee Compliance and Database; or 2) an approved Corrective Action Plan to address issues identified in the IGMS Grantee Compliance Database.

7. 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 ($500,000) 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 2016 is $300,000.**

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 2016 Exchange Network Grant program must submit an application package to EPA through the grants.gov website by November 13, 2015. If an applicant does not have the technical capability to apply electronically through grants.gov, the applicant must because of limited or no internet access that prevents them from being able to upload the required application materials to request approval to submit their application through an alternate method. EPA will confirm receipt of each application with an e-mail to the contact(s) listed in the cover letter.

Application package requirements are available in Appendix, including format requirements for the project narrative, 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 http://www.epa.gov/ogd/forms/forms.htm

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, November 13, 2015**. 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

This funding opportunity is *not* subject to Executive Order (EO) 12372, "Intergovernmental Review of Federal Programs."

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 http://www.epa.gov/ogd/competition/solicitation_provisions.htm. 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 scores and ranks applications, with a highest possible score of 100. The possible point totals for the five major evaluation criteria are listed below in bold text. Sub-components (or possible point deductions) within the five criteria are listed in bold italic text below 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 refer to the discussion of goals, outputs and outcomes included in Section I of this Notice. **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.

1. Project Outputs and Outcomes Leading to Environmental Results (15 points):
For each goal, EPA uses the following criteria to evaluate project outputs and outcomes:
 ➢ Does each proposed goal have at least one outcome that leads to an environmental result? These might include outcomes such as:
   • improving the timeliness, completeness, and accuracy of environmental data;
   • reducing the burden and costs associated with data management and reporting; or
   • supporting better environmental decision making by enhancing data access for environmental professionals and the public. *(10 points)*
 ➢ Does the application include a plan that allows the applicant to track and report progress towards achieving the goal to EPA? Each grant-funded goal, such as a project to complete a web application that will allow users to display, analyze, or collect environmental information, should have **several outputs** scheduled over the project period. *(5 points)*

2. Project Feasibility and Approach (15 points):
EPA evaluates the feasibility of proposed projects using the following criteria:
 ➢ Does the application clearly describe individual project roles and responsibilities for the applicant and, for collaborative projects, each partner? *(5 points)*
 ➢ All projects involving programmatic data must 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. An example would be a CROMERR system upgrade. In this case, the proposal should explain why programmatic involvement was unnecessary. *(5 points)*
 ➢ Applicants must explicitly commit to reuse existing project-appropriate EN tools and resources. This requires searching Reusable Component Services (RCS) and Exchange Network Discovery Services (ENDS) for resources such as data flows, Web services or EN services. The applicant must also commit in writing to register any new tool or resource they develop in RCS or any new node, data flow or EN service in ENDS. For innovative flows, applicants must demonstrate that the project will result in reusable tools and services for the Exchange Network. *(5 points)*

3. Exchange Network Pri*orities (40 points):*
EPA will evaluate the consistency of proposed work with EN priorities (Section I-E). More details on data exchange activities are in Appendix A or the EN website at http://www.exchangenetwork.net/exchanges/.

Under this criterion, EPA will evaluate each proposal to determine if meets the requirements stated in section I-E as follows:
 ➢ Does the proposal clearly state the goal or goals? *(5 points)*
 ➢ Does the proposal include at least one Tier 1 priority as a goal? *(10 points)*
 ➢ Does the applicant explain why the proposal includes each goal (i.e., business or administrative need? *(5 points)*
 ➢ Does the proposal describe how the applicant plans to implement each goal; does it demonstrate that the applicant has sufficient technical understanding to perform the work? *(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? *(10 points)*

4. Budget, Resources, and Key Personnel (15 points):
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.
➢ Does the application include a total budget amount for each goal in the project narrative? *(5 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 a tribal applicant who proposes to use a portion of this grant to hire key personnel for a capacity building proposal, has the applicant submitted a statement of knowledge, skills, abilities, and qualifications from the recruitment package for that position? *(5 points)*
➢ Expenditure of Awarded Grant Funds. Under this criterion, EPA will evaluate applicants based on their approach, procedures, and controls for ensuring that awarded grant funds will be expended in a timely and efficient manner. *(5 points)*

5. Past Performance (15 points):
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.
➢ Has the applicant made sufficient progress toward achieving the expected results in the prior assistance agreements? *(10 points)*
➢ Has the applicant submitted at least 90% of the progress reports required in the terms and conditions of the prior assistance agreements within thirty days of their due dates? *(5 points)*

Please note that in evaluating applicants under this criterion, 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).

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 ULO's

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

The past performance evaluation criterion will include consideration of ULO's. Specifically, for any grant that meets the appropriate excessive ULO criterion in Figure 5-1, all applications submitted by the recipient of that grant will automatically lose 10 points, unless the applicant can explain that the excessively high ULO was not due to action or inaction on the part of the state, tribe or territory. 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[12] during the first week of October 2015, 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 Greg McNelly of ECOS at gmcnelly@ecos.org). EPA will make the final determination of whether previously awarded Exchange Network grants meet the excessive ULO threshold based on the first quarter FY 2016 report, which EPA will make available during January 2016.

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;
- ➢ Selection of higher priority activities over other assistance activities;
- ➢ Ensuring participation in the Exchange Network by federally recognized Indian tribes and inter-tribal consortia; and
- ➢ 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 April 2016. EPA plans to issue the awards by August 2016.

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[12] http://www.epa.gov/exchangenetwork/grants/

VI. Award Administration Information

VI-A. Award Notices

EPA will notify all applicants (by telephone, electronic or postal mail) of their status in or around April 2016. The Agency will send the notification to the original signer of the application or the project contact listed in the application. The notification of a full or partial funding recommendation, which advises the applicant that EPA has preliminarily selected and recommended their proposed project for award, is not an authorization to begin work. The award notice, signed by an EPA grants officer, is the authorizing document, which EPA will provide through electronic or postal mail. 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 K. Applicants must also commit to register any newly developed resources in ENDS or RCS as appropriate. Information about ENDS can be found at www.exchangenetwork.net/2011/07/15/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; and
- ➢ 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://www2.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. 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. Dispute Resolution Provision

Assistance agreement competition-related disputes will be resolved in accordance with the dispute resolution procedures published in 70 FR (Federal Register) 3629, 3630 (January 26, 2005) which can be found at http://www.epa.gov/ogd/competition/resolution.htm. Applicants may also request a copy of these procedures by contacting Salena Reynolds at 202-566-0466 or reynolds.salena@epa.gov.

VI-E. Unliquidated Obligations

EPA expects an applicant that receives an award under this announcement to manage assistance agreement funds efficiently and effectively and make sufficient progress towards completing the project activities described in the work-plan in a timely manner. The assistance agreement will include terms and conditions implementing this requirement. EPA uses the criteria in section V-A to help determine if an applicant is expending grant funds at an acceptable rate. Grantees who meet the above criteria for excessive ULO's for Exchange Network assistance agreements may be subject to scoring penalties in future grant applications.

VI-F. 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 DUNS, SAM, copyrights, disputes, and administrative capability, can be found at http://www.epa.gov/ogd/competition/solicitation_provisions.htm. 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 Collection
    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	Salena Reynolds
U.S. Environmental Protection Agency	U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW (2823T)	1301 Constitution Avenue, NW (Rm 6416S)
Washington, DC 20460	Washington, DC 20004

Appendix A

Suggested Exchange Network Data Exchange Activities

This Appendix outlines some example project opportunities that applicants should consider when applying for the FY 2016 National Environmental Information Exchange Network Grant Program. Appendix A contains two subsections: *I.) Definition of Standard Milestones for EPA Information System or Data Exchanges*; and *II.) Data Exchanges and Services* (descriptions of individual data exchanges and related EN activities). This Appendix highlights the EPA Program Office activities related to flows and provides suggested activities for applicants to consider when developing their application.

I. Definition of Standard Milestones for EPA Information Systems or Data Exchanges

This section will assist Exchange Network partners in better understanding the EPA Program Office activities and establish consistency across all data flows by further defining each milestone. Program Offices may have already completed or in the process of completing some of these activities at the time of release of this guidance.

Testing of XML schema - (Version X) –EPA has completed testing and ready to release the schema on a limited basis to Exchange Network Partners that will conduct field-testing to identify any potential issues from real data exchanges. This includes the use of real data sets in XML instance documents. At this stage, Partners will have the constructs for mapping data to their own systems. These partners will need sufficient time to complete that process once EPA releases the schema(s).

Release of final XML schema – (Version X) – EPA has completed schema conformance review and is ready to post it on the Exchange Network website for access by all Exchange Network Partners (www.exchangenetwork.net).

National database available for testing - National database is ready for testing to exchange data in a format that complies with agreed upon standards and rules. For example, the database can support testing the receipt and processing of XML instance documents or a converted format as part of the exchange process.

Availability of EPA node services for testing - EPA Node services include all central services the program offices need or choose that enable a more efficient data exchange among exchange partners. Examples include XML validation (Schema and Schematron), Network Authentication and Authorization Service (NAAS), XML Gateway services, and the Universal Description and Discovery Integration tool.

Readiness for complete end-to-end testing by Exchange Network partners - At this stage, the XML schema(s) at a minimum are ready for testing by Network Partners and the National Database and EPA Node services are available for testing. In addition, all EPA accounts have been established for testing (e.g. privileges to NAAS and authorization to the database)

Flow Configuration Document completed or updated - Flow Configuration Documents identify and standardize the minimum information needed by trading partners to execute a data exchange. They describe

the technical configuration and business processes used to exchange data between trading partners.

System ready to receive or publish - This status indicates that EPA and its partners have conducted a sufficient amount of end-to-end testing, EPA has addressed all problems, has released the XML schema(s), finalized the supporting documentation, and completed all production readiness reviews. Furthermore, if applicable, the National Computing Center has approved deployment of new code to production. EPA has notified appropriate parties (e.g. helpdesks) of release and ensured that they have the necessary tools to respond to Exchange Network Partners' inquiries.

II. Data Exchanges and Services

This section of Appendix A describes the individual data exchanges (and related Network activities) for which EPA is soliciting FY 2016 Exchange Network grant applications. It is organized by media and includes both Phase 1 and Phase 2 data exchanges and related activities. As the Exchange Network community is actively engaged in Phase 2, EPA has adjusted priorities for this grant solicitation to support those activities and data flows. This includes placing a higher (Tier 1) priority on data publishing and access applications and tools, virtual sharing, Virtual Exchange Services implementation support, shared CROMERR services and components, and implementation of new and innovative data flows.

The appendix describes each individual data exchange, highlights critical milestones and includes additional activities applicants should consider for their proposals during the F 2016-2019 timeframe. Those activities must align with EPA's programmatic priorities in Section I-E, and the Agency will score them according to the tiering in that section. Applicants can propose to implement one or more of these data exchanges:

Water

Other Data Exchanges

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, 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 the 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 (normal, "raw sample," data elements remained unchanged).

EPA does not anticipate any major changes to AQS affecting EN flows or milestones in FY16.

Emission 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 Emission 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.

Additional Activities Grant Applicants Should Consider:
The Consolidated Emission Reporting schema (CERS) facilitates the reporting of data from state/local/tribal agencies to EPA for the NEI. EPA expects that CERS will shorten the length of time required to meet reporting deadlines and reduce burden on state, local and tribal agencies. Although all states report to EIS through the Exchange Network, most regional and local air pollution control authorities do not because they are not eligible for Exchange Network grants. Therefore, EPA suggests that states partner with local governments delegated to report to EIS to transition reporting from legacy methods to the Exchange Network, (Tier 2)

In addition to the submission of emissions data to the EIS, grant applicants may also apply for funds to:
1. Improve access to environmental information for environmental program staff, managers, the public and other stakeholders.
2. Support the sharing of data among EN partners, especially cross-state, cross-tribal, or state-tribal data exchanges
3. Support the transition from locally installed nodes to the EPA hosted Virtual Node.

EPA considers these three types of activities to be Tier 1 priorities.

Radon Data Exchange

Description:

Radon remains a leading cause of 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. Exchange Network partners have an opportunity to use the Network to improve access to radon data and promote better management of exposure risks.

The New Jersey Department of Environmental Quality has developed an XML schema and a set of web services for publishing radon data that the state's health department securely accesses. Other states 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 at http://www.exchangenetwork.net/data-exchange/radon/ .

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. EPA is interested in working with other radon stakeholders through this work group to build the capacity to share radon data via Web services. Visit http://www.radonleaders.org/exchange/ for more information about the Radon State Data Exchange work group.

Activities Grant Applicants Should Consider:
- Participate in the Radon State Data Exchange 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.
- Map radon data to the Radon XML schema and build the capacity to generate and share those XML files via Network Web services.
- Implement Exchange Network Web services that make radon test data available to other stakeholders and the public as appropriate.

These activities are eligible for funding as Tier 1 priorities if the proposal commits to implementing the Web services that provide access to radon data.

ICIS
Integrated Compliance Information System

Description:
ICIS contains the modernized versions of the Permit Compliance System (PCS) as ICIS-NPDES and the Air Facility System (AFS) as ICIS-Air. It supports NPDES wastewater discharge program functions (e.g., permitting, compliance monitoring, enforcement, and special regulatory programs), as well as air stationary source compliance and enforcement data. The ICIS data flow accepts XML formatted submissions of NPDES and air data from States, Tribes and local environmental agencies via the Exchange Network. EPA completed ICIS with the release of the ICIS-Air Electronic Data Transfer (EDT) in October 2014.

EPA implemented the ICIS electronic submission in four parts:

➤ **Part 1**: Batch DMR for NPDES Hybrid States. As of May 2008, *Hybrid States* were able to electronically transfer (batch) their DMR data from their state system to ICIS–NPDES and directly enter all of their non-DMR NPDES data into ICIS–NPDES via the ICIS Web screens. Hybrid states typically use ICIS-NPDES to manage their NPDES program directly.

➤ **Part 2**: NetDMR. As of June 2009, ICIS-NPDES became capable of receiving DMRs (via CDX) from facilities that had electronically signed and submitted them using NetDMR. EPA developed the NetDMR tool in collaboration with an Exchange Network grant managed by Texas with the participation of 11 other states. The DMR XML schema components developed in Part 1: Batch DMR for Hybrid States formed the basis for the NetDMR flow. NetDMR currently supports more than 14 States and 8 EPA Regions.

➤ **Part 3:** Full Batch NPDES States. As of December 2012, Full Batch states that have their own systems to manage the NPDES program were able to electronically transfer (batch) some or all of their NPDES data from their state systems via CDX to ICIS-NPDES.

➤ **Part 4:** Air EDT Delegated Agencies. As of October 2014, State, tribe and local agencies that have their own systems to manage the air program were able to transfer electronically some or all of their air compliance data from their own systems via CDX to ICIS-Air.

Activities Grant Applicants Should Consider:
ICIS grant applicants should consider the following activities among their opportunities for obtaining grant funding:

➤ Upgrade of State System and/or data flow to meet the requirements of EPA's proposed 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 will become required under Appendix A of 40 CFR 127 when the proposed NPDES eReporting Rule becomes final. 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 the approved schema and methodology, including changes to the Exchange Network's ICIS-NPDES plugins and mapping tables.

➤ Extract and convert the data from State NPDES and air systems into the XML format needed to submit data to ICIS electronically.

➢ Modify state systems to accommodate the data requirements for ICIS-NPDES and ICIS-Air.
➢ Install and configure ICIS-NPDES and ICIS-Air plug-ins available on the Exchange Network.

ICIS-NPDES activities supporting the requirements of the NPDES eReporting Rule are eligible for funding as Tier 1 priorities. ICIS-Air activities are eligible for funding as Tier 2 priorities. Proposals for both are eligible for funding if the proposal commits to putting the upgrades and/or a new data family flow into production.

ICIS Data Publishing

Description:

ICIS contains the modernized versions of the Permit Compliance System (PCS) as ICIS-NPDES and the Air Facility System (AFS) as ICIS-Air. It supports NPDES wastewater discharge program functions (e.g., permitting, compliance monitoring, enforcement, and special regulatory programs), as well as air stationary source compliance and enforcement data. The ICIS data flow accepts XML formatted submissions of NPDES and air data from States, Tribes and local environmental agencies via the Exchange Network. EPA completed ICIS with the release of the ICIS-Air Electronic Data Transfer (EDT) in October 2014.

States may have requirements to have their data in ICIS published back to them so they can consume it for various purposes, including performing quality assurance, seeding Exchange Network plugins with data, or populating their newly developed NPDES or air systems with data from ICIS. In addition, states hosting their own electronic DMR (eDMR) systems may need to have ICIS limit data published back to them to derive anticipated DMRs or ICIS reference code table data that has been recently changed.

ICIS currently offers a NPDES data publishing flow for states to extract updated reference table data as well as NPDES data contained in EPA's ICIS system. The publishing of air data through this data flow still needs to be developed.

The table below shows OECA's planned milestones for enabling data access and publishing.

Exchange Network Program Office Activities	
Milestone	**Target Completion Date**
Data Access Integrated Project Team (IPT) of NPDES stakeholders initiated.	Completed
Production release of Web services to extract recently changed data from seven ICIS reference tables.	Completed
Draft release of Web services to extract recently changed state data from basic permit, pretreatment permit, limit, discharge monitoring report (DMR), narrative condition, compliance schedule, compliance monitoring, and enforcement action ICIS-NPDES data families.	Completed
Pilot states test draft Web services to extract recently changed state data from basic permit, pretreatment permit, limit, discharge monitoring report (DMR), narrative condition, compliance schedule, compliance monitoring, and enforcement action data.	Completed

Production release of Web services to extract recently changed state data from basic permit, pretreatment permit, limit, discharge monitoring report (DMR), narrative condition, compliance schedule, compliance monitoring, and enforcement action ICIS-NPDES data families.	Completed
Draft release of Web services to extract recently changed state data from general permit, permit component, unpermitted facility, tracking event, violation and program report ICIS-NPDES data families.	Completed
Pilot states test draft Web services to extract recently changed state data from general permit, permit component, unpermitted facility, tracking event, violation and program report data.	Completed
Production release of Web services to extract recently changed state data from general permit, permit component, unpermitted facility, tracking event, violation and program report ICIS-NPDES data families.	Completed
Data Access Integrated Project Team (IPT) of Air stakeholders initiated.	TBD
Draft release of Web services to extract recently changed State, Tribal and Local Agency Air compliance and enforcement data from ICIS-Air data families.	TBD
Pilot states test draft Web services to extract recently changed State, Tribal and Local Agency Air compliance and enforcement data.	TBD
Production release of Web services to extract recently changed State, Tribal and Local Agency Air compliance and enforcement data from ICIS-Air data families.	TBD

Activities Grant Applicants Should Consider:
ICIS data publishing grant applicants should consider the following activities among their opportunities for obtaining grant funding:
- ➢ Assist the IPT with determining the selection criteria to be used for extracting air data from ICIS using standard Exchange Network web services.
- ➢ Perform pilot testing of the web services developed for publishing ICIS-Air data.

➢ Review the ICIS Data Access Flow Configuration Document to ensure it matches the web service calls developed under the IPT work.
➢ Develop reusable scripts to parse the XMLs results of air data published by the ICIS Data Access web services and import the data into the State, Tribal or Local Agency database.
➢ Develop and implement the capability of invoking the Web services from a State Node or Virtual Exchange Service to extract air data out of ICIS via CDX.

These activities are eligible for funding as Tier 1 priorities if the proposal commits to putting the services that consume ICIS data into production.

NetDMR Electronic Reporting Tool

Description:
Electronic transmission of discharge monitoring reports (DMRs) allows NPDES permitting authorities to get out of the business of printing and mailing hard copy paper DMR forms to thousands of facilities, sorting the paper forms received, keypunching results by hand, and filing the paper forms. A group of states (led by Texas), OECA and OEI collaboratively developed the National Installation of NetDMR to be a common, centrally-hosted electronic DMR application closely integrated with EPA's ICIS-NPDES system. NetDMR and ICIS-NPDES use the Central Data Exchange (CDX) for the exchange of data.

EPA released version 1.0 of the National Installation of NetDMR for use by permittees of select pilot states and EPA Regions in June 2009. Version 2.1 of NetDMR, released in June of 2015, now supports more than fifteen states and eight EPA Regions; the Agency can deploy additional instances.

States that have specific business reasons for not deploying an instance within the National Installation of NetDMR (e.g., does not meet program requirements) may wish to develop and deploy an alternative electronic DMR (eDMR) system within their state environment. These states can used their eDMR systems to ensure timely and accurate reporting of DMRs by permittees to the regulatory authority and EPA's ICIS-NPDES system, using CDX and the Exchange Network.

Activities Grant Applicants Should Consider:
The 2016 Exchange Network grant process will support efforts by states, in consultation with their EPA Regions, to: pilot test and launch their instances within the National Installation of NetDMR (Area 1); or develop, test, and implement their own eDMR system (Area 2).

Area 1 – Testing and Implementation of State Instance within NetDMR National Installation

Effective implementation includes development of all the business processes to move from a paper-based system to an electronic system, with the understanding that the state may have to maintain a paper-based system for several years until all permittees are converted to the electronic system. Applicants could describe the efforts needed by the state to test and launch the use of their instance within the National Installation of NetDMR, provide a plan for outreach, training and support to members of their regulated community using NetDMR, and discuss their adoption rate goals and milestones. Applications could also describe how using NetDMR will assist them in converting from paper to electronic processes, ensuring that that the state properly handles Subscriber Agreements according to CROMERR requirements and that permit limits are up to date in ICIS-NPDES. Applicants could identify specific production implementation dates that the state prefers for their implementation within the National Installation of NetDMR.

Area 2 – Development, Testing and Implementation of eDMR System within a State Environment

Some states have specific business reasons why an instance within the National Installation of NetDMR cannot meet their programmatic requirements and, therefore, need an alternative 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 environment that is fully CROMERR compliant. In these cases, applicants might explain why it is advantageous to develop and deploy a stand-alone 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 outreach training and support to members of their regulated community using NetDMR, and discuss their adoption rate goals and milestones.

*Note: Under either area, the grantee could indicate whether the state plans to mandate electronic submission of DMRs for permits that are renewed after the project is completed. Additionally, these activities are eligible for funding as **Tier 1** priorities if the project proposal commits to deploying the NetDMR instance or the eDMR system into production.*

Electronic Reporting of Notices of Intent (eNOI)
and Special Regulatory Program Reports

Description:
Providing a means for members of the regulated community to submit NPDES general permit data to EPA and states electronically by filling out an online Notice of Intent (NOI) form or special regulatory program report online allows state permitting authorities to transition away from entering thousands of permits and reports by hand and storing paper forms.

OECA is in the process of promulgating an Electronic Reporting Rule (NPDES eReporting Rule) that proposes to make the regulated community's electronic reporting of NPDES data mandatory. In preparation, OECA has developed a national electronic reporting tool called the NPDES e-Reporting Tool (NeT) for the regulated community to use in filing electronic NOIs. EPA designed NeT to capture these data and populate the ICIS-NPDES system with general permit covered facility permits and their associated limit data. Ultimately, the tool may include the ability to electronically capture and store CAFO, biosolid, CSO event, annual pretreatment, SSO event, industrial user compliance, and MS4 storm water program NOI and annual reporting information from the regulated community.

NeT creates XML files and submits them to ICIS-NPDES based upon the schema developed under the ICIS-NPDES Full Batch Integrated Project Team (IPT). CROMERR compliant services developed by the Central Data Exchange (CDX) are used for NeT's user registration process, handling of user account information, electronic signature, copy of record (COR) storage, and submission of data to ICIS-NPDES through the Exchange Network. States may be able to host their own NOI forms in EPA's NeT for electronic reporting and retrieve their eNOI form data from CDX to save on their development, hosting, and maintenance costs.

In addition, states may want to consider creating and hosting their own NPDES eReporting tools for their regulated community to use. State-hosted NPDES eReporting systems developed under this effort must be fully CROMERR compliant, and ensure timely and accurate transfer of data from the regulated community to EPA's ICIS-NPDES system using CDX and the Exchange Network in an XML format that matches the existing schema developed under the ICIS-NPDES Full Batch IPT.

Exchange Network Program Office Activities	
Milestone	**Target Completion Date**
Production release of NeT eReporting tool to support EPA Region 6's Gulf of Mexico master general permit NOIs for Offshore Oil Drillers	Completed
Production release of Office of Water Regional Storm Water Multi-Sector General Permit NOI and annual report forms within NeT	Completed
Proposed deadline* for electronic reporting of all other state NOIs and special regulatory program report data to EPA	January 2018

* Note: deadline is included within EPA's proposed NPDES eReporting Rule and is subject to change depending on final promulgation of the Rule.

Activities Grant Applicants Should Consider:
Exchange Network grants support efforts by states, in consultation with their EPA Regions, to: pilot test and launch their electronic NOI and special regulatory report forms and processes within OECA's NeT electronic reporting tool (Area 1); develop, test, and implement their own NOI and program report electronic reporting system (Area 2); or modify their existing electronic reporting system to align with forthcoming requirements of the proposed NPDES Electronic Reporting Rule (Area 3).

Area 1 – Test and Implementation of State Forms and Business Processes within OECA's NPDES e-Reporting Tool (NeT)

Effective implementation often requires development of all the business processes to move from a paper-based system to an electronic system, with the understanding that the state will need to maintain a paper-based system for several years until all permittees are converted to the electronic system. Applicants could describe the efforts needed by the state to effectively define business process flows, test and launch the use of their notices of intent and program reports within NeT, provide a plan for outreach training and support to members of their regulated community using NeT, and discuss their adoption rate goals and milestones. An applicant could also assist in converting from paper to electronic processes, ensuring that it properly handles Subscriber Agreements according to CROMERR requirements, and ensuring that permit limits are up to date in ICIS-NPDES. Applicants could identify specific production implementation dates that the state prefers for their implementation within NeT.

Area 2 – Development, Testing and Implementation of a NPDES Electronic Reporting System within a State Environment

Some states have specific business reasons why hosting their general permit NOI forms within OECA's NeT tool cannot meet their programmatic requirements and, therefore, need an alternative eReporting system. For states with more specific state requirements, this area can provide support for technical activities that lead to successful implementation of a fully CROMERR compliant NOI and special regulatory program report eReporting system within the state environment. In these cases, applicants might explain why it is advantageous to develop and deploy their own system (which requires state operation and maintenance). 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 using NeT, and discuss their adoption rate goals and milestones.

Area 3 – Upgrade of State System to Meet Requirements of EPA's NPDES Electronic Reporting Rule

This area provides support for states to modify their state NPDES database systems to ensure that they can capture, store, and transmit to EPA any new data that will become required under Appendix A of 40 CFR 127 when the proposed NPDES eReporting Rule becomes final. 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 the approved schema and methodology, including changes to the Exchange Network's ICIS-NPDES plugins and mapping tables.

Activities under areas 1 and 2 are eligible for funding as Tier 1 priorities, if the applicant proposes to deploy the project's output (e.g., system, business process). Activities under area 3 are eligible for funding as a Tier 1 priority, if the applicant complete and deploys the upgrade.

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. 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.

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	12/2015

Additional Activities Grant Applicants Should Consider
Participants are encouraged to develop innovative ways for interacting with RCRAInfo Data including mobile application to be used "in the field."

*Note: This activity is eligible for funding as a **Tier 1** activity if the project plan commits to deploying a production application that consumes RCRAInfo outbound services.*

e-Manifest

Description:
On October 5, 2012, President Obama signed into law the Hazardous Waste Electronic Manifest Establishment Act, which amended the Resource Conservation and Recovery Act (RCRA) to direct the Environmental Protection Agency's (EPA) Administrator to establish an electronic hazardous waste manifest system. The Act states the Administrator shall establish an electronic manifest (e-Manifest) system to be used by any user, as defined in the Act and by EPA. An e-Manifest system will enable all stakeholders to take advantage of cost effective and more efficient processes, including but not limited to, drafting, developing, submitting, tracking, analyzing, and managing manifests for shipments of hazardous waste. EPA is also charged with sharing this information with the states.

The e-manifest system currently in development is envisioned to offer web services that make the data available to the States and public. EPA is also interested in providing states the ability to request that TSDFs make corrections to certain manifests via web services.

Exchange Network Program Office Activities	
Milestone	**Target Completion Date**
User Specified Outbound Services	As requested
Providing messaging on corrections	As requested

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) all 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. This data set has even OMB's attention. Development of specific data standards might be needed. Development or enhancement of 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. Tribes are encouraged to develop the data requirements that will meet ORCR and IHS data needs and develop the appropriate schema and flow configuration to meet these data needs.

Milestones:
➢ 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

Additional Activities Grant Applicants Should Consider:
➢ 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.

Note: This activity is eligible for funding as a Tier 1 activity if the project plan commits to putting the Open Dump data exchange into production.

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 http://www2.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. *(tier 2)*
- Map systems to the approved national XML schemas. http://www.exchangenetwork.net/communities-of-interest/water/ *(Tier 2*)*
- 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. *(Tier 2*)*
- 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. *(Tier 2*)*
- Check with other internal state offices for existing Node capability and EPA virtual node 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). *(Tier 2*)*
- Participate in biweekly/monthly Beach conference calls. *(this activity is not eligible for funding)*

*Applications will be scored as Tier 2 proposals if this is a new data flow for the applicant and that the project proposal commits to deploying the eBeaches data flow into production.

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 data flows use XML files to exchange data between the Primacy Agency's SDWIS State system (or other PWSS program management system) and EPA for quarterly reporting and between other stakeholders, such as laboratories and other state agency systems and state agencies. EPA is in the process of replacing SDWIS State with a new system, SDWIS Primacy Agency (or "SDWIS Prime")[13]. EPA plans to replace SDWIS State with SDWIS Prime by May 31, 2015.

In addition to the data exchange mechanisms SDWIS State provides, SDWIS Prime will include a REST Application Programming Interface (API) for two-way data exchange. Many primacy agencies have other, external business systems that leverage Open Database Connectivity (ODBC) for implementing data exchanges with SDWIS State. Because EPA will house SDWIS Prime in a secure "cloud" environment accessible from the web, agencies should replace these unsecure ODBC connections with by calls to secure Web services. At this time, the SDWIS Prime project team has identified a number of candidate Web services and development is underway.

In addition, the SDWIS Prime project team is planning the release of a Compliance Monitoring Data Portal (CMDP) by Q3 2016. The CMDP will be accessible from the Exchange Network and will be a single, authoritative, CROMERR-compliant collection site for laboratory samples data, laboratory and public water system information updates and water utility operational data reporting. CMDP will "route" submissions to the appropriate primacy agency compliance database or to SDWIS Prime for further action. Details on CMDP operations will become available as development proceeds through December 2015 followed by a six-month pilot phase starting in January 2016.

Additional Activities Grant Applicants Should Consider:
Development of Web services that consume SDWIS Prime data for use with external primacy agency business systems. Examples of external primacy agency business systems include systems used to manage water system engineering plan reviews, operator certifications, water system permitting and fee collection. *(Tier 1)*
Modification of primacy agency external business systems that interact with SDWIS Prime to replace ODBC and similar connections used with SDWIS State and other systems with Web service calls. *(Tier 1* if the applicant proposes to place the replacement system into product to interact with SDWIS Prime.*)*

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[13] In July 2013, the SDWIS NextGen system was renamed to SDWIS Primacy Agency, or SDWIS Prime. The reason for the name change is to emphasize that this new system is designed specifically for the drinking water primacy agencies.

Underground Injection Control (UIC) Database

Description:
EPA launched a new UIC national database in Dec 2007 and immediately began accepting data through EPA's Exchange Network. The Agency designed the UIC database to provide high quality, consistent, and complete information to support EPA's management and oversight of the program. Data fields are at the well level, including UIC inventory (linked to FRS), permits, geospatial coordinates, inspections, mechanical integrity, violations, and enforcement actions.

As of April 2015, 30 of the 69 state and regional UIC programs had successfully submitted data to the UIC database, including 17 primacy agencies that had fully transitioned to electronic reporting. Another 10 agencies are working towards submission with the support of Exchange Network grants.

EPA released a revised XML document (Version 2.0) in 2010 under the same UIC data model to improve performance. After UIC programs complete mapping their data to the UIC Database XML schema they address data completeness and quality issues. Once a program meets the data quality and completeness requirements, they are expected to start submitting data twice annually.

Exchange Network Program Office Activities	
Milestone	**Target Completion Date**
Release revised XML Schema – (Version 2.0)	Completed
Revised flow configuration document, other documentation completed	Completed
Other: Successful mapping, conversion of state data consistent with EPA mapping instructions, and node to node submission (for all 69 UIC programs)	2016
Other: Validation of data received in EPA's database after each biannual submission to address QA/QC data issues and to continue until transition to e-reporting, transition to e-reporting are met.	Ongoing

Additional Activities Grant Applicants Should Consider:

➢ Activities related to data publishing/availability including supporting data exchanges among partners or making data available to environmental program staff and managers and the public through Web pages or desktop/laptop, mobile and Web applications. *(Tier 1)*

➢ Virtual node implementation such as transitioning from nodes to virtual nodes, creating data publishing services and new data flows on virtual nodes or creating virtual node security analyses and plans. *(Tier 1)*

➢ EPA will support activities to build local data systems for Class V state programs with no effective existing database, to support efficient data transfer to EPA's database. EPA has existing data templates and data transfer tools available. *(Tier 2)*

Note: These activities are eligible for funding if the proposal commits to putting the UIC data flow into production, transitions the data flow to the virtual node and places into production, and/or puts publishing/data availability applications or Web pages into production.

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 (http://www.epa.gov/storet/dw_home.html). Network Partners collect water quality monitoring data and submit it to STORET via WQX. For more information about WQX, please visit http://www.epa.gov/storet/wqx/index.html or http://www.exchangenetwork.net/exchanges/water/wqx.htm.

In addition, data from STORET can be queried using the EPA and USGS co-hosted Water Quality Portal http://waterqualitydata.us.

Exchange Network Program Office Activities	
Milestone	**Target Completion Date**
Develop biological web services for use in the Water Quality Portal	Summer 2015
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)	Summer 2016
Develop habitat, metrics and index web services for use in the Water Quality Portal	Fall 2016

** The STORET Warehouse web mapping services are available at the following URL: http://www.epa.gov/waters/geoservices/docs/waters_mapping_services.html. Note that two separate services exist for STORET: STORET_NAD83 and STORET_WMERC.

Additional Activities Grant Applicants Should Consider:
➢ Develop applications that use EPA STORET Warehouse or Water Quality Portal web services (data and spatial) for data integration and analysis (e.g., establish links to water impairment, water permit facilities, watershed resource planning). *(Tier 1)*
➢ 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. *(Tier 2)*
➢ Explore ways to make water data discoverable through development of publishing services (e.g. leveraging Virtual Node or Virtual Node related plans). *(Tier 1)*

- ➢ Build tools using Exchange Network application programming interfaces (API) technologies, services and specifications that integrate water quality data from various sources (*e.g.* Water Quality Portal data) to present a common view of water quality data. *(Tier 1)*
- ➢ Link station locations consistent with the NHD and the Geospatial One Stop Hydrography Standard; implement NHDEvent data flow for STORET/WQX monitoring locations that have been geo-referenced to the NHD. *(Tier 2)*

Assessment TMDL Tracking & 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.

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 Framework14, 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 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 priorities; and
> ➢ Identify activities that states are performing that lead to water quality restoration.

The data available in ATTAINS will reside in a cloud-based application that states, territories, tribes15, 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

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[14] **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.

[15] 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 implement the redesign in two phases, completing phase one in FY 2016 and phase 2 in FY 2017. The Agency is working with states to define the requirements for this new system, and is developing a draft data model and schema. States should plan to transition to the new ATTAINS by the 2018 Integrated Reporting Cycle. To make this transition, states can use either the new Exchange Network ATTAINS data flow or the new cloud-based ATTAINS data system (or some combination of the two). EPA will no longer support the OWIR-ATT data flow as of the summer of 2017.

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, and not an enhancement to the existing OWIR-ATT data flow. States currently using the OWIR-ATT data flow are eligible for receiving grants to provide data via the new ATTAINS data flow. Beginning with this EN grant solicitation, EPA will no longer award grants for the OWIR-ATT data flow.

Exchange Network Program Office Activities	
Milestone	Target Completion Date
Integrated Project Team (IPT) to evaluate system data flow and data elements (outreach)	Fall 2015
Final ATTAINS v1.0 schema and Flow Configuration Document	Fall 2015
States pilot ATTAINS v1.0 flow for the 2016 Integrated Reporting Cycle	Spring 2016
Compile lessons learned from 2016 Integrated Reporting Cycle	Summer/Winter 2016
Compile updates for ATTAINS v1.0 schema and Flow Configuration Document	Winter 2016
Draft ATTAINS v1.1 schema and Flow Configuration Document	Winter 2016
Final ATTAINS v1.1 schema and Flow Configuration Document	Spring 2017
End support for OWIR-ATT data flow and schema	Summer 2017
Full transition to new ATTAINS Flow for the 2018 Integrated Reporting Cycle	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.

Note: *All activities are eligible for funding as **Tier 1** priorities provided that the project proposal commits to deploying the ATTAINS data flow into production.*

Facility Registry System (FRS)

Description:
The Facility Registry System (FRS) is EPA's centrally managed database that integrates facility data across nearly 90 EPA and other federal systems, as well as numerous state, tribal and territorial databases. It 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 integrated environmental information reported from and about facilities and sites. The Facility Id 3.0 (FACID 3.0) schema is now 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 FACID 3.0.

Applicants that wish to take advantage of FRS Web services can find a listing of data resources here: http://www.epa.gov/enviro/html/fii/dataresources.html 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.

Substance Registry Services (SRS)

Description:
The Substance Registry Services (SRS) is a shared service that:
➢ Enables data integration by chemical;
➢ Increases data quality of chemical names and other identifiers in systems and online forms;
➢ Promotes information management by EPA programs, states, and tribes of chemical lists;
➢ Helps the public and other users discover which systems and programs have data and under which chemical name.

SRS is EPA's centralized resource for basic information about chemicals, biological organisms, and other substances that EPA and/or other organizations (e.g., state agencies, tribal agencies, and other federal agencies) track or regulate. It helps the public discover the EPA and partner programs that have data for a substance.

Each substance has a record that contains basic information about the substance, such as Chemical Abstract Service (CAS) Name and CAS number. Importantly, SRS includes 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.

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.

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 facility searches for a chemical using a synonym or other identifier. The facility 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 access at www.epa.gov/srs.

Additional Activities Grant Applicants Should Consider:
➢ Work with the SRS team to add state or tribal programmatic or statutory 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. *(Tier 1*)*
➢ Add SRS identifiers to state or tribal systems to promote the ability to link across datasets by substance, regardless of which synonyms are used. *(Tier 1*)*

➢ 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. *(Tier 1*)*

*These efforts are fundable only when that are included as outputs of tier 1 projects.

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 via CDX. Benefits of the TRI Data Exchange include:

- ➢ Elimination of duplicative data entry, reducing burden for reporting facilities;
- ➢ Reduction state data reconciliation; and
- ➢ Faster access to the data.

Exchange Network Program Office Activities	
Milestones	**Target Completion Date**
Load/Update XML Schema (if necessary) for FY 2016	11/30/2015
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	Ongoing

Additional 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 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 program office employees at TDX states to take advantage of the benefits offered by the TDX Viewer tool. More information about the TDX Viewer can be accessed at http://www2.epa.gov/toxics-release-inventory-tri-program/tdx-viewer-information
- ➢ 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 already on the TRI Data Exchange. A map displaying current TDX participants can be accessed at http://www2.epa.gov/toxics-release-inventory-tri-program/tri-data-exchange
- ➢ Collaborate with states on the TRI Data Exchange and other states interested in joining (i.e., participate in monthly TDX conference calls, develop sharable code)

Note: *These activities are eligible for funding as **Tier 2**priorities if the project proposal commits to deploying the outbound data flow into production.*

Enabling Geospatial Data Exchange

Description:
Geospatial data represent features on Earth expressed as points, lines, or polygons. EPA and its partners use these data in tandem with programmatic data, through geospatial information systems and browsers, to conduct analyses in a geographic or place-based context.

Office of Management and Budget (OMB) Circular A-16 "Coordination of Geographic Information and Related Spatial Data Activities" identifies 16 critical geospatial data themes that are essential components of the National Spatial data infrastructure (NSDI) (http://www.whitehouse.gov/omb/circulars/a016/a016_rev.html). The A-16 geospatial data theme categories encompass a wide variety of place-based data sets that are essential to environmental analysis and decision-making. These include, but are not limited to data related to biodiversity, geology, cultural resources, administrative units and boundaries, parcels and cadaster, wetlands, watershed boundaries, soils, hydrography, imagery, transportation, and elevation.

The Exchange Network can be particularly useful for publishing geospatial data when any of the following conditions apply:
➢ The data need to flow securely;
➢ Large quantities of data that require automated machine-to-machine delivery;
➢ Data need to be delivered to multiple locations simultaneously (such as inspections, enforcement, or facilities data collected in the field that ends in a flow to one or more state programs, an EPA program office, and the Facility Registry Service);
➢ The data are already accessible through a node;
➢ The data are needed immediately for disaster and emergency response; and
➢ The data are used to update and maintain large national datasets (see activity below).

Additional Activities Grant Applicants Should Consider:
➢ **Emergency Response and Recovery Data Flows**: Development and rapid deployment of secure geospatial web services (e.g., web feature services) on the EN virtual node, to support joint federal, state and/or local response and recovery activities. EPA gives priority to data flows and schema that support response to incidents that may involve significant environmental impacts. Critical information includes:
  ▪ Accurate geographic coordinates;
  ▪ Current facility names;
  ▪ Key personnel and their phone numbers;
  ▪ Rapid assessment or operational status for drinking water and wastewater treatment plants, facilities subject to RMP (Remedial Project Manager) and/or FRP (Facility Response Plan) requirements and facilities subject to SARA 311/312 Tier 1 reporting requirements;
  ▪ Current geospatial data and operational status for the affected area's utility infrastructure (e.g., electrical, gas, water, phone, etc.); and
  ▪ The area's current local cadastral data (tax parcels with ownership).
  ▪ Grantees should engage State, local and Federal responders such as the EPA Data Team to help plan, develop, test and consume these Web services. **(Tier 1)**

➢ **Advanced Facility Monitoring and Enforcement:** Compare continuous monitoring data and/or

advanced emissions monitoring data (for criteria or air toxics pollutants) to permit data and/or human health risk thresholds and use GIS visualization to indicate where monitoring exceeds permit limits or risk thresholds. The applicant can use the results to identify potential targets for compliance evaluations and trends for source categories and industry sectors. **(Tier 1*)**

*This activity is eligible for funding as a Tier 1 priority if the project proposal commits to deploying into production an application or publishing service that utilizes this capability.

Appendix B

Virtual Exchange Services

The Exchange Network Grant Program encourages projects that promote efficiency through the reuse of shared systems and resources. The Exchange Network governance established an integrated project team (IPT) consisting of states, tribes and EPA to review the feasibility of and to develop requirements for a cloud-based virtual exchange service (VES). The IPT developed the Virtual Node Guidance and Recommendations Document v1.0 (http://www.exchangenetwork.net/virtual-node-ipt/), which EPA used to create a virtual node in the cloud.

VES, which is analogous to a central shared data exchange platform, where each partner can individually configure the services to handle its different data flows. EPA developed this new model in response to Exchange Network partners that need more cost efficient ways to manage their nodes and decrease costs. This new approach has potential to simplify significantly development and maintenance of data exchanges using inheritance features and plug-in support. Several states and tribes currently implement VES

The focus of this solicitation is to cover the transition cost for partners to move from a physical node implementation to the VES multi-tenant (shared) implementation. Funding for VES adoption will not exceed $70,000. Actual award amounts will be based upon the complexity of moving individual nodes and associated data flows (e.g., number of active data flows) to this environment.

VES Application

EPA is interested in working closely with partners to leverage this new model for a shared node implementation (partners sharing a common scalable node). 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.

Under the VES solution:

- Partners would configure data flows on the new centrally hosted cloud environment, but partner databases could stay in place.
- State databases would connect to the VES through a new secure channel or backend bridge.
- Administrators would retain complete control of all aspects of their VES, their data flows, and the manner in which the virtual node accesses their staging tables or databases.
- Wizard-driven functionality is available on the VES that minimizes the effort to create and transition data flows over to the VES.

The VES may offer some significant advantages over traditional Exchange Network nodes. 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.

Applications for transitioning to the virtual node should focus on development activities such as:
- ➢ Dataflow configuration,
- ➢ Testing,
- ➢ Security Plan Requirements, and
- ➢ Virtual Exchange Training.

New Virtual Exchange Communication Model
Another key goal of the solicitation is to explore various ways of interconnecting from the partner staging tables or database servers (backend) to the virtual node in the cloud environment. The following technical options are currently available:
- ➢ **Internet Service Bus (ISB):** The partner installs a component in its backend database environment, which establishes an SSL tunnel with the ISB in the cloud for relaying network activity to/from the node in the cloud. The component is supplied by CDX and installed as a Windows Server service using Advanced Message Queuing Protocol (AMQP). Reduces firewall requirements to SSL outbound-only.
- ➢ **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.

Appendix C

Shared CROMERR Services

Background
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., security, user identification, etc.) designed to make electronic reports as legally defensible as paper submittals.

To date, states and local governments have typically addressed CROMERR requirements by implementing system functions within their respective electronic reporting systems resulting in some duplicative investment of resources. Budget shortfalls, staff turnover, changing technology and complex program requirements pose challenges to organizations required to implement CROMERR and continue this duplicative investment.

In an effort to ease these challenges, the Exchange Network Leadership Council established the Shared CROMERR Services Integrated Project Team (IPT), comprised of EPA management, staff, and 17 state representatives, in the fall of 2012. The IPT discussed and investigated opportunities for the adoption of information technology services that EPA maintains and co-regulators could use to meet CROMERR requirements. This Executive Summary broadly reviews the recommendations from the IPT and the actions that EPA is taking to assist our trading partners.
Description of Shared CROMERR Services

EPA is offering CROMERR services that can be reused and managed in a centralized way, and co-regulators can leverage the CDX CROMERR services for their own reporting programs in a more cost effective and efficient manner. EPA will offer states and tribes a set of CDX services for CROMERR functions; states and tribes will be able to select the desired services and implement them to meet their organizational and system needs.

At a summary level, the services can be broken down into the following three categories:
  - ➤ **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 CROMERR minimum criteria based on government id validation
  - ➤ **User Management:** -- creating, validating and maintaining accounts of reporting entities.
  - ➤ **Electronic Signature:** -- authenticating credentials, verifying user intent, and electronically signing submissions from regulated entities that is as legally defensible as the traditional pen and paper approach.
  - ➤ **Copy of Record (COR) Management ---** storing, maintaining, and retrieving data submissions at the level of legal integrity required by CROMERR.

Anticipated Benefits

EPA anticipates that adoption of Shared CROMERR Services will yield the following benefits:

- ➢ **Reduced barriers for compliance** – will reduce the i6nitial upfront and ongoing investment to meet CROMERR requirements.
- ➢ **Improved CROMERR Compliance Assistance – a**doption of Shared CROMERR Services will facilitate better responses to CROMERR compliance auditing activities.
- ➢ **Realization of Cost Savings –i**ntegrating shared CROMERR services as opposed to building, operating and maintaining independent systems.
- ➢ **Common Support Model** – States and tribes will be able to leverage a common pool of resources, services and lessons learned to assist with implementation approaches and integration work.
- ➢ **User Friendly Experience to Regulated Communities**– States and tribes will be able to provide consistent and simplified registration and electronic signature processes to the regulated community.
- ➢ **Consistent Audit and Enforcement Practices** – Shared CROMERR services should provide a stronger legal foundation and more consistent practices in civil and criminal enforcement proceedings.

Status

EPA has implemented a set of CROMERR shared services and is working with EN partners to test and use them. Numerous states have established plans for implementing the necessary business processes and technical environments to consume these services. EPA is conducting a series of continual improvement sessions to get feedback on service refinements and explore opportunities for expansion of the services. The CROMERR Shared Services IPT is continuing as a mechanism to educate new EN partners and make future implementation easier. More Information is available on the IPT and status of the services at the EN website: http://www.exchangenetwork.net/shared-cromerr-services-ipt/

Exchange Network Grant Opportunities

Exchange Network Partners with a need to implement CROMERR 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 CROMERR services into exchange partner data flows,
- ➢ Documenting technical and security requirements,
- ➢ Testing and deploying CROMERR services,
- ➢ Participating on and supporting the State/EPA CROMERR IPT(s), and
- ➢ Project planning and management

Appendix D

Enterprise Identity Management

The Enterprise Security Bridge is an identity federation and security trust framework where user identities can be used across multiple Exchange Network partners. Web applications need to be secured using authentication and authorization mechanisms, and the Enterprise Security Bridge offers a standards-based, unified interface to enable hundreds of thousands of user accounts without partners having to register and manage the identities.

The Exchange Network Enterprise Security Bridge would be 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 for integrating with the Enterprise Security Bridge very easily.

Identity federation is a process of sharing user identities and user authentication process between two parties: The relying party (RP) and the identity provider (IdP). The following diagram depicts the general process of federated authentication process:

Several types of enterprise security integration can be done with grant funds:
  ➢ Enable SSO in your website by integrating the Secure Token Services to accept Enterprise tokens
  ➢ Integrating your web applications to leverage Enterprise bridge and third party Identities
  ➢ Integrate your own existing Open ID / Open ID Connect Identity provider interface into the Enterprise Security Bridge
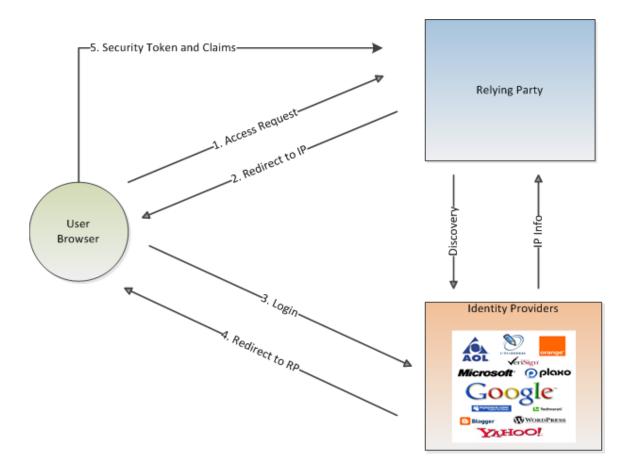
Enable Single Sign On for your users across the enterprise using the Secure Token Services

After users are authenticated, a call to the STS will create a standard enterprise token for the user. The token can then be used to access any enterprise relying party (web sites)

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 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. In other words, the integration will 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.

Appendix E

Detailed Instructions for Submitting Applications

Applicants for the FY 2016 Exchange Network Grant program must submit an application package to EPA by November 13, 2015. 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 of internet accessibility, the applicant must contact OGDWaivers@epa.gov, or write to the address listed below (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	OGD Waivers
c/o Barbara Perkins	c/o Barbara Perkins
USEPA Headquarters	Ronald Reagan Building
William Jefferson Clinton Building	1300 Pennsylvania Ave., N.W.
1200 Pennsylvania Ave., N. W.	Rm # 51267
Mail Code: 3903R	Washington, DC 20004
Washington, DC 20460	

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, 2015, it is valid for any competitive or non-competitive application submission to EPA through December 31, 2015. 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, 2015 with a submission deadline of January 15, 2016, the applicant would need a new exception to submit through alternative methods beginning January 1, 2016. Please note that if an applicant has already received a waiver for this year, it may submit its application for and 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 ENGrantProgram@epa.gov. EPA will confirm receipt of each application with an e-mail to the contacts listed in the cover letter.

EPA will notify applicants of its selection decisions in or around April 2016. The notification letters will include further instructions to successful applicants for submittal of additional or updated documents. EPA plans to award all grants by August 31, 2016.

The following forms and documents are required under this announcement (fillable forms can be obtained from http://www.epa.gov/ogd/forms/forms.htm):

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 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 what their roles as agencies or tribes are.

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 national, 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 here, such as training that is not covered elsewhere. 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 applicants 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 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. **indication of whether the proposal is for a traditional Phase 2 (or Phase 1) Exchange Network or E-Enterprise related category.**
4. type of vehicle requested (grant/cooperative agreement/ Performance Partnership Grant);
5. proposed amount of grant (broken down into direct funding and in-kind assistance if relevant);
6. partners on the grant (if applicable);
7. brief project summary including a statement of project goal(s);
8. contact information for the project lead; and

9. signature of executive level Authorized Organizational Representative (AOR).

13. **Additional Information for Inter-tribal Consortium:** An inter-tribal consortium applying for an FY 2016 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, 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 and are limited to the $300,000 maximum funding for a single-jurisdiction grant and are not eligible for EE assistance agreements.

15. **List of EN 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-15-01**. Electronic applications must be submitted to this website by 11:59 pm on November 13, 2015. 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. 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

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. Enter the Funding Opportunity Number EPA-OEI-15-01, or the CFDA number that applies to this announcement (CFDA 66.608), in the appropriate field and click the Search button. Alternatively, you may be able to access the application package by clicking on the Application Package button at the top right of the synopsis page for the announcement on http://www.grants.gov . To find the synopsis page, go to http://www.grants.gov and click "Browse Agencies" in the middle of the page. Then go to "Environmental Protection Agency" to find the EPA funding opportunities.

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

Additional Application Preparation and Submission Instructions

Documents 1 through 6 listed under Application Materials above should appear in the "Mandatory Documents" box on the Grants.gov Grant Application Package page. For documents 1 through 6, click on the appropriate form and then click "Open Form" below the box. The fields that applicants must complete will be highlighted in yellow. Grants.gov displays optional fields and completed fields in white. If you enter an invalid response or incomplete information in a field, you will receive an error message. When you have finished filling out each form, click "Save." When you return to the electronic Grant Application Package page, click on the form you just completed, and then click on the box that says, "Move Form to Submission List." This action will move the document over to the box that says, "Mandatory Completed Documents for Submission."

Documents 7 and 8 require attached electronic files. Prepare your project narrative and detailed itemized budget as described above and save the documents to your computer as an MS Word or PDF file. When you are ready to attach your documents to the application package, click on "Project Narrative Attachment Form," and open the form. Click "Add Mandatory Project Narrative File," and then attach your documents (previously saved to your computer) using the browse window that appears. You may then click "View Mandatory Project Narrative File" to view it. Enter a brief descriptive title of your project in the space beside "Mandatory Project Narrative File Filename;" the filename should be no more than 40 characters long. If there are other attachments to submit to accompany your application, you may click "Add Optional Project Narrative File" and proceed as before. When you have finished attaching the necessary documents, click "Close Form." When you return to the "Grant Application Package" page, select the "Project

Narrative Attachment Form" and click "Move Form to Submission List." The form should now appear in the box that says, "Mandatory Completed Documents for Submission." Follow the same general procedures for attaching document 8 – the Detailed Itemized Budget – using the "Budget Narrative Attachment Form."

Grants.gov lists documents 9 through 15 in the "Optional Documents" box, but *please note that these documents must be submitted as part of the application package, if applicable to your organization.* To attach documents 9 through 16, use the "Other Attachments Form" in the "Optional Documents" box. After attaching the documents, please remember to highlight the "Other Attachments Form" and click "Move Form to Submission List" in order to move the documents to the box that says, "Optional Completed Documents for Submission.

Please note that applicants are limited to using the following characters in all attachment file names. Valid file names may only include the following UTF-8 characters: **A-Z, a-z, 0-9, underscore (_), hyphen (-), space, period.** If applicants use any other characters when naming their attachment files their applications, grants.gov will reject it.

Once you have finished filling out all of the forms/attachments and they appear in one of the "Completed Documents for Submission" boxes, click the "Save" button that appears at the top of the Web page. *EPA suggests that you save the document a second time, using a different name, since this will make it easier to submit an amended package later, if necessary.* Please use the following format when saving your file: "Applicant Name – FY 2015 Exchange Network – 1st Submission" or "Applicant Name – FY 2015 Exchange Network – Back-up Submission." If it becomes necessary to submit an amended package at a later date, the name of the 2nd submission should be changed to "Applicant Name – FY 2015 Exchange Network – 2nd Submission."

Once your application package has been completed and saved, send it to your AOR for submission to U.S. EPA through grants.gov. Please advise your AOR to close all other software programs before attempting to submit the application package through grants.gov.

In the "Application Filing Name" box, your AOR should enter your organization's name and the words, "FY 2015 Exchange Network." The filing name should not exceed 40 characters (i.e., abbreviate where possible). From the "Grant Application Package" page, your AOR may submit the package by clicking the "Submit" button that appears at the top of the page. Grants.gov will then ask the AOR to verify the agency and funding opportunity number for which the application package is submitted. If problems arise during the submission process, the AOR should reboot the computer before trying to submit the application package again. [It may be necessary to turn off the computer (not just restart it) or change computers before attempting to submit the package again.] If you continue to experience submission problems, the AOR may contact grants.gov for assistance at 1-800-518-4726 or email at http://www.grants.gov/help/help.jsp or call Salena Reynolds at 202-566-0466. You are encouraged to submit your application early, in case problems are encountered that result in delays.

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], entitled [project name], under the FY 2015 Exchange Network Grant Program. This application is for an [**Exchange Network or E-Enterprise-related**] category of EN project. 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. 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**
Several states and Region 8, including Illinois, Minnesota, Utah, the National Park Service, and possibly Alaska, are developing the replacement database for STORET, AWQMS (Ambient Water Quality Management System). 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 that 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, 2016	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, 2016	
	1.3 GHG flow to EPA becomes operational[2]	Dec. 31, 2016	
	1.4 Improve GIS locations & geospatial metadata for air release points[3]	Sept. 30, 2017	
	1.5 Add Assessment Module[3] to evaluate air emissions near	Mar. 31, 2018	
WQX [4]	2.1 Data mapped to XML schema[2]	Mar. 31, 2016	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, 2016	
	2.3 Written documentation of implementing WQX with multi-state AWQMS	Jan. 31, 2017	
	2.4 Publish Web service	Sept. 30, 2017	

[1] Estimated Grant Period: October 1, 2015 through Sept. 30, 2018. 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, 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 November 13, 2015**. 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 if application is for traditional Phase 2 (or Phase 1) Exchange Network priorities or E-Enterprise related category
    - 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

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   □ Planning, Mentoring, and Training
□ Data Exchange, Analysis and Integration   □ 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.

Appendix J

Reusability: RCS and ENDS

What is Reusability?
Reusability, as related to the Exchange Network and the grants, has a broad definition. It could mean exact reuse, such as employing a widget or mobile application as developed and available, or simply discovering similar existing tools and are seeking best practices therein. It is difficult to deem an asset reusable or not because reusability is only limited by the willingness and creativity of its developers and users.

Some examples of reusability include:
➢ using components of an existing CROMERR compliant tool to develop your own tool that is CROMERR compliant;
➢ 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 Web services;
➢ pooling resources to develop a software tool that will benefit multiple states;
➢ using existing Web services to authenticate access to CDX instead of developing your own; and
➢ new or updated map templates, geospatial data Web services or geoprocessing tools that address commonly occurring challenges.

Benefits of Reusability
➢ Cost: 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:
➢ the resource and its architecture have comprehensive documentation;
➢ the resource is 'portable' in that it does not rely heavily on a specific hardware or technology;
➢ the resource is flexible and can perform multiple functions;
➢ the resource is compliant with existing standards; and
➢ the resource is reliable and free of defects.

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

Appendix K

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.

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." 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 the Asset Catalog in either Browse or Search mode

2. Click "Add Asset" (near the middle of the page)

3. Fill out the requested information:

a. Name (i.e. Iowa RiverMapper)
b. Description (i.e. a software tool that allows users to map river data around the state of Iowa)
c. Version (this will likely be Version 1)
d. Organization (choose "U.S. EPA and Partners")

4. Click "OK." The full record of the new resource will display.

5. Fill out the appropriate information in the tabs, such as information about the steward of this asset. Please note that not all tabs need to be filled in; rather, any important metadata or information relevant to the resource should be provided. Every resource should have a steward.

6. The new resource will be reviewed by the RCS Registrar. Until approved by him, it will only be visible to you.

What should be registered in RCS?
Block of 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.

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, or ICIS*

Widget- 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 that can be registered. Please check in RCS to see a full list.

***<u>Please</u> do not hesitate to contact Lico Galindo (galindo.lico@epa.gov, 202-566-1252) if you have any questions at all regarding problems accessing RCS, what or how to register, or if you would like some hands-on help or a demo of RCS.

Searching for reusable data flows and services in ENDS
The recipient shall reuse existing data flow names and Exchange Network services registered in ENDS, instead of building new ones, for sharing similar data over the Exchange Network. To research what resources exist, the recipient shall review what is registered at http://www.exchangenetwork.net and have an Exchange Network node administrator check in the production ENDS Web site located at https://ends2.epa.gov/admin/default.aspx. ENDS supports copying existing service definitions in order to simplify this reuse.

Registering new Exchange Network resources to ENDS:

The recipient shall enter metadata and descriptions of all new Exchange Network nodes, data flows and services developed under this grant into the Exchange Network Discovery Services v2.0. Registering information in ENDS is described at http://www.exchangenetwork.net/exchange-network-discovery-service-ends and in detail in the Discovery Users Guide V3 at http://www.exchangenetwork.net/node/DiscoveryUserGuidev3.doc. In order to register new resources in ENDS, the recipient will need a NAAS account with node administrator access rights. Such account needs to be requested at the Exchange Network help desk at 888-890-1995 nodehelpdesk@epacdx.net.

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.

***_Please_ contact the Exchange Network help desk (nodehelpdesk@epacdx.net, 888-890-1995) if you have any questions at all regarding problems accessing ENDS, what or how to register.*

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
Software Tools		X
Web services not related to data flows, SOAP or REST		X
Widget tools		X
Programming Code (routines, classes, etc.)		X
Mobile Applications		X
Code Libraries		X
Others	PLEASE DISCUSS WITH YOUR REGIONAL COORDINATOR	

Appendix L

Definitions

Application Programming Interface (API)
When used in the context of web development, an API is typically defined as 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)
EPA's CDX is the point of entry to the National Environmental Information Exchange Network (Exchange Network) for environmental data exchanges to the Agency. 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 Regulation (CROMERR)
Regulation 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 Exchange Template (DET)

A data exchange template is a standardized format that identifies the types of information required/allowed in a particular document or data exchange. Data exchange templates contain no data, but they define the format for exchange according to data standards and trading partner agreements. A standard template for DET's is available on the Exchange Network website (http://www.exchangenetwork.net/knowledge-base/).

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/

E-Enterprise

E-Enterprise is a joint initiative of States 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.

Enhancement

An enhancement is defined as expanding geographic coverage, or adding new data elements, additional parameters, or historical data to an existing national or priority data exchange or schema.

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.

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 in-kind services will be provided. The recipient may not direct the work provided through in-kind services. EPA manages these services.

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.

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)

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/ .

Schematron

Schematron is an open source application that is used for validating XML documents against business rules and returning error reports. It uses XML stylesheet (XSLT) technology. The Network Quality Assurance Services use Schematron to validate XML documents against the business rules, as well as supporting a standard parser for schema validation.

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 Node

A Virtual Node 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.