Date Posted: Monday, July 8, 2019

REQUEST FOR PROPOSALS (RFP)

Definition of Smart Utility - How to be a Digital Utility and the Framework for an Intelligent Water System **(RFP 5039)**

Due Date: Proposals must be received by 2:00 pm MT on
Thursday, September 12, 2019

WRF Project Contact: Walter Graf, wgraf@waterrf.org

Project Sponsors
This project is funded by The Water Research Foundation (WRF) as part of WRF's Research Priority Program.

Project Objective

- Based on successful application of Intelligent Water Systems (IWS) approaches, define concepts and components of an effective data-driven, digital utility/smart water system, including culture, management and skill sets.

- Leverage ongoing advancements in sensor, data management/analytics, and digital communication technologies.

- Facilitate the use of IWS/data-driven digital utility approaches for optimal management and operation of complex water systems.

Budget
Applicants may request up to $75,000 in WRF funds for this project. WRF funds requested and total project value are evaluation criteria considered in the proposal selection process.

Background and Project Rationale
The data "revolution" is here. It is well documented that the water sector has more data being generated and stored than is used. In addition, new data sets will be from new kinds of sensing technologies that can perform edge processing (processing data in the proximity where they are generated) using battery power and wireless communications. The traditional methods that utilities use for processing data will be a challenge as new technologies are implemented. Determining how to make the best use of these data can provide insights leading to improvements across the utility.

Intelligent Water Systems (IWS), also called Smart Water Networks, is a popular topic and utilities face many issues in a rush to become data-driven. Big Data, the Internet of Things (IoT), machine learning, artificial intelligence (AI), etc. are associated with an IWS. There is a clear need for a coherent model (framework) or set of management practices and principles to guide a utility in becoming a Smart Utility.

What are the characteristics, the fundamental elements of a smart utility, the basic building blocks, technologies, skill sets, culture and workforce, and how do they fit into an IWS? An IWS is essential to addressing many issues, such as watershed protection, facility operations, infrastructure sustainability, customer service, and workforce management. In other words, what is the value to a utility and its customers, as described in a business case, of becoming a Smart Water Utility?

Recent WRF research underscores the efforts of utilities and their journey toward becoming a smart utility. Essential to becoming a smart utility is a clear understanding of the various terms, elements, practices, people, technologies and value for the utility and customers. This means that definitions, methods, asset classes, and individual research areas need a common approach to determining digital projects that begin with the knowledge of the subject.

Research Approach
A research approach that is logical, step-wise, and easily understandable with clearly defined benefits is necessary to help the water sector with IWS efforts. The research approach should:

- Define a common IWS framework.

- Develop a framework for the fundamental elements necessary for an IWS to assist utilities to become a Smart Utility at their own pace and ability. Include business case, planning and change management guidance along with how and where to begin because IWS is a journey, not an "all or nothing" effort.

- Discuss utility culture and the digital utility – project management, company organization change, employee talent characteristics.

- Develop Best Appropriate Practices relevant to each part of the framework.

The IWS Maturity Model and Maturity Tool from WRF project 4714, *Intelligent Water Networks Summit*, may be a starting point for developing this framework. This model identifies levels of maturity of the operational units shown in Figure 1 in terms of strategy and vision, data management, analytics and information use, integration and interoperability, workforce, asset management, and resiliency. In addition, WRF has completed literature reviews to identify technologies in use by water and wastewater utilities (project 4614), and has identified workforce skills (projects 4981 and 4663) needed to meet the challenges of the future digital utility.
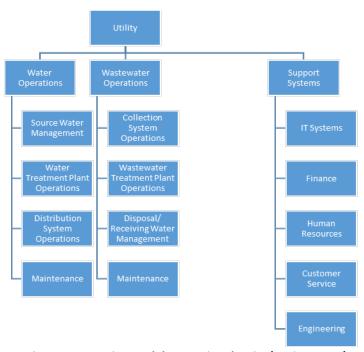
Figure 1. Maturity Model Operational Units (project 4714)

Expected Deliverables

The outputs of this project are left up to the proposer to allow for creativity, flexibility, and originality. A framework for an IWS must be a part of any final product(s) produced. Some deliverables suggestions include:

- A summary report, or similar deliverable such as a:
    - Guidance manual
    - Online tool (including a plan for maintenance)

- The project also may lend itself to a webcast, LIFT Working Group presentation, conference presentation, fact sheet, case study, infographic, etc.

Communications Plan

Please review WRF's *Project Deliverable Guidelines* for information on preparing a communications plan. The guidelines are available at http://www.waterrf.org/funding/Pages/proposal-guidelines.aspx. Conference presentations, webcasts, peer review publication submissions, and other forms of project information dissemination are typically encouraged.

Project Duration

The anticipated period of performance for this project is 6-9 months from the contract start date.

References and Resources

The following list includes examples of research reports, tools, and other resources that may be helpful to proposers. It is not intended to be comprehensive, nor is it a required list for consideration.

- Intelligent Water Networks Summit (project 4714)
- Defining Attributes and Demonstrating Benefits of Intelligent Water Systems (project 4614)
- Building Workforce Skills for Intelligent Water Operations (project 4663)

- [Workforce Skills of the Future](#)
- Strategic Workforce Plan/Employee Value Proposition (project 4982)

Proposal Evaluation Criteria

The following criteria will be used to evaluate proposals:

- Understanding the Problem and Responsiveness to RFP (maximum 20 points)
- Technical and Scientific Merit (maximum 30 points)
- Qualifications, Capabilities, and Management (maximum 20 points)
- Communication Plan, Deliverables, and Applicability (maximum 15 points)
- Budget and Schedule (maximum 15 points)

Proposal Preparation Instructions

Proposals submitted in response to this RFP must be prepared in accordance with the WRF document *Guidelines for Research Priority Program Proposals*. The current version of these guidelines is available at http://www.waterrf.org/funding/Pages/proposal-guidelines.aspx, along with *Instructions for Budget Preparation*. The guidelines contain instructions for the technical aspects, financial statements, indirect costs, and administrative requirements that the applicant <u>must</u> follow when preparing a proposal.

Eligibility to Submit Proposals

Proposals will be accepted from domestic or international entities, including educational institutions, research organizations, governmental agencies, and consultants or other for-profit entities.

WRF's Board of Directors has established a Timeliness Policy that addresses researcher adherence to the project schedule. The policy can be reviewed at http://www.waterrf.org/funding/Pages/policies.aspx. Researchers who are late on any ongoing WRF-sponsored studies without approved no-cost extensions are not eligible to be named participants in any proposals. Direct any questions about eligibility to the WRF project contact listed at the top of this RFP.

Administrative, Cost, and Audit Standards

WRF's research program standards for administrative, cost, and audit compliance are based upon, and comply with, Office of Management and Budget (OMB) Uniform Grants Guidance (UGG), 2 CFR Part 200 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, and 48 CFR 31.2 Contracts with Commercial Organizations. These standards are referenced in WRF's *Guidelines for Research Priority Program Proposals*, and include specific guidelines outlining the requirements for indirect cost negotiation agreements, financial statements, and the Statement of Direct Labor, Fringe Benefits, and General Overhead. Inclusion of indirect costs must be substantiated by a negotiated agreement or appropriate Statement of Direct Labor, Fringe Benefits, and General Overhead. Well in advance of preparing the proposal, your research and financial staff should review the detailed instructions included in WRF's *Guidelines for Research Priority Program Proposals* and consult the *Instructions for Budget Preparation*, both available at http://www.waterrf.org/funding/Pages/proposal-guidelines.aspx.

Budget and Funding Information

The maximum funding available from WRF for this project is $75,000. The applicant must contribute additional resources equivalent to at least 33 percent <u>of the project award</u>. For example, if an applicant requests $100,000 from WRF, an additional $33,000 or more must be contributed by the applicant.

Acceptable forms of applicant contribution include cost-share, applicant in-kind, or third-party in-kind that comply with 2 CFR Part 200.306 cost sharing or matching. The applicant may elect to contribute more than 33 percent to the project, but the maximum WRF funding available remains fixed at $75,000. **Proposals that do not meet the minimum 33 percent of the project award will not be accepted.** Consult the *Instructions for Budget Preparation* available at http://www.waterrf.org/funding/Pages/proposal-guidelines.aspx for more information and definitions of terms.

Period of Performance
It is WRF's policy to negotiate a reasonable schedule for each research project. Once this schedule is established, WRF and its sub-recipients have a contractual obligation to adhere to the agreed-upon schedule. Under WRF's No-Cost Extension Policy, a project schedule cannot be extended more than nine months beyond the original contracted schedule, regardless of the number of extensions granted. The policy can be reviewed at http://www.waterrf.org/funding/Pages/policies.aspx.

Utility and Organization Participation
WRF encourages participation from water utilities and other organizations in WRF research. Participation can occur in a variety of ways, including direct participation, in-kind contributions, or in-kind services. To facilitate their participation, WRF has provided contact information, on the last page of this RFP, of utilities and other organizations that have indicated an interest in this research. Proposers are responsible for negotiating utility and organization participation in their particular proposals. The listed utilities and organizations are under no obligation to participate, and the proposer is not obligated to include them in their particular proposal.

Application Procedure and Deadline
Proposals are now being accepted exclusively online in PDF only format and must be fully submitted before 2:00 pm Mountain Time on Thursday, September 12, 2019. All proposal documents must be compiled into two (2) PDF files consisting of your technical review documents and your financial review documents. All forms and components of the proposal are available in the *Proposal Component Packet* zip file on the proposal website at https://proposals.waterrf.org/Pages/RFPs.aspx. An FAQ and a tutorial are also available. A login is required to access the proposal website and download the packet. Proposers are encouraged to create logins and verify the validity and compatibility of the system well in advance in order to avoid last-minute errors or delays.

The online proposal system allows submission of your documents until the date and time stated in this RFP. To avoid the risk of the system closing before you press the submit button, do not wait until the last minute to complete your submission.

Questions to clarify the intent of this RFP and WRF's administrative, cost and financial requirements may be addressed to the WRF Program Director, Walter Graf at (571) 384-2102 or wgraf@waterrf.org. Questions related to proposal submittal through the online system may be addressed to Caroline Bruck at (303) 347-6118 or cbruck@waterrf.org**.**

Utility and Organization Participants

The following utilities have indicated interest in possible participation in this research. This information is updated within 24 business hours after a utility or an interested organization submits a volunteer form, and this RFP will be re-posted with the new information. **(Depending upon your settings, you may need to click refresh on your browser to load the latest file.)**

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