



REQUEST FOR PROPOSALS (RFP)

Smart and Connected Energy Management (5296)

Date Posted

Friday, September 20, 2024

Due Date

Proposals must be received by 3:00 pm Mountain Time on Thursday, November 21, 2024

WRF Project Contact

Alice Jariz, PE, ajariz@waterrf.org

Project Sponsors

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

Project Objectives

- Develop a comprehensive understanding of the current state of smart and connected energy management in water and wastewater utilities
- Recommend tools and guidance for implementing smart water networks to reduce waste and improve overall energy efficiency

Budget

Applicants may request up to \$150,000 in WRF funds for this project.

Background and Project Rationale

In order to optimize plant energy performance, staff need to have real time knowledge of plant operating conditions, parameters, and performance. Accurate energy performance quantification is crucial for identifying inefficiencies, prioritizing maintenance efforts to mitigate excess energy use, and identifying poor energy performance and operational issues.

By harnessing the capabilities of Internet of Things (IoT) sensors for real-time monitoring and analysis, it is feasible to assess various operating issues, including leaks, pressure deviations, pump performance, and other water operations issues that are wasting energy. WRF project 4917, Utilizing Smart Water Networks to Manage Pressure and Flow for Reduction of Water Loss and Pipe Breaks (Karl et al. 2022), examined using smart meters for pressure loss. This project would build on 4917's work to examine the specifics of energy optimization points in the system best informed with IoT applications.

Research Approach

The proposed research approach would involve the following:

- Conduct a detailed literature review to identify best practices and gaps in this subject
- Survey utilities of different sizes and water/wastewater treatment types to collect information, best practices, and challenges related to implementing smart energy programs
- Identify process and component energy wastes or excesses within water and wastewater operations and distributions that would be informed by smart water networks by in-depth case studies, network analysis, or other approaches
- Develop a guidance manual of best practices for implementing smart water utility network technology and analysis approaches. Guidance manual should include:
 - Recommendations on what components should or should not be included based on size and/or frequency of use
 - How to establish a baseline for quantifying the effectiveness of smart and connected energy management initiatives

Expected Deliverables

Possible deliverables could include:

- Literature review synthesis document
- Summary of survey results
- Final research report
- Utility-facing guidance document, including recommendations on equipment inclusion and guidance for establishing baseline energy usage
- Webcasts and conference presentations
- Open access journal article

Communication Plan

Please review WRF's [Project Deliverable Guidelines](#) for information on preparing a communication plan. Conference presentations, webcasts, peer-reviewed publication submissions, and other forms of project information dissemination are typically encouraged.

Project Duration

The anticipated period of performance for this project is 18 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.

- Karl, M., E. Culbertson, J. Abrera, and R. Janke. 2022. *Utilizing Smart Water Networks to Manage Pressure and Flow for Reduction of Water Loss and Pipe Breaks*. Project 4917. Denver, CO: The Water Research Foundation.

<https://www.waterrf.org/research/projects/utilizing-smart-water-networks-manage-pressure-and-flow-reduction-water-loss-and>

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 15 points)
- Communication Plan, Deliverables, and Applicability (maximum 20 points)
- Budget and Schedule (maximum 15 points)

PROPOSAL PREPARATION INSTRUCTIONS

Proposals submitted in response to this RFP must be prepared in accordance with WRF's [Guidelines for Research Priority Program Proposals](#) and [Instructions for Budget Preparation](#). These guidelines contain instructions for the technical aspects, financial statements, indirect costs, and administrative requirements that the applicant must follow when preparing a proposal.

Proposals that include the production of web- or software-based tools, such as websites, Excel spreadsheets, Access databases, etc., must follow the criteria outlined for web tools presented in the [Technology Deliverables Guidance](#).

Eligibility to Submit Proposals

Proposals will be accepted from both U.S.-based and non-U.S.-based 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. 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](#).

Budget and Funding Information

The maximum funding available from WRF for this project is \$150,000. The applicant must contribute additional resources equivalent to at least 33% of the project award. 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% to the project, but the maximum WRF funding available remains fixed at \$150,000. Proposals that do not meet the minimum 33% of the

project award will not be accepted. Consult the [Instructions for Budget Preparation](#) 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.

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 accepted exclusively online in PDF format, and they must be fully submitted before 3:00 pm Mountain Time on Thursday, November 21, 2024.

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. Submit your proposal at <https://forms.waterrf.org/cbruck/rfp-5296>.

Questions to clarify the intent of this RFP and WRF's administrative, cost, and financial requirements may be addressed to the WRF project contact, Alice Jariz at 303.347.6111 or ajariz@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 on your settings, you may need to click refresh on your browser to load the latest file.)**

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