



THE
Water
Research
FOUNDATION

FOCUS AREA RFP

This project is being funded through the Focus Area Program, which enables WRF to solve broadly relevant subscriber issues and challenges with a targeted, sustained research effort. The program is developed around research Focus Areas: a topic area that is of high interest and priority to WRF subscribers because of a challenge or opportunity that is present, emerging, or anticipated, and for which research will help subscribers manage and address the challenge or optimize the opportunity. A focus area includes a discrete challenge or opportunity statement, measurable objectives, and one or more projects that will lead to applied solutions and benefits for WRF subscribers within a specified, relevant time frame.

*This project is funded under the Focus Area titled **Defining Attributes and Demonstrating Benefits of Intelligent Water Networks** and is intended to support the Focus Area objective(s):*

- ***Define characteristics and components of intelligent distribution and collection systems, as well as their benefits and costs.***
- ***Using multiple available technologies, demonstrate tangible improvements in one or more distribution and collection systems.***
- ***Investigate and summarize ways to implement, integrate, and optimize various technologies to improve efficiencies, reduce costs, and provide better customer service.***

Utilizing Smart Water Networks to Manage Pressure and Flow for Reduction of Water Loss and Pipe Breaks (RFP#4917)

Project Objective

Develop an approach in water systems using intelligent water networks to manage pressures and flows to extend pipe life and reduce water loss.

Budget

Proposals may request WRF funds in the range of \$290,000-\$301,437. WRF funds requested and total project value will be a criteria considered in the proposal selection process.

Background

The AWWA 2017 State of the Industry Report cited deteriorating infrastructure as the top concern among utilities, and pressure has been implicated in pipe failure in several studies. Finite Element Modeling (FEM) has been used recently to theoretically understand empirical data on pressure-related failures in cast iron pipe (Project 4326). In several case studies, pressure reductions also apparently correlated with reduced pipe breaks, and many times major pressure surges in a distribution system could be followed by a series of pipe breaks. Lowering pressure, consistent with water quality protection, may be able to provide significant reductions in pipe breaks, leakage, and energy costs, and certain smart water technologies are applicable for measuring and managing pressure with the direct result of reduced water loss and less stress on pipes.

This project will help inform several pressure management efforts:

- 1) the Partnership for Safe Water Distribution System utilities are seeking guidance on effective ways to implement effective pressure monitoring and management; and
- 2) pressure monitoring and management is also of interest to utilities addressing the expanding state regulation of leakage. The results will be used widely beneficial to the industry.

Research Approach

The project approach will be to recruit a minimum of four utilities, with a diversity of system designs and asset classes, that currently engage in pressure management. Utilities should be willing to explore multiple approaches to pressure management, such as using different practices, sensors, and network configurations to improve their ability to manage pressure and flow for the purpose of preserving pipe integrity, reducing water loss, and locating leaks before they become main breaks. At least one utility that utilizes District Metered Areas (DMAs) or Pressure Managed Areas (PMAs) should be included in this study. The concept of Virtual DMAs may also be explored.

The principal investigator and the utilities will evaluate various approaches based on the individual utilities' system designs and asset classes. The utilities may be chosen from the published list of volunteers for this RFP, but other utilities may be chosen as well. However, only WRF subscribing utilities are eligible for financial assistance through the WRF award. The successful proposal should enlist utilities with a high level of experience in pressure management that understand standard water loss concepts and that have maintained good quality historical data on their water losses and pipe breaks.

As part of their initial efforts, utilities should calculate their Economic Level of Leakage (ELL) to determine the levels of expenditure and effort that should be undertaken to reduce water loss and extend pipe life. This will help guide their decisions on how the various approaches to the pressure management system can be adjusted to improve performance while maintaining economic feasibility. Although data management is not a core part of this effort, utilities should not overlook the importance of being prepared to collect, store, secure, analyze, and act upon data derived from pressure management devices and practices.

Deliverables should include the following:

- Case studies of the participating utilities' pressure management history, including results derived from changes made during the project period.
- A detailed guidance document on best practices and approaches to pressure management under a variety of conditions based on the results of the participating utilities' optimization efforts.

The successful proposal will secure commitments from participating utilities to complete the project objectives within their utilities, including, but not limited to time commitments. The successful bidder will confirm that financial resources are available through the utilities, vendors, manufacturers, and other sources, including the project award, to ensure that the utilities have adequate funding to implement and analyze the anticipated experimental practices, sensors, and network configurations. It is expected that four participating utilities will each receive \$25,000 from the project award, paid through the Principal Investigator's organization, preferably as sub-contractors, to defray costs incurred as part of this project for technology upgrades or changes. Additional utilities may be involved in the project, but only four subscribing utilities will be supported financially through the WRF award.

Proposal Preparation Instructions

Proposals submitted in response to this RFP must be prepared in accordance with the Water Research Foundation document "Guidelines for Focus Area Program Proposals." The most current version of

these guidelines is available at <http://www.waterrf.org/funding/Pages/proposal-guidelines.aspx> . The guidelines contain instructions for the technical aspects, financial statements and administrative requirements that the applicant must follow when preparing a proposal.

Eligibility to Submit Proposals

This RFP solicits proposals from all technically qualified U.S. based or non-U.S. based applicants, including educational institutions, research organizations, federal or state agencies, local municipalities, and consultants or other for-profit entities. *(If there is any funding from non-WRF sources, check with WRF Grants Management regarding possible eligibility restrictions)*

WRF's Board of Trustees has established a Timeliness Policy that addresses researcher adherence to 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 an approved no-cost extension are not eligible to be a named participant in any proposal. If you have any questions about your eligibility for WRF projects, please contact the WRF Research Manager listed at the bottom of the RFP.

Administrative, Cost and Audit Standards

WRF's Focus Area 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 the WRF's "Guidelines for Focus Area 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 financial staff should review the detailed instructions included in WRF's annually released "Guidelines for Focus Area Program Proposals."

Budget and Funding Information

The funding available from WRF for this project is in the range of \$290,000-\$301,437. A minimum 25 percent of the total project value must be contributed by the applicant (i.e. the applicant's minimum contribution must equal one-third of WRF funds requested). 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 25 percent to the project but the maximum WRF funding available remains fixed at \$301,437. **Proposals that do not meet the minimum 25 percent of the total project value will not be accepted.**

Period of Performance

The proposed project schedule should be realistic, allowing ample time for the preparation of final reports and for review of project results. 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 is especially interested in receiving proposals which include both participation and contribution of resources from water utilities and organizations in the research effort. Information on utilities and/or organizations that have indicated an interest in participating in this research project are listed on the last page of this RFP. While WRF makes utility and organization participation volunteers known to applicants, it is the applicant's responsibility to negotiate utility and organization participation in their particular proposal, and the utilities and/or organizations are under no obligation to participate.

Application Procedure and Deadline

Proposals are now being accepted exclusively online in PDF only format and must be fully submitted before August 22, 2018, 5pm Mountain Time. All the forms and components of the proposal are available online in the "Proposal Component Packet" zip file. A login is required to download this packet and use the proposal website. This information is available at <https://proposals.waterrf.org/Pages/RFPs.aspx>

The online proposal system allows submission of your documents until the date and time stated in the 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 Request for Proposals and WRF's administrative, cost and financial requirements may be addressed to the Research Manager, Mary Messec Smith, at (303) 347-6134 or by e-mail at msmith@waterrf.org.

UTILITY AND ORGANIZATION PARTICIPANTS

The following utilities have indicated an interest in possible participation in this research. This information is updated within 24 business hours when a utility 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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UTILITY AND ORGANIZATION PARTICIPANTS (continued)

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