WQRF | Water Quality Research Foundation

Request for Proposals

All proposals submitted to WQRF will be treated as confidential and will not be shared beyond WQRF.

OVERVIEW

Purpose: To solicit research proposals to replicate and expand upon the 2009 Energy Savings study to re-evaluate the benefits of softened water in improving household appliance efficiency, reducing energy use and carbon footprint, and informing regulatory and public awareness efforts.

Submission Deadline: Notice of Intent to apply due by 6/15/2026 by 11:00 AM Central. Proposal due 7/24/2026 by 11:00 AM Central to foundation@wqrf.org.

Budget: Not to exceed $600,000 of WQRF funds. The applicant may contribute additional resources (cost share, applicant in-kind, or third-party in-kind) to the project award.

Eligibility Requirements:

- Be well-qualified and have previous experience working with POU/POE drinking water treatment technologies
- Have the facilities to accomplish this project or must provide a list of partner organizations and their qualifications

Format Requirements: Provided in Appendix A.

Estimated Award Notification Timeline: By 9/4/2026

- The research would start approximately 30 days after award notification, depending on the time needed for contract review, unless otherwise mutually agreed upon.

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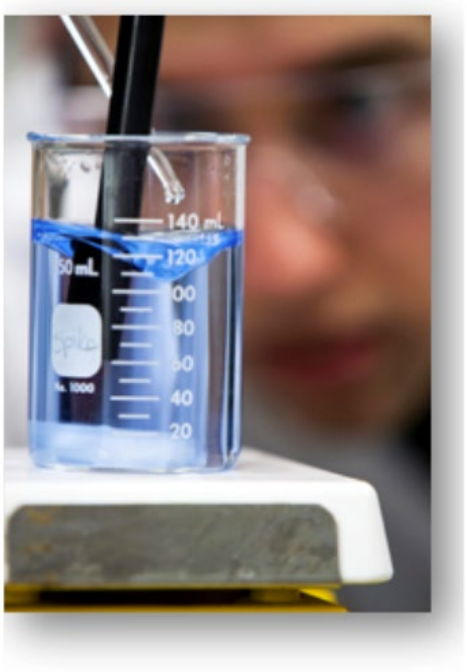
ABOUT US

Who is WQRF?



The Water Quality Research Foundation (WQRF), organized as a Section 501(c)(3) non-profit foundation under the Internal Revenue Code, was formed in 1952 to serve as a universally recognized, independent research and education sponsorship organization.

The mission of WQRF is advancing knowledge and the science of high quality, sustainable water. WQRF's vision is water quality improvement through relevant research.

Our Research Program

WQRF-funded research provides third-party **validity** and **credibility** for the drinking water treatment industry.

Since inception, WQRF has sponsored numerous research studies which have examined a broad range of water chemistry, technology and environmental impact issues. These studies generated essential data on water quality and technology, positively impacted legislative change, and helped advance efficiencies of in-home water treatment technologies.

Additionally, in an effort to position the water treatment industry for the future, WQRF launched its Research Grant Program in 2017. The purpose of the Grant is to solicit and potentially fund unique and interesting ideas from the research community. This allows academic and independent researchers more flexibility for submission of study proposals which are topical to WQRF's mission, bylaws and research agenda.

Research proposals submitted in response to RFPs are reviewed by WQRF's designated Research Task Force. The Task Force is comprised of WQRF staff and subject matter experts who volunteer their time to WQRF.

It is WQRF's preference that after review and acceptance of the final report, the researcher will seek to publish the study in a peer-reviewed publication.

BACKGROUND

Background and Purpose

The Water Quality Research Foundation (WQRF) seeks proposals to replicate and expand upon the 2009 Battelle study titled *"Study on Benefits of Removal of Water Hardness (Calcium and Magnesium Ions) from a Water Supply."* The original study provided compelling evidence that softened water significantly improves the performance and longevity of household water heaters, fixtures, and appliances, while also reducing energy consumption and carbon footprint. Soft water is defined by American National Standards NSF/ANSI 44 and NSF/ANSI 330 as water containing <1 grain of hardness per gallon (or <17.1 mg/L hardness) as $CaCO_3$ equivalents.

Key findings showed that softened water:

- **Maintained consistent water heater efficiency**, while hard water caused measurable efficiency degradation over time.
- **Reduced scale accumulation** by orders of magnitude (e.g., ~7 g/yr vs ~538 g/yr in gas storage heaters).
- **Prevented clogging and performance failure** in fixtures (e.g., showerheads clogged in <7 days under hard water).
- **Lowered carbon footprint** for gas water heating by ~4-15% depending on technology.

Summary of 2009 project parameters:

- Test design: controlled laboratory study comparing softened (<0.55 grains per gallon (gpg) as $CaCO_3$ equivalents) vs unsoftened (~26 gpg) water
- Equipment tested: 30 water heaters (10 gas storage, 10 electric storage, 10 instantaneous gas), 6 laundry washers, and 6 dishwashers
- Duration and acceleration: water heaters were tested for 90 days with accelerated scaling (35-100x real-world equivalent); appliances were tested for 30 days at 8 cycles/day
- Measurements: energy input/output and efficiency, water throughput and temperature, scale buildup (mass and visual inspection), and carbon footprint (gas and electricity work)

Given the increasing scrutiny of residential water softeners by environmental and regulatory bodies, particularly regarding brine discharge and total dissolved solids, this follow-up study is critical to update the scientific basis for the benefits of softened water. The results will support both **regulatory affairs** and **public awareness** initiatives by providing updated, peer-reviewed data to inform policy, consumer education, and industry best practices.

SCOPE

Project Objectives

The main goals of this study are to:

- Quantify the energy efficiency and operational performance of household water heaters (gas storage, electric storage, and instantaneous gas) when operated with variable total hardness concentrations.
- Assess the impact of water hardness on scale buildup, maintenance requirements, and appliance longevity.
- Evaluate the performance degradation of fixtures (low-flow showerheads and faucets) and appliances (dishwashers and laundry washers) under variable total hardness concentrations.
- Calculate the differential carbon footprint associated with variable total hardness concentrations use in residential settings.
- Provide updated economic models for life-cycle costs and maintenance implications.
- Test a range of water hardness (<1, 3, 5, 10, 20, and 30 gpg as $CaCO_3$ equivalents)
- Incorporate the updated NAECA standards for water heaters

Scientific Requirements and Parameters

Researchers are encouraged to build upon the framework of the 2009 study (defined in the background section of RFP) while introducing innovations in testing design, data analysis, and environmental modeling. Proposals should clearly justify the chosen parameters and methods, and demonstrate how they will produce representative, reliable, and actionable results. After submitting a Notice of Intent (NOI), WQRF will share the full 2009 project report.

RESTRICTIONS

Proposals whose scope fall within any of these restrictions will not be funded.

You are encouraged to consult WQRF prior to developing a proposal if you are unsure whether your study topic encompasses one of these restrictions.

1. The proposal must be scoped to prevent use of the study to promote or disparage a specific water treatment product model, company/organization or brand name. **It is WQRF's policy that brands, models, and manufacturers are confidential**, only the specifications of the products tested can be included in the report(s).

2. The **research will not be of a type ordinarily expected to be carried on by private enterprises in the ordinary course of research and development**, the testing and inspection of materials or products, particularized market or consumer research or the design and construction of water treatment equipment, products or parts.

3. While WQRF supports the many benefits of product validation evaluation and testing, **WQRF does not fund product development-related activities**, such as validation testing of new products or emerging technologies that are not yet widely available.
    a. Projects that involve general validation or study broadly the benefits of certain categories of technologies relative to other categories of technologies have been funded only when they were scoped to benefit the entire industry and not to promote a specific product, benefit a specific manufacturer or develop intellectual property.
    b. Consistent with this policy, WQRF bylaws require that any patents or trademarks owned by WQRF resulting from research they fund shall be made available to the public-at-large on a non-discriminatory basis.

4. **Researchers are prohibited from having a commercial interest in any products or technologies proposed** for inclusion in the research study.

SELECTION PROCESS

Proposals will initially be evaluated against the restrictions, requirements and other criteria as presented in this RFP. If you are unsure of the requirements, you are encouraged to reach out to WQRF at foundation@wqrf.org prior to developing and/or submitting your proposal.

Proposals meeting the requirements will also be evaluated by:

- Assessing the **potential impact** of the research compared to the cost.
- The researchers' **credibility, previous experience, knowledge of in-home water treatment technologies** (AKA point-of-use [POU] and point-of-entry [POE] technologies) as applicable to the proposed work, qualifications, and prior publications.
- The proposed **dissemination plan** to communicate results.

Researchers may be contacted for further information throughout the selection process. WQRF may request written responses to questions, a virtual meeting, and/or minor revisions to the proposed approach and/or deliverables.

The duration of the process will vary depending on the number of proposals received, their complexity and the Task Force's availability to engage in discussions. **Typically, WQRF receives between 5-10 proposals in response to an RFP.**

All bidding research teams will be notified of the outcome as it pertains to their respective proposal. The proposal selected by the Task Force for the funding recommendation is then presented to the WQRF Board of Directors for review, due diligence, and a decision on approval of funding. **Historically, the proposal selection process has taken 2-4 months.**

WQRF reserves the right to partially fund proposals by awarding portions or phases of proposed projects. If WQRF decides to partially fund a proposal, it will do so in a manner that does not prejudice any applicants or affect the basis upon which the proposal, or portion thereof, was evaluated and selected for award, and therefore maintains the integrity of the competition and selection process.

RESPONSIBILITIES

In support of an accepted research project, WQRF ordinarily will:

1. Provide the researcher with any background information needed, such as a list of industry and other interested parties and stakeholders.
2. **Take an active role in the technical review of progress/interim reports and acceptance of the final report.**
3. Track progress and provide any necessary coordination with, and supply technical input from, industry stakeholders.
4. **Provide public access to an executive summary and the full report.** Ordinarily, upon release or publication, the researcher will be permitted to make the report available as best determined.

The researcher will enter into a research sponsorship agreement with WQRF, the terms of which broadly will include the following commitments from the researcher:

1. Undertake, manage and perform all aspects of the contracted research and any necessary support activities.
2. Complete the work in a timely manner according to the project schedule.
3. **Engage with WQRF, its Research Task Force and its technical staff and provide responses to WQRF questions relating to progress and coordination, as well as comments on progress/interim reports.**
4. Agree that all intellectual property will be owned by WQRF or perpetually licensed to it without royalty or charge.
5. **Publish the study in a peer-reviewed publication.**

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INTELLECTUAL PROPERTY

Generally, WQRF will own the entire right, title, and interests, including all copyrights and other intellectual property rights, in and to all Project Intellectual Property developed by WQRF personnel. Project Intellectual Property that is jointly developed by the researcher and WQRF personnel will be jointly owned by the researcher and WQRF.

Generally, WQRF will reserve the intellectual property associated with the final report submitted to WQRF, including the copyright thereof, and all rights to distribute the final report. WQRF will make publicly available the research funded and knowledge gained through research, and the researcher ordinarily will be permitted to make available and publish sponsored research and use the knowledge gained to further its own research. However, no research results can be published by the researcher without prior review by WQRF.

It is WQRF's preference that after review and acceptance of the final report, the researcher will seek to publish the study in a peer-reviewed publication. Whenever referencing or publishing the study, or information and/or data derived from the study, researchers must cite as its source to the report delivered to WQRF. The study should be submitted for peer-review publication within 6 months from the date that WQRF accepted the final report. WQRF does not commit that the research will be withheld from the public during the 6-month period.

APPENDIX A - FORMAT

Proposals *must not* be password protected to restrict editing. Upon receipt, WQRF will watermark to the proposal to identify it as confidential prior to its internal distribution. Proposals should include the following requirements, and if necessary, other sections may be added. There is no word/page limit for proposals.

- **Abstract** – Summarize the research project plan, timeline and objectives. Identify under which research agenda topic the proposal falls. Highlight your team's relevant experience and the potential impact on the water treatment industry from the proposed research project.

- **Literature review** – Review relevant publications and include a summary to define what is already known about the subject matter of the research and highlight any knowledge gaps. Describe your experience using data sources and technology relevant to the proposed work.

- **Detailed research plan and methodology** – Proposals without a detailed methodology will likely not be considered for funding. Please describe:
  - The proposed experiment(s), including any equipment **(excluding POU/POE brand/device names)** and methods, which will be used to undertake the research. Address all methods of data collection and how you will analyze, interpret, normalize the findings, and present the results.
  - The frequency which the Primary Investigator(s) (PIs) will meet with the entire team to discuss the project.
  - Who is responsible for reviewing the work before submission to WQRF.
  - If funded, would WQRF be given the opportunity to review any deviations from the methods as described in the proposal before those changes are made/implemented?

- **Deliverables** – Describe all the deliverables that you will be providing for this work. The **required deliverables** for this project are:

  - **Ongoing research progress reports** – Formal progress reports should be prepared and submitted at least quarterly, although more frequent, informal updates on progress are encouraged. For each progress report, WQRF will organize a conference call between the researchers and the task force. During this call, the researchers are asked to present the progress made from the last report and respond to questions from WQRF. Additional updates may be requested on an as-needed basis.
  - **Drafts of the final report and a 1–3-page executive summary**
    - The executive summary is a stand-alone document intended to summarize the purpose, methods, findings of the research, and future research opportunities identified. The information and data included in the executive summary must be readily understood without referring to the full report.
    - The WQRF Task Force will provide technical review of the drafts of the final report and the executive summary.
  - **The final report and executive summary documents**

  Consider providing additional deliverables to make the proposal more competitive. Additional deliverables might include magazine articles, infographics, a workshop, an interactive data tool, conference presentations, webinar presentations, etc.

- **Estimated project invoice and deliverable timeline** – Download the template, edit it based on the requirements described below to fit your specific project timeline, and incorporate the table into the proposal.

  - The total project timeline **shall not exceed 2-years** from the start date.
  - Include an invoicing schedule along with your timeline that includes the upfront payment amounts due at the start of the project and an ongoing payment schedule. **All invoices must be linked to a deliverable or scientific milestone.**
    - Allocate up to 10% of the budget for the start of the project, after the contract has been signed.
    - At least 15% of the project cost **must** be associated with the delivery of the final report and executive summary.

- ☐ **Dissemination plan** – Include a communication/dissemination plan detailing:
  - **Data visualization tools** that will be created for, or alongside, the report
  - **The target audience(s)** for the research results – potential audiences may include: scientists/researchers, POU/POE equipment manufacturers and dealers, water quality industry members, associations/non-governmental organizations (NGOs), laboratories, policy makers, state and federal agencies, the general public, etc.
  - How the research team will share the results with the target audience(s) identified
  - An **estimated timeframe** for completing the proposed communications plans (use the project invoice/deliverable timeline template for this)

- ☐ **Budget** – **Total budget shall not exceed $250,000 of WQRF funds.** Preference may be given to a lower-cost proposal that still best meets all requirements. At a minimum, the budget should be segmented by the following categories (as applicable): Salaries, Fringe Benefits, Tuition Reimbursement, Equipment (list items and dollar amount for each item), Travel, Subcontract Fees, and Indirect Costs (F&A). **It is WQRF's policy that indirect costs shall not exceed 13% of total direct costs (see Appendix B).**

- ☐ **OPTIONAL SECTION: Future Opportunities** – Describe efforts that are beyond the scope of this project, but could be completed with potential future funding to address a known data gap, and/or further the impact of the current proposed research project.

- ☐ **Potential conflict circumstances statement and disclosure of any additional organizations who would potentially contribute to this project** – Include a statement reporting any direct or indirect facts or circumstances which could potentially create a conflict of interest. For example, if the results of proposed study could further the interests of a company with which the researcher or the research organization has a financial interest or relationship (including any contractual agreement or practice to provide testing, certification, consulting or other services (or is negotiating such an agreement), that is to be disclosed as a potential conflict circumstance. WQRF will have final authority in its sole discretion over whether a potential conflict circumstance represents a disqualifying Conflict of Interest. Please also disclose the name(s) of any organizations who you have contacted to potentially contribute to this project (in-kind or monetary contribution).

- **Credentials and qualifications** – In this section, please include:
  - The **names, qualifications, previous POU/POE experience and curricula vitae** of primary and supporting investigators involved in this project.
    - Depending on the primary investigators' previous experience with POU/POE devices, WQRF may elect to utilize an Industry Subject Matter Expert (ISME) to provide technical, hands-on advice to the funded researcher.
  - **Details relating to student involvement** on the project (note: this section only required if the PIs are planning to have student(s) on the research team):
    a. Are the PI(s) seeking undergraduate, graduate, or doctoral student(s)?
    b. Will the student(s) be writing a thesis or dissertation based on this research?
    c. How many students will be recruited to the research team?
    d. How will the student(s) be recruited?
    e. Based on past experiences, how many students typically apply for research positions?
    f. When is an ideal time to recruit student(s)?
    g. Are there any incentives provided by the University for students to participate in the research program?
       i. If credit hours are received, how is their work evaluated (pass/fail; graded)?
       ii. Who evaluates/grades their work?
    h. What responsibilities will be assigned to the student(s)?
    i. What guidance/training will the PIs provide to the student(s)?
    j. How often will a PI meet with student(s) for status updates and to ensure the project is being conducted according to the methodology as stated in the proposal?
  - A statement of qualifications, previous experience, and related publications (including full curricula vitae) of the primary and supporting investigators.

- **References** – Cite any references used to develop the content for the proposal.

APPENDIX B – INDIRECT COSTS

Indirect Costs Policy

Indirect costs shall not exceed 13% of total direct costs. The purpose of this policy is to keep costs associated with project outcomes (direct costs) the primary use of funding, as opposed to funding going towards expenses related to the general business of the funding recipient (indirect costs). Examples of indirect costs include rent, utilities, personnel of general administration (IT, HR, Legal), or other costs that would exist with or without the existence of the project WQRF is funding.