

REQUEST FOR PROPOSALS

GREEN BUILDING DESIGN: WATER QUALITY AND UTILITY MANAGEMENT CONSIDERATIONS (RFP 4383)

Objective

This project has two objectives. The primary objective is to predict/evaluate how green building designs may impact water quality issues in building premise plumbing or possibly the distribution system (from reduced demand, etc.). The secondary objective is to collect, compile and report on non-water-quality-related impacts of green building and off-grid green building designs on centralized water utility system operations addressing such concerns as rate payer equity, service and connection charges, incentives or rebates, fire service supply, supply redundancy, main sizing, codes, and standards.

Background

Sustainable and green buildings are becoming more popular and their growth can be expected to continue in the future with public support. The Environmental Protection Agency defines green building as the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction. This practice expands and complements the classical building design concerns of economy, utility, durability, and comfort. The U.S. Green Building Council (USGBC) plays a significant role in the expansion and certification of green buildings. The Leadership in Energy and Environmental Design (LEED) certification program evaluates a building's indoor environmental quality, site planning, water management, energy, and material use. A building can achieve one of four levels (certified, silver, gold, or platinum) of certification based on many factors within the five evaluation categories. These certifications can apply to new construction or existing buildings and can include various commercial buildings, schools, neighborhoods and other structures. According to the USGBC, there are currently 27,581 commercial registered projects and 5,707 commercial certified projects representing > 1 billion square feet (www.usgbc.org). While LEED certification can be attractive it is likely that many building owners are implementing green practices and designs without becoming certified by any official organization, potentially making this an even larger issue.

The transition to green building design has obvious benefits, but such design may cause or create unique water quality problems. Water efficient devices, new materials, hydraulic configurations, and water reuse (gray water, recycled water) are a few areas where green buildings can be unique from classical construction. These new designs have the potential to affect water age (typically increased, which is often associated with reduced water quality), disinfectant residual, corrosion, microbial regrowth, and other water quality aspects including aesthetics. Some examples of negative water quality impacts have been associated with buildings with advanced water conservation features.

Water utilities are required to maintain water quality standards within the distribution system up to the building connection or meter. Utilities are not directly responsible for water quality in buildings and premise plumbing, but despite that, poor water quality in such situations is often blamed on the water provider. Moreover, water utilities are concerned that the high quality of water delivered to a building may not make its way to the glass of the consumer. Thus, even though not directly responsible for these issues, utilities should understand the impacts green building approaches may have on water quality and utility management issues in order to be able to more effectively engage in discussions and trouble-shooting when problems arise.

Other programs provide advanced green building rating systems that go beyond the LEED-rating system. These buildings may either be totally off of the water and wastewater utility grid, or partially off-grid. Some of these buildings are designed to operate within the water budget of their sites by utilizing rainwater to offset potable use while still requiring some connectivity to the potable supply and wastewater connections, while others utilize a closed loop system, with a goal of achieving “net zero” water use. These building and development projects differ from conventional projects in their approach to sourcing water, using (and reusing) water in both interior and exterior applications, and treating water prior to outflow off the building site or into the environment. “Living Buildings” are examples of such developments. The Living Building Challenge is a program operated by the Cascadia Region Green Building Council www.cascadiagbc.org (a chapter of both the US Green Building Council and Canada Green Building Council) that is active in the Pacific Northwest. Although there are no certified projects at this time, there are more than 70 projects in process throughout the U.S. and Canada, and five of these projects are now in their verification operational phase and three of these will likely achieve certification in 2010. All of the projects in process are incorporating strategies to achieve ‘water independence,’ either within their project boundary or by tapping into scale-jumping opportunities at the neighborhood level.

In addition to the premise water quality issues, there are several engineering, managerial and financial considerations that should be evaluated from the water utility perspective in order to minimize unintended consequences of green building and off-grid building construction and maximize the synergies between these distributed systems and the traditional centralized utility system.

Research Approach

The primary research goal of the project is to evaluate the full-range of water quality considerations of green building design. This goal is anticipated to take up the majority of

available funding. The list of tasks below is expected to consider the full-range of water quality concerns (e.g., organic and inorganic contaminants, microbial regrowth, aesthetic issues, etc.).

- Conduct a focused but comprehensive literature review on the current understanding of premise plumbing impacts on water quality (materials, devices, hydraulics, connections, etc.) and also on any case studies involving green buildings and premise water quality impacts. Solicit input from water utilities with active customer complaint response programs as to common causes of building plumbing problems. Also, solicit input from water utilities involved in the planning and development of green buildings to identify those factors that were considered in planning the development of green and off-grid buildings with water utilities and developers.
- Compile a list of relevant stakeholders that could be contacted with questions (water system plumbing, design, and maintenance) on green building design.
- Interview green building experts (engineers, designers, building maintenance, the green building councils, etc.) on the potential changes in green buildings that are new to the drinking water industry and could be anticipated to affect premise water quality. This task could also include interviewing plumbing inspectors/regulators and plumbing code committee members.
- Profile several green buildings (various locations and sizes) and highlight the unique features about them that could have an effect on premise plumbing water quality.
- Evaluate the extent that relevant stakeholders (USGBC, engineers, architects, etc.) consider premise water quality for design decisions.
- Provide an evaluation of known or anticipated premise water quality issues that could develop from green building design changes and known methodologies to mitigate negative water quality impacts (e.g., water age, corrosion, etc.).
- Conduct case studies of drinking water utilities that have had experiences with green buildings and summarize premise water quality issues.
- Document those factors that water utilities should be considering--and developers should be aware of--when planning and reviewing development plans for partially or totally off-grid green buildings.

The secondary research goal is to do a “white paper” style summary of the managerial considerations of green buildings and completely off-grid buildings. While comprehensively studying the water quality impacts of green building design, the research team will use the opportunity to assess the managerial and distribution system impacts including:

- rate payer equity,
- service and connection charges,
- incentives or rebates,
- property ownership changes
- fire service,
- supply redundancy,
- emergency service,
- main sizing,
- codes, and
- standards.

The final report should provide a focused but comprehensive assessment of how green buildings can affect premise water quality and related mitigating actions, and a white paper summary of the managerial impacts of green design. The information in the final report should enable utilities to better respond to customer complaints involving green buildings and to be prepared with clear, consistent and equitable policies and strategies to deal with impacts to the financial and structural utility system from green development. A Foundation sponsored webcast, and other innovative communication tools, should be considered to communicate the project results to drinking water utilities and other stakeholders.

Proposal Preparation Instructions

Proposals submitted in response to this RFP must be prepared in accordance with the Water Research Foundation “Guidelines for Solicited Proposals.” The most current version of these guidelines is available at <http://www.waterrf.org/Research/Administration/ProposalGuidelines/ProposalDocuments/SolicitedProposalGuidelines.pdf>. The guidelines contain instructions 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.

The Foundation’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/Research/Administration/Policies/Policies/TimelinessPolicy.pdf>. Researchers who are late on any ongoing Foundation-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 Foundation projects, please contact your current Foundation project manager directly.

Budget and Funding Information

The maximum funding available from the Foundation for this project is \$275,000. 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 the Foundation funds requested). Therefore, the minimum total value of this project is \$366,667, (\$275,000 in Foundation funds and \$91,667 in applicant contribution). Acceptable forms of applicant contribution include cost-share, applicant in-kind or third-party in-kind that meet Code of Federal Regulation (CFR) requirements in 2 CFR Part 215.23, or the requirements of Office of Management and Budget (OMB) Circular A-102.24. The applicant may elect to contribute more than 25 percent to the project but the maximum Foundation funding available remains fixed at \$275,000. Proposals that request less than \$275,000 from the Foundation need only contribute 25 percent of the total project value.

Administrative, Cost and Audit Standards

The Foundation's standards for administrative, cost and audit compliance consist of the US Federal (OMB) administrative requirements, cost principles and audit requirements. These standards include specific guidelines outlining the requirements for Indirect Cost Negotiation Agreements, Financial Statements and the Statement of Direct Labor, Fringe Benefits and General Overhead. Recovery of indirect costs must be substantiated by a negotiated agreement or appropriate Statement of Direct Labor, Fringe Benefits and General Overhead. Prior to preparing the proposal, your financial staff should review the detailed instructions included in the Foundation's annually released "Guidelines for Solicited Proposals."

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 the Foundation's policy to negotiate a reasonable schedule for each research project. Once this schedule is established, the Foundation and its contractors have a responsibility to adhere to the agreed-upon schedule. Under the Foundation'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/Research/Administration/Policies/>.

Utility Participation

The Foundation is especially interested in receiving proposals which include both participation and contribution of resources from water utilities in the research effort. Information on utilities that have indicated an interest in participating in this research project is attached. While the Foundation makes utility participation volunteers known to applicants, it is the applicant's responsibility to negotiate utility participation in their particular proposal, and the utilities are under no obligation to participate.

Application Procedure and Deadline

Proposals must be postmarked or date-stamped by the carrier on or before June 10, 2011.

Four unbound copies, plus one electronic copy (PDF format) (5 copies total) of the proposal should be sent to:

**Proposals – RFP 4383
Water Research Foundation
6666 W. Quincy Avenue
Denver, CO 80235**

Questions to clarify the intent of this Request for Proposals may be addressed to the Senior Administrative Assistant, Caroline Bruck, at 303.347.6118 or by email at cbruck@waterrf.org.

4383- UTILITY VOLUNTEERS

The following utilities have indicated an interest in possible participation in this research. This information is updated within 12 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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