Request for Consultant Proposal

Non-energy efficiency benefits of advanced building controls

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Efficiency Forward/DesignLights Consortium® Background

Efficiency Forward (EF)/the DesignLights Consortium (DLC) is a non-profit organization whose mission is to achieve energy optimization by enabling controllability with a focus on quality, people, and the environment. The DLC promotes high-quality, energy-efficient lighting products in collaboration with utilities and energy efficiency program members, manufacturers, lighting designers, and federal, state, and local entities. Through these partnerships, the DLC establishes product quality specifications, facilitates thought leadership, and provides information, education, tools and technical expertise.

Introduction

Advanced building controls provide many benefits both to building management and to building occupants in commercial buildings. These controls have the potential, through the integration of building systems and analytics, to provide greater energy savings and improve the quality of the occupant experience. However, the DLC believes these additional benefits are not adequately represented in the financial decision-making process both by individual building owners/facility managers but also by energy efficiency incentive programs. The full scope of non-energy benefits is not typically considered in cost/benefit analysis. Typically, following installation, these benefits are well-reported anecdotally, but there is a need for improved methodology to evaluate these added benefits in the initial system decision making. In this study, the DLC would like to create a methodology for quantifying these additional benefits, including benefits for occupants, managers, and society with the intent that this methodology be used in decision making with regard to investments in advanced controls.

Project Vision

Efficiency programs nationally would incorporate the methodology proposed in this study into their incentive program evaluation methods. The evaluation framework would provide a method to quantify the non-energy benefits (NEBs) realized by building occupants, building management, and society. Upon the successful completion of this study, the DLC would promote the methodology to their member organizations. Additionally, the DLC would promote this evaluation framework to real estate owners and managers to encourage their investment in advanced controls.

Project Scope

The scope of this project is to develop an evaluation method to quantify the non-energy benefits of advanced building controls. Example benefits include improved occupant productivity, improved occupant comfort, reduced maintenance, improved space utilization, and reduced carbon emissions.

For the purposes of this study, the definition of advanced controls includes:

1. Highly controllable luminaires that are responsive to the building occupants, with control typically provided by a networked control system. Occupants may be allowed to manually raise or lower the light level to adjust lighting to their preferences. Building management may adjust,

or trim, the maximum output of luminaires at the initial installation as another way of adapting a standard fixture to its actual installation. If done judiciously, this strategy has been shown to save considerable energy while not negatively impacting the occupants' experience. Light sensors may be used to measure the daylight and automatically adjust the light level throughout the day, creating more dynamic, and potentially more stimulating, lighting. More advanced luminaires may have the capability to vary the color temperature of their light automatically throughout the day to mimic daylighting patterns, which may stimulate alertness.

2. Control of lighting in adjoining outdoor spaces such as parking lots, walkways, and entrances. Control by motion sensors and advanced scheduling can raise awareness of outdoor lighting and enhance the feeling of safety. An example is lights that turn on to light a path to an occupant's car.
3. The integration of building systems such that information is shared between networked lighting controls and other building systems, including HVAC, shade and window controls, access control, energy metering, onsite energy generation, and grid response. Examples include:
    a. A networked lighting control system sharing space occupancy information that informs the operation of the HVAC system.
    b. Any system configuration that makes the building more responsive to occupants.
4. Building IoT that provides data about the conditions within a building, such as air quality, occupancy levels, and occupant comfort levels, particularly where this information is turned into actionable items. Building IoT can also include wayfinding and asset tracking.
5. Analytics applications that collect information from building systems. The functions provided can include space utilization, heat mapping, energy use visualization, exception reporting, fault detection, and other advanced analytics. These applications may advise the building management on the building operation or may automatically issue corrective commands to the building systems.

The focus of this study is non-residential buildings. More specifically, the DLC proposes to focus this study on four target vertical applications and their key stakeholders:

Vertical application	**Property managers**	**Occupants**
Office buildings	Building engineers, property managers, real estate portfolio	Office workers, office managers
Hospitals and other healthcare facilities	Building engineers, hospital administrators	Nurses, doctors, patients
Educational buildings including K-12, colleges and universities	Building engineers, facilities administrators	Teachers, students
Warehouse and light industrial	Building engineers, property managers	Warehouse managers and workers

These vertical applications have been selected primarily because occupants are recurring users of the space; for example, an office worker or a teacher regularly returns to an office or classroom during working hours. Of particular interest in this study is the benefit realized by the occupants.

(See Appendix A for vertical markets that have been excluded from this study.)

Deliverables

1. Provide a summary report on previous studies of non-energy benefits for commercial and industrial buildings, the categorization of benefits, the methodologies proposed, a brief history on their adoption or rejection, and the suitability of these methodologies for the purposes of this study.
2. Provide a report on efficiency programs in the US that currently provide incentives for non-energy benefits of advanced controls. Provide an overview of their evaluation criteria for NEBs, including any quantified benefits. Research for this work may be based on published incentives and may include interviews with administrators of energy efficiency incentive programs.
3. Provide a report detailing a proposed methodology for financially quantifying NEBs.
4. Provide a validation plan detailing an outreach list, a plan for interviewing stakeholders, the format for collecting stakeholder responses, and sample questions.
    - 4a. Conduct interviews to validate and refine methodology. At a minimum, conduct 15 occupant interviews and five building manager interviews for each of the four vertical markets (minimum of 80 interviews) to assess the accuracy of the proposed methodology. Interviews must be conducted with people working in or responsible for facilities with advanced controls.
5. Provide a final report with the proposed methodology, the results of the interviews, and identification of recommended next steps.

For each of the deliverables, provide a presentation (via video conference) of the results to DLC staff. Within two weeks after the presentation, submit a written report or slide. The written report shall respond to review comments provided at the video conference presentation.

Deliverable Schedule

Deliverable	Intended Completion
1. Summary report on previous NEBs studies	April 15, 2021
2. Report on efficiency programs that include NEBs	April 30, 2021
3. Proposed methodology for quantifying NEBs	May 2021
4. Proposed validation plan	June 2021
5. Final report	August 30, 2021

Project Team

For this project, the DLC is soliciting proposals from consultants. However, as the intent of this program is to create a method that can be broadly disseminated, the DLC would favorably view validating the study results with one or more DLC member efficiency programs.

RFP Schedule

The DLC anticipates following the schedule:

Release RFP	February 16, 2021
Questions due	February 24, 2021
Proposals due	**March 1, 2021**
Follow up with selected respondents for clarification	March 1-10, 2021
Selection and award of contract	March 12, 2021

Pre-Submittal Questions

All communications between bidders and EF are to be directed to:

- Doug Paton at dpaton@designlights.org.

Bidders' Questions & Responses

Bidders may submit questions on this RFP via email. All questions submitted as of February 24, 2021 will be answered to the best of our ability.

RFP Submittal Deadline & Format

Bidders are required to submit their proposal by **March 1, 2021** via email to Stephen White at swhite@designlights.org, with the email subject field labeled: **"BID DLC NEBs RFP"**.

- The proposals should be submitted in both Microsoft Word and PDF format.
- A confirmation of receipt will be sent to those who submit proposals on time.
- Late submittals will be rejected.
- Bidders are not required to submit print copies of their proposals.
- The transmittal letter contained in the proposal package must have an electronic signature and must be signed by a person who is authorized to bind the proposing firm.

EF reserves the right to reject as non-responsive any proposals that do not contain the information requested in this RFP. EF is not liable for any costs incurred by any person or firm responding to this RFP or participating in best and final interviews.

RFP Evaluation Criteria

The intent is to award a contract to the vendor that best satisfies the overall requirements of the RFP. This set of criteria will be used to evaluate each vendor's proposal:

- Completeness of proposal
- Expertise evaluating non-energy benefits of energy efficiency improvements
- Novel or innovative approaches
- Team qualifications
- Proposal cost
- Vendor diversity

Response Guidelines and Requirements

Proposals should provide straightforward and concise descriptions of the bidder's ability to satisfy the requirements of this RFP. Omissions, inaccuracies, or misstatements will be sufficient cause for rejection of a proposal. Proposals not submitted as indicated may be rejected.

EF is looking for proposals demonstrating creativity, expertise, and experience in how bidders approach the work scope – not necessarily a detailed final approach. Once the consultant is selected, an initial task will be to review the scope and deliverables with EF and finalize a Scope of Services.

Bidders are requested to provide a concise, yet complete description of the bidder's approach and capabilities for satisfying the required services outlined in this RFP. Excessive length is discouraged. In addition, bidders are encouraged to proactively present additional information and responses not specifically requested that help demonstrate understanding of this project's objectives and needs as well as bidder's creativity, experience, and/or expertise.

After reviewing Responses, the DLC reserves the right to conduct phone interviews with selected respondents.

Appendix A: Vertical Markets Excluded from this Study

Excluded from this study are vertical applications including:

- Airports
- Retail stores
- Assembly buildings such as churches and recreation facilities
- Hospitality such as hotels and restaurants
- Multi-family housing

The common theme of most of the excluded vertical applications is that the occupants are more transient or less frequent visitors to a building.