Request for Consultant Proposals:

Interoperability Research Consultant

Issued by Efficiency Forward, Inc.™:
07/25/2019

Questions Due Before:
8/7/2019 4:00PM

Proposals Due:
8/19/2019 4:00PM

Efficiency Forward/DesignLights Consortium® Background

Efficiency Forward (EF)/the DesignLights Consortium (DLC) is a non-profit organization dedicated to accelerating the widespread adoption of high-performing commercial lighting solutions. 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.

Project Objectives

The DesignLights Consortium is seeking proposals for consultants to conduct market research and propose a strategic plan regarding interoperability in networked lighting controls (NLCs).

Services to Be Performed

Your proposal is expected to cover the following services:

1. Develop interoperability use cases and report
2. Develop a multi-year strategy for the DLC to drive greater interoperability of listed systems
3. Disseminate findings
4. Project management

Submittal Information

Contact and Communications

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

- Stephen White, Director of Administration and Finance, swhite@designlights.org.

Bidders' Questions and Responses

Bidders may submit questions about this RFP via email. All questions submitted prior to **August 7, 2019 at 4:00 PM** will be answered to the best of our ability on or before August 12, 2019.

RFP Submittal Deadline and Format

Bidders are required to submit their proposal by **August 19, 2019 at 4:00 PM** via email to Stephen White, Director of Administration and Finance, swhite@designlights.org.

- 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 <u>not</u> 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.

Milestone Schedule

To allow adequate time for proposal submission and evaluation, the schedule below will be followed:

RFP Issued	7/25/2019
Questions Due	8/7/2019
DLC Responses	8/12/2019
Proposals Due	8/19/2019
Anticipated Notification to Successful Bidder	8/23/2019
Anticipated Contract Start Date (Kickoff call)	8/30/2019

Minimum Qualifications

A single firm or a group of firms under a single primary contractor may submit bids. Changes in proposed key staff members may not be made during the execution of the work without written approval of EF.

- Key staff members must have demonstrated expertise in NLC interoperability and market research
- Contractor must be familiar with utility energy efficiency program design and implementation for lighting and NLCs
- Contractor must be independently owned and operated and must not be affiliated with any product manufacturer *in a fiduciary manner*, whether by ownership or contract
- Contractor must demonstrate a history of completing projects on time and on budget

Modifications to the RFP

EF may modify the RFP prior to the proposal submission deadline by the issuance of an addendum to all parties who have submitted a notice of intent to bid by the required date.

Post Proposal Negotiation and Awarding of Contracts

EF reserves the right to negotiate both price and non-price factors during any post-proposal negotiations with a finalist. EF has no obligation to enter into an agreement with any respondent to this RFP and may terminate or modify this RFP at any time without liability or obligation to any respondent.

Acceptance of Terms and Conditions

The submission of a proposal to EF shall constitute a bidder's acknowledgement and acceptance of the terms, conditions, and requirements outlined in this RFP.

EF will utilize its standard Consulting Agreement to contract for the services outlined in this RFP. A list of exceptions to the terms and conditions outlined in the Consulting Agreement should be returned with bidder's response.

All proposals submitted to EF pursuant to this RFP shall become the exclusive property of EF and may be used for any reasonable purpose by EF.

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.

Proposals must include the following:

- **Proposal Cover**
  Must indicate the RFP name, the proposal date, bidder's name, and list of subcontractors.

- **Signed Cover/Transmittal Letter**
  Must state that the person signing the letter is authorized to commit the bidding organization to the proposed work scope, budget, and rates; that the information in the proposal is accurate; and that the proposal is valid for 90 days from the date of submittal.

- **Table of Contents**

- **Team and Location**
  Provide a general introduction to the representatives of the consulting team, including each team member's area of expertise.

- **Statement of Work**
  Provide a high-level overview of the proposed approach to the scope of work (Attachment A).

- **References**
  Supply three (3) references (names and telephone numbers) of clients.

- **Exceptions to Contract Terms** (if needed)

- **Conflicts of Interest** (if needed)

- **Appendix**
  Resumes of key staff.

Evaluation of Proposals

EF will evaluate proposals on criteria including, but not limited to, the scoring matrix below. As noted above, the qualifications of key staff assigned to lead this project and the amount of time they commit to the project will be weighed heavily.

RFP Evaluation Criteria/Scoring Matrix
Part A: General Approach
Proposal quality – comprehension and clarity regarding meeting project objectives and quality of proposed approach for meeting those objectives
Thoroughness and practicality of approach
Creativity of approach
Part B: Qualifications and Experience
Key staff experience, experience with similar projects and research
Part C: Cost
Total project cost proposal and hourly rates

Attachment A: Scope of Services
Research on Networked Lighting Control (NLC) Interoperability

Introduction

The DLC maintains and publishes a set of Technical Requirements and a corresponding Qualified Products List (QPL) for networked lighting control systems. The QPL is referenced and used as a tool by DLC stakeholders, including utilities, efficiency program administrators, specifiers, contractors, end-users, and others to identify systems and capabilities eligible for utility energy programs and associated financial incentives. Users of the QPL also use it as a tool to compare and/or identify systems for their projects and applications based on characteristics of the system. The DLC's overall objective of the Technical Requirements and QPL is to provide a tool to improve NLC technology and support increased technology adoption.

Each system on the QPL must meet the Technical Requirements to be listed. Each year in June, the DLC updates these requirements to keep pace with technology and standards. In the last two revision cycles, the DLC has focused on introducing a set of phased multi-year requirements to improve energy monitoring and cybersecurity capabilities of the listed systems. These multi-year plans to phase in complex requirements have been well-received by industry, who can incorporate the plans into their multi-year cycles of design and development. The next area of focus to be included in the DLC's revision in 2020 will be interoperability. The scope of work contained herein is intended to provide the relevant research and information, and then a proposed multi-year interoperability plan, to be incorporated into the DLC's next NLC Technical Requirements revision in 2020.

Interoperability

Two devices (or a device and a system) are **interoperable** if they can both work together to operate as intended, typically facilitated by an ability to share a common defined set of information.[1] Interoperability of NLCs can be organized into three different areas:

- NLC to Luminaire/Lamp/Sensor/Device – The interoperability between an NLC and the luminaire, lamps, sensor, or device it is intended to control and/or receive data from.

- NLC to Other Building System – The interoperability between an NLC and another building system such as a BMS/EMS or HVAC system.

- NLC to NLC – The interoperability between an NLC to another different NLC system, often a different manufacturer's system.

Each of these areas have different challenges and opportunities.

Currently, most NLC systems are not interoperable, or only support low levels of interoperability with other building systems and other NLC systems. The lack of interoperability prevents efficiency opportunities while slowing technology adoption and innovation. For example, energy efficiency opportunities from connecting building systems, such as lighting to HVAC, or lighting to building management systems, are difficult or impossible to achieve without interoperability. From a customer and specifier perspective, proprietary, non-interoperable systems reduce customer choice, locking them in to single vendors while increasing costs of hardware and ongoing operations.

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[1] Michael Poplawski, "Control System Interoperability: Can We Talk?", DOE SSL Market Development Workshop Nov 13, 2014. https://www.energy.gov/sites/prod/files/2014/11/f19/poplawski_interoperability_detroit2014.pdf

Another challenge for customers relates to the number of individual systems in their buildings. Currently, a facility manager with a large portfolio has many dashboards, one for each proprietary system. They desire a single dashboard for lighting and also BMS; one per building or portfolio—even if various buildings have NLC systems provided by various manufacturers.

Further, building owners and facility managers want to maintain systems after installation and have the flexibility to expand later. For instance, in a new building addition, can the new NLC system cooperate with the old one?

All of these interoperability challenges create significant barriers to technology adoption. This is a current challenge for utility efficiency programs who are looking to expand their programs from widget-based incentives to broader, systems-based incentives. For example, utilities are looking to expand beyond luminaire rebates to NLC, and continue expanding to include HVAC BMS, plug loads, etc. These are key focus areas for utility efficiency programs moving forward.

Standards, Standardization, and APIs

To date, the market has evolved such that proprietary systems have proliferated and even most systems that claim to be interoperable and comply with standards have developed proprietary application layers that in effect make them not interoperable. Without standardization, many manufacturers are offering translator devices or APIs to support some (often limited) level of interoperability. APIs are evolving as a promising mechanism to support interoperability, but many are not open and available for use to support more interoperability.

From a standardization perspective, to support full interoperability, a standard should be:

- Comprehensive – Address all the potential use cases, performance, and data needs so that manufacturers don't need to develop proprietary versions

- Open – So that anyone and everyone can use the standard, develop systems around it, and also add to and improve the standard

- Certifiable – So that products can be tested to verify that they FULLY comply with the standard and therefore are interoperable with other products or systems that comply with the standard.

Similar criteria could be applied to APIs.

Scope of Work Description

The DLC is seeking a consultant to do research and outreach on interoperability, produce a publicly available report based on the research, and develop a multi-year strategy for DLC to drive greater levels of interoperability of systems listed on the NLC QPL. The DLC envisions the following activities that are further defined in the Task Descriptions.

1. Develop interoperability use cases and report
    a. Catalog interoperability use cases including definition, opportunity and value proposition, energy savings, and barriers for each.
    b. Prioritize use cases to top 5-10 based on market size and potential energy savings impact.
    c. Create a DLC public report on interoperability incorporating findings.

2. Develop a multi-year strategy for the DLC to drive greater interoperability of listed systems.

3. Disseminate findings.

4. Project management (ongoing throughout the project)

Various stakeholder groups will each have their own priorities, value propositions, and business objectives related to interoperability. Contractor will document these priorities, and hopefully find areas of overlap where the DLC can focus efforts. Stakeholders include:

- Small, medium, and large manufacturers of networked controls and/or luminaires
- Specifiers, architects, engineers, procurement agents
- End-users: building owners, facility managers, portfolio managers
- Utility efficiency programs and implementers
- Champions of standards including TALQ, D4i, BT Mesh 1.0, BACnet, Zhaga
- Cloud app developers such as bluepillar.com, LumiFi, etc.
- Distributers, contractors (lower priority)

Key Project Goal: Strategy by January 2020

The primary goal is to develop the DLC strategy by January 2020, so that the DLC can include a draft multi-year plan for interoperability in Draft 1 of the V5.0 NLC Technical Requirements, to be finalized by the end of January 2020.

Contractor may propose adjustments in other deliverables, if necessary, in order to meet this primary goal.

Tasks and Deliverables

Note: task numbers match the DLC's proposal for funding to Natural Resources of Canada (NRCan), excerpted at the end of this document. Contractor will maintain these task numbers to simplify reporting to NRCan—despite recent updates in the plan that have made some tasks non-sequential.

Task 1: Develop interoperability use cases and report
Contractor shall catalog interoperability use cases, prioritize them, and create a public report.

Task 1a: Catalog interoperability use cases
Contractor shall compile a list of current and potential NLC interoperability use cases. These use cases should be in the three areas of: NLC to Luminaire/Lamp/Sensor/Device, NLC to Other Building System, and NLC to NLC, as described previously. The DLC does not have an expectation of how many use cases there are; the list should be inclusive of all the most significant interoperability use cases in each area in terms of value propositions, but probably not more than 30. Each use case should be characterized in terms of definition, benefits and value proposition, energy savings (if applicable), and barriers/challenges.

- *Deliverable 1a:* Catalog of interoperability use cases including definition, benefits and value proposition(s), energy savings, and barriers for each
- Based on secondary research and phone interviews
- In a format amenable to the surveys in 1b, so that stakeholders will be able to prioritize use cases quickly
- While some use cases will be specific to lighting, the use cases should be generalized for IoT as feasible. For instance, if a use case can be applied to other IoT systems beyond lighting, it should be written in a generalized way with reference to edge devices; with the definition of edge devices including luminaires, wall stations, and sensors.

- Secure access to the NEMA ANSI C137 Committee website by completing a no-cost application to be an observer, in order to read working documents on standards under development for interoperability, energy reporting, and data dictionaries.

Task 1b: Prioritize use cases based on stakeholder input
Survey the DLC Technical Committee members for input from efficiency programs. Survey other stakeholders using contact lists developed by contractor. Surveys must include end-users (building owners, facility managers, portfolio managers). Architects and specifiers may also be considered. Prioritize use cases based on market size and potential energy savings impact.

- *Deliverable 1b:* Survey and outreach results and recommended 8-10 prioritized use cases for the DLC to focus on. Include full lists of contacts, organized by stakeholder group.

Task 1c: Public report
Create a publicly-available white paper on interoperability that educates stakeholders on what interoperability is, the importance for energy savings, issues and needs, and value propositions for various stakeholders, in terms of the primary use cases identified.

Task 2: Strategic plan
Develop a multi-year, phased strategic plan to support higher levels of interoperability in NLC systems listed on the DLC's NLC QPL. A phased approach is essential to allow time for manufacturers to change or upgrade their products to meet the new interoperability requirements.

- *Deliverables:* An internal report for the DLC and a PowerPoint presentation that the DLC can use as a basis for explanations of the plan to stakeholders.

Emphasis should be on the highest priority use cases, and on expansive use cases that integrate NLC systems with other electrical loads beyond lighting.

As an example of what the plan might include, the DLC could begin by defining and differentiating interoperable networked lighting control systems on its NLC QPL as part of a future specification revision. The interoperability level of each listed system could be *reported (optional)* first. Eventually, a basic level of interoperability could be required, in order for products to continue to be eligible for efficiency program rebates/incentives. The DLC has utilized this approach successfully in the past in advancing technological capabilities.

Also, if identified as a strategic priority, the DLC could develop and publish a model specification based on use cases. The end result would be a public template that enables end users to specify their performance requirements for interoperability for each of their projects, by addressing 1) dependencies, 2) responsible parties, and 3) required outcomes. As a publicly-available specification template, the document could resemble the DOE MSSLC model specification. However, unlike the MSSLC specification, this document would not describe all aspects of an NLC system. It would only describe performance related to interoperability. A draft specification outline is shown in Appendix A as a hypothetical starting point.

Task 3: Disseminate Findings
Write a blog article for the DLC website, summarizing and promoting the findings.

Hold 2 webinars with the DLC to promote the public report. Work with the DLC to extend invitations to all contacts from Task 1, plus additional stakeholder groups not surveyed (including distributers

and contractors). Create first drafts of the presentations, revise with the DLC, and present with the DLC.

Based on the Strategic Plan, work with the DLC to choose the main topic and audience for each webinar.

Task 4: Project Management
Track project progress to schedule and budget. Provide biweekly updates in meetings with DLC.

Schedule

Task	Draft	Completed	Output Deliverable
0	Kickoff online meeting with DLC	8/30/2019*	
1a	Research plan Research plan comments Draft final	9/11/2019 9/13/2019 9/30/2019	Catalog of use cases
1b	Draft 1 Draft 1 comments Draft final	10/18/2019 10/22/2019 10/30/2019	Prioritized use cases
2	Draft 1 Draft 1 comments Draft final PowerPoint	11/27/2019 12/9/2919 12/20/2019 ** 1/11/2020	Strategy report PowerPoint
1c	Draft 1 Draft 1 comments Draft final	1/24/2020 2/12/2020 2/28/2020	Public report
3a	Draft 1 Draft 1 comments Draft final	3/13/2020 3/20/2020 3/27/2020	Blog
3b	Webinar 1 Draft 1 Webinar 1 presentation	3/20/2019 Week of 3/30/2019	PowerPoint & webinar
3c	Webinar 2 Draft 1 Webinar 2 presentation	4/10/2019 Week of 4/20/2019	PowerPoint & webinar
4	Biweekly progress updates		Meeting minutes

* The DLC technical lead will be on vacation the first and second weeks of September.
** The strategy report should be available in time to incorporate into the NLC V5.0 Technical Requirements Draft 1 in January.

Research Questions for Strategic Plan

1. Should the DLC establish criteria for interoperability standards that we recognize (as reported, and maybe eventually as required) similar to new V4.0 criteria for cybersecurity standards? These criteria could consider some of the factors listed below:

    - Certification supports successful interoperation
        o Precisely predictable performance

- - Testing rigor
  - Comprehensiveness
    - Multiple use cases
    - Wide range of performance needs
    - Proprietary versions are unnecessary
  - Future proofing: expandable and backwards-compatible
  - Interchangeability: system performance is preserved when a component is substituted for a component from a different manufacturer
- Market size
  - Multi-vendor installations, successful and unsuccessful
  - Number of vendors and products in the marketplace
- Openness
  - Anyone can use and improve the standard

2. How to reorganize the QPL and the application to focus on answers relevant to interoperability? Possibly create a score to report the interoperability level of each listed system? Eventually require a minimum score?