2019 DLC
April 1 - 3 • St. Louis, MO
STAKEHOLDER MEETING
Energy Monitoring Discussion
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Energy Solutions
V4.0 Focus Areas

Interoperability

- The capability of lighting and/or building systems or components to connect to one another
- Unlocks new energy savings by connecting different systems
V4.0 Focus Areas

Energy Monitoring
- The capability of a system to measure and report the energy consumption
- Strengthens the value for utilities and customers
Desired Outcomes

- Lighting energy performance data becomes a standard feature in NLC systems
- More utilities provide more extensive support for NLC technology
- NLC systems are installed on more projects

Accelerated Technology Adoption and Energy Savings
Energy Data
Utility Program Poll 2/2019

Incentive Programs Using Energy Data
(of 18 respondents)

- Currently use energy data
- Might use energy data soon
- No plans for energy data
Energy Monitoring Plan

June 2018 V3

• Energy Monitoring is **Reported**.

June 2019 V4

• Energy Monitoring with data report is **Required**
• Accuracy is self-reported, unless the accuracy depends on manual input
• Option to reapply under V3 with 1-year grace period.

June 2020 V5

• Energy Monitoring Capability is **Required**
• Methods requiring manual input are not accepted, unless a new ANSI standard specifies the accuracy
• ANSI Standards for Accuracy and Data Model will be required after they become available
Summary of Comments Received

1. Different requirement/timeline for Room-level systems, and/or for systems with numerical manual input?

2. Incentive programs need 15-minute numerical interval data with headings
   1. “Event-based” not clearly defined, not scalable, not usable by incentive programs
   2. Graphical charts are not usable
   3. pick kWh or Wh

3. Just require “accurate data”, not 15 minute intervals
Updated Energy Monitoring Definition

• Automated energy measurement versus numerical manual input (both qualify this year, type is reported)

• Output data is either regularly spaced or state-change events. If regularly spaced, 15 minutes or less.

• Timestamped output data record via .CSV file and/or API.
Topics to address

1. In the absence of a current Interior standard for energy monitoring data, what are the minimum technical details that DLC should specify?
2. Should the energy monitoring requirements differ for Exterior vs. Interior?
3. Should the energy monitoring requirements be different for Room-level systems? If so, how to define?
# Topic 1: Data Guidelines

<table>
<thead>
<tr>
<th>Topic</th>
<th>Data Element</th>
<th>Definition</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site</td>
<td>NLC Manufacturer</td>
<td>The manufacturer of the NLC system</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NLC Product</td>
<td>The name of the NLC system</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Building/Business Type</td>
<td>The main business function pertaining to the portion of the building where the NLC system is installed</td>
<td>Select from ASHRAE 90.1-2016 Table 9.5.1</td>
</tr>
<tr>
<td></td>
<td>Baseline for NLC</td>
<td>The energy consumption condition without NLC enabled.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maximum Rated Power without Controls, in Watts</td>
<td>The maximum possible power consumption of the lighting system without any control strategy in effect. If a luminaire retrofit has occurred, this value is equal to the maximum rated power of the new luminaire(s).</td>
<td>Luminaire or zone level if feasible; else site level.</td>
</tr>
<tr>
<td>Energy</td>
<td>Reporting Interval, in minutes</td>
<td>The frequency an energy measurement is reported</td>
<td>15 minutes or less</td>
</tr>
<tr>
<td></td>
<td>Timestamp</td>
<td>Date and time of each energy measurement</td>
<td>Unix time or RFC 3339 time</td>
</tr>
<tr>
<td></td>
<td>Energy data</td>
<td>The actual energy reading that is reported</td>
<td>Wh or kWh</td>
</tr>
<tr>
<td></td>
<td>Nominal Accuracy</td>
<td>% accuracy of the energy data</td>
<td></td>
</tr>
<tr>
<td>Headings</td>
<td>For each field</td>
<td>Each type of data element is identified by a heading.</td>
<td></td>
</tr>
</tbody>
</table>
Topic 2: Interior vs. Exterior

• NEMA ANSI c136 and c137
Topic 3: Room-Level Systems

• Different requirement/timeline?
• If so, rationale?
• How to define a system that qualifies?