

Measure Information Template –

LED Night Lighting in Bathrooms

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2008 California Building Energy Efficiency Standards

PIER Program - EnergySoft, LLC

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Overview

Description	The California Lighting Technology Center (CLTC) research team developed two energy efficient bathroom lighting technologies that will save energy and improve safety in hotel bathrooms and related institutional applications. The first is a Motion Sensor Nightlight, targeted at retrofit applications. It is now a commercial product produced and distributed by The Watt Stopper as product WN-100. The second is a "Smart" Light Fixture (SLF), targeted at new construction or major renovations, to be produced and distributed by Speclight, a subsidiary of Lithonia Lighting. Both products reduce bathroom lighting energy use by about 50 to 75 percent.
Type of Change	The recommended language change would be to the Mandatory Measures section of 150 in the Standards. Currently, the Standards would not permit the use of this type of technology, since the LED does not meet the minimum efficacy requirements and therefore must be controlled by a motion sensor. This would defeat the purpose of the LED.
Energy Benefits	A field study of the product at the Sacramento Doubletree hotel demonstrated an average of 50% energy savings.
Non-Energy Benefits	This product provides an additional level of safety in bathroom applications because of the always on function. In addition, the LED feature can be tied into hotel emergency lighting systems to provide an additional measure of safety in power outages.
Environmental Impact	There is no significant environmental impact with the use of the LED technology.
Technology Measures	Measure Availability and Cost Both products described here are now available from at least one manufacturer. This measure template proposal simply proposes a slight change in language which would permit the use of this technology, thus prompting more widespread use by other manufacturers. Useful Life, Persistence and Maintenance The LED technology has a much longer life than the fluorescent light in these products. In addition, the product does not require any maintenance.
Performance Verification	There is no additional performance verification required with the use of this product.
Cost Effectiveness	The payback on this measure is 2-5 years when used in hotel room applications. It will probably be longer in conventional residential applications.
Analysis Tools	No energy savings claims are being requested for this technology.
Relationship to Other Measures	The residential standards also include a table for minimum efficacy requirements for high efficacy light fixtures.

Methodology

While the tests done with technology demonstrate a 2-5 year payback, based upon field measured energy savings, this proposal does not seek any credit in the Standards for the use of this technology. The purpose of this proposal is merely to permit the use of the technology, which has demonstrated energy savings over conventional bathroom lighting, through a slight change in the mandatory measures section.

Analysis and Results

This project has successfully met its objective in developing lighting technologies that save 50 to 70 percent of the lighting energy used in hotel and institutional bathroom applications. The project goals and scope have been exceeded with two technologies resulting in commercial products produced and distributed by the manufacturing partners of the project: a Motion Sensor Nightlight (WN-100) manufactured and distributed by The WattStopper and a “Smart” Lighting Fixture (SLF) manufactured and distributed by Speclight. The WN-100 was installed at the Sacramento Doubletree Hotel and resulted in 50% average savings. The SLF is currently in preparation for production. Several demonstration applications are being planned in hotel, dormitory, and assisted living facilities.

Recommendations

Summarize the specific recommendations for changing the Standards and/or the ACM Manuals. This section should have specific recommended language and contain enough detail to develop the draft standard in the next phase of work. Use the language from the relevant 2005 document(s), and use underlining to indicate new language and strikethroughs to show deleted language.

Material for Compliance Manuals

It is recommended that Table 150-C of the Standards as well as the table in section 2.17 in the Nonresidential Manual include an additional line item for lamps less than 5 watts, allowing 30 lumens per watt.

Table 0-1 – Standards Table 150-C

Lamp Power Rating	Minimum Lamp Efficacy
5 watts or less	30 lumens per watt
Over 5 watts to 15 watts	40 lumens per watt
Over 15 watts to 40 watts	50 lumens per watt
Over 40 watts	60 lumens per watt

Bibliography and Other Research

Information for this measure template has been taken from the PIER research project number 500-01-041-A10 report. This PIER report is available from the California Energy Commission's PIER group as an Adobe Acrobat file, and includes the detailed background and research related to this measure template proposal.

The hyperlink for this project is as follows:

http://www.archenergy.com/lrp/advlight_luminaires/project_4_1.htm