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Measure BLD-2

Changes to Lighting Power Density Values: Bringing Certain Values in Line with Standard 90.1

2008 California Building Energy Efficiency Standards

June 28, 2006

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Overview

Description	Both Title 24 and ASHRAE/IESNA 90.1 use similar analysis and decision making to set lighting power density standards, including a cost effectiveness test. For this reason, when there is a difference between similar standards, historically Title 24 values have been adjusted to meet comparable 90.1 values when it is confirmed that the assumptions and related issues including applicable exemptions and other potential differences are properly addressed. Note that because the area category and space-by-space methods differ in theory, the cross comparison is not as obvious as it might seem to the casual reviewer.
Type of Change	The Change affects certain lighting power density values in Tables 146-B, 146-C and 146-D, which are prescriptive lighting power allowances also used for baseline allowances in modeling. There is no other impact or change of scope.

Energy Benefits	Generally adjustments to Title 24 are only made when the corresponding 90.1 value is lower.
Non-Energy Benefits	There are no specific benefits.
Environmental Impact	There are no known adverse impacts.
Technology Measures	It is assumed that, because major analysis is performed only periodically for every value in the Standard, that because the technical basis of the current standards are similar, the lower value probably represents either (a) the latest technology and/or (b) a more recent or complete analysis.
Performance Verification	No field performance verification required.
Cost Effectiveness	The Measure is cost effective.
Analysis Tools	Standard analysis tools can be used to analyze this measure.
Relationship to Other Measures	The retail whole building value is proposed to be reduced under BLD-1 and it is the same as ASHRAE with the proposed change.

Methodology

A comparison of 90.1 whole building and Title 24-2005 whole building lighting power density allowances (LPDA) is made, and a comparison of 90.1 space-by-space and Title 24-2005 area category LPDA's is separately made. Each difference is reviewed using basic analysis models and the analyst's design experience.

Analysis and Results

The fact that a lower LPDA for a comparable quantity is contained in 90.1 is considered *prime fascia* evidence that the LPDA is reasonable and cost effective. There is no further analysis.

Recommendations

A reduction in allowed lighting power density according to the following tables is recommended.

New definitions will need to be added for parking garages to define the parking area separate from the ramp and entry.

Table 146-B

Convention Centers	1.3	1.2
Office Buildings	1.1	1.0
Parking Garage	0.4††	0.3

Table 146 –C

Auto Repair	1.1 **	0.9**
Office	1.2	1.1
Parking Garage		
Parking Area	†	0.2
Ramps and Entries	†	0.6

† No existing value

†† Value previously in table 146-C

*Not Recommended for Change:**Hotels and Motels are 1.4 in Title 24 and 1.0 in 90.1, but 90.1 does not count portable lighting and regulates guest quarters.***Material for Compliance Manuals**

The manual needs to address parking garages in greater detail.

Bibliography and Other Research

Technical data as follows:

IESNA LEM-1-05 (Lighting Portion of 90.1-2004)

California Title 24 Part 6 Section 146

Testimony of John Hogan at hearing May 19, 2006

Appendices

None