**Code Amendment Proposal Form**

For public amendments proposed to the 2018 editions of the International Codes

**Instructions:** Upload this form and all accompanying documentation at [www.denvergov.org/BuildingCode](http://www.denvergov.org/BuildingCode). If you are submitting your proposal on a separate sheet, make sure it includes all information requested below.

All proposals must be received by **April 26, 2019**.

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**CONTACT INFORMATION**

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Signature: [Signature]

Co-proposed by:  
Amber Wood, Denver Department of Public Health and Environment  
Jim Meyers, Southwest Energy Efficiency Project

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**AMENDMENT PROPOSAL**

Please use a separate form for each proposal.

1) Code(s) associated with this proposal. Please use acronym: **IECC**

If you submitted a separate coordination change to another code, please indicate which code: ___________________________


<table>
<thead>
<tr>
<th>Acronym</th>
<th>Code Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBC-xxxx</td>
<td>Denver Building Code–xxxx (code) amendments (e.g., DBC-IBC, DBC-IEBC)</td>
</tr>
<tr>
<td>IBC</td>
<td>International Building Code</td>
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<tr>
<td>IEBC</td>
<td>International Existing Building Code</td>
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<tr>
<td>IECC</td>
<td>International Energy Conservation Code</td>
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<td>IFC</td>
<td>International Fire Code</td>
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<td>IFGC</td>
<td>International Fuel Gas Code</td>
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<td>IGCC</td>
<td>International Green Construction Code</td>
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<td>IMC</td>
<td>International Mechanical Code</td>
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<tr>
<td>IPC</td>
<td>International Plumbing Code</td>
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<tr>
<td>IRC</td>
<td>International Residential Code</td>
</tr>
</tbody>
</table>

2) Please check here if a separate graphic file is provided: ☐

*Graphics may also be embedded within your proposal below.*

3) Use this template to submit your proposal or attach a separate file, but please include all items requested below in your proposal. The only formatting needed is **BOLDING, STRIKEOUT AND UNDERLINING**. Please do not provide additional formatting such as tabs, columns, etc., as this will be done by CPD.

**Code Sections.Tables/Figures Proposed for Revision:**

IECC R202 & R404.1

**Proposal:**

*Modify the definition of High-Efficacy Lamps as follows:*
HIGH-EFFICACY LAMPS LIGHT SOURCES. Compact fluorescent lamps, light-emitting diode (LED) lamps, T-8 or smaller diameter linear fluorescent lamps, or other lamps with an efficacy of not less than 65 lumens per watt, or luminaires with an efficacy of not less than 45 lumens per watt, the following:

1. 60 lumens per watt for lamps over 40 watts.
2. 50 lumens per watt for lamps over 15 watts to 40 watts.
3. 40 lumens per watt for lamps 15 watts or less.

Modify the Section as follows:

R404.1 Lighting equipment (Mandatory). Not less than 90 percent of the permanently installed lighting fixtures shall be or contain only high-efficacy lamps, light sources.

Supporting Information:

Purpose:

The purpose of this proposal is to improve the efficiency of interior lighting in homes.

Reason:

The lighting section includes a requirement for a minimum percentage of "high efficiency lamps." However, the definition of "high efficacy lamps" has not been updated to reflect the changes in the market due to increased federal minimums and greater availability/affordability of LED lighting. Because of this, the code is actually becoming less stringent as the baseline for lighting equipment is raised.

The proposal solves this problem by updating the definitions with lighting requirements that reflect what is actually "high-efficacy" in today's market. The proposal also simplifies the definition by reducing the number of wattage categories. The categories in the residential code are an artifact of incandescent and early compact fluorescent lamp wattages. As lamps have gotten more efficient, the higher wattage categories have become less meaningful. As lamps have gotten more efficient, the higher wattage categories have become less meaningful. Even a “100W equivalent” LED lamp generally uses 15W or less, which is the middle category in the existing definition.

The proposal also accommodates high efficacy luminaires. Many luminaires on the market do not include lamps and include integrated LEDs instead. The way the current code language is written, these efficient lighting products cannot be used to meet the lighting efficiency requirements in the code. The proposal changes the term in the definition to be more inclusive, adds an efficacy requirement for integrated luminaires, and updates the code language to reflect this update.

Referenced Standards:

NA

Impact:

The effect of the proposal on the cost of construction: ☒ Increase ☐ Reduce ☐ No Effect

- This change could potentially increase the cost of construction because it requires higher efficacy lighting (lamps and/or fixtures), which will likely eliminate some lower-end CFL options and/or push builders to newer LED technologies. However, the cost of LEDs has been steadily declining over the last several years and is expected to continue to decline. Based on an analysis by the U.S. Department of Energy’s Building Energy Codes Program conducted during the 2018 IECC Code Development cycle, the estimated and projected prices for LEDs were $4.84 per lamp compared to CFLs at $3.10 per lamp. However, the rapid expansion of the LED lighting market has changed the economics. A spot check of Home Depot in early 2019 showed that a warm white, 60W equivalent A-lamp is as low as $1.24 for both CFL and LED when purchased in packs. And, LEDs are actually cheaper than CFLs at some sources. At 1000bulbs.com, on online retailer, the same lamps are $1.79/bulb for CFL and $0.99 for LED. Therefore, this code change may actually reduce the cost of construction.

The effect of the proposal on the cost of design: ☐ Increase ☐ Reduce ☒ No Effect

Is the proposal more or less restrictive than the I-codes: ☒ More ☐ Less ☐ Same

Departmental Impact: (To be filled out by CPD staff)
Note: CITY STAFF ONLY. Discuss the impact of this proposal in this section AND indicate the impact of this amendment proposal for each of the following:

- The effect of the proposal on the cost of review:  
  - [ ] Increase  
  - [ ] Reduce  
  - [ ] No Effect

- The effect of the proposal on the cost of enforcement/inspection:  
  - [ ] Increase  
  - [ ] Reduce  
  - [ ] No Effect