DENVER AMENDMENT PROPOSAL FORM
FOR CPD INTERNAL PROPOSALS TO THE 2016 DENVER BUILDING CODE AMENDMENTS AND THE 2018 INTERNATIONAL CODES

2018 CODE DEVELOPMENT CYCLE

1) Name: Daniel Krausz  Date: 5/10/19

2) Proposals should be drafted in Word with the only formatting that is needed being **BOLDING**, STRIKEOUT AND UNDERLINING. Please do not provide additional formatting such as tabs, columns, etc.

   Please use a separate form for each proposal submitted.

   Is separate graphic file provided?  ☐ Yes  ☒ No

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Code Name</th>
<th>Acronym</th>
<th>Code Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBC- xxx</td>
<td>Denver Building Code– xxx code base</td>
<td>IMC</td>
<td>International Mechanical Code</td>
</tr>
</tbody>
</table>

AMENDMENT PROPOSAL

Please provide all of the following items in your amendment proposal.

**Code Sections/Tables/Figures Proposed for Revision:**
2018 IECC Section C505.1 General

**Note:** If the proposal is for a new section, indicate (new).
Proposal:

Revise as follows:

**Section C505.1 General initial sentence is replaced as follows and Table C505.1 is added**

**C505.1 General.** Spaces undergoing a change in occupancy that would result in an increase in demand for either fossil fuel or electrical energy to a higher energy-demand category (higher number) as shown in Table C505.1 shall comply with the requirements of this code for new construction.

**TABLE C505.1**

<table>
<thead>
<tr>
<th>ENERGY-DEMAND CATEGORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 (highest energy-demand)</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

**Exception:**
Where it is calculated that the change in occupancy or the alterations will not result in an increase in demand for fossil fuel and electrical energy, the space shall comply with the requirements of this code for alterations.

**Note:** Show the proposal using **strikeout, underline format.** At the beginning of each section, one of the following instruction lines are also needed:

- Revise as follows
- Add new text as follows
- Delete and substitute as follows
- Delete without substitution
Supporting Information:

Note: This amendment was vetted by Danny Boncich.

Purpose of the amendment:
This Section is sorely missing objective and uniform criteria for its application. Because it represents a monumental requirement for existing buildings, when applied unequally or unreasonably, it results in an unfair burden to existing buildings. Adaptive-reuse is an environmental and energy conserving practice and, in the Denver market costs for new construction are high, reuse of attractive buildings in prime locations (such as LODO & RINO) often present a more affordable alternative. However, the random application of this Section discourages the reuse of existing buildings.

The intent of this Section:
Section C505.1 asserts that approval of a new occupancy or use may not inherently constitute approval of an increase in the building’s energy-waste from existing deficiencies of the building thermal envelope and mechanical and plumbing systems. The increase in waste resulting from an inefficient building is directly tied to an increase in energy-demand. For example, if an existing building is 20% less efficient than is required by code and the demand on the building systems is increased by 50% the approval of the new occupancy is allowing an increase in energy-waste of 10%. Although energy-inefficiencies from existing building thermal envelopes and systems are ‘grandfathered-in,’ this is limited to the previously permitted right to occupy the building for the level of energy-demand associated with the occupancy. When undergoing a change of occupancy, a right for increased energy-demand can be conferred on what was previously a low-energy use. Were the building were not made energy-efficient, significant additional energy-waste would be conferred with the new right. The Section therefore requires compliance with IECC where approval of a new occupancy classification inherently and objectively paves the way for a likely increase in energy-demand, present or future, that is typically associated with the new occupancy type as compared with the energy-demand typically associated with the previously permitted occupancy.

The deficiency in the Section as it exists:
In the first sentence, the Section intends to establish a significant threshold for the additional requirement. However, whether an occupancy change would result an increase in energy demand is subjective and the requirement is often applied to a broader spectrum of occupancy changes than intended. This happens when it is merely possible that the change will result in increased energy-demand (since previous demand isn’t typically known) or when the project includes new energy-loads - even when they’re not associated with the occupancy change and weren’t intended to trigger the requirement.

The solution:
This amendment proposes a standard for comparing the level of energy-demand inherently associated with one occupancy to that of another in the same way that the IEBC, in Chapter 10, limits rights associated with a previously permitted occupancy to that occupancy’s hazard-category (or a less-hazardous category considered to be included with previous rights). This amendment employs a Table to present a hierarchy of occupancies based on the level of energy-demand inherent to the occupancy classification. The code then limits previous rights to the occupancy’s energy-demand category (or less), as intended.

Substantiation:
The hierarchy in the proposed Table uses the occupant density (informed by IBC Table 1004.5) and ventilation rates (informed by the IMC) of the function associated with each occupancy type to determine whether the occupancy change requires that the energy-demand be increased. Increasing the occupant load of a space will increase code-required ventilation and hot-water – both of which are regulated by the IECC. The IECC also regulates the building thermal envelope. However, thermal envelope inefficiencies increase the energy-demand only when accompanied by an increased ventilation rate.

Equipment loads and ventilation for purposes other than human occupancy were not considered when compiling this Table for two reasons; Firstly, changes to these loads are not inherent to the occupancy classification. For example, an F-1 manufacturing facility shellng peanuts can be used as for a grow-facility under the same occupancy and use without requiring that the existing building comply with the IECC. This is regardless of the very significant difference in energy-consumption associated with the manufacturing processes. The second reason these loads were not considered is that the IECC does not regulate these loads in new buildings. IECC Section 4301.1.1 requires ventilation-loads to be calculated per ANSI/ASHRAE/ACCA Standard 183 which bases ventilation on human occupancy and IECC Section C405 does not limit electrical power to equipment.

Note: The following items are required to be included:
**Purpose:** The proponent shall clearly state the purpose of the proposed amendment to physical, environmental and customary characteristics that are specific to the City and County of Denver (e.g., clarify the Code; revise outdated material; substitute new or revised material for physical, environmental and customary characteristics; add new requirements to the Code; delete current requirements, etc.)

**Reasons:** The proponent shall justify changing the current Code provisions, stating why the proposal is necessary to reflect physical, environmental and customary characteristics that are specific to the City and County of Denver. Proposals that add or delete requirements shall be supported by a logical explanation which clearly shows why the current does not reflect physical, environmental and customary characteristics that are specific to the City and County of Denver and explains how such proposals will improve the Code.

**Substantiation:** The proponent shall substantiate the proposed amendment based on technical information and substantiation. Substantiation provided which is reviewed and determined as not germane to the technical issues addressed in the proposed amendment shall be identified as such.

**Bibliography** (as needed): The proponent shall submit a bibliography when substantiating material is associated with the amendment proposal. The proponent shall make the substantiating materials available for review.

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**Referenced Standards:**

List any new referenced standards that are proposed to be referenced in the code.

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**Impact:**

Click or tap here to enter text.

*Note:* The proponent shall discuss the impact of the proposed amendment and indicate one of the following for each point below regarding the amendment proposal:

- The effect of the amendment proposal on the cost of construction;  
  - Increase  ☒ Reduce  ☐ No Effect

- The effect of the amendment proposal on the cost of design;  
  - Increase  ☒ Reduce  ☐ No Effect

- Is the amendment proposal more- or less-restrictive than the I-Codes;  
  - More  ☐ Less  ☒ Same

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**Departmental Impact:**

Click or tap here to enter text.

*Note:* The proponent shall discuss the impact of the proposed amendment and indicate one of the following for each point below regarding the amendment proposal:

- The effect of the amendment proposal on the cost of review;  
  - Increase  ☒ Reduce  ☐ No Effect

- The effect of the amendment proposal on the cost of enforcement/inspection;  
  - Increase  ☐ Reduce  ☒ No Effect