Code Amendment Proposal Form

For public amendments proposed to the 2021 editions of the International Codes

Instructions: Upload this form and all accompanying documentation. If you are submitting your proposal on a separate sheet, make sure it includes all information requested below.

All proposals must be received by July 23, 2021.

CONTACT INFORMATION

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Organization or Representing Self: Group14 Engineering

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Signature:

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>
<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>
<td>IFGC</td>
<td>International Fuel Gas Code</td>
</tr>
<tr>
<td>IBC</td>
<td>International Building Code</td>
<td>IRC</td>
<td>International Residential Code</td>
</tr>
<tr>
<td>IEBC</td>
<td>International Existing Building Code</td>
<td>IMC</td>
<td>International Mechanical Code</td>
</tr>
<tr>
<td>IECC</td>
<td>International Energy Conservation Code</td>
<td>IPC</td>
<td>International Plumbing Code</td>
</tr>
<tr>
<td>DGC</td>
<td>Denver Green Code</td>
<td>DGC</td>
<td>Denver Green 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:
C202 (new), C401.2 (new), C407.2

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

Proposal:

Section C407.2 Mandatory requirements is replaced as follows:
C407.2 Mandatory requirements. Compliance based on total building performance requires that a proposed design meet all of the following:

1. The requirements of the sections indicated within Table C407.2.
2. The building energy cost or site EUI shall be equal to or less than 76 percent of the standard reference.
design building for mixed-fuel buildings and 81 percent for all-electric buildings. Energy prices shall be taken from a source approved by the code official, such as the Department of Energy, Energy Information Administration’s State Energy Data System Prices and Expenditures reports. Code officials shall be permitted to require time-of-use pricing in energy cost calculations. The reduction in energy cost of the proposed design associated with on-site renewable energy shall be not more than 5 percent of the total energy cost. The amount of renewable energy purchased from off-site sources shall be the same in the standard reference design and the proposed design.

Add the following definition to Section C202:

Proposed Energy Use Intensity (pEUI): the annual site energy use of the proposed design utilizing a whole building energy model per square foot in units of kBTU/sq.ft of building floor area.

Modify the section as follows:

C401.2 Application. Commercial buildings shall comply with C401.2.1 or C401.2.2.

C401.2.1 Total Building Performance. The Total Building Performance option requires compliance with section C407 and the fixed performance target.

C401.2.2 ASHRAE 90.1. Commercial buildings shall comply with one of the following:

1. The requirements of Appendix G of ANSI/ASHRAE/IESNA 90.1, as modified by Section C407.
2. The fixed performance target, as modified by Section C407

C407.4 Compliance based on fixed performance target. Energy use for the proposed design shall be reported to the code official as proposed energy use intensity (pEUI) in kBtu/sf/yr.

C407.4.1 Fixed Performance Target. Projects of the types listed in Table C407.3.2 may use the EUI targets identified in the table. The proposed building model proposed performance will be demonstrated using the energy modeling procedures for the proposed building performance in Appendix G of ASHRAE 90.1-2016, as modified in Section C407. Buildings with multiple occupancy types listed in Table C407.3.2 shall develop a performance target based on a weighted-average EUI calculated by floor area of each occupancy type.

Table C407.4.1 Fixed EUI Targets

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Performance Targets (kBtu/ft2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-Rise and Mid-Rise Multifamily (R-2) Up to 7 stories</td>
<td>TBD*</td>
</tr>
<tr>
<td>High-Rise Multifamily (R-2) 8 or more stories</td>
<td>TBD*</td>
</tr>
<tr>
<td>Small Hotel (R-1) 0-100,000</td>
<td>TBD*</td>
</tr>
<tr>
<td>Large Hotel (R-1) 100,000 sf and larger</td>
<td>TBD*</td>
</tr>
<tr>
<td>Healthcare/Hospital</td>
<td>TBD*</td>
</tr>
<tr>
<td>Small and Medium Office (Group B)</td>
<td>TBD*</td>
</tr>
<tr>
<td>Up to 100,000 sf</td>
<td>TBD*</td>
</tr>
<tr>
<td>Large Office (Group B) 100,000 sf and larger</td>
<td>TBD*</td>
</tr>
<tr>
<td>Restaurant</td>
<td>TBD*</td>
</tr>
</tbody>
</table>
C407.4.2 Energy modeling procedures when following the Fixed Performance Target. All projects using the Fixed Performance Target pathway must use energy modeling best practices and engineering judgement to more accurately predict the performance of the building. This includes but is not limited to schedules and occupancy that reflect the most likely scenario for building use by zone, envelope thermal bridges, infiltration assumptions that match air barrier requirements, HVAC equipment de-rating for elevation, and inclusion of all energy consumption on site, such as but not limited to pools, spas, exterior radiant heat and snowmelt.

C407.4.3 The reduction in energy of the proposed design associated with on-site renewable energy is not limited when following the Fixed Performance Target.

C407.4.4 Excluded energy use. Energy used for data centers and EV charging equipment may be excluded from the total EUI of the building.

*Further analysis is needed to calculate the performance targets. It is recommended that the analysis used for determining the Denver Target Adjustment (DTA) and Site Energy Building Performance Factor (SEBPF) is also used to set the fixed EUI targets per building along with the Energize Denver Targets established for 2030. If possible, it is recommended to have a scaling factor for operational changes from the norm (office schedules at 24/7 vs 8-5 M-F). Also, consider excluding large process loads such as on-site laundry and pools if they are not included in the pEUI target calculation process.

Note: Show the proposal using strikethrough, underline format. At the start of each section, give one of the following instructions:
• Revise as follows:
• Add new text as follows:
• Delete and substitute as follows:
• Delete without substitution:

Supporting Information:
• **Purpose:** To incentivize all-electric buildings to help meet Denver’s carbon reduction goals and remain on track for Denver’s energy savings goals. To align new construction energy compliance metrics with Energize Denver to help meet Denver’s carbon reduction goals and remain on track for Denver’s energy savings goals. Please note that this proposal is written to align with the “Limit Modeling to Appendix G” proposal.
• **Reasons:** The 2021 IECC and current Denver Amendments do not provide any incentive for projects to pursue all-electric design. This would substantially increase interest in all-electric buildings in Denver. Increasing the energy savings beyond the current 24%, or proposed 21% for all electric, is not necessary to keep on track for Denver’s energy savings goals due to the 2021 IECC having 9.38% energy cost savings over the 2018 IECC. Projects can meet Denver energy code without meeting the necessary EUI to meet Energize Denver. This amendment would align Energize Denver and the Denver Energy Code.
• **Substantiation:** The 2020 City of Boulder Energy Conservation Code Section C407.4.1 includes a 5% reduction in necessary energy savings for code compliance for all electric buildings. The DOE found that the 2021 IECC has 9.38% site energy savings and 8.66% energy cost savings compared to 2018 IECC. The 2020 City of Boulder Energy Conservation Code Section C407.3.2 has a fixed performance target pathway. Energize Denver is setting 2030 target EUI’s that buildings have to perform to. It makes sense to align the energy code with Denver’s existing building targets so that buildings comply with the 2030 targets and do not have to invest more later to meet the targets or pay penalties.
• **Bibliography:** Include a bibliography when substantiating material is associated with the amendment proposal. The proponent shall make the substantiating materials available for review.

Referenced Standards:

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

Impact:
**Note:** 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 construction: ☐ Increase ☒ Reduce ☐ No Effect
- 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