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. 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.

CONTACT INFORMATION

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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>
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</thead>
<tbody>
<tr>
<td>DBC-xxxx</td>
<td>Denver Building Code–xxxx (code) amendments (e.g., DBC-IBC, DBC-IEBC)</td>
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<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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<td>IPC</td>
<td>International Plumbing Code</td>
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<tr>
<td>IRC</td>
<td>International Residential Code</td>
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</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 C103.2, C402.5.1

**Proposal:**
Revise the sections as follows:

**C103.2 Information on construction documents.** Construction documents shall be drawn to scale on suitable material. Electronic media documents are permitted to be submitted where approved by the code official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in sufficient detail pertinent data and features of the building, systems and equipment as herein governed. Details shall include, but are not limited to, the following as applicable:

1. Insulation materials and their R-values.
2. Fenestration U-factors and solar heat gain coefficients (SHGCs).
3. Area-weighted U-factor and solar heat gain coefficient (SHGC) calculations.
4. Mechanical system design criteria.
5. Mechanical and service water heating systems and equipment types, sizes and efficiencies.
7. Equipment and system controls.
8. Fan motor horsepower (hp) and controls.
9. Duct sealing, duct and pipe insulation and location.
10. Lighting fixture schedule with wattage and control narrative.
11. Location of daylight zones on floor plans.
12. Air barrier and air sealing details, including the location of the air barrier.

**C402.5.1 Air barriers.** A continuous air barrier shall be provided throughout the building thermal envelope. The air barriers shall be permitted to be located on the inside or outside of the building envelope, located within the assemblies composing the envelope, or any combination thereof. The air barrier shall comply with Sections C402.5.1.1, C402.5.1.2 and C402.5.1.3.

Exception: Air barriers are not required in buildings located in Climate Zone 2B.

Add new Section as follows:

**C402.5.1.3 Building envelope performance verification.** The installation of the continuous air barrier shall be verified by a registered design professional or approved agency in accordance with the following:

1. A review of the construction documents and other supporting data shall be conducted to assess compliance with the requirements in Sections C402.5.1.
2. Inspection of continuous air barrier components and assemblies shall be conducted during construction while the air barrier is still accessible for inspection and repair to verify compliance with the requirements of Sections C402.5.1.1 and C402.5.1.
3. A final commissioning report shall be completed by the registered design professional or approved agency and provided to the building owner or owner’s authorized agent and the code official. The report shall identify deficiencies found during the review of the construction documents and inspection and details of corrective measures used.

**Supporting Information:**

**Purpose:**

The purpose of this proposal is to improve the air leakage rates of commercial buildings through requiring third-party verification of the air barrier installation.

**Reason:**

The testing path for infiltration in the IECC requires a leakage rate of 0.40 CFM/sf @ 75PA. However, according to “Achieving the 30% Goal: Energy and Cost Savings Analysis of ASHRAE Standard 90.1-2010” prepared by the Pacific Northwest National Lab, the prescriptive air barrier requirements currently used in the IECC only achieve 1.0 CFM/sf @ 75Pa. The prescriptive path is therefore not achieving the level of performance achieved by the testing path. The code requires that air barrier materials meet 0.40 CFM/sf @ 75Pa, so the issue is with installation. This proposal narrows that gap by requiring verification of the air barrier during construction and reporting back to the owner and code official in a manner similar to existing acceptance testing requirements, thereby ensuring better air barrier installation without actually requiring testing. It will also help ensure that buildings that select the testing path have their air barriers installed in a manner that will support meeting the requirements of infiltration testing.

The proposal includes a sequence of requirements to ensure both effectiveness, ease of implementation and ease of enforcement. Key among these is a requirement that the inspection occur while remediation of errors can still be remedied. Submission of the report to the code official and the owner will ensure that the process has been followed.

**Savings:**
According to Evan Mills, PhD, a researcher at Lawrence Berkeley National Laboratory, savings associated with using BECx from both maintenance and energy savings average about 16% for existing buildings and 13% for new construction (“Calculating the ROI of building enclosure commissioning.” Building Design + Construction. June 28, 2013.)

Referenced Standards:

NA

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

Impact:

The effect of the proposal on the cost of construction: ☒ Increase ☐ Reduce ☐ No Effect
  ● Evan Mills, PhD, a researcher at Lawrence Berkeley National Laboratory studied the benefits of BECx, noting that commissioning only costs about $1.16/sf for new construction, with a payback period of as little as 14 months.

The effect of the proposal on the cost of design: ☒ Increase ☐ Reduce ☐ No Effect
  ● There may be a minor increase in the cost of design due to the fact that a higher quality of detailing will be required in order to ensure that the building meets the requirement.

Is the proposal more or less restrictive than the I-codes: ☒ More ☐ Less ☐ Same
  ● Since the prescriptive path delivers significantly poorer infiltration than the testing compliance path, this proposal will increase stringency.

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