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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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></td>
<td>(e.g., DBC-IBC, DBC-IEBC)</td>
<td>IGCC</td>
<td>International Green Construction Code</td>
</tr>
<tr>
<td>BC</td>
<td>International Building Code</td>
<td>IMC</td>
<td>International Mechanical Code</td>
</tr>
<tr>
<td>EBC</td>
<td>International Existing Building Code</td>
<td>IPC</td>
<td>International Plumbing Code</td>
</tr>
<tr>
<td>ECC</td>
<td>International Energy Conservation Code</td>
<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:**

C403.7.4 Energy Recovery ventilation systems

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

**Proposal:**

Revise text:

C403.7.4 Energy recovery ventilation systems (Mandatory).

Where the supply airflow rate of a fan system exceeds the values specified in Tables C403.7.4(1) and C403.7.4(2), the system shall include an energy recovery system. The energy recovery system shall be configured to provide a change in the enthalpy of the outdoor air supply of not less than 50 percent of the difference between the outdoor air and return air enthalpies, at design conditions. Where an air economizer is required, the energy recovery system shall include bypass dampers on supply and exhaust air or controls that permit operation of the economizer as required by Section C403.5. Maximum heat exchanger pressure drop is 0.6 in. w.g. at sea level and standard density per table C403.8.1(2), and the supply and exhaust fan static efficiency must be 65% or greater.

**Note:** Show the proposal using **strikeout**, **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:** Close the loophole that allows high pressure drop heat exchangers and low efficiency fans, making energy recovery a net energy user.

**Reasons:** High heat recovery pressure drop or low fan efficiency can make energy recovery systems net energy users. Clarify the maximum heat exchanger pressure drop allowed by table C403.8.1(2) is 0.6”. Clarify that heat recovery bypass dampers are required on both supply and exhaust if controls can’t inhibit heat recovery in economizer bypass on one side only can cause over heating in economizer mode. Require that fan static efficiency must be 65% or greater.

Energy analysis was done for energy recovery units with a typical 12 hour a day, 5 day a week occupancy, assuming 55 deg cooling setpoint, and 75 deg return air temp in the summer and 60 deg heating setpoint, with 68 deg return air temp in the winter. When fan efficiency was below 65%, or the heat wheel pressure drop was above 0.6” Carbon reduction was in the 50 – 70% range, however paybacks often greatly exceeded 10 years.

Limiting the pressure drop to 0.6” and having a minimum fan efficiency of 65% dropped paybacks under 10 years.

**Substantiation:** Available on request

**Bibliography:**

**Note:** This section MUST include these items:

- **Purpose:** 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. to reflect physical, environmental and customary characteristics that are specific to the City and County of Denver)

- **Reasons:** Clearly justify the change to 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 that clearly shows why the current code does not reflect physical, environmental and customary characteristics that are specific to the City and County of Denver and explains how such proposal will improve the code.

- **Substantiation:** 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:** 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:**

65% static efficiency fans are readily available and heat exchangers with pressure drops at or below 0.6” are also readily available in both packaged and custom equipment. Fan efficiencies in table C403.8.1(2) are based on 65% efficiency, so no impact should be felt.

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: ☒ No Effect
- The effect of the proposal on the cost of design: ☒ No Effect
- Is the proposal more or less restrictive than the I-codes: ☒ More

**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