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-IIBC)</td>
<td>IMC</td>
<td>International Mechanical Code</td>
</tr>
<tr>
<td>BC</td>
<td>International Building Code</td>
<td>IPC</td>
<td>International Plumbing Code</td>
</tr>
<tr>
<td>EBC</td>
<td>International Existing Building Code</td>
<td>IRC</td>
<td>International Residential Code</td>
</tr>
<tr>
<td>ECC</td>
<td>International Energy Conservation Code</td>
<td></td>
<td></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:

<table>
<thead>
<tr>
<th>IECC Table 403.7.4(2)</th>
</tr>
</thead>
</table>

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

#### Proposal:

Revise Section as follows:

C403.7.4 Energy recovery ventilation systems (Mandatory). Where the supply outside airflow rate of a fan system exceeds the values specified in modified Tables C403.7.4(1) and C403.7.4(2), or the exhaust exceeds three times the outside air values as listed in modified Table C403.7.4(2) exhaust row, 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 or controls that permit operation of the economizer as required by Section C403.5

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**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:** Code Clarification and simplification.

**Reasons:** Changing the wording “less than” to “more” simplifies a double negative.

The current table focuses on outside air percentages and supply fan volumes to calculate outside air volumes and is confusing to many people. The proposed table simplifies the outside air volumes where energy recovery is required in terms of % and outside air volume, removing the supply fan volume from the equation. This simplification allows the code to also look at exhaust flows as well. 2018 IECC currently mandates that 80 cfm of OA at 80% OA should have heat recovery. By adding an exhaust row for exhaust requirement at three times the outside air requirement, it holds that a space with 240 cfm of exhaust served by a unit with 80% outside air should definitely have heat recovery.

The current code which states exception 8 to C403.7.4 “Where the largest source of air exhausted at a single location at the building exterior is less than 75 percent of the design outdoor air flow rate.” Unfortunately, a work around to not use energy recovery on projects is to exhaust two separate air paths at 50% each, which was not the intent of the code, but is often used to contradict the intent of the code. If exhaust air volumes are taken into account as well as outside air volumes, then energy recovery will be employed more often.

This simplifies the analysis so that if say a system has 10% outside air and an outside airstream of 500 cfm, then energy recovery needs to be provided, or if the exhaust is 1,500 cfm and the unit serving that area has 10% outside air then energy recovery is required.

Example 1. Currently an application for 8,000 hours at 2,500 cfm supply fan with 250 cfm of outside air would land in the 10% outside air, column, requiring energy recovery. However, under the proposed code, heat recovery would be required at 500
cfm of outside air, or 1,500 cfm of exhaust air at a single location.
Example 2. If there is a 100% outside air unit with 20,000 cfm of outside air and 16,000 cfm of exhaust air running more than 8,000 hours a year, which is exhausted by two exhaust fans at 8,000 cfm each, under existing code, exemption 8 could have been triggered, negating the requirement to do energy recovery. Now it would be required as a result of changing the terminology to Outside or Exhaust Air.

Substantiation: The author has seen where energy recovery is required by code, but two exhaust fans are installed to “get around” the intent of the code. Energy use is then much higher, as well as carbon emissions.

Bibliography: None

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:

None

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

### Impact:

Although the effect is less restrictive in the sense that in some cases the requirements to do energy recovery increased in size at lower outside air volumes, the code is simplified.

In another sense it better enforces the intent of the code, which is to require energy recovery at the airflow volumes tabled and this proposal limits the ability to “work around the code” and not provide energy recovery, thereby saving energy and drastically reducing carbon emissions (in the 30 – 60% range).

**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