**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.**

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**CONTACT INFORMATION**

<table>
<thead>
<tr>
<th>Name</th>
<th>Michael Fulton, PD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>7/17/21</td>
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</tr>
</tbody>
</table>

**Organization or Representing Self:** Western Mechanical Solutions, LLC.

*By signing below, I hereby grant and assign to City and County of Denver all rights in copyright I may have in any authorship contributions I make to City and County of Denver in connection with this proposal. I understand that I will have no rights in any City and County of Denver publications that use such contributions in the form submitted by me or another similar form and certify that such contributions are not protected by the copyright of any other person or entity.*

**Signature:**

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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>
</tr>
</thead>
<tbody>
<tr>
<td>DBC-xxxx</td>
<td>Denver Building Code–xxxx (code) amendments (e.g., DBC-IBC, DBC-IEBC)</td>
</tr>
<tr>
<td>IBC</td>
<td>International Building Code</td>
</tr>
<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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<tr>
<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>IRC</td>
<td>International Residential Code</td>
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<tr>
<td>IMC</td>
<td>International Mechanical Code</td>
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<tr>
<td>IPC</td>
<td>International Plumbing Code</td>
</tr>
<tr>
<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:**

New Section C403.3.3 HVAC Equipment Air source heat pump requirements

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

**Proposal:**

Add new text as follows:

C403.3.3 HVAC Equipment Air source heat pump requirements:

All replacement air cooled electrically operated unitary air conditioners and condensing units must comply with Table C403.3.2(2) and must be provided with a factory installed reversing valve to allow unit to operate as a heat pump in heating mode. The heating is a byproduct of cooling, which means that the cooling is not required to be increased in size. Gas heat shall not be allowed to operate unless temperatures drop below heat pump capacity. This provision sunsets when or if more stringent requirements are enacted such as Energize Denver’s requirements or other regulations.
Exception: If it can be proven by engineering calculations that heating is not required above 30°F (due to economizer or other reason), a reversing valve is not required.

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: To address replacement units specifically. There are thousands of opportunities to upgrade Denver to heat pumps during the most economical time to transition – replacement. These costs are minimal during replacement. The purpose of requiring reversing valves on all air cooled unitary air conditioning units is to allow operation with 100% electric source of heating during more temperate months. Although supplemental gas heat may be required during peak conditions, this requirement will reduce the overall emission of CO2 for heating.

However, this will not require the replacement unit to be sized for heating, so existing electrical service will not be affected.

Sunsetting this requirement when Energize Denver or a more stringent code is adopted is anticipated.

Reasons: The only difference between a heat pump and cooling only is a reversing valve and some piping. Utah power implemented this as a rebate as they realized the grid is cleaner at mild heating temperatures and the CO2 emission reduction is dramatic. The 30 deg requirement is to recognize that on commercial buildings there may not be a heating requirement until 30 deg or below.

Substantiation: Backup available upon request.

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:**

This measure will result in savings of 50-60% in CO2 emissions due to the increased efficiency of heat pump operation. Adding a reversing valve (heat pump capability) has minimum impact on overall equipment costs. The typical cost for adding a reversing valve is $110 per nominal ton of cooling capacity.

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