



DENVER AMENDMENT PROPOSAL FORM FOR PROPOSALS TO THE 2019 DENVER BUILDING CODE AMENDMENTS AND THE 2021 INTERNATIONAL CODES

DENVER
THE MILE HIGH CITY

2021 CODE DEVELOPMENT CYCLE

1) **Name:** Courtney Anderson **Date:** 10/12/2021
Email: Courtney.Anderson@denvergov.org; **Representing (organization or self):**
City Staff Proposal (check box):

2) One proposal per this document is to be provided with clear and concise information.

Is a separate graphic file provided ("X" to answer): ___ Yes or No

3) Highlight the code and acronym that applies to the proposal

| <u>Acronym</u> | <u>Code Name</u> | <u>Acronym</u> | <u>Code Name</u> |
|----------------|--|----------------|--------------------------------|
| DBC-AP | Denver Building Code–Administrative Provisions | IPC | International Plumbing Code |
| IBC | International Building Code | IRC | International Residential Code |
| IECC | International Energy Conservation Code | IFGC | International Fuel Gas Code |
| IEBC | International Existing Building Code | IMC | International Mechanical Code |
| IFC | International Fire Code | DGC | Denver Green Code |

AMENDMENT PROPOSAL

Please provide all the following items in your amendment proposal.

Code Sections/Tables/Figures Proposed for Revision:

Instructions: If the proposal is for a new section, indicate (new), otherwise enter applicable code section.

C406.2.5

Proposal:

Instructions: Show the proposal using ~~strikeout~~, underline format.

Place an "X" next to the choice that best defines your proposal: Revision New Text Delete/Substitute Deletion

Add the following sections and renumber the following equations:

Remove C406 Credit Limit for Premium Cooling

Code Language:

Modify the section as follows:

C406.2.5 More than ten percent cooling efficiency improvement. Where equipment exceeds the minimum annual cooling and heat rejection efficiency requirements by more than 10 percent, energy efficiency credits for cooling may be determined using Equation 4-12, rounded to the nearest whole number. Where multiple cooling performance requirements are provided, the equipment shall exceed the annual energy requirement, including IEER, SEER, and IPLV.

$$EEC_{CEC} = EEC_{10} \times [1 + ((CEI - 10 \text{ percent}) / 10 \text{ percent})] \quad \text{(Equation 4-12)}$$

EEC_{CEC}= energy efficiency credits for heating efficiency improvement

EEC₁₀= C406.2.4 credits from Tables C406.1(1) through C406.1(5)

CEI = ~~the lesser of:~~ the improvement above minimum cooling and heat rejection efficiency requirements, ~~or 15 percent~~

Denver Green Code Revisions:

701.4.2 (7.4.3) Heating, Ventilating, and Air Conditioning. The heating, ventilating, and air conditioning shall comply with the IECC, Sections C301 and C403, with the following modifications and additions.

701.4.3.1.(7.4.3.1) Minimum Equipment Efficiencies. All *building projects* shall exceed the applicable full-load equipment efficiency requirements in Normative Appendix B by at least 10 percent, shall exceed the applicable seasonal (annual) equipment efficiency requirements by at least 15 percent, and meet the applicable ENERGY STAR requirements in Section 701.4.7.3.2 (7.4.7.3.2). Where equipment efficiency is not defined/listed in Normative Appendix B or in Section 701.4.7.3.2 (7.4.7.3.2), the equipment shall meet the minimum efficiency requirements defined/listed in ANSI/ASHRAE/IES Standard 90.1. Specifically, this applies to the following products in ANSI/ASHRAE/ IES Standard 90.1:

- a. Table 6.8.1.3, “Water-Chilling Packages—Minimum Efficiency Requirements
- b. Table 6.8.1-11, “Air Conditioners and Condensing Units Serving Computer Rooms—Minimum Efficiency Requirements.”
- c. Table 6.8.1-12, “Commercial Refrigerator and Freezers—Minimum Efficiency Requirements.”
- d. Table 6.8.1-13, “Commercial Refrigeration— Minimum Efficiency Requirements.”
- e. Table 6.8.1-14, “Vapor Compression Based Indoor Pool Dehumidifiers—Minimum Efficiency Requirements.”
- f. Table 6.8.1-15, “Electrically Operated DX- DOAS Units, Single-Package and Remote Condenser, without Energy Recovery—Minimum Efficiency Requirements.”
- g. Table 6.8.1-16, “Electrically Operated DX- DOAS Units, Single Package and Remote Condenser, with Energy Recovery—Minimum Efficiency Requirements.”-
- h. Table 10.8-1, “Minimum Nominal Full-Load Efficiency for NEMA Design A, NEMA Design
- i. Table 10.8-2, “Minimum Nominal Full-Load Efficiency for NEMA Design C and IEC Design H Motors at 60 Hz” (NEMA MG 1).
- j. Table 10.8-3, “Minimum Average Full-Load Efficiency for Polyphase Small Electric Motors.”
- k. Table 10.8-4, “Minimum Average Full-Load Efficiency for Capacitor-Start Capacitor-Run and Capacitor-Start Induction-Run Small Electric Motors.”
- l. Table 10.8-5, “Minimum Nominal Full-Load Efficiency for Fire Pump Electric Motors.”

Supporting Information (Required):

All proposals must include a written explanation and justification as to how they address physical, environmental, and/or customary characteristics that are specific to the City and County of Denver. The following questions must be answered for a proposal to be considered.

- Purpose: What does your proposal achieve?

This proposal would remove the cap on possible credits in C406.2.5 for higher efficiency cooling equipment.

- Reason: Why is your proposal necessary?

The 2021-IECC caps the number of points that can be achieved through above-code equipment efficiency, only offering points for up to 15% improvement over federal minimums. However, federal minimums lag the market substantially and heat pump technology has advanced substantially in the last few years, offering cooling equipment that is substantially more than 15% better than federal minimums. For example, for air conditioners under 65 kBtu in size, there is equipment available on the market that exceeds federal minimums by more than 80%.

- Substantiation: Why is your proposal valid? (i.e. technical justification)

This proposal removes that 15% cap, allowing the credit calculation to scale up to the highest efficiencies available. Removing the cap allows prescriptive projects to take advantage of this very high-performance equipment.

Bibliography and Access to Materials (as needed when substantiating material is associated with the amendment proposal):
None

Other Regulations Proposed to be Affected

***For proposals to delete content from the 2019 Denver Green Code in conjunction with adding it to other mandatory Denver codes and/or regulations, only.**

Please identify which other mandatory codes or regulations are suggested to be updated (if any) to accept relocated content.

None

Referenced Standards:

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

None

Impact:

How will this proposal impact cost and restrictiveness of code? ("X" answer for each item below)

The proposal will reduce the cost of construction by allowing projects to claim compliance credit for efficiencies higher than the threshold.

Cost of construction: ___ Increase X Decrease ___ No Impact

Cost of design: ___ Increase X Decrease ___ No Impact

Restrictiveness: ___ Increase X Decrease ___ No Impact

Departmental Impact (City use only):

This amendment proposal increases/decreases/is neutral to the cost of plans review.

This amendment increases/decreases/is neutral to the cost of inspections.