



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.
C406.8

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:

Modify the table as follows:

TABLE C406.1
Additional Energy Efficiency Credits for Denver

Sub-section / Occupancy:	Group B	Group R and I	Group E	Group M	Other ^a Occupancies
C406.2.1: 5% Heating Eff Imprv.	NA	1	2	2	2
C406.2.2: 5% Cooling Eff Imprv.	2	1	1	2	2
C406.2.3: 10 % Heating Eff Imprv.	1	2	4	4	3
C406.2.4: 10 % Cooling Eff Imprv.	5	1	2	3	3
C406.3: Reduced Light Power	8	2	9	14	8
C406.4: Enh. Digital Light Ctrl	2	NA	2	3	3
C406.5.1: On-site Renewable Egy.	9	7	6	7	7
C406.6: Dedicated OA Sys (DOAS)	3	5	NA	3	4
C406.7.2: Recovered/Renew SWH _b	NA	14	1	NA	14
C406.7.3: Eff fossil fuel SWH _b	NA	9	3	NA	9
C406.7.4: Heat Pump SWH _b	NA	5	1	NA	5

C406.8: Enhanced Envelope Perf	7	5	3	5	5
C406.8.1: Reduced envelope UA	7	5	3	5	5
C406.8.2: Further reduced envelope UA	10	6	3	6	7
C406.9: Reduced Air Infiltration	4	5	NA	2	4
C406.10 Energy Monitoring	3	1	3	4	3
C406.11 Fault Detection	1	1	1	1	1

- a. Other occupancy groups include all Groups except for Groups B, R, I, E, and M
- b. For occupancy groups listed in C406.7.1 and schools with showers or full-service kitchens

Modify the section as follows:

C406.8 Enhanced envelope performance. The total UA of the building thermal envelope as designed shall be not less than Section C406.8.1 or C406.8.2.

C406.8.1 Reduced envelope UA. 15 percent below the total UA of the building thermal envelope in accordance with Section C402.1.5.

C406.8.2 Further Reduced envelope UA. 25 percent below the total UA of the building thermal envelope in accordance with Section C402.1.5.

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 adds an additional credit option for projects that meet a total UA reduction (25% reduction) that goes beyond the existing credit option in C406.8.

Reason: Why is your proposal necessary?

Achieving the goals in “Denver’s Net Zero Energy (NZE) New Buildings & Homes Implementation Plan” for energy efficiency for new buildings will require setting higher credit targets in Section C406. This, in turn, creates the need for additional credits for design teams.

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

Envelope performance improvements can be particularly effective in colder climates like Denver’s. This can be useful when pursued as part of a strategy that simultaneously minimizes space conditioning size (and cost). Establishing a second credit option for even higher envelope performance increases the number of design strategies that design teams have for achieving efficiency credits in Section C406.

The credit values are estimated based on the credits available in the existing UA credits option. The credits for this option are 50% greater even though the UA requirement is 67% more stringent. There isn’t modeling to calculate the exact savings, so this estimate for the credit value recognizes that additional envelope insulation results in diminishing returns for savings.¹

¹ For example, the New Buildings Institute’s New Construction Guide includes two options for above code envelope insulation. In order to increase the savings from the first tier to the second tier by 100%, the insulation had to be increased by 125%. So, doubling the savings required more than double the additional insulation. (“Technical Document: Savings Analysis for the Advanced Buildings New Construction Guide,” 2014)

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)

Cost:

The proposal will reduce the cost of construction by giving projects another option for acquiring credits toward compliance with Section C406 that may be more cost effective than other credit options, particularly when achieving the higher credit targets that will be necessitated by the Denver Roadmap's efficiency targets for this code cycle.

Cost of construction: ___ Increase X Decrease ___ No Impact

Cost of design: ___ Increase X Decrease ___ No Impact

Restrictiveness: ___ Increase ___ XDecrease ___ 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.