



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



## 2021 CODE DEVELOPMENT CYCLE

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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 X\_\_\_ 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	<b>DGC</b>	<b>Denver Green Code</b>

## 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.

(NEW) Indoor Environmental Quality Maintenance and Monitoring

### **Proposal:**

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

**Place an “X” next to the choice that best defines your proposal:** \_\_\_ Revision \_\_\_ X\_ New Text \_\_\_ Delete/Substitute \_\_\_ Deletion

*Update Table 101.4.1 Applicable to nonresidential occupancy projects including Commercial New Construction, Additions, Alterations when within scope, Tenant Improvement and Adaptive Reuse as well as to Multifamily Residential building projects.*

**1001.4 IAQ maintenance and monitoring (Project Elective).** The plan for operation shall document procedures for maintaining and monitoring IAQ after building occupancy and shall contain the following:

- For buildings located in nonattainment areas for PM<sub>2.5</sub>, as defined by USEPA, all outdoor air provided to occupied spaces shall pass through filters or air cleaners as specified in Section 801.3.1.3(a) [8.3.1(a)].  
**Exception:** Spaces without mechanical ventilation.
- For buildings located in “non-attainment” areas for ozone, as defined by the USEPA, all outdoor air provided to occupied spaces shall pass through filters or air cleaners as specified in Section 801.3.1.3(b) [8.3.1.3(b)] from June 21 through December 21.  
**Exception:** Spaces without mechanical ventilation.
- Biennial monitoring of IAQ by one of the following methods:
  - Performing IAQ testing as described in Section 1001.3.1.5 (10.3.1.5).
  - Monitoring occupant perceptions of IAQ by any method, including but not limited to occupant questionnaires.
  - Each building shall have an occupant complaint/ response program for IEQ.
- For buildings where radon mitigation is required, operation, maintenance, and monitoring procedures shall include all of the following:
  - Annual inspection by maintenance staff to verify operation of fans and other mechanical components.

2. Biennial radon testing in accordance with AARST MALB to verify that radon concentrations remain below 2.7 pCi/L (100 Bq/m<sup>3</sup>). Where radon testing indicates that the indoor radon concentration is 2.7 pCi/L (100 Bq/m<sup>3</sup>) or greater, mitigation shall be conducted in accordance with AARST RMS-LB, and the building shall be retested to verify that the radon concentration is below 2.7 pCi/L (100 Bq/m<sup>3</sup>). Where the required effectiveness of mitigation systems is consistently demonstrated for a period of not less than eight years, and such systems are inspected quarterly to verify fan operation, radon testing shall be repeated at intervals of not less than every five years.
3. Biennial inspection and repair as needed for mitigation system performance indicators, fans, and visible mitigation system components, including piping, fasteners, supports, labels, and soil-gas barrier closures at exposed membranes, sumps, and other openings between soil and interior space.
4. Documentation and retention of inspection and repair records and testing reports.

**1001.5 Outdoor air ozone air cleaners.** Ozone air cleaning devices required under Section 801.3.1.3 (8.3.1.3) shall be operated whenever outdoor ozone concentrations are forecast to exceed applicable regulatory limits.

### **Supporting Information**

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 provides a framework to monitor and maintain indoor environmental quality standards. Stronger air filtration results in cleaner air and reduced transmission of viral particles including Covid-19. A balanced approach to introducing stronger filtration and increasing fan power can reduce energy penalties as compared to increased outdoor air. Increased indoor environmental quality will minimize human exposure to harmful contaminants, contributing to occupant well-being and health.

- **Reason:** Why is your proposal necessary?

According to the WELL building standard, people are estimated to spend approximately 90% of their time in enclosed spaces such as homes, offices, schools or other building environments. Even prior to the Covid-19 epidemic, indoor pollutants were found to be the tenth most important cause of ill health for world populations. As outdoor air pollutants cause dangerously high AQI days at an increasing rate of frequency during wildfire season in the Rocky Mountain Front Range, the need for clean indoor air is essential. Adding to that, mitigation is needed to protect occupants from potential risks of spreading viral particles and other indoor contaminants ranging from carbon monoxide to cleaning and other products containing volatile organic compounds (VOCs).

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

The language proposed is drawn from existing standards including IgCC and the WELL Building Standard. The requirements are achievable and documented to be effective at improving indoor environmental quality.

**Bibliography and Access to Materials** (as needed when substantiating material is associated with the amendment proposal):

1. IgCC 2021 Chapter 10 Section 1001.9.4.4
2. WELL Building Standard v2, Air A08 : <https://v2.wellcertified.com/wellv2/en/air>
3. PNNL Faster Air Exchange in Buildings Not Always Beneficial for Coronavirus Levels: <https://www.pnnl.gov/news-media/faster-air-exchange-buildings-not-always-beneficial-coronavirus-levels>
4. Air Conditioning Heating Refrigeration News Maximizing Indoor Air Quality Without Sacrificing Energy Efficiency: <https://www.achrnews.com/articles/144546-maximizing-indoor-air-quality-without-sacrificing-energy-efficiency>

### **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.

### **Referenced Standards**

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

### **Impact**

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

Cost of construction:     Increase     Decrease     No Impact

Cost of design:          Increase     Decrease     No Impact

Restrictiveness:       Increase       Decrease       No Impact