

IRC — Building



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2018 GROUP A PROPOSED CHANGES TO THE I-CODES COLUMBUS COMMITTEE ACTION HEARINGS

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IRC Building Code Change Proposals

The following code change proposals are labeled as residential building code change proposals because they are proposals for changes to sections in chapters of the International Residential Code that are designated as the responsibility of the IRC-Building Code Development Committee (see page ix of the Introductory pages of this monograph), which meets in the Group B cycle in 2019. However the changes included in this Group A code development cycle are to sections of the code that are the responsibility of a different IRC Code Development Committee— either the IRC-Mechanical or the IRC-Plumbing Committee.

The committee assigned for each code change proposal is indicated in a banner statement near the beginning of the proposal. Both the IRC-Mechanical and the IRC-Plumbing hearing orders are include here for your reference.

**2018 GROUP A – PROPOSED CHANGES TO THE
INTERNATIONAL RESIDENTIAL CODE – PLUMBING/
MECHANICAL**

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Central Regional Office
Country Club Hills, IL

Gregg Gress

Senior Technical Staff
International Code Council
Central Regional Office
4051 W. Flossmoor Rd
Country Club Hills, IL

RB1-18

IRC: R303.4

Proponent: Mike Moore, representing Broan-NuTone (mmoore@newportventures.net)

2018 International Residential Code

Revise as follows:

R303.4 Mechanical ventilation. Where the air infiltration rate of a *dwelling unit* is 5 air changes per hour or less where tested with a blower door at a pressure of 0.2 inch w.c (50 Pa) in accordance with Section N1102.4.1.2, the *dwelling unit* shall be provided with whole-house mechanical ventilation and local exhaust for kitchens in accordance with ~~Section M1505.4. Chapter 15.~~

Reason:

Kitchens are typically the largest source of indoor air pollution in U.S. homes. During cooking, harmful pollutants are released in concentrations that have been shown to increase the frequency of cancer, lung disease, heart disease, asthma aggravation, and hospital visits. In residential kitchens, concentrations of these pollutants frequently exceed maximum safe levels set by the World Health Organization and U.S. National Ambient Air Quality Standards. According to research cited by the World Health Organization, "long-term exposure to PM_{2.5} (particulate matter with a diameter of 2.5 microns or less, see graphic below for relative size) is associated with an increase in the long-term risk of cardiopulmonary mortality by 6–13% per 10 µg/m³ of PM_{2.5}." Without kitchen exhaust, residential kitchens regularly see concentrations that are easily hundreds of µg/m³ higher than outdoor levels (see Chart 1).

Cooks (all of us and our spouses if we're so fortunate) face the highest exposure to cooking pollutants, but if not captured at the source, these pollutants quickly find their way to bedrooms in far corners of the home. In tight homes, the concentration and associated damage caused by cooking pollutants can increase dramatically, as pollutants have nowhere to go. Opening a window can help to reduce kitchen pollutant levels, but it's as likely to spread the pollutants to other corners of the home as it is to exhaust them to the outdoors. In these locations, pollutants are deposited on surfaces, and re-enter the breathing zone when disturbed. All considered, building homes tight without providing mechanical kitchen exhaust presents an enormous liability for the industry and a disservice to the families that buy homes.

Builders are doing a great job constructing tight homes. But this shouldn't happen to the detriment of home owner health and safety. The IRC's charge in Section R101.3 is to IRC to "safeguard public safety, health, and general welfare through...ventilation" (among other methods). Approve this proposal to ensure that our ventilation systems are keeping pace with today's tight construction.

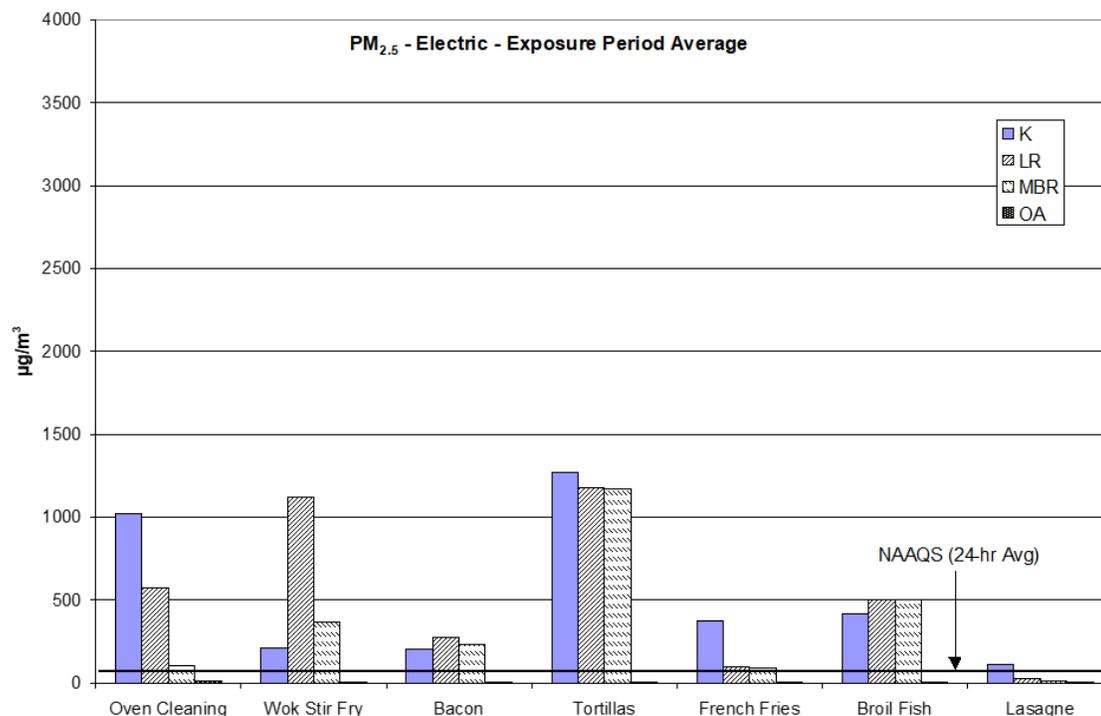


Chart 1. Concentration of PM_{2.5} (particulate matter with a diameter < 2.5 microns: the most harmful cooking pollutant)

during various cooking events in a test home. According to the World Health Organization, "long-term exposure to PM_{2.5} is associated with an increase in the long-term risk of cardiopulmonary mortality by 6–13% per 10 µg/m³ of PM_{2.5} (8–10)." Chart data sourced from Fortmann et al.

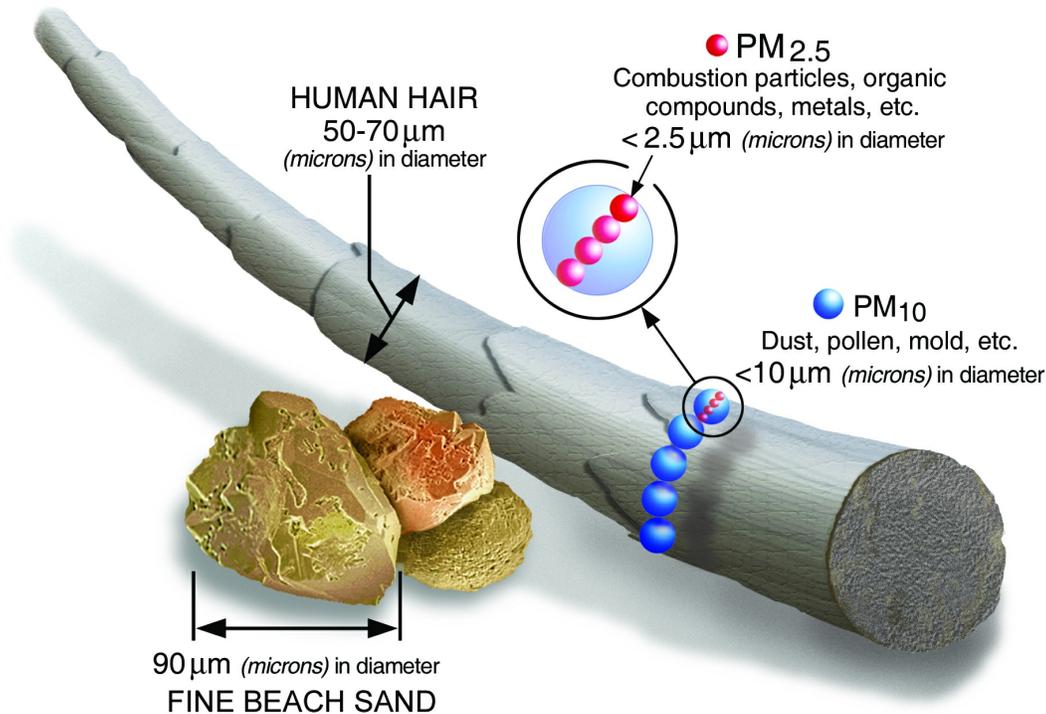


Figure 1. Size of particulate matter. Source: <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics>.

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Cost Impact

The code change proposal will increase the cost of construction .

For those units that do not already install kitchen exhaust, the cost of construction will increase, depending on equipment selection. Exhaust hoods start around \$50 retail (e.g., Broan economy hood #403001, 2-speed, moving 160 cfm, priced on zoro.com at \$47.60 with tax and shipping on January 11, 2018). Installed cost to the GC for ducting is estimated at ~\$9.85 per linear foot for 3.25"x10" galvanized sheet metal duct (RS Means, 2015, Section 23 31 13.13.0500), and a damper would cost about \$15 retail.

Internal ID: 1949

RB2-18

IRC: R303.4

Proponent: Mike Moore, Newport Ventures, representing The Home Ventilating Institute (mmoore@newportventures.net)

2018 International Residential Code

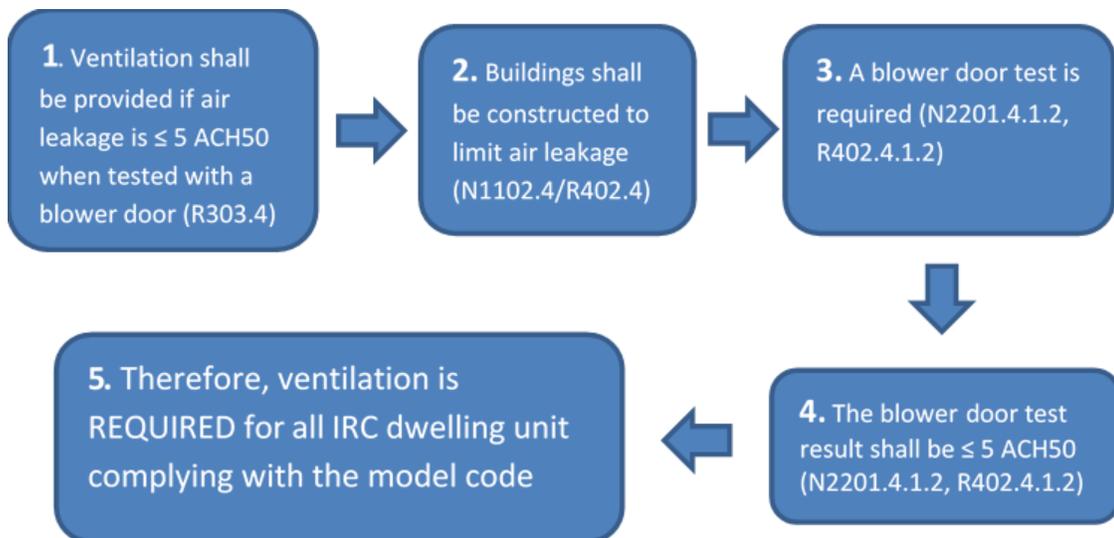
Revise as follows:

R303.4 Mechanical ventilation. ~~Where the air infiltration rate of a dwelling unit is 5 air changes per hour or less where tested with a blower door at a pressure of 0.2 inch w.c (50 Pa) in accordance with Section N1102.4.1.2, the dwelling unit is served by space-heating or cooling equipment, it shall be provided with whole-house mechanical ventilation in accordance with Section M1505.4.~~

Reason:

Building tight dwelling units has benefits of energy efficiency; improved comfort; and improved odor, rodent, and sound control. Tight buildings are typically the byproduct of better fire and smoke control as well. Beginning with the 2012 IRC, building tight has been code minimum practice, which is good. However, we learned in the 1970s that building tight without mechanically ventilating results in sick building syndrome.

So, since 2012, the code has required tight dwelling units to also be provided with mechanical ventilation. The problem is that we've heard from ICC staff, code officials, builders, and design professionals that it's hard to follow the code language requirements. Currently, we have a 5-step process to identify that mechanical ventilation is required for all IRC dwelling units that introduces needless confusion. Here's what the process looks like:



Instead of a 5-step process, we can simplify the code and enforcement by jumping straight to the conclusion: ventilation is required for all dwelling units. This proposal does exactly that. Additionally, this proposal introduces an exception for the mechanical ventilation requirement in climates and situations where natural ventilation is expected to provide all of the climate control and ventilation needed (i.e., when no space-heating or cooling equipment is provided). A similar exception exists in ASHRAE 62.2.

Cost Impact

The code change proposal will not increase or decrease the cost of construction .

Ventilation is already required for IRC dwelling units, so this proposal will not increase the cost of construction. For dwelling units without heating or cooling (e.g., seasonal cabins), this code change proposal will decrease the cost of construction.

Internal ID: 531

RB3-18

IRC: R303.1

Proponent: Mike Moore, Newport Ventures, representing Broan-NuTone (mmoore@newportventures.net)

2018 International Residential Code

R303.1 Habitable rooms. Habitable rooms shall have an aggregate glazing area of not less than 8 percent of the floor area of such rooms. Natural *ventilation* shall be through windows, skylights, doors, louvers or other *approved* openings to the outdoor air. Such openings shall be provided with ready access or shall otherwise be readily controllable by the building occupants. The openable area to the outdoors shall be not less than 4 percent of the floor area being ventilated.

Exceptions:

1. The For habitable rooms other than kitchens, the glazed areas need not be openable where the opening is not required by Section R310 and a whole-house mechanical *ventilation* system or a mechanical ventilation system capable of producing 0.35 air changes per hour in the habitable rooms is installed in accordance with Section M1505.
2. For kitchens, the glazed areas need not be openable where the opening is not required by Section R310 and a local exhaust system is installed in accordance with Section M1505. Where the openable glazing area is less than 4 percent of the kitchen floor area, ductless kitchen exhaust shall not be permitted.
- ~~2.3.~~ The glazed areas need not be installed in rooms where Exception 1 is satisfied and artificial light is provided that is capable of producing an average illumination of 6 footcandles (65 lux) over the area of the room at a height of 30 inches (762 mm) above the floor level.
- ~~3.4.~~ Use of sunroom and patio covers, as defined in Section R202, shall be permitted for natural ventilation if in excess of 40 percent of the exterior sunroom walls are open, or are enclosed only by insect screening.

Reason:

Prior to 2012, this section permitted users to specify "mechanical ventilation systems capable of producing 0.35 air changes per hour" or whole-house mechanical ventilation systems where an openable area of at least 4% of the habitable room's floor area is not provided. This proposed change would reintroduce the option for room-based mechanical ventilation systems, which are especially useful for additions or remodels. The proposed change is also consistent with Chapter 15's recognition that kitchens have different ventilation requirements than other habitable rooms. Namely, local exhaust, not whole-house mechanical ventilation that could be located in a far corner of the house, is needed for kitchens to ensure that cooking pollutants generated in the kitchen are captured and exhausted at their source. This language clarifies that IF the builder chooses to not provide the minimum openable glazing area in a kitchen, the kitchen shall be provided with ducted local exhaust in compliance with Chapter 15.

If approved, this change will provide more flexibility and can introduce cost savings for builders and buyers.

Cost Impact

The code change proposal will decrease the cost of construction .

This change adds options that can reduce cost and clarifies that if a kitchen range hood is installed in lieu of natural ventilation, the kitchen range hood shall be ducted to the exterior.

Internal ID: 1654

RB4-18

IRC: R202

Proponent: Janine Snyder, City of Thornton, representing Colorado Association of Plumbing & Mechanical Officials (CAPMO) (Janine.Snyder@cityofthornton.net); Guy Tomberlin, Fairfax County, VA, representing Fairfax County Building Division (guy.tomberlin@fairfaxcounty.gov)

2018 International Residential Code

Revise as follows:

[MP] CLEANOUT. An access opening in the drainage system used ~~utilized~~ for the removal of possible obstruction and located to allow for access of obstructions. Types of cleanouts include a removable plug or cap, and a removable fixture or fixture trap.

Reason:

By adding the text from the cleanout definition in the International Plumbing Code will not only add clarity by adding the types of cleanouts into the definition in International Residential Code, but will also maintain consistency between the two code definitions.

Cost Impact

The code change proposal will decrease the cost of construction .

This proposal will decrease the cost of construction by not requiring additional cleanouts to be installed where a water closet may be utilized.

Internal ID: 1372

RB5-18

IRC: R105.2

Proponent: Jim Tidwell, Tidwell Code Consulting, representing Honeywell (jimtidwell@tccfire.com)

2018 International Residential Code

Revise as follows:

R105.2 Work exempt from permit. Exemption from *permit* requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this *jurisdiction*. *Permits* shall not be required for the following:

- Building:
 1. One-story detached *accessory structures*, provided that the floor area does not exceed 200 square feet (18.58 m²).
 2. Fences not over 7 feet (2134 mm) high.
 3. Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.
 4. Water tanks supported directly upon *grade* if the capacity does not exceed 5,000 gallons (18 927 L) and the ratio of height to diameter or width does not exceed 2 to 1.
 5. Sidewalks and driveways.
 6. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.
 7. Prefabricated swimming pools that are less than 24 inches (610 mm) deep.
 8. Swings and other playground equipment.
 9. Window awnings supported by an exterior wall that do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.
 10. Decks not exceeding 200 square feet (18.58 m²) in area, that are not more than 30 inches (762 mm) above *grade* at any point, are not attached to a dwelling and do not serve the exit door required by Section R311.4.
- Electrical:
 1. *Listed* cord-and-plug connected temporary decorative lighting.
 2. Reinstallation of attachment plug receptacles but not the outlets therefor.
 3. Replacement of branch circuit overcurrent devices of the required capacity in the same location.
 4. Electrical wiring, devices, *appliances*, apparatus or *equipment* operating at less than 25 volts and not capable of supplying more than 50 watts of energy.
 5. Minor repair work, including the replacement of lamps or the connection of *approved* portable electrical *equipment* to *approved* permanently installed receptacles.
- Gas:
 1. Portable heating, cooking or clothes drying *appliances*.
 2. Replacement of any minor part that does not alter approval of *equipment* or make such *equipment* unsafe.
 3. Portable-fuel-cell *appliances* that are not connected to a fixed piping system and are not interconnected to a power grid.
- Mechanical:
 1. Portable heating *appliances*.
 2. Portable ventilation *appliances*.
 3. Portable cooling units.
 4. Steam, hot- or chilled-water piping within any heating or cooling *equipment* regulated by this code.
 5. Replacement of any minor part that does not alter approval of *equipment* or make such *equipment*

unsafe.

6. Portable evaporative coolers.
 7. Self-contained refrigeration systems containing 10 pounds (4.54 kg) or less of ~~refrigerant or non-flammable (A-1) refrigerant.~~
 8. Self-contained refrigeration systems containing non-flammable (A-1) refrigerants that are actuated by motors of 1 horsepower (746 W) or less.
 - ~~8.9.~~ Portable-fuel-cell *appliances* that are not connected to a fixed piping system and are not interconnected to a power grid.
- Plumbing:
 1. The stopping of leaks in drains, water, soil, waste or vent pipe; provided, however, that if any concealed trap, drainpipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with new material, such work shall be considered as new work and a *permit* shall be obtained and inspection made as provided in this code.
 2. The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures, and the removal and reinstallation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.

Reason:

The existing exemption for permitting residential size HVAC systems is founded on the fact that all refrigerants used in these systems have been non-flammable up until now. Changing out a system historically hasn't presented a significant risk. That changes with the introduction of flammable refrigerants. Changing out a system now may require significantly more design work to assure a safe installation. In addition, piping may need to be re-routed or replaced in some cases. If flammable refrigerants are used, it is no longer a simple equipment replacement, but a much more complex issue with significant safety risk. Requiring a permit will provide the jurisdiction with the opportunity to address that risk during the review and inspection process.

Cost Impact

The code change proposal will increase the cost of construction .

While the actual cost of construction isn't impacted, the requirement for a permit will add to the final cost.

Internal ID: 2065
