



Building Standards and Codes

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TECHNICAL BULLETIN

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Source Document: 19NYCRR part 1240 – State Energy Conservation Construction Code²
19NYCRR part 1220 – Residential Construction³

Topic: Mechanical Ventilation (Mandatory) and Whole House Mechanical Ventilation

This document is to clarify the Uniform Code and Energy Code provisions for mechanical ventilation in dwellings regulated by the 2015 International Residential Code (2015 IRC).

With respect to the Energy Code, Section R402.4.1.2 of the 2015 International Energy Conservation Code (2015 IECC), as amended by the 2016 Supplement to the New York State Energy Conservation Code (the 2016 EC Supplement), requires that dwelling units *“be tested and verified as having an air leakage rate not exceeding three air changes per hour”* and Section R403.6 requires that new homes *“be provided with ventilation that meets the requirements of the... 2015 International Residential Code... or with other approved means of ventilation.”*

With respect to the Uniform Code, Section R303.1 of the 2015 IRC requires that habitable rooms be provided with either natural or mechanical ventilation, and Section R303.4 requires that:

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 in accordance with Section M1507.3. (Emphasis added).

Therefore, every dwelling in compliance with Section R402.4 of the 2015 IECC, as amended by the 2016 EC Supplement, will be below the threshold set forth in Section R303.1 of the 2015 IRC as quoted above, and a whole house mechanical ventilation system will be required.

A *“Whole House Mechanical Ventilation System”* is defined in Section N1101.6 of the 2015 IRC as follows:

An exhaust system, supply system, or combination thereof that is designed to mechanically exchange indoor air with outdoor air when operating continuously or through a programmed intermittent schedule to satisfy the whole house ventilation rates.

The requirements for whole house mechanical ventilation are contained in Section M1507.3 of the 2015 IRC, and the ventilation rates are stipulated in Section M1507.3.3 and Table M1507.3.3(1). Section M1507.3.2 of the 2015 IRC requires that the system *“be provided with controls that enable manual override.”* The provisions for the location of openings for

¹ The “Code Effective Date” for this Technical Bulletin is October 31, 2017, which is the effective date of the current version of the New York State Uniform Fire Prevention and Building Code (the Uniform Code).

² The 2015 International Energy Conservation Code (2015 IECC) and the 2016 Supplement to the New York State Energy Conservation Construction Code (Revised August 2016) are publications incorporated by reference in 19 NYCRR Part 1240. The 2015 IECC, as amended by the 2016 Supplement to the NYS Energy Conservation Construction Code (Revised August 2016), is part of the State Energy Conservation Construction Code (the Energy Code).

³ The 2015 International Residential Code (2015 IRC) and the 2017 Uniform Code Supplement are publications incorporated by reference in 19 NYCRR Parts 1219 through 1228. The 2015 IRC, as amended by the 2017 Uniform Code Supplement, is part of the Uniform Code.

intake and exhaust are found in Section R303.5 and the provisions for opening protection are found in Section R303.6. The efficacy of the whole house mechanical ventilation system fan is stipulated in Section R403.6.1 of the 2015 IECC.

House ventilation is not the same as infiltration or air leakage which takes place through the joints of dissimilar materials or fenestration. According to the 2015 IECC Commentary, the purpose of limiting air infiltration is two-fold: to reduce the energy used by conditioning the incoming air, and to control the quality of the air entering the building. Consider as an example, the quality of air infiltrating from a moldy crawl space or an attached garage. A common concern is the energy loss associated with conditioning the fresh air intake. A heat or energy recovery ventilator would address that concern, but it is not specifically required by the Uniform Code. Neither does the Uniform Code specify the method by which mechanical ventilation takes place. It is the choice of the applicant and their registered design professional, where applicable, to provide either supply fans, exhaust fans, or a balanced combination of the two. The exhaust air duct can also be connected to the HVAC return duct, if one is provided. Regardless of the method used, as noted above, the quantity of outdoor air intake must be proven, or quantified as meeting the requirements of Table M1507.3.3(1) of the 2015 IRC.

All bathroom and kitchen fans are required to be vented to the exterior, see Section M1501 of the 2015 IRC. Bathroom and kitchen fans are separate components of mandatory ventilation, serving to remove excessive moisture and contaminants. These two exhaust fan locations are required in addition to whole house ventilation systems, but may serve as a component of the whole house ventilation systems. In a typical ventilation application, continuous run fan(s) or intermittent run fan(s) may be used as part of the system, however, the supply of outside air is specifically required by the code (see Section M1507.3.3 of the 2015 IRC).

In summary, a whole house ventilation system is required by the 2015 IRC and 2015 IECC. It shall be designed, and have the calculations provided to the Authority Having Jurisdiction, to show how the outdoor air intake meets the code requirements. Either exhaust only with air intake by means of infiltration, supply only with clean air intake, or balanced mechanical systems are permitted options, provided that air quality and quantity of air intake are proven or quantified.

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