

**Revise Section R403.3.3 of the 2018 IECC as follows:**

**R403.3.3 Duct testing (Mandatory).** Ducts shall be pressure tested in accordance with ANSI/RESNET/ICC 380 or ASTM E1554 to determine air leakage by one of the following methods:

(Remainder of section left unchanged)

**Reason Statement:**

Section R403.3.3, Duct testing, currently provides no guidance for testing duct systems to determine if they meet the maximum duct leakage rate. The current code language sets a duct leakage metric and essentially leaves it up to those that are testing the system to determine how to arrive at the results. The lack of guidance can lead to inconsistent test results from house to house. This code change proposal solves this problem by requiring testing to conform to ANSI/RESNET/ICC Standard 380 - *Standard for Testing Airtightness of Building Enclosures, Airtightness of Heating and Cooling Air Distribution Systems, and Airflow of Mechanical Ventilation Systems* OR ASTM E1554. Standard 380 provides a standardized methodology that is currently in use throughout the industry. The methodology will provide consistent results that can be replicated by testing organizations and enforcement personnel.

RESNET/ICC Standard 380 has been developed to provide a consensus national standard for consistent measurement of several air-flow related residential building metrics. It builds off of existing American National Standards to provide standard procedures essential to the evaluation of the energy performance of residential buildings energy.

ASTM Standard E1554-13, was most recently re-approved in 2018 and describes 4 different test methods (A, B, C, and D) for performing a duct leakage test. Method A requires multi-point testing of both the enclosure and the distribution system at a range of 5 to 50 Pa in 5 Pa increments using both pressurization AND depressurization of the building enclosure AND distribution system. Method B requires a physical separation of the supply and return distribution systems and that each are tested separately at a 25 Pa pressure difference, while measuring the pressure difference between any buffer zones and the outside. This procedure requires several iterations of each test (supply, return, buffer zone). Method C measures distribution system leakage to the outside using a 25 Pa pressure difference across the building enclosure with reference to the outside using a location sheltered from wind and sunshine. The distribution system is tested at a 25 Pa pressure difference with reference to the outside and the recording of inside temperature, outside temperature, and barometric pressure at the start and end of each test. This method requires testing under pressurization, while Standard 380 allows pressurization or depressurization (field conditions may require depressurization in order to maintain seals on the supply outlets and return inlets). Method D measures total distribution system leakage at a 25 Pa pressure difference with reference to the outside without using a fan (blower door) to create a 25 Pa pressure difference across the building enclosure to isolate leakage to the outside.

Although Standard 380 is a more industry-recognized standard, either Standard 308 or ASTM E1554 provide a consistent methodology for testing the air leakage of duct systems.

**Cost Impact:** Will not increase the cost of construction

The protocol for duct testing described in Standard 380 is consistent with the testing protocols presented in RESNET certifications for HERS raters and also with the Duct and Envelope Testing (DET) training sessions that are being deployed in several states to meet the testing needs of the IECC. This protocol is considered industry standard and will not increase the time for testing ductwork, so the cost of testing will not increase, but will lead to more compliant duct systems for duct testing professionals that may not be following a protocol. The protocol does not change the target duct air leakage rate so there are no additional costs to seal the duct system to make it code compliant. ASTM E1554 is offered as an alternative because it is another standard for testing duct systems for leakage.