

## CHAPTER 4 COMMERCIAL ENERGY EFFICIENCY

### SECTION C403.2.6.1 2015 Edition IECC Interpretation 71-17 Issued 05-14-2018 EC\_15\_71\_17

**C403.2.6.1 Demand controlled ventilation.** Demand control ventilation (DCV) shall be provided for spaces larger than 500 square feet (46.5 m<sup>2</sup>) and with an average occupant load of 25 people per 1,000 square feet (93 m<sup>2</sup>) of floor area (as established in Table 403.3.1.1 of the *International Mechanical Code*) and served by systems with one or more of the following:

1. An air-side economizer.
2. Automatic modulating control of the outdoor air damper.
3. A design outdoor airflow greater than 3,000 cfm (1416 L/s).

**Exception:** Demand control ventilation is not required for systems and spaces as follows:

1. Systems with energy recovery complying with Section C403.2.7.
2. Multiple-*zone* systems without direct digital control of individual *zones* communicating with a central control panel.
3. Systems with a design outdoor airflow less than 1,200 cfm (566 L/s).
4. Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than 1,200 cfm (566 L/s).
5. Ventilation provided for process loads only.



**Q:** Are spaces larger than 500 square feet (46.5 m<sup>2</sup>) and with an average occupant load of 25 people or greater per 1,000 square feet (m<sup>2</sup>) of floor area required to be provided with demand control ventilation?

**A:** Yes.

Code requirements such as this are intended to provide a minimum threshold above which the requirement is applicable.

While the text (read literally) limits the application of Section C403.2.6.1 to those spaces with an average design occupant load for ventilation of exactly 25 people per 1,000 square feet, the language of Section C403.2.6.1 of the 2015 IECC, (and similarly Sections C403.2.5.1 of the 2012 IECC, and 503.2.5.1 of the 2009 IECC) was intended to be, and is interpreted to be inclusive of "... spaces larger than 500 square feet (46.5 m<sup>2</sup>) and with an average occupant load of 25 people or greater per 1,000 square feet (93 m<sup>2</sup>) of floor area," consistent with the charging language of Code Change EC104-06/07 which is the basis for the resulting text in the 2009 IECC (and subsequent editions as noted above). The substantiation for Code Change EC104-06/07 referenced ASHRAE 90.1 – 2007 Section 6.4.3.9 and ASHRAE 90.1 – 2013 Section 6.4.3.8 entitled, "Ventilation Controls for High-Occupancy Areas" which includes similar requirements.

To allow an "absolute value" of 25.0 persons per 1,000 square feet (93 m<sup>2</sup>) to serve as the sole threshold for an energy conservation measure is not practical in engineering practice. Application of Demand Controlled Ventilation to average occupant loads of 40 people or greater per 1,000 square feet (93 m<sup>2</sup>) is standard engineering practice for states adopting the 2009 edition of the IECC and to average occupant loads of 25 people or greater per 1,000 square feet (93 m<sup>2</sup>) for states adopting the 2012 and 2015 editions of the IECC.