

# Demand Control Ventilation on Single-Zone Systems

IECC: C403.7.1

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## 2018 International Energy Conservation Code

Revise as follows:

**C403.7.1 Demand control ventilation (Mandatory).** Demand control ventilation (DCV) shall be provided for all single-zone systems required to comply with Sections C403.5 through 403.5.3 and 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, 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).

### Exceptions:

1. Systems with energy recovery complying with Section C403.7.4.
2. Multiple-zone systems without direct digital control of individual zones communicating with a central control panel.
3. ~~Systems~~ Multiple-zone 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 only for process loads.

**Reason Statement:** Many spaces are over-ventilated due to design professionals establishing ventilation rates based on peak design conditions that rarely exist on a daily basis. Substantial energy savings can be obtained even in low-occupancy areas through the implementation of DCV. CO<sub>2</sub> sensor costs have fallen in recent years making DCV on smaller sized units that already require economizers, (and therefore already have modulating dampers) more cost-effective than they have been in the past.

**Cost Impact:** The code change proposal will increase the cost of construction. A single CO<sub>2</sub> sensor in the return air duct of a single zone system is expected to cost less than \$300 and provides assurance that indoor air quality in smaller spaces will be maintained to safe CO<sub>2</sub> levels. Note that the requirement for installing DCV is only on units that are already required to have an economizer installed, which drastically reduces the cost of implementing DCV.