

**IMC/2006 SECTION 312**  
**HEATING AND COOLING LOAD CALCULATIONS**

**312.1 Load calculations.** Heating and cooling system design loads for the purpose of sizing systems, appliances and equipment shall be determined in accordance with the procedures described in the ASHRAE *Handbook of Fundamentals*. Heating and cooling loads shall be adjusted to account for load reductions that are achieved when energy recovery systems are utilized in the HVAC system in accordance with the ASHRAE Handbook – *HVAC Systems and Equipment*. Alternatively, design loads shall be determined by an approved equivalent computation procedure, using the design parameters specified in Chapter 3 of the *International Energy Conservation Code*.

**IECC/2006 Section 503.2**

**503.2.1 Calculation of heating and cooling loads.** Design loads shall be determined in accordance with the procedures described in the ASHRAE *Handbook of Fundamentals*. Heating and cooling loads shall be adjusted to account for load reductions that are achieved when energy recovery systems are utilized in the HVAC system in accordance with the ASHRAE Handbook-*HVAC Systems and Equipment*. Alternatively, design loads shall be determined by an approved equivalent computation procedure, using the design parameters specified in Chapter 3.

**503.2.2 Equipment and system sizing.** Heating and cooling equipment and systems capacity shall not exceed the loads calculated in accordance with Section 503.2.1. A single piece of equipment providing both heating and cooling must satisfy this provision for one function with the capacity for the other function as small as possible, within available equipment options.

**Exceptions:**

- a. Required standby equipment and systems provided with controls and devices that allow such systems or equipment to operate automatically only when the primary equipment is not operating.
- b. Multiple units of the same equipment type with combined capacities exceeding the design load and provided with controls that have the capacity to sequence the operation of each unit based on load.

**503.2.4.3 Off-hours controls.** Each zone shall be provided with thermostatic setback controls that are controlled by either an automatic time clock or programmable control system.

**Exceptions:**

- a. Zones that will be operated continuously.
- b. Zones with a full HVAC load demand not exceeding 6,800 Btu/h and having a readily accessible manual shutoff switch.

**503.2.4.3.1 Thermostatic setback capabilities.** Thermostatic setback controls shall have the capability to set back or temporarily operate the system to maintain zone temperatures down to 55°F or up to 85°F.

**503.2.4.3.2 Automatic setback and shutdown capabilities.** Automatic time clock or programmable controls shall be capable of starting and stopping the system for seven different daily schedules per week and retaining their programming and time setting during a loss of power for at least 10 hours. Additionally, the controls shall have a manual

override that allows temporary operation of the system for up to 2 hours; a manually operated timer capable of being adjusted to operate the system for up to 2 hours; or an occupancy sensor.

**503.2.4.4 Shutoff damper controls.** Both outdoor air supply and exhaust ducts shall be equipped with motorized dampers that will automatically shut when the system or spaces served are not in use.

**Exceptions:**

- a. Gravity dampers shall be permitted in buildings less than three stories in height.
- b. Gravity dampers shall be permitted for buildings of any height located in climate zones 1, 2, and 3.
- c. Gravity dampers shall be permitted for outside air intake or exhaust airflows of 300 cfm or less.

**503.2.5 Ventilation.** Ventilation, either natural or mechanical shall be provided in accordance with Chapter 4 of the International Mechanical Code/2006. Where mechanical ventilation is provided, the system shall provide the capability to reduce the outdoor air supply to the minimum required by Chapter 4 of the IMC.

**503.2.9 HVAC system completion.** Prior to the issuance of a certificate of occupancy, the design professional shall provide evidence of system completion in accordance with Sections 503.2.9.1 through 503.2.9.3.

**503.2.9.1 Air system balancing.** Each supply air outlet and zone terminal device shall be equipped with means for air balancing in accordance with the requirements of Chapter 6 of the International Mechanical Code/2006. Discharge dampers are prohibited on constant volume fans and variable volume fans with motors 25 hp and larger.