

Commercial Kitchens

When do the Standards Apply?

The **2016 Building Energy Efficiency Standards** (Energy Code) apply to all commercial kitchens and dining facilities with at least one exhaust hood. The applicable requirements vary based on the number, type, and size of the exhaust hoods.

When the Energy Code applies, the energy requirements for commercial kitchens can be found in §140.9(b) of Title 24, Part 6. The requirements for commercial kitchens are prescriptive and may be traded off when using the performance method of compliance.

For additions and alterations, the requirements in §140.9(b) do not apply to existing hoods and makeup air units that are not replaced as part of the addition or alteration.

What is Covered in a Commercial Kitchen?

The Energy Code has requirements for kitchen exhaust systems and replacement air (air used to replace the exhausted air from outside or transferred from other spaces); Type 1 exhaust hood flow rates; ventilation air; and energy-efficient features and controls.

Kitchen Exhaust Systems:

- **Replacement air introduced directly into the hood cavity of kitchen exhaust hoods cannot exceed 10 percent of the hood exhaust rate.**
- **Facilities having a combined Type I* and Type II* kitchen hood exhaust airflow rate greater than 5,000 cfm must meet the following:**
 - » Each Type I hood must have an exhaust rate that complies with TABLE 1.

TABLE 1: Maximum Net Exhaust Flow Rate, CFM per Linear Foot of Hood Length

Type of Hood	Light Duty Equipment*	Medium Duty Equipment*	Heavy Duty Equipment*	Extra Heavy Duty Equipment*
Wall-mounted Canopy	140	210	280	385
Single Island	280	350	420	490
Double Island	175	210	280	385
Eyebrow	175	175	Not Allowed	Not Allowed
Backshelf / Passover	210	210	280	Not Allowed

* Typically, Type I hoods are used for greasy smoke removal and Type II hoods are used for steam removal applications. Refer to ASHRAE 154-2011 for exhaust hood and duty cycle definitions.

- » If a single hood or section of a hood is installed over appliances with different duty ratings, the maximum flow rate for the hood or hood section must not exceed the TABLE 1 values for the highest appliance duty rating under the hood.
- » **EXCEPTION:** When 75 percent of the total Type I and Type II exhaust replacement air is transfer air that would otherwise be exhausted from the building.

Kitchen Ventilation:

- **Mechanically cooled or heated makeup air must not exceed the greater of the following:**
 - » The supply flow required to meet the space heating and cooling load; or
 - » The hood exhaust flow minus the available transfer air from adjacent spaces.
- **Facilities having a combined Type I and Type II kitchen hood exhaust airflow rate greater than 5,000 cfm must have **one** of the following:**
 - » At least 50 percent of replacement air is transfer air that would otherwise be exhausted;
 - » A demand ventilation system on at least 75 percent of the exhaust air that includes **all** the following:
 - › Controls to modulate airflow in response to appliance operation while maintaining full capture and containment of smoke, effluent, and combustion products during cooking and while idle; and
 - › Failsafe controls that trigger full flow in the event of a cooking sensor failure; and
 - › An adjustable timed override to allow occupants the ability to temporarily override the system to full flow; and

- › The system must be capable of reducing exhaust and replacement air to the larger of:
 - 50 percent of the total design exhaust and replacement airflow; or
 - The ventilation rate required by §Section 120.1 of Title 24, Part 6.

- » UL-listed energy recovery devices with a sensible heat recovery effectiveness of not less than 40 percent on at least 50 percent of the total exhaust; or
- » A minimum of 75 percent makeup air that complies with both of the following:
 - › Unheated, or heated to no more than 60°F; and
 - › Uncooled, or cooled without the use of mechanical cooling.

Kitchen Exhaust System Acceptance:

- **Kitchen exhaust systems with a Type I exhaust hood must pass acceptance testing as specified in Reference Nonresidential Appendix NA7.11.**
- **A Certificate of Acceptance document that certifies the equipment and systems meet the acceptance requirements of Reference Nonresidential Appendix NA7.11 must be completed and signed by the appropriate person as required in Title 24, Part 1, §10-103(a)4.**
- **The Certificate of Acceptance document must be submitted to the enforcement agency.**

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