

# Laboratory Exhaust System

## When do the Standards Apply?

The **2016 Building Energy Efficiency Standards** (Energy Code) has requirements for new laboratory exhaust systems with minimum circulation rates of 10 air changes per hour or less.

The Energy Code defines a scientific laboratory as a room or area where research, experiments, and measurements in medical and physical sciences are performed requiring examination of fine details. The area may include workbenches, countertops, scientific instruments, and associated floor spaces. Scientific laboratory does not refer to film, computer, and other laboratories where scientific experiments are not performed.

Requirements for laboratory exhaust systems can be found in California Code of Regulations, Title 24, Part 6, §140.9(c). The requirements for laboratory exhaust systems are prescriptive and may be traded off if the performance method of compliance is used.

## What are the Requirements?

The Energy Code has requirements for laboratory exhaust and makeup airflow rates. The system must be designed to reduce the exhaust and makeup flow rates to the larger of the following:

- The regulated minimum circulation rate
- The minimum required to maintain pressurization requirements.

Variable exhaust and makeup airflow must be coordinated to achieve the required space pressurization at varied levels of demand and fan system capacity.

There are two exceptions to these requirements:

1. Laboratory exhaust systems serving zones where constant volume is required by the authority having jurisdiction, facility environmental health and safety department, or other applicable code.
2. New zones on an existing constant volume exhaust system.

## Applicable to Laboratories with MINIMUM circulation rates of 10 ACH or Less



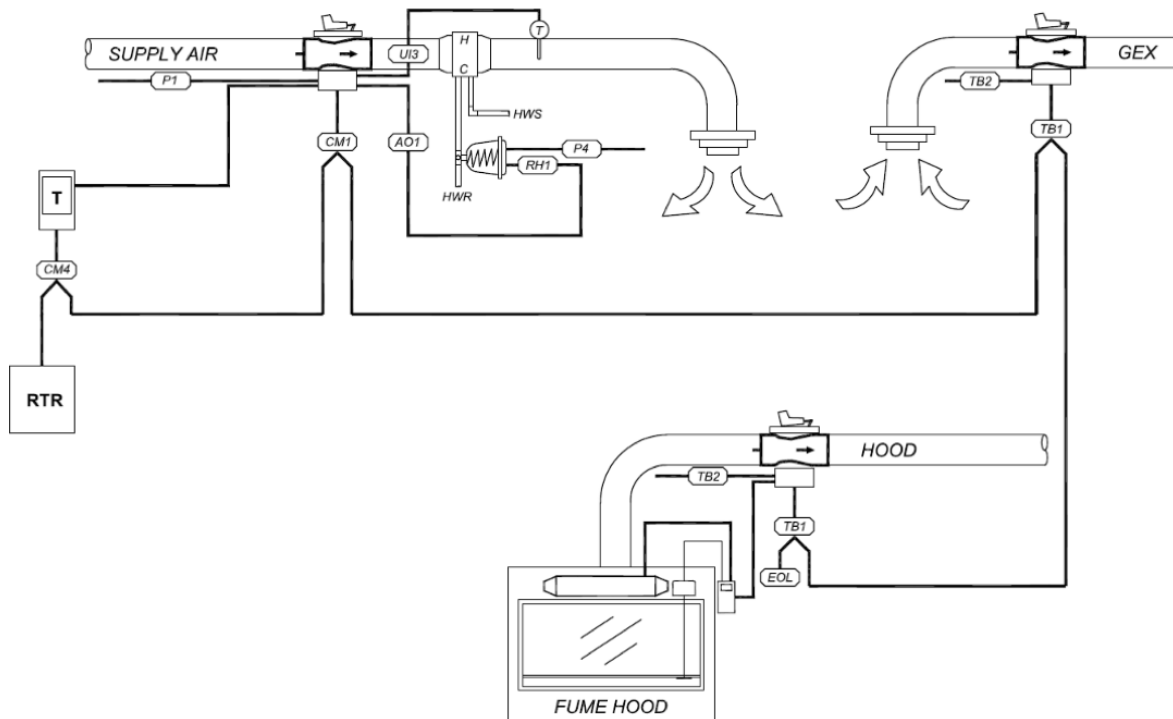
Source: California Energy Commission video - Prescriptive Requirements for Laboratory Exhaust Systems

There are many ways to achieve compliance with the Energy Code. Figure 1 illustrates one example showing the zone components for a variable air volume (VAV) laboratory. There are three VAV zone valves shown in this figure, one in each on the following areas:

- The supply air to the zone
- The fume hood
- The general exhaust (GEX)

These valves are controlled simultaneously to adjust ventilation airflow while maintaining room pressure setpoints. See Chapter 4 of the [2016 Nonresidential Compliance Manual](#) for more details.

**Figure 1: Zone Components for a VAV Laboratory**



Source: 2016 Nonresidential Compliance Manual

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