THE CALIFORNIA ENERGY COMMISSION | EFFICIENCY DIVISION

Enclosed Parking Garages

When do the Standards Apply?

The ***2016 Building Energy Efficiency Standards*** (Energy Code) has requirements for the ventilation systems of enclosed parking garages with a total design exhaust rate greater than or equal to 10,000 cfm.

The Energy Code does not apply to the following:

- Garages or portions of garages where more than 20 percent of the vehicles are expected to have engines other than gasoline combustion engines.
- Additions and alterations to existing garages where less than 10,000 cfm of new exhaust capacity is being added.

Requirements for enclosed parking garages can be found in §120.6(c) of Title 24, Part 6.

What are the Requirements?

The Energy Code has requirements related to ventilation and fan power, carbon monoxide (CO) sensor placement and CO detection, CO sensor quality; control system logic, and acceptance testing.

Ventilation and Fan Power

- The ventilation rate must be at least 0.15 cfm/ft^2 when the garage is scheduled to be occupied.
- Ventilation systems must automatically detect contaminant levels and stage fans or modulate fan airflow rates to 50 percent or less of design capacity provided acceptable contaminant levels are maintained.
- Ventilation fans must have controls and/or devices that will result in fan motor demand of no more than 30 percent of design wattage at 50 percent of design airflow.
- The system must maintain the garage at negative or neutral pressure relative to other occupiable spaces when the garage is scheduled to be occupied.

CO Sensor Placement and CO Detection

- CO must be monitored with at least one CO sensor per 5,000 square feet, with the sensor located in the highest expected concentration location.
- There must be at least two CO sensors per proximity zone. A proximity zone is defined as an area that is isolated from other areas either by a floor or other impenetrable obstruction.
- CO concentration at all sensors must be maintained at 25 ppm or less at all times.

CO Sensor Quality

CO sensors must be factory calibrated and certified by the manufacturer for the following:

- Accuracy within plus or minus 5 percent of measurements.
- No more than 5 percent drift per year.
- Calibration is not required more than once per year.

Control System Logic

The control system must have logic that automatically checks for sensor failure by the following means:

- If any sensor is not calibrated within the specified calibration period, the sensor will be reported as failed.
- During unoccupied periods the system must compare the readings of all sensors. For example, if any sensor is more than 15 ppm above or below the average of all sensors for longer than four hours, the sensor has failed.

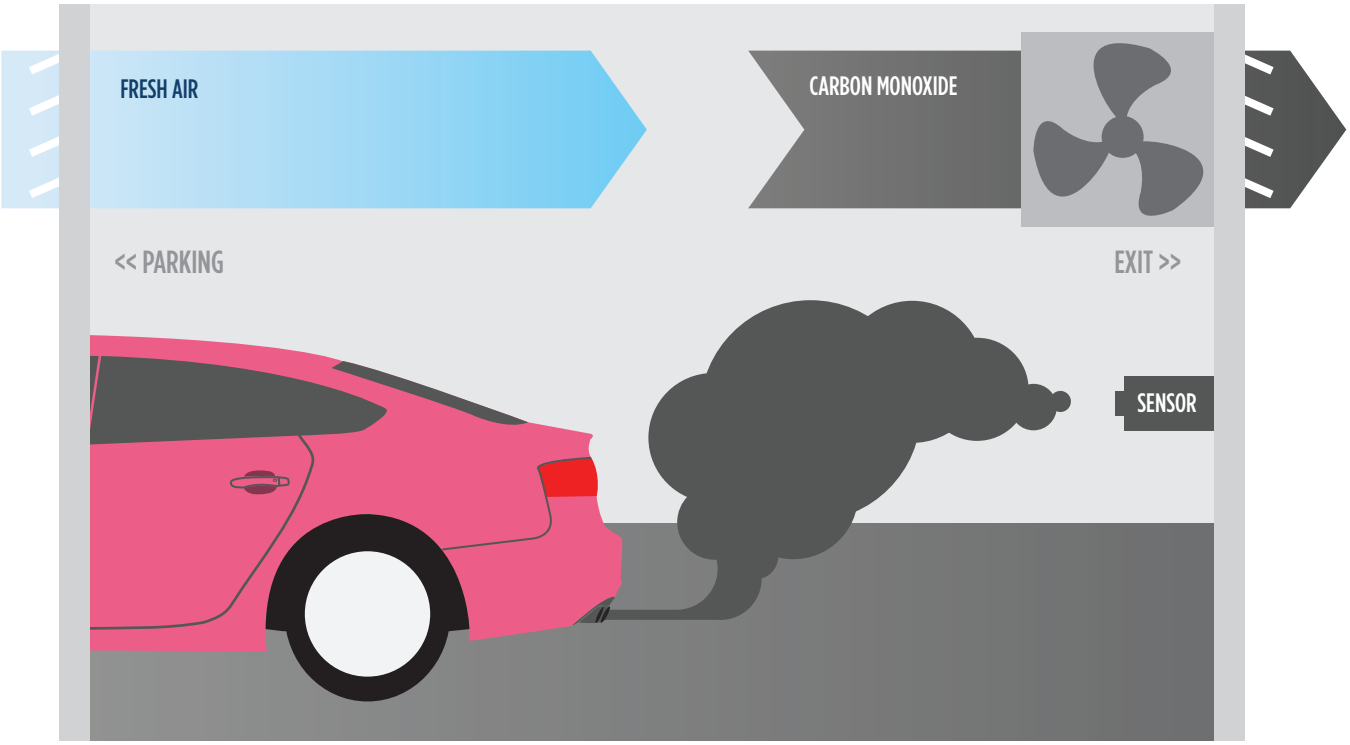
- During occupied periods the system must compare the readings of all sensors in the same proximity zone. For example, if the 30 minute rolling average for any sensor in a proximity zone is more than 15 ppm above or below the 30 minute rolling average for other sensor(s) in that proximity zone, the sensor has failed.

Upon detection of a failure, the system must reset to the design ventilation rates and transmit an alarm to the facility operators.

System Acceptance Testing

Before an occupancy permit is granted for a parking garage system, a Certificate of Acceptance must be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in Nonresidential Appendix NA7.12.

Parking garage carbon monoxide sensing and ventilation



Source: California Energy Commission

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