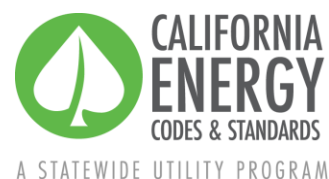


# Proposal Summary



## 2022 California Energy Code (Title 24, Part 6)

### HVAC Controls – Guest Room Controls

Updated: September 6<sup>th</sup>, 2019

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#### Introduction

The document summarizes proposed revisions to the California Energy Code (Title 24, Part 6) that will be discussed during a utility-sponsored stakeholder meeting on November 5<sup>th</sup>, 2019. The Statewide Utility Codes and Standards Enhancement (CASE) Team is seeking input and feedback. To provide your comments, email [info@title24stakeholders.com](mailto:info@title24stakeholders.com) by November 19<sup>th</sup>, 2019.

#### Measure Description

The 2019 code requires guest rooms in hotels and motels to have occupancy sensing zone controls. These controls must be programmed to implement the following after all rooms in the zone have been unoccupied for 5 minutes: 1) shut off ventilation to every room in the unoccupied zone if there is no call for heating or cooling, and 2) adjust the temperature setpoints by 5°. After 30 minutes, guestrooms are required to further setback/setup setpoints by 5°F.

This measure proposes to require ventilation to be shut off to the guest room within 5 minutes of all occupants leaving the room, and require temperature setpoints of at least 60°F for heating and 80°F for cooling for unrented and unoccupied guest rooms. These requirements will align Title 24 Part 6 with the guest room ventilation control requirements in ASHRAE Standard 90.1 (2016) and guestroom purge requirements of 189.1 (2017). Thresholds for number of guest rooms in the hotel or networked control of guest rooms may be included in the requirements upon further research. ASHRAE 90.1 (2016) requires the measure for >50 guest rooms, so this may be the appropriate starting point to consider. This measure will also attempt to clarify and clean-up the ventilation and setback requirements that are currently spread over multiple sections of Title 24 Part 6: 120.1(d)5, 120.2(e)3, and 130.1(c)8.

#### Opportunities for Discussion

Currently the requirements for occupant sensing and resulting control are somewhat spread out in various sections and somewhat disparate. We propose to not only include the guest room control requirements from ASHRAE 90.1, but also consolidate the sensor system requirements into Chapter 110 and adjust the references in Chapters 120.1, 120.2 and 130.1 such that 'inoccupancy' is consistently defined in all spaces for HVAC and lighting. The current draft lists time requirements in each section, however we also propose to define when and how a space is determined to be unoccupied, specifically by motion and IR based systems, in section 110.13.



## Draft Code Language

### 120.1(d)2

- **Requirements for Ventilation and Indoor Air Quality**
  - **Operation and Control Requirements for Minimum Quantities of Outdoor Air**

**Pre-occupancy.** A ventilation purge cycle shall be implemented in accordance with one of the following:

A. For spaces other than guest rooms, the lesser of the minimum rate of outdoor air required by Section 120.1(c) or three complete air changes shall be supplied to the entire building each occupiable zone during the 1-hour period immediately before the building, or individual zone, is normally occupied.

B. For guest rooms, ventilation systems shall have an automatic preoccupancy purge cycle that shall provide outdoor air ventilation at the design ventilation rate for 60 minutes, or at a rate and duration equivalent to one air change. In guest rooms with a networked guestroom control system, the purge cycle shall be completed within 60 minutes prior to the time the room is scheduled to be occupied. Where guest rooms are not connected to a networked guest room control system, the preoccupancy purge cycle shall occur daily.

EXCEPTION to Section 120.1(d)2: Spaces that are operated continuously

### 120.1(d)5

- **Requirements for Ventilation and Indoor Air Quality**
  - **Operation and Control Requirements for Minimum Quantities of Outdoor Air**

**Occupant Sensor Ventilation Control Devices.** When occupancy sensor ventilation devices are required by Section 120.2(e)3 Where Table 120.1-A occupancy category permits ventilation air to be reduced to zero when the zone is in occupied-standby mode, occupant sensors shall be used to reduce the rate of outdoor air flow shall be reduced when occupants are not present in accordance with the following when the zone is unoccupied:

A. Occupant ~~sensors~~ sensing systems shall meet the requirements in Section 110.9(b)4 and shall have suitable coverage and placement to detect occupants in the entire space ~~ventilated~~. If occupant sensors controlling lighting are also used for ventilation, the ventilation signal shall be independent of daylighting, manual lighting overrides, or manual control of lighting. When a single zone damper or a single zone system serves multiple rooms, there shall be an occupancy sensor in each room and the zone is not considered vacant until all rooms in the zone are vacant.

B. One hour prior to normal scheduled occupancy, the ~~occupancy sensor~~ ventilation control shall allow pre-occupancy purge as described in Section 120.1(d)2.

C. Zones shall be placed in occupied standby mode when all spaces served by the zone are unoccupied for more than 5 minutes.

D. During occupied standby mode.

i. Ventilation fans shall automatically be turned off, or isolation devices serving each zone shall automatically shut off the supply of outdoor air to the unoccupied zone.

## 120.2(e)3

- **Required Controls for Space-Conditioning Systems**
  - **Shut-off and Reset Controls for Space-Conditioning Systems**

**Occupancy Sensing Zone Controls.** Space conditioning systems serving room(s) that are required to have occupant sensing controls in accordance with Section 130.1(c), and where the Table 120.1-A occupancy category permits ventilation air to be reduced to zero when the space is in occupied-standby mode, shall meet the following:

A. The zone shall be placed in occupied standby mode when all room(s) served by the zone are unoccupied for more than 5 minutes; ~~and,~~

B. During occupied standby mode:

i. Zone controls must adjust temperature setpoints by either

a. Automatically setup the operating cooling temperature set point by 2°F or more and setback the operating heating temperature set point by 2°F or more; ~~or~~

b. For multiple zone systems with Direct Digital Controls (DDC) to the zone level, setup the operating cooling temperature setpoint by 0.5°F or more and setback the operating heating temperature setpoint by 0.5°F or more.

ii. All heating and cooling airflow to the zone shall be shut off whenever the space temperature is between the active heating and cooling setpoints.

~~C. During occupied standby mode, all airflow to the zone shall be shut off whenever the space temperature is between the active heating and cooling setpoints.~~

EXCEPTION 1 to Sections 120.2(e)1, 2, and 3: Where it can be demonstrated to the satisfaction of the enforcing agency that the system serves an area that must operate continuously.

EXCEPTION 2 to Sections 120.2(e)1, 2, and 3: Systems with full load demands of 2 kW or less, if they have a readily accessible manual shut-off switch.

EXCEPTION 3 to Sections 120.2(e)1 and 2: Systems serving hotel/motel guest rooms, if they have a readily accessible manual shut-off switch.

EXCEPTION 4 to Sections 120.2(e)3: Occupied cooling setpoints may be maintained during unoccupied times if necessary to maintain space dehumidification setpoints.

## 120.2(e)4

- **Required Controls for Space-Conditioning Systems**
  - **Shut-off and Reset Controls for Space-Conditioning Systems**

**Hotel and motel guest rooms** shall have captive card key controls, occupancy sensing controls, or automatic controls. ~~such that, no longer than 30 minutes after the guest room has been vacated, setpoints are setup at least +5°F (+3°C) in cooling mode and set down at least -5°F (-3°C) in heating mode.~~

A. Guest room zones shall be placed in occupied standby mode when all room(s) served by the zone are unoccupied for more than 5 minutes;

B. During occupied standby mode:

i. HVAC set points shall be automatically raised by at least 5°F from the occupant set point in the cooling mode and automatically lowered by at least 5°F from the occupant set point in the heating mode.

ii. All heating and cooling airflow to the zone shall be shut off whenever the space temperature is between the active heating and cooling setpoints.

C. When the guest room is unrented and unoccupied, HVAC set points shall be automatically reset to 80°F or higher in the cooling mode and to 60°F or lower in the heating mode. Unrented and unoccupied guest rooms shall be determined by either of the following:

i. The guest room has been continuously unoccupied for up to 16 hours.

ii. A networked guest room control system indicates the guest room is unrented and the guest room is unoccupied for 30 minutes or longer.

D. Guestroom controls shall have separate, occupant-adjustable setpoints for heating and cooling and shall have a minimum deadband of 3°F and a maximum deadband of at least 8°F, i.e. the thermostat will not allow occupants to set the setpoints closer than 3°F and will not allow occupants to set them farther than 8°F. Fans not providing ventilation shall be shut off in deadband when the space is occupied.