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California Energy Commission

**DOCKETED**

**12-BSTD-6**

**TN # 68645**

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To: Mazi Shirakh

**SUBJECT: Docket number: 12-BTSD-06**

**Proposed Residential Manual Language Changes**

ConSol proposes to clarify the zonal control credit for heating systems in the Residential Manual. We believe the section was unintentionally omitted. Zonal credit for heating is a compliance option that is needed to allow credit for selectively conditioning only the occupied areas of the house. As the California Energy Commission moves towards zero energy homes, zonal control is one of the cost effective strategies that reduces energy use. The following language is from the 2008 Residential Manual modified to remove any credit for zonal cooling and to clarify that gas vented fireplaces meet the zonal control heating credit as long as they meet the other requirements for zonal control.

The proposed language is follows.

**4.5.2 Zonal Control**

An energy compliance credit is provided for zoned heating systems, which save energy by providing selective conditioning for only the occupied areas of a house. A house having at least two zones (living and sleeping) may qualify for this compliance credit. The equipment may consist of one heating system for the living areas and another system for sleeping areas or a single system with zoning capabilities, set to turn off the sleeping areas in the daytime and the living area unit at night (see Figure **Error! No text of specified style in document.-1**).

There are unique eligibility and installation requirements for zonal control to qualify under the Standards. The following steps must be taken for the building to show compliance with the Standards under this exceptional method:

1. **Temperature Sensors.** Each thermal zone, including a living zone and a sleeping zone, must have individual air temperature sensors that provide accurate temperature readings of the typical condition in that zone.
2. **Habitable Rooms.** Each habitable room in each zone must have a source of space heating such as forced air supply registers, a gas vented fireplace or



individual conditioning units. Bathrooms, laundry, halls and/or dressing rooms are not habitable rooms.

3. **Non-closeable Openings.** The total non-closeable opening area ( $W$ ) between adjacent living and sleeping thermal zones (i.e., halls, stairwells, and other openings) must be less than or equal to 40 ft<sup>2</sup>. All remaining zonal boundary areas must be separated by permanent floor-to-ceiling walls and/or fully solid, operable doors capable of restricting free air movement when in the closed position.

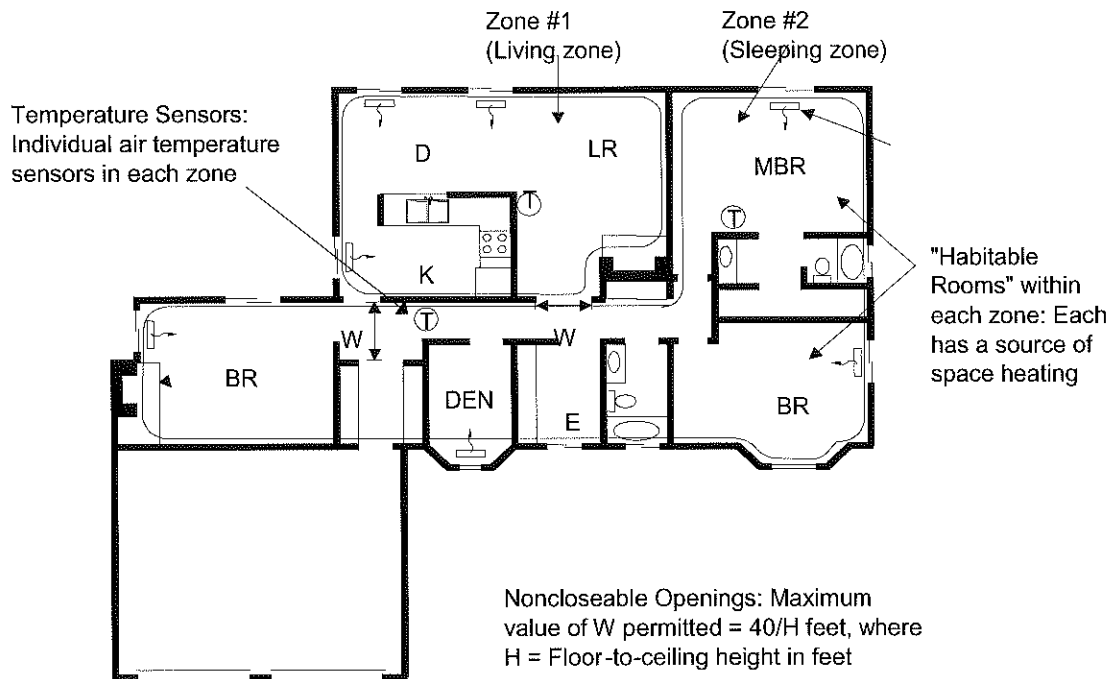


Figure Error! No text of specified style in document.-1- Zonal Control Example

4. **Thermostats.** Each zone must be controlled by a central automatic dual setback thermostat that can control the conditioning equipment and maintain preset temperatures for varying time periods in each zone independent of the other.

Other requirements specific to forced air ducted systems include the following:

1. Each zone must be served by a return air register located entirely within the zone. Return air dampers are not required.
2. Supply air dampers must be manufactured and installed so that when they are closed, there is no measurable airflow at the registers.
3. The system must be designed to operate within the equipment manufacturer's specifications. Gas vented fireplaces must meet ANSI Z21.88-2009 (Vented Gas Fireplace Heater Standards).
4. Air is to positively flow into, through, and out of a zone only when the zone is being conditioned. No measurable amount of supply air is to be discharged into unconditioned or unoccupied space in order to maintain proper airflow in the system.



Although multiple thermally distinct living and/or sleeping zones may exist in a residence, the correct way to model zonal control for credit requires only two zones: one living zone and one sleeping zone. All separate living zone components must be modeled as one single living zone: the same must be done for sleeping zones.

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**Example-1**

**Question**

In defining the living and sleeping zones for a home with a zonally-controlled HVAC system, can laundry rooms and bathrooms (which are not habitable spaces) be included on whichever zone they are most suited to geographically (e.g., a bathroom located near bedrooms)?

**Answer**

Yes. For computer modeling purposes, include the square footage of any non-habitable or indirectly conditioned spaces, with the closest zone.

**Example-2**

**Question**

How do I model the energy efficiency of a gas vented fireplace for zonal control heating?

**Answer**

The efficiency of gas vented fireplaces is described as an Annual Fuel Utilization Efficiency (AFUE) and is calculated by the manufacturer per the ANSI Z21.88-2009 Standard. Gas vented fireplaces need to meet all of the other relevant requirements of zonal control.

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Regards,



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Cc: Andrew McAllister, Presiding Member, Energy Committee  
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