CEC2D-6-23

IECC CE: C403.4.1.2 (New), C403.4.1.3 (New), C403.4.1.4 (New)

Proponents:

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2024 International Energy Code[CE Project] R3

Revise as follows:

C403.4.1.2 Deadband.

Where used to control both heating and cooling, zone thermostatic controls shall: ~~be configured to provide a temperature range or deadband of not less than 5°F (2.8°C) within which the supply of heating and cooling energy to the zone is shut off or reduced to a minimum.~~

1. Have separate set points for heating and cooling, each individually adjustable,
2. Be capable of and initially configured to provide a temperature range or dead band between the two set points of not less than 5°F (3°C) within which the supply of heating and cooling energy to the zone is shut off or reduced to a minimum, and
3. Have a minimum dead band of not less than 1°F (0.5°C) when set points are adjusted.

Exceptions:

1. Thermostats ~~that require~~ requiring *manual* changeover between heating and cooling modes.
2. Occupancies or applications where applicable codes or accreditation standards requiring precision in indoor temperature control ~~as approved by the code official~~ shall be permitted to be initially configured to not less than 1ºF (0.5ºC) deadband.

Add new text as follows:

C403.4.1.3 Set point adjustment and display.

Where thermostatic control set points are capable of being adjusted by occupants or HVAC system operators, the adjustment shall be independent for the heating set point and the cooling set point; when one set point is changed, the other shall not change except as needed to maintain the minimum dead band required by Section C404.4.1.2. For thermostatic controls that display set points, both the heating and cooling set points shall be displayed simultaneously, or the set point of the currently active mode (heating or cooling) shall be displayed along with an indication of that mode.

Revise as follows:

C403.4.1.~~3~~4 Set point overlap restriction.

Where heating and cooling to a zone are controlled by ~~has a~~ separate ~~heating and a separate cooling~~zone thermostatic controls located within the zone, mechanical or software means shall be provided ~~a limit switch, mechanical stop or direct digital control system with software programming shall be configured~~ to prevent the heating setpoint from exceeding the cooling setpoint, minus the deadband required by ~~and to maintain a deadband in accordance with~~ Section C403.3.4.1.

Reason:

The requirements to thru demand limiting will result in a setup of cooling to a higher temperature to turn on heat. The setback for heating operation could turn on cooling for building thermostats that have a single setpoint, which we have found is commonly used in Hotels and some commercial buildings. The proposed text is pulled from a new ASHRAE 90.1 addendum

Also with electrification, buildings may have cooling and heating thermal storage, which could be used for demand limiting without

resulting in comfort problems. We have proposed adding an exception for buildings with thermal storage.

Bibliography:

This change is the same as addendum c to ASHRAE 90.1-2022.

Cost Impact:

The code change proposal will increase the cost of construction.

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The capability exists in most thermostats and control systems. Most modern controllers already have dual set points since the dead band capability has been a requirement of Standard 90.1 since 1989. And many already have displays that meet the new requirements. Direct digital control systems generally have configurable displays that can be readily modified to meet the proposed requirements. So the primary first cost impact will be to modify the displays of non-DDC (firmware) thermostats, but these are low-cost thermostats to begin with and also the thermostats that this addendum is targeting. The energy savings will more than cover the small first cost in just a few years of demand control.