### REPI-71: Revision / Coordination with AHRI, NBI, DOE and REPI-70 + CEPI-99

**IECC®: SECTION R202 (New), R403.1.2 (New), R407.2, CTA (New)**

**Proponents:**

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**2021 International Energy Conservation Code**

**SECTION R202**

**GENERAL DEFINITIONS**

*Add new definitions as follows:*

**DEMAND RESPONSE SIGNAL.** A signal that indicates a price or a request to modify electricity consumption for a limited time period.

**DEMAND RESPONSIVE CONTROL.** A control capable of receiving and automatically responding to a *demand* *response signal*.

**SECTION R403**

**SYSTEMS**

*Revise text as follows:*

**R403.1 Controls.** Not less than one thermostat shall be provided for each separate heating and cooling system. The primary heating or cooling system serving the dwelling unit shall comply with Sections R403.1.1 and R403.1.2.

**R403.1.1 Programmable thermostat.** The thermostat controlling the primary heating or cooling system of the dwelling unit shall be capable of controlling the heating and cooling system on a daily schedule to maintain different temperature setpoints at different times of the day. This thermostat shall include the capability to set back or temporarily operate the system to maintain zone temperatures of not less than 55°F (13°C) to not greater than 85°F (29°C). The thermostat shall be programmed initially by the manufacturer with a heating temperature setpoint of not greater than 70°F (21°C) and a cooling temperature setpoint of not less than 78°F (26°C).

**R403.1.2 Demand responsive thermostat.** The thermostat shall be provided with a *demand responsive control* capable of communicating with the Virtual End Node (VEN) using a wired or wireless bi-directional communication pathway and executing the following actions in response to a *demand response signal*:

1. Automatically increasing the zone operating cooling set point by the following values: 1°F (0.5°C), 2°F (1°C), 3°F (1.5°C), and 4°F (2°C).
2. Automatically decreasing the zone operating heating set point by the following values: 1°F (0.5°C), 2°F (1°C), 3°F (1.5°C), and 4°F (2°C).

Thermostats controlling single stage HVAC systems shall comply with Section R403.1.2.1. Thermostats controlling variable capacity HVAC systems shall comply with Section R403.1.2.2. Thermostats controlling two-stage HVAC systems shall comply with either Section R403.1.2.1 or R403.1.2.2. Where a *demand responsive signal* is not available the thermostat shall be capable of performing all other functions.

**Exception:** Assisted living facilities.

**R403.1.2.1 Single stage or two-stage HVAC system controls.** Thermostats controlling single stage HVAC systems shall be provided with a *demand responsive control* that complies with one of the following:

* + - 1. Certified OpenADR 2.0a VEN, as specified under Clause 11, Conformance
	1. Certified OpenADR 2.0b VEN, as specified under Clause 11, Conformance
	2. Certified by the manufacturer as being capable of responding to a *demand response signal* from a certified OpenADR 2.0b VEN by automatically implementing the control functions requested by the VEN for the equipment it controls
	3. IEC 62746-10-1
	4. The communication protocol required by a controlling entity, such as a utility or service provider, to participate in an automated demand response program
	5. The physical configuration and communication protocol of CTA 2045-A or CTA-2045-B

**R403.1.2.2 Variable capacity or two stage HVAC system controls.** Thermostats controlling variable capacity and two stage HVAC systems shall be provided with a *demand responsive control* that complies with the communication and performance requirements of AHRI 1380.

**SECTION R407**

**TROPICAL CLIMATE REGION COMPLIANCE PATH**

*Revise text as follows:*

**R407.2 Tropical climate region.** Compliance with this section requires the following:

1. Not more than one-half of the *occupied* space is air conditioned and is controlled by a thermostat in accordance with Sections R403.1.1 and R403.1.2.

**Add new standard(s) as follows:**

AHRI Air-Conditioning, Heating, & Refrigeration Institute 2111 Wilson Blvd, Suite 500 Arlington VA 22201

AHRI 1380-2019 Demand Response through Variable Capacity HVAC Systems in Residential and Small Commercial Applications

ANSI American National Standards Institute 25 West 43rd Street, 4th Floor New York NY 10036

CTA Consumer Technology Association Technology & Standards Department 1919 S Eads Street Arlington, VA 22202

ANSI/CTA-2045-A – 2018 Modular Communications Interface for Energy Management

ANSI/CTA-2045-B – 2019 Modular Communications Interface for Energy Management

IEC IEC Regional Centre for North America 446 Main Street 16th Floor Worcester MA 01608
IEC International Electrotechnical Commission.

IEC 62746-10-1 - 2018 Systems interface between customer energy management system and the power management system – Part 10-1: Open automated demand response

OpenADR OpenADR Alliance 111 Deerwood Road Suite 200 San Ramon CA 94583
OpenADR OpenADR Alliance

OpenADR 2.0a and 2.0b – 2019: Profile Specification Distributed Energy Resources

### Proposal Originally Submitted

**SECTION R202**

**GENERAL DEFINITIONS**

*Add new definitions as follows:*

**GRID-INTEGRATED CONTROL.** An automatic control that can receive, automatically respond to demand response requests from and send information back to a utility, electrical system operator, or third-party demand response program provider.

**SECTION R403**

**SYSTEMS**

*Add new text as follows:*

R403.1.1.1 Grid-integrated thermostat controls.

The thermostats shall be provided with grid-integrated controls that comply with AHRI 1380 capable of the following:

1. Automatically increasing the zone operating cooling set points by a minimum of 4°F (2.2°C)
2. Automatically decreasing the zone operating heating set points by a minimum of 4°F (2.2°C)
3. Automatically decreasing the zone operating cooling set points by a minimum of 2°F (1.1°C)
4. Automatically increasing the zone operation heating set points by a minimum of 2°F (1.1°C)
5. Both ramp-up and ramp-down logic to prevent the building peak demand from exceeding that expected without the DR implementation.

The thermostat shall be capable of performing all other functions provided by the control when the grid-integrated controls are not available.

**Exception:** Assisted living facilities.

**Revise as follows:**

R407.2 Tropical climate region.

Compliance with this section requires the following:
1. Not more than one-half of the occupied space is air conditioned and is controlled by a thermostat in accordance with Section R403.1.1.