



# BUILDINGS 2021-018 BULLETIN O T C R

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**PURPOSE:** This document establishes guidelines for installation and maintenance of space heating distribution energy management systems.

**SUBJECT(S):** Innovation Challenge, Space heating distribution energy management system, Data collection, Central heating plant, Electric fan, Radiator

## RELATED CODE SECTIONS: AC 28-105, AC 28-113

### I. INNOVATION CHALLENGE COMPETITION

In 2020, the Department of Buildings launched the **Carbon Neutrality Innovation Challenge** competition. The competition sought ideas for increasing energy efficiency and cutting emissions among NYC's buildings. The Department's website provides a [list of the winning technologies](#).

One of the competition's winning technologies is space heating distribution energy management systems. This Bulletin describes how space heating distribution energy management systems, that comply with the description and acceptance criteria of this Bulletin, can be utilized in building mechanical systems.

### II. BACKGROUND

The NYC Construction Codes do not prescribe requirements for space heating distribution energy management systems.

Additionally, in accordance with Administrative Code §28-105, a permit for installing space heating distribution energy management systems would not be required since the installation does not involve the construction, enlargement, alteration, repair, move, demolition, removal or change to the use or occupancy of a building or structure; or the erection, installation, alteration, repair, removal, conversion or replacement of any gas, mechanical, plumbing, fire suppression or fire protection system. Therefore, this Bulletin establishes guidelines for the installation of space heating distribution energy management systems.

### III. DESCRIPTION

Space heating distribution energy management systems are energy management and electrification platforms for radiator-heated buildings. The system includes insulated, thermostatic radiator enclosures (TREs) wirelessly networked to a central heating plant control. TREs include infrared thermostats and electric powered fans designed to deliver warm air to tenant spaces. Each individual TRE sends data to the central heating plant control. The central heating plant control calculates the building's average temperature and sends this data to the boiler controller.

#### IV. USES

Space heating distribution energy management systems provide increased tenant comfort and improved energy efficiency by reducing overheating and energy waste. TREs provide tenant comfort by monitoring room temperatures with built-in thermostats and delivering desired thermal energy by an internal electric powered fan. Energy efficiency is achieved by (1) thermodynamically manipulating the steam condensation rate within each radiator, depending on local demand, exacting a more balanced effect on the steam distribution network of a building; and (2) temperature data from every networked TRE feeding into an algorithm that informs the boiler controller.

TREs may integrate with any radiator, including steam and hydronic types. The units are plug in devices that do not require a licensed contractor to install. TREs do not interfere with a building's plumbing system and provide real-time monitoring and analytics of a building's heating distribution system and envelope.

#### V. GUIDELINES FOR INSTALLATION & MAINTENANCE

Recommended installation and maintenance guidelines for space heating distribution energy management systems include the following:

##### A. Installation

1. Installation of the space heating distribution energy management system must be in accordance with the manufacturer's instructions.
2. Sufficient power supply must be available to operate the TREs.
3. The electric powered TRE fan should be UL listed.
4. Building owners should consult with the manufacturer of a space heating distribution energy management system to ensure the control/communication devices are compatible with the boiler.

##### B. Maintenance

1. The components of the thermostatic radiator enclosures (i.e. fan) must be maintained periodically in accordance with manufacturer's instructions.