



**BSR/ASHRAE/IES Addendum cm  
to ANSI/ASHRAE/IES Standard 90.1-2016**

**Public Review Draft**

# **Proposed Addendum cm to Standard 90.1-2016, Energy Standard for Buildings Except Low-Rise Residential Buildings**

**First Public Review (February 2019)  
(Draft Shows Proposed Changes to Current Standard)**

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## FOREWORD

Addendum 90.1au revised Exception 2 to Section 6.5.2.1 Zone Controls to reference the Simplified Procedure to determining ventilation rates and airflow minimums that was incorporated in Standard 62.1 by Addendum 62.1f in early 2018.

2. Zones with *DDC* that comply with all of the following:
  - a. The airflow rate in *dead band* between heating and cooling does not exceed the larger of the following:
    - (1) ~~Twenty percent of the zone design peak supply rate.~~
    - (2) The minimum primary outdoor airflow rate required to meet the Simplified Procedure ventilation requirements of ASHRAE Standard 62.1 for the zone and is permitted to be the average airflow rate as allowed by ASHRAE Standard 62.1.
    - (3) Any higher rate that can be demonstrated, to the satisfaction of the authority having jurisdiction, to reduce overall system annual energy use by offsetting reheat/recool energy losses through a reduction in outdoor air intake.
    - (4) The airflow rate required to comply with applicable codes or accreditation standards, such as pressure relationships or minimum air change rates.
  - b. The airflow rate that is reheated, recooled, or mixed shall be less than 50% of the zone design peak supply rate.
  - c. The first stage of heating consists of modulating the zone supply air temperature *set point* up to a maximum *set point* while the airflow is maintained at the *dead band* flow rate.
  - d. The second stage of heating consists of modulating the airflow rate from the *dead band* flow rate up to the heating maximum flow rate.

However, we overlooked that Exception 1 had the same 20% minimum for DDC systems. This addendum makes the same change to Exception 1.

***Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and strikethrough (for deletions) unless the instructions specifically mention some other means of indicating the changes. Only these changes are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed substantive changes.***

## Addendum cm to 90.1-2016

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(IP and SI Units)

Revise Exception 1 to Section 6.5.2.1 to the Standard as follows:

### 6.5.2 Simultaneous Heating and Cooling Limitation

#### 6.5.2.1 Zone Controls

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##### Exceptions to 6.5.2.1

1. Zones for which the volume of air that is reheated, recooled, or mixed is less than the larger of the following:
  - a. ~~Twenty percent~~ For systems without DDC, 30% of the zone design peak supply ~~for systems with DDC and 30% for other systems.~~
  - b. For systems with DDC, the minimum primary ~~outdoor~~ airflow rate required to meet the Simplified Procedure ventilation requirements of ASHRAE Standard 62.1 for the zone and is permitted to be the average airflow rate as allowed by ASHRAE Standard 62.1.
  - c. Any higher rate that can be demonstrated, to the satisfaction of the authority having jurisdiction, to reduce overall system annual energy use by offsetting reheat/recool energy losses through a reduction in outdoor air intake for the system.
  - d. The airflow rate required to comply with applicable codes or accreditation standards, such as pressure relationships or minimum air change rates.

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*NOTE TO REVIEWERS: Addendum au also changed section 6.5.2.1 of Standard 90.1-2016. Following is how section 6.5.2.1 would appear after this modification.*

### 6.5.2 Simultaneous Heating and Cooling Limitation

#### 6.5.2.1 Zone Controls

Zone *thermostatic controls* shall prevent

- a. *reheating*;
- b. *recooling*;
- c. mixing or simultaneously supplying air that has been previously mechanically heated and air that has been previously cooled, either by *mechanical cooling* or by economizer *systems*; and
- d. other simultaneous operation of heating and cooling *systems* to the same zone.

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##### Exceptions to 6.5.2.1

1. Zones for which the volume of air that is reheated, recooled, or mixed is less than the larger of the following:
  - a. For systems without DDC, 30% percent of the zone design peak supply.
  - a. For systems with DDC, the minimum primary airflow rate required to meet the Simplified Procedure ventilation requirements of ASHRAE Standard 62.1 for the zone and is permitted to be the average airflow rate as allowed by ASHRAE Standard 62.1.

- c. Any higher rate that can be demonstrated, to the satisfaction of the *authority having jurisdiction*, to reduce overall *system* annual *energy* use by offsetting *reheat/recool energy* losses through a reduction in *outdoor air* intake for the *system*.
  - d. The airflow rate required to comply with applicable codes or accreditation standards, such as pressure relationships or minimum air change rates.
2. Zones with *DDC* that comply with all of the following:
- a. The airflow rate in *dead band* between heating and cooling does not exceed the larger of the following:
    - (1) The minimum primary airflow rate required to meet the Simplified Procedure ventilation requirements of ASHRAE Standard 62.1 for the zone and is permitted to be the average airflow rate.
    - (2) Any higher rate that can be demonstrated, to the satisfaction of the authority having jurisdiction, to reduce overall system annual energy use by offsetting reheat/recool energy losses through a reduction in outdoor air intake.
    - (3) The airflow rate required to comply with applicable codes or accreditation standards, such as pressure relationships or minimum air change rates.
  - b. The airflow rate that is reheated, recooled, or mixed shall be less than 50% of the zone design peak supply rate.
  - c. The first stage of heating consists of modulating the zone supply air temperature *set point* up to a maximum *set point* while the airflow is maintained at the *dead band* flow rate.
  - d. The second stage of heating consists of modulating the airflow rate from the *dead band* flow rate up to the heating maximum flow rate.
3. Laboratory exhaust *systems* that comply with Section 6.5.7.3.
4. Zones where at least 75% of the *energy* for *reheating* or for providing warm air in mixing *systems* is provided from *site-recovered energy* (including condenser heat) or *site-solar energy*.
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