



**BSR/ASHRAE/IES Addendum n  
to ANSI/ASHRAE/IES Standard 90.1-2019**

**Public Review Draft**

# **Proposed Addendum n to Standard 90.1-2019, Energy Standard for Buildings Except Low-Rise Residential Buildings**

**First Public Review (July 2020)  
(Draft Shows Proposed Changes to Current Standard)**

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**(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)**

## FOREWORD

This addendum adds an exception for units that use only series energy recovery for reheating dehumidified air to the requirements in Section 6.5.2.6. For reference, the text of 6.5.2.6 is shown below. The existing text of the section is not part of this addendum.

### 6.5.2.6 Ventilation Air Heating Control

Units that provide *ventilation* air to multiple zones and operate in conjunction with zone heating and cooling *systems* shall not use heating or heat recovery to warm supply air above 60°F [16°C] when representative *building* loads or *outdoor air* temperature indicate that the majority of zones require cooling.

The rationale for this section is that when the ventilation airstream is reheated when the building needs sensible cooling energy is wasted, even with free condenser reheat. Work done by the ventilation unit compressor is unnecessarily destroyed by the reheat and increase load on the zone unit compressors.

There is a form of reheating, series energy recovery, that reheats using energy pulled from upstream of the cooling coil. A definition was added in the 2019 version of the standard. It is shown here for reference. The definition is not part of this addendum.

**energy recovery, series:** A three-step process in which the first step is to remove energy from a single airstream without the use of mechanical cooling. In the second step the air stream is mechanically cooled for the purpose of dehumidification. In the third step the energy removed in step one is reintroduced to the air stream.

Any reheating of the airstream with series energy recovery results in an equivalent reduction of the load on the unit's compressor, so the rationale for 6.5.2.6 no longer applies. The exception is only allowed in Climate Zones 0A, 1A, 2A, 3A, and 4A because the additional fan power required by series energy recovery is likely to outweigh the energy saving provided in cool or dry climates.

Reviewers should note that the exception is written so that units that combine series energy recovery with other forms of heating are not excluded from using the exception as long as only the series energy recovery is employed when the representative building loads or outdoor air temperature indicate that the majority of zones require cooling. For example, a commercial warm air furnace can be included with the unit as long as it is designed to only be used to provide space heating and not used for dehumidification reheat.

**COST EFFECTIVENESS** – This addendum would lower the cost of using series energy recovery, since the expensive controls that are currently required can be eliminated. It does not affect the cost of using other forms of reheating during dehumidification.

*[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~striketrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard 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 changes.]*

## **Addendum n to 90.1-2019**

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*Modify the standard as follows (IP and SI Units)*

### **6.5.2.6 Ventilation Air Heating Control**

Units that provide *ventilation* air to multiple zones and operate in conjunction with zone heating and cooling *systems* shall not use heating or heat recovery to warm supply air above 60°F [16°C] when representative *building* loads or *outdoor air* temperature indicate that the majority of zones require cooling.

**Exception to 6.5.2.6:** Units that heat the airstream using only *series energy recovery* when representative *building* loads or *outdoor air* temperature indicate that the majority of zones require cooling in Climate Zones 0A, 1A, 2A, 3A, and 4A.