BSR/ASHRAE/IES Addendum bx
to ANSI/ASHRAE/IES Standard 90.1-2025

Public Review Draft

Proposed Addendum bx to Standard 90.1-2025, Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings

Third Public Review, ISC (June 2026)
(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

In the Second Public Review, ISC, the sentence was added to the list in Section 6.5.7.3.2.1 based on feedback from a commenter who pointed out that a sensible heat recovery ratio of 0.45 could result in freeze up of the exhaust recovery coil for humidified laboratories where design day ambient is less than 0 °F . A reviewer of the Second Public Review ISC then pointed out that coil frosting can still occur above 0 °F .
An exhaust coil can frost (at least in some spots) if coil entering fluid < 32 °F and exhaust air dewpoint > exhaust coil entering fluid temperature. This is because the coil surface temperature can be < 32 °F which can cause the moisture in the exhaust air to condense and freeze on the coil. After running several runaround coil selections using a popular runaround coil selection program, it turns out that coil entering fluid can be < 32 °F at outside air dry bulb below about 10 °F . Above 10F OADB the exhaust coil fluid entering temperature will be above 32 °F. Therefore, 0F is changed to 20 °F out of an abundance of caution. For example, one of the coil selections we ran at 20 °F OADB, resulted in exhaust coil entering fluid temperature of 38.3 °F . So safely above 32 °F or any risk of frosting, regardless of exhaust air dewpoint. Other details of that coil selection:

Supply EADB (°F)	20
Supply LADB (°F)	45.9
Exhaust EADB (°F)	70
Exh entering DP (°F)	40
Exhaust LADB (°F)	44.3
Effectiveness	51.8%
Exh EFT (°F)	38.3
Face velocity (fpm)	500
Min. tube wall temp. (°F)	40.9
Air pressure drop (in of water)	0.61
Fluid pressure drop (ft of water)	14.1
Rows	6
FPI	10

Cost justification: Cost justification is not required as this proposal reduces the stringency of the original proposal.

[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) and highlight is added for visual assistance 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.]

3rd PPR, ISC of Addendum bx to 90.1-2025

Modify Section 6.5.7.3.2 as shown (I-P and SI):

6.5.7.3.2 Exhaust Air Heat Recovery

Buildings with laboratory exhaust *systems* having a total laboratory exhaust rate greater than 10,000 cfm [4,725 L/s] shall include an exhaust air heat recovery system that meets all the following:

1. A *sensible energy recovery ratio* of at least 45% at heating design conditions in all climates except Climate Zones 0, 1, and 2. For laboratories with design heating outdoor air temperature below ~~0°F [-17.8°C]~~ 20.0°F [-6.7°C] and with active humidification, the *sensible energy recovery ratio* shall be rated at the coldest outdoor air temperature that does not result in frosting on the exhaust air coil, but no colder than the design heating outdoor air temperature.