



**BSR/ASHRAE Addendum h
to ANSI/ASHRAE Standard 90.4-2016**

Public Review Draft

Proposed Addendum h to Standard 90.4-2016, *Energy Standard for Data Centers*

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

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ASHRAE, 1791 Tullie Circle, NE, Atlanta GA 30329-2305

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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 new compliance approach simplifies compliance for data centers and computer rooms such as small IDF closets in an office building that are served by a VAV box off of the house air handling system by providing an alternate compliance path. Simulations have shown that VAV systems with air economizers have lower annualized MLCs than the MLCs in 90.4-2016 and also lower than the annualized MLCs proposed in addendum g to 90.4-2016. This option saves the user from having to provide a simulation model for every little computer closet and it relieves the AHJ from the burden of reviewing that simulation model. Hopefully this option will improve adoption of 90.4 as well as compliance and enforcement. Note that a computer room still complies with this option if it is served by a system without an air economizer, such as a standby CRAC unit, as long as the primary cooling source has an air economizer. This allows flexibility in terms of redundancy, reliability, minimizing emergency power and UPS loads, etc.

[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) 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 h to 90.4-2016

Modify Section 4.2 as follows:

4.2.1 Compliance Paths

4.2.1.1 **New Data Centers.** New *data centers* shall comply with the provisions of Sections 5, 7, 9, and 10 and one of the following:

- a. Sections 6 and 8
- b. Section 11
- c. Sections 8 and 13

Informative Note: See Figure C-1 for an illustrative diagram.

4.2.1.2 **Additions to Existing Data Centers.** Additions to existing *data centers* shall comply with the provisions of Sections 5, 7, 9, and 10 and one of the following:

- a. Sections 6 and 8
- b. Section 11
- c. Sections 8 and 13

...

4.2.1.3 **Alterations to Existing Data Centers.** *Alterations* to existing *data centers* shall comply with the provisions of Sections 5, 7, 8, and 10 and with either Sections 6 and 8, or Sections 8 and 13, or Section 11, provided such compliance will not result in the increase of energy consumption of the building.

...

4.2.2.2 **Supplemental Information.** Supplemental information necessary to verify compliance with this standard, such as calculations, worksheets, compliance forms, vendor literature, or other data, shall be made available when required by the building official. Compliance may be documented using mechanical and electrical calculations to complete each required path. If compliance is to be shown for mechanical *systems* only, the designer performs the calculations in Sections 6.2.1.1 or 6.2.1.2 or

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provides documentation demonstrating compliance with Section 13. If compliance is to be shown for electrical *systems* only, the designer performs the calculations in Section 8.2.1.1. The calculations in Section 6.2.1.2 can be used to take credit for existing mechanical *system* efficiencies when compliance is to be shown for electrical *systems* only. The calculations in Sections 8.2.1.1 and 6.2.1.2 can be used to take credit for existing electrical *system* efficiencies when compliance is to be shown for mechanical *systems* only.

Add new section:

13. PRESCRIPTIVE HVAC OPTION

The primary cooling system for the data center shall be a VAV system with an air economizer that is sized to meet the design cooling load of the data center. If the VAV system also serves non-data center spaces, such as office spaces, then it shall be capable of shutting off flow to the non-data center spaces when they are unoccupied while continuing to serve the data center. The data center may also be served by a secondary cooling system if the secondary system only runs when the primary system is not available or when running the secondary system is more energy efficient.

Informative Note: If the Prescriptive HVAC Option is selected the data center shall still comply with Section 8 and shall not use the tradeoff option described in Section 11.