



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

Public Review Draft

Proposed Addendum f to Standard 90.1-2019, Energy Standard for Buildings Except Low-Rise Residential Buildings

**First Public Review (March 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

Historically, the required efficiency increases to eliminate economizer has been a point of confusion for the industry. The confusion stems from whether you need to increase both the full load efficiency and part load efficiency or just the part load efficiency of the equipment. Additionally, if the metric is not in the format of work out divided by energy in (ex. IPLV), then you could get different efficiency levels required based on how you do the math. This change should address both issues. (Note: the values in the table are not underlined and not up for public review/comment.). The language was also changed to allow for a broader range of rating metrics that are being utilized in different rating standards.

There is no cost impact to this revision as it just clarifies the use of the standard.

[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 f to 90.1-2019

Modify the standard as follows (IP Units)

Table 6.5.1-2 Eliminate Required Economizer for Comfort Cooling by Increasing Cooling Efficiency

Climate Zone	Efficiency Improvement ^a
2A	17%
2B	21%
3A	27%
3B	32%
3C	65%
4A	42%
4B	49%
4C	64%
5A	49%
5B	59%
5C	74%
6A	56%
6B	65%
7	72%
8	77%

- a. If a unit is rated with an annualized or part-load metric IPLV, IEER, or SEER, then to eliminate the required economizer, only the annualized or part-load minimum cooling efficiency of the HVAC unit must be increased by the percentage shown. If the HVAC unit is only rated with a full-load metric like EER cooling, then these must be increased by the percentage shown. To determine the efficiency required to eliminate economizer, when the unit equipment efficiency is rated with an energy-input divided by work-output metric, the metric shall first be converted to COP prior to multiplying by the efficiency improvement percentage and then converted back to the rated metric.

Informative note: Some examples of annualized or part-load metrics are: IPLV, IP, IEER, and SEER.

Modify the standard as follows (SI Units)

Table same as I-P version

- a. If a unit is rated with an annualized or part-load metric IPLV, ICOP, or SEER, then to eliminate the required economizer, only the annualized or part-load minimum cooling efficiency of the HVAC unit must be increased by the percentage shown. If the HVAC unit is only rated with a full-load metric like COP cooling, then these must be increased by the percentage shown.

Informative note: Some examples of annualized or part-load metrics are: IPLV, SI, ISCO_P, and SCOP_c.