



**BSR/ASHRAE/IES Addendum bb
to ANSI/ASHRAE/IES Standard 90.1-2022**

Public Review Draft

Proposed Addendum bb to Standard 90.1-2022, Energy Standard for Sites and Buildings Except Low- Rise Residential Buildings

**First Public Review (July 2024)
(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

Increasing the minimum efficiency of axial fan open-circuit cooling towers will save energy and the new level will now match the mandatory level found in California Title 24. This efficiency increase is not expected to result in any meaningful market shift from water-cooled systems to alternative cooling solutions.

The proposed change will impact a relatively small segment of the market that is currently below the 42.1 gpm/hp efficiency level, increasing cost slightly for these selections. As a typical example, an axial fan counterflow cooling tower selection was examined that required an additional layer of fill (heat transfer surface) but reduced the fan horsepower from 30 HP to 25 HP. This increased the height of the unit by 16" but resulted in an estimated simple payback of 1.5 years based on the additional cost (unit, taller screen wall, etc.) offset by the yearly energy savings of the smaller motor, exceeding the Scalar Ratio Limit (SRL) calculated based on a 20-year life for axial fan, open circuit cooling towers.

This Continuous Maintenance Proposal is being submitted on behalf of the Regulatory Subcommittee of ASHRAE TC8.6 (Cooling Towers) and has its unanimous support. Note that TC8.6 has also submitted a complementary proposal for a cooling tower Energy Credit that is based on this new, higher efficiency level.

[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 bb to 90.1-2022

IP:

Table 6.8.1-7 Performance Requirements for Heat Rejection Equipment—Minimum Efficiency Requirements ...

Equipment Type	Total System Heat-Rejection Capacity at Rated Conditions	Subcategory or Rating Condition ^h	Performance Required ^{a,b,c,f,g}	Test Procedure ^{d,e}
Propeller or axial fan open-circuit cooling towers	All	95°F entering water 85°F leaving water 75°F entering wb	≥40.2 <u>42.1</u> gpm/hp	CTI ATC-105 and CTI STD-201 RS

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(Note: rest of table is unchanged.)

SI:

Table 6.8.1-7 Performance Requirements for Heat Rejection Equipment—Minimum Efficiency Requirements ...

Equipment Type	Total System Heat-Rejection Capacity at Rated Conditions	Subcategory or Rating Condition ^h	Performance Required ^{a,b,c,f,g}	Test Procedure ^{d,e}
Propeller or axial fan open-circuit cooling towers	All	35.0°C entering water 29.4°C leaving water 23.9°C entering wb	$\geq 3.4056 \text{ L}/(\text{s}\cdot\text{kW})$	CTI ATC-105 and CTI STD-201 RS

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(Note: rest of table is unchanged.)