

<b>DOCKETED</b>	
<b>Docket Number:</b>	24-BSTD-01
<b>Project Title:</b>	2025 Energy Code Rulemaking
<b>TN #:</b>	256311
<b>Document Title:</b>	TC 8.6 Subcommittee on Standards Comments - TC 8-6 Comment Letter on 45 Day Language
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	TC 8.6 Subcommittee on Standards
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	5/13/2024 9:40:09 AM
<b>Docketed Date:</b>	5/13/2024

*Comment Received From: TC 8.6 Subcommittee on Standards  
Submitted On: 5/13/2024  
Docket Number: 24-BSTD-01*

## **TC 8-6 Comment Letter on 45 Day Language**

See attached letter for TC 8.6 Comments on Title 24 45 day language.

*Additional submitted attachment is included below.*

## ASHRAE TC8.6 Standards Subcommittee

May 13, 2023

To: CEC Docket 24-BSTD-01

(<https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-BSTD-01>)

cc: Haile Bucaneg, Senior Mechanical Engineer ([Haile.Bucaneg@energy.ca.gov](mailto:Haile.Bucaneg@energy.ca.gov))

Re: **ASHRAE TC8.6 Standards Subcommittee Comments on the 45 Day Language for the 2025 Building Energy Efficiency Standards, Title 24, Parts 1 and 6, Express Terms**

Dear CEC Staff:

These comments are being submitted by the ASHRAE TC8.6 Standards Subcommittee on the 45-day language for the 2025 Building Energy Efficiency Standards, Title 24, Parts 1 and 6, Express Terms. ASHRAE Technical Committee (TC) 8.6 is concerned with open and closed-circuit cooling towers, evaporative condensers, adiabatic condensers and fluid coolers, spray ponds, and other types of contact type liquid-to-air heat rejection equipment along with their application and impact on complete HVAC, Industrial, and Refrigeration systems, including the associated energy and water usage as well as water treatment requirements.

Please feel free to visit our Committee's website at:

<https://tc0806.ashraetcs.org/>

TC8.6 supports the California Energy Commission's goals to improve building energy efficiency and reduce overall water use, while also decreasing carbon emissions, which align closely with those of the TC and its members. We appreciate the changes incorporated into the 45 day language in response to stakeholder comments, including those of this TC.

After reviewing the 45 day language, the CEC Staff Supplemental to the 2025 Case Report – Cooling Towers dated March 28, 2024, and the California Utility CASE Team and Compliance Improvement Team comments dated May 3, 2024, we would like to offer the following additional comments:

### **Minimum Efficiency by Climate Zone for Cooling Towers**

The TC is grateful for the reduction in the minimum efficiency of axial fan open circuit cooling towers used on chiller plants over 300 tons. This change from a maximum of 90 to 80 gpm/hp will help to minimize potential negative impacts on the water-cooled marketplace going forward. Our members have also noted, however, that while the minimum efficiency has been lowered in California Climate Zones 8, 10, and 15, the minimum efficiency values have been increased in California Climate Zones 2, 4, 5, and 13 as compared to the initial Draft Case Report as illustrated in the Table below.

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Source	CZ 1	CZ 2	CZ 3	CZ 4	CZ 5	CZ 6	CZ 7	CZ 8	CZ 9	CZ 10	CZ 11	CZ 12	CZ 13	CZ 14	CZ 15	CZ 16
First Draft Case Report	42.1	60	60	60	60	100	100	120	100	120	100	100	60	60	120	42.1
Final Case Report	42.1	70	60	70	70	80	80	90	80	90	60	70	80	60	90	42.1
45-Day Language	42.1	70	60	70	70	80	80	80	80	80	60	70	80	60	80	42.1

Table 1 Minimum Efficiency by CZ (gpm/hp)

These increases were not explained in the Final Case Report nor the CEC Staff Supplement. Can these increases be explained, especially the substantial increase in CZ13 from 60 to 80 gpm/hp?

### Cooling Tower Blowdown Controls

While the requirement for a confirmation test for the blowdown controls and the high-water alarm will add cost and effort when using water-cooled systems, we believe that these requirements will help to ensure that water treatment systems are in place and functioning properly. However, after reviewing the CA Utility CASE Team and Compliance Improvement Team’s comments on the 45 day language, we agree with and support the simplifications and corrections proposed for setting the cycles of concentration, relying only on the values contained in Table 110.2-A-1. Overall, the modified proposal will save water while helping to protect water-cooled systems from unintended scaling and corrosion and the associated loss of both cooling tower and associated system thermal efficiency. The Subcommittee will continue to follow the changes in this section in the upcoming 15 day language.

### Adiabatic Fluid Cooler Minimum Efficiency (addition to Title 24)

The TC 8.6 Standards Subcommittee proposed the addition of a minimum efficiency and test code for pad-type Adiabatic Fluid Coolers for the 2022 Edition of ASHRAE 90.1. This addition was approved by the SSPC and adopted in the 2022 Edition with the publication of Addendum “q” (link attached below). For Title 24, these requirements would be added to Table 110.2-E PERFORMANCE REQUIREMENTS FOR HEAT REJECTION EQUIPMENT as follows:

Equipment Type	Total System Heat Rejection Capacity at Rated Conditions	Subcategory or Rating Condition	Performance Requirement <sup>f</sup>	Test Procedure
<u>Propeller or axial fan adiabatic fluid coolers, integral pad type</u>	<u>All</u>	<u>110°F entering water</u> <u>100°F leaving water</u> <u>95°F entering db</u> <u>75°F entering wb</u>	<u>≥ 6.2 gpm/hp</u>	<u>CTI ATC-105</u> <u>Adiabatic</u>

<sup>f</sup>For purposes of this table, the adiabatic performance of an *integral pad-type adiabatic fluid cooler* with a once-through pad wetting system is defined as the process water flow rating of the unit at the thermal rating condition listed in Table 110.2-E divided by the fan motor nameplate power. The adiabatic performance of a pad-type adiabatic fluid cooler equipped with a recirculating spray water pump is defined as the process water flow rating of the unit at the thermal rating condition listed in Table 110.2-E divided by the sum of the fan motor nameplate power and the integral spray *pump* motor nameplate power.

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Add the following Test Code to Appendix 1-A:

CTI ATC-105 Adiabatic (23)      Acceptance Test Code for Adiabatic Fluid Coolers

Add the following in Section 10-102 DEFINITIONS:

*adiabatic fluid coolers, integral pad-type: a heat-rejection device consisting of a heat exchanger, an air moving device, integral pad-type adiabatic air-cooling system, and a structure. Water to the pads can be supplied as once-through or recirculated by a spray pump. Adiabatic heat-rejection devices with spray systems and no wetted media are not included in this definition, nor are adiabatic cooling systems field installed on the unit and supplied by anyone other than the manufacturer of the unit.:*

This addition will:

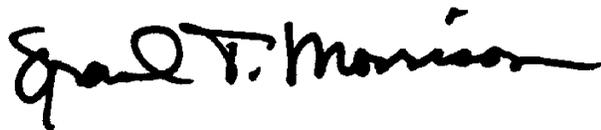
- include a growing category of heat rejection devices in the Code
- help to build awareness of a heat rejection category that offers lower energy use than dry coolers (already covered in the Table) with lower water use than cooling towers, both of which are important goals of the CEC
- and lastly will harmonize Title 24 with Standard 90.1.

Reference the Addendum to Standard 90.1 using the link below for additional details.

The ASHRAE TC 8.6 Subcommittee on Standards appreciates the opportunity to comment on the 45 day language as well as the stakeholder suggestions that have been incorporated. We hope you will consider our suggestions on the Express Terms as well as include adiabatic fluid coolers in the 15 day language, which we look forward to reviewing.

Please feel free to contact the Subcommittee with any questions regarding our comments and recommendations.

Best regards,



Frank T. Morrison  
Chair, Standards Subcommittee  
ASHRAE TC8.6 – Cooling Towers and Evaporative Condensers  
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cc: Stephen Kline, Chair, ASHRAE TC 8.6  
ASHRAE TC8.6 Standards Subcommittee

## **ASHRAE TC8.6 Standards Subcommittee**

Attachment link for Addendum “q”:

[https://www.ashrae.org/file%20library/technical%20resources/standards%20and%20guidelines/standards%20addenda/90\\_1\\_2022\\_q\\_20240229.pdf](https://www.ashrae.org/file%20library/technical%20resources/standards%20and%20guidelines/standards%20addenda/90_1_2022_q_20240229.pdf)