

DOCKETED

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**AHRI Comments on the Title 24-2025 Cooling Towers Draft CASE
Report dated May 2023**

Additional submitted attachment is included below.

July 18, 2023

Cooling Tower CASE Team

Bryan Boyce (bboyce@energy-solution.com)

(submitted electronically to Docket 22-BSTD-01)

Re: AHRI Comments on the Cooling Towers Draft CASE Report dated May 2023

Dear Mr. Boyce:

Air-Conditioning, Heating, and Refrigeration Institute (AHRI) supports California's efforts to develop cost effective, equitable energy efficiency improvements for Title 24 – 2025. In this regard, please see our comments below on the three measures proposed by the CASE Team in their Cooling Tower Draft CASE Report published in May 2023.

AHRI represents more than 300 manufacturers of air-conditioning, heating, and refrigeration equipment. It is an internationally recognized advocate for the HVACR industry and certifies the performance of many of the products manufactured by our members. In North America, the annual economic activity resulting from the HVACR industry is approximately \$256 billion. In the United States alone, AHRI member companies, along with distributors, contractors, and technicians employ more than 1.3 million people.

In addition to its activities as a global standards developer, AHRI works closely with other global codes and standards developers as well as utilities to ensure their access to the latest technology and innovation from the HVACR and water heating industry.

Overview

AHRI takes this opportunity to present the following considerations and recommendations for the Cooling Tower Draft CASE Report Measures 1, 2, and 3.

Measure 1: Increase in Cooling Tower Minimum Efficiency

- AHRI recommends maintaining the cooler tower minimum efficiency at 60 gpm/hp.
- The current 60 gpm/hp minimum efficiency for the prescriptive requirement in Title 24 is well above the mandatory minimum in Title 24 (42.1 gpm/hp) and already removes a significant portion of models from consideration on many projects. Increasing the minimum prescriptive value to 80 gpm/hp or greater will have significant consequences on the ability of designers to optimize water-cooled chilled water systems. These consequences include models that are physically larger in terms of width, length, and / or height with commensurate increases in unit weight. This increases equipment costs along with increasing shipping, rigging, architectural screen wall, and structural support costs. All these extra costs must be properly considered in any analysis.
- Furthermore, designers will be challenged to fit the desired cooling tower capacity on a given site for many of their projects, especially if the minimum efficiency requirements force a need to add additional cooling tower cells. Many sites may not have the space to accommodate the necessary amount of heat rejection to optimize the energy efficiency of the system.
- AHRI expresses concern about the cost effectiveness of the proposal to increase minimum efficiency levels (up to 120 gpm/hp in certain climate zones) and the impact on a large percentage of open circuit cooling tower models. A proposal predicated on faulty cost effectiveness analysis could lead to a restraint of trade for certain products. To decrease the likelihood of significant consequences, AHRI recommends maintaining the current 60 gpm/hp minimum efficiency.

Measure 2: Revisions to the Current Air-cooled Chiller Limitation

- AHRI recommends reducing prescriptive requirements or, if the current structure is maintain, adding exemptions for higher efficiency air-cooled chillers; air-to-water heat pumps; air-to-water heat pump chillers; and heat recovery chillers
- Optimizing HVAC systems is a very complex process, and the results vary for each building based on numerous factors. This is true even when comparing air-cooled and water-cooled chillers. Because of the complexity, prescriptive measures can often lead to unintended negative consequences.
- If air-cooled chillers are not allowed on a given project due to the air-cooled chiller limitation, then some owners will use another air-cooled alternative (such as a rooftop cooling unit or a variable refrigerant flow (VRF) system) instead of water-cooled chillers, bypassing the limitation. Based on these comments, AHRI believes that the existing and proposed rules are overly prescriptive.
- If the Case Team chooses to maintain the air-cooled chiller limitation, then the new exception for the use of air-cooled chillers that meet certain efficiency criteria along with new exceptions for air-to-water heat pumps, air-to-water heat pump chillers and heat recovery chillers. These products support electrification. They can be used directly or as a combination of a two-stage system using air-to-water with thermal storage and a water-to-water booster.

Measure 3: Blowdown Controls

- AHRI recommends the recirculating water quality be maintained in-line with the thresholds for water properties listed in ASHRAE Standard 189.1-2020, rather than attempting to maximize cycles of concentration using Langelier Saturation Index (LSI).
- The prescriptive setting of cycles of concentration for cooling towers can be challenging at best. This also has the potential for unintended negative consequences such as fill scaling or tower corrosion. The ASHRAE Standard 189.1-2020 thresholds for water properties were developed and implemented with input from the ASHRAE Technical Committee (TC) on Water Treatment, ASHRAE TC 3.6.
- AHRI also recommends that the Case Team reach out to the water treatment community such as the Cooling Technology Institute (www.cti.org), the Association of Water Technologies (www.awt.org), and ASHRAE TC 3.6 – Water Treatment (<https://tc0306.ashraetcs.org/>) for specific guidance in this area.

AHRI appreciates the opportunity to provide these comments and looks forward to working with the CEC on the development of cost effective, equitable energy and water efficiency improvements for Title 24 – 2025. If you have any questions regarding this submission, please do not hesitate to contact me.

Sincerely,



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