

DOCKETED	
Docket Number:	21-BSTD-01
Project Title:	2022 Energy Code Update Rulemaking
TN #:	238288
Document Title:	Statewide Utility Codes and Standards Enhancement Team Comments - on Computer Room Economizer Exceptions Language Clean Up
Description:	N/A
Filer:	System
Organization:	Statewide Utility Codes and Standards Enhancement Team
Submitter Role:	Public
Submission Date:	6/18/2021 2:39:32 PM
Docketed Date:	6/18/2021

*Comment Received From: Statewide Utility Codes and Standards Enhancement Team
Submitted On: 6/18/2021
Docket Number: 21-BSTD-01*

**Comment on Computer Room Economizer Exceptions Language
Clean Up**

Additional submitted attachment is included below.

Comment on Computer Room Economizer Exceptions

CALIFORNIA STATEWIDE UTILITY CODES AND STANDARDS TEAM

June 18, 2021

1. Introduction

The California Statewide Utility Codes and Standards Enhancement Team (Statewide CASE Team) appreciates the opportunity to participate in the review of the May 6, 2021 Express Terms 2022 Energy Code, Title 24 Parts 1 and 6 (45-Day Express Terms)¹.

The Statewide CASE Team actively supports code-setting bodies in developing and revising building energy codes and standards. The program's objective is to achieve significant energy savings and assist in meeting other energy-related state policy goals through the development of reasonable, responsible, and cost-effective code changes. Three California Investor Owned Utilities – Pacific Gas and Electric Company, San Diego Gas and Electric, and Southern California Edison – and two Publicly Owned Utilities – Los Angeles Department of Water and Power and Sacramento Municipal Utility District (herein referred to as the Statewide CASE Team when including the CASE Author) – sponsored this effort. The Statewide CASE Team is actively supporting the California Energy Commission (Energy Commission) in updating the California Energy Code (Title 24, Part 6) for the 2022 code update cycle. Through CASE Reports, the Statewide CASE Team has provided the Energy Commission with the technical and cost-effectiveness information to assist in making informed judgments on proposed standards for promising energy efficiency design practices and technologies.

The Statewide CASE Team encourages the Energy Commission to consider the recommendations presented in this document.

¹CEC Docket #21-BSTD-01, Document #237717
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=237717&DocumentContentId=70942>

2. Recommended Revisions

Section 140.9(a)1, is the requirement for either air, water or pumped refrigerant economizers for cooling computer rooms in new buildings. Section 141.1(b)1, is a similar requirement for newly installed computer room installations as part of an alteration. The Statewide CASE Team recommends the following changes to the 45-Day Language for the exceptions to these sections.

2.1 Proposed Change to Section 140.9(a)1 Exception 2

For Exception 2 to Section 140.9(a)1, we recommend the following two changes and provide rationale:

- Keep Exception 2i, to full economizing if in addition to a non-economizing system cooling the computer room, the computer room is served by a space conditioning system economizer which can meet computer room load when the rest of spaces in the building are at 50% of design load. However, we recommend that this exception be more clearly specified that the building space cooling system economizer be designed to provide full computer room economizing at 65°F outdoor dry-bulb temperature. The intent of Exception 2 is to allow buildings with economizers on their space conditioning system to serve computer rooms as long as the space cooling economizer can meet computer room economizer temperature thresholds in Section 140.9(a)1A. This gives designers flexibility to use space air conditioning serving the other spaces in the building to meet 140.9(a)1 computer room economizer requirements. This exception is easier to understand than the newly proposed exception ii.
- Do not include newly proposed Exception 2ii. This exception would exempt the requirements for full air economizing to the computer room if the building air conditioning economizer is able to provide to the computer room economizing capacity of at least 5 tons or 25% of the building space cooling system design capacity. Besides not indicating how much of the computer room cooling load is served, this exception may be difficult to enforce, and retaining Exception 2i with the updated language largely achieves the intent of this new item of ensuring the supplemental cooling from the building space conditioning system economizer is sized to provide a minimum level of computer room economizing.

2.2 Proposed Change to 140.9(a)1 Exception 3

We recommend not including the newly proposed Exception 3 to Section 140.9(a)1. The rationale for not including this exception is twofold:

1. For computer rooms in jurisdictions not allowing (evaporative) cooling towers, there are other prescriptive economizer technologies that can be used to comply with Section 140.9(a)1 (e.g., air economizers), and there is also the option of computer rooms using air-cooled technologies such as air-cooled chillers with

integrated economizers or dry coolers to comply with code via the performance path.

2. Including Exception 3ii may introduce confusion of what is an allowable economizer technology under Section 140.9(a)1. This exception specified that a dry-bulb ambient temperature is listed as a design temperature instead what is more appropriate temperature for designing evaporative water economizers namely the wetbulb temperature. There are several hydronic cooling systems for computer rooms that do not use evaporative cooling (e.g., air-cooled chillers with integrated economizers) and therefore do not meet the Title 24 definitions of water economizers per section 100.1(b). Listing the dry-bulb temperatures would only create confusion around what is meant by a water economizer.

2.3 Proposed Change to 141.1(b)1 Exception 4

We recommend not including the newly proposed Exception 4 to Section 141.1(b)1. The rationale for not including this exception is as follows:

1. Scenarios covered by Exception 4 would already be exempted by Exception 2 or Exception 3.

3. Proposed Code Language

Recommended revisions to the 45-Day Language are included in this document in **red**. The Statewide CASE Team's recommended language insertions are underlined and recommended language deletions are **struck**.

3.1 Proposed Change to 140.9(a)1 Exception 2

EXCEPTION 42 to Section 140.9(a)1: A computer room with an ITE design load less than 20 tons (70 kW) may be served by a second fan system without an economizer if it is also served by a fan system with an economizer that also serves other spaces within the building, provided that all of the following are met:

- ~~The economizer system is sized to meet the design cooling load of the computer room when the other spaces within the building are at 50 percent of their design load~~ The economizer system is sized to meet the design cooling load of the computer room when the other spaces within the building are at 50 percent of their design load at outside air temperatures of 65°F dry-bulb and below or 50°F wet-bulb and below; and
- ~~The economizer system has the ability to serve only the computer rooms~~ connected to it, e.g., shut off flow to other spaces within the building when unoccupied; and
- ~~The economizer system has the ability to deliver either the computer room ITE design load or the maximum of 5 tons and at least 25 percent of the economizer system capacity at design conditions.~~
- ~~The noneconomizer system does not operate when the outside air drybulb temperatures is below 60°F and, the cooling load of other spaces within the building~~

served by the economizer system is less than 50 percent of design load.

3.2 Proposed Change to 140.9(a)1 Exception 3

~~**EXCEPTION 3 to Section 140.9(a)1:** If the local water authority does not allow cooling towers the cooling system shall include either:~~

- ~~i. An integrated air economizer capable of providing 100 percent of the expected system cooling load at 65°F to 80.6°F supply air temperature at outside air temperatures of 55°F dry bulb and below or 50°F wet bulb and below, and be equipped with a fault detection and diagnostic system as specified by section 120.2(ii); or~~
- ~~ii. An integrated water economizer capable of providing 100 percent of the expected system cooling load at 65°F to 80.6°F supply air temperature at outside air temperatures of 40°F dry bulb and below or 35°F wet bulb and below; or~~
- ~~iii. An integrated refrigerant economizer capable of providing 100 percent of the expected system cooling load at 65°F to 80.6°F supply air temperature supply air temperature at outside air temperatures of 40°F dry bulb and below or 35°F wet bulb and below.~~

3.3 Proposed Change to 141.1(b)1 Exception 4

~~**EXCEPTION 4 to Section 141.1(b)1:** A computer room with an ITE design load less than 20 tons (70 kW) may be served by a fan system without an economizer if it is also served by a second fan system with an economizer that also serves other spaces within the building provided that all of the following are met:~~

- ~~i. The economizer system has the ability to serve only the computer rooms connected to it, e.g., shut off flow to other spaces within the building when unoccupied; and~~
- ~~ii. The economizer system has the ability to deliver either the computer room ITE design load or the maximum of 5 tons and at least 25 percent of the economizer system capacity at design conditions.~~