DOCKETED	
Docket Number:	26-BSTD-01
Project Title:	2025 Energy Code Compliance Option Applications
TN #:	269244
Document Title:	Executive Director Approval - Dedicated Outdoor Air System with Water Loop Heat Pumps (1404(a)3)
Description:	Executive Director Determination of Equivalent Energy Savings for Dedicated Outdoor Air System with Water Loop Heat Pumps as Specified in Section 140.4(a)3 of the 2025 Energy Code
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California ENERGY COMMISSION

CALIFORNIA NATURAL RESOURCES AGENCY

MEMORANDUM

TO: CALIFORNIA ENERGY COMMISSION

FROM: DREW BOHAN
EXECUTIVE DIRECTOR
CALIFORNIA ENERGY COMMISSION
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SUBJECT: CEC EXECUTIVE DIRECTOR DETERMINATION PURSUANT TO SECTION 140.4(a)3Av

DATE: MARCH 18, 2026

BACKGROUND

On September 11, 2024, the California Energy Commission (CEC) adopted the 2025 Energy Code, contained in the California Code of Regulations, Title 24, Part 1, Chapter 10, and Part 6, which includes prescriptive requirements for multi-zone space conditioning system types in office buildings and school buildings in Section 140.4(a)3. These requirements went into effect on January 1, 2026.

The 2025 Energy Code specified four prescriptive options for these system types in covered buildings in Section 140.4(a)3Ai – 140.4(a)3Aiv. Section 140.4(a)3Av also allows compliance with "a space-conditioning system determined by the Executive Director to use no more energy than the systems specified in Section 140.4(a)3."

On January 14, 2026, the Statewide Codes and Standards Enhancement (CASE) Team submitted to the CEC a request for determination by the Executive Director regarding the energy use of a multi-zone space-conditioning system referred to as a Dedicated Outdoor Air System with Water Loop Heat Pump (DOAS+WLHP), compared with the systems specified in Section 140.4(a)3 of the 2025 Energy Code.

The DOAS+WLHP system utilizes zone-level heat pumps, a dedicated outdoor air system (DOAS) for ventilation, cooling towers for heat rejection, and air-to-water heat pumps (AWHP) for heat addition.

On February 3, 2026, the CEC provided a copy of the CASE team's request to interested persons and provided an opportunity for public comment through March 4, 2026. No written comments were received.

In response to the CASE team's request, CEC staff reviewed the request, including supporting analysis. Staff confirmed that the DOAS+WLHP systems use no more energy than the systems specified in Section 140.4(a)3.

Therefore, staff recommended that the Executive Director determine that this system, as described in Attachment 1, may be used as an alternative to the other systems specified in Section 140.4(a)3.

SEQUENCE OF EVALUATION

- On January 14, 2026, the CASE team submitted an application to the CEC requesting a determination by the Executive Director under Section 140.4(a)3Av that the DOAS+WLHP multi-zone space conditioning type uses no more energy than the systems specified in Section 140.4(a)3.
- On February 3, 2026, the CEC provided a copy of the CASE team's application to interested persons and provided an opportunity for public comment through March 4, 2026. A public notice was posted to Docket Number 26-BSTD-01 https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=26-BSTD-01.
- The notice provided an opportunity for public comment through March 4, 2026. No comments were received.
- Staff reviewed the application and supporting documentation, and confirmed that the DOAS+WLHP systems use no more energy than the systems specified in Section 140.4(a)3, as required by Section 140.4(a)3Av.

CONCLUSION AND RECOMMENDATION

Based upon all of the information and in response to the CASE team's application, in accordance with section 140.4(a)3Av of the 2025 Energy Code, the Executive Director determines that the DOAS+WLHP system that meets the installation criteria in Attachment 1 will consume no more energy than the systems specified in Section 140.4(a)3, and therefore may be used to satisfy the prescriptive requirement for multi-zone space conditioning systems specified in Section 140.4(a)3.

Drew Bohan
Executive Director
California Energy Commission

Date: March 18, 2026

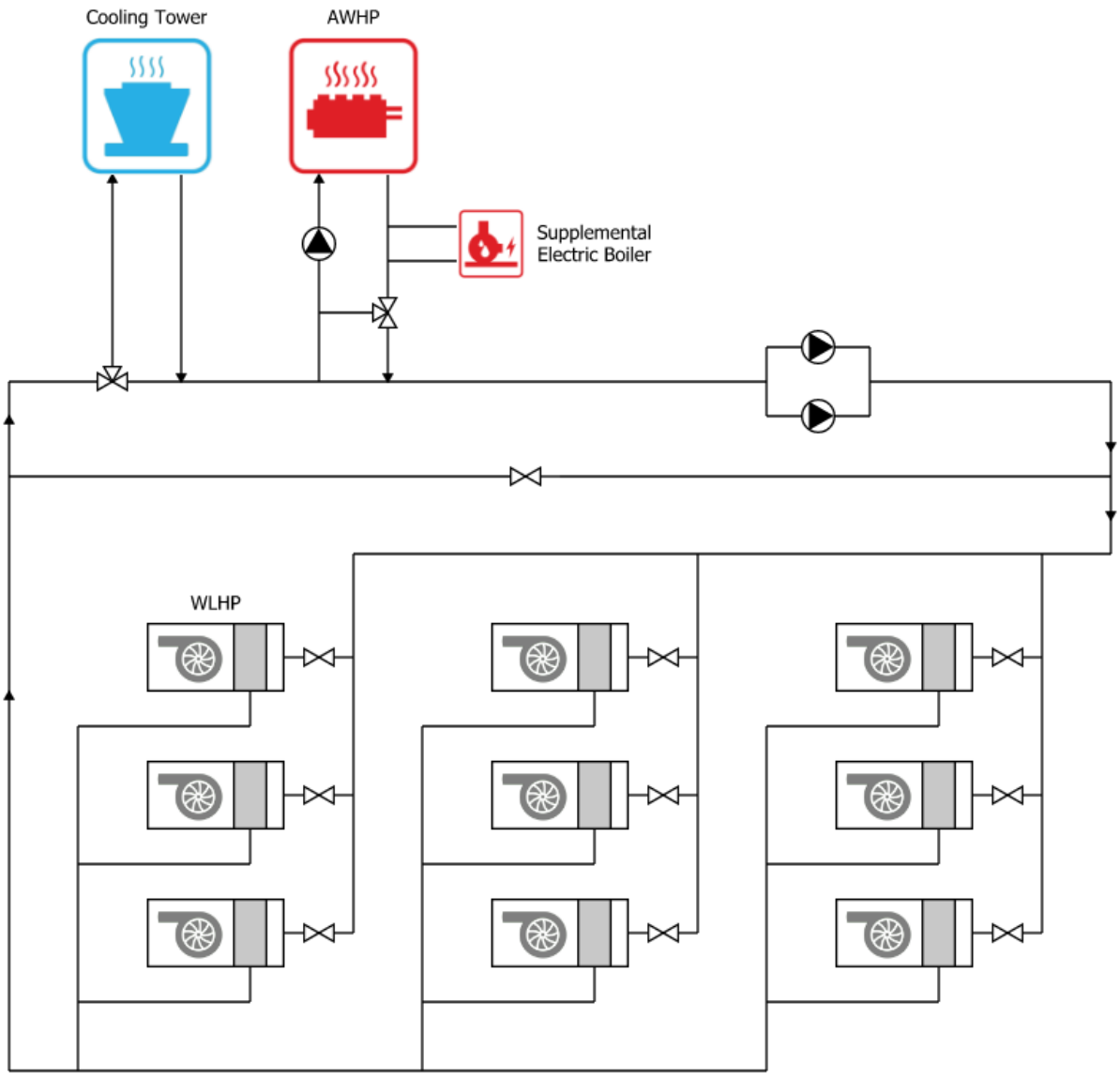
ATTACHMENTS

Attachment 1 (DOAS+WLHP) Prescriptive requirements for Dedicated Outdoor Air System + Water Loop Heat Pump

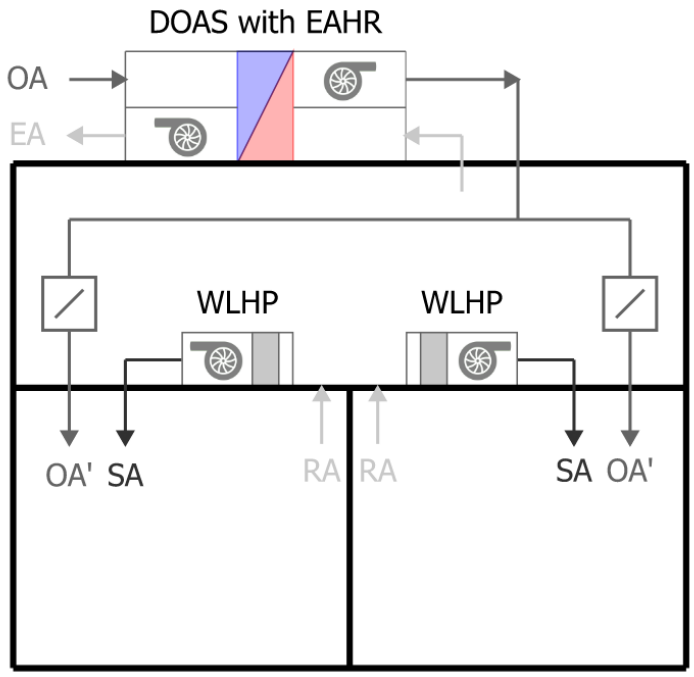
Attachment 1

Prescriptive requirements for Dedicated Outdoor Air System + Water Loop Heat Pump (DOAS+WLHP)

Example diagram of a hydronic loop for a DOAS+WLHP system



Example diagram of DOAS air distribution with ventilation air delivered direct to zone



Note: EAHR represents an exhaust air heat recovery device; OA is outdoor air; EA is exhaust air; SA is supply air; RA is return air.

Definitions

Note: these definitions are taken from ISO 13256-1:1998, Water-source heat pumps – Testing and Rating for performance, which is referenced in the 2025 Energy Code. These definitions are included for readability.

WATER-SOURCE HEAT PUMP is a single-phase or three-phase reverse-cycle heat pump that uses a circulating water loop as the heat source for heating and as the heat sink for cooling. The main components are a compressor, refrigerant-to-water heat exchanger, refrigerant-to-air heat exchanger, refrigerant expansion devices, refrigerant reversing valve, and indoor fan. Such equipment includes the following applications:

> **WATER-LOOP HEAT PUMP** is a water-to-air heat pump using liquid circulating in a common piping loop functioning as a heat source/heat sink
>
> **GROUND-WATER HEAT PUMP** is a water-to-air heat pump using water pumped from a well, lake, or stream functioning as a heat source/heat sink
>
> **GROUND-LOOP HEAT PUMP** is a brine-to-air heat pump using a brine solution circulating through a subsurface piping loop functioning as a heat source/heat sink

Minimum Requirements

The DOAS+WLHP space-conditioning system designed to comply with the Executive Director's determination under Section 140.4(a)3Av shall meet the following requirements:

1. The space-conditioning system shall be a water loop heat pump (WLHP) system.
    a. The common heat pump water loop shall utilize cooling towers for heat rejection and air-to-water heat pumps (AWHPs) for heat addition; AWHPs shall not be used for heat rejection.

b. Supplemental heating shall be provided either by an electric boiler not exceeding 50% of the heat pump loop design heating capacity, or airside electric resistance heating complying with Exception 2 to Section 140.4(g), but not both.

2. Indoor fans shall meet the requirements of Section 140.4(a)3D.

3. Ventilation to all zones served by the space-conditioning system shall be provided by a dedicated outdoor air system (DOAS). The DOAS shall comply with Section 140.4(a)3E.

Note: Section references in minimum requirements refer to Sections of 2025 Energy Code.