



**Addendum n to
ASHRAE Guideline 36-2021**

Public Review Draft

Proposed Addendum n to Guideline 36-2021, High-Performance Sequences of Operation for HVAC Systems

**First Public Review (March 2024)
(Draft shows Proposed Changes to Current Guideline)**

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(This foreword is not part of this guideline. It is merely informative and does not contain requirements necessary for conformance to the guideline.)

FOREWORD

Note: In this addendum, changes to the current guideline are indicated in the text by underlining (for additions) and strikethrough (for deletions) unless the instructions specifically mention some other means of indicating the changes. Only these changes 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 substantive changes.

This purpose of this addendum is to allow fans to cycle off during occupied-standby mode for fan-powered terminal units and single zone VAV air handling units.

Addendum n to Guideline 36-2021

(IP and SI Units)

Revise paragraph 5.7.5.5 as follows:

5.7.5.5. Fan Control

- a. Fan shall run whenever Zone State is heating.
- b. If ventilation is according to ASHRAE Standard 62.1-2016, in Occupied Mode only, the fan shall run in Deadband and Cooling when both of the following conditions are true for 1 minute: Voz is greater than zero and the primary air volume is less than Voz for 1 minute; and The fan shall shut off be disabled when either of the following conditions are true for 3 minutes: Voz is equal to zero or primary air volume is above Voz by 10% for 3 minutes.
- c. If ventilation is according to California Title 24, in Occupied Mode only, the fan shall run in Deadband and Cooling when both of the following conditions are true for 1 minute: Zone-Abs-OA-min is greater than zero and the primary air volume is less than Zone-Abs-OA-min for 1 minute; and The fan shall shut off be disabled when either of the following conditions are true for 3 minutes: Zone-Abs-OA-min is equal to zero or the primary air volume is above Zone-Abs-OA-min by 10% for 3 minutes.

The designer must ensure that the sum of the indirect ventilation provided by the fan plus the ventilation provided by the primary air at minimum setpoint meet Standard 62.1 requirements.

Revise paragraphs 5.8.5.1 and 5.8.5.2 as follows:

5.8.5.1. When the Zone State Is Cooling

- a. The cooling-loop output shall be mapped to the active airflow setpoint from the minimum endpoint to the cooling maximum endpoint.
 1. If supply air temperature from the air handler is greater than room temperature, the active primary airflow setpoint shall be no higher than the minimum endpoint.
- b. Heating coil is OFF.
- c. If ventilation is according to ASHRAE Standard 62.1-2016, in Occupied Mode only, ~~the parallel fan shall run~~ starts when both of the following conditions are true for 1 minute: Voz is greater than zero and the active primary airflow setpoint drops below Voz minus one half of Pfan-z. The fan shall be disabled and shuts off when either of the following conditions are true for 3 minutes: Voz is equal to zero or the primary airflow setpoint rises above Voz by 10%. The fan airflow rate setpoint shall be equal to Voz minus the current primary airflow setpoint.
- d. If ventilation is according to California Title 24, in Occupied Mode only, ~~the parallel fan starts~~ shall run when both of the following conditions are true for 1 minute: Zone-Abs-OA-min is greater than zero and the active primary airflow setpoint drops below Zone-Abs-OA-min minus one half of Pfan-z. The fan and shuts off shall be disabled when either of the following conditions are true for 3 minutes: Zone-Abs-OA-min is equal to zero or the primary airflow setpoint rises above Zone-Abs-OA-min by 10%. The fan airflow rate setpoint shall be equal to Zone-Abs-OA-min minus the current primary airflow setpoint.

The designer must ensure that the sum of the indirect ventilation provided by the fan plus the ventilation provided by the primary air at minimum setpoint meet Standard 62.1 requirements.

5.8.5.2. When the Zone State Is Deadband

- a. The active primary airflow setpoint shall be the minimum endpoint.
- b. Heating coil is OFF.
- c. If ventilation is according to ASHRAE Standard 62.1-2016, in Occupied Mode only, the parallel fan shall run if when both of the following conditions are true for 1 minute: Voz is greater than zero and the active primary airflow setpoint is below Voz. The fan shall be disabled when either of the following conditions are true for 3 minutes: Voz is equal to zero or the primary air volume is above Voz by 10%. The fan airflow rate setpoint shall be equal to Voz minus the active primary airflow setpoint.
- d. If ventilation is according to California Title 24, in Occupied Mode only, the parallel fan shall run if when both of the following conditions are true for 1 minute: Zone-Abs-OA-min is greater than zero and the active primary airflow setpoint is less than below Zone-Abs-OA-min. The fan shall be disabled when either of the following conditions are true for 3 minutes: Zone-Abs-OA-min is equal to zero or the primary air volume is above Zone-Abs-OA-min by 10%. The parallel fan airflow rate setpoint shall be equal to Zone-Abs-OA-min minus the active primary airflow setpoint.

Revise paragraph 5.9.5.5 as follows:

- 5.9.5.5. Fan Control. Fan shall run whenever zone is in heating or cooling Zone State, or if the associated Zone Group is in Occupied Mode and the active primary airflow setpoint, Vspt, is greater than zero. Prior to starting the fan, the damper is first driven fully closed to ensure that the fan is not rotating backward. Once the fan is proven ON for a fixed time delay (15 seconds), the damper override is released.

Revise Paragraph 5.10.5.5 as follows:

- 5.10.5.5. Fan Control. Fan shall run whenever zone is in heating or cooling Zone State, or if the associated Zone Group is in Occupied Mode and the active primary airflow setpoint, Vspt, is greater than zero. Prior to starting the fan, the damper is first driven fully closed to ensure that the fan is not rotating backward. Once the fan is proven ON for a fixed time delay (15 seconds), the damper override is released.

Revise paragraph 5.18.4.1 as follows:

- 5.18.4.1. The supply fan shall run whenever ~~the unit is in any mode other than Unoccupied Mode~~ zone is in heating or cooling Zone State, or if the unit is in Occupied Mode and the minimum outdoor airflow setpoint, MinOAsp, is greater than zero.