Addendum f to
ASHRAE Guideline 36-2024

Public Review Draft

Proposed Addendum f to Guideline 36-2024, High-Performance Sequences of Operation for HVAC Systems

First Public Review (August 2026)
(Draft shows Proposed Changes to Current Guideline)

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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.

This addendum fixes a bug in the DCV logic for dual duct boxes using “cold deck minimum” logic. Current DCV logic can result in oversupplying the zone diffusers since hot and cold deck airflows are additive. The logic to limit supply air rate for DCV is the same as that for parallel fan-powered boxes which have the same additivity issue.

Addendum xx to Guideline 36-2024

(IP and SI Units)
Revise Section 5.2.1.3.b.5.iv.e as follows:

5.2 Generic Ventilation Zones

5.2.1. Zone Minimum Outdoor Airflow and Minimum Airflow Setpoints

(e) For cooling-only VAV terminal units, reheat VAV terminal units, constant-volume series fan-powered terminal units, dual-duct VAV terminal units with mixing control and inlet airflow sensors, or dual-duct VAV terminal units with mixing control and a discharge airflow sensor~~, or dual-duct VAV terminal units with cold-duct minimum control~~:

(1) The CO_2 control loop output shall reset both the occupied minimum airflow setpoint (Vmin*) and the population component of the required breathing zone outdoor airflow (Vbz-P*) in parallel. Vmin* shall be reset from the zone minimum airflow setpoint Vmin at 0% loop output up to maximum cooling airflow setpoint Vcool-max at 100% loop output. Vbz-P* shall be reset from 0 l/s (0 cfm) at 0% loop output up to the Vbz-P at 100% loop output. See Figure 5.2.1.3-1.

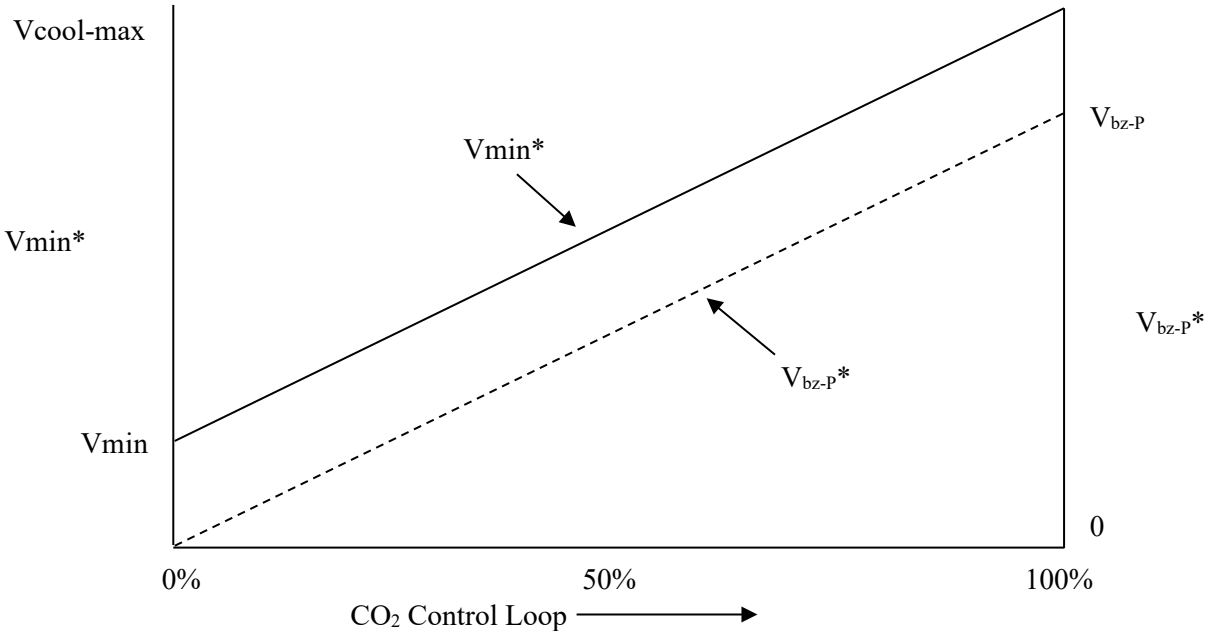

Figure 5.2.1.3-1 Vmin* and Vbz-P* reset with CO_2 loop.

The CO_2 control loop graph in Figure 5.2.1.3-1 is provided as a visual representation of the reset logic and is not representative of magnitude of Vbz-P in relation to Vbz-A or Vmin*.*

(f) For parallel fan-powered terminal units:

(1) Determine VCO_2-max as follows:
(2) When the Zone State is cooling, VCO_2-max is equal to the maximum cooling airflow setpoint Vcool-max.
(3) When the Zone State is heating or deadband, VCO_2-max is equal to Vcool-max minus the parallel fan airflow

This logic prevents the total supply airflow from exceeding Vcool-max, which could create diffuser noise problems.

(4) The CO_2 control loop output shall reset both the occupied minimum airflow setpoint Vmin* and the population component of the required breathing zone outdoor airflow Vbz-P* in parallel. Vmin* shall be reset from the zone minimum airflow setpoint Vmin at 0% loop output up to maximum cooling airflow setpoint VCO_2-max at 100% loop output. Vbz-P* shall be reset from 0 l/s (0 cfm) at 0% loop output up to the Vbz-P at 100% loop output. See Figure 5.2.1.3-2.

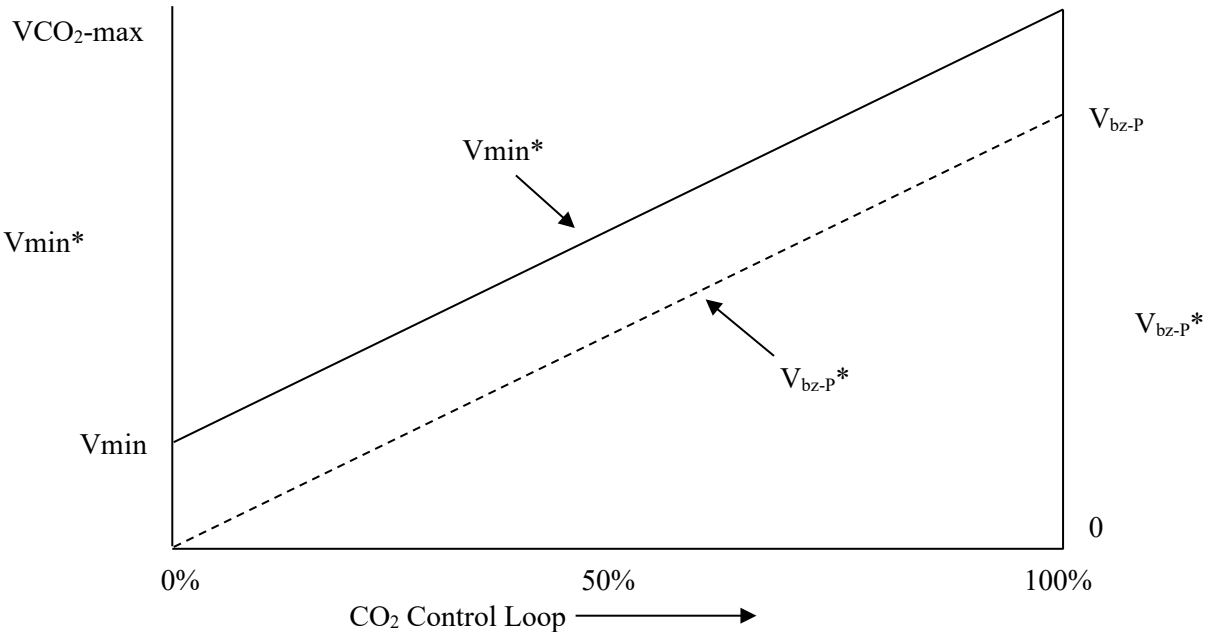

Figure 5.2.1.3-2 Vmin* and Vbz-P* reset with CO_2 loop (parallel fan-powered).

The CO_2 control loop graph in Figure 5.2.1.3-2 is provided as a visual representation of the reset logic and is not representative of magnitude of Vbz-P in relation to Vbz-A or Vmin*.*

(g) For dual-duct VAV terminal units with cold-duct minimum control:

(1) Determine VCO_2-max as follows:
(2) When the Zone State is cooling, VCO_2-max is equal to the maximum cooling airflow setpoint Vcool-max.
(3) When the Zone State is heating or deadband, VCO_2-max is equal to Vcool-max minus the current zone heating airflow.

This logic prevents the total supply airflow from exceeding Vcool-max, which could create diffuser noise problems.

(4) The CO_2 control loop output shall reset both the occupied minimum airflow setpoint Vmin* and the population component of the required breathing zone outdoor airflow Vbz-P* in parallel. Vmin* shall be reset from the zone minimum airflow setpoint Vmin at 0% loop output up to maximum cooling airflow setpoint VCO_2-max at 100% loop output. Vbz-P* shall be reset from 0 l/s (0 cfm) at 0% loop output up to the Vbz-P at 100% loop output. See Figure 5.2.1.3-3.

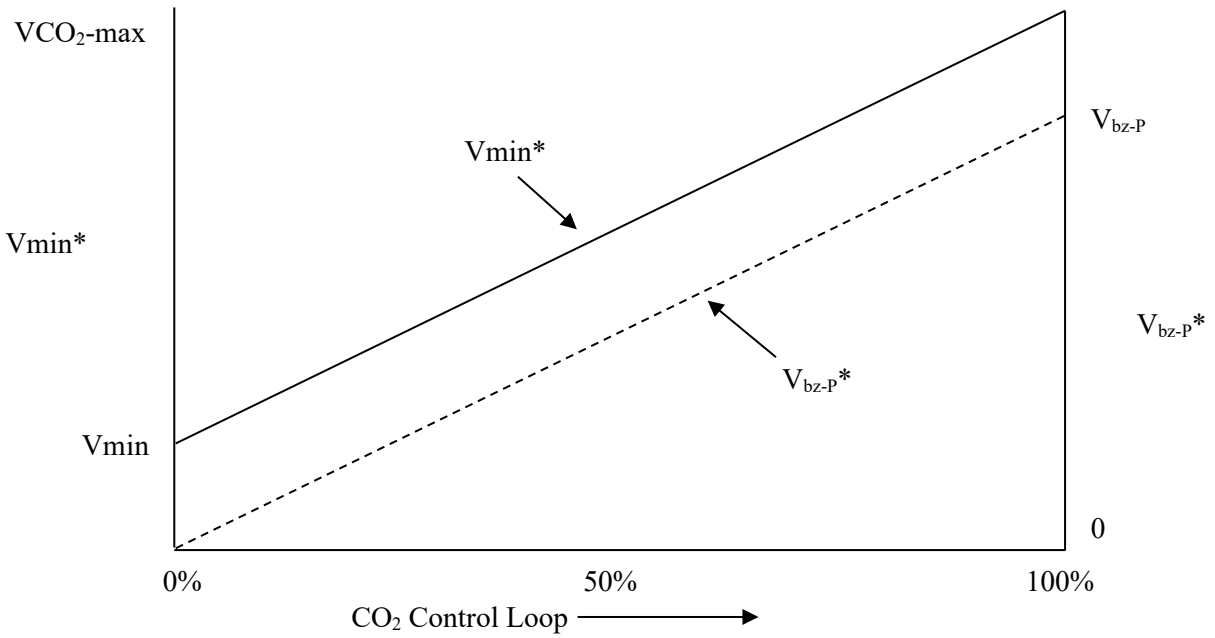

Figure 5.2.1.3-3 Vmin* and Vbz-P* reset with CO_2 loop (dual-duct VAV terminal units with cold-duct minimum control).

The CO_2 control loop graph in Figure 5.2.1.3-3 is provided as a visual representation of the reset logic and is not representative of magnitude of Vbz-P in relation to Vbz-A or Vmin*.*

Revise Section 5.2.1.4.b.5.iii.e as follows:

(e) For cooling-only VAV terminal units, reheat VAV terminal units, constant-volume series fan-powered terminal units, dual-duct VAV terminal units with mixing control and inlet airflow sensors, or dual-duct VAV terminal units with mixing control and a discharge airflow sensor~~, or dual-duct VAV terminal units with cold-duct minimum control~~:

(1) The CO_2 control loop output shall reset the occupied minimum airflow setpoint Vmin* from the zone minimum airflow setpoint Vmin at 0% up to maximum cooling airflow setpoint Vcool-max at 50%, as shown in Figure 5.2.1.4-1. The loop output from 50% to 100% will be used at the system level to reset minimum outdoor airflow setpoint; see AHU controls.

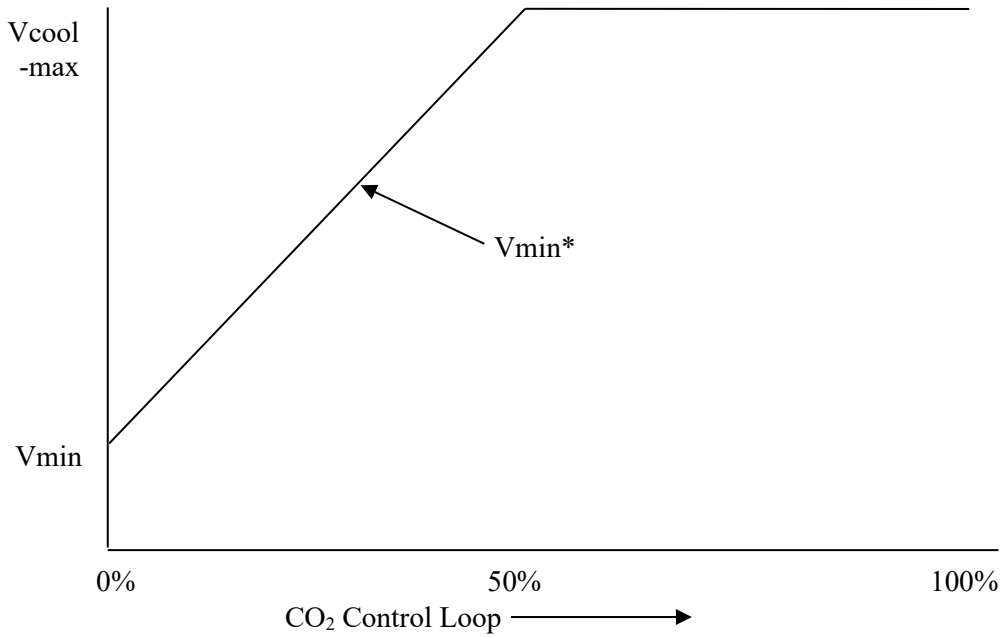

Figure 5.2.1.4-1 Vmin* reset with CO_2 loop.

(f) For parallel fan-powered terminal units:

(1) Determine VCO_2-max as follows:
(2) When the Zone State is cooling, VCO_2-max is equal to the maximum cooling airflow setpoint Vcool-max.
(3) When the Zone State is heating or deadband, VCO_2-max is equal to Vcool-max minus the parallel fan airflow

This logic prevents the total supply airflow from exceeding Vcool-max, which could create diffuser noise problems.

(4) The CO_2 control loop output shall reset the occupied minimum airflow setpoint Vmin* from the zone minimum airflow setpoint Vmin at 0% up to maximum cooling airflow setpoint VCO2-max at 50%, as shown in Figure 5.2.1.4-2. The loop output from 50% to 100% will be used at the system level to reset minimum outdoor airflow; see AHU controls.

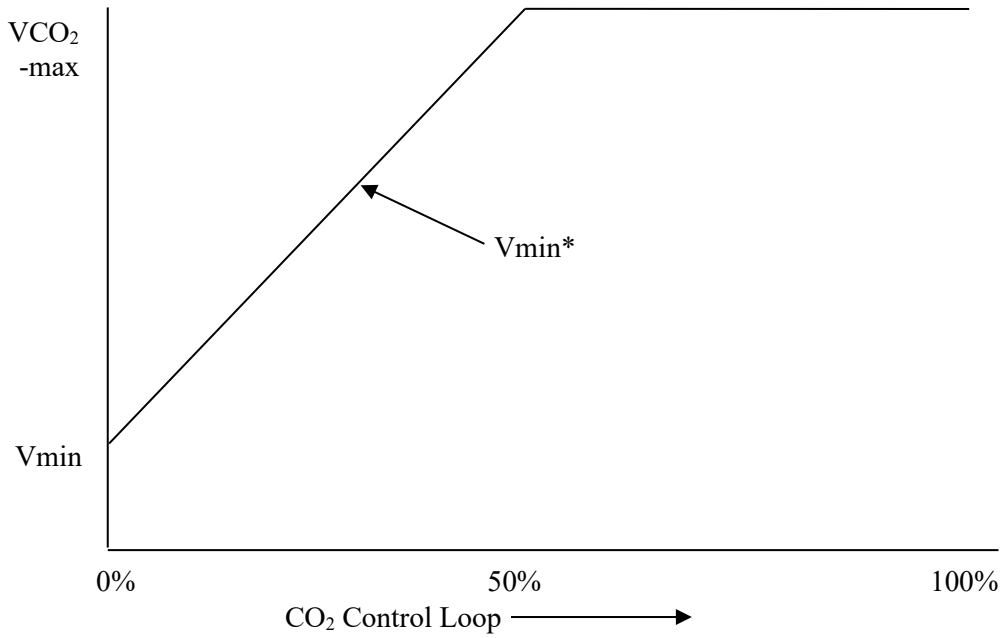

Figure 5.2.1.4-2 Vmin* reset with CO_2 loop (parallel fan-powered).

(g) For dual-duct VAV terminal units with cold-duct minimum control:

(1) Determine VCO_2-max as follows:
(2) When the Zone State is cooling, VCO_2-max is equal to the maximum cooling airflow setpoint Vcool-max.
(3) When the Zone State is heating or deadband, VCO_2-max is equal to Vcool-max minus the current zone heating airflow.

This logic prevents the total supply airflow from exceeding Vcool-max, which could create diffuser noise problems.

(4) The CO_2 control loop output shall reset the occupied minimum airflow setpoint Vmin* from the zone minimum airflow setpoint Vmin at 0% up to maximum cooling airflow setpoint VCO2-max at 50%, as shown in Figure 5.2.1.4-3. The loop output from 50% to 100% will be used at the system level to reset minimum outdoor airflow; see AHU controls.

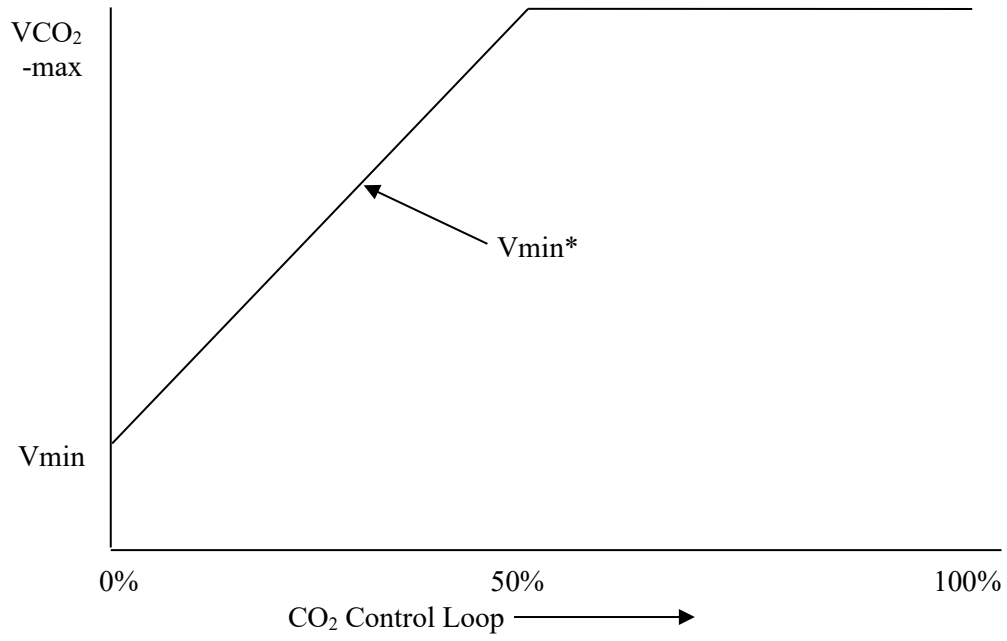

Figure 5.2.1.4-3 Vmin* reset with CO_2 loop (dual-duct VAV terminal units with cold-duct minimum control).