## **Section 5 – Demand Control Ventilation (DCV) Operation**

## Ventilation Verification and Energy Optimization Assessment

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|  | **Demand Control Ventilation (DCV) systems shall be verified for proper operation** |

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| Step | Passing this test verifies the DCV and associated CO2 sensor operates as designed. | Results |
| 1 | Prior to functional testing, record the following: |  |
| a. | Disable economizer controls. |  |
| b. | Record outside air CO2 concentration from dynamic measurement or | ppm |
|  | Assume outside air concentration if dynamic measure is not include with the system | 400 ppm |
| c. | Record interior CO2 concentration setpoint (may not exceed Step 1b + 600 ppm)[[1]](#footnote-1) | ppm |
| 2 | Simulate a signal at or slightly above the CO2 concentration setpoint required. |  |
| a. | Apply CO2 calibration gas at a concentration at or slightly above the setpoint to the sensor. | ppm |
| b. | For single zone units, verify that the outdoor air damper modulates open to satisfy the total required ventilation air. called for in the Mechanical Schedule. | P/F/NA |
| c. | For multiple zone units, the zone damper (or outdoor air damper when applicable) modulates open to satisfy the zone ventilation requirements. | P/F/NA |
| 3 | Simulate signal well below the CO2 setpoint. |  |
| a. | Apply CO2 calibration gas at a concentration well below the setpoint to the sensor or ventilate the sensor as necessary. | ppm |
| b. | For single zone units, outdoor air damper modulates to the design minimum value. | P/F/NA |
| c. | For multiple zone units, the zone damper (or outdoor air damper when applicable) modulates to satisfy the reduced zone ventilation requirements. | P/F/NA |
| 4 | Verify DCV operation with economizer |  |
| a. | Restore economizer controls and remove all system overrides initiated during the test. |  |
| b. | Apply CO2 calibration gas at a concentration slightly above the setpoint to the sensor. | ppm |
| c. | Verify that the outdoor air damper modulates open to satisfy the total ventilation required air. | P/F |
| 5 | Remove all system overrides initiated during the test and return system to normal operation. |  |

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| Y/N | **DCV functions as designed with the established setpoint (1b)** |
|  | **If No, and the DCV requires adjustment or repairs:**   * Document Required Repairs and Adjustments * Document information required for a repair or adjustment (i.e. measurements, model, serial, etc.) |
|  | **Disabled DCV During Pandemic:**  The ASHRAE Epidemic Task Force recommends that DCV systems be disabled during the COVID 19 pandemic. |
|  | **Enabled DCV During Pandemic with Reduced Setpoint:**  Alternative option to disabling DCV, is to lower the CO2 setpoint of the DCV system to 750 ppm, as recommended by the WCEC[[2]](#footnote-2), which will provide additional ventilation while still saving energy during reduced occupancy periods. |
|  | Include relevant photographic documentation |
| If the demand control ventilation, is operated, but cannot maintain average daily maximum CO2 levels below 1,100 ppm, it shall be disabled until the DCV system can be repaired, unless disabling the control would adversely affect operation of the overall system. When disabling a demand control ventilation system, the system must be configured to meet the minimum ventilation rate requirements and tested and adjusted. | |

*This document is intended to be used solely as an aide when developing the methods, procedures, and forms used in the Ventilation Verification and Energy Optimization Assessment.  It is the responsibility of each contractor, supervisor, and technician to ensure that the methods, procedures, and forms used meet the requirements of the local mechanical codes.  The National Energy Management Institute Committee makes no representations, whatsoever, that drafting procedures or forms based on this document will meet that requirement of local mechanical codes and expressly disclaims any liability or responsibility regarding the use of this document.*

1. Or as required by applicable local, state, or provincial guidance. [↑](#footnote-ref-1)
2. The CO2 set point of 750 ppm is recommended by the UC Davis Western Cooling Efficiency Center. A setpoint of 750 ppm will approximately double the ventilation provided when compared to a typical setpoint of 1,000-1,100 ppm. [↑](#footnote-ref-2)