**Training Aid to Assist in Developing Ventilation Verification Procedure**

**Ventilation Rate** - Calculation of the required outside air rates for each occupied area based on the anticipated occupancy and physical verification that the ventilation rate meets or exceeds the minimum ventilation set forth by the local jurisdiction in all modes of operation.

1. **Determine Minimum Required Outside Air (OSA)**
	1. If available, obtain the design documents and obtain the minimum required OSA.
	2. Determine if the zones actual use and occupancy matches the designs expected use and occupancy.
		1. Occupancy Rate – Original Design
		2. Occupancy Category – Original Design
		3. Occupancy Rate – As Used
		4. Occupancy Category – As Used
			* Document how was “As Used” determined.
	3. If designs matches “As Used” category and occupancy, proceed to outside air measurements.
	4. If designs does not matches “As Used” category and occupancy, calculate the new minimum outside air rate based the current version of the applicable ASHRAE 62 standard for Acceptable Indoor Air Quality or current locally adopted Mechanical Code, whichever is more stringent.
		1. ASHRAE Standard 62.1 Ventilation for Acceptable Indoor Air Quality
		2. ASHRAE Standard 62.2 Ventilation and Acceptable Indoor Air Quality in Residential Buildings.
2. **Verify Minimum Required Outside Air (OSA)**
	1. All tests shall be completed in a safe manner by personal wearing personal protective equipment.
	2. Disable demand control ventilation (if applicable)
	3. Verify unit is not in economizer mode during test (economizer disabled)
	4. CAV and VAV testing at full supply airflow.
		1. Adjust supply air to achieve design airflow or maximum airflow at full cooling.
		2. Measure outdoor airflow reading (cfm)
		3. Record required outdoor airflow (cfm)
		4. Document time for outside air damper to stabilize after full supply airflow is achieved (minutes).
	5. VAV testing at reduced supply airflow.
		1. Adjust supply airflow to either the sum of the minimum zone airflows, full heating, or 30% of the total design airflow.
		2. Measure outdoor airflow reading (cfm).
		3. Required outdoor airflow (cfm)
		4. Document time for outside air damper to stabilize after reduced supply airflow is achieved (minutes).
	6. Return system to initial conditions.
	7. Calculations
		1. Determine Percent Outside Air at full supply airflow (%OAFA).
			* %OAFA = Measured outdoor airflow reading /Required outdoor airflow.
			* %OAFA is within 10% of design Outside Air. (90% ≤ %OAFA ≤ 110%)
			* Verify that outside air damper position stabilizes within 5 minutes.
		2. VAV only: Determine Percent Outside Air at reduced supply airflow (%OARA)
			* %OARA = Measured outdoor airflow reading /Required outdoor airflow reading.
			* %OARA is within 10% of design Outside Air. (90% ≤ OARA ≤ 110%)
			* Verify that outside air damper position stabilizes within 5 minutes.
3. **Increased Outside Air**
	1. Document if the ventilation components can provide increased outside air if recommended.
		1. Note OSA inlet size can accommodate additional OSA.
		2. Note current OSA damper position.
	2. Document unit model and serial number
	3. Provide documentation, including relevant photographic documentation, in the assessment report so a licensed professional can determine if the minimum outside air should be increased and can be without compromising the system’s ability to maintain space conditions and pressurization.

*This document is intended to be used solely as an aide when developing the methods, procedures, and forms used in the Ventilation Verification 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 and health codes. Furthermore, it is the responsibility of the IAQ Supervisor or contractor to submit the methods, procedures, and forms that it drafts directly to the Authority Having Jurisdiction (AHJ) for approval and owner’s representative, prior to performing the actual work. 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, building, and health codes and expressly disclaims any liability or responsibility regarding the use of this document.*