



# LEED 2009 for Schools New Construction and Major Renovations

## IEQ CREDIT 2: INCREASED VENTILATION

All fields and uploads are required unless otherwise noted.

Note: All linked fields in this form are read only. Please complete IEQp1: Minimum Indoor Air Quality Performance before proceeding to IEQc2: Increased Ventilation.

### ALL OPTIONS

This static sample form has been modified for offline access. All sections of the form are visible. Sample forms are for reference only.

Select all that apply to the project building:

- ☐ The project building is mechanically ventilated, in part or in whole.
- ☐ The project building is naturally ventilated, in part or in whole.

### MECHANICAL VENTILATION

- ☐ Mechanical ventilation systems are designed using local code, which is more stringent than the ASHRAE Standard 62.1-2007, Ventilation Rate Procedure. (Optional)

Complete the following tables for all mechanically ventilated occupied spaces pursuing this option. Determine the minimum ventilation rates from ASHRAE 90.1-2007 Chapter 6.

Table IEQc2-1. Ventilation Rate Procedure

AHU	Zone	Occupancy Category	Rp (cfm/ person)	Ra (cfm/ sf)	Occupant Density		Az (sf)	Vbz (cfm)	Ez	Voz (cfm)	Ev	Vot (cfm)
					Default	#/1000sf						
					<input type="checkbox"/> Yes							

Table IEQc2-2. Outdoor Air Flow

AHU	Zone	Occupancy Category	Vot (cfm)	Design OA Intake Flow (cfm)	Zone Complies with IEQc2
All spaces comply with IEQ Credit 2?					

Note: The design outdoor air intake flow for all zones must be 30% greater than the minimum outdoor air ventilation rate required by ASHRAE Standard 62.1-2007, Ventilation Rate Procedure.

The project does not meet the requirements of credit IEQc2: Increased Ventilation.

#### Compliance with IEQ Credit 2:

*Note: The design outdoor air intake flow for all zones must be 30% greater than the minimum outdoor air ventilation rate required by ASHRAE Standard 62.1-2007, Ventilation Rate Procedure.*

## NATURAL VENTILATION

**Upload IEQc2-1.** Provide documentation demonstrating the flow diagram process in Figure 2.8 of the CIBSE Application Manual 10: 2005, Natural Ventilation in Non-domestic Buildings was used to determine that natural ventilation is an effective strategy for the project.

Files:

Select all that apply:

- ☐ **OPTION 1.** Recommendations from a CIBSE manual
- ☐ **OPTION 2.** Minimum ventilation rates from ASHRAE Standard 62.1-2007

### OPTION 1. CIBSE RECOMMENDATIONS

Select all that apply:

- ☐ **PATH 1.** CIBSE Applications Manual 10: 2005, Natural Ventilation in Non-domestic Buildings
- ☐ **PATH 2.** CIBSE Applications Manual 13: 2000, Mixed Mode Ventilation

**Upload IEQc2-2.** Provide diagrams and calculations demonstrating the design of the natural ventilation systems meets the recommendations set forth in the CIBSE Applications Manual 10: 2005, Natural Ventilation in Non-domestic Buildings.

Files:

**Upload IEQc2-3.** Provide documentation demonstrating the design of the natural ventilation systems meets the recommendations set forth in CIBSE Applications Manual 13: 2000, Mixed Mode Ventilation.

Files:

Describe how a combination of the CIBSE manuals have been applied to the project building.

### OPTION 2. MINIMUM VENTILATION RATES

- ☐ The space is an engineered natural ventilation system approved by the authority having jurisdiction. The project takes an exception to the prescriptive requirements of ASHRAE Standard 62.1-2007 sections 5.1.1 and 5.1.2.

**Upload IEQc2-4.** Provide a graphic and numeric summary of the airflow analysis performed. Include the boundary conditions used for the analysis, simulation algorithm, solution variables, temperatures, airflow volumes and mean age of air for the spaces modeled. The documentation should support claims in Table IEQc2-4.

Files:

**Upload IEQc2-5.** Provide a graphic and numeric summary of the airflow analysis performed. Include the boundary conditions used for the analysis, simulation algorithm, solution variables, temperatures, airflow volumes and mean age of air for the spaces modeled. The documentation should support claims in Table IEQc2-4.

Files:

Complete the following tables for all naturally ventilated occupied spaces pursuing this option. Determine the minimum ventilation rates from ASHRAE 90.1-2007 Chapter 6.

**Table IEQc2-3.** Ventilation Rate Procedure

AHU	Zone	Occupancy Category	Rp (cfm/ person)	Ra (cfm/ sf )	Occupant Density		Az (sf)	Vbz (cfm)	Ez	Voz (cfm)	Ev	Vot (cfm)
					Default	#/1000sf						
					<input type="checkbox"/> Yes							

Complete the following table. In "Room-by-Room Airflows", input the room-by-room airflows predicted using the macroscopic, multi-zone, analytic model.

**Table IEQc2-4.** Outdoor Air Flow

AHU	Zone	Occupancy Category	OA Intake Flow Required (Vot)	Room-by-Room Airflows	Zone Complies with IEQc2
All spaces comply with IEQ Credit 2?					

*Note: The predicted room-by-room airflows must be greater than or equal to the minimum ventilation rates required by ASHRAE 62.1-2007 for at least 90% of the occupied spaces. Compliance is calculated as a percent of quantity of spaces and not based on total floor area of the spaces.*

## ADDITIONAL DETAILS

☐ Special circumstances preclude documentation of prerequisite compliance with the submittal requirements outlined in this form.

## SPECIAL CIRCUMSTANCES

Describe the circumstances limiting the project team's ability to provide the submittals required in this form. Be sure to reference what additional documentation has been provided, if any. Non-standard documentation will be considered upon its merits.

**Upload IEQc2-SC.** Provide additional documentation that supports the claim to special circumstances. (Optional)

*Files:*

- ☐ The project team is using an alternative compliance approach in lieu of standard submittal paths.

## ALTERNATIVE COMPLIANCE PATH

Describe the alternative compliance path used by the project team. Include justification that this path meets the prerequisite intent and requirements. Be sure to reference what additional documentation has been provided, if any. Non-standard documentation will be considered upon its merits.

**Upload IEQc2-ACP.** Provide additional documents that support the alternative compliance path approach. (Optional)

*Files:*

## SUMMARY

IEQ Credit 2: Increased Ventilation Points Documented: