



LEED 2009 for Commercial Interiors

IEQ PREREQUISITE 1: MINIMUM INDOOR AIR QUALITY PERFORMANCE

All fields and uploads are required unless otherwise noted.

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.

Note: Content highlighted in yellow below must be consistent with IEQc2, if attempted.

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

The content highlighted in yellow above is linked to IEQc1, IEQc2, IEQc5, IEQc6(.2) & IEQc7.1.

Signatory IEQp1-1.

The project meets Sections 4 through 7 of ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality.

Select one of the following:

- ☐ **Signature.** Provide a digital signature affirming the signatory statement in gray directly above.

Initial here:
- OR
- ☐ **Upload IEQp1-S1.** Provide a document with the signatory statement, copied directly from the form, signed and dated on letterhead.

MECHANICAL VENTILATION

Select all that apply to the project space:

- ☐ One or more AHUs are able to meet the ASHRAE Standard 62.1-2007 outdoor air requirement.
- ☐ One or more AHUs are unable to meet the ASHRAE Standard 62.1-2007 outdoor air requirement.

Note: Projects with one or more AHUs unable to meet the ASHRAE Standard 62.1-2007 outdoor air requirement are NOT eligible for IEQ Credit 2: Increased Ventilation.

AHUs THAT MEET ASHRAE STANDARD 62.1-2007 OUTDOOR AIR REQUIREMENTS

The ASHRAE 62.1-2007 Ventilation Rate Procedure documentation for each air handling unit must be submitted using one of the documentation methods below. All documentation methods (including energy simulation output reports) should account for the worst case ventilation conditions (generally heating mode), and should list all relevant variables used in the calculations (e.g. Ez, Ds, Ev, etc.). All AHUs must be included in one, not all, of the documents below.

- ☐ Complete "VRP Compliance Calculator" found in Appendix below.
- ☐ Download, complete, and upload ASHRAE calculator "62MZCalc".
- ☐ Energy simulation software is being used to determine required ventilation levels.

VRP Compliance Spreadsheet

Complete the "VRP Compliance Calculator" in Appendix 1 below for all relevant zones.

Note: The following summary information is linked from Appendix 1 below and is read only. This table includes results from all AHUs documenting credit compliance via the VRP Compliance Calculator (Table IEQp1-A4). To modify this information, see Appendix 1.

Table IEQp1-1. Mechanical Ventilation AHU Summary - VRP Compliance Calculator

| System Name and Number | Required Outdoor Air Intake Flow (Vot) | Required Outdoor Air Intake Flow to Meet IEQc2 (Optional) | Design Outdoor Air Intake Flow (cfm) |
|------------------------------------|--|---|--------------------------------------|
| | | | |
| | | | |
| | | | |
| Compliance with IEQ Prerequisite 1 | | | |
| Compliance with IEQ Credit 2 | | | |

ASHRAE Calculator

Upload IEQp1-1. Complete "62MZCalc" (found under "Credit Resources") for all AHUs in the project building using this method. It is acceptable to provide values only for the critical zones.

Note: Project teams pursuing IEQ Credit 2 must use the 62MZCalc provided by USGBC in the credit resources section of LEED Online to document compliance with IEQp1 and IEQc2. All other projects may use 62MZCalc provided by ASHRAE.

Describe how critical zones are selected and how all occupiable zones are accounted for in the determination of the critical zone. A critical zone is defined as the zone which requires the largest fraction of outdoor air in the primary air stream.

Table IEQp1-2. Mechanical Ventilation AHU Summary - ASHRAE Calculator

| System Name and Number | Required Outdoor Air Intake Flow (Vot) | Required Outdoor Air Intake Flow to Meet IEQc2 (Optional) | Design Outdoor Air Intake Flow (cfm) |
|------------------------------------|--|---|--------------------------------------|
| | | | |
| Compliance with IEQ Prerequisite 1 | | | |
| Compliance with IEQ Credit 2 | | | |

Energy Simulation

Upload IEQp1-2. Provide the output reports from the simulation software indicating the outdoor air provided for all the occupiable spaces using this method.

Note: The acceptable output reports are required to be pre-approved by USGBC. A list of acceptable programs and the required reports can be found in the document, "Approved Software for IEQp1 Compliance" (located in the Credit Resources section).

Table IEQp1-3. Mechanical Ventilation AHU Summary - Energy Simulation

| System Name and Number | Required Outdoor Air Intake Flow (Vot) | Required Outdoor Air Intake Flow to Meet IEQc2 (Optional) | Design Outdoor Air Intake Flow (cfm) |
|------------------------------------|--|---|--------------------------------------|
| | | | |
| Compliance with IEQ Prerequisite 1 | | | |
| Compliance with IEQ Credit 2 | | | |

AHUs UNABLE TO MEET ASHRAE STANDARD 62.1-2007 OUTDOOR AIR REQUIREMENTS

Briefly describe why project is unable to meet ASHRAE 62.1-2007. Include, at a minimum, identification of critical space(s) and system constraints that prohibit introduction of additional OA into the space.

Signatory IEQp1-2.

All AHUs unable to meet the outdoor air requirements of ASHRAE 62.1-2007 are designed to achieve a minimum of 10 cfm per person. All other requirements of ASHRAE Standard 62.1-2007 are met.

Select one of the following:

☐ **Signature.** Provide a digital signature affirming the signatory statement in gray directly above.

Initial here:

OR

☐ **Upload IEQp1-S2.** Provide a document with the signatory statement, copied directly from the form, signed and dated on letterhead.

NATURAL VENTILATION

Note: Information highlighted in yellow below must be consistent with IEQ Credit 2 Natural Ventilation Option 2, if attempted.

☐ 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. (Optional)

Upload IEQp1-3. Provide the regulatory approval letter or document indicating the engineered system has been approved by the authority having jurisdiction.

Upload L-14. 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.

Complete the "VRP Compliance Calculator" in Appendix 1 below. Include all zones utilizing natural ventilation.

Note: The following summary information is linked from Appendix 1 below and is read only. This table includes results from all AHUs documenting credit compliance via the VRP Compliance Calculator (Table IEQp1-A6). To modify this information, see Appendix 1.

Table L-17. Natural Ventilation AHU Summary

| System Name and Number | All Zones Meet Minimum Window Requirements? | Number of Zones that Meet ASHRAE 62.1-2007 | Total Number of Zones Served by Natural Ventilation System |
|------------------------------------|---|--|--|
| | | | |
| Compliance with IEQ Prerequisite 1 | | | |
| Compliance with IEQ Credit 2 | | | |

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 IEQp1-SC. Provide additional documentation that supports the claim to special circumstances. (Optional)

☐ 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 IEQp1-ACP. Provide additional documents that support the alternative compliance path approach. (Optional)

SUMMARY

IEQ Prerequisite 1: Minimum Indoor Air Quality Performance
Compliance Documented:

APPENDIX

- Select all that apply to the project building:
- ☐ Mechanical Ventilation Multiple Zone Unit
- ☐ Mechanical Ventilation Single Zone Unit
- ☐ Mechanical Ventilation 100% Outside Air
- ☐ Natural Ventilation

MULTIPLE ZONE

Table IEQp1-A1. Mechanical Ventilation - Multiple Zone Unit

Note: Systems with local recirculation and/or multiple recirculation paths (such as systems with fan-powered terminals) should use the ASHRAE 62MZ calculator instead of this table.

Click "Calculate" in the summary section of the table to perform the calculations. "Calculate" must be clicked after any or all the data is entered in the table to refresh the calculated values and obtain accurate information.

| | | | | | | | | IEQp1 Compliance | | | | | | | IEQc2 Compliance | | |
|---|--------------------|-------------|--------------|--------------------------|-------------|----|---------|------------------|----|-----------|------------|--------|-----------|----|------------------|-----------|----|
| Zone | Occupancy Category | Rp (cfm /p) | Ra (cfm /sf) | Occupancy Density | | | Az (sf) | Vbz (cfm) | Ez | Voz (cfm) | Vdzd (cfm) | Ds (%) | Vpz (cfm) | Zp | Vbz (cfm) | Voz (cfm) | Zp |
| | | | | Default | # / 1000 sf | Pz | | | | | | | | | | | |
| | | | | <input type="checkbox"/> | | | | | | | | | | | | | |
| System Population without diversity (Ps) | | | | | | | | | | | | | | | | | |
| Occupancy Diversity (D) (%) | | | | | | | | | | | | | | | | | |
| System Population with Diversity (Ps) | | | | | | | | | | | | | | | | | |
| Design System Primary supply Airflow (Vpsd) (cfm) | | | | | | | | | | | | | | | | | |
| Uncorrected Outdoor Air Intake (Vou) (cfm) | | | | | | | | | | | | | | | | | |
| System Ventilation Efficiency (Ev) | | | | | | | | | | | | | | | | | |
| Required Outdoor Intake Flow (Vot) (cfm) | | | | | | | | | | | | | | | | | |
| Project Design Outdoor Airflow (cfm) | | | | | | | | | | | | | | | | | |

Would need over 100% OA Intake

SINGLE ZONE

Table IEQp1-A2. Mechanical Ventilation - Single Zone Unit

Click "Calculate" in the summary section of the table to perform the calculations. "Calculate" must be clicked after any or all the data is entered in the table to refresh the calculated values and obtain accurate information.

| | | | | | | | | IEQp1 Compliance | | | IEQc2 Compliance | | |
|------------------------|--------------------|-------------|--------------|--------------------------|-------------|----|---------|------------------|----|-----------|------------------|-----------|------------------------------|
| System Name and Number | Occupancy Category | Rp (cfm /p) | Ra (cfm /sf) | Occupancy Density | | | Az (sf) | Vbz (cfm) | Ez | Voz (cfm) | Vbz (cfm) | Voz (cfm) | Design Outdoor Airflow (cfm) |
| | | | | Default | # / 1000 sf | Pz | | | | | | | |
| | | | | <input type="checkbox"/> | | | | | | | | | |

100% OUTSIDE AIR

Table IEQp1-A3. Mechanical Ventilation 100% OA

Click "Calculate" in the summary section of the table to perform the calculations. "Calculate" must be clicked after any or all the data is entered in the table to refresh the calculated values and obtain accurate information.

| | | | | | | | | IEQp1 Compliance | | | IEQc2 Compliance | |
|--|--------------------|------------|-------------|--------------------------|-------------|----|---------|------------------|----|-----------|------------------|--|
| Zone | Occupancy Category | Rp (cfm/p) | Ra (cfm/sf) | Occupancy Density | | | Az (sf) | Vbz (cfm) | Ez | Voz (cfm) | Voz (cfm) | |
| | | | | Default | # / 1000 sf | Pz | | | | | | |
| | | | | <input type="checkbox"/> | | | | | | | | |
| Required Outdoor Intake Flow (Vot) (cfm) | | | | | | | | | | | | |
| Project Design Outdoor Airflow (cfm) | | | | | | | | | | | | |

Table IEQp1-A7. Natural Ventilation

Click "Calculate" in the summary section of the table to perform the calculations. "Calculate" must be clicked after any or all the data is entered in the table to refresh the calculated values and obtain accurate information.

| | | | | | | IEQc2 Case 2, Option 2 Compliance | | | | | | | | | |
|------|-----------------|------------------|-----------|-------------|----------------------|-----------------------------------|-------------|--------------|-------------------|-------------|----|---------|-----------|-----------|--------------------|
| Zone | Floor Area (sf) | Window Area (sf) | Ratio (%) | Within 25`? | Complies with IEQp1? | Occupancy Category | Rp (cfm /p) | Ra (cfm /sf) | Occupancy Density | | | Az (sf) | Vbz (cfm) | Voz (cfm) | Meets ASHRAE 62.1? |
| | | | | | | | | | Default | # / 1000 sf | Pz | | | | |

| Zone | Floor Area (sf) | Window Area (sf) | Ratio (%) | Within 25`? | Complies with IEQp1? | Occupancy Category | Rp (cfm /p) | Ra (cfm /sf) | Occupancy Density | | | Az (sf) | Vbz (cfm) | Voz (cfm) | Meets ASHRAE 62.1? |
|------|--------------------|------------------------|--------------|----------------|----------------------------|-----------------------|-------------------|--------------------|--------------------------|----------------|----|------------|--------------|--------------|--------------------------|
| | | | | | | | | | Default | # / 1000 sf | Pz | | | | |
| | | | | | | | | | <input type="checkbox"/> | | | | | | |

Table IEQp1-A8. Natural Ventilation AHU Summary

| System Name and Number | All Zones Meet Minimum Window Requirements? | Number of Zones that Meet ASHRAE 62.1-2007 | Total Number of Zones Served by Natural Ventilation System |
|---|---|--|--|
| | | | |
| Compliance with IEQ Prerequisite 1 | | | |
| Compliance with IEQ Credit 2 Case 2, Option 2 | | | |