

# Minimum indoor air quality performance

Required

## Requirements

Meet the following requirements for both ventilation and monitoring.

### Ventilation

#### Mechanically Ventilated Spaces

For mechanically ventilated spaces (and for mixed-mode systems when the mechanical ventilation is activated), determine the minimum outdoor air intake flow for mechanical ventilations systems using the ventilation rates in ASHRAE Standard 170–2008, Section 7; the requirements of the 2010 FGI Guidelines for Design and Construction of Health Care Facilities (Table 2.1–2); or a local equivalent, whichever is most stringent [[Canada ACP](#)]. For any area not covered in 170 or the FGI guidelines, follow ASHRAE 62.1 or a local equivalent, whichever is more stringent and meet the minimum requirements of ASHRAE Standard 170–2008, Sections 6–8, Ventilation of Health Care Facilities (with errata) or a USGBC-approved equivalent standard for projects outside the U.S.

#### Naturally Ventilated Spaces

For naturally ventilated spaces (and for mixed-mode systems when the mechanical ventilation is inactivated), determine the minimum outdoor air opening and space configuration requirements using the natural ventilation procedure of ASHRAE Standard 62.1–2010 (with errata) or a local equivalent, whichever is more stringent. Confirm that natural ventilation is an effective strategy for the project by following the flow diagram in Figure 2.8 of the Chartered Institution of Building Services Engineers (CIBSE) Applications Manual AM10, March 2005, Natural Ventilation in Nondomestic Buildings. [[Latin America ACP: Engineered Natural Ventilation Systems](#)]

### Monitoring

#### Mechanically Ventilated Spaces

For mechanically ventilated spaces (and for mixed-mode systems when the mechanical ventilation is activated), provide a direct outdoor airflow measurement device capable of measuring the minimum outdoor air intake flow. This device must measure the minimum outdoor air intake flow with an accuracy of +/-10% of the design minimum outdoor airflow rate defined by the ventilation requirements above. An alarm must alert staff whenever the outdoor airflow value varies by 15% or more from the outdoor airflow setpoint.

#### Naturally Ventilated Spaces

For naturally ventilated spaces (and for mixed-mode systems when the mechanical ventilation is inactivated), comply with at least one of the following strategies.

- Provide a direct exhaust airflow measurement device capable of measuring the exhaust airflow with an accuracy of +/-10% of the design minimum exhaust airflow rate. An alarm must indicate when airflow values vary by 15% or more from the exhaust airflow setpoint.
- Provide automatic indication devices on all natural ventilation openings intended to meet the minimum opening requirements. An alarm must indicate when any one of the openings is closed during occupied hours.
- Monitor carbon dioxide (CO<sub>2</sub>) concentrations within each thermal zone. CO<sub>2</sub> monitors must be between 3 and 6 feet (900 and 1 800 millimeters) above the floor and within the thermal zone. CO<sub>2</sub> monitors must have an audible or visual indicator or alert the building automation system if the sensed CO<sub>2</sub> concentration exceeds the setpoint by more than 10%. Calculate appropriate CO<sub>2</sub> setpoints by using the methods in ASHRAE 62.1–2010, Appendix C.

## Alternative Compliance Paths (ACPs)

### Canada ACP

Projects in Canada may consider CAN/CSA-Z317.2-10 - Special requirements for heating, ventilation, and air-conditioning (HVAC) systems in health care facilities as an equivalent to ASHRAE Standard 170–2008, Section 7 and the 2010 FGI Guidelines for Design and Construction of Health Care Facilities (Table 2.1–2).

### Latin America ACP: Engineered Natural Ventilation Systems

Projects in Latin America may follow the *Verification Protocol for Engineered Natural Ventilation Systems in Equatorial Climates* and receive a design review and approval from the Colombian Professional Association of Air-conditioning, Ventilation and Refrigeration (ACAIRE).