



Credit Interpretation Request

1127 : Clarification for natural ventilation strategies

Final Ruling Date 4/30/2014

Rating System LEED Canada for New Construction and Major Renovations Version 2009

Credit Category Indoor Environmental Quality (EQ) IEQp1

Minimum IAQ Performance

Subject

Clarification for natural ventilation strategies

Summary Question

Please provide clarification for compliance to EQp1 (Minimum IAQ Performance) for designs using operable windows and other natural ventilation strategies.

Context and Arguments

N/A

Final Ruling

Natural ventilation is a valuable strategy to reduce energy use in LEED buildings. However, reliance on natural ventilation to supplement mechanical ventilation or as the sole means of ventilation is only acceptable for EQp1 compliance where it can be shown that the openings will remain open when the space is occupied. In a cold climate this is often impractical. This ruling clarifies the use of natural ventilation strategies under LEED Canada, but does not impact projects using engineered natural ventilation system designs or those using mixed-mode ventilation systems that can demonstrate EQp1 compliance solely through mechanical ventilation; these systems will be assessed on a case-by-case basis through the certification process.

Although Section 5.1 of ASHRAE 62.1 (2004 and 2007) does not stipulate any requirements around the use of natural ventilation openings, section 6.4 of ASHRAE 62.1-2007 addendum n (June 2009) and ASHRAE 62.1-2010 clarifies that "Natural ventilation openings that comply with the requirements of Section 6.4 (Natural Ventilation Procedure) are permanently open or have controls that prevent the openings from being closed during periods of expected occupancy, or the zone is not served by heating or cooling equipment." This approach is consistent with mechanically ventilated buildings in that spaces must be ventilated during all occupied times.

As an example, a Multi-unit Residential Building (MURB) may not rely solely on operable windows or mechanical ventilation supplemented with natural ventilation through operable windows to achieve EQp1, unless a mechanism exists to prevent the operable windows from closing during periods of expected occupancy.

This ruling is effective for projects with a building permit application date (for which HVAC design is submitted for review) of June 2, 2014 and later.

Projects with a building permit application date (for which HVAC design is submitted for review) prior to June 2, 2014 can demonstrate compliance to EQp1 using natural ventilation provided that the project complies with Section 5.1 of ASHRAE 62.1 (2004 or 2007). However, such projects must adequately take into account the effects of natural ventilation on energy cost savings for the purposes of EAp2/EAc1 (Minimum/Optimize Energy Performance). For example, the following are clarifications for modeling ventilation rates for MURB projects with residential units with naturally ventilated areas:

1) Ventilation rates for the proposed building energy model shall be modelled as follows:

- For mechanically ventilated areas, use actual design ventilation rates.
- For naturally ventilated areas, use ventilation rates as calculated in the Ventilation Rate Procedure (as if for mechanically ventilated spaces), using an Ez of 0.8. The ventilation air for naturally ventilated spaces shall be modelled as unconditioned air supplied directly to the zone.

2) Ventilation rates for the baseline (reference) building energy model shall be modelled as follows:

- For all areas (including naturally ventilated areas), calculate the ventilation rates using ASHRAE 62.1 (2004 or 2007) Ventilation Rate Procedure following the rules in the LEED Canada 2009 Supplementary Energy Modelling Guidelines. For residential suites, use the residential dwelling outside air rates as stipulated in Table E-2 in ASHRAE 62.1-2004 or Tables 6-1 and 6-4 in ASHRAE 62.1-2007, whichever is applicable to the project.

This CIR clarification is only applied for the purposes of LEED Canada certification. The CaGBC is not the authority having jurisdiction for code compliance or other compliance purposes.

Please refer to CIR 1126 "Demonstrating compliance to EQp1 for MURBs" for additional guidance.

Additional Applicable Credits

Rating System	Version	Prerequisite/Credit
LEED Canada for New Construction and Major Renovations	1.0	IEQp1