Please upgrade your browser. This site requires a newer version to work correctly. Read more

- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Annual energy use
- EAc1 | Annual energy use
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1 | Optimize energy performance
- EAc1.1 | Optimize energy performance - lighting power
- EAc1.1 | Optimize energy performance, lighting power
- EAc1.1 | Optimize energy performance - lighting power
- EAc1.1 | Optimize energy performance - lighting power
- EAc1.1 | Optimize energy performance - lighting power
- EAc1.1-1.5 | Optimize energy performance
- EAc1.2 | Optimize energy performance - lighting controls
- EAc1.2 | Optimize energy performance, lighting controls
- EAc1.2 | Optimize energy performance - lighting controls
- EAc1.2 | Optimize energy performance - lighting controls
- EAc1.2 | Optimize energy performance - lighting controls
- EAc1.3 | Optimize energy performance - HVAC
- EAc1.3 | Optimize energy performance, HVAC
- EAc1.3 | Optimize energy performance - HVAC
- EAc1.3 | Optimize energy performance - HVAC
- EAc1.3 | Optimize energy performance - HVAC
- EAc1.4 | Optimize energy performance - equipment and appliances
- EAc1.4 | Optimize energy performance, equipment & appliances
- EAc1.4 | Optimize energy performance - equipment and appliances
- EAc1.4 | Optimize energy performance - equipment and appliances
- EAc1.4 | Optimize energy performance - equipment and appliances
- EAc1.5 | Optimize energy performance, envelope
- EAc1.5 | Optimize energy performance - building envelope
- EAc10 | Renewable energy
- EAc10 | Space heating and cooling equipment
- EAc11 | Residential refrigerant management
- EAc11 | Heating and cooling distribution systems
- EAc12 | Efficient domestic hot water equipment
- EAc13 | Lighting
- EAc14 | High-efficiency appliances
- EAc15 | Renewable energy
- EAc2 | On-site renewable energy
- EAc2 | On-site renewable energy
- EAc2 | On-site renewable energy
- EAc2 | On-site renewable energy
- EAc2 | Insulation
- EAc2 | On-site renewable energy
- EAc2 | Enhanced commissioning
- EAc2 | On-site and off-site renewable energy
- EAc2 | On-site renewable energy
- EAc2 | On-site renewable energy
- EAc2 | On-site renewable energy
- EAc2 | Enhanced commissioning
- EAc2 | Efficient hot water distribution system
- EAc2 | On-site renewable energy
- EAc2 | On-site renewable energy, 1%
- EAc2 | Enhanced commissioning
- EAc2.1 | Existing building commissioning - investigation and analysis
- EAc2.1 | Renewable energy - 5%
- EAc2.1 | Existing building commissioning - investigation and analysis
- EAc2.1-2.3 | Renewable energy
- EAc2.2 | Existing building commissioning - implementation
- EAc2.2 | Existing building commissioning - implementation
- EAc2.2 | Renewable energy - 10%
- EAc2.3 | Existing building commissioning - ongoing commissioning
- EAc2.3 | Existing building commissioning - ongoing commissioning
- EAc2.3 | Renewable energy - 20%
- EAc3 | Enhanced commissioning
- EAc3 | Measurement and verification
- EAc3 | Air infiltration
- EAc3 | Enhanced commissioning
- EAc3 | Energy use, measurement and payment accountability
- EAc3 | Enhanced commissioning
- EAc3 | Enhanced commissioning
- EAc3 | Additional commissioning
- EAc3 | Additional commissioning
- EAc3 | Enhanced commissioning
- EAc3 | Energy use, measurement & payment accountability
- EAc3 | Enhanced commissioning
- EAc3 | Advanced utility tracking
- EAc3 | Enhanced commissioning
- EAc3.1 | Performance measurement - building automation system
- EAc3.1 | Performance measurement - building automation system
- EAc3.1 | Building operations and maintenance - staff education

- EAc3.2 | Performance measurement - system-level metering
- EAc3.2 | Performance measurement - system-level metering
- EAc3.2 | Building operations and maintenance - building systems maintenance
- EAc3.3 | Building operations and maintenance - building systems monitoring
- EAc3.3 | Performance measurement - system-level metering
- EAc4 | Enhanced refrigerant management
- EAc4 | Windows
- EAc4 | Enhanced refrigerant management
- EAc4 | Enhanced refrigerant management
- EAc4 | Green power
- EAc4 | Additional ozone protection
- EAc4 | Enhanced refrigerant management
- EAc4 | Enhanced refrigerant management
- EAc4 | Ozone protection
- EAc4 | Ozone depletion
- EAc4 | Enhanced refrigerant management
- EAc4 | Enhanced refrigerant management
- EAc4 | Green power
- EAc4 | Active solar-ready design
- EAc4 | On-site and off-site renewable energy
- EAc4 | Green power
- EAc4 | Green power
- EAc4 | Enhanced refrigerant management
- EAc4 | Enhanced refrigerant management
- EAc4 | Enhanced refrigerant management
- EAc4.1 | On-site and off-site renewable energy
- EAc4.2 | On-site and off-site renewable energy
- EAc4.3 | On-site and off-site renewable energy
- EAc4.4 | On-site and off-site renewable energy
- EAc5 | Measurement and verification
- EAc5 | Measurement and verification
- EAc5 | Measurement and verification
- EAc5 | Enhanced refrigerant management
- EAc5 | On-site renewable energy
- EAc5 | Heating and cooling distribution system
- EAc5 | Measurement and verification
- EAc5 | Refrigerant management
- EAc5 | Measurement and verification
- EAc5 | Measurement and verification
- EAc5 | Measurement and verification
- EAc5 | Measurement and verification
- EAc5 | On-site renewable energy
- EAc5 | Measurement and verification
- EAc5 | HVAC Start-up credentialing
- EAc5 | Measurement and verification
- EAc5.1 | Measurement and verification - base building
- EAc5.1 | Performance measurement - enhanced metering
- EAc5.1 | Measurement and verification - base building
- EAc5.1 | Measurement and verification - base building
- EAc5.2 | Measurement and verification - tenant submetering
- EAc5.2 | Measurement and verification - tenant submetering
- EAc5.2 | Performance measurement - enhanced metering
- EAc5.2 | Measurement and verification - tenant submetering
- EAc5.3 | Performance measurement - enhanced metering
- EAc5.4 | Performance measurement - emission reduction reporting
- EAc6 | Emissions reduction reporting
- EAc6 | Space heating and cooling equipment
- EAc6 | Green power
- EAc6 | Emissions reduction reporting
- EAc6 | Documenting sustainable building cost impacts
- EAc6 | Green power
- EAc6 | Green power
- EAc6 | Green power
- EAc6 | Green power
- EAc6 | Green power
- EAc6 | Building orientation for passive solar
- EAc6 | Green power
- EAc6 | Green power
- EAc6 | Green power
- EAc6 | Green power
- EAc6 | Green power
- EAc7 | Community contaminant prevention - airborne releases
- EAc7 | Water heating
- EAc7 | Air infiltration
- EAc8 | Lighting
- EAc8 | Envelope Insulation
- EAc9 | Appliances
- EAc9 | Windows
- EAp1 | Fundamental commissioning of building energy systems
- EAp1 | Fundamental commissioning of building energy systems
- EAp1 | Fundamental commissioning of the building energy systems
- EAp1 | Energy efficiency best management practices - planning, documentation and opportunity assessment
- EAp1 | Fundamental commissioning
- EAp1 | Existing building commissioning
- EAp1 | Fundamental commissioning of the building energy systems
- EAp1 | Fundamental commissioning of the building energy systems
- EAp1 | Fundamental building systems commissioning
- EAp1 | Fundamental building systems commissioning
- EAp1 | Fundamental commissioning of the building energy systems
- EAp1 | Fundamental Commissioning
- EAp1 | Fundamental commissioning of building energy systems
- EAp1 | Fundamental commissioning of building energy systems
- EAp1 | Fundamental commissioning of building energy systems
- EAp1 | Minimum energy performance

- EAp1 | Minimum energy performance
- EAp1 | Energy efficiency best management practices - planning, documentation and opportunity assessment
- EAp2 | Minimum energy efficiency performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy efficiency performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Energy metering
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp2 | Minimum energy performance
- EAp3 | Fundamental refrigerant management
- EAp3 | Fundamental refrigerant management
- EAp3 | Fundamental refrigerant management
- EAp3 | Fundamental refrigerant management
- EAp3 | Refrigerant management - ozone protection
- EAp3 | CFC reduction in HVAC/R equipment
- EAp3 | Ozone protection
- EAp3 | Fundamental refrigerant management
- EAp3 | Fundamental refrigerant management
- EAp3 | CFC reduction in HVAC/R equipment
- EAp3 | CFC reduction in HVAC/R equipment
- EAp3 | Fundamental refrigerant management
- EAp3 | CFC reduction in HVAC&R equipment
- EAp3 | Education of homeowner, tenant, or building manager
- EAp3 | Fundamental refrigerant management
- EAp4 | Home size
- MEAc1 | Optimize energy performance in mid-rise buildings
- MEAc1 | Optimize energy performance in mid-rise buildings

Our "watch" feature allows you to stay current on all aspects of this specific credit. In your account, you can control what you get updated on and how you receive your notifications. Hide

LEED ID+C: Commercial Interiors | v4 - LEED v4

Minimum energy performance

Required

1 result in**All** .

- Glossary

Intent

To reduce the environmental and economic harms of excessive energy use by achieving a minimum level of energy efficiency for the building and its systems.

Requirements

Option 1. Tenant-level energy simulation

Demonstrate a 3% improvement in the proposed performance rating compared with the baseline performance rating for portions of the building within the tenant's scope of work. Calculate the baseline according to ANSI/ASHRAE/IESNA Standard 90.1–2010, Appendix G, with errata (or a USGBC-approved equivalent standard for projects outside the U.S.), using a simulation model for all tenant project energy use.

Projects must meet the minimum percentage savings before application of renewable energy systems.

The proposed design must meet the following criteria:

- compliance with the mandatory provisions of ANSI/ASHRAE/IESNA Standard 90.1–2010, with errata, (or a USGBC-approved equivalent standard for projects outside the U.S.);
- inclusion of all energy consumption and costs within and associated with the tenant project; and
- comparison against a baseline tenant project that complies with Standard 90.1–2010, Appendix G, with errata but without addenda (or a USGBC-approved equivalent standard for projects outside the U.S.).

Exception: the baseline project envelope must be modeled according to Table G3.1(5) (baseline), Sections a–e, and not Section f.

Document the energy modeling input assumptions for unregulated loads. Unregulated loads should be modeled accurately to reflect the actual expected energy consumption of the tenant project.

If unregulated loads are not identical for both the baseline and the proposed performance ratings, and the simulation program cannot accurately model the savings, follow the exceptional calculation method (ANSI/ASHRAE/IESNA Standard 90.1–2010, G2.5). Alternatively, use the COMNET modeling guidelines and procedures to document measures that reduce unregulated loads.

OR

Option 2. Prescriptive compliance

Comply with the mandatory and prescriptive provisions of ANSI/ASHRAE/IESNA Standard 90.1–2010, with errata (or a USGBC-approved equivalent standard for projects outside the U.S.).

- Reduce connected lighting power density by 5% below ASHRAE 90.1-2010 using the space-by-space method or by applying the whole-building lighting power allowance to the entire tenant space.
- Install ENERGY STAR appliances, office equipment, electronics, and commercial food service equipment (HVAC, lighting, and building envelope products are excluded) for 50% (by rated-power) of the total ENERGY STAR eligible products in the project. Projects outside the U.S. may use a performance equivalent to ENERGY STAR.

Alternative Compliance Paths (ACPs)

Canada ACP - NECB

Projects in Canada may instead demonstrate a percentage improvement in the proposed building performance rating compared with the baseline according to the National Energy Code for Buildings (NECB) 2011. The same percentage improvement in energy performance is required to meet the Prerequisite, and the same points for percentage improvement in energy performance are applicable for the Credit.

The following conditions (where applicable) must be met. Note that unless otherwise noted, CanQUEST (the Canadian energy modelling software based on eQUEST that performs NECB 2011 compliance runs) does not implement these conditions correctly and would require corresponding modifications to the Reference case.

1. **Comply with mandatory requirements of ASHRAE 90.1-2010**

   ASHRAE 90.1-2010 mandatory requirements must be met, in addition to the performance path limitations referenced in the NECB 2011 Sections 3.4.1.2, 5.4.1.2 and 6.4.1.2. In cases where ASHRAE and the NECBC reference requirements concerning the same item, the more stringent requirement shall be adhered to.

2. **Apply fenestration area convention similar to ASHRAE 90.1-2010**

   Maintain the same FWR (as defined by NECB, including doors) for the Reference as exists in the Proposed Design, up to the prescribed maximum. If the Proposed Design's FWR exceeds the prescribed FWR, scale down the fenestrations in the Reference case accordingly.

3. **Apply skylight area convention similar to ASHRAE 90.1-2010**

   Maintain the same SRR for the Reference as exists in the Proposed Design, up to the prescribed 5% maximum. If the Proposed Design's SRR exceeds 5%, scale down the skylights in the Reference case accordingly.

4. **Model proposed and reference outside air similar to ASHRAE 90.1-2010**

   Proposed and reference (baseline) outside air rates shall be modeled as per ASHRAE 90.1 – 2010 (G3.1.2.6).

5. **Apply ASHRAE kitchen exhaust demand ventilation requirements**

   Provide for the same demand ventilation requirements as described in ASHRAE Appendix G3.1.1.d.

6. **Apply ASHRAE's chiller heat recovery requirements**

   Provide for the same chiller heat recovery requirements as applies to ASHRAE.

7. **Apply supply air temperature reset controlled based on warmest zone**

   Reset the minimum supply air temperature to satisfy the cooling requirements of the warmest zone, as stipulated in NECB Section 5.2.8.8. Note that this control setting is already corrected in CanQUEST for the Reference case.

8. **Account for uninsulated structural penetrations if they exceed 2% of net wall area**

   The 2% allowance may be applied, but based on the net opaque wall area, not the entire building envelope area.

9. **Follow ASHRAE/LEED rules for renovations to existing buildings**

   Model existing components consistent with ASHRAE and LEED provisions.

10. **Account for all anticipated energy use in building**

    Fully account for all energy end-uses in the energy performance modelling.