



LEED ID+C: Hospitality | v4 - LEED v4

Enhanced refrigerant management

Possible 1 point

Glossary

Intent

To reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to climate change.

Requirements

Option 1. No refrigerants or low-impact refrigerants (1 point)

Do not use refrigerants, or use only refrigerants (naturally occurring or synthetic) that have an ozone depletion potential (ODP) of zero and a global warming potential (GWP) of less than 50.

OR

Option 2. Calculation of refrigerant impact (1 point)

Select refrigerants that are used in heating, ventilating, air-conditioning, and refrigeration (HVAC&R) equipment to minimize or eliminate the emission of compounds that contribute to ozone depletion and climate change. The combination of all new and existing base building and tenant HVAC&R equipment that serve the project must comply with the following formula:

IP units	SI units
$\text{LCGWP} + \text{LCODP} \times 10^5 \leq 100$	$\text{LCGWP} + \text{LCODP} \times 10^5 \leq 13$
Calculation definitions for $\text{LCGWP} + \text{LCODP} \times 10^5 \leq 100$ (IP units)	Calculation definitions for $\text{LCGWP} + \text{LCODP} \times 10^5 \leq 13$ (SI units)
$\text{LCODP} = [\text{ODPr} \times (\text{Lr} \times \text{Life} + \text{Mr}) \times \text{Rc}] / \text{Life}$	$\text{LCODP} = [\text{ODPr} \times (\text{Lr} \times \text{Life} + \text{Mr}) \times \text{Rc}] / \text{Life}$
$\text{LCGWP} = [\text{GWPr} \times (\text{Lr} \times \text{Life} + \text{Mr}) \times \text{Rc}] / \text{Life}$	$\text{LCGWP} = [\text{GWPr} \times (\text{Lr} \times \text{Life} + \text{Mr}) \times \text{Rc}] / \text{Life}$
LCODP: Lifecycle Ozone Depletion Potential (lb CFC 11/Ton-Year)	LCODP: Lifecycle Ozone Depletion Potential (kg CFC 11/(kW/year))
LCGWP: Lifecycle Direct Global Warming Potential (lb CO ₂ /Ton-Year)	LCGWP: Lifecycle Direct Global Warming Potential (kg CO ₂ /kW-year)
GWPr: Global Warming Potential of Refrigerant (0 to 12,000 lb CO ₂ /lbr)	GWPr: Global Warming Potential of Refrigerant (0 to 12,000 kg CO ₂ /kg r)
ODPr: Ozone Depletion Potential of Refrigerant (0 to 0.2 lb CFC 11/lbr)	ODPr: Ozone Depletion Potential of Refrigerant (0 to 0.2 kg CFC 11/kg r)
Lr: Refrigerant Leakage Rate (2.0%)	Lr: Refrigerant Leakage Rate (2.0%)
Mr: End-of-life Refrigerant Loss (10%)	Mr: End-of-life Refrigerant Loss (10%)
Rc: Refrigerant Charge (0.5 to 5.0 lbs of refrigerant per ton of gross AHRI rated cooling capacity)	Rc: Refrigerant Charge (0.065 to 0.65 kg of refrigerant per kW of AHRI rated or Eurovent Certified cooling capacity)
Life: Equipment Life (10 years; default based on equipment type, unless otherwise demonstrated)	Life: Equipment Life (10 years; default based on equipment type, unless otherwise demonstrated)

For multiple types of equipment, calculate a weighted average of all base building HVAC&R equipment, using the following formula:

IP units	SI units
$\frac{\sum (\text{LCGWP} + \text{LCODP} \times 10^5) \times \text{Qunit}}{\text{Qtotal}} \leq 100$	$\frac{\sum (\text{LCGWP} + \text{LCODP} \times 10^5) \times \text{Qunit}}{\text{Qtotal}} \leq 13$
Calculation definitions for $[\sum (\text{LCGWP} + \text{LCODP} \times 10^5) \times \text{Qunit}] / \text{Qtotal} \leq 100$ (IP units)	Calculation definitions for $[\sum (\text{LCGWP} + \text{LCODP} \times 10^5) \times \text{Qunit}] / \text{Qtotal} \leq 13$ (SI units)
Qunit = Gross AHRI rated cooling capacity of an individual HVAC or refrigeration unit (Tons)	Qunit = Eurovent Certified cooling capacity of an individual HVAC or refrigeration unit (kW)
Qtotal = Total gross AHRI rated cooling capacity of all HVAC or refrigeration	Qtotal = Total Eurovent Certified cooling capacity of all HVAC or refrigeration (kW)