



# Enhanced refrigerant management

Possible 1 point

## 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					
LCGWP	+	LCODP	x	10 <sup>5</sup>	≤ 100	LCGWP	+	LCODP	x	10 <sup>5</sup>	≤ 13
Calculation definitions for LCGWP + LCODP x 10 <sup>5</sup> ≤ 100 (IP units)						Calculation definitions for LCGWP + LCODP x 10 <sup>5</sup> ≤ 13 (SI units)					
LCODP = [ODPr x (Lr x Life +Mr) x Rc]/Life						LCODP = [ODPr x (Lr x Life +Mr) x Rc]/Life					
LCGWP = [GWPr x (Lr x Life +Mr) x Rc]/Life						LCGWP = [GWPr x (Lr x Life +Mr) x Rc]/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 CO2/Ton-Year)						LCGWP: Lifecycle Direct Global Warming Potential (kg CO2/kW-year)					
GWPr: Global Warming Potential of Refrigerant (0 to 12,000 lb CO2/lbr)						GWPr: Global Warming Potential of Refrigerant (0 to 12,000 kg CO2/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	
$\sum (LCGWP + LCODP \times 10^5) \times Q_{unit}$	≤ 100	$\sum (LCGWP + LCODP \times 10^5) \times Q_{unit}$	≤ 13
Qtotal		Qtotal	

Calculation definitions for $[\sum (LCGWP + LCODP \times 10^5) \times Q_{unit}] / Q_{total} \leq 100$ (IP units)	Calculation definitions for $[\sum (LCGWP + LCODP \times 10^5) \times Q_{unit}] / Q_{total} \leq 13$ (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)

$Q_{total}$  = Total gross AHRI rated cooling capacity of all HVAC or refrigeration

$Q_{total}$  = Total Eurovent Certified cooling capacity of all HVAC or refrigeration (kW)