

Voluntary Greenhouse Gas Reporting

Emission Factors 2011

These greenhouse gas emission factors can be used by organisations who wish to voluntarily monitor and report greenhouse gas (GHG) emissions on an organisational basis for their New Zealand operations.

The emission factors are presented in carbon dioxide equivalents (CO₂-e) for the 2011 calendar year. Further data and information on guidance for organisations on voluntary greenhouse gas reporting can be found in the Ministry for the Environment's publication *Guidance for Voluntary Corporate Greenhouse Gas Reporting for the 2011 calendar year* at www.mfe.govt.nz/publications/climate

Scope One

Scope 1 emissions are direct GHG emissions occurring from sources that are owned or controlled by the company (ie, sources within the organisational boundary) eg, emissions from combustion of fuel in owned or controlled vehicles.

Liquid Fuels – Stationary Combustion

Emission source	Unit	Emission factor total CO ₂ -e (kg CO ₂ -e/unit)
Diesel	Litre	2.66
LPG	Kg	2.89
Heavy fuel oil	Litre	3.00
Light fuel oil	Litre	2.94

Natural Gas

Natural Gas	Emission factor total CO ₂ -e (kg CO ₂ -e/kWh)	Emission factor total CO ₂ -e (kg CO ₂ -e/GJ)
Commercial	0.193	53.7
Industry	0.191	53.1

Wood

Wood	Emission factor total CO ₂ -e (kg CO ₂ -e/kg)
Industry	0.0142
Fireplaces	0.0690

Note: The total CO₂-e emission factor for wood includes CH₄ and N₂O emissions. This is based on *ISO 14064-1* and *The GHG Protocol* reporting requirements for combustion of biomass as Scope 1 emissions. CO₂ emissions, from the combustion of biologically sequestered carbon are reported separately.

Coal

Emission source	Emission factor total CO ₂ -e (kg CO ₂ -e/kg)
Residential – Bituminous	2.76
Residential – Sub-bituminous	2.08
Residential – lignite	1.53
Residential – default*	1.86
Commercial – Bituminous	2.59
Commercial – Sub-bituminous	1.95
Commercial – lignite	1.44
Commercial – default*	1.69
Industry – Bituminous	2.59
Industry – Sub-bituminous	1.95
Industry – lignite	1.44
Industry – default*	2.15

*The default coal emission factor should be used if it is not possible to identify the specific type of coal. Note, the default for industrial use of coal does not include coal used by the dairy industry as it is expected this sector would know the type of coal it consumes.

Transport (liquid fuels)

Fuel	Emission factor total CO ₂ -e* (kg CO ₂ -e/litre)
Regular petrol	2.34
Premium petrol	2.36
Petrol – default*	2.34
Diesel	2.70
LPG	1.55
Heavy fuel oil	3.02
Light fuel oil	2.96

*The default petrol emission factor should be used if it is not possible to distinguish between regular and premium petrol use.

Transport (distance travelled)

Vehicle size class	Emission factor total CO ₂ -e (kg CO ₂ -e/km)
Car – small (<1600 cc)	0.181
Car – medium (1600–<2500 cc)	0.237
Car – large (≥ 2500 cc)	0.308
Car – default*	0.237

*The default emission factor should be used if vehicle size class cannot be determined.

Scope Two

Scope two emissions are indirect GHG emissions occurring from the generation of purchased electricity consumed by the company.

Purchased electricity

Emission source	Emission factor total CO ₂ -e (kg CO ₂ -e/kWh)
Purchased electricity	0.129

Scope Three

Scope 3 emissions are other indirect GHG emissions occurring as a consequence of the activities of the company, but generated from sources not owned or controlled by the company (eg, emissions from air travel).

Air Travel

Emission Source	Cabin Class	Unit	Emission factor total CO ₂ -e (kg CO ₂ -e/unit)
Domestic	Average	pkm*	0.167
Short Haul International (<3700 km)	Average	pkm	0.0952
	Economy class	pkm	0.0907
	Business class	pkm	0.136
Long Haul International (>3700 km)	Average	pkm	0.109
	Economy class	pkm	0.0795
	Premium economy class	pkm	0.127
	Business class	pkm	0.231
	First class	pkm	0.318

Transmission and distribution line losses (purchased electricity)

Emission source	Emission factor total CO ₂ -e (kg CO ₂ -e/kWh)
Transmission and distribution line losses for purchased electricity	0.0133

Transmission and distribution losses (distributed natural gas)

Emission source	Unit	Emission factor total CO ₂ -e (kg CO ₂ -e/unit)
Transmission and distribution losses for distributed natural gas	kWh	0.0189
	GJ	5.25

Taxis and rental cars

Emission source	Unit	Emission factor total CO ₂ -e (kg CO ₂ -e/unit)
Rental car – small (<1600cc)	Km	0.181
Rental car – medium (1600 – <2500cc)	Km	0.237
Rental car – large (≥ 2500)	Km	0.308
Rental car – default*	Km	0.237
Taxi travel – distance travelled	Km	0.308
Taxi travel – dollars spent (GST inclusive)	\$	0.114

*The default emission factor should be used if the vehicle size class of rental cars cannot be determined.

Waste to landfill

Emission source	Emission factor total CO ₂ -e (kg CO ₂ -e/kg)
Landfilled waste of known composition (without landfill gas recovery)	
Paper and textiles	2.52
Garden and food	0.945
Wood	1.89
Landfilled waste of known composition (with landfill gas recovery)	
Paper and textiles	1.06
Garden and food	0.397
Wood	0.794
Landfilled waste – default values (without landfill gas recovery)	
Mixed waste (national average)	1.06
Office waste	1.55
Landfilled waste – default values (with landfill gas recovery)	
Mixed waste (national average)	0.444
Office waste	0.650