

UNDERSTANDING EMISSIONS OF ENERGY SOURCES AND CALORIFIC VALUES OF COMMON ENERGY

Energy source*	Units	Kg CO2e per unit
Grid electricity	kWh	0.000171
Natural gas	kWh	0.1773
	GJ	49.3
LPG	kWh	0.214
	litres	1.497
Gas oil	kWh	0.277
	litres	3.029
Fuel oil	kWh	0.266
	tonnes	3229
Burning oil	kWh	0.247
	tonnes	3165
Diesel	kWh	0.253
	litres	2.669
Petrol	kWh	0.243
	litres	2.331
Industrial coal	kWh	0.313
	tonnes	2,338
Wood Pellets	kWh	0.039
	tonnes	121.5

Fuel	Kilowatt hour per tonne	Kilowatt hour per litre
Solid fuels		
Coal (average)	7583	
Coke	8277	
Liquid fuels		
Ethane	14083	5.2
LPG	13722	7.1
Jet kerosene	12833	10.3
Petroleum	13083	9.6
Gas/diesel oil	12666	10.8
Fuel oil	11999	11.9
Lubricating oils	12555	11.1
Naphtha	13249	9.1
Crude oil (average)	12694	10.7
Petroleum products (average)	12555	9.3

Fuel	Kilowatt hour per tonne	Kilowatt hour per m3
Gaseous fuels		
Natural gas		11
COG		5.6
BFG (Blast Furnace Gas)		0.8
Landfill gas		10.7
Sewage gas		10.7
Solid renewables		
Domestic Wood (Green 50% MC)	2778	
Industrial wood (Semi-Dried)	3890	
Wood Pellets (MC 5%)	5298	
Straw	4166	
	2444	
General industrial waste	4444	
Hospital waste	3889	
Municipal solid waste	2639	
Refuse derived waste	5194	
Tyres	8888	

Energy Unit	Kilowatt hour (kWh) Equivalent	Volume Equivalent
1 tonne oil equivalent	11630	
1 therm	29.31	
1 Gigajoule (GJ)	277.8	
1 Gigajoule (GJ)		26 m3 N.Gas
1 Gigajoule (GJ)		39.2 Litres LPG
1 kg of Wood Pellets	5.2	
1 kg of 30% MC Wood Chips	3.89	

1 Metric Tonne = 1000 litres of Water = 1 cubic meter of Water @ 4 deg Cel
Oil weighs approx .88 kg/litre
1Tonne Oil = approx. 1136 litres

GHG	Multiply to obtain CO2e value
CO2	1
CH4 ("Natural" Gas)	23
N2O (NOX)	296
SF6	22,200
HFCs	12 - 12,000
PFCs	5,700 - 11,900

8.89*10⁻³ metric tons CO₂/gallon gasoline * 11,720 VMT_{car/truck average} * 1/20.4 miles per gallon_{car/truck average} * 1 CO₂, CH₄, and N₂O/0.977 CO₂ = **5.23 metric tons CO₂E /vehicle/year**

*Source information from Carbon Trust UK. And The Log Pile UK and USDA data and US -EPA & Pacific Carbon Trust.