

Support material #10:

Energy calculations

Energy calculations

- Electricity is measured in kilowatt hours
- Gas is measured in megajoules

Conversions

- 1 kilowatt (k) = 1000 watts (W)
- 1 kilowatt hour (kWh) means 1 kilowatt (kW) of power being used for 1 hour
- 1 kilowatt hour (kWh) = 1000 watt hours (Wh)
- 1 megawatt hour (MWh) = 1000 kilowatt hours (kWh)
- 1 kilowatt hour (kWh) = 3.6 megajoules (MJ)
- 1 gigajoule (GJ) = 1,000,000,000 Joules

To convert energy consumption units to greenhouse gas produced (kg CO₂-e)

Energy source	To convert from the units below	To greenhouse gas produced (kg CO ₂ -e) multiply by
Electricity	kWh	NSW = 1.06 QLD = 1.04 SA = 0.98 VIC = 1.31
Natural gas	MJ	NSW = 0.06773 QLD = 0.05483 SA = 0.06523 VIC = 0.05583

The above figures are correct as of June 2010.
For more information please visit the Australian Department of Climate Change (DCC) website, <http://www.climatechange.gov.au>.

Example calculation involving electricity

Item: A common light globe uses 60 watts per hour.

Scenario:

If this light globe was to run for 24 hours a day, 365 days a year, it will run for a total of how many hours?

$$24 \text{ hours/day} \times 365 \text{ days/year} = 8760 \text{ hours/year}$$

How many watt hours of electricity will the light use in one year?

$$8760 \text{ hours} \times 60 \text{ watts} = 525,600 \text{ watt hours (Wh)/year}$$

Convert watt hours to kilowatt hours.

$$525,600 \text{ watt hours} \div 1000 = 525.60 \text{ kilowatt hours/year}$$

Therefore, a 60W light globe running all year will use around 526 kilowatt hours of electricity per year.

Using the multiplier from the table on the left, calculate how much carbon dioxide would be produced from running the 60W globe constantly for one year. For this example, we are in Queensland.

$$526 \text{ kilowatt hours} \times 1.046 = 550.2 \text{ kg CO}_2\text{-e}$$

Therefore, a light globe using 526 kilowatt hours of electricity per year produces 550.2 kg of CO₂.