SUPPORT MATERIAL #10:
Energy calculations

Calculate: Activity 6

Energy calculations

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

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 hour (kWh)
- 1 kilowatt hour (kWh) = 3.6 megajoules (MJ)
- 1 gigajoules (GJ) = 1,000,000,000 Joules
- 1 gigajoules (GJ) = 1000 megajoules (MJ)

To convert energy consumption units to greenhouse gas produced (kg CO_{2}-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 of a simple calculation involving electricity

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

Scenario: If the light globe runs for 24 hours a day, 365 days a year, it will run for a total of 8760 hours.

24 hours/day x 365 days/year = 8760 hours/year

This means the light will use 525,600 watt hours of electricity in the year.

8760 hours x 60 watts
= 525,600 watt hours (Wh)/year

To convert watt hours to kilowatt hours, divide by 1000.

525,600 watt hours ÷ 1000
= 525.60 kilowatt hours/year

Therefore, an ordinary light globe running all year will use around 526 kilowatt hours of electricity per year.

A light globe using 526 kilowatt hours a year uses 550.2 kg of CO_{2} gases per year.

526 kilowatt hours x 1.04 kg/kWh (QLD figure)
= 547.04 kg CO_{2}-e .