

# ENERGY EFFICIENCY OVERVIEW – E1

Eco-efficiency resources for the food processing industry

## *Tips on saving energy and money*

*Rising resource costs and economic impacts from addressing climate change are putting pressure on industry to improve efficiency, while reducing greenhouse gas emissions. The majority of greenhouse gases emitted by the food processing industry come from its energy use. All food processing facilities use energy for daily activities such as refrigeration, compressed air, boilers, ovens and lighting.*

The Australian Government is developing a 'cap and trade' Carbon Pollution Reduction Scheme (CPRS) to be introduced in 2010. The scheme is likely to impact many sectors as the cost of energy increases. The most effective way for food companies to limit the impact of an emissions trading scheme is to reduce energy use through better practices that improve energy efficiency. Refer to the *Greenhouse gas emissions (E3)* factsheet for more information on emissions trading schemes.

Whilst energy-intensive food processing companies will probably have to be involved in emissions trading schemes, smaller companies are likely to become involved through downward pressure from their supply chain, carbon emissions labelling requirements and consumer pressure to be more efficient. The *Energy efficiency programs (E2)* factsheet provides more information on thresholds and reporting requirements.

Climate change is discussed further in the Current issues and future trends (G4) fact sheet, however impacts from addressing climate change that specifically effect energy use include:

- increased cost of energy
- mandatory requirements to report on and reduce energy use
- greenhouse gas emissions trading
- reduced electricity availability
- reduced oil/gas availability
- reduced transportation availability.

The most effective way to prepare for these changes is to:

- gain a good understanding of the company's energy use and associated greenhouse gas emissions
- investigate opportunities to reduce energy use by becoming more efficient.

There are many ways a company can become more energy efficient. These range from turning out lights in areas not being used, to investing in energy efficient utilities or alternative energy sources.

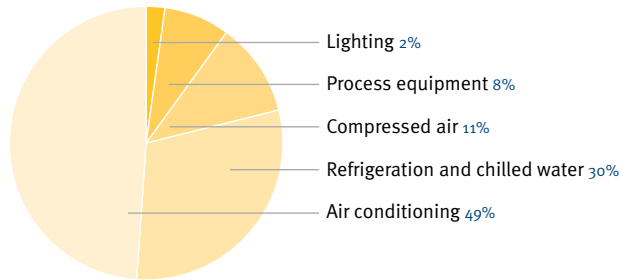


<sup>1</sup>Australian Department of Climate Change, 9 July 2008, [www.greenhouse.gov.au/emissionstrading/about.html](http://www.greenhouse.gov.au/emissionstrading/about.html)

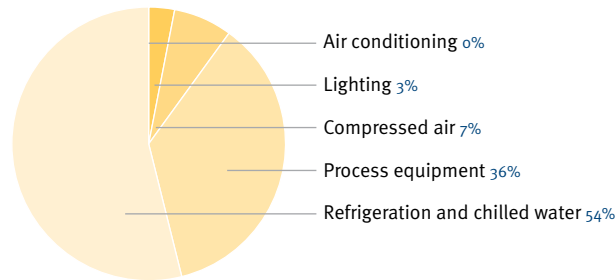
Figure 1 below provides examples of typical energy usage distribution in food processing facilities. Data like this allows companies to determine where and how energy is being used and work towards maximising energy efficiency.

### Figure 1: Typical distribution of energy use in a food processing factory

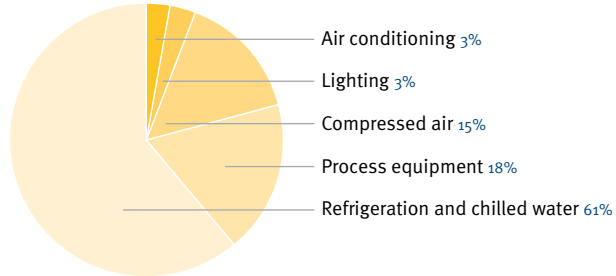
#### Distribution of energy use in a beverage plant



#### Typical distribution of energy use in a meat processing plant



#### Typical distribution of energy use in a vegetable processing plant



### Typical energy use for factory equipment

Energy use in a factory can be complex with different sources of energy used including electricity, coal, gas, petroleum products and heat recovery. Deciding what type of system is most suitable can be difficult and depends on how much energy is used. Table 1 on the next page provides some examples of how much energy it takes to operate certain equipment.



**Table 1: Typical equipment energy consumption**

These figures assume general operation for 16 hours per day, five days per week over a 48 week year.

Equipment	Approximate yearly energy requirement (kWh/year)	Approximate CO <sub>2</sub> equivalent (kg CO <sub>2</sub> -e) <sup>2</sup>	Equivalent number of cars	Yearly operating cost at \$0.10 per kWh (\$/year)
100W incandescent light bulb	384	399	0.10	\$38
Compact fluorescent light bulb	69	72	0.02	\$7
44kW Refrigeration unit	192,500	200,277	50.07	\$19,250
22kW rating compressed air	117,000	121,669	30.42	\$11,700
2kW motor	8,800	9,156	2.29	\$880

This series of fact sheets provide an explanation of the current terminology in relation to climate change and energy use, provide sources of funding for factories implementing efficient projects and provide ideas on the efficient operation of factories. The following fact sheets are available:

- E1 – Energy efficiency overview
- E2 – Energy efficiency programs
- E3 – Greenhouse gas emissions
- E4 – Alternative energy sources
- E5 – Energy recovery

This series of fact sheets provides examples and suggestions to the modern food processor on how to achieve both economic and environmental benefits from eco-efficiency. Visit the project website [www.ecoefficiency.com.au](http://www.ecoefficiency.com.au) for more ideas and case studies.

<sup>2</sup>Table 5 Scope 3, 289 kg CO<sub>2</sub>-e/GJ, Department of Climate Change, National Greenhouse Accounts (NGA) Factors. January 2008.

*The eco-efficiency for the Queensland food processing industry project is an initiative of the Department of Tourism, Regional Development and Industry and the Environmental Protection Agency with technical information provided by UniQuest through the UNEP Working Group for Cleaner Production.*