Australian Government
Department of Industry and Science

Dairy Australia
Your Levy at Work

Smarter energy use on Australian dairy farms

Analysis of regional energy assessment data: Subtropical

Since 2012 almost 1,400 dairy shed energy assessments have been conducted in all dairy regions across Australia as part of the national Dairy Australia project *Smarter energy use on Australian dairy farms*, funded by the Department of Industry and Science as part of the Energy Efficiency Information Grants Program.

As part of this project, RM Consulting Group was commissioned to undertake an independent analysis of the energy assessment data that was collected during the 1,400 dairy shed assessments. This fact sheet summarises the outcomes from that independent analysis for this region.

Background

The *Smarter energy use* program will close in June 2015. Since 2012 this project has successfully delivered 1,400 energy assessments, covering ~21% of dairy farms across Australia.

This information sheet is benchmarking data from 137 energy efficiency assessments conducted in subtropical region dairy sheds, representing 21% of dairies in the region, from 2012 to 2015. The energy assessments involved: review of 12 months of power bills; shed visit for energy efficiency assessment and follow up visit/communication with farmers with recommendations.

This data only relates to dairy shed use and any other loads connected to the dairy metering point. So it does not include irrigation, which is typically the biggest part of the power bill for irrigated farms, depending on the season.

The data excludes automatic, small rotary (herds <150) and large walk through (herds >300) dairies which all have higher energy use compared to others with a similar herd size.

Key findings of study

Energy costs per 100 cows

Energy costs per 100 cows can provide a simple benchmark. These benchmarks can indicate if you have a problem and therefore are a good indicator of potential savings. If your energy use were similar to the 'high' benchmark it would be worthwhile undertaking an assessment of your energy use to identify where efficiencies can be made (Table 1).

Table 1 Subtropical benchmarks

	Subtropical benchmarks		
	Low	Average	High
Total energy costs per 100 cows	$4,300	$6,800	$9,400
Hot water costs per 100 cows	$180	$1,370	$2,560
Milk cooling costs per 100 cows	$1,690	$2,850	$4,010
Milk harvesting costs per 100 cows	$710	$1,280	$1,840
Energy use per milk production kWhr per 1000L	33	50	67
Energy cost per milk production $ per 1000L	$7	$11	$16
Energy cost per kWhr (average for year of assessments from 2012 to 2015)	$0.20	$0.23	$0.25

All figures are inclusive of GST

In the subtropical region, more energy is used for cooling milk and therefore costs for cooling milk are higher than for some other regions.

Energy use and cost per kL milk

For benchmarking energy use, the best comparison is kWhr per kL because that accounts for variations in L per cow and MS per cow. The amount of energy used largely depends on the volume of milk physically harvested and cooled. See Table 1 for benchmarks per kL milk.

Scale is important

Dairies with larger herd sizes have lower energy use per kL milk. Energy use for all three main cost components is lower for larger herds.

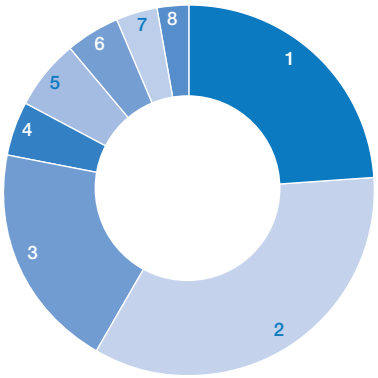
Nationally, energy use per kL milk declines by about 14% from herd size 100 to 200 and then by about 4% for every 100 cows up to 500 cows.

Identified savings

In the Subtropical region, typically 54% of assessments had indicative identified savings of between $0 and $2,000 per year. About 34% had indicative savings of between $2,000 and $5,000. Others were between $5,000 and $12,000 indicative savings per year.

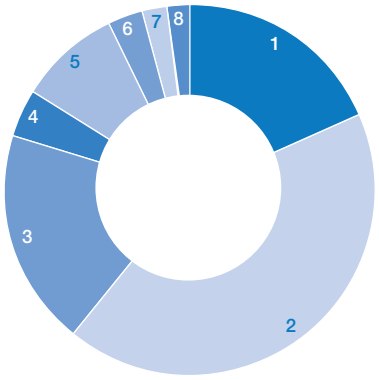
Refer to the national summary for information on most common recommendations.

Figure 1 Breakdown of energy costs average for rotary sheds – Subtropical



1	Hot water	23.9%
2	Milk cooling	34.4%
3	Milk harvesting	19.9%
4	Cleaning and effluent	4.6%
5	Stock and dairy water	6.2%
6	Feed	4.6%
7	Shed, office, workshop, misc.	3.7%
8	Lights	2.6%

Figure 2 Breakdown of energy costs average for herringbone sheds – Subtropical



1	Hot water	18.5%
2	Milk cooling	42.4%
3	Milk harvesting	19.0%
4	Cleaning and effluent	4.2%
5	Stock and dairy water	8.9%
6	Feed	3.0%
7	Shed, office, workshop, misc.	2.0%
8	Lights	2.0%

Cost components

The three main energy cost components are hot water, milk cooling and milk harvesting totalling about 80% of energy costs in the subtropical region. Figure 1 and 2 show the breakdown of energy costs for the most common dairy types, rotary and herringbone.

To reduce energy consumption and costs, focus on the three main cost components: hot water, milk cooling and milk harvesting.

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