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Dairy Australia

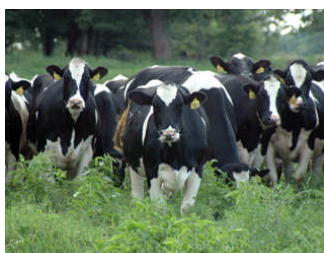
Smarter Energy Use Program Phase 1 Evaluation

Report
DRAFT

May 2014

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Contents

Page

Executive Summary	4
Main report	
1. Background	8
2. Methodology	8
3. Sample demographics	9
3.1 Age.....	9
3.2 Gender	9
3.3 Dairy enterprise phase	10
3.4 Herd Size.....	10
3.5 Milking frequency.....	11
3.6 Type of dairy.....	11
4. Overall impact of Smarter Energy Use program	12
4.1 Impact on energy use awareness and knowledge.....	12
4.2 Impact on decision making	13
4.3 Changes made as result of Smarter Energy Use program	14
4.4 Barriers to making changes.....	16
4.5 Impact of changes made on energy consumption.....	17
4.6 Impact on attitudes towards energy consumption	18
5. Farmer perception of Smarter Energy Use program.....	19
5.1 Perception of assessment process.....	19
5.2 Perceived usefulness of energy efficiency plan	20
5.3 Additional information required.....	21
5.4 Overall satisfaction with program.....	22
5.5 Farmer recommendations to improve future programs	23
6. Smarter Energy Use program structure	24
6.1 Creating program awareness and drivers to participation	24
6.2 Assessor aptitude	25
Appendix: Questionnaires.....	28

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Executive Summary

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Executive Summary

Background and methodology

The Smarter Energy Use program provided interested dairy farmers with an assessment of energy consumption in their dairy, identifying any potential options to reduce the amount of energy being used. Once an assessment had been conducted, an Energy Efficiency Plan was prepared and provided to dairy farmers. In total, 900 dairy farmers participated in program and received an Energy Efficiency Plan.

This Evaluation Report provides information based on data collected during the monitoring and evaluation components of the program. Insights included in the report are based on a series of telephone interviews with three samples – the first consisting of dairy farmers just after an assessment was conducted, the second consisting of dairy farmers after receiving their Plan and the third consisting of dairy farmers interviewed 1 year after receiving their Plan.

The post assessment interviews (33 in total) were conducted by program co-ordinators to determine whether dairy farmer contact with assessors had been positive and informative.

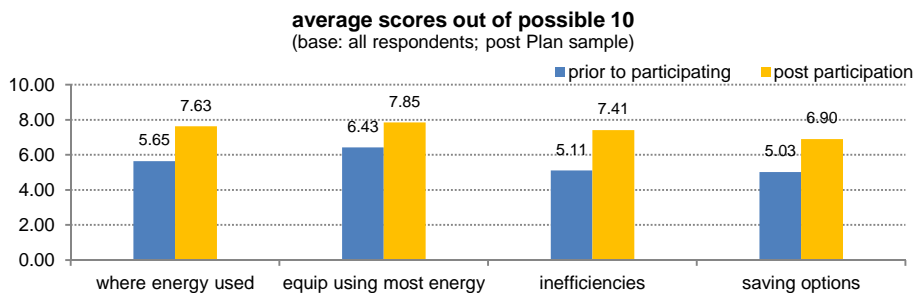
Down To Earth Research (DTER) consultants then contacted a number of dairy farmers (49) after they had received their Energy Efficiency Plan. The aim of these interviews was to measure the impact of program participation on energy efficiency awareness as well as the likelihood of considering making changes to reduce energy consumption.

DTER consultants also contacted 50 dairy farmers approximately 1 year after they received their Energy Efficiency Plan to determine whether it was being used as a reference and if so, its impact dairy on farmer attitudes and decision making relating to energy consumption.

Key findings

Program impact and outcomes

- Results from interviews with Smarter Energy Use program participants reveal it has successfully increased knowledge and awareness of energy use in the dairy. The chart below details dairy farmer self ratings out of 10 on 4 key measures prior to having the assessment conducted and after they had received their Energy Efficiency Plan):



- Additionally, 80% of those interviewed say they now think and/or behave differently, mainly through switching off equipment and lights when not required, increasing maintenance of equipment to ensure it operates efficiently and replacing inefficient machinery with more suitable options when it breaks down. Many comments similar to the following were made:

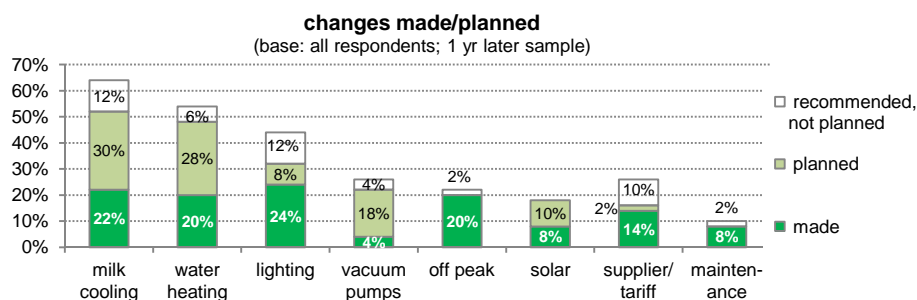
"We now turn the lights off in the dairy as soon as it is light and we turn the yard lights off when it is light enough to see. We also turn off everything as soon as we leave the dairy - fans, equipment and the like."

"We are now a lot more aware of looking at efficiencies of equipment and making sure we do the maintenance required to keep machines running at their peak efficiency."

"Having the assessment conducted has meant that when I was looking for a new water heater I factored in the energy efficiency of the equipment as well, rather than just looking at size and cost."

Those saying the program had little, if any affect on their attitude are typically dairy farmers who have already had a strong focus on reducing power consumption, mainly due to trying to minimise costs.

- Energy Efficiency Plans have been used throughout the past year by most people receiving them. Plans have been used to prioritise and guide decisions, particularly in terms of purchasing new equipment. Recommendations made in the Plan are being put into effect by most dairy farmers as shown in the chart below:



- ❖ Costs associated with replacing existing equipment and machinery is the main barrier to implementing recommended changes, but recent lifts in farm gate milk price is likely to increase the number of dairy farmers able to make changes in the foreseeable future.

Perceptions of the program

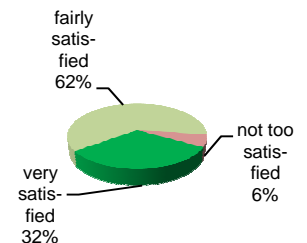
- ❖ The vast majority of dairy farmers participating in the program have been satisfied with the initial assessment process, believing it to be relatively efficient and interesting. A few however did have difficulty providing accurate information for the length of time equipment runs.
- ❖ Receiving an Energy Efficiency Plan has proved useful for 92% of dairy farmers due to the identification of energy saving potential and subsequent money saving as well as benchmark data. For some respondents, Plans would have been more useful if information on new technologies and alternative power sources had been included.
- ❖ Overall satisfaction with the program has been widespread, with 94% of respondents saying they have been fairly (62%) to very satisfied (32%) and comments made highlight how effective the program has been, even though the greatest interest has been in identifying ways to save money rather than reducing energy consumption specifically:

"I think this has been one of the better programs I've been involved with. We learnt so much that can help us save money – things like the different electricity tariffs people are paying and how to reduce energy use by having variable speed pumps, milking earlier so we can use off peak and now we're only using the power we absolutely need."

"It identified where the real costs are in the dairy and helps prioritise where you need to spend money to get the greatest savings. The assessor was great. He put a dollar value on all the possible changes and didn't recommend anything that wasn't going to give me a net benefit."

"It gives us a plan to make changes short term and a plan to make changes down the track as things wear out. Before receiving it, I had no idea what I could do to use electricity efficiently. I could go ahead blindly replacing things, but after knowing what was using what, it gives you an idea of which way to go."

satisfaction with program
(base: all respondents; 1 yr later sample)



Program structure

- ❖ Awareness of the Smarter Energy Use program was created through a variety of means, highlighting the importance of a multipronged communication strategy for programs of this nature. Promotion through RDPs in certain regions is beneficial, particularly when used in conjunction with other methods.
- ❖ Dairy farmers were mainly attracted to the program by potential cost savings and this finding reaffirms that communication strategies for similar programs should focus on this factor to encourage participation.
- ❖ After some initial difficulties in identifying suitable assessors for the Smarter Energy Use program, those eventually selected managed to provide dairy farmers with most of the information required throughout the assessment process. Holdups with developing Energy Efficiency Plans caused some concern among dairy farmers and future programs need to ensure the time between having an assessment conducted and receiving a Plan is minimal.

Program learnings

- ❖ In future, similar programs can benefit from some of the difficulties experienced in rolling out the program as well as findings from the evaluation, namely:
 - Multi-pronged communication strategies are likely to be the most successful in encouraging participation and interest in the program.
 - Assessors employed to undertake on-farm energy assessments must be encouraged to be reliable and submit Energy Efficiency Plans within a short period of being on farm.
 - Assessors must have good communication skills and knowledge of energy use.
 - Some farmers will require assistance to collect data on duration of machinery use required for the assessment and it may be worth offering additional assistance or explaining that an estimate is all that is needed.
 - Some dairy farmers expected to receive guidance with purchase decisions, ie. the size and brand of equipment most suited to their situation. It would be worthwhile explaining that this type of information is outside of the scope of the program.
 - If a more rapid rate of change is desired, then grants or rebates will need to be offered.
 - There is some interest in using alternative power options and this information could be provided in future.

Assumptions informing program

- The Smarter Energy Use program was informed by several assumptions, each of which was tested in this evaluation. Data collected shows that all 6 assumptions have been proven:

Assumption 1:

At least 900 dairy farmers will register for energy assessments.



- 900 dairy farms registered for the program and an assessment of energy use in the dairy was conducted on each of these farms.

Assumption 2:

Suitable people will be found to conduct assessments on farm.



- After some initial difficulties, a knowledgeable and reliable group of assessors was found in each dairy region.
"The assessor was excellent and really easy to talk to. I had a great experience – the assessor made it easy, he explained it well and was very patient."

Assumption 3:

Dairy farmers will be able to provide information for the assessment relating to energy consumption



- While providing reliable information has not been a problem for most of the dairy farmers interviewed, there have been some for whom this proved difficult.

Assumption 4:

Participation in the program will result in greater awareness of energy saving opportunities and efficient options for the dairy.



- There is clear evidence the program has increased knowledge among participating dairy farmers, with almost all learning at least one thing and rating their knowledge higher.

Assumption 5:

Participation in the program will result in changed attitudes towards energy consumption.



- The vast majority of dairy farmers interviewed for this evaluation stated that participation in the program changed their attitude and they are now more aware of turning off lights and equipment when it is not in use. Additionally, the energy consumption of any new equipment purchased will be factored into decision making.

Assumption 6:

Participation in the program will result in changes in the dairy likely to reduce overall energy consumption.



- A substantial amount of change has already occurred and is likely to increase further as funds become available and machinery needs replacing.

Conclusions and recommendations

- Interest in the Smarter Energy Use program has been widespread among dairy farmers, and the quota set for 900 farms being assessed was achieved. Of note, dairy farmers participating in the Smarter Energy Use program are typically younger and with larger herds than 'average' suggesting the program has appealed to those most likely to achieve the greatest benefits from reducing power consumption.
- The program has successfully increased knowledge and awareness of reducing power consumption in the dairy and has encouraged many dairy farmers to undertake simple efficiency measures such as turning of lighting and equipment when it is not in use. There is already evidence of equipment purchasing decisions being influenced by the Plans developed and this is likely to become more widespread as financial pressures ease or as existing equipment and machinery ceases to function.
- There were some initial difficulties in the program's structure in terms of putting together a team of reliable assessors, but these challenges were resolved by identifying those who met the program's needs and using this group exclusively. These assessors interacted well with dairy farmers and were able to provide them with suitable information and recommendations as well as drafting Energy Efficiency Plans in a reasonably short time frame.
- The model used to promote the Smarter Energy Use program has clearly been successful and should be considered for future programs, with particular emphasis on opportunities where costs can be reduced by decreasing power consumption.



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Dairy Australia

Smarter Energy Use Program Phase 1 Evaluation

Main report

May 2014

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1. Background

The Smarter Energy Use on Australian Dairy Farms project was developed to assist farms to realise their potential for energy savings by conducting energy efficiency assessments. The project was administered by Dairy Australia with funds provided under the Caring For Our Country initiative.

To ensure the project achieved its ultimate goal of increasing awareness of where energy can be saved on dairy farms, a monitoring and evaluation plan was developed which included the following components:

- Component 1: Feedback from dairy farmers post assessment, but prior to receiving their Energy Efficiency Plan (referred to in report as Post Assessment sample).

This component was included to ensure the process of having an energy assessment conducted on farm met dairy farmer expectations as well as monitoring assessor activities. It also provided some baseline data on awareness of where energy is used in dairies and where energy use efficiency can be changed.

- Component 2: Feedback from dairy farms following receipt of their Energy Efficiency Plan (referred to in report as Post Plan sample).

The second evaluation component explored the impact of the Energy Efficiency Plan in terms of increasing dairy farmer knowledge of where energy is used in the dairy and where efficiencies can be made. It also reviewed the process of having the Plan developed and whether this met people's needs or whether there were some aspects which could have been handled better.

- Component 3: Feedback from dairy farms one year after receiving their Energy Efficiency Plan (referred to in report as 1 Yr Later Sample).

The final evaluation component aimed to fully measure the impact of Smarter Energy Use Program by contacting dairy farmers one year after receiving their plan to determine if they had implemented changes on farm to reduce energy consumption. It also provided an opportunity to check whether knowledge gained by having an assessment conducted for the farm was retained.

The monitoring and evaluation plan was structured to ensure both formative and summative data was collected to ensure the program roll out could be modified as required as well as capturing learning to inform future programs.

2. Methodology

Post Assessment sample:

A total of 33 interviews with dairy farmers among the first to enrol in the Smarter Energy Use program were conducted to explore their perceptions of dealing with an energy assessor to determine whether this process needed reviewing.

Interviews for this component were carried out by program co-ordinators, with most obtaining 1 or 2 interviews per assessor. Interviews were conducted via telephone between January and May 2013, using a structured questionnaire (see Appendix 1).

Post Plan sample:

Interviews for this component were conducted by Down To Earth Research (DTER) consultants. In total 49 interviews were achieved. All interviews were conducted via telephone between February and May 2013, using a structured questionnaire (see Appendix 2).

1 Year Later sample:

This component consisted of a further 50 interviews with dairy farmers 1 year after receiving their Energy Efficiency Plans. Interviews were conducted via telephone by DTER consultants between February and March 2014.

3. Sample demographics

3.1 Age

Post assessment sample

age	% mentioning (base: all respondents)							
	total (n = 33)	nth vic (n = 5)*	west vic (n = 7)*	gipps (n=4)*	qld (n=4)*	sa (n = 4)*	Wa (n = 2)*	tas (n = 6)*
18-39	16%	20%	14%	0%	50%	0%	50%	0%
40-56	66%	80%	86%	50%	25%	75%	50%	67%
56+	19%	0%	0%	50%	25%	25%	0%	33%
Average age (years)	48	44	48	55	46	55	39	49

Post receipt of Plan sample:

age	% mentioning (base: all respondents)							
	total (n = 49)	nth vic (n = 8)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
18-39	22%	13%	22%	22%	33%	17%	40%	17%
40-56	55%	63%	67%	56%	50%	50%	40%	50%
56+	22%	25%	11%	22%	17%	33%	20%	33%
Average age (years)	48	50	47	49	47	50	45	47

1 year later sample:

age	% mentioning (base: all respondents)							
	total (n = 50)	nth vic (n = 9)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
18-39	34%	11%	33%	44%	33%	33%	40%	50%
40-56	50%	56%	44%	44%	67%	50%	40%	50%
56+	16%	33%	22%	11%	0%	17%	20%	0%
Average age (years)	45	51	45	43	44	45	45	39

*Caution: very small sample sizes. Data included for interest only.

3.2 Gender

Post assessment sample

gender	% mentioning (base: all respondents)							
	total (n = 33)	nth vic (n = 5)*	west vic (n = 7)*	gipps (n=4)*	qld (n=4)*	sa (n = 4)*	Wa (n = 2)*	tas (n = 6)*
Male	88%	80%	100%	75%	100%	100%	100%	67%
Female	12%	20%	0%	25%	0%	0%	0%	33%

Post receipt of Plan sample

gender	% mentioning (base: all respondents)							
	total (n = 49)	nth vic (n = 8)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Male	92%	88%	78%	100%	100%	100%	100%	92%
Female	8%	13%	22%	0%	0%	0%	0%	8%

1 year later sample

gender	% mentioning (base: all respondents)							
	total (n = 50)	nth vic (n = 9)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Male	90%	78%	89%	100%	100%	100%	100%	67%
Female	10%	22%	11%	0%	0%	0%	0%	33%

*Caution: very small sample sizes. Data included for interest only.

3.3 Dairy enterprise phase

Post assessment sample

farm phase	% mentioning (base: all respondents)							
	total (n = 33)	nth vic (n = 5)*	west vic (n = 7)*	gipps (n=4)*	qld (n=4)*	sa (n = 4)*	Wa (n = 2)*	tas (n = 6)*
Expansion	24%	40%	0%	25%	20%	0%	50%	50%
Steady, where want to be	55%	20%	86%	75%	60%	100%	50%	0%
Steady, unable to expand	21%	40%	14%	0%	20%	0%	0%	50%
Winding down	0%	0%	0%	0%	0%	0%	0%	0%

*Caution: very small sample sizes. Data included for interest only.

Post receipt of Plan sample

farm phase	% mentioning (base: all respondents)							
	total (n = 49)	nth vic (n = 8)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Expansion	37%	25%	44%	11%	0%	83%	60%	50%
Steady, where want to be	29%	13%	44%	67%	50%	0%	0%	0%
Steady, unable to expand	31%	50%	11%	22%	50%	0%	40%	50%
Winding down	4%	13%	0%	0%	0%	17%	0%	0%

1 year later sample

farm phase	% mentioning (base: all respondents)							
	total (n = 50)	nth vic (n = 9)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Expansion	38%	44%	44%	22%	0%	33%	80%	50%
Steady, where want to be	32%	22%	44%	44%	17%	50%	0%	33%
Steady, unable to expand	24%	11%	11%	33%	67%	17%	20%	17%
Winding down	6%	22%	0%	0%	17%	0%	0%	0%

*Caution: very small sample sizes. Data included for interest only.

3.4 Herd Size

Post assessment sample

herd size	% mentioning (base: all respondents)							
	total (n = 33)	nth vic (n = 5)*	west vic (n = 7)*	gipps (n=4)*	qld (n=4)*	sa (n = 4)*	Wa (n = 2)*	tas (n = 6)*
Small (<150 cows)	22%	0%	14%	0%	60%	25%	50%	17%
Medium (150-300)	31%	40%	29%	67%	40%	25%	50%	0%
Large (301-500)	41%	60%	43%	33%	0%	25%	0%	83%
X-Large (501-700)	6%	0%	14%	0%	0%	25%	0%	0%
Average herd size	299	3260	353	287	133	326	225	363

Post receipt of Plan sample

herd size	% mentioning (base: all respondents)							
	total (n = 49)	nth vic (n = 8)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Small (<150 cows)	8%	38%	0%	0%	0%	17%	0%	0%
Medium (150-300)	57%	50%	44%	89%	83%	17%	60%	50%
Large (301-500)	20%	13%	33%	0%	0%	33%	20%	50%
X-Large (500+)	14%	0%	22%	11%	17%	33%	20%	0%
Average herd size	359	192	386	299	284	717#	382	327

#includes one herd of 2,300 milking cows

1 year later sample

herd size	% mentioning (base: all respondents)							
	total (n = 50)	nth vic (n = 9)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Small (<150 cows)	6%	11%	0%	0%	17%	17%	0%	0%
Medium (150-300)	40%	56%	33%	44%	67%	33%	40%	0%
Large (301-500)	36%	33%	44%	44%	0%	17%	40%	67%
X-Large (500+)	18%	0%	22%	11%	17%	33%	20%	33%
Average herd size	462	294	415	311	278	646	390	1072

#includes herds of 2,300 and 4000 milking cows

*Caution: very small sample sizes. Data included for interest only.

3.5 Milking frequency

Post assessment sample

milking frequency	% mentioning (base: all respondents)							
	total (n = 33)	nth vic (n = 5)*	west vic (n = 7)*	gipps (n=4)*	qld (n=4)*	sa (n = 4)*	Wa (n = 2)*	tas (n = 6)*
Once a day	0%	0%	0%	0%	0%	0%	0%	0%
Twice a day	100%	100%	100%	100%	100%	100%	100%	100%
Three times a day	0%	0%	0%	0%	0%	0%	0%	0%

Post receipt of Plan sample

milking frequency	% mentioning (base: all respondents)							
	total (n = 49)	nth vic (n = 8)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Once a day	0%	0%	0%	0%	0%	0%	0%	0%
Twice a day	100%	100%	100%	100%	100%	100%	100%	100%
Three times a day	0%	0%	0%	0%	0%	0%	0%	0%

1 year later sample

milking frequency	% mentioning (base: all respondents)							
	total (n = 50)	nth vic (n = 9)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Once a day	2%	0%	11%	0%	0%	0%	0%	0%
Twice a day	98%	100%	89%	100%	100%	100%	100%	100%
Three times a day	0%	0%	0%	0%	0%	0%	0%	0%

*Caution: very small sample sizes. Data included for interest only.

3.6 Type of dairy

Post assessment sample

dairy type	% mentioning (base: all respondents)							
	total (n = 33)	nth vic (n = 5)*	west vic (n = 7)*	gipps (n=4)*	qld (n=4)*	sa (n = 4)*	Wa (n = 2)*	tas (n = 6)*
Rotary	24%	20%	43%	25%	0%	50%	0%	17%
Herringbone	58%	20%	43%	50%	100%	50%	100%	67%
Swing over	18%	60%	14%	25%	0%	0%	0%	17%

Post receipt of Plan sample

dairy type	% mentioning (base: all respondents)							
	total (n = 49)	nth vic (n = 8)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Rotary	22%	0%	56%	33%	0%	33%	20%	0%
Herringbone	47%	50%	44%	44%	83%	50%	40%	17%
Swing over	24%	50%	0%	22%	0%	17%	0%	83%
Other (double up, etc)	6%	0%	0%	0%	17%	0%	40%	0%

1 year later sample

dairy type	% mentioning (base: all respondents)							
	total (n = 50)	nth vic (n = 9)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Rotary	30%	22%	56%	22%	0%	33%	40%	33%
Herringbone	50%	33%	44%	44%	83%	50%	60%	50%
Swing over	20%	44%	0%	33%	17%	17%	0%	17%
Other (double up, etc)	0%	0%	0%	0%	0%	0%	0%	0%

*Caution: very small sample sizes. Data included for interest only.

❖ Sample demographics reveal that dairy farmers participating in the Smarter energy Use program are typically younger and with larger herds than 'average'.

4. Overall impact of Smarter Energy Use program

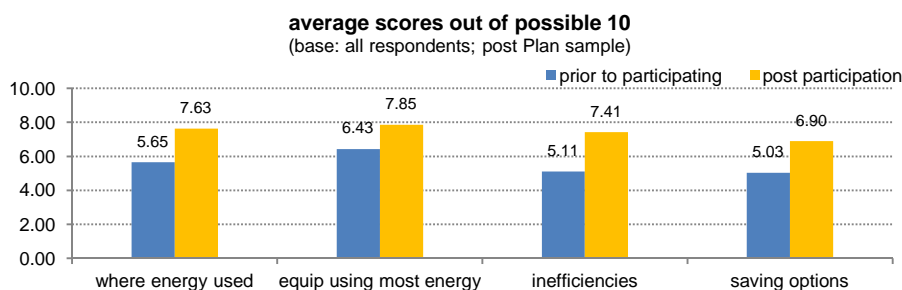
4.1 Impact on energy use awareness and knowledge

Q. Prior to having an energy assessment conducted, how would you have rated your knowledge on a scale of 0 to 10 where 0 equals 'no knowledge' and 10 equals 'know everything there is to know' about the following ...

Q. Now that you have had an energy efficiency assessment conducted, how would you rate your knowledge on a scale of 0 to 10 where 0 equals 'no knowledge' and 10 equals 'know everything there is to know' about the following ...

knowledge area	average score out of a possible 10 (base: all respondents; post Plan sample)							
	total (n = 49)	nth vic (n = 8)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Pre assessment:								
Where energy is used in dairy	5.65	4.40	6.13	6.38	6.25	5.67	4.80	5.25
Equipment using most energy in dairy	6.43	6.20	7.00	7.00	7.25	5.67	5.60	5.25
Potential energy inefficiencies in dairy	5.11	4.20	6.00	5.75	5.00	4.33	4.80	4.25
Energy saving options available for dairy and farm	5.03	4.20	5.88	5.63	4.75	3.67	5.40	4.00
Post assessment:								
Where energy is used in dairy	7.63	7.80	7.63	8.00	8.25	6.60	7.80	7.33
Equipment using most energy in dairy	7.85	7.00	8.00	8.75	8.25	6.80	8.00	7.67
Potential energy inefficiencies in dairy	7.41	6.80	7.63	7.88	7.75	6.60	8.20	6.83
Energy saving options available for dairy and farm	6.90	6.80	7.75	7.00	7.50	4.00	8.00	6.83

*Caution: very small sample sizes. Data included for interest only.



Key findings

- There have been substantial gains in self rated knowledge in all 4 key areas tested in this evaluation resulting from having the Energy Assessment conducted on farm and receiving an Efficiency Plan.
- The average increases recorded are as follows:
 - *Where energy is used in the dairy:* up from an average 5.65 points to 7.63 points
 - *Which equipment uses the most energy in the dairy:* up from 6.43 points to 7.85 points
 - *Where there can potentially be energy inefficiencies in the dairy:* up from 5.11 points to 7.41 points
 - *Energy saving options available for the dairy and the farm:* up from 5.03 points to 6.90 points

Implications

Participating in the Smarter Energy Use program has had a substantial impact on the knowledge and awareness of dairy farmers regarding where energy is used in the dairy and potential areas of inefficiency as well as energy saving options available.

4.2 Impact on decision making

Q. Over the past year, have you referred to your energy Efficiency Plan other than to read through it when you first received it?

Q. Have you made any changes as a result of recommendations made in the Energy Efficiency Plan you received?

Q. If purchased new equipment or new lighting: did information gained through the assessment assist you in any way to make decisions about the equipment/lighting purchased? If yes: In what way?

impact	% mentioning (base: all respondents 1 yr later sample)							
	total (n = 50)	nth vic (n = 9)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Referred back to plan	54%	44%	44%	56%	33%	83%	40%	83%
Will refer to plan prior to making change	20%	22%	44%	22%	17%	17%	0%	0%
Remember recommendations so have not referred back to plan	8%	11%	0%	11%	0%	0%	40%	0%
Not referred to plan	18%	22%	11%	11%	50%	0%	20%	17%

*Caution: very small sample sizes. Data included for interest only.

audit assisted equipment purchase	% mentioning (base: purchased equipment) (n = 16*)
Plan assisted purchase of equipment	94%
Considered efficiency of equipment	88%
Purchased equipment that uses heat recovery/solar etc	38%

*Caution: very small sample sizes. Data included for interest only.

Key findings

- In the year since receiving their Energy Efficiency Plan, 54% of the dairy farmers interviewed have referred back to it, typically to refresh their memory on recommendations made.
- One in 5 (18%) dairy farmers interviewed said that although they had not referred to the Plan again since receiving it, they would do so prior to making any changes.
- Others have not re-read their Plan, mainly due to remembering its contents. Notably, 2 of this group said their Plan did not recommend making any changes and consequently there was no need to refer back to it.
- Approximately one third (32%) of the dairy farmers interviewed bought new equipment for the dairy over the past 12 months and all except one of these respondents said the efficiency plan made them consider the energy efficiency of equipment purchased and several looked into equipment that uses heat recovery systems or similar.

Implications

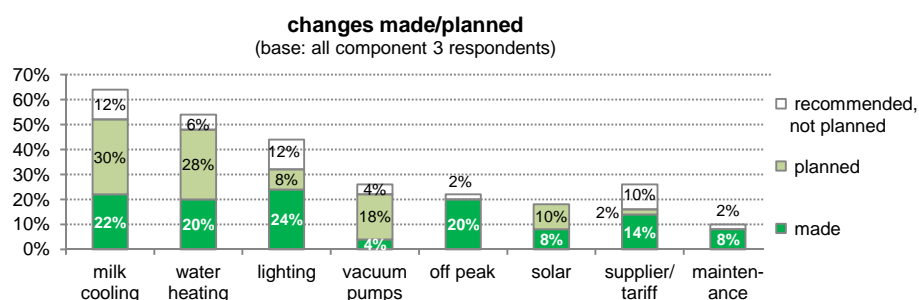
Clearly the Energy Efficiency Plans developed for individual farms are being used as a reference and are having an impact on farmer decision making and purchases.

4.3 Changes made as result of Smarter Energy Use program

- Q. Did the Energy Efficiency Plan you received make any recommendations similar to the following?
- Q. Have you made any changes as a result of recommendations made in the Energy Efficiency Plan you received?
- Q. If yes: What have you changed?
- Q. If no changes made or not all recommended changes made: Do you plan to make any changes/any further changes as a result of those recommendations or are there changes/further changes you would like to make but probably won't be able to?
- Q. If yes: What changes do you have planned or would you like to make?

changes recommended/implemented/ planned	% mentioning (base: all respondents 1 yr later sample)							
	total (n = 50)	nth vic (n = 9)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Milk cooling system:								
Change recommended in Plan	64%	56%	78%	56%	50%	83%	40%	83%
Change already made	22%	22%	11%	22%	17%	17%	20%	50%
Change planned for future	30%	33%	44%	33%	17%	33%	0%	33%
Water heating system:								
Change recommended in Plan	54%	33%	89%	44%	67%	50%	20%	67%
Change already made	20%	22%	33%	22%	17%	0%	0%	33%
Change planned for future	28%	11%	44%	22%	17%	67%	20%	17%
Vacuum pumps:								
Change recommended in Plan	26%	22%	33%	33%	17%	33%	20%	17%
Change already made	4%	0%	11%	11%	0%	0%	0%	0%
Change planned for future	18%	11%	22%	11%	33%	17%	20%	17%
Change energy supplier/tariffs								
Change recommended in Plan	26%	33%	22%	0%	33%	67%	20%	17%
Change already made	14%	22%	11%	0%	0%	33%	20%	17%
Change planned for future	2%	0%	0%	0%	17%	0%	0%	0%
Lighting:								
Change recommended in Plan	24%	0%	33%	22%	33%	33%	60%	0%
Change already made	8%	0%	11%	0%	17%	17%	20%	0%
Change planned for future	12%	0%	22%	11%	17%	0%	40%	0%
Increase off peak electricity use:								
Change recommended in Plan	22%	11%	33%	22%	17%	33%	40%	0%
Change already made	20%	11%	22%	22%	17%	33%	40%	0%
Change planned for future	0%	0%	0%	0%	0%	0%	0%	0%
Increase equipment maintenance:								
Change recommended in Plan	10%	0%	33%	0%	0%	33%	0%	0%
Change already made	8%	0%	33%	0%	0%	17%	0%	0%
Change planned for future	0%	0%	0%	0%	0%	0%	0%	0%
Solar:								
Change already made	8%	11%	11%	0%	33%	0%	0%	0%
Change planned for future	10%	22%	11%	0%	0%	0%	20%	17%
Total: already made changes†	62%	56%	78%	56%	50%	83%	40%	67%
Total: plan to make changes†	68%	67%	67%	44%	67%	83%	60%	100%

*Caution: very small sample sizes. Data included for interest only.
 †Some respondents have made or plan to make changes in more than 1 area.



Key findings

- Energy Efficiency Plans provided recommendations to reduce power consumption in all except for two respondent dairies. The most commonly made recommendations covered the following areas:
 - Milk cooling, including installation of more efficient equipment, using cooler water sources, etc (recommended in 64% of dairies)
 - Water heating, including installation of more efficient equipment, lowering water temperatures where possible, using heat exchange units, etc (54%)
 - Vacuum pumps, including installation of more efficient equipment (26%)
 - Negotiation of tariffs/change of energy supplier for better rates (26%)
 - Lighting, including changing to more efficient globes, etc (24%)
 - Using more off-peak electricity (22%)
- At least some of the recommended changes have been implemented by 62% of the dairy farmers interviewed and 68% plan to make changes in the future (some have made changes and plan to make others). Main areas of change are as follows:
 - Milk cooling (22% already making changes, 30% planning to do so in future)
 - Water heating (20% making changes, 28% planning to)
 - Lighting (24% making change, 8% planning to)
 - Vacuum pumps (4% making change, 18% planning to)
 - Using more off peak power (20% making change, 2% planning to)

Implications

Having an Energy Assessment conducted on farm has resulted in changes being made or planned for which will ultimately reduce the amount of energy consumed. Some of the changes made have been relatively minor, such as sourcing cooler water to run through plate coolers, while others have meant significant investment such as purchasing new equipment.

4.4 Barriers to making changes

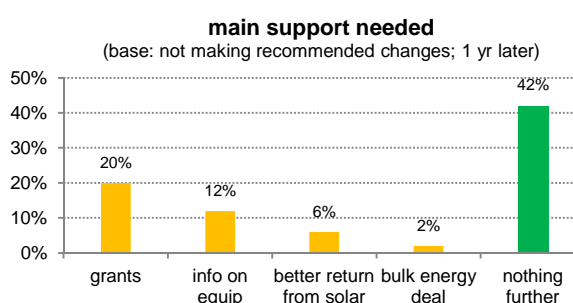
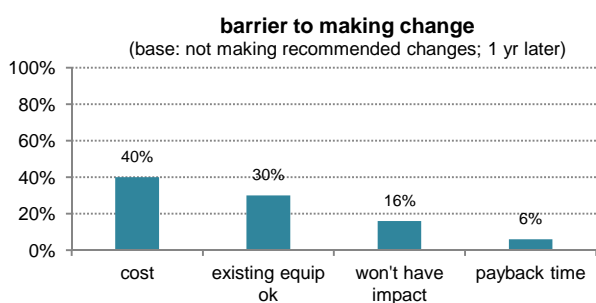
Q. If changes planned or would like to make in future: What has prevented you from making changes?

Q. If no changes made or planned: Are there any reasons why you won't make the changes recommended?

Q. What sort of support, if any, would you need to implement changes?

barriers to change/support required to make changes	% mentioning (base: respondents not making recommended changes; 1 yr later sample)							
	total (n = 38)	nth vic (n = 6)*	west vic (n = 7)*	gipps (n = 4)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 3)*	tas (n = 6)*
Cost/unable to afford	40%	22%	44%	33%	50%	83%	20%	33%
Existing equipment still working	30%	11%	44%	22%	50%	17%	40%	33%
Don't believe change will affect consumption	16%	22%	22%	0%	33%	0%	0%	33%
Payback time too long/unrealistic	6%	0%	0%	0%	17%	0%	0%	33%
Grants/financial assistance	20%	11%	22%	0%	33%	50%	0%	33%
Checklist/costs for purchasing equipment	12%	11%	11%	22%	17%	17%	0%	0%
Better return on solar power contributions to the grid	6%	0%	11%	0%	17%	0%	20%	0%
Bulk purchase of electricity	2%	0%	0%	0%	17%	0%	0%	0%
Nothing further required/don't know	42%	44%	44%	22%	50%	33%	40%	67%

*Caution: very small sample sizes. Data included for interest only.



Key findings

- The main barrier to implementing changes recommended by Energy Efficiency Plans is cost (mentioned by 40%), although recent increases in milk price may result in more changes being made in the near future:

"We're getting better money for milk at the moment, so we have a bit of surplus money to spend on that type of thing now."
- Others (30%) said equipment identified as inefficient will be replaced, but only when it fails:

"The Plan showed the water heater we have is really inefficient but it is still working and I don't plan on replacing it until it breaks down. When it does break down though, I will certainly look at purchasing a more efficient heater."
- Eight respondents believe the recommended changes will have little or no impact on energy consumption in the dairy and consequently do not plan on implementing change.
- When asked if any support is needed in order to implement changes recommended, 20% of dairy farmers interviewed suggested they would need financial assistance in the form of a grant or similar, 12% need more information on the most suitable type of equipment for their situation:

"It would be good to have some sort of checklist of things to look for when you are buying equipment – things like the size of equipment that would be the most efficient in your situation."

Implications

Barriers to change are typically linked to affordability and the fact current equipment is still functioning. This finding validates comments made by respondents that as equipment breaks down or when finances improve, changes to more energy efficient options will occur.

While providing grants would no doubt encourage faster replacement of equipment, there is no pressing need to consider this option.

4.5 Impact of changes made on energy consumption

Q. Have these changes substantially reduced power consumption, slightly reduced power consumption or not changed power consumption at all?

Q. How satisfied are you with this change in power consumption/the fact power consumption hasn't altered?

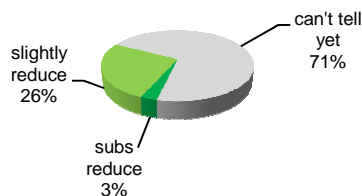
impact on energy consumption	% mentioning (base: made at least some changes; 1 year later sample)							
	total (n = 31)	nth vic (n = 5)*	west vic (n = 7)*	gipps (n = 5)*	qld (n = 3)*	sa (n = 5)*	Wa (n = 2)*	tas (n = 4)*
Substantially reduced	3%	0%	14%	0%	0%	0%	0%	0%
Slightly reduced	26%	20%	14%	40%	67%	0%	100%	0%
Not changed power consumption	0%	0%	0%	0%	0%	0%	0%	0%
Can't tell yet	71%	80%	71%	60%	33%	100%	0%	100%

*Caution: very small sample sizes. Data included for interest only.

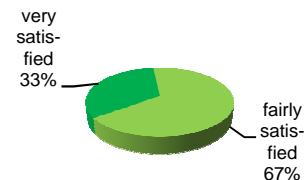
satisfaction with impact	% mentioning (base: able to judge change in power consumption; 1 year later sample)							
	total (n = 9)*	nth vic (n = 1)*	west vic (n = 2)*	gipps (n = 2)*	qld (n = 2)*	sa (n = 0)*	Wa (n = 2)*	tas (n = 0)*
Very satisfied	33%	0%	50%	50%	50%	0%	0%	0%
Fairly satisfied	67%	100%	50%	50%	50%	0%	100%	0%
Not too satisfied	0%	0%	0%	0%	0%	0%	0%	0%
Not satisfied at all	0%	0%	0%	0%	0%	0%	0%	0%

*Caution: very small sample sizes. Data included for interest only.

impact on energy use
(base: respondents making some change)



satisfaction with impact
(base: able to measure change)



Key findings

- Assessing the impact of changes made in the dairy proved difficult for most respondents, due to the following:
 - Receiving 'estimated' bills from their power supplier
 - Increases in herd size and/or production
 - Change in hotter than normal weather conditions impacting power requirements to cool milk and for sprinkler systems and fans etc. to keep animals cool
- Only 9 respondents making at least some of the changes recommended in their Energy Efficiency Plan were able to evaluate the subsequent impact on power consumption. All were either fairly (6 respondents) or very (3 respondents) satisfied with the outcome.

Implications

It is clearly difficult for farmers to accurately measure the impact of installing more energy efficient equipment in the dairy. This finding highlights the importance of using credible assessors in the first instance and (if required) using other more robust means of determining energy consumption prior to and following the installation of new equipment.

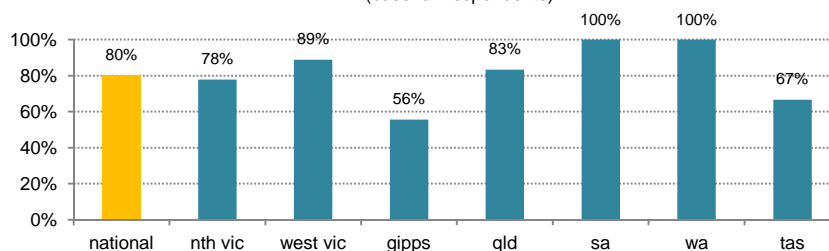
4.6 Impact on attitudes towards energy consumption

Q. Has the energy audit of your dairy changed your attitude towards energy consumption generally in any way at all? If yes: In what way?

impact	% mentioning (base: all respondents; 1 year later sample)							
	total (n = 50)	nth vic (n = 9)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	Wa (n = 5)*	tas (n = 6)*
Assessment changed attitude	80%	78%	89%	56%	83%	100%	100%	67%
Already conscious of energy use	20%	22%	11%	44%	17%	0%	0%	33%
Now more conscious of switching equipment off/decreasing consumption	56%	56%	56%	33%	50%	50%	100%	67%
Maintaining/servicing equipment	30%	11%	67%	22%	17%	67%	20%	0%
Energy efficiency will be considered when purchasing equipment	26%	22%	33%	33%	17%	33%	40%	0%

*Caution: very small sample sizes. Data included for interest only.

assessment changed attitude towards energy consumption
(base: all respondents)



Key findings

- A very high 80% of respondents said that having an energy assessment conducted changed their attitude towards energy consumption. Key changes in attitude are mainly linked to the following areas of focus:

- Turning off lights and equipment when not in use:

"We now turn the lights off in the dairy as soon as it is light and we turn the yard lights off when it is light enough to see. We also turn off everything as soon as we leave the dairy - fans, equipment and the like."

"We used to leave everything on in the dairy, but the assessment has made us realize there is no point having all these lights blinking at you because machinery is on when no one is using it."

- Maintaining and servicing equipment:

"We are now a lot more aware of looking at efficiencies of equipment and making sure we do the maintenance required to keep machines running at their peak efficiency."

- Investigating energy efficiency of equipment before purchasing:

"Having the assessment conducted has meant that when I was looking for a new water heater I factored in the energy efficiency of the equipment as well rather than just looking at size and cost."

"It makes you more aware of energy consumption and I actually was talking with my electrician last week and said to him that anything we do from now on, energy consumption has to be factored in. It's no use telling me to put in 3 phase power or anything like that if it is going to use more power."

- For one dairy farmer the assessment gave him the knowledge and confidence to speak to other dairy farmers in regards to options for reducing power consumption:

"I've been speaking to a number of other dairy farmers about the simple things they can do to save money, which I wouldn't have done without the audit. They have asked me lots of questions about it and some of them have since told me they have made some changes to the dairy and others have said they will do so in future, especially when they have to replace equipment that has broken down."

- Respondents saying the assessment has not changed their attitude said this was typically due to already having good awareness of the benefits of saving energy:

"We have made lots of changes in the past and always tried to minimise the electricity bill and so nothing has changed really. Everything the assessor mentioned we were already aware of and had a good understanding about."

Implications

Attitudinal changes have resulted from program participation – an encouraging finding.

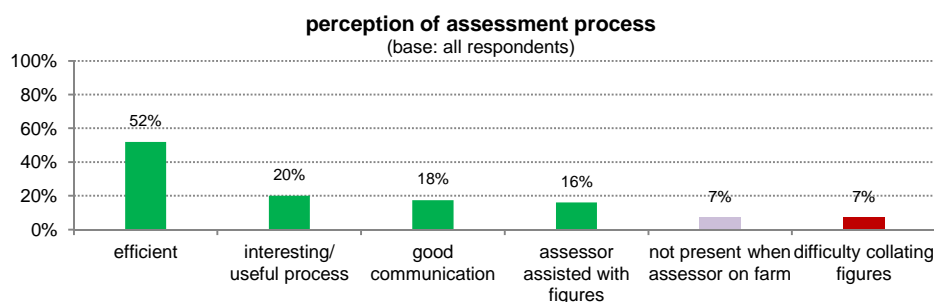
5. Farmer perception of Smarter Energy Use program

5.1 Perception of assessment process

Q. How have you found the process of having an energy efficiency assessment conducted for your farm?

perception of assessment process	% mentioning (base: all respondents; post Plan sample)							
	total (n = 49)	nth vic (n = 8)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	wa (n = 5)*	tas (n = 6)*
Positive mentions:								
Efficient/not too much paperwork	52%	40%	56%	78%	40%	60%	40%	33%
Interesting/useful process	20%	20%	22%	11%	0%	40%	40%	17%
Good communication with assessor	18%	0%	44%	22%	20%	20%	0%	0%
Assessor assisted with figures	16%	20%	0%	11%	60%	0%	0%	33%
Negative mentions:								
Difficult to collate data required	7%	20%	11%	0%	20%	0%	0%	0%
Neutral mentions:								
Not present during assessment/other	7%	0%	0%	0%	20%	0%	20%	17%

*Caution: very small sample sizes. Data included for interest only.



Key findings

- Comments made about the assessment process were almost all positive, although it should be noted that 4 respondents were not actually present when the assessor arrived on their farm.
- In general, the assessment process was deemed to be efficient, with comments similar to the following made:

"There really wasn't anything to complain about. It was all done very efficiently and the right questions were asked and it was excellent."
- Nine of the dairy farmers interviewed found the assessment process quite useful:

"It wasn't too much trouble. We had to give the figures and temperatures, but that was fine. We need to know those sorts of things and we normally don't cover them."
- Comments made by some respondents suggest that at least some assessors have interacted well with farmers and assisted them with some program requirements:

"The process was really good. The assessor asked all the right questions and then chased down all our power bills to help us put the figures together. She came back with all the answers I was looking for, so I would have to say the process was really good."
- The only negative aspect of the assessment process mentioned by respondents revolves around the difficult in collating some of the data required:

"Chasing up some of the details of power bills was a bit of an issue for us. The assessor assisted where they could, but because we have a number of accounts, we had to work out which proportion was due to the use in the dairy."

Implications

The assessment process has typically been relatively efficient and interesting, although a few dairy farmers struggled to provide reliable information on equipment running times and size of equipment required. In future, some consideration should be given to offer additional support to those needing it (if the budget allows).

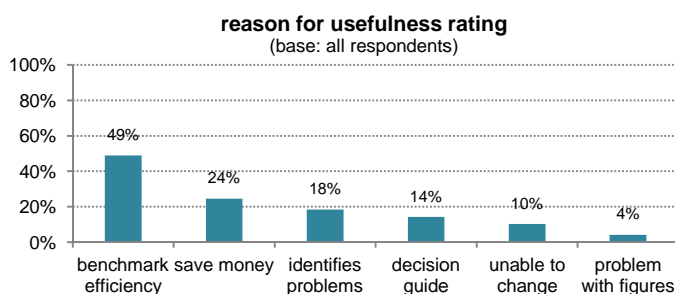
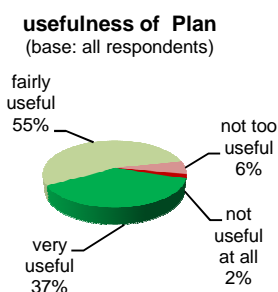
5.2 Perceived usefulness of energy efficiency plan

Q. How would you rate the energy efficiency plan in terms of usefulness to you? Have you found it ...

Q. Why do you say that?

usefulness of plan	% mentioning (base: all respondents; post Plan sample)							
	total (n = 49)	nth vic (n = 8)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	wa (n = 5)*	tas (n = 6)*
Very useful	37%	25%	33%	33%	33%	50%	20%	67%
Fairly useful	55%	63%	67%	44%	50%	50%	80%	33%
Not too useful	6%	13%	0%	22%	0%	0%	0%	0%
Not useful at all	2%	0%	0%	0%	17%	0%	0%	0%
Total: useful	92%	88%	100%	78%	83%	100%	100%	100%
Total: not useful	8%	13%	0%	22%	17%	0%	0%	0%
Benchmark/check on farm efficiency	49%	63%	56%	56%	33%	33%	80%	17%
Ideas to save money	24%	13%	22%	11%	33%	33%	20%	50%
Highlight inefficiencies/areas to focus on	18%	0%	11%	22%	0%	0%	60%	50%
Guide for making energy good efficiency decisions in the future	14%	0%	22%	11%	33%	17%	0%	17%
Unable to make change currently due to cost	10%	0%	11%	22%	33%	0%	0%	0%
Initial figures supplied inaccurate	4%	13%	0%	11%	0%	0%	0%	0%

*Caution: very small sample sizes. Data included for interest only.



Key findings

- All except for 3 respondents have found the Plan prepared for their farm *fairly* to *very* useful, mainly due to providing benchmark data on efficiency.

"It's been really interesting to compare to other farms that have had assessments done and it makes you realize which areas you are good in and which areas you are not so good in."
- Being able to identify areas where money can be saved is mentioned by approximately one quarter of respondents. For some the amount of potential savings are quite small, but for others, the assessment has identified areas where substantial savings can be made:

"It picked up some problems and showed us how to save some significant money."

"It taught me a lot about the little alterations you can make to save a few bob."
- Being able to identify where inefficiencies are is useful for some:

"It highlighted some problem areas in our dairy – areas where there were some inefficiencies and that helps us to work out which areas are the most important for us to focus on first."
- Several respondents rated the Plan useful due to providing them with information that will guide future decisions when equipment must be replaced:

"If nothing else it has certainly made me much more aware of where the costs are going and if I did make changes to the dairy in the future – like the hot water service or that sort of thing when it dies – that's the time where you would be really thinking about what you learnt through this program."
- Three respondents said the Plan was not too useful for them due to being unable to afford required changes and 2 respondents had difficulty providing correct information and consequently believed their Plan was flawed.

Implications

Dairy farmers value the data provided in Energy Efficiency Plans due to being able to compare their energy consumption with other farms and identifying cost saving options.

5.3 Additional information required

Q. Is there any additional information you need to help you potentially save energy in future?

Q. If yes: What do you need?

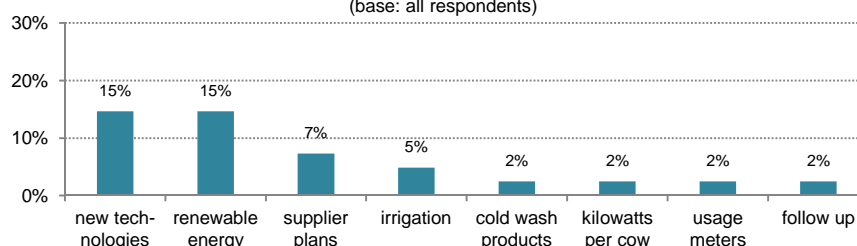
information required	% mentioning (base: all respondents; post Plan sample)							
	total (n = 49)	nth vic (n = 8)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	wa (n = 5)*	tas (n = 6)*
Require additional information	51%	38%	33%	56%	80%	40%	40%	83%
New technologies coming out	15%	14%	13%	40%	0%	20%	20%	0%
Solar/renewable energy	15%	14%	13%	20%	0%	0%	0%	50%
Supplier plans	7%	0%	0%	0%	20%	0%	20%	17%
Irrigation power usage	5%	0%	0%	0%	40%	0%	0%	0%
Sanitiser prices (cold wash)	2%	0%	0%	0%	0%	0%	0%	17%
Kilowatts used per cow in comparison to other farms	2%	0%	0%	20%	0%	0%	0%	0%
Meters to monitor usage	2%	0%	0%	0%	0%	20%	0%	0%
Follow up assessment in future	2%	0%	0%	0%	20%	0%	0%	0%

*Caution: very small sample sizes. Data included for interest only.

require additional info
(base: all respondents)



type of info required
(base: all respondents)



Key findings

- Half the dairy farmers interviewed would like more information to assist in saving energy in future. Information on new technologies and renewable energy options are the most commonly mentioned:

"Keeping up to date with the costings and break-evens of new technologies is always beneficial."

"I would have liked some more information on whether or not solar power works – so an evaluation of solar – is it economical given we use half our power in the dark and the feedback tariffs the electricity suppliers are paying when we feed back into the grid."

- There is some interest in receiving more information on electricity plans:

"The assessor mentioned in their report to speak to the electricity suppliers about contestability clauses and I would like to know a bit more about them."

"It would be good to have more information on how to find a cheaper energy supplier."

- Others wanted to have the efficiency of their irrigation system assessed and there was also some interest in being able to compare kilowatts of energy used per cow, usage meters and having follow up assessments.

Implications

It would seem that many dairy farmers interviewed who participated in the Smarter Energy Use program are interested in learning more about new technologies and renewable energy options and offering additional information in these areas could be considered for future programs.

5.4 Overall satisfaction with program

Q. Following receipt of Plan: How satisfied have you been with the Smarter Energy Use program? Would you say you are ...? Q. Why do you say that?

Q. 1 year after receipt of Plan: How satisfied have you been with the Smarter Energy Use program? Would you say you are ...? Q. Why do you say that?

satisfaction rating	% mentioning (base: all respondents; 1 yr later sample)							
	total (n = 50)	nth vic (n = 9)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	wa (n = 5)*	tas (n = 6)*
1 year after receiving Plan:								
Very satisfied	32%	11%	44%	33%	17%	33%	60%	33%
Fairly satisfied	62%	89%	56%	67%	67%	50%	40%	50%
Not too satisfied	6%	0%	0%	0%	17%	17%	0%	17%
Not satisfied at all	0%	0%	0%	0%	0%	0%	0%	0%
Total: satisfied	94%	100%	100%	100%	83%	83%	100%	83%
Total: not satisfied	6%	0%	0%	0%	17%	17%	0%	17%

*Caution: very small sample sizes. Data included for interest only.

satisfaction rating	% mentioning (base: all respondents; 1 yr later sample)							
	total (n = 50)	nth vic (n = 9)*	west vic (n = 9)*	gipps (n = 9)*	qld (n = 6)*	sa (n = 6)*	wa (n = 5)*	tas (n = 6)*
Positive mentions:								
Provided options for saving money/power	40%	44%	56%	33%	17%	33%	40%	50%
Good/thorough process/assessor helpful	28%	0%	22%	33%	33%	50%	40%	33%
Identified energy usage of equipment	26%	33%	44%	33%	17%	33%	0%	0%
Provided benchmark for comparison	24%	33%	22%	22%	33%	17%	40%	0%
Negative mentions:								
Not enough information on tariffs	4%	0%	0%	0%	17%	0%	0%	17%
Assessment generic/initial figures not accurate	4%	0%	0%	0%	17%	17%	0%	0%
Should have included irrigation energy use	2%	0%	0%	0%	17%	0%	0%	0%
Too long to receive report	2%	0%	0%	11%	0%	0%	0%	0%
Assessor didn't present report as was promised	2%	0%	0%	0%	0%	0%	0%	17%

*Caution: very small sample sizes. Data included for interest only.

Key findings

- Almost all respondents (94%) said they were either *fairly* (62%) or *very* (32%) *satisfied* with the Smarter Energy Use program.
- Satisfaction is due to a variety of factors, namely:
 - The energy Efficiency Plan provides both short and long term options for saving money/power as well as helping prioritise:

"It gives us a plan to make changes short term and a plan to make changes down the track as things wear out. Before receiving it, I had no idea what I could do to use electricity efficiently. I could go ahead blindly replacing things but after knowing what was using what, it gives you an idea of which way to go."

"It identified where the real costs are in the dairy and helps prioritise where you need to spend money to get the greatest savings. The assessor was great. He put a dollar value on all the possible changes and didn't recommend anything that wasn't going to give me a net benefit."
 - Provides a benchmark for power usage
 - Confirms where the dairy is running efficiently:

"It was really good to know that we are close to the mark in terms of efficiency and knowing that we aren't wasting the power, because the cost of it is getting out of control at the moment."
- Only 3 respondents were unsatisfied with the program, with 2 stating the figures given at the start of the program should have been more accurate:

"I don't think the detail around the Plan is good enough. It's all based on guesses as to how long machines run for and in an operation this size, unless you put meters on everything it's just too hard to calculate."

Implications

Satisfaction with the program is high and it has clearly achieved its goals of increasing awareness of inefficiencies in the dairy and where improvements can be made.

5.5 Farmer recommendations to improve future programs

Q. Is there any aspect of the program that could have been better or is there anything you can recommend to improve similar programs that may be run in future?

recommendations to improve program	% mentioning (base: all respondents; 1 yr later sample)							
	total (n = 50)	total (n = 50)	total (n = 50)	total (n = 50)	total (n = 50)	total (n = 50)	total (n = 50)	total (n = 50)
Provide further information on tariffs	8%	0%	11%	0%	50%	0%	0%	0%
Irrigation energy efficiency	6%	0%	0%	0%	33%	0%	0%	17%
More accurate calculation of initial figures	4%	0%	0%	0%	17%	17%	0%	0%
Nothing further needed/no suggestions	88%	100%	89%	100%	33%	100%	100%	83%

*Caution: very small sample sizes. Data included for interest only.

Key findings

- In line with widespread satisfaction with the program, 88% of respondents were unable to recommend improvements.
- Those who could suggested the following:
 - Supply additional information to ensure farmers are on the most suitable rates (4 respondents mentioning)
 - Include irrigation systems in future assessments (3 respondents)
 - Increase the accuracy of the initial figures farmers supplied to the assessor (2 respondents):

"If it's going to work at all, it needs to have equipment monitored properly for a week a month, a year, whatever, but you need to base your recommendations on solid data. It's all based on guesses as to how long machines run for and in an operation this size, unless you put meters on everything it's just too hard to calculate."

Implications

Clearly the Smarter Energy Use program has been well received by assessment recipients, with only a handful able to suggest improvements. The only contentious aspect of the program has been the ability of some farms to provide accurate information on the length of time equipment is used.

6. Smarter Energy Use program structure

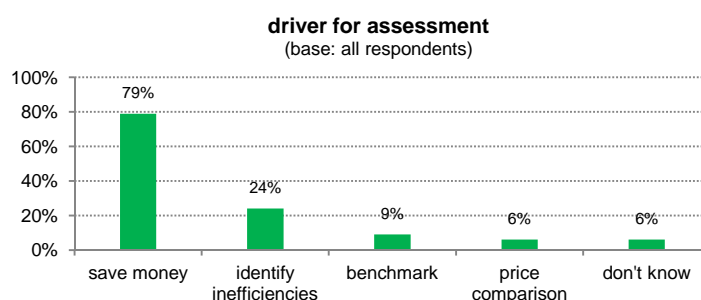
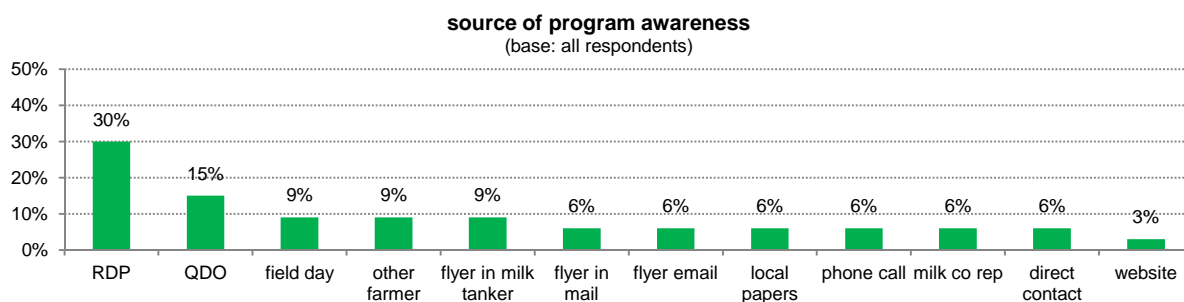
6.1 Creating program awareness and drivers to participation

Q. How did you hear about the energy assessments being conducted through Dairy Australia?

Q. What encouraged you to apply to have an energy assessment conducted on your farm?

awareness source/driver to participate	% mentioning (base: all respondents; post assessment sample)							
	total (n = 33)	nth vic (n = 5)*	west vic (n = 7)*	gipps (n=4)*	qld (n=5)*	sa (n = 4)*	wa (n = 2)*	Tas (n = 6)*
Through the RDP	30%	0%	14%	50%	0%	50%	50%	67%
QDO	15%	0%	0%	0%	100%	0%	0%	0%
At a field day	9%	20%	29%	0%	0%	0%	0%	0%
From other farmers	9%	20%	14%	25%	0%	0%	0%	0%
Flyer with the milk tanker	9%	0%	14%	50%	0%	0%	0%	0%
Flyer in mail	6%	0%	14%	0%	0%	0%	0%	17%
Flyer via email	6%	20%	0%	0%	0%	0%	50%	0%
Local papers	6%	0%	29%	0%	0%	0%	0%	0%
Phone call	6%	0%	0%	0%	0%	50%	0%	0%
Through milk co rep	6%	20%	0%	25%	0%	0%	0%	0%
Direct contact/call from service provider	6%	0%	0%	0%	0%	25%	0%	17%
Website	3%	20%	0%	0%	0%	0%	0%	0%
Potential to save money	79%	100%	86%	100%	40%	50%	100%	83%
Identify inefficiencies in dairy	24%	40%	29%	0%	60%	0%	0%	17%
Benchmark against other farms	9%	0%	14%	0%	0%	0%	50%	17%
Understand supplier price/rates	6%	20%	0%	25%	0%	0%	0%	0%
Don't know	6%	0%	0%	0%	0%	50%	0%	0%

*Caution: very small sample sizes. Data included for interest only.



Key findings

- Awareness of the program was created through a number of means, but mainly RDP's in Tasmania, Gippsland, SA and WA, local papers, flyers with the mail and field days in WestVic and several different means in Nth Vic. Queensland respondents were informed purely via the Queensland dairy farmer's organisation.
- The possibility of saving money was the key driver behind program participation.

Implications

Awareness of the Smarter Energy Use Program has been created through a variety of means, highlighting the importance of a multipronged communication strategy for programs of this nature. Promotion through RDP's in certain regions is beneficial, particularly when used in conjunction with other methods. Stressing the reducing energy consumption is likely to result in cost savings is key to encouraging program participation.

6.2 Assessor aptitude

Q. Did you have any questions you wanted the assessor to answer while he/she was on the farm? Q. Were your questions answered to your satisfaction? Q. What do you still need to know?

Q. Do you have any comments to make about your experience with the assessor, either good or bad?

assessor questions/perceptions	% mentioning (base: all respondents; post assessment sample)							
	total (n = 33)	nth vic (n = 5)*	west vic (n = 7)*	gipps (n=5)*	qld (n=5)*	sa (n = 4)*	wa (n = 2)*	tas (n = 6)*
Had questions for assessor	58%	40%	57%	75%	80%	50%	0%	67%
Questions answered satisfactorily	36%	40%	0%	50%	80%	25%	0%	50%
Needed comparison of vacuum pumps	7%	0%	14%	0%	0%	0%	0%	17%
Areas to save money	7%	0%	29%	0%	0%	0%	0%	0%
Use of green wash to cut down on water/chemicals	4%	0%	14%	0%	0%	0%	0%	0%
More information on heat exchange	4%	0%	14%	0%	0%	0%	0%	0%
Wait for report to receive information	4%	0%	14%	0%	0%	0%	0%	0%
Good communication/knowledgeable	64%	20%	86%	75%	80%	50%	100%	50%
Identified areas to assist energy usage	24%	0%	14%	50%	0%	50%	0%	50%
Assessment simple/efficient	18%	80%	14%	0%	20%	0%	0%	0%
Nothing useful yet but will wait for report	6%	0%	0%	0%	20%	0%	0%	17%
Time to receive post assessment report too long	3%	0%	14%	0%	0%	0%	0%	0%

*Caution: very small sample sizes. Data included for interest only.

Key findings

- Assessors on 27 of the 33 farms included in this evaluation were asked additional questions. These questions were answered satisfactorily according to 10 respondents, but 6 required more information on the following:
 - Comparison of vacuum pumps (2 respondents mentioning)
 - Areas to save money (2 respondents)
 - Further information regarding heat exchange (1 respondent)
 - Use of clean green wash to reduce chemical and water usage (1 respondent)
- When asked to comment on their experience with the assessor, respondents typically had positive responses. Being knowledgeable and providing good communication and an efficient assessment process highlighted as reasons for a positive experience. The following comments are typical:
 - "The assessor was a wealth of knowledge and the process was excellent."*
 - "The assessor was excellent and really easy to talk to. I had a great experience - the assessor made it easy, he explained it well and was very patient."*
 - "I had a very good experience and a good discussion in regard to replacing quantum heat pumps with solar or rearranging our hot water system."*
- Waiting too long to receive their energy efficiency plan led to one respondent having a negative perception of their assessor and two respondents had not found the assessment useful, one stating:
 - "Need to have the report as I can't really say that I have got anything useful yet."*

Implications

Interaction with assessors has been positive for nearly all respondents and assessors were generally perceived as knowledgeable and able to communicate effectively. Some respondents did not find the assessment process useful and are relying on their post assessment efficiency plan for further information. Reports should be prepared and presented to farmers as soon as possible after the on farm assessment.

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Appendix: Questionnaires

Appendix: Questionnaires

Post assessment questionnaire:

- Q1. How did you hear about the energy assessments being conducted through Dairy Australia?
- | | | |
|--|-------|----|
| Local papers | ----- | 1 |
| Flyer in the mail | ----- | 2 |
| Flyer with the milk tanker | ----- | 3 |
| Flyer via email | ----- | 4 |
| Phone call | ----- | 5 |
| Through the RDP | ----- | 6 |
| Through the milk co rep | ----- | 7 |
| Through direct contact/phone call from a service provider/dairy technician/electrician/etc | -- | 8 |
| Through email from service provider/dairy technician/electrician/etc | ----- | 9 |
| From another farmer | ----- | 10 |
| At a field day | ----- | 11 |
| Website | ----- | 12 |
| Other (specify) | ----- | 13 |
| Can't recall | ----- | 14 |
- Q2. What encouraged you to apply to have an energy assessment conducted on your farm? Record verbatim. *Explore (but do not prompt) for things like wanting more information on energy saving options, renewable energy options, wanting more information on lowering power bills, the cost of energy for the business, where energy is lost in the dairy, etc.*
-
- Q3. What sort of information did you want or expect to get from having the assessment conducted on the farm?
-
- Q4. Prior to having the assessment conducted, how would you rate your knowledge on a scale of 0 to 10 where 0 = 'no knowledge' and 10 = 'know everything there is to know' about the following ...
Interviewer note: you may need to explain the scoring more fully
- | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|----|
| 1. Where energy is used in the dairy | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 2. Which equipment uses the most energy in the dairy | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 3. Where there can potentially be energy inefficiencies in the dairy | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 4. Energy saving options available for the dairy and the farm | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
- Q5. Did you have any expectations of the assessment process?
- | | | | |
|-----|-------|---|----------|
| Yes | ----- | 1 | continue |
| No | ----- | 2 | go to Q9 |
- Q6. What expectations did you have?
-
- Q7. Were your expectations met or realised?
- | | | | |
|-----|-------|---|----------|
| Yes | ----- | 1 | go to Q9 |
| No | ----- | 2 | continue |
- Q8. Why do you say that?
-
- I want to ask you some questions about the assessor and his/her dealings with you ...
- Q9. Did you have any questions you wanted the assessor to answer while he/she was on the farm?
- | | | | |
|-----|-------|---|-----------|
| Yes | ----- | 1 | continue |
| No | ----- | 2 | go to Q12 |
- Q10. Were your questions answered to your satisfaction?
- | | | | |
|-----|-------|---|-----------|
| Yes | ----- | 1 | go to Q12 |
| No | ----- | 2 | continue |
- Q11. What do you still need to know?
-
- Q12. Do you have any comments to make about your experience with the assessor, either good or bad?
-

- Q13. How do you feel about the energy efficiency plan which is now being developed for your farm? Would you say you feel ...
- Very positive ----- 1
 - Fairly positive ----- 2
 - Fairly negative ----- 3
 - Very negative ----- 4
 - Neither positive nor negative----- 5

Q14. Why do you say that?

I just have a couple of questions about you and then this part of the project will be completed. (or complete with details already collected – just confirm as necessary)

Q15. Firstly, may I please ask your age? _____

- Q16. Record gender (but do not ask)
- Male ----- 1
 - Female ----- 2

- Q17. How would you describe the phase your dairy enterprise is currently in? Is it ...
- An expansion phase ----- 1
 - A steady as she goes pattern because it is pretty much where you want it to be ----- 2
 - A steady as she goes pattern because you are unable to expand at the moment ----- 3
 - A winding down phase----- 4

Q18. How many cows were in your milking herd at the peak of last season? _____

- Q19. Do you milk ...
- Once a day ----- 1
 - Twice a day ----- 2
 - Three times a day ----- 3
 - Other (specify) ----- 4

- Q20. What sort of dairy do you have?
- Rotary ----- 1
 - Herringbone ----- 2
 - Swing over ----- 3
 - Other (specify) ----- 4

- Q21. State/region
- Nth Victoria ----- 1
 - West Vic ----- 2
 - Gippsland ----- 3
 - Qld ----- 5
 - SA ----- 6
 - WA ----- 7
 - Tas ----- 8

Post efficiency plan questionnaire:

Q1. I'd just like to check that you've received your Energy Efficiency Plan?
 Yes ----- 1
 No ----- 2 record and make time to call back in future

Q2. And have you read through it?
 Yes ----- 1
 No ----- 2 record and make time to call back in future

Ask respondent to have their Energy Efficiency Plan close by so they can refer to it.

Q3. How have you found the process of having an energy efficiency assessment conducted for your farm?

Q4. What did the assessment include?

Q5. Did you learn anything new from the Energy Efficiency Plan?
 Yes ----- 1 continue
 No ----- 2 go to Q8

Q6. What did you learn?

Q7. How is that knowledge likely to help you in future, if at all?

Q8. How would you rate the Energy Efficiency Plan in terms of usefulness to you? Have you found it ...
 Very useful ----- 1
 Fairly useful ----- 2
 Not too useful ----- 3
 Not useful at all ----- 4
 Too early to say ----- 5

Q9. Why do you say that?

Q10. Now that you have had an energy efficiency assessment conducted, how would you rate your knowledge on a scale of 0 to 10 where 0 = 'no knowledge' and 10 = 'know everything there is to know' about the following ... *Interviewer note: you may need to explain the scoring more fully*

- 1. Where energy is used in the dairy
 0 1 2 3 4 5 6 7 8 9 10
- 2. Which equipment uses the most energy in the dairy
 0 1 2 3 4 5 6 7 8 9 10
- 3. Where there can potentially be energy inefficiencies in the dairy
 0 1 2 3 4 5 6 7 8 9 10
- 4. Energy saving options available for the dairy and the farm
 0 1 2 3 4 5 6 7 8 9 10

Q11. Is there any additional information you need to help you potentially save energy in future?
 Yes ----- 1 continue
 No ----- 2 go to Q13

Q12. What information do you need?

Q13. Are you planning to make any changes on the farm as a result of having the assessment conducted and an energy efficiency plan developed?
 Yes ----- 1 continue
 No ----- 2 go to Q17

Q14. What changes do you have planned?

Q15. How much of an impact are you expecting these changes to have on your energy use?

Q16. Were there any changes you would like to make, but probably won't?
 Yes ----- 1 go to Q18
 No ----- 2 go to Q21

If no changes planned (Q13 = 2), ask Q17

Q17. Is there a reason why you don't think you will make any changes?

.....

Q18. If respondent would like to make changes, but is unable, ask: What changes would you like to make?

.....

Q19. What sort of support would you need to implement changes?

.....

Q20. If you were able to make changes, what sort of an impact do you think they would make on your energy use?

.....

Q21. How satisfied have you been with the Smarter Energy Use program? Would you say you are ...

- Very useful ----- 1
- Fairly useful ----- 2
- Not too useful ----- 3
- Not useful at all ----- 4
- Too early to say ----- 5

Q22. Why do you say that?

.....

Q23. Is there any aspect of the program that could have been better or is there anything you can recommend to improve similar programs that may be run in future?

.....

I just have a couple of questions about you and then this part of the project will be completed. (or complete with details already collected – just confirm as necessary)

Q24. Firstly, may I please ask your age? _____

Q25. Record gender (but do not ask)

- Male ----- 1
- Female ----- 2

Q26. How would you describe the phase your dairy enterprise is currently in? Is it ...

- An expansion phase ----- 1
- A steady as she goes pattern because it is pretty much where you want it to be ----- 2
- A steady as she goes pattern because you are unable to expand at the moment ----- 3
- A winding down phase ----- 4

Q27. How many cows were in your milking herd at the peak of last season? _____

Q28. Do you milk ...

- Once a day ----- 1
- Twice a day ----- 2
- Three times a day ----- 3
- Other (specify) ----- 4

Q29. What sort of dairy do you have?

- Rotary ----- 1
- Herringbone ----- 2
- Swing over ----- 3
- Other (specify) ----- 4

Q30. State/region

- Nth Victoria ----- 1
- West Vic ----- 2
- Gippsland ----- 3
- Qld ----- 5
- SA ----- 6
- WA ----- 7
- Tas ----- 8

Q31. Would you be happy for us to contact you in approximately one year?

- Yes ----- 1
- No ----- 2

1 year later questionnaire:

- Q1. Over the past year, have you referred to your Energy Efficiency Plan other than to read through it when you first received it?
- Yes ----- 1
 - No, but will prior to making future changes ----- 2
 - No ----- 3

- Q2. Did the Energy Efficiency Plan you received make any recommendations similar to the following?
- Use more off peak electricity ----- 1
 - Change energy supplier or tariff ----- 2
 - Increase maintenance/cleaning of equipment ----- 3
 - Change water temperature/water heating ----- 4
 - Improve milk cooling system ----- 5
 - Make changes to the lighting ----- 6
 - Install/change vacuum pumps ----- 7
 - Other equipment changes (specify) ----- 8
 - Covered/insulated existing equipment ----- 9
 - Other changes (specify) ----- 10
 - No recommendations ----- 11 go to Q13
 - Can't recall ----- 12

If Plan made recommendations, ask Q3. If no recommendations in Plan, ask Q12

- Q3. Have you made any changes as a result of those recommendations?
- Yes ----- 1
 - No ----- 2 go to Q8

If yes:

- Q4. What have you changed?
- Use more off peak electricity ----- 1
 - Change energy supplier or tariff ----- 2
 - Increase maintenance/cleaning of equipment ----- 3
 - Change water temperature/water heating ----- 4
 - Improve milk cooling system ----- 5
 - Make changes to the lighting ----- 6
 - Install/change vacuum pumps/heat exchange unit ----- 7
 - Other equipment changes (specify) ----- 8
 - Covered/insulated existing equipment ----- 9
 - Other changes (specify) ----- 10
 - Can't recall ----- 12

- Q5. Have these changes ...
- Substantially reduced power consumption ----- 1
 - Slightly reduced power consumption ----- 2
 - Not changed power consumption at all ----- 3
 - Can't tell yet ----- 4 go to Q7

- Q6. How satisfied are you with this change in power consumption/the fact power consumption hasn't altered? Are you ...
- Very satisfied ----- 1
 - Fairly satisfied ----- 2
 - Not too satisfied ----- 3
 - Not satisfied at all ----- 4

If purchased equipment or new lighting, ask:

- Q7. Did information gained through the Energy Audit assist you in any way to make decisions about the equipment/lighting you purchased?
- Yes ----- 1
 - No ----- 2 go to Q9

- Q8. In what way did it assist? *Do not prompt*
- Considered energy efficiency of equipment ----- 1
 - Purchased equipment that will use heat recovery/solar or similar ----- 2
 - Other (specify) ----- 3

If Plan made recommendations, but no changes made yet, or if not all changes recommended have been made ask:

- Q9. Do you plan to make any changes/any further changes in future as a result of those recommendations or are there changes/further changes you would like to make but probably won't be able to?
- Yes ----- 1 continue
 - No ----- 2 go to Q11

If yes:

- Q10. What changes do you have planned or would you like to make?
 - Use more off peak electricity ----- 1
 - Change energy supplier or tariff ----- 2
 - Increase maintenance/cleaning of equipment ----- 3
 - Change water temperature/water heating ----- 4
 - Improve milk cooling system ----- 5
 - Make changes to the lighting ----- 6
 - Install/change vacuum pumps ----- 7
 - Other equipment changes (specify) ----- 8
 - Covered/insulated existing equipment ----- 9
 - Other changes (specify) ----- 10
 - Can't recall ----- 12

Q11. If have changes planned or would like to make in future, ask:
 What has prevented you from making changes?

If no changes made or planned, ask:

Are there any reasons why you won't make the changes recommended?

- Too expensive/can't afford ----- 1
- Current equipment still working fine ----- 2
- Don't believe they will have much of an impact on power consumption ----- 3
- Other (specify) ----- 4

Q12. What sort of support, if any, would you need to implement changes?

If Energy Efficiency Plan did not recommend changes, ask Q13. All others go to Q16

Q13. Although your Energy Efficiency Plan did not recommend any changes to energy use in the dairy, do you believe having the audit conducted on your farm will influence your thinking in any way about energy consumption in the dairy in the future?

- Yes ----- 1 continue
- No ----- 2 go to Q15

If yes:

Q14. In what way?

If no:

Q15. Why do you say that?

Ask all:

Q16. Has the energy audit of your dairy changed your attitude towards energy consumption generally in any way at all?

- Yes ----- 1 continue
- No ----- 2 go to Q18

If yes:

Q17. In what way?

Q18. How satisfied have you been with the Smarter Energy Use program? Would you say you are ...

- Very satisfied ----- 1
- Fairly satisfied ----- 2
- Not too satisfied ----- 3
- Not satisfied at all ----- 4
- Too early to say ----- 5

Q19. Why do you say that?

Q20. Is there any aspect of the program that could have been better or is there anything you can recommend to improve similar programs that may be run in future?

I just have a couple of questions about you and then this part of the project will be completed. (or complete with details already collected – just confirm as necessary)

Q21. Firstly, may I please ask your age? _____

Q22. Record gender (but do not ask)

- Male ----- 1
- Female ----- 2

- Q23. How would you describe the phase your dairy enterprise is currently in? Is it ...
- An expansion phase ----- 1
 - A steady as she goes pattern because it is pretty much where you want it to be ----- 2
 - A steady as she goes pattern because you are unable to expand at the moment ----- 3
 - A winding down phase----- 4
- Q24. How many cows were in your milking herd at the peak of last season? _____
- Q25. Do you milk ...
- Once a day ----- 1
 - Twice a day ----- 2
 - Three times a day ----- 3
 - Other (specify) ----- 4
- Q26. What sort of dairy do you have?
- Rotary ----- 1
 - Herringbone ----- 2
 - Swing over ----- 3
 - Other (specify) ----- 4
- Q27. State/region
- Nth Victoria ----- 1
 - West Vic ----- 2
 - Gippsland ----- 3
 - Qld ----- 5
 - SA ----- 6
 - WA ----- 7
 - Tas ----- 8