

Submission No:

25



**Submission to the House Standing Committee on Industry
and Resources:**

**Inquiry into the development of the non-fossil fuel energy
in Australia:**

Case study into selected renewable energy sectors:

Selected Sector: *Solar Hot Water*

Selected industry segment: *Australian Dairy Industry*

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INTRODUCTION

This submission is a result of research into the Dairy Industry, and their high energy use, with particular regard to their hot water requirements for the sterilisation of milking equipment on Dairy Farms.

The hot water requirements of a Dairy have been estimated by the Industry at 45% of their total electrical energy usage.

Currently the 'on farm' dairies produce 65,000 tonnes of CO₂ emissions per annum, to meet its hot water requirements as per their milk supply contracts. Our submission, if implemented, would result in a 75% reduction of this amount equating to a reduction of 48,000 tonnes of CO₂.

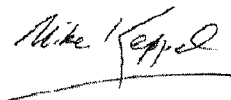
The proposal utilises the evacuated tube technology that was developed at the University of New South Wales, but now manufactured almost exclusively in China.

To convert the industry to solar would take a period of two to five years, and would involve 65% local content

Our proposal consists of the following two page document.

We trust that this submission is in line with your terms of reference, that you can recognise its feasibility and ultimately influence its implementation.

Yours sincerely,

A handwritten signature in black ink that reads "Mike Keppel". The signature is written in a cursive style and is positioned above a horizontal line.

Mike Keppel
Director
Krystal Alternative Energy

DAIRY INDUSTRY CONVERSION TO SOLAR HOT WATER

Recently the government has increased a subsidy for PV panels to \$8,000.00 for a maximum of 1000 watts (1Kw).

Very broadly if there was available 10 hours of sunshine per day where these panels were installed they could produce 10Kw of power with a day's full sunshine. Power usage is measured in Kwh (Kilowatt hours) so they have the potential to supply 10Kwh of usage where as the average daily household usage is 15Kwh.

The government has indicated that it expects an uptake of about 14,000 so is budgeting to spend about \$112,000,000, (although the budget release papers mentioned \$150m.) Because the generating capacity is about 2/3rds of an average household this – on the basis of 10 hours of daily sunshine - is the equivalent of removing about 9,350 households from the grid, at a cost of \$12,000 per household-equivalent.

The total dairy industry in Australia (\$2.4 billion export earnings), comprises of 8,843 dairies with an average herd size of 140 cows, with a requirement to heat 400 Litres of hot water per day to 87°C. To achieve this over an 8 hour period we have a 48Kwh requirement – three times an average household use. If we work on the premise that solar will account for 75% of water heating requirements there is a potential saving of 36Kwh per day per dairy. Each dairy fitted with solar would be then the equivalent of taking 2.4 households from the grid – a potential of 21,200 household equivalents, at a cost of \$2,600 each.

14,000 PV panels	Cost \$150m	Equivalent Savings 9,350 households
8,843 Dairy solar collectors	Cost \$55m	Equivalent Savings 21,200 households

Krystal Alternative Energy has developed a dairy-industry specific system that could be supplied to the entire dairy industry for less than half of the PV proposed subsidy – less than half the price for more than twice the result – not taking into account any existing State or Federal subsidies.

This proposal would have the following additional benefits:

- Support for an export industry rather than just domestic consumption
- Demonstrable support for a drought affected sector of the economy
- Support for an expanded rural based economy through rural re-sellers
- Up-skilling of the rural workforce providing at least 9,000 work days – jobs for 45 persons for 12 months.
- Massive long-term reduction of green-house gasses – 36.6m tonnes of CO2 annually.
- Cost savings for dairy farmers, without any suggestion of Government product subsidies.

On the basis of 1Kwh producing 0.43 kilos of greenhouse gas, each dairy currently produces 7.4 tonnes of greenhouse gas per year, the industry 65,070 tonnes annually (for water heating only). Conversion to solar heating has the potential to save 48,802 tonnes annually. The installation of 14,000 PV panels has the potential to save only 21,462 tonnes.

1 PV panel	Govt Cost \$8,000	Saves 1.5 tonnes of CO2 .pa
1 Solar Dairy Conversion	Govt Cost \$5,000	Saves 5.55 tonnes of CO2 .pa

1 PV panel	1 Govt dollar	Buys 1.9 kg of CO2
1 Solar Dairy Conversion	1 Govt dollar	Buys 11 kg of CO2

(1 of 2)

(2)

For a gross price (ex GST) of \$55m the entire dairy industry could be converted to solar water heating, making Australia the first country in the world to complete the transfer of an entire industry.

I believe that \$1,200 contribution by the farmer is realistic. As a 'Drought Relief' measure this could be reimbursed at \$50 per month over the two years. This contribution by the farmer would reduce the gross cost by \$10.5m.

We believe that the proposal is worthy of investigation with a view for adoption by Government, on the basis of saving in both CO2 emissions and cost effectiveness.