

COAG Review Discussion Paper 1 – Eligibility of new small-scale technologies and heat pumps

Overview

This submission template should be used to provide comments on:

COAG Review Discussion Paper 1 – Eligibility of new small-scale technologies and heat pumps

The purpose of this discussion paper is to provide an introduction to the key issues relating to the eligibility of new small-scale technologies and heat pumps within the RET, and to encourage input on these issues from individuals, businesses and organisations to inform the review process.

Stakeholders are asked to use the template provided to answer the questions posed in the discussion paper. The Department will also accept any other documents, further information, costing tables etc that are attached to the submission template.

Contact Details

Name of Organisation:	Rheem Australia Pty Ltd
Name of Author:	Gareth Jennings
Phone Number:	0423792334
Email:	gareth.jennings@rheem.com.au
Website:	www.rheem.com.au
Date:	30 October 2009

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All submissions will be treated as public documents, unless the author of the submission clearly indicates the contrary by marking all or part of the submission as 'confidential'. Public submissions may be published in full on the Department of Climate Change website, including any personal information of authors and/or other third parties contained in the submission. If any part of the submission should be treated as confidential then please provide two versions of the submission, one with the confidential information removed for publication.

A request made under the *Freedom of Information Act 1982* for access to a submission marked confidential will be determined in accordance with that Act.

Do you want this submission to be treated as confidential? Yes No

Submission Instructions

Submissions should be made by **close of business 30 October 2009**. The Department reserves the right not to consider late submissions.

Where possible, submissions should be lodged electronically, preferably in Microsoft Word or other text based formats, via the email address - **RET@climatechange.gov.au**.

Submissions may alternatively be sent to the postal address below to arrive by the due date.

Renewable Energy Sub Group Secretariat
Department of Climate Change
GPO Box 854, Canberra ACT 2601

For more information phone: 02 6159 7428

Existing eligibility of small-scale technologies under the RET

Question 1: Are there any new small-scale renewable energy technologies not currently eligible under the RET which may be considered for eligibility to participate in the scheme? Details are sought on:

- a description of the technology and how it works (including how it uses renewable energy to generate or displace electricity); and
- the extent to which the technology has been or is ready to be deployed to the market, such as industry size, capacity and market penetration.

Although there are no water heating products that currently fit the description outlined in the question, the industry is constantly researching and developing new products.

As the timing around the deployment of these and other new products is unclear we would simply ask that there be a regular (annual?) opportunity to apply to the Minister for the review and inclusion of additional technologies in the scheme, subject to proof that these technologies truly generate renewable energy, and with the requirement that a robust methodology exists for the calculation of their renewable energy contribution.

Question 2: Where possible, provide examples of the amount of renewable energy produced by a system in a particular application, noting: geographic location; size; and the amount of fossil fuel based energy also used in producing the total energy output (if any).

No comment

Eligibility of heat pumps

Question 3: Should heat pumps continue to be eligible under the RET? How cost-effective are heat pumps compared to solar hot water systems and conventional systems such as gas and electric systems? In particular, details are sought on:

- the capital cost, including installation;
- annual running costs, including maintenance;
- the effective life of the system; and
- annual savings compared to using fossil fuel based energy such as gas or electricity.

The installation of heat pump water heaters in residential premises is a crucial component of Australia's transition from high greenhouse gas intensity residential water heating to a lower carbon future. The ongoing eligibility of heat pumps in the RET scheme provides a mechanism to assist householders overcome the additional cost of installing heat pumps and helps the deployment of the technology, a key objective of the RET legislation.¹

The RET scheme and its predecessor, the MRET, has been a triumph in encouraging the adoption of solar water heaters by Australian households, with Rheem's internal estimates suggesting the annual sales of solar water heaters nationally have increased from 20,000 to 160,000 – an 800% increase during the life of the scheme. An annual market of 160,000 solar and heat pump water heater equates to reducing household CO2 emissions by nearly half a million tonnes per annum. The scheme has also given surety to solar water heater manufacturers, and has underwritten the growth of the local manufacturing industry – an industry that delivers on the government's desire for new businesses that are sustainable in a carbon constrained economy. This surety has allowed the industry to invest, and the increased competition in the sector, together with the increased availability of lower cost solar systems, is the dividend that this investment is repaying.

We are therefore concerned that it is deemed necessary to review the ongoing eligibility of heat pump water heaters are playing.

To assist the inquiry we will therefore deal with the issues that should be central to any decision on the ongoing inclusion of heat pumps in the RET:

1. Heat pumps use renewable energy and should remain eligible under the RET.

Claims have been made heat pump water heaters do not use renewable energy and therefore should not be included in the RET. These claims demonstrate a misunderstanding as to how this technology operates.

As a starting point it is important to understand that it takes the same amount of energy to heat a given volume of water, regardless of the energy source. To demonstrate how heat pump water heaters use renewable energy, consider a heat pump heating 200L of water:

The energy to heat 200 L of water from 20°C to 60°C during one day can be calculated at:

$$QH \text{ (energy out)} = CP \text{ (heat capacity of water)} \times \Delta T \text{ (} 836 \times 40 \text{ MJ)} = 33.4 \text{ MJ/day}$$

In an electric water heater, the conversion of electrical energy to heat energy occurs with an efficiency approaching 100%, however heat loss (QL) is 8.8 MJ/day Hence energy required is

$$QE \text{ (energy in)} = QH \text{ (energy out)} 33.4 \text{ MJ} + QL \text{ (heat losses)} 8.8 \text{ MJ} = 42.2 \text{ MJ/day}$$

In a heat pump the measured electrical input power (QM) is 14.6 MJ/day, however we know from the above equation that required QE is 42.2MJ/day. This means the renewable energy component (QR) is the difference:

$$QR \text{ (renewable energy)} = QE 42.2 \text{ MJ/day} - QM 14.6 \text{ MJ/day} = 27.6 \text{ MJ/day}$$

Or an annual renewable energy use of 10,074 MJ or 2.8 RECs pa

We can therefore see from the above calculation that 10,074 MJ of energy per year, or 65% of a heat pump's

¹ RENEWABLE ENERGY (ELECTRICITY) AMENDMENT BILL 2008 EXPOSURE DRAFT COMMENTARY December 2008 pg 1

energy usage, comes from renewable sources.

No technology “creates” renewable energy. In fact, all renewable technologies instead capture renewable energy and transform it to useable energy. Just as wind and hydro turbines capture kinetic energy and transform it to electricity, heat pumps capture their energy from renewable sources – the heat in the air - and use it to heat water.

Worldwide, heat pumps are recognised as a renewable technology, with the European Union recently recognising heat pumps (airo-thermal solar) as renewable energy technology, alongside windmills and solar panels.

2. Heat pumps offer a low capital cost solution for Australian households

Heat pump water heaters are playing a major role in substituting the soon to be banned greenhouse intensive electric storage water heaters.

Heat pumps have been successful because they offer a renewable water heating solution for not much more than the cost of a fossil fuel powered water heater. As can be seen from Table 1, the installed cost of heat pumps, with the benefit of RECS, comes close to that of the most low cost compliant products, 5 star gas water heaters. The table also demonstrates that without RECS the heat pumps become considerably less attractive.

TABLE 1: APPROXIMATE INSTALLED COST OF COMPLIANT WATER HEATERS

Water Heater Type	Approx Installed Cost
5 Star Gas Water Heater	\$1500-\$2000
Heat Pump with RECS (28@ \$30)	\$2500-\$3000
Heat Pumps (no RECS)	\$3250-\$3750
Electric Boosted Solar with RECS (32@ \$30)	\$3500-\$4000
Gas Boosted Solar with RECS (35@ \$30)	\$4500-\$5000

Electric and 4 star gas water heaters (both approx \$1000-\$1500 installed) excluded due to plans to ban in next 2-3 years.

Advocates for the elimination of heat pump water heaters from the RET claim that the combined discount offered on heat pump water heaters to householders through the RET, federal and state rebate schemes has “over-subsidised” the industry. Table 1 excludes the currently available additional state and federal rebates as it is Rheem’s view that these schemes will be relatively short lived and do not offer the same level of surety of support to manufacturers as is offered by a RET scheme that will be in place for 10 years.

To summarise the complementary schemes:

- Eligibility for the federal government’s \$1000 solar rebate scheme for heat pumps is limited to households replacing an electric water heater and which have not applied for an insulation rebate. The programme is scheduled to conclude in March 2012, after assisting the installation of 300-400,000 solar and heat pump water heaters. The scheme can be cancelled, or the eligibility varied, by the relevant minister at any time, as was demonstrated by the recent overnight cut in the heat pump rebate value from \$1600 to \$1000.
- The NSW State Govt solar rebate scheme (\$600-\$1000 for heat pumps) is in place until mid 2011 or until the funds are exhausted. Like the federal scheme, this rebate can be changed or cancelled by the minister with no warning.
- The Victorian solar scheme favours gas boosted solar in gas areas, with rebates for electric boosted solar and heat pumps declining substantially if the federal rebate is accessed. This scheme has yet to secure long term funding.
- The SA solar rebate scheme (\$500) is only available to those on a concession card, and is not funded for the long term.
- The WA solar rebate excludes heat pumps and electric boosted solar.
- No rebate schemes exist at a state level in Queensland and Tasmania.

From the above it is obvious that although there is a plethora of schemes, their eligibility requirements are mixed and, apart from NSW, the schemes are balanced in favour of gas boosted solar or the disadvantaged. In NSW the scheme only applies to householders replacing electric water heaters.

It should also be noted that all rebate schemes are expected to conclude within the next 3-4 years, yet the life cycle for water heaters, and therefore the timeframe required for the conversion of the existing installed stock to lower emission products, is 10+ years. Only the RET will be in place over the timeframe required to help achieve this objective.

It is Rheem's belief that the RET should form a solid underpinning for the affordability of heat pump water heaters, and that sensible levels of state and federal rebates should be introduced, bringing the net cost of renewable down to the equivalent cost of a traditional water heater. Any non RET governmental rebates substantially beyond this level are unnecessary.

Approximately 80% of water heater sales are emergency replacements for breakdowns and consequently impose an unexpected financial burden on householders. Inclusion of heat pumps in the RET is critical in ensuring they remain affordable options for householders replacing electric water heaters in emergency situations.

3. Heat pumps offer a low running cost solution for Australian households

Substantially less than 50% of Australian households have access to reticulated natural gas.

Certainly in areas without access to natural gas, we believe that heat pumps can offer a lower running cost and low emission alternative householders. If heat pump water heaters were to be excluded from the RET at the same time that electric water heaters are banned² then the only alternatives in these situations would be higher up-front cost roof based solar installation (see Table 1) or the vastly higher running cost of an LPG gas solution.

For example, using the latest South East Queensland Energy tariffs and applying them to the energy usage of various water heaters, the high incremental cost of LPG water heating is obvious. Table 2 indicates the likely annual running cost of various types of water heaters, using both natural gas (column 2) and LPG tariffs (column 3).

TABLE 2: SE Queensland Water Heater Running Costs³

Water Heater Type	Annual Qld Running Costs	Annual LPG Running Cost	10 Year Incremental LPG Cost
Small Electric	\$ 484.45		-
Large Electric	\$ 340.39		-
3 Star Gas	\$ 440.86	\$ 1,086.51	\$6456.50
5 Star Gas Storage	\$ 373.15	\$ 919.63	\$5464.80
5 Star Gas Instant	\$ 382.05	\$ 928.53	\$5460.00
Heat Pump	\$ 281.14		
Electric Solar	\$ 231.39		
Gas Boosted Solar	\$ 111.78	\$ 255.88	\$1441.00

Whilst solar water heaters deliver the best running cost outcome, heat pumps offer the lowest running cost solution in non gas reticulated areas for those not able or where it is not practical to undertake a roof mounted solar installation.

² Federal Govt policy is for a phase out from 2010 to 2012

³ Source: Ergon Energy, Origin Energy, Elgas tariffs all July 2009. Tariffs applied based on Australian standards and TRNSYS modelling. Excludes \$265 fixed annual fee for access to gas network.

4. Importance of RET recognition of Heat Pumps for other regulatory purposes

As outlined above, heat pumps and solar water heaters benefit from access to a range of state and federal subsidies. Inclusion in the RET, and the number of RECS that these technologies generate, are both used by other regulators to determine eligibility for these state and federal schemes. Eliminating heat pumps from the RET would result in their exclusion from many other incentive programmes.

Inclusion in the RET is also used as a basis for other regulatory decisions. For example, in Queensland the code relating to new home construction requires a minimum number of RECS be achieved before a solar or heat pump water heater is considered a compliant appliance. It is understood that the newly proposed Building Code of Australia 2010 will also rely on RET inclusion as a determinant of compliance.

5. Are heat pumps a durable product with an appropriate effective life?

Heat pumps generally have two main subsystems – the tank and the compressor. We will deal with the effective life of these two components individually:

The Tank

The heat pump tanks that are manufactured in Australia employ the same technologies used for storage gas and electric water heaters. As such, they have the same effective life as any traditional water heater tank.

Locally manufactured tanks are designed to cope with both Australian climatic conditions as well as the variability of Australian water quality. However, as there is such a great variation in these factors across the country, it is virtually impossible to guarantee a precise effective life across all installations. This also means that heat pump warranties vary, as is the case with gas and electric water heaters..

The Compressor

Calculating a precise “effective life” of heat pump compressors is more problematic as load and usage varies widely. As a guide, however, the compressor unit used in a heat pump has a great deal in common with that found in a household air-conditioner. The major difference is that the compressor in a heat pump is likely to modulate less frequently than that in an air conditioner, placing less stress on the water heater’s compressor.

Finally it is important not to confuse the warranty offered by manufacturers of water heaters with the effective life of their products. Warranties are a cost to the manufacturer, so extended or over generous warranties tend to add cost to the product, which adds to the product’s price. As a result, warranties beyond industry norms tend to be used as marketing tools, with longer warranties often offered by inferior or challenger brands as a method of overcoming market suspicion or resistance.

6. Ongoing inclusion of heat pump water heaters in the RET is necessary for the survival of the Australian water heater manufacturing industry and its conversion to renewable energy appliances

The water heater market is the last large appliance market in the country still dominated by locally made products. Local manufacturers directly employ over 2000 people and the industry contributes several billion dollars to the local economy.

This competitiveness has been built on the industry’s highly cost effective “tank” or cylinder manufacturing capability. These cylinders are used in all forms of storage water heaters, from traditional electric and 3 star gas water heaters, through to solar and heat pump products.

In 2007 significant regulatory moves were announced that will result in the banning of 70% of locally made products (electric and low efficiency gas units) via state and federal regulation .

When these bans were first announced it was generally assumed that this change would create a windfall benefit for the importers of high efficiency gas water heaters, and those supplying gas to households. This assumption was made on the basis that the only other remaining compliant water heating solution, solar, would be too costly to be competitive.

This situation has changed in the last two years as solar and heat pump sales have grown as a result of the MRET and the solar water heating component of the Federal Government's February 2009 stimulus package.

This package has been extremely successful, with a doubling of solar and heat pump installations in the last 6 months alone, the creation of hundreds of manufacturing and installation jobs in the industry, and the investment of millions of dollars in increased production capacity by local manufacturers.

With traditional cylinder based products now facing a very limited life, solar and heat pumps are acting as natural replacement to fill what would otherwise be surplus local cylinder production facilities.

The long term nature of the RET also provides market surety for local manufacturers upgrading or investing in new facilities.

Rheem alone has invested approximately \$5 million in converting electric water heater production capacity to heat pump manufacturing capacity in our Sydney factory and in the expansion of solar capacity in our West Australian and Victorian operations. Rheem's heat pump labour has grown fourfold during the same period.

All of this has been undertaken on the basis of the inclusion of heat pumps in the RET.

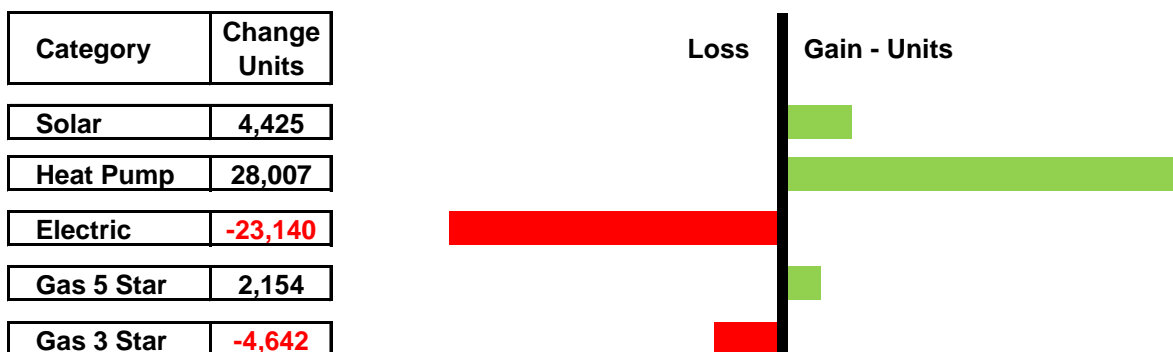
7. Heat pumps are not replacing natural gas water heaters in domestic situations

One of the assertions made against the lowering of installed cost of solar and heat pump water heaters through rebates and the RET scheme, is that this is encouraging householders to take out gas water heaters and substitute them with solar, or more frequently, heat pumps.

This myth has been promoted particularly strongly by single agenda lobby groups concerned that they will not benefit as they had originally expected from the regulatory move against electric resistance water heaters. This anti heat pump lobby had assumed that LPG would be the main beneficiary of the outlawing of electric water heaters, however the growth of heat pumps, a superior environmental and running cost solution to LPG powered gas water heaters, has changed the likely outcomes of the regulatory change. The ongoing lobbying against heat pumps, including the refusal to acknowledge the technology's renewable credentials, represents the rear guard action in this discussion.

Rheem's position as the largest manufacturer all types of water heaters sold in Australia - electric, gas and solar - puts it in a strong position to refute these claims. This position gives us a unique insight into how different segments of the water heater market are interacting. Table 3 shows the change in Rheem's sales for these different water heater types year on year to the end of October 2009.

TABLE 3: Annual Change in Rheem Domestic Water Heater Unit Volume Sales By Water Heater Type



As can be seen from the table, Heat Pumps sales growth has been largely sourced from electric water heater sales, whilst 3 star gas and 5 star gas have effectively substituted each other, with only a small amount of slippage from low efficiency gas to renewable products. Total gas water heater sales remain in the range of 250,000 units pa. Rheem believes the incremental growth of solar and heat pumps (6000 units) above the normally stable 700,000 unit market is due to market expansion as householders retire their electric water heaters early to take advantage of government rebates.

As Rheem holds a competitive market position in all segments, we believe that our sales results are indicative of that experienced by the entire domestic industry. This being the case, it would seem clear that heat pumps and solar are not growing at the expense of the installed base of gas products.

Question 4: What is the effectiveness of heat pumps in reducing greenhouse gas emissions in different circumstances?

The effectiveness of heat pumps is currently calculated using TRNSYS modelling. This takes into account the weather patterns for a year and calculates the amount of energy that the product would use, in comparison to an electric water heater. The model uses different weather data across 4 different areas (zones) within Australia, thus calculating a different level of effectiveness depending on where the installation is to take place. The savings in energy use between the modelled heater and the performance of an electric water heater is the basis for greenhouse gas emission savings.

Rheem is aware of three issues with this methodology:

1. Lack of importance given to ambient temperature by TRNSYS

The TRNSYS model assumes there are 4 climate zones in Australia. As the TRNSYS model was originally intended to only calculate the benefits of solar water heaters, these zones were based on areas with common solar irradiation. Hence the model treats an area which includes Perth, Adelaide, Canberra, Sydney and Brisbane as having the same “weather” (Zone 3) for TRNSYS calculation purposes.

Heat Pumps however are not reliant on solar radiation for their renewable energy, but instead on ambient air temperature. Obviously the ambient air temperature in the area covered by Zone 3 varies substantially from region to region, making the current TRNSYS model less accurate for true heat pump effectiveness calculation.

On the basis of this flaw, the Australian Standards Committee CS028 (Solar and Heat Pump Water Heating) is currently developing an alternative set of climate zones that can be used in the TRNSYS modelling of heat pumps. The aim is to more accurately reflect the effectiveness of heat pumps by region.

2. TRNSYS calculations for Commercial installations

The TRNSYS model uses a water heating “load” to calculate the level of renewable energy generation from any given heat pump.

For domestic water heaters, this can be fairly easily calculated as there is data to suggest that households use the amount of water that they have stored in a single water heater tank on a daily basis. The TRNSYS model therefore uses the size of the tank as the basis for its load calculations for domestic RECS calculations.

This is not the case for Commercial heat pump installations.

Commercial heat pump installations attract a significant and disproportionate number of RECS because they are allocated on the basis of the theoretical capacity that is installed, rather than on an average expected water usage, as is the case for domestic heat pumps. The validity of this system is therefore dependent on responsible sizing of the system by the plumber and the installation of the appropriate heat pump capacity to meet the needs of the business in question.

The generous REC allocation that commercial heat pumps receive makes it possible for the cost of a commercial installation to be offset entirely by the RECS that the installation generates. It is understood that many businesses have recently taken advantage of this situation, leading to a huge growth in commercial heat pump installations and their associated RECS.

Aware of this issue and the inappropriate behaviour in the market, Rheem has long had standing instructions to all sales and technical personnel that they are not to oversize commercial heat pump installations to maximise the RECS benefit. This stance has had a negative impact on Rheem’s commercial sales however we were willing to bear this difficulty as we saw it being in the long term interests of the industry. Instead we have focussed on campaigning within the industry, with regulators and with legislators to outlaw oversizing, making an ongoing series of recommendations for changes to the product standard or to the RET guidelines that underpin this behaviour.

Rheem’s internal estimates of the market for the Jan – Sept 2009 period is that heat pump sales have grown to about 60,000 installations. Cross referencing this with REC creation data supplied by the Office of Renewable

Energy Regulator (ORER) Rheem believe the split between commercial heat pump RECS and domestic heat pump RECS is approximately as follows:

55,000 Domestic Heat Pump Installations @ 35 RECS = 1,925,000 RECS

4,500 Commercial Installations * 3 units @ 320 RECS = 1,440,000 RECS

These figures are approximate only and Rheem is not aware of how to further validate the numbers, as no third party data on installations and market size is available. However, if these estimates are close to correct it would indicate that 5%-10% of the heat pump installations are responsible for approximately 40% of heat pump RECS. The solution to this imbalance will require changes to the regulations underlying the RET, with potentially a need to make changes to commercial measurement standards.

During debate on the RET legislation the Government and Opposition agreed to address this issue by introducing a requirement for statutory declarations on appropriate sizing of commercial installations. Analysis of RECs created in the September quarter indicate that this change has had the desired effect on behaviour, however Rheem believes that ongoing vigilance is required to ensure the problem does not return.

If the behaviour was to return to previous levels, it is Rheem's belief that RET eligibility of commercial heat pump installations (above 700L capacity) should be suspended until a more accurate measurement technique is developed by regulators to better reflect actual usage in commercial applications.

Regardless of the decision taken with regard to commercial installations it would be an absolute tragedy to remove all Heat Pumps from the RET to deal with this narrow but important issue. We therefore strongly recommend that there should be no change to the treatment under the RET of heat pump or solar water heaters installed in domestic/residential situations, as this perceived market distortion issue is not associated with these installations.

3. The need to stop a potential REC "arms race" in heat pump and solar water heater design

Since the introduction of the RET scheme water heater appliance designers have identified methods for obtaining better TRNSYS results, with a corresponding increase in the RECS generated by their products. In some instances this ability has resulted in water heaters that theoretically produced large amounts of hot water (and therefore renewable energy) but which in practice failed to meet household demand, or in some cases exceeded the demand that was there.

To eliminate this dynamic, Rheem recommends that a cap be placed on the number of RECs that can be created for any domestic solar or heat pump water heater installation.

Whilst this could most accurately be applied by reference of the water heater's delivery capacity to the size of the dwelling in which it is installed, or by the number of people that it services, in practice these are complicated measures and difficult to police.

We therefore believe that the elimination of the "large load" calculation within the Australian standard, limiting all solar and heat pump water heaters to a medium load at best, would stop the TRNSYS model being applied inappropriately and would instead lead to a greater focus on appropriately sized and featured domestic installations. Although this will lead to a slight reduction of RECs generated by larger systems, it will discourage any inappropriate practices in future product development, and ensure that RECs from solar and heat pump water heater installations are a result of better applications.

Cost-effectiveness, reliability and market deployment

Question 5: Information is sought on the cost-effectiveness of any new technology identified, in particular:

- the capital cost of the technology, including installation;
- annual running costs, including maintenance;
- the effective life of the system;
- annual savings compared to using fossil fuel based energy such as gas or electricity; and
- for electricity generation, the capacity factor of the system.

No comment

Impact on existing eligible technologies and REC market

Question 6: Would including new small-scale technologies or amending the eligibility of heat pumps have a major impact on the deployment of existing eligible technologies?

Rheem challenges the assertion that a change in heat pump water heater eligibility would have a major impact on the deployment of existing eligible technologies.

Firstly we should deal with the issue of REC pricing.

There has been much discussion recently within the renewable energy community that the high volumes of RECs generated by solar water heaters, heat pump water heaters and photovoltaic installations are creating a large surplus of RECs above the RET trajectory. This “surplus” is blamed for the recent downward pressure on REC prices, with this in turn negatively impacting the deployment of alternative renewable technologies, such as wind power.

This debate seems to overlook a fundamental element of REC pricing – that the REC price represents the difference between the wholesale price of traditionally generated energy and the marginal cost of renewable energy. A low REC price is not a problem – it just means that we are accessing low marginal cost renewable energy. In fact, a case could be made that the lowest cost renewable energy technologies should be the first deployed.

Opponents of solar and heat pump water heaters argue that low REC prices are not desirable, and that higher REC prices are a better outcome, as these can be used to underwrite investment in large scale higher cost renewable energy generation capacity.

Rheem takes a different view. Whilst higher REC prices are good for generating business cases, a high REC price means that the last unit of energy generated to meet demand is more expensive. As the price of RECS is passed through to energy users in the form of higher energy prices, higher REC prices translate directly to higher energy prices. In simple terms, the prices of RECs are being paid by users so that they can buy energy that will be more expensive to produce, with the net economics of this transaction negative to the energy user.

Conversely, installing a solar water heater reduces a user’s “purchased energy” consumption, so the net economic benefit of a solar or heat pump water heater is positive or, at worst, neutral. Although householders are unlikely to have economically rationalised their behaviour as it is outlined here, there is no doubt that this more beneficial economic outcome is behind the large uptake in solar and heat pump water heaters.

In summary, a low REC price means lower energy costs, and the RECs generated by solar and heat pump water heaters pay for themselves whilst delivering the overall objective of all climate change legislation – a reduction in CO₂ emissions. We are yet to be convinced that these are a bad series of outcomes.

Rheem would also like to make the following observations.

- The current REC “surplus” is likely to reduce in the very short term. It fails to take into account either the substantial decline in Heat Pump sales following the reduction in the federal solar rebate from \$1600 to \$1000, nor the reduced numbers of commercial heat pump installations arising from the tighter controls on eligibility introduced as part of the recent RET legislation. The impact of these declines on installations and thus RECs creation has yet to flow through to the physical REC market.
- The spot price, which is currently criticised as being too low, can be moved substantially by relatively small volumes of RECs. For example, a small creator of RECs needing to sell 5000 RECs for cash flow purposes will accept whatever is on offer. If the major market participants do not need to buy RECs at that time, the price offered may be artificially low, and will drive the spot price down to this level.
- REC pricing and the market for RECs is driven by sentiment as much as by physical creation of RECS. Like any tradeable commodity, prices move based on market psychology and this is unpredictable. For example, the current drop in spot REC prices has been variously attributed to delays in the passage of the RET legislation, solar water heater rebates and the lower demand for RECs that will arise from the introduction of a CPRS.

Finally it is worth reviewing the concept which seems to underly this review - should a technology be made ineligible for RECs if it becomes "too successful". We would argue that this success, instead of a being treated as a problem, should in fact be welcomed as a demonstration that the RET scheme is being successful in assisting the deployment of a renewable energy technology.

If heat pumps are made ineligible for being "too successful", what message will this send to developers of other renewable technologies?

If a technology can be proven to deliver the renewable energy gains that it is credited with under the scheme, and can do so more cost effectively and with greater public acceptance than can be achieved by competing renewable technologies, it is an inappropriate policy response to penalise the more successful technology to benefit those that are less successful.

Any other additional comments

Given the strong arguments for the ongoing inclusion of heat pump water heaters in the RET scheme, Rheem is deeply concerned and surprised that their eligibility within the scheme is being reviewed..

We had taken encouragement in 2007 when the Prime Minister had indicated the expanded scheme would not only have the same eligibility criteria as the old scheme, but would also be expanded to further encourage the uptake of solar water heaters :

“Under Federal Labor’s scheme, only renewable energy will count towards the target and the eligibility criteria will remain the same as the current scheme. Labor will examine how the use of microgeneration, including rooftop solar panels, solar hot water and small scale generation, can be increased to encourage the development of new technologies.”⁴

We recognise the importance of getting all the regulatory settings right for the new RET, but believe the removal of heat pump water heaters from the scheme would be contrary to the Prime Minister’s commitment.

Any attempt to retreat on this commitment will leave manufacturers, dealers and installers of water heaters with significant stranded investment in a difficult economy. The loss of RECS and the associated increase in net prices will set back the uptake of renewable water water heaters, with a negative impact on this form of renewable energy adoption by the community.

We would therefore urge you to consider the important role that heat pumps water heaters have to play in Australia’s low carbon future, and to reach a conclusion that this technology is worthy of ongoing inclusion in the RET. If the review believes that amendments to the scheme are necessary to overcome perceived inconsistencies, we would urge that no change be made to the eligibility of domestic heat pump water heaters, as the scheme is operating effectively to transition the market from electric to renewable and not to the detriment of gas.

Heat pumps represent an essential part of the future of local manufacturing, and their exclusion from the RET would damage a competitive local industry that is already undergoing radical transformation to address climate change.

⁴ Election 07 Policy Document , Labor’s 2020 Target for a Renewable Energy Future pg 2