

## Submission Template

### 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

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#### Confidentiality

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](mailto: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.

Heat from biomass-fuelled heating or combined heat and power plants.

These plants can use a range of forms of biomass to substitute from fossil fuels. These include flammable residues and wastes such as straw, chipped plantation harvest residues, woody weeds (such as self sown pines in native forest, or willows), or municipal solid waste (this can be up to 80% biomass and is classed as biomass in Scandinavia). While a number of alternate technologies are used they all produce heat energy and can produce electricity.

Or wet putrescible wastes that will produce biogas (60-70% methane) when anaerobically fermented. This can be fuel for a gas motor driving a generator – as on many municipal landfill sites, or upgraded to pure methane for use as an LPG or natural gas substitute.

The scale for equipment utilising both sections of biomass is very flexible – from a few kilowatts up to hundreds of MW combined energy. Normally MSW-fuelled waste to energy plants are at the higher end and will utilise 75,000 tonnes/yr or more. Cost of woody biomass particularly is very competitive with fossil energy, and can be better than cost-competitive when only heat is produced.

The technology is mature and is in widespread use in northern Europe, and in more limited forms in China, India, Brazil, central and southern Europe and New Zealand. In Australia its adoption is limited by lack of long term policy, by lack of any eligibility of utilised heat for RECs, and by general ignorance in policy development areas and the media.

**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).

Normally bioenergy substitutes for fossil energy and does not require fossil-fuel produced electricity. Heat output-only plants will use electricity from the grid in tiny amounts for running pumps, other small electric motors and sensing systems.

Some examples – Berrybank Piggery near Ballarat producing biogas to electricity and heat.  
McCains food processing at Ballarat producing biogas to 3 MW combined electricity and heat.  
APM paper mill in Gippsland using processing by-product to produce electricity and heat  
Visy waste paper processing plant at Tumut using waste product to produce electricity and heat.  
Sugar mills in NE NSW and SE Qld using bagasse to produce electricity and heat (70-90 MW).

Royal Childrens Hospital, Melbourne) installing chip-fired boiler for space and water heating (0.8 MW)

Other mostly small plants in industries mostly involved with timber processing

## 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.

What applies to heat pumps should equitably apply to other low emission heat provided by other fossil fuel replacing technology. Solar hot water systems should receive the same RECs/KW capacity as heat pumps and biomass-fueled utilised heat  
The provision of 5 RECs/KW of heat from solar PVs is inequitable and needs to be discontinued.

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

The Swedes are high users of heat pumps as a low emission heat source in capacities of up to 5 MW for township district heating, and their information is freely available

## 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.

**Capital cost of biomass fired heating plants is from \$1500-2000/kw for smaller scale. At larger scale it can be closer to \$1000/kw capacity. Small biomass fuelled plants producing heat and electricity of from 5 MW-e can be 3 million/mW capacity of electricity and close to \$1 million/MW electric and thermal combined.**

**Annual running costs vary depending on biomass fuel type. For a 1-1.5 MW wood pellet fuelled plant with automated feed NZ figures indicate NZ\$21,000/yr**

**But this is balanced by a cost saving compared to LPG of almost NZ \$231,000/yr**

**Effective life of the system is comparable to a LPG or diesel oil fired furnace, so 20-25 years plus.**

**For electricity generation a dry biomass fuelled gasifier of about 300kw would have a an electrical output efficiency of about 30-35%.**

**For larger conventional furnace/boiler/turbine plant efficiency of electrical output is usually 28-35%, but when heat is fully utilised efficiency of fuel to utilised energy is 80-85%.**

## 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?

**Clearly there are places where each of the current RE technologies could have a clear advantage in its application. This also applies to biomass fuelled energy plants. This is the technology that in Scandinavia is producing up to 28% of national energy (and over 60% of renewable energy including industrial scale hydro systems in Sweden for example).**

**To have this option effectively not on the table and to be stimulating heat pumps and solar PV with RECs is bizarre and indicates a poorly advised and educated community of policy makers.**

## Any other additional comments

I think the examples and experience of many countries should be looked at closely, in addition to this consultation with domestic opinion. New Zealand is definitely a country to look at, and for bioenergy options see [www.bkz.co.nz](http://www.bkz.co.nz). For bioenergy information in Australia look at [www.bioenergyaustralia.org.au](http://www.bioenergyaustralia.org.au). For a study in the ballarat region of Victoria on unutilised biomass availability and the options for utilising it look at [www.chaf.org.au](http://www.chaf.org.au).