

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.

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.

The energy sources listed in the discussion paper appear to cover all sources that can reasonably be classed as renewable. However, the list of eligible small generation unit installations only covers technologies deriving energy from solar, wind, and hydro. It would be desirable to broaden the criteria to all technologies that can be demonstrated to derive energy from renewable sources and meet a set of environmental criteria, such as not impacting on biodiversity.

Biomass-based technologies are not represented, yet there is a potential to harvest a significant amount of energy from these sources. Any inclusion of biomass technologies under the RET would have to be subject to a carefully defined set of criteria, to exclude potentially harmful technologies such as wood heaters. The author is unaware of any commercially available small-scale devices that may be considered for inclusion, however, home-made biogas digesters and ethanol plants have been constructed over the years. In fact, domestic biogas is more prevalent in developing countries, as plant can be constructed cheaply, and to varying degrees of complexity.

Biogas digesters work by anaerobic decomposition of organic matter. Source materials include animal manure, human waste, and vegetable matter. Animal manures appear to yield the highest quantity of gas, and do not require mechanical pre-processing unlike most vegetable materials. Methanogenic bacteria act on the source material to produce methane. Typically, the resultant gas consists of methane, carbon dioxide, hydrogen gas, and hydrogen sulphide. The digester needs to be kept at a fairly constant temperature of around 35°C for mesophilic strains and 55°C for thermophilic strains. The effluent produced can be suitable for use as a garden fertiliser.

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).

The author is unable to comment on specific biomass systems. The energy output is dependant on size, source material, digestion times and digester temperature.

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 author is unable to comment on heat-pumps for water heating.

Heat pumps are an energy-efficient rather than an energy-generating technology. It is, of course, desirable to encourage the uptake of heat pumps, however these should be provided for under legislation concerning energy efficient technologies.

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

Factors to be considered in investigating this question include:

- Temperature differential
- Comparative efficiency over technology to be replaced
- Behavioural changes resulting from installing a more energy efficient technology. The author understands that some people who have installed heat pump space heating heat their houses at a higher temperature than they did prior to the installation, thereby reducing the environmental benefits.

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.

The following general observations are given for biogas digesters. The author does not have the expertise to provide a detailed answer.

- Capital cost varies considerably according to digester design
- Running costs may be quite high due to labour intensive source material input and effluent disposal. Again this is dependant on digester design and the nature of the source material. In some situations (such as on some farms), the digester would be replacing an existing waste management process with its own labour regime.

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?

Any other additional comments