24 July 2009

The Senate Economics Committee
Inquiry into the RET
Parliament House
Canberra ACT 2600

Submission to the Senate Economics Committee's Inquiry into the Renewable Energy (Electricity) Amendment Bill 2009

Australia's emerging renewable energy industries are extremely concerned about the design of the expanded national Renewable Energy Target (RET) as detailed in the *Renewable Energy (electricity) Amendment Bill 2009 (The Bill)*.

The RET as outlined in *The Bill* will not deliver the scale and diversity of the transformation of the renewable energy sector consistent with a capability to avoid dangerous climate change at low cost. The emerging technology industries collectively believe that with some straightforward amendments it will play a critical role in ensuring the required industries are under development to make such an outcome possible. Geothermal, ocean and solar concentrator (photovoltaic and thermal) and other emerging energy generation technologies are an essential part of a future Australian low carbon economy. Though relatively more expensive or in the early stages of development today, these resources will be harnessed at low cost in the medium term (by about 2025) and can be available at large scale with much of the expertise and intellectual property developed here in Australia.

The modeling of the RET undertaken for the Government estimates that 70% of the incentives will be taken up by wind projects which will deny incentives to the emerging technologies and therefore delay their entry to the national market. The emerging technologies believe that this is not in the national interest.

The modeling undertaken for the Government focused on how to meet the target at lowest cost in 2020 and the emerging technologies have serious concerns with this limited focus and on the assumptions in the modeling including:

1. **The failure to focus on the costs of delivering large scale low cost renewable energy post 2020;**
2. **The failure to take into account the integrated nature of the national electricity market where project developers gain from the early development of projects and internally remit their liability; and**
3. **The failure to place an economic or energy security value on the delivery of other benefits including:**
   i) baseload energy;
   ii) job intensity;
   iii) export potential; and
   iv) integration into the national energy market.

Building Long term Capacity for Low Cost Large Scale Deployment of Renewable Energy

Australia and the world will not meet future emissions reduction targets and energy demand requirements with the existing suite of energy technologies operating in the global market today. New technologies need to be developed and Australia has a leadership position in a number of these technologies including geothermal, solar and ocean energy technologies.

Integrated Nature of the National Energy Market

Many Australian energy companies are actively involved in the development of energy generation projects and in the electricity retail market. The current design provides a very strong incentive to build projects early in the scheme to generate Renewable Energy Certificates (RECs) over the lifetime of the Scheme, particularly for companies with generation and retail businesses in that they can acquit their liabilities internally.

The RET scheme is designed to bring the cheapest available renewable energy into the market at any point in time however the scheme as proposed will lock out the potentially cheapest forms of energy as integrated companies purchase from themselves rather than from the market. However, the value of the RECs to the business case of projects built in the first few years of the scheme may result in projects offering an early and extended return getting off the ground against projects ready for development in the middle of the scheme with higher up front development costs ultimately producing cheaper or, overall, a more cost effective energy over the lifetime of the project.

Other Benefits

<u>Baseload Energy</u>

The value of baseload energy technologies where reliability and output can be predicted and additional generation and transmission infrastructure to deliver the energy is not required has not been acknowledged in the design of the RET.

Geothermal energy is the most likely of the emerging technologies to deliver baseload energy and a numberof solar concentrator technologies are in the process of developing a range of baseload capabilities from within the available solar resource. And, ocean technologies currently provide a significantly higher degree of predictability than wind energy.

The current design of the RET is working against the technologies that offer these benefits.

Job Intensity

Employment has been a major issue in the national climate change debate. The employment intensity emerging technologies is greater than in the wind energy industry, the single largest predicted beneficiary of the RET as proposed. The emerging technologies believe that this outcome is not in the national interested particularly when some of these technologies are predicted to be cheaper than wind by 2020.

AGEA commissioned ACIL Tasman to produce a report on employment intensity *Employment in the Renewable Generation Sector* (attached) and the findings are summarized in the following table.

Estimated upper bounds for cumulative employment for the construction of a 100MW renewable energy plant

	Wind	Geothermal	Solar PV	Solar thermal	Ocean
Direct employment on construction /MW	2.9	4	10.2	6.7	6
Capacity (MW)	100	100	100	100	100
Annual employment	290	400	1020	670	600
Construction time (years)	2	3	6	2.5	4
Cumulative employment (man years)	580	1200	6120	1675	2400
Indirect employment multiplier	1.1	1.3	1.3	1.4	1 (a)
Total cumulative employment	1218	2760	14076	4020	4800

(a) ACIL Tasman would judge this multiplier to be a conservative estimate.
Note: The data in this table are upper bounds
Data source: ACIL Tasman estimates

The major factor behind the findings is that the jobs in the research and development end of the industry where the technologies are developed from the laboratory up are Australian jobs in the emerging technologies. Much of the work and therefore the jobs in the process of developing the existing technologies particularly wind are not Australian jobs. All technologies of course include construction and maintenance jobs.

Export Potential

Given that the global community is highly unlikely to meet future emissions reduction targets and energy demand predictions with the current suite of technologies, Australia can expect to be a major supplier of technology and expertise to the global market in the technologies currently under development.

Any disincentive in the RET for the optimum development of these technologies or that directly impedes the development of these technologies in Australia may result in the development going overseas and in the loss of potential export income and jobs.

The potential benefits of accelerating the development of the emerging technologies and the positive impact that they would bring through export income was not factored into the DCC's consideration of the final legislation.

Integration into the National Energy Market

The accelerated development of the wind industry to be brought about by the RET will require additional investment in transmission infrastructure. This will require a significant investment by the Australian community in transmission infrastructure that will need to be built to deliver the capacity of the generation infrastructure but which will not be delivering the capacity continuously and which is predicted to constrain the emerging technologies. This is not in the national interest as output of the emerging technologies can reasonably be expected to align more with demand profiles and in some cases can be expected to deliver a lower cost outcome than wind once fully developed.

Confidence in Emerging Technologies

Australia has throughout its history had more difficulty than larger markets in raising capital to invest in new technology innovation. This is currently exacerbated by the current global financial environment.

Further, since the release of the exposure draft and the subsequent COAG position on the RET, companies in the emerging technologies sector are also reporting that they are getting concerns from the investment community in regard to the RET. A concerning view is that the Government has chosen wind over the emerging technologies in that it has developed a scheme under which the wind industry is designed to be the 'winner'. This perception is a further barrier to the raising of capital for the emerging technologies.

Recommendations from the Emerging Technologies

The emerging technologies have put a range of options to the formal processes employed by the Department of Climate Change (DCC) to overcome these concerns. These options related mainly to the impact of unlimited banking which is to encourage an over build in the early years of the scheme's operation and an alteration of the phase path to flatten demand in the early years. All our suggestions have been ignored thus far.

Since the release of the exposure draft the geothermal, solar and ocean energy industries have met to develop a range of other options and have held many discussions with Government, Opposition, Green and Independent Members and Senators to discuss our concerns and propose more effective options.

These options are outlined below:

1) Increase and extend the renewable energy target to 30% of electricity in 2025 and require the whole of the additional 10% to be met from emerging renewable technologies;
2) Introduce a new overlapping 'Emerging Renewable Energy Target' starting in 2015 which achieves an additional 10% of electricity RET by 2025 and require the whole of the additional 10% to be met from transformative emerging renewable technologies;
3) Maintain the existing target but require 50% of the scheme in 2020 to be met from transformative emerging renewable technologies.
4) Band the renewable energy technologies into 'existing' and 'emerging' where the existing technologies receive 1 REC for every 1.25MWh of electricity produced and the emerging technologies receive 1 REC for every 0.75MWh of electricity produced.

A definition of emerging technologies is attached.

The contributors to this submission would appreciate the opportunity to jointly discuss their concerns and proposed options at any public hearings to be held by the Committee.

Yours sincerely

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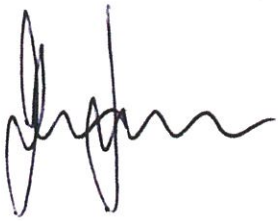

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Definition of Emerging Technologies

- Emerging renewable technologies can be defined as renewable energy technologies that have the potential to provide large volumes of electricity at a high level of year round supply reliability. Using the nomenclature in Section 17 of the *Renewable Energy (Electricity) Act*, "emerging" renewable technologies are wave; tide; ocean; solar concentrator (thermal and photo-voltaic); geothermal-aquifer; EGS (enhanced Geothermal Systems) or 'hot rock' and Geothermal Direct Use. An "emerging" renewable technology will become an "existing" renewable technology once it achieves 500 MWe of installed capacity.

- The United Kingdom's *Renewables Obligation*[1] identifies the following "emerging" technologies as warranting additional support: Wave; Tidal-stream; Advanced biomass gasification; Advanced biomass pyrolysis; Anaerobic biomass Digestion; Dedicated energy crops; Dedicated biomass with Combined Heat and Power; Dedicated energy crops with Combined Heat and Power: Solar photovoltaic; Geothermal; Tidal impoundment - tidal barrage; Tidal impoundment - tidal lagoon; with three other technologies receiving additional but less valuable incentives, namely Offshore wind; Dedicated biomass; Co-firing of energy crops with Combined Heat and Power. The UK has not included solar thermal in its list of emerging technologies for support (not surprisingly given its present climate).

[1] *Renewables Obligation Order 2009*: http://www.opsi.gov.uk/si/si2009/pdf/uksi_20090785_en.pdf (accessed 3 July 2009).