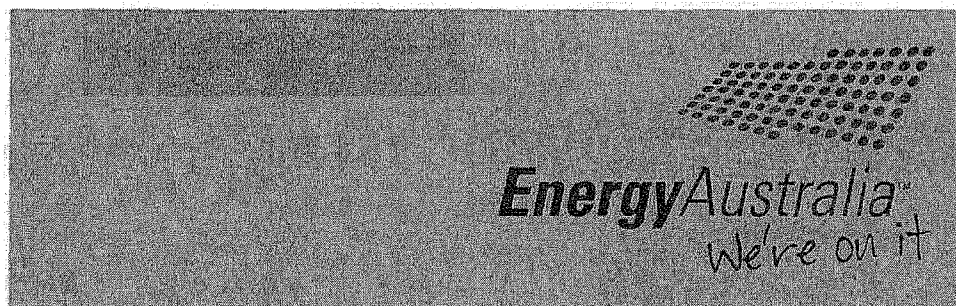


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02 July 2007

The Committee Secretary
House of Representatives Standing Committee
on Industry and Resources
PO Box 6021
Parliament House
CANBERRA ACT 2600

Submission No:112.....

By email: ir.reps@aph.gov.au

Dear Mr Chafer,

Case Study into Renewable Energy in Australia

EnergyAustralia welcomes the opportunity to provide input into the House of Representatives Standing Committee on Industry and Resources (the Committee) case study for examining the relative state of development of the selected renewable energy sectors in Australia.

The renewable energy industry has grown rapidly over the past decade and is becoming an increasingly important part of Australia's low emissions energy mix. In the absence of an appropriate carbon price signal and/or a renewable subsidy the majority of renewable technologies will not be price competitive with coal or natural gas fired generation.

It is anticipated that once implemented an emissions trading scheme will provide additional financial assistance to the renewable generation sector in Australia, making it more attractive for future investors than the status quo. However, if based on the current cost of carbon proposed by many analysts EnergyAustralia believes it alone would not be sufficient to financially support renewable projects to the level required to be commercially viable. The result of this will be that project support in the form of emissions trading and a renewable, MRET type subsidy will be required to maintain and develop a viable renewable energy sector in Australia.

Renewables Technology Cost Curve

EnergyAustralia's experience with the renewable energy sector in Australia, in particular with both wind and solar generation, has clearly shown that contrary to popular belief, increasing demand has led to price increases and not price decreases as would usually be expected.

Wind Generation – Supply Demand

There seems to be a consensus in the media and by non government organisations (NGO), environmental groups and some commentators that the cost of renewable technology, particularly wind, is decreasing in line with economies of scale. In EnergyAustralia's view the reality of the situation is somewhat different. Since mid 2006 a number of wind farm developers have reported that the increased global demand for wind turbines and associated infrastructure is, in fact, driving the price of wind generation upward.

Given this perception, EnergyAustralia believes more accurate costs of wind generation need to be outlined in the various reports and papers that examine the economic impacts of the increasing renewable mix going forward in a carbon constrained future.

Project Delivery

EnergyAustralia has been involved with a number of renewable energy developments as a purchaser of wind, biomass and solar generation and related instruments in Australia.

In the case of wind generation, it is understood that developers currently have lead times of at least 15 months with some reporting delays of up to 3 years in securing turbines. These delays are likely to inhibit the development of wind generation in Australia.

Regulatory Issues

Renewable developments are often owned by non-NEM participants that are required to either gain generation licences in order to operate in the market or, alternatively, enter into a contract to sell the electricity generated to a licensed retailer and work through that retailer to effect a NEMMCO approval for the plant. For the majority of companies the latter is usually the case.

Under this second scenario, the renewable generator requires the contracted retailer, if not the local retailer, to undertake the role of NEMMCO Intermediary on behalf of the generator. EnergyAustralia has undertaken this role with a number of renewable generators, and has found that the process adds further delay and complexity to the transaction. The arrangement additionally causes issues to arise where the retailer must guarantee certain performance levels to NEMMCO on behalf of the generator and at the end of the contract when the purchase arrangement and status as NEMMCO Intermediary lapses.

In promoting renewable generation, it is recommended that the Ministerial Council on Energy (MCE) be requested to examine, via the Australian Energy Regulator (AER), the licensing process for smaller, renewable generators with a view to removing some of the 'red tape' surrounding the current licensing requirements. Any reduction of regulatory requirements should not however be at the expense of appropriate prudential requirements for NEM participants.

Distributed Renewable Generation

Distributed renewable generation is generally currently limited to the PV generation units that households can have installed. To further develop the generation mix, a technology is required that will allow almost every home in Australia to have a small efficient, but affordable generation system. For example, almost 1 million homes with a 1kW generator running at the same time are required to replace one large coal fired generation plant. Whilst subsidies and

grants will assist those households with a large disposable income to make a 'lifestyle choice' of a PV array, it is EnergyAustralia's view that a more affordable generator (for example \$500 - \$1,000/kW) or additional subsidies will be required before a mass market up take of renewable, distributed generation occurs.

The increased level of Federal Government support for a property owner installing solar PV is acknowledged, however EnergyAustralia believes the Federal Government should consider providing additional research and development (R&D) funding to specifically support the development of an affordable renewable generation system for households by Australian industry. EnergyAustralia believes such a device would not only help in reducing Australians' overall greenhouse gas emissions, but may also provide a huge potential export industry for Australia if successful.

Alternatively active support for improving energy efficiency in the home can deliver significant benefits in emission reduction.

Solar

EnergyAustralia owns the largest solar PV generation array in Australia at Singleton NSW. Data on the generation output from the array has been matched with the applicable NEMMCO price data from the same period in order to evaluate the claims that solar is a peaking generation technology and therefore deserves favourable treatment in a legislated buy-back. The results across the year show that the solar output generation profile is rarely coincident with system price peaks – see Appendix 1. When compared to actual pool price for example, the average value of solar generation during 2006 is approximately \$45.10/MWh.

Life Cycle Emissions

There appears to be little published information on the full lifecycle emissions associated with energy developments. If such information was made available the overall greenhouse gas emissions associated with the manufacture/construction of the renewable development could then be better compared against the emissions saved and the emissions associated with competing fossil fuel technologies and nuclear energy.

The overall carbon balance is of particular interest when examining the promotion and subsidy of specific generation technologies and EnergyAustralia believes that an unbiased assessment would be of great assistance to industry stakeholders and the community.

Renewable Baseload Generation

Biomass

EnergyAustralia believes biomass is an existing renewable technology that is currently capable of providing small amounts of baseload electricity. The production of electricity from biomass utilised two main technologies:

1. The combustion of methane produced from the decomposition of organic material used to generate electricity; and
2. The combustion of organic material to create heat and the conversion of heat to electricity.

EnergyAustralia has several contracts with biomass generators that utilise these technologies in the form of landfill gas and bagasse generation. All generation is of a modest scale with all but one being under 10MW capacity.

Whilst EnergyAustralia supports biomass as a source of renewables, it is our policy not to support the production of electricity from the combustion of native forests or forest waste. EnergyAustralia believes similar policies should be considered by the Federal Government in order to make this sector ineligible for subsidies (MRET included).

Similarly, support for renewable generation from urban waste should be based upon the primary objective of minimisation and recycling, then electricity generation. For example, the decomposition of urban effluent is a legitimate source of renewable generation, however EnergyAustralia believes additional incentives could be provided to support sewage treatment that fully recycles the effluent into water suitable for future potable or industrial use rather than being discharged into the ocean.

In examining any biomass source, the overall sustainability of the practice needs to be properly understood. For example, land clearing of native forests to enable bio-fuel crops to be grown would not be considered a sustainable practice and should be discouraged.

Geothermal

An emerging renewable source which appears to have the potential to provide a substantial quantity of baseload electricity in Australia is geothermal generation. The abundant source of geothermal energy in Australia is reported to be 'hot dry rock' granite formations that occur up to several kilometres below the earth's surface. According to some scientists, Australia has some of the best reserves of hot dry rocks in the world, which offer the prospects for a plentiful supply of baseload energy.

Whilst there are a number of organisations in Australia that are in the process of developing the technology, the progress to pilot plant stage appears to be slowed by the proponents' lack of funds and its expensive development costs. In examining low emission technologies for baseload generation, geothermal offers many if not more advantages than clean coal - carbon capture and storage technology and, although supported, geothermal does not receive a commensurate level of R&D funding from the Federal Government. Given the importance of baseload power EnergyAustralia believes further R&D funding for geothermal is warranted in order to further develop this technology in Australia.

Intermittent Renewable Generation

The requirement for scheduled baseload electricity is a recurrent criticism of renewable generation. At this point of time, there is little evidence to suggest that wind, solar and tidal generation have addressed the intermittency issue.

Hydrogen or Other Storage

It is considered feasible that the conversion of electrical energy into a stored and transportable form of potential energy may be achieved via using hydrogen as an intermediary. When the hydrogen fuel is later utilised, the conversion products are energy and water and thus no greenhouse gas emissions are produced.

In this process, electricity is used in an electrolytic reaction to convert water to the base elements of hydrogen and oxygen with the hydrogen being captured and stored. The

stored hydrogen is then, when required, converted back to water with the reaction used to create electricity (for example via a fuel cell).

The important aspect of the hydrogen cycle for renewables is the capability to produce electricity from an intermittent source and store it for later use when the generation is required. The reliability issues raised in the previous section are effectively solved by this means.

It is our understanding that the efficiency of the hydrogen cycle conversion process is not currently developed to the extent to economically generate, store and re-generate any quantity of electricity at this time. Based on its potential to support all intermittent renewable technologies EnergyAustralia believes additional R&D from the Federal Government would be justified.

Long Term & Legacy Issues

When retired from service, old fossil fuel generating plants have given rise to issues of soil contamination and the removal and disposal of dangerous substances such as asbestos. The contamination issue along with the physical structure of a retired fossil fuel generation plant can cause ongoing environmental problems, particularly those sites planned for redevelopment.

While most of the renewable technologies under consideration in the Committee's case study are in their infancy stages of their lifecycle the question of how such sites are to be decommissioned is yet to be determined. In the future renewable generators, like their fossil fuel predecessors will be retired and similar decommissioning issues will begin to arise.

Similar concerns may also exist with wave generation technology in coastal regions.

Tidal & Wave

Given the expanse of the Australian coastline, and clustering of population in the same regions, tidal and wave generation would appear to offer an attractive source of renewable electricity. As indicated in the previous section, there is a balance required between generation and the maintenance of site amenity. For example, tidal technology might require the construction of large offshore concrete dam-like structures to capture and focus the tidal flow to enable generation to take place.

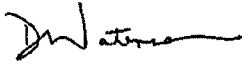
Whilst tidal and wave generation appears not to be a commercially feasible technology at this time, EnergyAustralia would recommend the Federal and State Governments establish clear development guidelines for future wave and tidal generation systems. Ideally, such installations would be best established below the surface rather than be in the form of large industrial like structures on the coastline.

EnergyAustralia recommends that any large scale renewable generation project should be required to address the potential legacy issues of the development as part of the initial development application approval process.

EnergyAustralia believes further developing the renewable energy sectors in Australia is extremely important as a contributor to reducing Australia's greenhouse emissions as well as for improving the long term sustainability of energy supply. EnergyAustralia also believes that additional funding of energy efficiency will aid in delivering the greenhouse benefits being sought by the community. The Federal Government's continued support through the setting of effective policies and programs to underpin the development of the industry is critical to its future success.

Should we be able to provide any further comments I can be contacted on (02) 9269 4921.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'D. Waterson', with a long horizontal flourish extending to the right.

Dave Waterson
Acting Executive General Manager Retail