



Committee Secretary  
Senate Select Committee on Fuel and Energy  
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Canberra ACT 2600  
Australia

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16 July 2009

Dear Sir or Madam,

**Re: Senate Select Committee on Fuel and Energy inquiry.**

Thank you for the opportunity to respond to the Senate Select Committee on Fuel and Energy inquiry into the challenges of ensuring secure, reliable and affordable fuel and energy supplies in an environmentally sustainable way. Hydro Tasmania notes the interim report from the inquiry and welcomes the further opportunity to contribute. A most important aspect of the inquiry from Hydro Tasmania's perspective is the development of Australian climate change policy and its relation to fuel and energy, and has previously made submissions to the Garnaut Review, CPRS Green Paper and CPRS exposure draft legislation.

Hydro Tasmania is the largest renewable energy generator in Australia, and is internationally recognised for its expertise in renewable energy. Hydro Tasmania continues to make a major contribution to the production and growth of renewable energy and reduction of greenhouse gas emissions, including through global wind energy developer Roaring 40s (a joint venture company between Hydro Tasmania and China Light and Power). Hydro Tasmania also has a Consulting business providing expertise internationally and a 51% share in Momentum Energy an accredited Green Power electricity retailer in Victoria.

With the appropriate price signals Hydro Tasmania can make important further contributions to Australia's emission reduction goals and has a number of renewable energy projects waiting to be deployed. This project pipeline includes wind farms, mini-hydro, and system enhancement opportunities. Hydro Tasmania is also involved in proving and deploying new renewable energy solutions such as: energy storage, system integration and diesel replacement solutions. A summary of these development opportunities is presented in Attachment 1.

Hydro Tasmania believes that a portfolio of technologies deployed across a geographically dispersed region, supported by emerging storage solutions and existing large hydro power storage capacity can deliver a significant portion of Australia's energy supply in a safe, secure and environmentally sensitive manner.

Hydro Tasmania supports the Government's commitment to implementing emissions trading through the Carbon Pollution Reduction Scheme (CPRS) and broadly supports the design features outlined in the White Paper and exposure draft legislation. Delaying action will increase the costs of meeting future emissions reduction targets. In recognition of this, Hydro Tasmania supports a scheme design that ensures the full cost of carbon is reflected in all investment decisions as soon as practically possible, providing investment certainty and a long-term emissions reduction pathway for Australia. This should be the primary objective of the CPRS. Attachment 2 provides a more detailed overview of the role and merits of an emissions trading scheme.

The expanded Renewable Energy Target (RET) in parallel with an emissions trading scheme (such as the proposed Carbon Pollution Reduction Scheme (CPRS)) is essential if an increased share of renewable energy in the national electricity generation mix is to be realised. The RET will support the deployment of a mix of least cost renewable energy technologies until the full cost of carbon is reflected in the wholesale electricity market providing long-term investment certainty to project developers. A summary of the role and merits of the RET are in Attachment 3 of this submission

The recent global financial conditions have only placed further emphasis on the need for long term policy support and certainty. The global financial conditions have long term ramifications for energy sector investments, including project financing and debt levels. While this will present further impediments to the accelerated investment in energy supply to deliver demand projections, a strong policy framework and investment incentives will ensure the renewable energy sector remains a priority and favoured sector for attracting international capital. An overview of the policy framework necessary for the renewable energy sector is in Attachment 4.

Hydro Tasmania has identified a number of other critical issues that must be addressed in order to ensure a clean and secure energy supply is achieved into the future. This includes the development of a strategic framework that accelerates the development and deployment of all zero and low emissions energy generation technology. This is integral to Australia's response to climate change and to ensure secure and low carbon energy supplies, and must include:

- addressing the infrastructure and market impediments to delivering strategic outcomes such as Australia's 20% renewable energy target.

Appropriate governance and regulatory frameworks are essential to underpin ongoing investment. This should include:

- an energy price which broadly reflects true costs, including transmission network and system support infrastructure costs;
  - a national approach to transmission planning to ensure inter-regional network development which has access to necessary financial capital, to underpin the growth of new renewable generation; and
  - a strong locational signal to ensure that economically efficient decisions are made in relation to the required investment in new renewable and low-carbon generating plant capacity.
- A comprehensive policy framework is essential to provide the necessary investment signals throughout all phases of the technology development lifecycle for all zero and low emission technologies. This must recognise the importance of:
    - the expanded RET in parallel with an emissions trading scheme.
    - the need for RET to remain in place at least until the prevailing electricity price supports commercialisation of new renewable energy project development; and
    - the imperative to maintain, enhance and upgrade existing renewable energy generation assets. Without these, Australia's carbon abatement challenge will be exacerbated;

We welcome the opportunity to provide the Senate Select Committee with further information about the contents of this submission or any other issues.

Should you have any queries or require further information, please contact Mr Kane Thornton, Senior Advisor Renewable Energy Policy (email: [kane.thornton@hydro.com.au](mailto:kane.thornton@hydro.com.au) or telephone: 03 8628 9735)

Yours faithfully

<original signed>

Andrew Catchpole  
General Manager  
Communications & External Relations

## **Attachment 1: Hydro Tasmania Development Opportunities**

The expanded RET legislation will underpin Hydro Tasmania's investments in a range of projects including modernisation, upgrades and enhancements to existing hydro power stations and new wind developments through Roaring 40s.

These projects include:

- New wind energy projects stemming from Hydro Tasmania's 50% ownership of Australian-based wind developer Roaring 40s include a total construction pipeline of 1000-1500 MW with over 500 MW in operation and under development worth over \$1.5 billion. Next key projects include Waterloo Wind Farm (SA) and 114 MW and Musselroe Wind Farm (TAS) 140 MW.
- Opportunities to increase the level of generation from the current hydro power system and to restore the lost inflows as result of recent drought and possible longer term impacts of climate change. Some of these projects will include new mini-hydro facilities, while others will increase the capacity of the current system as well as improving the efficiency and sustaining the existing generation. Approximately 1000 GWhr worth of projects have been identified in prefeasibility assessments and would cost approximately \$400 million in value over the next 12 years if pursued.
- The Bass Strait Islands Renewable Energy Integration project (\$61 million) which includes an innovative portfolio of new and existing technologies. Hydro Tasmania is seeking assistance for these and other innovative projects through the Government's \$4.5 billion Clean Energy Initiative. This project includes:
  - Biodiesel - convert the diesel engines from conventional diesel to bio-diesel ready
  - Expand wind energy generation, installation of energy storage technology, incorporating thermal Carbon Block storage device and additional vanadium redox chemical battery storage. The carbon block has the potential of meeting both heat and electrical load
  - Demand Side Management (DSM) trials through the use of smart metering throughout the Island communities

The original Mandatory Renewable Energy Target provided the incentive for Hydro Tasmania to accelerate maintenance, refurbishment and modernisation of our hydro assets, and since 2002 Hydro Tasmania has spent approximately \$180 million.

Projects such as these are essential to ensure mitigation of emissions and adaptation to the physical impacts of climate change. It needs to be recognised, however, that many opportunities cannot be fully realised on current energy prices alone. With the right policy framework and market incentives, these projects can make a valuable contribution to Australia's response to climate

change and transitioning Australia to a lower carbon intensive economy while ensuring a secure and diverse energy supply portfolio.

## **Attachment 2: Role of an Emissions Trading Scheme**

By placing a price on carbon emissions, an emissions trading scheme will recognise the environmental externalities of greenhouse gas emissions. This carbon price will act to encourage investment towards low emissions industries and technologies and the substitution of high emissions intensity goods towards low emissions products. Greater investment in zero and low emissions energy should be a clear long term objective and outcome of the emissions trading scheme.

Hydro Tasmania believes that a cap and trade emissions trading scheme is preferable over alternative emissions reduction models. An emissions trading mechanism can provide environmental certainty through the setting of scheme caps and is the most appropriate mechanism by which Australia can achieve its emissions reduction objectives.

Both the (former) Prime Ministerial Task Group on Emissions Trading and the Garnaut Review recognised that investment in research and development of low emissions technologies will not be adequately supported through the introduction of a carbon price alone. Measures complementary to an emissions trading scheme will be needed to incentivise early stage R&D and later deployment and commercialisation of these technologies. The policies and measures necessary to ensure the early stage development of renewable energy technology are discussed in detail in later sections of this submission.

There are a range of other complementary measures that need to be considered to also support renewable energy deployment. These are discussed elsewhere in this submission.

### **Attachment 3: Expanded RET is essential**

RET is a proven and effective market driven policy measure to accelerate the deployment of least cost, commercially proven renewable energy technologies. At present this is predominantly wind energy, with some biomass and hydro power. The expanded RET is also essential to provide a long term signal to emerging technologies and ensures a vibrant market and demand for these technologies once they are technically proven and cost competitive.

RET is essential to support immediate deployment of least cost renewable energy technology until the emissions trading scheme matures and the full cost of carbon is reflected in the wholesale electricity market.

The 20% RET will deliver 45,000GWh (additional 35,500GWh) renewable energy generation by 2020 and result in:

- approximately 26,000 new jobs<sup>1</sup> throughout rural and regional Australia:
  - 2,500 new permanent positions;
  - over 15,000 construction jobs; and
  - more than 8,600 indirect jobs in supporting sectors.
  - Most of the permanent jobs will be created in regional areas, with the bulk occurring in South Australia, New South Wales and Victoria.<sup>2</sup>
- at least \$20 billion<sup>3</sup> invested in new renewable energy projects
- an additional approximately 7,000MW<sup>4</sup> of renewable generation capacity to Australia's energy mix.
- the deployment of a range of proven and emerging technologies. The greatest investment is likely to be in wind energy, geothermal with additional investments in solar and hydro technologies.

The recognition of the significant contribution of existing generation to achieving the 20 per cent target is important, and the scheme design must continue to ensure that this contribution is retained and enhanced where possible.

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<sup>1</sup> MMA Report for the Climate Institute, *Regional Employment and Income Opportunities Provided by Renewable Energy Generation*, May 2009

<sup>2</sup> Ibid

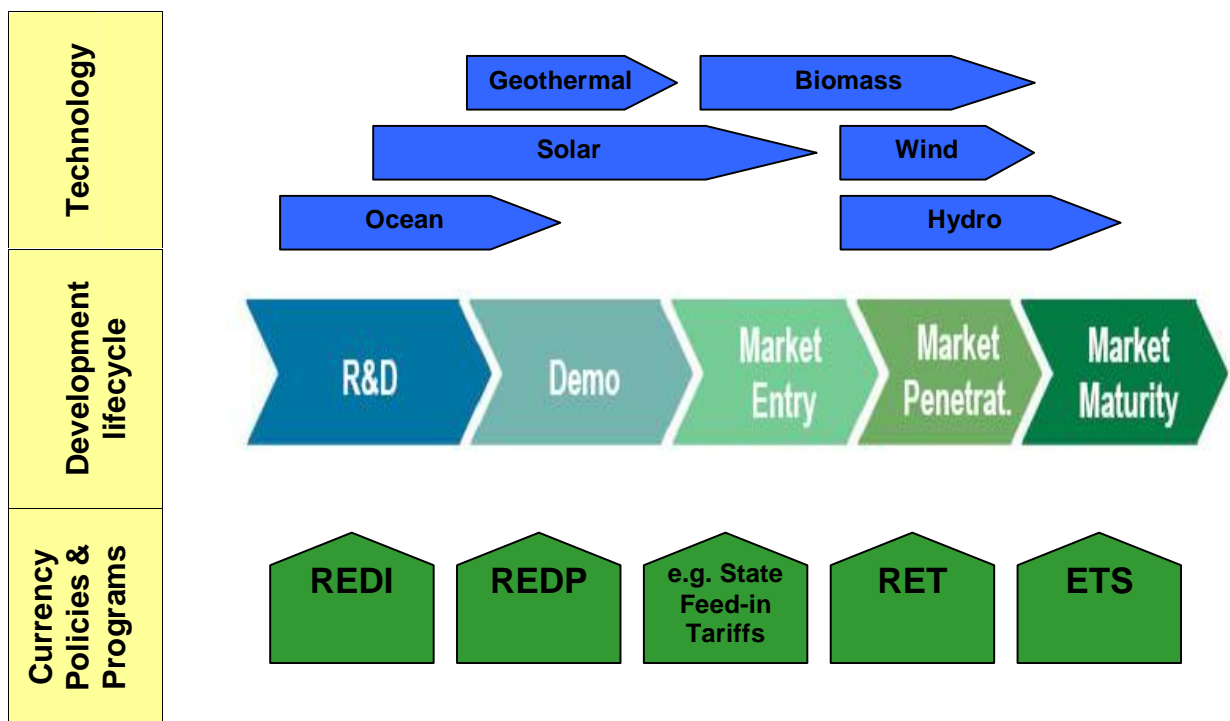
<sup>3</sup> Clean Energy Council, 2009

<sup>4</sup> IES for the CEC, *Modelling the effects of design parameters on the expanded national renewable energy target*, December 2008

## Attachment 4: A comprehensive policy framework

The renewable energy sector requires a comprehensive policy platform to provide necessary incentives for the development of a range of technologies throughout the full technology development lifecycle as depicted in Figure 1 below.

Figure 1 – Comprehensive portfolio of renewable energy policies



This framework must address the range of market failures that impact the development and deployment of renewable energy and ultimately contribute to sub-optimal levels of deployment.

Key market failures were most recently summarised by McLennan Magazine Associates (MMA)<sup>5</sup> who noted five key market failures relating to the diffusion of renewable energy technology:

<sup>5</sup> *Renewable Energy – A Contribution to Australia’s Environmental and Economic Sustainability*, 2006, Renewable Energy Generators of Australia



1. Knowledge spill-overs: A firm adopting technologies creates benefits for other firms while incurring most of the costs of adoption and therefore does not have the incentive to increase those benefits by investing in technological development and diffusion.
2. Adoption externalities: The cost of a new technology to a user may depend on the number of other people who adopt the technology.
3. Learning by doing: Uptake of new technologies typically involves the adopter learning by doing. The benefits of this learning by doing may be passed onto other later adopters, even though they did not compensate the early adopter for the costs incurred and risks taken during the learning by doing process.
4. Network externalities: These externalities occur where costs of a technology may reduce or its benefits increase, as adoption becomes more widespread. For example, the more renewable generation deployed in an isolated region, the lower per unit transmission cost of transmitting energy to load centres.
5. Incomplete information: There is a great deal of uncertainty around the potential outcomes of adopting new technologies which may result in investors being sceptical about the prospects of a technology and demand a premium on return in order to cover the risks of the investment.

MMA also identified a range of other market barriers that impede the deployment of renewable energy. This includes transmission pricing, connection fees and differing rules for new and existing generators.

With the correct policy framework, Australia can significantly increase the level of renewable energy generation as (detailed previously in this submission) revealed in analysis undertaken by the Commonwealth Government<sup>6</sup> :

*“Provided a suitable policy framework is in place, there appears to be no technical or financial impediment to renewables providing about 50 per cent of all Australian electricity demand by 2040”.*

Such a policy framework should to the extent possible, provide streamlined support that both stimulates and avoids the stalling of technology development at any stage.

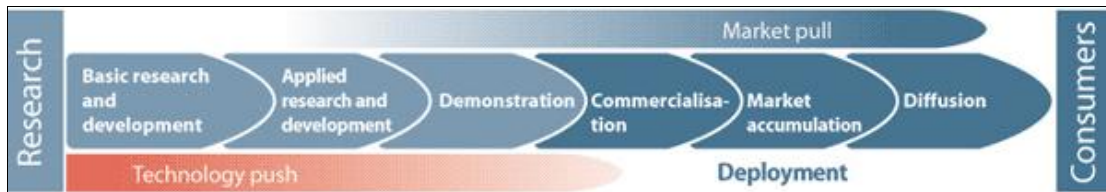
Direct grants have historically been the primary method of encouraging early stage research and development and demonstration while market mechanisms like RET have been effective and favoured for the deployment and commercialisation phases. This (illustrated in Figure 2 below) is often referred to

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<sup>6</sup> *The potential for renewable energy to provide baseload power in Australia*, 2008, Australian Parliamentary Library.

as *Technology Push – Market Pull* and is widely considered to be the most effective framework for successful technology development.

**Figure 2: Steps for successful technologies<sup>7</sup>**



<sup>7</sup> *Report of the Task Group on Emissions Trading*, Prime Ministerial Task Group on Emissions Trading Report, 2007, p129