

The Secretary
Senate Economics Legislation Committee
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CANBERRA ACT 2600

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19 July 2009

Dear Senator,

Inquiry into the Renewable Energy (Electricity) Amendment Bill 2009 and a related bill

Thank you for the opportunity to make a submission to the Inquiry.

Summary

1. WWF submits that the *Renewable Energy (Electricity) Amendment Bill* should be amended so as to ensure the deployment of transformational zero emission electricity generation by 2020. This will lead to the early establishment of transformational clean industries and long-term jobs.
2. This can be achieved by adding a new set of “bands” for an additional 10% of renewable source electricity by 2025 with the bands quarantined for specified transformational renewable technologies¹. The transformational bands should commence in 2015 to allow further development and small-scale deployment. Alternatively the target in the existing Bill could be “banded” to ensure that transformational renewable energy technologies are deployed.
3. WWF submits that the Bill should also be amended to limit the banking of certificates to one year in order to limit the deployment of low cost, rapidly deployable sources of renewable electricity and encourage the deployment of transformational sources of electricity.

Background

4. Geothermal, wave, solar thermal and photovoltaic and other transformational zero emission energy resources are an essential part of a future Australian low carbon economy.
5. Although more costly today due to capital costs, these energy resources are likely to be cheaper than coal, oil and gas by about 2025 because of reducing capital costs, no fuel costs (fuel costs are likely to rise at about 2% per year on average in the Australian market), and no carbon price.

¹ This approach is similar to the *Connecticut Renewables Portfolio Standard Program* in the United States: <http://www.ct.gov/dpuc/cwp/view.asp?a=3354&q=415186> (accessed 03/7/2009).



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6. The Global Financial Crisis has resulted in emerging technology firms having great difficulty raising venture capital and this is hindering their development.
7. Transformational zero emission energy technologies need investment today in commercial demonstration/deployment, training of personnel, access to plant and equipment and infrastructure to ensure swift and orderly large-scale deployment in the future².
8. Although there are many different technologies which can be used to exploit energy resources, the number of energy resources is actually very limited³. The approach proposed in this submission is technology-neutral but would foster the development of low-carbon energy sources of strategic national importance. These energy sources are of strategic national importance because they have the potential to transform the Australian electricity sector quickly.

The recommended approach

9. Amend the *Renewable Energy (Electricity) Act* and its Regulations (RET scheme) to require liable entities to retire a minimum percentage of renewable energy certificates for transformational sources of energy. This approach is similar to the *Connecticut Renewables Portfolio Standard Program*⁴ in the United States which provides that electricity suppliers and distribution companies must meet targets for Classes of renewable energy sources according to a specific annual schedule. The targets can be met through the purchase of certificates in a trading scheme.
10. This could be achieved by adding a new band of an additional 10% of electricity generated (in 2025) quarantined for transformational renewable technologies (see definition below) with the band starting in 2015. Alternatively, a portion of the existing target could be quarantined for transformational technologies.

Definition of transformative technologies

11. The United Kingdom's *Renewables Obligation Order 2009*⁵ 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*

² Climate Risk report for WWF (2008), *Industrial Constraints and Dislocations to Significant Emission Reductions by 2050* (appended to this submission and online at <http://www.climate-risk.com.au/downloads.php> {accessed 19/7/2009}).

³ Essentially three fossil fuels (oil, gas and coal), six renewables (hydro, wind, bioenergy, geothermal, solar, wave/tidal), and nuclear energy from uranium.

⁴ See appended legal advice/drafting instructions by the Environmental Defender's Office dated 3 June 2009. An overview of this program is contained on the Connecticut Department of Public Utility Control website: <http://www.ct.gov/dpuc/cwp/view.asp?a=3354&q=415186> (accessed 03/07/2009).

⁵ http://www.opsi.gov.uk/si/si2009/pdf/uksi_20090785_en.pdf (accessed 03/7/2009).



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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).

12. In the Australian context it is submitted that focus initially be on energy sources which have the potential to provide very large volumes of electricity at a high level of supply reliability year round⁶ and which are abundant in Australia. These are (using the terminology in s17 of the *Renewable Energy (Electricity) Act*⁷): *wave; tide; ocean; solar (thermal and photo-voltaic); geothermal-aquifer; hot dry rock*. Australia has very large wave, geothermal and solar energy resources and Australian companies are amongst the market leaders in all three areas.

Supporting transformative technologies

13. Each of these emerging/transformational technologies requires several years of further demonstration at scale before they can be deployed at scale commercially. To allow this to occur, WWF submits that liable entities under the *Renewable Energy (Electricity) Act* be required to retire a minimum percentage of renewable energy certificates for geothermal, marine and solar electricity generating power stations in and after 2015 and that banking of certificates be limited to one year. Liable entities could be required to either ensure they produce a minimum of their electricity supply from transformational sources in accordance with the minimum percentages or to purchase certificates to meet the requirements if they fall short.
14. For example, a new s40A could be inserted into the Act, together with the amended s40 as proposed by the Bill, in terms such as the following:

Section 40A

- 1. The Regulations may provide that one or more renewable energy sources can be allocated to meet a minimum percentage of the “required GWh of renewable source electricity” in s40.*
- 2. Each liable entity must comply with the minimum percentages allocated in accordance with this section and the Regulations.*

⁶ For example, geothermal will generate electricity 365 days of the year and solar can generate half a day, every day and wave generation can be reliably forecast 5-7 days in advance.

⁷ Section 17 identifies the “renewable energy sources” eligible for support under the Act.



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Renewable energy target extended to 2025 and increased to 25% of electricity in 2025

15. If the renewable energy target was increased to 25% of electricity and extended to 2025, the Regulations could provide as follows:

For the purposes of s40A, the following percentages are to be applied to the required GWh of renewable source electricity received each year.

Year	Non-transformative renewable energy sources as a % of renewable source electricity received	Transformational renewables energy sources as a % of renewable source electricity received			
		Minimum % wave, tide and ocean	Minimum % solar PV	Minimum % solar thermal	Minimum % geothermal aquifer & hot dry rock
2010	100	0.0	0.0	0.0	0.0
2011	100	0.0	0.0	0.0	0.0
2012	100	0.0	0.0	0.0	0.0
2013	100	0.0	0.0	0.0	0.0
2014	100	0.0	0.0	0.0	0.0
2015	95.6	0.0	3.0	0.3	1.2
2016	90.7	0.1	4.9	1.2	3.1
2017	85.2	0.4	6.7	2.4	5.3
2018	79.8	0.8	8.4	3.8	7.3
2019	74.7	1.2	9.8	5.2	9.1
2020	70.1	1.6	11.0	6.5	10.8
2021	66.0	1.8	12.1	7.7	12.3
2022	62.4	2.0	13.1	8.8	13.6
2023	59.2	2.2	14.0	9.9	14.8
2024	56.4	2.3	14.8	10.8	15.7
2025	54.1	2.3	15.5	11.7	16.3



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Banding of existing target

16. If the existing target was maintained, the Regulations could provide as follows:

For the purposes of s40A, the following percentages are to be applied to the required GWh of renewable source electricity received each year.

<i>Year</i>	<i>Non-transformative renewable energy sources as a % of renewable source electricity received</i>	<i>Transformational renewables energy sources as a % of renewable source electricity received</i>			
		<i>Minimum % wave, tide and ocean</i>	<i>Minimum % solar PV</i>	<i>Minimum % solar thermal</i>	<i>Minimum % geothermal aquifer & hot dry rock</i>
<i>2010</i>	<i>100</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
<i>2011</i>	<i>100</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
<i>2012</i>	<i>100</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
<i>2013</i>	<i>100</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
<i>2014</i>	<i>100</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
<i>2015</i>	<i>95.6</i>	<i>0.0</i>	<i>3.0</i>	<i>0.3</i>	<i>1.2</i>
<i>2016</i>	<i>90.7</i>	<i>0.1</i>	<i>4.9</i>	<i>1.2</i>	<i>3.1</i>
<i>2017</i>	<i>85.2</i>	<i>0.4</i>	<i>6.7</i>	<i>2.4</i>	<i>5.3</i>
<i>2018</i>	<i>79.8</i>	<i>0.8</i>	<i>8.4</i>	<i>3.8</i>	<i>7.3</i>
<i>2019</i>	<i>74.7</i>	<i>1.2</i>	<i>9.8</i>	<i>5.2</i>	<i>9.1</i>
<i>2020</i>	<i>70.1</i>	<i>1.6</i>	<i>11.0</i>	<i>6.5</i>	<i>10.8</i>

17. Other changes would be required to the Act and Regulations to reflect the proposed changes. For example, amendments would be required to ensure that the type of renewable energy source is contained on each certificate under the Act, and to enable the determination of the renewable energy shortfall charge in the context of the minimum percentage requirements.

Powers of the Regulator

18. The amendments outlined in this submission would require an obligation on the Regulator to regularly review the minimum percentage figures and/or transformation sources of energy if, for example:

- A renewable energy source becomes commercially viable without support under the Act;
- It is necessary to avoid a shortfall in electricity supply;



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- A new source of viable transformation energy is identified.

19. Reasonable certainty for the industry could be assured by allowing the percentage figures to be amended only five years in advance, as is proposed for the setting of caps under the *Carbon Pollution Reduction Scheme*. In other words, the Regulator would review the percentage requirements every year (or two) and determined if the current figures for five years in advance would achieve the objectives of the legislation (to start the transformation of the Australian electricity sector).

Key related issues

20. **Cost to householders and commercial sector/small energy users:** economic modeling for the existing RET scheme shows that the cost to most electricity users is very small. The changes proposed in this document will increase the cost of the RET scheme in the short term but reduce costs in the medium and long term. In other words, the proposed changes act as a market facilitator. The overall cost of the scheme is reduced by allowing a significant proportion of the target to be met from low cost sources of energy such as wind and biomass.
21. **Cost to large energy users:** large energy users are largely exempt from the RET scheme. In the medium term however Australia's ability to continue to smelt aluminum and undertake other large scale minerals processing is contingent on low priced energy. Carbon capture and storage fossil fuels will not provide low priced energy. With carbon pollution costs considered, only zero fuel, zero emission sources of base-load energy like geothermal and wave and perhaps solar thermal will be able to provide low priced energy.
22. **Unnecessary because CPRS will transform the electricity sector:** modeling of industrial constraints indicates that a carbon price alone will not transform the electricity sector because investor uncertainty, shortages of skilled personnel, plant and equipment and infrastructure will prevent rapid deployment of new technologies⁸. These occur in other energy sectors (eg. oil and gas⁹) but in the case of renewables such shortages will have graver consequences because they will prevent Australia achieving emission reduction targets.
23. **Risk of shortfall in electricity generation (leading to blackouts):** see paragraphs 15 and 16 above.
24. **Waste mine gas:** waste mine gas is not a renewable source and should not be included in the Act. It would be appropriate to make arrangements for existing waste mine gas operations by transitional arrangements under either the CPRS Bill (which could continue the NSW GGAS legislation for a period of five years) or through allocations under the coal industry support stream of the Climate Change Action Fund. In the future coal waste mine gas should be dealt with by conditions of development consents.

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<http://www.climaterisk.com.au/userfiles/image/Download%20Files/wwf/Identification%20of%20industrial%20constraints%20v.20%20with%20schedules%20included.pdf> (accessed 3 July 2009)

⁹ See for example, "Outlook for the price of oil: Bust and boom", *The Economist*, 23 May 2009, 65-67.



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Copies of the Climate Risk report, *Industrial Constraints and Dislocations to Significant Emission Reductions by 2050* and a legal advice/drafting instructions by the Environmental Defender's Office dated 3 June 2009 are appended to this appended to this submission.

Paul Toni
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