Submission to the COAG Working Group on Climate Change and Water re the consultation paper 'Design Options for the Expanded National Renewable Energy Target Scheme'

Ben Rose
26/07/08

Summary of main points

- Eligible sources for the RET should be restricted to electricity generation, as inclusion of other sources will reduce the amount of renewable electricity that is finally installed by 2020.

- The scheme should be restricted to electricity generation. Inclusion of other sources would dilute its effectiveness and generation of electrical energy from fossil fuel sources is more emissions intensive than generation of heat energy directly from those sources.

- Trade exposed industries that are 'emissions inefficient' by world standards due to their use of large amounts of carbon intensive electricity such as the aluminium smelting industry should be included in the RET and ETS schemes. This is likely to mean that some or all aluminium smelting operations will have to move offshore. However that cost is best borne by those industries, with government assistance where appropriate rather than all Australian consumers having to pay for higher carbon and REC prices indefinitely, as would be the case if they were exempted.

- Banking of REC's should be minimized.

- Eligibility should be limited to less than 15 years and be scaled according to the type of renewable energy generation.

- The shortfall charge should be varied with the REC price so that it always exceeds the REC price.

- Approach 2 is the preferred of the two options set out in the Consultation Paper as it would better manage the risk that 45,000 GWh of renewable electricity is not generated in 2020.

Issues from the Consultation Paper are addressed below.

1. Stakeholders' views are sought on possible approaches to setting annual targets and their implications for investment mix, generation profile and cost of the measure.

There should be no reason why a 'flat' allocation for a set amount each year could not be applied, once as the capacity to install appropriate generation is reached. The advantage of reaching a maximum flat rate of allocation of REC's as soon as possible would be that industry installation capacity would be encouraged to grow at a maximum rate.

However, there needs to be flexibility for the State government electricity infrastructure corporations to plan and select appropriate projects as the grid is expanded, to avoid having excess of, say wind power feeding into existing grids.

It is important that annual targets include a mechanism for selecting appropriate mixes of eligible projects. For example, it is likely that there will be a flood of wind proposals as these are the most economic and proven renewable technology. However, it is generally accepted that wind cannot comprise more than about 20% of the electricity generation mix and that renewable base load power will be needed. The most promising sources are:

- biomass - already commercial in Europe but more expensive than wind and requiring forward plantations and infrastructure.
- 'hot rocks' geothermal – pilot power station soon to be constructed at Innamincka, but will require large infrastructure in high voltage power lines to the main grid before being expanded to larger commercial scale. There is good potential for this type of geothermal over much of Australia.

2. Stakeholders' views are sought on the treatment of renewable energy sources and technologies, including the treatment of forest biomass and solar water heaters.

Eligible sources for the RET should be restricted to electricity generation, as inclusion of other sources will reduce the amount of renewable electricity that is finally installed by 2020.

There should be other measures to encourage installation of solar or instantaneous gas water systems, such as banning the high emission storage electric hot water systems and subsidizing the installation of solar – gas systems from the proceeds of the ETS.

Rooftop solar and small scale wind source should be included under the Scheme as they are electricity generation. Dispersed PV on rooftops utilizes existing space, minimized land and supporting structure costs, minimizes transmission losses and provides and avenue for 'mum and dad' investment into renewables. For these reasons, they should be encouraged under the scheme. In 20 years when the time comes for their replacement, economies of scale of production will most likely have reduced the cost considerably. This combined with much higher electricity prices could well make such installations viable in their own right by the end of the RET scheme.

3. Stakeholders' views are sought on approaches to banking of REC's and their potential impacts on investment profile, generation level and technology mix and on the cost of the measure.

The 'unlimited banking' of REC's that is included in current schemes would reduce the capacity to achieve the 20% renewable electricity target by 2020 and should not be allowed. As illustrated in the discussion paper, banking means that there need only be 20% surrendering of REC's by 2020, rather than the intended result, which is 20% actual generation of renewable power by 2020. This is borne out by draft modelling conducted by the WA Office of Energy.

Limited banking would probably be necessary for practical reasons to enable companies to 'smooth' their transaction / generation of REC's. For example up to 20 % over and above their target in any one year could be banked for up to two years.

4. Stakeholders' views are sought on the implications of restricting the eligibility period for projects under the scheme.

Limiting eligibility to a maximum 15 years should be sufficient to provide adequate financial incentives to establish renewal power ventures. It will als0 reduce the cost of the scheme to the taxpayer. The RET scheme is after all only an additional incentive for renewable electricity generation, over and above the carbon cap and trade ETS.

The current MRET provision for creation of REC's for the duration of the scheme is a perverse incentive for 'first cab off the rank' projects which may not be optimally efficient in the long term.

The Scheme needs to recognize the fact that some of the required renewable energy, particularly some of the base load projects such as biomass or geothermal, have very different cost curves to wind. Biomass has an ongoing higher fuel cost whereas wind has only the capital, maintenance and refurbishment cost of the generation infrastructure. Geothermal has high exploration, development and ongoing drilling costs to cover in addition to the capital cost of the plant.

These energy sources are an essential base load component of a sustainable renewable energy mix, rather than a simply a more expensive alternative to the intermittent solar wind, wave and tidal power sources. It will therefore be sensible to provide greater incentives to their projects and one way to do this would be to extend their eligibility to say 15 years compared to say 7 years for wind. Detailed budget modelling should be conducted to determine the eligibility period for different types of projects.

The eligibility period applying to the new MRET scheme should also (suggested above) should also apply to projects built under the previous scheme. Under this scenario, projects predating 1997 would reach the end of their eligibility period by 2012

5. Stakeholders' views are also sought on the treatment of additional generation created, for example, through capacity additions or refurbishment.

Refurbishment to maintain existing renewable energy capacity should obviously not be included in the scheme as their projects have already had their assistance. It should be the responsibility of the generating company to budget for and conduct ongoing refurbishment / replacement of generating components without further assistance.

6. Stakeholders' views are sought on the appropriate level of the shortfall charge, in particular on whether it should be set at a very high level to encourage compliance or at a level only slightly above the maximum expected REC price.

It is logical that the shortfall charge should exceed the REC price by a set percentage, say 5% so that there is no incentive for generators to pay the shortfall charge a cheaper option to purchasing REC's.

The existing situation of a set $40 shortfall charge appears to be from the old mindset of limiting electricity prices for political expediency.

In Western Australia the fixing of artificially low electricity prices for 10 years has had disastrous consequences, with Verve Energy operating and infrastructure deteriorating (there have been several costly fires started by faulty power poles). Low electricity prices are a thing of the past

and Government and power retailers should educate industry and the public that prices must increase to cover carbon cost and that energy efficiency must be their goal. Under 'cap and trade' with CO2 targets, the carbon price must rise to whatever level it takes to induce energy efficiency and switch to renewable energy sources. These sources are inevitably significantly more expensive than fossil fuels.

7. Trade-exposed electricity-intensive industries

It is important that trade-exposed mineral processing industries be included in both the REC and ETS schemes. Such industries comprise at least 10% of Australia's emission and to exclude them would be to shift the cost of emissions cuts to domestic users and the commercial and manufacturing sectors that are much more important to the nation in terms of employment.

Spurious claims are being made by the industry groups, to the effect that if they relocate offshore, emissions will remain the same and merely be produced elsewhere. This is a false premise and the truth is that, for the aluminium industry, CO2 emissions would be reduced by at least 2/3 (see Appendix)

This false premise seems to have been encouraged by the State governments. Previous State governments have unwisely struck ridiculously low electricity prices and generous conditions in government agreement acts to 'woo' these industries to their states under the assumption that coal fired generation has no adverse impacts and would remain cheap indefinitely.

There may be high costs imposed on governments to extricate themselves from the energy provisions in these secret agreement acts. The practice of striking secret 'commercial in confidence' power supply deals by governments must stop and all industry electricity tariffs, including those truck under 'special deals' and government agreements must be made completely transparent and available to the public.

It is inevitable in a carbon constrained that energy intensive trade exposed industries such as aluminium smelting must eventually move away from Australia, because we have no cheap renewable energy options. Governments should concentrate on assisting less energy-intensive manufacturing industries to replace them as soon as possible. Simply excluding them from the ETS and RETS indefinitely may appear an easier solution politically. However if proper economic analysis were conducted it is likely to show that the higher carbon price that will be necessary to attain reduction targets would shift the burden from these industries and their relatively small number of employees to all Australian consumers.

APPENDIX 1

Emissions and carbon cost savings of moving the aluminium industry offshore

Summary

Australia produces 1.9 million tonnes of aluminium (ABS Year Book, 2006), the smelting of which accounted for 32.9 million tonnes CO2e (Greenhouse Challenge Public Statement, 2004. *Australian Alumina Refining Industry*. http://www.aluminium.org.au/Page.php?d=1114) Australia**'s** net greenhouse gas emissions across all sectors totalled 576.0 million tonnes of carbon dioxide equivalent in 2006 (*www.greenhouse.gov.au/inventory*)**.** Aluminium smelting accounts for 5 -6 % of Australia's total emissions. (From these figures and Turton, H. 2002. *'The Aluminium Smelting Industry'*, report for Australia Institute)

If these emissions are not reduced, the additional cost of reduction will fall on domestic consumers and other industries, most of which are more 'jobs intensive' than the aluminium industry. The aluminium industry employees a total of 16,000 people (ABS, 2006), less than half of which would be in smelting.

Emission savings from moving aluminium smelting offshore

Moving industry offshore to a location with electricity emission factors similar to that of the EU would save about 2/3 of the current emissions from smelting (over 21 million tonnes of CO2e), when the emissions from shipping alumina are taken into account

Aluminium smelting in Victoria is probably Australia's most emissions intensive trade exposed industry because it uses very large amounts of CO2 emissions-intensive electricity. In Victoria electricity is mainly generated from brown coal and is amongst the most carbon intensive in the world. Queensland, where other smelters are located, also has a very high electricity emission factor (Table A1 below).

Table A1 – comparison of emissions intensity of electricity generation by country

Country	**2004 electricity EF kg CO2e / kWh***
Korea	443
US	576
Hong Kong, China	723
EU 25	370
Japan	424
Russia	325
Australia – Victoria (2007)	1.31**
Australia – NSW (2007)	1.06**
Australia – Qld (2007)	1.04**

** WRI/WBCSD. 2005. Indirect CO2 Emissions from the Consumption of Purchased Electricity, Heat, and/ or Steam.*
*** DCC, 2007. NGA Factors Workbook*

Smelting aluminium requires about 15 kWh/ kg metal. CO2 emissions from smelting one tonne of aluminium emits exceed the annual emissions from electricity and vehicle use of an average Australian household.

Smelting in Victoria emits about 19.6 kg CO2e per kg smelted. I.e. smelting 1000 tonnes of aluminium generates 19,600 tonnes of CO2e. Aluminium smelting in an EU, African or Asian location with electricity EF < 400 would emit < 6,000 t CO2e per 1000 t of aluminium. Shifting the aluminium smelting operation from Victoria to such a location would save at least 13,000 tonnes CO2e per 1000 tonnes of aluminium produced (at least 9,000 t for aluminium currently smelted in Queensland).

The additional emissions from shipping the alumina rather than aluminium amount to little over 300 t CO2e per 1000 tonnes of aluminium if the alumina were shipped 20,000 km (see below). This is less than 2.5 % of the emissions savings from using cleaner power sources offshore.

Estimation of additional emissions from shipping alumina.

Shipping by dry bulk carrier incurs about 0.2 MJ per tonne km = .2*.078 = .0156 kg CO2e per tonne km (*International Maritime Organization, 2000. Study of Greenhouse Gas Emissions from Ships -Appendices)*

Shipping 1000 t for 20,000 km incurs 20000*1000*.0156 = 312,000 kg = 312 t CO2e

From the simple stoichiometry of Al_2O_3, the weight of alumina is (2(13) +3(8))/2(13) = 50/26 = 1.92 times that of aluminium.

Two thousand tonnes of alumina shipped 20,000 km by bulk carrier would incur about twice the emissions of shipping 1000 tonnes as aluminium. From the calculations above an additional 312 t CO2e per 1000 t would be incurred by shipping alumina rather than aluminium,

APPENDIX 2

About the Author

The author is an environmental consultant and CO2 / energy auditor, with 3 years experience in high school teaching, 16 years experience in agricultural extension and 5 years' consulting. Recently, he has conducted 16 CO2 / energy audits for commercial companies from small offices to a large mine. Of the 16 commercial audits conducted by the Author, an average more than 20% cuts were identified as easily achievable by energy efficiencies using existing technology. In the area of fleet vehicles and travel, the 'no cost' reductions identified were even higher.

He has developed educational materials and an emissions calculator for direct and indirect emissions of households and small businesses, now being used by the WA State Department of Planning and Infrastructure and has been giving talks on global warming Australia's CO2 emissions since 2003. GHG-Energy-Calc can be downloaded from www.ghgenergycalc.com.au.

He has also been consulting to Carbon Neutral Ltd on forest sink CO2 sequestration, Greenhouse Friendly accreditation and the development of a Carbon Reduced certification for businesses. He sits on the executive committee of the WA Conservation Council and is a member of Sustainable Transport Coalition of WA. However this submission does not necessarily reflect the policies of these bodies and is not made on behalf of either of these organizations. The views expressed in this submission are those of the Author.