Senate Select Committee on Wind Turbines
Questions on notice,
Public hearing, 19 May 2015, Parliament House, Canberra
Response to written questions on notice for Dr Alan Moran – Regulation Economics
from Senator Anne Urquhart

1. In your testimony, you said that work done on fossil fuel subsidies by Treasury has indicated any subsidies are trivial (Hansard, p.24). Can you direct the committee to this work?

The following reference http://www.oecd.org/site/tadffss/AUSdata.xls to an OECD review that Treasury oversights shows no support from Australia for coal other than for "clean coal". If there are doubts about this you might seek Treasury's advice directly.

2. In your submission you said that Australian electricity was among the cheapest in the world a decade ago, but it is now among the most expensive. The committee has heard that tens of billions of dollars' worth of 'gold plating' of poles and wires has contributed 74% of this growth. We have also heard that the RET and green schemes contribute between two and five per cent to electricity bills. Is this accurate? If not, can you direct the committee to independent research which shows otherwise?

This is not a controversial issue and is clouded only because low credibility bodies like the Australia Institute make up data to the contrary. The two to five per cent cost figure is inaccurate. See Chart 5 of my submission (copied below) which reproduces official data from the AEMC.

Chart 5 Cost Estimates in Victoria's electricity supply

		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**4.59**	**2.07**	**2.07**	**2.22**
Carbon	c/kWh	2.29	0.00	0.00	0.00
LRET	c/kWh	0.59	0.64	0.77	0.96
SRES	c/kWh	0.64	0.44	0.43	0.44
Feed in Tariff schemes	c/kWh	0.86	0.84	0.83	0.82
Victorian Energy Efficiency Target	c/kWh	0.21	0.15	0.04	0.00
Regulated networks	**c/kWh**	**11.64**	**12.50**	**13.07**	**13.09**
Transmission	c/kWh	1.35	1.36	1.36	1.36
Distribution	c/kWh	10.29	11.15	11.71	11.72
Competitive market Wholesale and retail	**c/kWh**	**12.59**	**12.67**	**12.72**	**12.98**
Total	**c/kWh**	**28.82**	**27.24**	**27.86**	**28.29**

3. In your testimony, you suggested the impacts of the RET to lower electricity prices for consumers can only be transitory (Hansard, p.25). Can you explain what you mean by this? Why would it be 'transitory' and can you direct the committee to any independent modelling which shows electricity prices will increase in the long-term as a direct result of the RET?

It is basic economic analysis that an impost on a business is passed onto consumers unless the business is expropriated or becomes bankrupt, not events that any responsible politician would seek to promote. If the impost and its effect could be forced to be taken from profits, this would result in lower returns for shareholders, a reduced incentive to save and invest and lower living standards.

There may be a transitory period during which prices collapse due to an unanticipated increase in supply or decrease in demand. But if the increased supply is created by a subsidy that results in established supply being forced out of the market, new investment for the established supply will not be made.

A permanent subsidy to renewables paid directly by taxpayers could be designed so that it brought about no increase in the underlying market price. This would need to be set at the difference between the long run marginal cost of commercially available power and the long run marginal cost of the cheapest form of renewable energy that is eligible for the subsidy. And for it to have no effect on prices it would need to be in the form of a direct subsidy from taxpayers rather than, as is largely the case at present, the subsidy coming about by regulatory requirements that retailers include specific proportions of designated renewable energy.

If the subsidised renewables were to comprise 20 per cent of demand and their cost was $100 per MWh compared to $40 per MWh for commercially available electricity they would need a subsidy from ratepayers of $60 per MWh in order meet this share. At a 20 per cent market share, this would raise the aggregate (wholesale) cost of electricity by ((60/40)*0.2) 24 per cent. This is arithmetical and no modelling is required to demonstrate it.

The increased taxation to pay for the subsidy would also need to be carefully managed, unless the share of renewables was small. That is because any but a small share would require increased costs overall due to the unpredictable nature of (wind and solar) renewable power and the consequent need for increased back-up.

4. In your testimony, you mentioned that the RET would have a $30 to $50 million (sic – actually I said $30-50 billion) negative impact on the economy. Can you provide a specific breakdown on where these impacts would be felt in the new RET deal given they aren't being worn by consumers or the federal budget? How much of the $30 to $50 million will come from electricity companies' profits as a result of lower wholesale electricity prices? Does this figure factor in the billions of dollars of investment and many thousands of jobs that will be created under the RET?

The $30 to $50 billion negative impact on the economy is derived from the independent analyses conducted for the Warburton Review into renewables.

It is untrue to suggest the new RET deal has costs that are not felt by either consumers of the federal budget. Renewable power as specified under the RET receives a subsidy from the consumer and also, in some cases, from the taxpayer. If it did not do so there would be no need for the RET to force consumers to buy this expensive source of energy.

Investment that the RET brings about is investment in assets that yield very low returns. It is wasted investment in facilities that require consumers to pay approximately two and a half times the price for its output compared to that available commercially.

Similarly, any jobs created as a result of the RET are unproductive jobs. Such employment is akin to that fostered by industry tariffs prior to the reforms of the Hawke Government where, for example, jobs in the tariff protected clothing sector produced output that was more than twice the cost of that available from imports. The jobs created in this way are more than offset by jobs destroyed as a result of the excess costs they generate. The study cited in my submission undertaken by Gabriel Calzada Alverez in Spain indicates in that case there were nine jobs lost as a result of every four created[1].

5. The committee has heard that spinning reserves have always been a standing feature of the national electricity grid and that it has not increased with the growth in wind power. Would you agree with this? If not, can you direct the committee to any work which shows the aggregate amount of spinning reserves has increased significantly as a result of greater wind energy in the Australian grid?

Spinning reserve is vital for electricity. The less reliable the generating units are the more such reserve is required.

Where wind has a small share its backup costs are trivial, especially in those systems with lots of fast start available. Ontario with a 24 per cent hydro share is a case in point. However, where fast start generation is scarce or where it can command a high price because it can be sold at a premium in other grids its use comes at some cost.

The UK Energy Research Centre[2] estimate where wind is only 2.5 per cent of generation, back up of only 6 per cent is necessary. At 15 per cent wind (in the UK at present it is 9.3 per cent) 18 per cent back up is necessary.

Wind generation share (%)	Backup needed (%)
2.5	6
5	12
15	18

The UK study further estimated that at a 15 per cent wind share, back-up costs about $11 per MWh, adding about 9 per cent to the UK costs of wind.

In Australia, where wind accounts for about 4 per cent of generation, but where there is little hydro, to avoid large losses (prices can reach $13,500 per MWh in the Australian National Electricity Market) traders usually buy a $300 per MWh insurance cap. The price is market determined but averages around $12 per MWh which is therefore the cost of ensuring reliability at an acceptable cost.

[1] http://instituteforenergyresearch.org/wp-content/uploads/2015/05/090327-employment-public-aid-renewable.pdf

[2] http://www.uwig.org/0604_Intermittency_report_final.pdf

6. Recent ANU research undertaken by Professor Jotzo has found that Australia could achieve both zero net emissions and a 100 per cent renewable energy mix by 2050 – and both at a relatively low cost. This seems in contradiction your testimony. Do you have concerns with the methodology, assumptions or findings of this research?

I am not familiar with Professor Jotzo's work. If you are interested in having me examine it, I would readily accept a commission to do so. Projections of the nature that you summarize are invariably based on forecasts of technological advance which are conjectural and sometimes verging upon science fiction.

7. You said in your testimony that the marginal costs of wind energy are $12 per megawatt hour. Can you direct the committee to the source for this figure? Are you aware of what the comparative megawatt hour cost is for coal generation? If so, could you direct the committee to this information?

AEMO, collects a considerable amount of data of this nature.
See http://www.aemo.com.au/Electricity/Planning/Related-Information/Planning-Assumptions

In the Fuel and Technology Cost Review Report in that data set, the latest information used by AEMO (and compiled by ACiL Allen) puts the variable operating and maintenance costs of wind at $13 per MWh, black coal at $4 per MWh and brown coal at $5 per MWh

I suggest you seek more information from AEMO if you are interested in pursuing the matter in detail.