Senate Committee on Wind Turbines: supplementary information following hearings on 19 May 2015

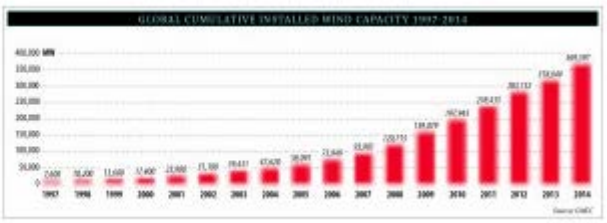
A number of issues arose from the hearings of 19 May largely as a result of the evidence given by Mr Campbell of the Australia Institute

1. Mr Campbell suggested that I had misled the committee by suggesting the growth in new capacity appears to be decelerating.

Here is the data on global wind installed capacity and cumulative installed capacity. It would appear that the increase has decelerated over recent years. Whether its growth will resume is a matter of conjecture.

Annual installed global capacity 1996-2014

Global Cumulative Installed Capacity 1997-2014



2. Mr Campbell invokes the authority of the economics profession in suggesting the cost of a good is its "levelised cost which includes the capital operating expenditure over the life of the asset". This terminology refers to the levelised cost of energy components (LCOE). He argues that I use that concept for wind but not coal.

He is confused because he does not understand what I am referring to when I compare different costs. Let me clarify.

By different costs I am referring to the costs that a new supplier could profitably sell a good in the market place after having covered all costs. The actual price is one determined by supply and demand. It is irrelevant that, for example, some car models are produced in a plant that was built 15 years ago and is fully amortised in an accountancy sense whereas rival model s are from brand new plants. The electricity costs referred to in my Chart 4 are for new plant under consideration by entrepreneurs as of today. The latest large scale coal power station built in Australia was Kogan Creek commissioned in 2007. Only the owners would know what price they hoped to receive for their output over the years but the spot price during the six years to 2007 was less than $30 per

MWh. The prices received by power stations are related to the spot market price, with a premium of about 10 per cent.

The material which CSIRO prepared and to which Mr Campbell referred is data based on power stations that it believes will be required in the future. That same material is also found in the BREE report (prepared in cooperation with CSIRO), *Australian Energy Technology Assessment 2012*. That report examines the costs of new technologies. Table 5.2.1 includes the following estimates

Table 5.2.1: LCOE Comparison (A$/MWh) with other Australian studies, current estimates[1]

TECHNOLOGY	AETA 2012	AETA (excl. CO2 price)	ACIL Tasman 2011	EPRI 2010
IGCC black coal	(176–189)	(125–136)	107 (96–118)	130
IGCC black coal with CCS	(193–253)	(183–243)	196.5 (151–242)	213
Supercritical pulverised brown coal	162	95	71.5 (66–77)	91
Supercritical pulverised brown coal with CCS	205	192	144 (134–154)	191
Supercritical pulverised black coal	(135–145)	(84–94)	64 (56–72)	78
Supercritical pulverised black coal with CCS	(162–205)	(153–196)	176 (130–222)	167
Oxy combustion pulverised black coal with CCS	(168–215)	(168–215)	171 (127–215)	166

It should be noted that all but one of these (the fifth in the table - supercritical pulverised coal) are speculative technologies, not presently in commercial operation anywhere in the world and are designed for operation in a regime where carbon emissions will be very heavily penalised. CCS is a technology that is not only unproven but may be infeasible.

The actual cost of coal based plant is well established and fairly standard across the world: many have recently been commissioned or are under construction in India, China and Indonesia. Australia has an advantage in terms of fuel cost over almost any other location in the world and this would bring the price required for profitable operations to around $40 per MWh.

The UMPNER report[1] in 2006 put the LCOE costs of coal at $28-38 per MWh (p.56), though the price estimate was $64-108 if CCS were to be incorporated. Since then costs have not changed markedly though the capital costs vary with steel prices and demand at a particular juncture. The above table put supercritical pulverised coal costs (the technology used by the latest Australian power stations at Millmerran, 2002 and Kogan Creek 2007) at $56-72. Prices would now be much lower.

Wind is competitive with fossil fuels, as Mr Campbell says, but only if wind generators' owners expect to receive a subsidy of $60 per MWh which brings wind's costs into line with that of coal. Without the subsidy nobody would build a commercial wind facility.

Mr Campbell says that nobody is proposing to build new coal plants in Australia at the present time. There are a number of reasons why this is the case, one being that demand is falling partly as a result of higher prices that the renewable program requires. This is compounded by political risk caused by agitation against the use of coal.

[1] http://www.ansto.gov.au/__data/assets/pdf_file/0005/38975/Umpner_report_2006.pdf

It is true that the "must run" nature of wind will depress prices considerably but this is not a genuine, sustainable benefit to consumers. I would refer the Committee to the recently released paper *Sundown, Sunrise* by the Grattan Institute (a strong supporter of renewable energy) which says (p.16) in relation to solar power, that the price depression "is a short term financial transfer from existing generators to retailers …. In economic terms, society as a whole does not benefit". It is always possible for governments to flood a market with subsidised product thereby lowering the price of all product offerings but this is not sustainable and, indeed, undermines market efficiency.

3. Mr Campbell suggests my own figures on the costs of the RET and green schemes are in accord with those he cites at 2-5 per cent of total costs.

In fact the data I use is sourced from the AEMC and adds 8 per cent to the average household's costs. That figure will rise as the government forces a higher share of renewables into the total supply and may rise much further if the price increases from its current level of $43 per MWh to its maximum of over $90 per MWh.