Submission No: 24

The House of Representatives Standing Committee on Industry and Resources
Inquiry on the Development of the Non-Fossil Fuel Energy Industry in Australia

Dear Committee Members

My Name is Craig Falconer and I would like to make a submission to you regarding the use of "Wind" Energy Facilities in Australia. I would like to state from the start that I am fully supportive and appluad any viable,effective, reliable and practical form of electricity generation.

I am afraid that after researching and being involved with the wind industry for over five years I cannont support its development as a viable alternative to conventional forms of power generation being, Coal or Gas Fired Power Stations nor as part of a "mix" in electricity generation and I am sure that if this committee is to thoroughly research and learn as much as it possibly can about wind energy facilities, that it will come to the same conclusion.

I would now like to comment on the Terms of Reference
Economically Viable Electricity Generation, Storage and Transmission.

Viable Electricity Generation

When it comes to wind energy, we only have to look at the overseas experience, Denmark and Germany who are the so called "world leaders" in this form of electricity production have both had huge economical, storage and transmission problems.

In a report from E.ON Netz - Wind Year 2003 - The German power company that controlled just under 44% of Germany's entire wind power capacity some 6,250 MW stated that :
- The average fed-in capacity was less than 16% of the wind power capacity installed in the yearly average.

and

- Over half the year the wind power fed-in was less than 11% of the wind power capacity installed in the yearly average.

At the start of 2003 Germany 14,000 wind turbines that produced just over 2% of Germany's electricity, of which utilities were forced to buy, sometimes up to 10 times the price of conventional power, which intern was past on to the end users. Not only is it unreliable but the economy has suffered because of the high price of power. Even some government officials now state that the push for the growth in the wind industry has had a negative effect on the country as a whole with other industries being forced to move their manufacturing operations to other countries that have lower energy costs.

Denmark is also in a similair position even though, wind may produce 19% of their energy, only 4% is actually used in Denmark. This is because the wind does not always blow at the correct speeds for power to be produced at the time when demand is at its highest. Most of the power produced by Demarks wind power is sold at below cost to Germany and Sweden as they are connected to the European grid system. This point was confirmed in the *Utilities Journal in July 2004 when David J White wrote "Danish Wind : Too Good To Be True?"* The problem with the antiquated technology is that the power it generates cannot be stored so it needs to be used by the grid straight away, this forces other conventional power suppliers to "ramp back" so the grid can continue to operate.

In February 2003 the output of the 6,000 turbines in Denmark was 0 thats right zero for the whole month. It is not only low winds that stop the wind turbines from operating, the strong ones do also. According to The Wall Street Journal Europe, the Copenhagen newspaper "Politiken"reported

that wind only met 1.7% of Denmark's total demand in 1999.

Denmark has continually failed with it production of electricity from wind facilities, in 2000 they imported more electricity than they exported. All Dainish electricity bills have a subsidy attached that supports the private companies building the wind towers, which makes the electricity costs for the consumer the highest in Europe

Transmission/Costs

Another major problem with wind is that the there is only limited forecasting for wind power infeed. This is a major hurdle for the wind industry and has caused serious faults and even failure of the supply in countries like the USA, Italy, Sweden, Spain, Germany and Denmark. The more wind energy facilities there are the greater the demands placed on control as well as bringing about rising grid costs. One needs to remember that most grid sytems start from a power station but wind energy facilities are tapping directly in the grid causing added pressure to a system that it was not designed for.

The problem with wind turbines is that they they cannot suppy 100% of their rate capacity over the year. As stated earlier German wind energy facilities only supply 16% of their rated capacity, yet here in Victoria the Bracks government has placed a rating capacity of 35%. This extraordinary figure was based on computer modelling conducted by SEAV, at the time Victoria had on one wind energy facility in the State. All information for overseas was ignored and so far the capacity rating set by the Victorian government has not been reached. When questioned at the Dollar Planning Panel Hearing for the proposed Dollar wind farm in 2005, Ms Wheatley from SEAV could not tell the panel members how much electricity was being produced by the wind energy facilities in Victoria or what their rated capacity was.

If we talk about the Dollar proposal being a 79.2MW facility and use the Victorian governments rating of 35% the facility becomes a 27.72MW facility, but if we us the South Australian government capacity rating of 8% the facility is only a mere 6.3MW . The South Australian report was conducted by the SA Electricity Supply Industry Planning Council and concluded that the rating capacity could only be considered as being 8% firm. This figure is also close to the figures that wind energy designers Garrad Hassan come up with for the Portland wind facility. Mr White from Garrad Hassan produced figures for the panel hearing stated that for 58.7% of the time the rated capacity would be 25% or less and that for 34.1% of the time the rated capacity would be 10% or less and for only 7.2% of the time would the rated capacity be above 35%

In Victoria 87% of the State 's electricity supply comes from brown coal producers and they are the lowest cost producers in Australia. Because of the intermittent nature of wind it can never be used as a form of "base load" power. The current grid system that is in place in Australia is managed by NEMMCO as I am sure the committee is aware and the managing of the grid requires the need for a reliable source of "spinning reserve" at all times, wind energy will always require some form of back up generation.

The intermittent nature of wind generation means that it cannont compete on a cost basis alone with any of the fossil fuel providers. If the wind is not blowing at times of peak demand then the supplier cannot obtain the higher price for supply. This ittermitancy also translates into higher electricity spot price volatility. Modelling carried out by Origin Energy on the impact of 1000 MW of wind generation on the South Australian electricity market indicates that 1 per cent of the time 250 MW of supply could be lost within the half hour and 390MW within the hour which, this in Origin's view, would significantly increase electricity spot price volatility.

Preliminary modelling conducted by Origin on the impact of wind energy facilities in Victoria could see spot prices increase by between $2 and $5/MWh as a result of a similar level of

variability occurring. The cost of additional financial risk associated with greater electricity spot price volatility will ultimately be borne by energy consumers. This the same as the overseas experience for the generation of wind power.

As for any country the unreliable capacity requires additional generation support

Additional wind capacity in Australia will require two forms of generation support because of the intermittent nature of the underlying energy source:

- *variability outside 5 minute dispatch intervals* - gas turbine generation, which can take between 15 and 30 minutes to reach maximum output, is either required to run to adjust for wind generation variability or to stand idle as back up support[6]; and

- *variability inside 5 minute dispatch intervals* - ancillary services generation is required, sometimes at significant extra cost, to cater for wind generation variability.

The costs of both forms of generation support are ultimately borne by energy consumers. Moreover, these costs are magnified as greater amounts of wind generation are connected to the system and more generation support is required.[7] This is compounded by inter-connector constraints from time to time as more generation support is required from other regions in the NEM.

The above was confirmed at the Victorian governments panel hearing for the proposed Dollar wind energy facility in South Gippsland Victoria in 2005. Mr Graeme White from wind energy designers Garrad Hassan stated that "even if Victoria had 20,000 wind turbines the coal and gas fired power stations would still need to be operating in spinning reserve ready for when the wind stopped". This quote and the failure of wind energy facilities anywhere around the world to shut down any conventional form of power station is proof that wind energy is not the anwser to Australia's engery needs.

Other reports that have been conducted on wind energy facilities show that the total cost of meeting customer electricity demand contributes to an increase as the penetratrion of wind generation increases. this is largely due to the retention or installation of surplus conventional capacity, for system security reasons and the operation of all installed conventional capacity in a "spinning reserve" manner. In countries such as Ireland by installing upto 1000 MW of wind energy would mean a 15% increase in costs of generation and a 1500MW would mean a 24% increase over a no wind generation case. These figures are the same the world over and the economical outcome to Australia will be damning to maintaining our competitiveness in the foreign market.

If the majority of additional renewable generation is from highly intermittent sources, such as wind, then the effect on the security of Australia's energy power supplies will almost certainty be negative.

One also needs to look at wind being used if a "Carbon Trading Scheme" comes into place. Although wind its self maybe free from CO2 emissions, wind generation brings with it a range of additional costs that make it less efficient overall, despite its zero emission intensity of carbon, than other generation options. The fact that it still requires a conventional power station to be running in reserve creates a greater problem. With Victoria and for that matter Australia being coal reliant, the more wind energy penetration will have an ever increasing impact on the performance of these power stations. These impacts will be adverse in nature, reducing the efficiency and increasing the operational demands on the conventional plants. Therefore increasing CO2 emissions that will require more trading and costs which will no doubt be past on

to the end user.

Power Used in Generating
The committee will also need to know that even though they may produce electricity, they also use electricity themselves. It may be that each turbine consumes 50% of its rated capacity and if so the energy facility - which may only produce as little as 16% of it rated capacity - would be using more power than it produces and sales.
The following functions all reduce the amount of electricity that a wind energy facility can place in the grid.
- Yaw mechanism (to keep the blade perpendicular to the wind; also to untwist the electrical cables in the tower when necessay) -- the nacelle (turbine housing) and blades together weigh over 90 tons on a GE 1.5 MW turbine

- Blade pitch control (to keep the rotors spinning at a regular rate)

- Lights, controllers, communication, sensors, metering, data collection, etc.

- Using the generator as a motor (when the wind speed is to low or for show if an important site tour is planned)

- Heating and dehumidifying the nacelle

- Oil heater and pump, - cooler in gearbox

- hydraulic brake

and

- magnetizing the stator -- the asynchronous (or induction) generators used in most large grid connected turbines, require a "large" amount of continuous electricity from the grid, both to keep the generator ready when the wind is not blowing and for the generator to function when the blades are turning.

Other Key Issues

I would like the committee to look at other issue that are involved with wind energy facilities as they also have a economic impact on the communities and regions that they are sited or proposed for.
I have lived and attended public meetings in areas where wind installation are and have been proposed for, at many of these I have been a key speaker. I have also been to Parliament House to attend a Round Table Discussion on a National Code for Wind Farms in September of last year as well as participating in panel hearings in Victoria and therefore believe that I have first hand knowledge of how a wind energy facility affects local and regional communities.

Wind generation has attracted significant and mixed attention from communities affected by wind turbine installations. The committee will need to look at these issue very closely when making their report. Wind energy facilities have had an adverse impact on the following :

Flora and Fauna - threatened endangered and vulnerable species - migratory routes - CAMBA & JAMBA Treaty -EPBC and FFG Act

Visual Amenity -is an issue that wind generation is more likely to attract than other generation investments (although community approval is an important part of all generation investments).

Landscape - significance - local - state - national

Noise - reports from the Toora installation show that they are operating above the legal nightime allowance for upto 92% of the time

Heritage - significance - local -state- national

Tourism - impact - detrimental / increase

Regional Economic Impact - property values - Homes that border the Toora wef have had a 40% drop in property prices while the rest of the shire increased - job creation- One part time lawn mowing position has become available to a local resident at Toora

Social Issues - communities/families divided - CFA SES - football/netball and other sporting clubs that are the backbone of rural communities affected

I wish to thank the committee for allowing me to make this submission on this matter and hope that it has been of use. I can supply a fully copy of any of the reports that I have used information from if the committee would like. I also have detailed information on the above listed topics in full detail relating to the Toora wef and the proposed Dollar and approved Macarthur wefs as well as a nomination to the EPBC act Threatening Process - Wind Turbines that I submitted in 2006

Yours Faithfully

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