

Submission No: 147

Submission to the House of Representatives
Renewable Energy in Australia
Inquiry into Developing Australia's Non-fossil fuel energy Industry



Maimed Wedge-tailed Eagle at the Starfish Hill wind farm. One of Many Eagles, other birds and bats killed at wind farms in Australia by an industry that purports to be 'green'.

15 June 2007
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1.0 Introduction

The use of renewable energy is not new although in recent years growth in that energy sector has resulted in rapid technological advancements to harness larger quantities of energy. This inquiry provides a timely opportunity to reflect on the consequences of that growth. Because the renewable energy sector is still reliant on taxpayer and consumer subsidies it is appropriate that the parliament undertake the inquiry and then take action ensure the desired outcomes are achieved.

The introduction of the Federal Government's 'Mandated Renewable Energy Target' was intended to 'seed' the creation of new renewable energy technologies. The result of this industry assistance has been further growth and development in solar technology and its use but in addition a wind industry has been transplanted into Australia to profit from the assistance mechanisms. Solar technology and application has proceeded for many years and has a high degree of community acceptance whereas the wind industry and wind farms are not. Given that wind power is not widely accepted, and has many negative environmental effects, it is worth examining whether or not it is worth the public continuing to subsidise this industry.

1.1 The Reasoning for a Wind Industry

The wind industry argues that 'global warming' is of such concern that their industry, because it is to combat 'global warming', needs to be facilitated without delay. Some governments agree with this view and install mandated schemes and draft 'guidelines' to facilitate its development.

The intention is that wind farms, electrical power generation plants, will reduce 'global warming' because they replace the supply of electricity generated by coal fired, CO₂ producing power plants. Clusters of wind turbines are to be placed in windy locations, generally in rural areas and away from cities, to generate electricity which is transmitted to the grid and distributed for use by industry and households.

The wind does not blow all of the time and its speed varies and to account for this state governments and the industry claim that, over time, an average output of 30-35% of installed, maximum, capacity will be achieved. This is the basis for determining the cost of wind power per kilowatt hour and how many households can be supplied

It is also claimed that each kilowatt of wind generated electricity will displace a kilowatt of coal generated electricity and this is used to determine how much CO₂ can be saved.

The claimed reduction of CO₂ resulting from wind generated power is stated as being between 1.0 and 1.4 tonnes of CO₂ saved per Mwh per annum (or kt CO₂ per Gwh per annum).

1.2 Matters that Need to be Considered

A number of wind farms have been approved, constructed and operated in Australia for well in excess of one year so it is now possible to assess the validity of the wind industry claims, that is do they:

- produce as much electricity as claimed by proponents preceding and post approval?
- supply the number of households they claim? and
- reduce greenhouse gases as much as claimed?

The two wind farms in South Gippsland are Toora, the first to be constructed and operated, and Wonthaggi, more recently commissioned provide useful information about the credibility of this industry. This submission contains information readily available to members of the public and careful evaluation of it reveals there is a need for a more detailed investigation into the claims made by the operators of these two wind farms and their performance.

The two other proposals for South Gippsland are the recently approved Bald Hills wind farm, a 'controlled action' and the Dollar wind farm also a 'controlled action' but not submitted to the Federal Government for approval.

Relevant, but less detailed, information about other wind farms in other regions is also included.

2.0 Negative Environmental Impacts

Wind farms have an array of negative environmental impacts that far exceed those of solar options in particular. Wind Turbines:

- Kill birds and bats. At least nine Nationally Endangered Wedge-tailed Eagles have been killed at the Woolnorth wind farm in Tasmania and an array of birds and bats. Bird and bats are killed at other wind farms around Australia, however inadequate to non-existent monitoring conceals the actual numbers.
- Displace wildlife from areas around wind turbines. Wildlife can be displaced for distances in the order of 800 metres from turbines and this is a problem when turbines are placed near reserves.
- Produce unacceptable levels of low frequency noise for nearby residents. Worldwide people who live near wind farms complain about the affects of noise yet the industry denies there is a problem.
- Oil spillage. Spillage from the gearbox in the nacelle can run down towers and cause pollution.
- Fire risk. Lake Bonney, Yambuk and Chalicum Hills have all experienced fire and placed demands on local fire brigades.
- Industrialise rural landscapes some of which are classified as significant landforms.
- Create shadow flicker and blade glint that is a nuisance to surrounding residences.

Many of these matters are not properly addressed by planning bodies because state government policies endorse wind farm approvals. State government support is based on the belief that wind farms provide significant benefit for the community.

3.0 Performance of Operating Wind Farms in South Gippsland

The following information on the two South Gippsland wind farms sheds some light on the industry and its claims about benefits.

3.2 The Toora Wind Farm Vic (operational for about 5 years)

3.2.1 Claims

Information about the Toora wind farm, including the claims about its production, was obtained from current web sites.

In an article on 11 September 2001 Wal Baker when reporting on Stanwell's project wrote *"Toora Wind Farm will generate enough renewable energy to supply 14,000 households, while replacing the emissions of more than 91,000 tonnes of carbon dioxide produced annually from non-renewable sources such as coal."*

The full article is at Attachment A.

3.2.2 Performance

This is how the Toora wind farm performed.

Noise

Steven & Jayne Garito, nearby residents suffered from the noise from the turbines to the degree that it caused illness. An article is at Attachment B.

Les Osbourne also a nearby resident was a supporter of the wind farm until it was built and he also suffered from noise from the turbines. An interview with him on ABC's AM is at Attachment C.

The following is an extract from that interview.

"Les Osborne initially welcomed plans for a wind farm next door to his house near the town of Toora. Now the turbines have been constructed he has a different view.

LES OSBORNE: Well, I welcomed them because they told me they weren't going to be noisy and they actually lied to me. So, I was under a misconception that they were going to be good. But they're not, they're evil.

RACHEL CARBONELL: I can hear them sort of swooshing in the background. Is that as noisy as they ever get?

LES OSBORNE: No, that's actually quite quiet... because we have an easterly and the noise is being blown away from us. Usually it comes from the southwest or northwest, and that's when I can't sleep at night.

RACHEL CARBONELL: How noisy is it?

LES OSBORNE: I liken it to living... having my bed on Tullamarine tarmac when a jet plane's coming in.

RACHEL CARBONELL: Les Osborne says selling up and moving isn't a viable option.

LES OSBORNE: I bought... when I bought this place it was my paradise, and now that big company from Queensland's come along and made it horrible...and they don't lose any sleep. According to the local real estate agents, my property's devalued by \$100,000.

RACHEL CARBONELL: The company that runs the 12 turbine farm, Stanwell Corporation, declined to be interviewed, and instead issued a statement:

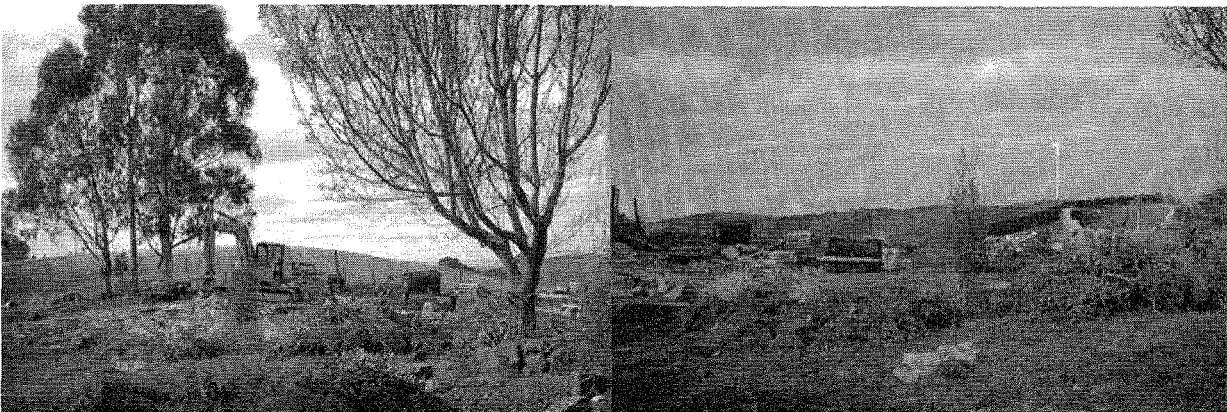
STANWELL CORPORATION STATEMENT: Independent experts and noise level monitoring have verified that the Toora Wind Farm is fully compliant with its operating permit conditions.

RACHEL CARBONELL: Locals are concerned about the visual effect on the landscape, the danger to bird populations, and what will happen to the turbines when they're past their use by date.

Another concern is the efficiency of wind farms. British Botanist, Professor David Bellamy, drew on the English experience as an example during a quick trip to Gippsland this week."

Early last year Stanwell, Queensland Government owners of the Toora wind farm, bought Les Osbourne's house which is probably about 600 metres or so from the nearest turbine. His house, being demolished in the photos, is just across the road from Steve & Jayne's place.

Stanwell chose to demolish the house rather than let anyone else live in it. People other than those who objected to wind farms also suffer from noise.



Getting Rid of a Noise Problem (Les Osbourne's House) - Photos by Trixy Allott

Bird and Bat Kills

Brett Lane and Associates Pty Ltd undertake monitoring to determine bird kills at the Toora wind farm. The total time of monitoring amounts to 1.43% of one year which would mean that you would be unlikely to pick up much remaining evidence of bird kills, particularly given the prevalence of foxes in the area.

Wind Farm Output

How are the Turbines Performing?

The following was downloaded from the Stanwell web site on 29/5/07

"TOORA WIND

Located in the South Gippsland region of Victoria, Stanwell Corporation's Toora Wind Farm is ideally positioned with good exposure to prevailing winds and close vicinity to electricity transmission infrastructure and large customer load centres.

Toora's Windmill Café, located at 25 Stanley Street, Toora, provides visitors to the region with an information display about the wind farm and its development. The Windmill Café can cater for tour groups of up to 50 people, phone 03 5686 2417."

Key Information	
Location	<i>On Silcock's Hill adjacent to the township of Toora in the South Gippsland region of Victoria, 170km south-east of Melbourne.</i>
Generating capacity	<i>21 megawatts</i>
Number of wind turbines	<i>12</i>
Equivalent homes powered annually	<i>6 600</i>
Fuel source	<i>Wind</i>
Annual greenhouse gas savings	<i>48 000 tonnes</i>
Energy production	<i>The wind spinning turbines drives a generator to produce electricity. This electricity travels through a transformer into the local electricity network.</i>
Grid entry point	<i>Electricity generated is injected directly into the TXU network.</i>
Commissioning date	<i>2002</i>
Environmental accreditation	<i>Accredited under Federal Government's Renewable Energy (Electricity) Act 2000. Accredited by the Sustainable Energy Development Authority (SEDA) as a Green Power Generator.</i>

The wind farm power output has, in this Stanwell information, been reduced significantly. That is, down from 14,000 households to 6,600 households and down from 91,000 tonnes of CO2 to 48,000 tonnes of CO2. It must be remembered that these figures are based on each kilowatt of wind power displacing a kilowatt of coal fired power. The erratic and variable output from wind turbines means that coal fired power stations, required as back up, are required to operate on standby running inefficiently and creating more CO2.

How are the Turbines Continuing to Perform?

Five turbines 'off line'

ALMOST half of the Toora wind farm turbines are out of operation and they won't be back on line at least until the end of the month. Owner/operator, Stanwell Corporation, said

Three turbines were taken "off-line" because of gearbox faults late last year, one in October and two in December.

Another two turbines broke down after the recent bushfires in Victoria's north-east, according to Stanwell, which means only seven turbines are operating.

It is not certain when the energy facility will be back to full strength.

"We don't know how long the wind turbines will be out of service, but we

anticipate a staged return to operation may be possible starting from the end of January 2007," a Stanwell spokesperson said.

The latest power crashes have been blamed on the heat and fires.

"Power supply interruptions on the high voltage electricity transmission line, which connects to the Toora wind farm, appear to have been a result of hot weather conditions and bushfires," the spokesperson said.

"These power supply interruptions have caused instability to some parts of the Victorian electricity transmission and distribution system."

"During the early hours of Friday, December 22, power supply interruptions on this transmission line occurred, which not only disrupted the power sup-

ply in the transmission line, but also appeared to have caused a power surge.

"This power surge resulted in damage to the wind turbine generator transformers on two turbines at the Toora wind farm. These wind turbine generator transformers will require replacement prior to the wind turbines being returned to service."

The company has arranged for two spare transformers and specialist lifting equipment so that repairs can be made this month. The three wind turbines out of order since last year were "taken off-line as a precautionary measure, while a gearbox bearing fault is investigated," the spokesperson said.

"One wind turbine was taken off-line in October, when the company detected a bearing fault in the gear-

box. A further investigation detected two more faults and the turbines were being taken off-line after showing early signs of a similar issue.

"Stanwell is working with the wind turbine manufacturers and other engineering specialists to determine the cause of this fault. Options have been identified to assist the wind farm in returning to normal operations.

"To expedite the repair, a replacement gearbox for the first turbine has been sourced from the original overseas equipment manufacturer.

"Investigations are also underway to engage a company capable of accessing spare parts and carrying out suitable repairs on the other two wind turbines' gearboxes."

•See Letters, Page 14.

Five out of 12 turbines not operating results in a further significant (42%) reduction in power generation.

What is the Future of the Toora Wind Farm?

On June 3 this year the Queensland Government provided the media with its plans for renewable energy. The full Brisbane Times article is at Attachment E. An extract from this article with quotes from Mr Beattie follows:

"A renewable energy fund will receive \$50 million to promote research and development to help reach a renewable and low emissions energy target of 10 per cent by 2020. He said the target would reduce emissions from the energy sector by requiring electricity retailers to purchase a set amount of their energy from Queensland-based renewable or low emission energy sources.

The State would also sell off some of its gas pipeline infrastructure and its wind farm assets to help fund a climate change fund, he said.

The sale would generate \$300 million to develop new technologies, like hydrogen fuel cells, and the fund would generate around \$20 million in interest each year. In terms of changes in the community, he said everybody could do their part to reduce emissions.

A Queensland feed-in tariff for solar power would be established so that people whose home solar systems put power back into the grid would be paid. Also on the home-front electric hot water systems will be phased out in existing homes from 2010, he said.

It will become mandatory for homeowners replacing hot water systems after 2010 to use greenhouse friendly hot water systems, but rebates would be offered.

Rebates would also be on offer to help people living in remote areas of the state to install greenhouse friendly devices. Business will be encouraged to become energy smart through a \$55 million program."

What is particularly interesting is that the Queensland Government proposes to sell of wind farms to fund positive renewable energy options. The Queensland Government clearly does not consider that wind farms are a credible method of reducing CO2 emissions.

Peter Beattie is reported to have commented on wind farms before last years the election saying words to the effect "I wish I could hand my hat on it and be a hero and say that this is going to save the world, but it's not. It simply doesn't deliver".

3.2.3 Summary

The Toora wind farm is now only about 5 years old and power output for one reason or another has gone through a rapid decline. The forecasts of households to be supplied and the amount of CO2 that would be reduced have not been achieved and during the process nearby residents have had their lives disrupted. It now appears that Stanwell is going to sell off the Toora wind farm.

This is the story of the short life one of Australia's first wind farms.

3.3 The Wonthaggi Wind Farm Vic (operational for over 18 months)

3.3.1 Claims

The Wonthaggi wind farm has six turbines with an installed capacity of 12 Megawatts and has been operational for about eighteen months.

In the proponent's EES it was claimed *"The proposed wind farm comprises six 1.75 MW turbines..... It will have a power generation capacity sufficient to supply 6,040 local households, and will reduce the greenhouse gas emissions by 41,000 tonnes per year."*

The capability of this wind farm is further described on page 76 of the State Government's panel report which recommended approval of the project. *"The panel agrees that the Wonthaggi wind farm proposal is a small development. However, it was advised by Mr Gobbo that it is not so small as to be uneconomical. Furthermore, the wind farm will generate sufficient electricity to power around 6,000 households. The panel agrees with Mr Gobbo, that this is not an insignificant contribution. The power generated would be sufficient to power a town the size of Wonthaggi, and more."*

The 1.75 Megawatt turbines nominated in the EES were replaced by 2.0 Megawatt wind turbines. The claim by Mr Gobbo, legal counsel for the proponent appears, by calculation, to be based on the wind farm delivering 30% of installed capacity.

The state government provided its own advice to the public about the Wonthaggi wind farm after it gave its approval. The full media release is at Attachment F. The following is part of that release.

"Building confidence in the community and in industry requires clear guidelines and processes. This is what the Bracks Government is delivering," Mr Theophanous said.

Meanwhile the Government has accepted an independent panel recommendation to grant a permit for six wind turbine generators on rural land about 1.6 km from the western edge of Wonthaggi.

"Although the proposal is for a small wind farm (12 megawatts), it is capable of generating the electricity requirements of about 6000 households and reducing greenhouse gas emissions by about 41,000 tonnes a year," Ms Delahunty said.

Mr Theophanous welcomed the announcement by the Minister for Planning that a permit has been granted for Wind Power's Wonthaggi Project.

"The approval of this 12 megawatt wind farm adds a critical signal to investors in the wind industry and to Victoria's attractiveness as a centre for wind turbine manufacturing.

"The decision also sends a signal to the wind energy industry that the Bracks Government is committed to achieving its target for wind energy through appropriate wind developments such as this," said Mr Theophanous."

These statements by the Ministers of the Victorian Government not only reinforce the claims by Wind Power Pty Ltd but as they give power production figures provide a Government endorsed prospectus of a private venture that would influence the investment decisions of potential investors.

The following pamphlet was distributed at the Wonthaggi wind farm site soon after it commenced operation.



Technical Turbine Information

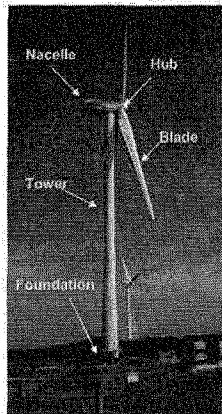
Turbine:	REpower MM82
Rated power	2,000 kW
Blade length	40 m
Tower height	69 m
Cut-in wind speed	3.5 m/s
Rated wind speed	13 m/s
Cut-out wind speed	25 m/s
Rotor speed	8.5 - 17.1 rpm
Blade tip speed	73.4 m/s
Gearbox ratio	1:105

Foundations

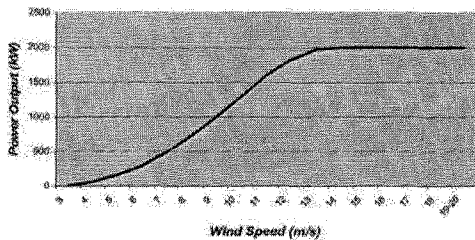
- 8 reinforced concrete piles
- 210 cubic metres of concrete
- 29 tonnes of steel reinforcing

Turbine Weights

- Rotor blade 6 tonnes
- Hub 16 tonnes
- Nacelle 60 tonnes
- Tower 60 tonnes
(20 tonnes per section)



MM82 Power Curve



Environmental Benefits of Wonthaggi Wind Farm

Electricity produced 34,400 MWh per annum
(12MW capacity x 8760 hours x 33% capacity factor x 98% reliability factor)

Greenhouse gas saved 47,830 tonnes
(12MW capacity x 8760 hours x 33% capacity factor x 98% reliability factor x 1.3)

Households supplied 6,400 (47% of Bass Coast shire based on 2003 ABS statistics)
(34,400 MWh / 5.33 MWh per average Victorian household)

Equivalents: 68,000 trees planted per annum
11,000 cars removed from roads per annum

(Each car produces approximately 4.33 tonnes and a tree can absorb 0.67 tonnes of CO₂ emissions per year)

Emissions Reductions

Every unit (kWh) of electricity produced by the wind displaces a unit of electricity which would otherwise have been produced by a power station burning fossil fuel. When fossil fuels are burnt during the production electricity from coal-fired, oil-fired or gas-fired power stations, greenhouse gases are emitted into the atmosphere. These gases include carbon dioxide (CO₂), sulphur dioxide (SO₂) and nitrogen oxides (NO_x).

Energy Balance

The comparison of energy used in manufacture with the energy produced by a power station is known as the 'energy balance'. It can be expressed in terms of energy 'pay back' time that is the time needed to generate the equivalent amount of energy used in manufacturing the wind turbine or power station.

The average wind farm in Australia will pay back the energy used in its manufacture within three to five months, and over its lifetime a wind turbine will produce over 30 times more energy than was used in its manufacture.

This compares favourably with coal power stations, which deliver only a third of the total energy used in construction and fuel supply. So, if fuel is included in the calculation, fossil fuel stations never achieve an energy pay back. Wind energy not only achieves pay back within a few months of installation but does so from a fuel that is free and inexhaustible.

The relevant claims in this pamphlet are that the wind farm comprises six 2.0 MW turbines that have a capacity factor of 33% and a 98% reliability factor. The electricity claimed to be produced is 34,400 MWh per annum.

The greenhouse gas saved is claimed to be 47,830 tonnes and by their calculation that is based on 1.39 tonnes of CO₂ per MWh per annum (although 1.3 is stated).

3.3.2 Performance

This is how the Wonthaggi wind farm is performing

Noise

Ken and Lois Townsend live within a kilometer of the turbines and suffer from noise from the turbines when the wind blows from a particular direction. The Claesen's live nearby and also suffer from noise from the turbines.

Bird and Bat Kills

Brett Lane and Associates Pty Ltd is also doing the monitoring of this wind farm but as yet no information is available for review.

Wind Farm Output

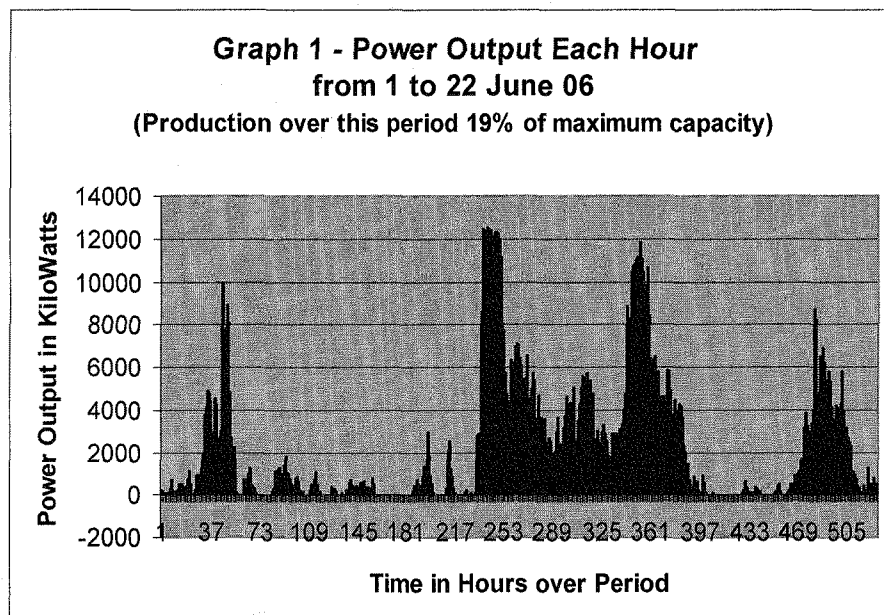
How are the Turbines Performing?

Detailed information is now available for the Wonthaggi wind farm. This data includes:

- the spreadsheet "Wonthaggi Wind Farm Turbine Direction and Turbine Power" which gives the wind direction and power output for each turbine each hour from 1 June 06 to 22 June 06,
- the power generated as recorded at the meter every 15 minutes from 1 June 06 to 26 June 06,
- The wind speed each 10 minutes and L95 noise generated from 6 June 06 to 24 June 06,
- The wind speed and wind direction every 10 minutes from 7 June 06 to 26 June 06.

The power output data from the Wonthaggi wind farm covers only a 22 day period, however it gives a clear indication of how electricity is generated which is probably fairly typical of the way most wind farms produce electricity.

The following graph has been generated by scanning a hard copy spreadsheet into xl and graphing the power produced by all six turbines each hour over time. Graph 1 reveals what most people observe, that is, the turbines stand still for periods of time not generating any power, start and stop regularly in light winds, move in moderate winds and turn steadily in high winds.



The total output over this period amounts to only 19% of installed capacity, not the 33% stated by the company during the approval process and in promotional material. From Graph 1 it can be clearly seen that the application of a percentage of installed capacity to determine the capacity to supply households is an oversimplification.

If the full amount of the power generated by this wind farm is to be used, 19% of installed energy in this instance, supplementary power would be required to ensure a constant overall delivery of power to the grid to meet demand. The amount of additional power required to is contained in Table 1.

Table 1 – Wonthaggi Wind Farm Power Generation and Required Supporting Power Generation to Provide Constant Delivery (based on hourly generation from 1 June to 22 June 06)		
Duration of Portion of Wind Power Generated		Additional Power from Other Generators to Support Wind Farm
Amount of Power Produced	Portion of Time Produced	
Negative – 0%	16%	Greater than 100% for 16% of the time
0 – 5%	31%	95 - 100% for 31% of the time
5 - 10%	9%	90 – 95% for 9% of the time
10 – 30%	18%	70 – 90% for 18% of the time
30 – 50%	15%	50 - 70% for 15% of the time
50 – 75%	6%	25 – 50% for 6% of the time
75 – 100%	5%	0 – 25% for 5% of the time

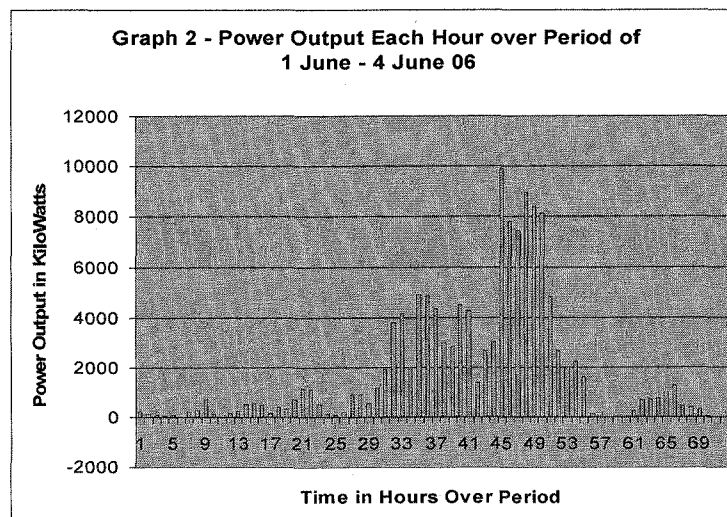
A closer examination of the data reveals that the wind farm is only able to supply 6,400 households for only 24% of the time and is unable to supply 1,200 households for 50% of time.

Clearly to maintain a constant supply of electric power to industry and households another form of power generation is required and this is not a small amount. It would amount to a total of 81% of the installed wind farm capacity if that supplementary power could be delivered to the grid with instantaneous adjustment. However, for 16% of the time the wind farm actually draws power from the grid as the operator attempts to start the turbines rotating in light winds so just over 100% of installed capacity is required as 'back up' generation to maintain constant delivery of power to households and industry.

If the backup supply power to offset low output from the wind farm is limited to that required to maintain continuous power for 6,400 households, and the excess peak output is surplus to needs, then the wind farm would be providing power at just over 13% of installed capacity.

The various levels of power generation do not occur in the groups as shown in Table 1 but are distributed randomly as shown in Graphs 1 and 2.

The following graph also using data from the Wonthaggi wind farm provides a more detailed examination of the variation of power output from hour to hour.



The standby power supply needs to respond quickly to ensure full utilization of wind generated power.

While the Bureau of Meteorology 'may' be able to forecast weather from day to day, the actual wind speed and wind direction at any location at any point in time cannot be forecast let alone predicted precisely. An examination of the wind speed and direction data for the Wonthaggi wind farm reveals the wind speeds and direction can vary significantly between 10 minute intervals. The power produced by wind turbines is

proportional to the cube of the wind speed, therefore variation in wind speed over a short period can produce a sharp variation in power produced as is reflected in Graphs 1 and 2.

It is clear that accurate forecasting to overcome the difficulty with changes in wind speed is not possible so backup power stations would need to be on call at all times. Backup could be in the form of quick start gas fired generation or coal fired generation that cannot be fired up and then stopped at short notice. Coal, the lower cost alternative, would need to be fully operational or in 'spinning reserve' mode while the wind turbines would be generating power. This is not an efficient method of providing backup and would result in a higher CO2 output.

Articles by Dr John Etherington in UK (Attachment H) and Eric Rosenbloom in USA (Attachment I) confirm that the intermittent nature of wind turbine power output means that they contribute very little to the power grid when needed and they reduce very little if any CO2.

The pamphlet distributed at the wind farm site claims a 98% reliability factor. What does this mean? It clearly could not mean the level of confidence in the 33% of installed output being met. Does it mean that breakdowns of turbines will only result in a 2% downtime? If so breakdowns at Wonthaggi may further erode actual output and if the delay in Toora wind farm repairs is any indication then Wonthaggi losses may be significant.

Wind gossip not the whole story

INTERNET news and gossip site *Crikey.com* last week published a comment stating the Wonthaggi wind farm consumed more power than it produced 16 per cent of the time in June 2006.

"That may or may not be correct, but it's certainly not the whole story," Wind Power Pty Ltd spokesperson, Vaughan Hulme said.

"When the winds are not blowing the facility consumes a small amount of energy. However in June 2006, the figure for the consumption of electricity was 0.132 per cent of generation.

"This electricity is required to run auxiliary services during periods when the wind is below the minimum cut-in speed of three metres a second."

Mr Hulme said on average the facility used electricity that could have powered 12 homes, and generated enough electricity for 6400 homes per year.

Article in 'The Star' Tuesday 13 March 2007

Even when the power generation information is available, Wind Power Pty Ltd still claim that they can provide power for 6,400 households over the year.

Figures reveal low efficiencies

Performance statistics show the six Wonthaggi turbines aren't as efficient as claimed when monitored last year.

The Wonthaggi wind farm was monitored by an industry noise consultant last June. During that period figures revealed performance efficiencies were less than 20 per cent.

Noise studies were conducted by Marshall Day and measurements were undertaken for 19 days, from June 7 until June 26.

At the request of a nearby Wonthaggi resident, the wind farm operators Wind Power Management also produced generation data for that period.

The loggers were installed at the resident's property on June 1 and performance data from that moment until June 22 were available. During that period, figures revealed the plant drew from, rather than produced power for the electricity grid for 16 per cent of the time.

It produced less than 10 per cent

of electricity for 56 per cent of the time and between 30 and 50 per cent of electricity for 15 per cent of the time. It produced five per cent electricity for 31 per cent of the time.

Figures showed the energy plant had produced 1159 megawatts of power, which amounted to 19 per cent of installed capacity, it was claimed.

Wonthaggi's (average) output was only 19 per cent of installed capacity during both periods instead of a promised 33 per cent. Anti-wind farm activist Andrew Chapman said.

Mr Chapman believed the monitoring data did not support the kind of efficiencies Wind Power claimed for its Wonthaggi farm.

"Industry continues to say the capacity factor is between 30 and 35 per cent, when going through an approval process. A brochure on the environmental benefits of the Wonthaggi wind farm stated a 33 per cent capacity factor."

"But the plant drew power from the grid for 16 per cent of the time. The figures show that wind power is not a reliable

energy source. It does not warrant expansion of the industry."

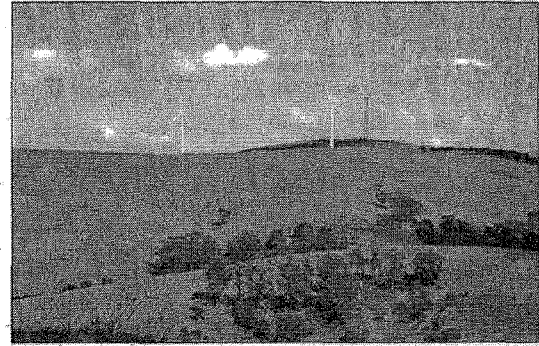
A spokesman for Wind Power, Vaughan Hulme explained when winds weren't blowing the wind farm would consume a small amount of energy, rather than produce energy.

He said the Wonthaggi plant had consumed 0.178 per cent of the total electricity generated during 2006.

"This electricity is required to run auxiliary services during periods when the wind is below the minimum cut-in speed of three metres/second."

Mr Chapman said the Stanwell operated Toora wind farm was not performing much better.

"The Toora wind farm is not doing much better, with five turbines suffering gear problems in recent months," Mr Chapman said. "This must be a serious concern for people who have invested in wind farms through their superannuation, having been told that wind energy production is 33 per cent, while it is significantly below that."



Low efficiencies: Wind farms may not be as efficient as people are made to believe. The Toora and Wonthaggi wind farms have been operating below optimum capacities in recent months.

Article in "The Star" Tuesday 15 May 2007

How are they Continuing to Perform?

One of the six turbines at Wonthaggi does not turn and has not turned for many months. This would further reduce the power output by 16.6 %. If this reduction was applied to the June data it would mean the wind farm was producing less than 16% of installed capacity, or less than half what was claimed at the time of approval and 5th the wind farm is only about 18 months old.

3.3.3 Summary

The Wonthaggi wind farm data for June 2006 reveals that the power output is erratic and unpredictable. It also reveals that averaging the total power produced over time to get a proportion of installed capacity does not give a useful indication of power produced.

The Victorian Government provided media statements amounted to a surety for the wind industry and investors in this project. The wind farm, particularly with one turbine completely out of action, is not producing anywhere near the amount of power claimed by the company or the Victorian Government.

4.0 Some Other Operating Wind Farms in Australia

These are just some other examples from other places.

In NSW, it has been reported that the Crookwell wind farm has only been able to produce 14.7% of its maximum capacity and about 100 kilometre further north along the Great Divide the Blaney wind farm has only produced 22% of its maximum capacity.

The 'Adelaide Sunday Mail' in February last year reported that the Lake Bonney wind farm fire automatic shutdown of generation during the heatwave blacked out 63,000 homes. The newspaper article is at Attachment G.

When maximum temperatures exceeded 40°C throughout most of the state between 19 and 22 January, creating record demands for electricity, wind farm output averaged only 10 per cent. The total wind farm output in SA plummeted to just 2 per cent of capacity, producing enough power for only 3,500 homes compared with the maximum capacity to power 175,000 homes. Later in August last year 'The Australian Financial Review' reported the owners of Lake Bonney had advised shareholders that performance of the wind farm was below expectations as in May and June there had been unusually wind-less months.

The Lake Bonney wind farm in SA was reported last year to be producing electricity well below expectations.

About 12 months after the construction of the Yambuk wind farm it also had fire problems as the following news item describes.

"ABC Tuesday, 20 February 2007. 11:37 (AEDT)

Lawyers hope for Yambuk fire settlement soon

Lawyers proceeding with a class action claim for fire-affected farmers in Yambuk are hoping a settlement can be reached.

Police are investigating the cause of the January fire and have interviewed a man in relation to the 1,000 hectare blaze.

Gary Foster from Maddens Lawyers says it is understood workers at a wind farm test site are responsible for the fire.

He says compensation is being sought for 11 burnt-out landowners.

"In some circumstances the losses run to hundreds of thousands of dollars and in other cases the damage is less substantial, but in each of the cases we hope to effect a fair settlement as soon as we can," he said."

5.0 The Bald Hills Wind Farm Vic (approved but not constructed)

The proposed Bald Hills wind farm comprises 52 turbines which have an installed capacity of 104 Megawatts. The proponent claimed in the EES that *"The wind farm will generate sufficient electricity to supply 65,000 households, and reduce greenhouse gas production by 450,000 tonnes per year, through replacing an equivalent amount of fossil-fuel generated electricity."*

During consideration of the Bald Hills wind farm by the Victorian State Government's planning panel, submissions by the government's Sustainability Energy Authority Victoria (SEAV) made claims about the benefits of the proposed wind farm, that is the wind farm would:

- *"generate 320 GWh per annum – enough electricity for 60,000 homes*
- *greenhouse pollution abatement of 440,000 tonnes per annum – same as taking over 100,000 cars off the road each year"*

Following approval of the project in a state government media release dated 25 August 2004, *"Mr Bracks said the Bald Hills wind farm would save up to 435,000 tonnes of carbon dioxide a year - equivalent to taking 75,000 cars off the road."* and also that it *"would supply power for more than 60,000 Victorian homes."*

The Bald Hills wind farm could generate 911 Gwh per annum if it operated at 100% installed capacity all of the time. To achieve the claimed 320 Gwh per annum the wind power company has clearly assumed an output at 35% of installed capacity.

The Bald Hills wind farm is not a great distance from Wonthaggi and is likely to be in a similar wind regime to the Wonthaggi wind farm. One farmer in the Bald Hills area that investigated placing wind turbines on his farm was told by other wind companies that the wind speeds at Bald Hills were not as high as they needed to be and as such they did not consider it a suitable place for power generation.

6.0 Lexton Wind farm Vic (recently approved)

In January 2007, the Lexton wind farm, comprising 19 turbines each of 1.5 Megawatt capacity was approved. It was reported that it would provide enough power to supply about 16,000 homes, and will displace about 113,000 tonnes of carbon dioxide or greenhouse gas a year, the equivalent of taking 26,000 cars off the road.

This is one of the most recent approvals and calculations indicated that it would be operating at about 35% of installed capacity to achieve the stated performance.

The claims outlined for the three wind farms above are typical of those used by the wind industry and governments, for wind farms at various locations, during and after the approval process.

7.0 Summary

Communities around Australia are being persuaded by wind farm developers and State Governments to adopt wind farm development policies. The industry and some state governments also present compelling arguments stating the number of households that will be supplied and the many tonnes of CO₂ the wind farm will prevent from entering the atmosphere. There is now enough evidence to suggest that the claims presented by them are not based on fact and that the wind industry and state governments know this. It appears the Queensland Government has now decided to abandon its involvement in the wind farm folly.

A close examination of the available data for the Wonthaggi wind farm reveals that erratic power output cannot simply be averaged to determine the number of households that could be supplied with electricity. Because wind farm power output is so erratic it does not displace CO₂ producing power on a kilowatt for kilowatt basis. Information from UK, USA, Spain and Japan confirms that wind generated electricity does not contribute significantly to powering households and industry or reducing CO₂ emissions.

There are environmental negatives for abutting property owners and the natural environment and so the claims of the environmental benefits of wind farms need to be based on fact and not just asserted.

The result of misplaced initiatives means that an additional and unnecessary burden is placed on taxpayers, consumers, property owners and investors. The Queensland Government has seen this and acted accordingly.

8.0 Conclusion

Clear and compelling evidence of wind farm performance in South Gippsland and information from other locations suggest that wind farms do not and cannot meet the claims made by the wind industry. They do not reduce CO₂ to the degree claimed by the wind industry and some governments and the policies of support for the industry need to be abandoned in favor of the other more beneficial alternatives.

The House of Representatives should undertake a full audit of the wind industry to ensure that the interests of taxpayers, consumers, investors are properly protected. The parliament could inform itself further by:

- Examining the claims wind farm proponent's have made to secure project approvals and identify whether or not approvals have been assisted by deception,
- Requesting from wind power operators the power production and operational details of all existing wind farms,
- Obtaining and examining the methods used by governments to determine the claimed benefits of wind farms, ie CO₂ reduction.
- Determine whether there has been a full disclosure to investors of the potential for below forecast power production.

It appears however that the experiences from Toora, Wonthaggi and other wind farms would suggest it would be prudent to suspend all government support for wind farms and redirect assistance to more productive and emerging technologies.

Yours faithfully

Andrew Chapman