

Submission

No 18

INQUIRY INTO THE ECONOMICS OF ENERGY GENERATION

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The Committee Manager
Public Accounts Committee (PAC)
Parliament House
Macquarie St
Sydney NSW 2000

Dear Sir or Madam,

INQUIRY INTO THE ECONOMICS OF ENERGY GENERATION

Thank you for the opportunity to make a submission on the economics of energy generation in New South Wales.

Epuron is a NSW-owned renewable energy developer. Established in 2003 as Taurus Energy it has gained planning approval for a number of wind farm developments in the state including: Snowy Plains, Cullerin Range, Conroy's Gap, Gullen Range and Silverton Wind Farm (which is a joint venture with Macquarie Capital Wind Fund). Within the state planning system currently, and at various stages of development, are wind energy projects known as White Rock, Rye Park and Liverpool Range and Birrema. Epuron is also progressing a number of smaller wind farm developments through local council/Joint Regional Planning Panel approval processes in the State.

In addition to its wind energy activities in NSW, Epuron is completing the construction of solar photovoltaic power stations at 3 remote communities in the NT and is developing further solar and wind projects around Australia.

In response to the terms of reference:

(i) Mix of energy sources used in New South Wales

Data from the NSW Department of Trade and Investment shows approximately 65% of NSW generation capacity is fuelled by coal, around 22% is hydro, and around 12% is fuelled by gas. Less than 1.5% is wind energy¹. Epuron estimates that around 1% of NSW electricity consumption was met by NSW wind farms in 2011.

The Federal Government's Renewable Energy Target (RET) is for 20% by 2020. To achieve the benefits possible from the achievement of this target NSW should currently be building and planning to build many new wind farms. Such power projects will provide jobs and investment in regional NSW as well as diversify the State's energy mix and provide ongoing downward pressure on the State electricity wholesale pool price. This has already been observed in South Australia, where around 20% of electricity demand was met by wind energy in 2010/11².

(ii) Legacy of public investment in coal fired power generation infrastructure

When coal mining and power generation were state-owned monopolies it was logical to integrate these assets with rail infrastructure that was also state-owned. As a result in the present day, after the privatization of many of these assets, coal fired power generation continues to enjoy the benefits of low cost capital, subsidised supporting infrastructure, and the low coal prices established in contracts that were written in some cases many years ago. Wind farms could generate power at substantially lower costs today if this same cost of capital was available and if the same subsidies provided for transmission connections, for example.

¹ NSW Department of Trade and Investment, 2012, *Electricity Generation*. Available from: <http://www.trade.nsw.gov.au/energy/electricity/generation> Accessed 10/02/2012

² AEMO, 2011, *South Australia Supply and Demand Outlook*. Available from: <http://www.aemo.com.au/planning/0400-0031.pdf>

Much of the cost of wind power at present is related to the initial installation cost of a wind farm (e.g. transmission lines, substations, access tracks, foundations) that is not required when that wind farm is refurbished at the end of its life. Accordingly, the replacement (“repowering”) of those same wind farms in 20 years will lead to an approximate halving of the cost of wind energy even without any reduction in the cost of wind turbines over that period. In contrast, the cost of fossil-fuelled generation is expected only to increase, as the cost of fuel increases and emissions trading or carbon taxation puts a price on emissions (note it is also possible that inland fossil fuelled generators will not continue to benefit from ‘free’ use of potable water, especially in periods of drought).

(iii) Issues relating to long term energy security in New south Wales

Security of supply generally means that electricity consumers are able to obtain electricity of defined quality when they need it, at cost-reflective and transparent prices. However, as noted in a review of security of supply in Europe for the European Energy Institute in 2007:

Security of supply also requires that the provision of electricity happens in a sustainable manner. Sustainability links the need to provide electricity to the present end users with caring for the provision to future generations. This is not a minor requirement, since the present model of electricity supply –and the entire energy model, for that matter- is not sustainable.³

The Federal conservative government in 1999 decided that increased diversity in our electricity generation market would be in the public interest for many reasons including energy security. Hence the creation of the RET scheme. Since this time none of the fundamentals have changed. In fact, the public benefit is greater now than it was when the RET was introduced, as coal prices have dramatically increased, as have environmental pressures. The RET has clear bipartisan support.

The NSW fleet of coal-fired power stations features eight that are over 1000MW, including four with capacity over 2000MW. This makes the state susceptible to any kind of threat to coal production or delivery, or any malfunction in the generation plant. This includes possible complications with the proposed new rail link required to supply coal from the Cobbora Mine. In such an event the power supply of the state would be significantly constrained. In past years water shortages in NSW and southern Queensland have caused large thermal generators to be constrained resulting in severe price spikes in the wholesale market. In the event of a longer drought than that experienced in 2007-2010, NSW would have insufficient capacity from the combination of generators not relying on inland water supplies, and would hence rely on interstate imports to meet demand⁴ (provided other states were able to increase capacity and there was sufficient interconnector capacity).

For all these reasons the NSW State Plan has a target of 20% renewable energy for electricity generation by 2020.

(iv) Potential for NSW sourcing energy interstate

Epuron believes that this approach would be to outsource significant opportunity for renewable energy investment in regional NSW. Under the RET legislation, originally put in place by the Howard Government and then expanded by the Rudd government, there is an opportunity for NSW to lead Australia in the construction of appropriately-sited, community-friendly wind power over the next 5 years. Jobs and investment will be created in the regional areas that need it most.

It is generally more economical to maximise the use of the existing NSW transmission network through the location of new wind and solar generation around the state than to invest in the expansion of significant new interstate links, which export money from NSW and may operate at very low utilisation.

(v) Potential for, and barrier to, development of alternative forms of energy generation (e.g. tidal, geothermal) in New South Wales

Tidal generation requires a tidal range far greater than is found anywhere in coastal NSW. Wave energy has great potential but requires significant investment to bring it to commercial reality. Epuron supports such investment.

³ Pérez-Arriaga, I. 2007. *Security of electricity supply in Europe in a short, medium and long-term perspective* European Review of Energy Markets. European Review of Energy Markets- volume 2, issue 2, December 2007 <http://www.eeoinstitute.org/european-review-of-energy-market/erem5-article-perez-arriaga>

⁴ Tanner, D. 2010. Water and energy: a complex relationship. ATSC Focus Number 163, August 2010. Available from: <http://www.eai.or.jp/glance/focus163iurg.pdf>

Furthermore, geothermal for NSW is an excellent plan. The government should seriously consider a new transmission line from key geothermal and wind locations including the far west, to link to the grid at Broken Hill and Bourke. This would enable a renewables hub in far western NSW which would provide investment and employment in this important region.

Epuron strongly supports investment in new and emerging energy technologies. However, in the present day solar and wind energy are already commercially proven, mature and widely available. These energy sources provide an invaluable low emission, low water use opportunity that will provide decades of clean energy to NSW. This opportunity exists irrespective of the exciting technology developments that will most likely occur in wave, tidal and other renewables.

The history of development of newer technologies including tidal, wave and geothermal demonstrates that while these technologies have good prospects they cannot be relied on for provision of bulk power to NSW. Conversely, more than 200,000 MW of wind energy is already operating efficiently and reliably worldwide.

(vi) Best practice in alternative energy generation in other jurisdictions

Best practice in alternative energy development includes having a clear policy and action plan which is understood by the market, by industry and by communities. Such a policy and associated process will lead to socially acceptable development, investment and a transition to a more secure, diverse, sustainable electricity sector.

The NSW energy industry is currently awaiting the release of the NSW Renewable Energy Action Plan that has been anticipated since the NSW Solar and Renewable Energy Summit in July 2011.

It is recognized in dozens of jurisdictions worldwide that wind and solar energy have important roles in the power generation fleet for today and for the coming years. Up to 20% - 30% wind can be accommodated in the NEM without requiring any changes to the current system operation or management. Although currently more expensive than wind, solar already provides valuable benefits through the high correlation between its peak output and peak demand.

After more than 20 years of investment in wind energy, northern Europe continues to lead the world in planning larger and more technically advanced onshore and offshore wind turbines. China has aspirations to install wind capacity greater than 6 times Australia's entire generation capacity in the next few years⁵.

The European Wind Energy Association found that in 2011 21% of all new energy projects built in Europe are wind powered, and 71% are based on renewable resources.

The Global Wind Energy Council's recently released annual market statistics show that the wind industry installed just over 41,000 MW of new clean, reliable wind power in 2011, bringing the total installed capacity globally to more than 238,000 MW at the end of last year⁶.

Despite significant progress around the world, in Australia a small minority of people is creating concern in some communities in relation to new wind energy developments. Australia has some of the most stringent assessment processes for the development of wind energy. Best practice means that the rules are clear to all and any changes are incremental and based on scientific evidence gathered over time. It is vital that this remains the case. Policy uncertainty is damaging to the industry, and prevents lower costs of capital from being applied to renewable energy projects.

Conclusion

It is well recognised that NSW needs new electricity generation capacity. NSW has world-class wind resources covering a vast land area. **Wind turbines at Cullerin in NSW were more productive than any others in the National Electricity Market in 2010.**

⁵ Global Wind Energy Council, 2010, *China Wind Energy Outlook 2010*. Available from: <http://www.gwec.net/index.php?id=169>

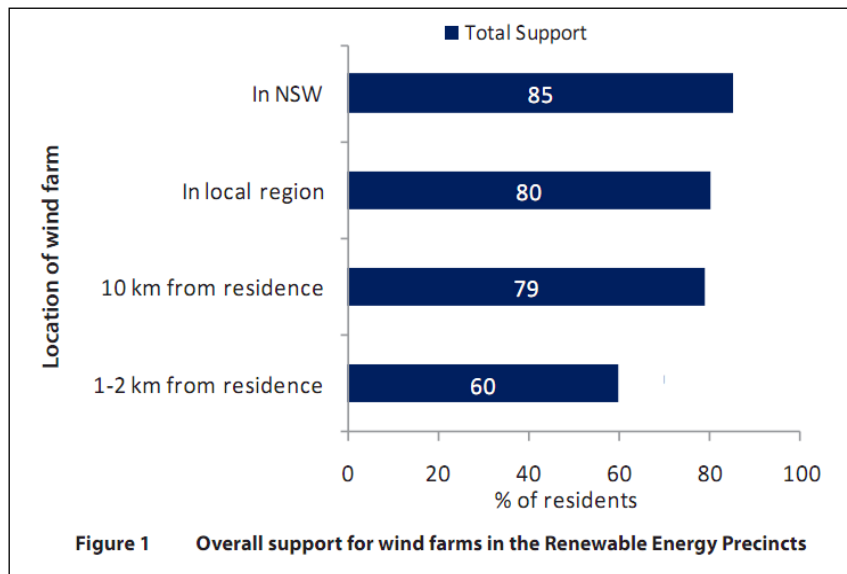
⁶ Global Wind Energy Council, 2012, *Wind Energy Powers Ahead Despite economic turmoil* [Press Release]. Available from: http://www.gwec.net/index.php?id=30&no_cache=1&tx_ttnews%5Btt_news%5D=340&tx_ttnews%5BbackPid%5D=4&cHash=f4d1217bad

The size of NSW means that there is excellent geographic diversity between wind projects. Gas-fired electricity generation capacity already in place and planned will support well over 2,000MW of wind with *no changes* to electricity network hardware or control strategies.

Electricity from NSW wind farms:

- Reduces coal and gas consumption which reduces pressure on existing supplies;
- Defers the need to extract CSG and/or leaves more for export (providing a significantly greater economic benefit to NSW);
- Significantly reduces inland water consumption of coal fired power stations in NSW; and
- Provides jobs, economic activity and growth in regional NSW

Despite the concerns raised in some media, it has been clearly demonstrated that the NSW community supports wind farms⁷:



Source: Department of Environment, Climate Change and Water NSW, 2010

As a small business in the this state working to achieve the transition to a more sustainable electricity sector, Epuron believes that with certainty of process and clear policy the electricity market will deliver cost appropriate generation, ensuring NSW receives its share of the benefits of increased renewable energy capacity.

Epuron would be pleased to provide further information about the potential for wind energy in NSW or any other aspect of this submission.

Yours sincerely,

Martin Poole

Executive Director

⁷ Department of Environment, Climate Change and Water NSW, 2010, *Community Attitudes to Wind farms and renewable energy in NSW*. Available from: <http://www.environment.nsw.gov.au/resources/climatechange/10948commattwind.pdf>