

INQUIRY INTO THE ECONOMICS OF ENERGY GENERATION

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Theme:

Summary



**Submission to:
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(Parliament of NSW)
Inquiry into the economics of energy generation**

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Introduction and background

Vestas Australian Wind Technology Pty Ltd is the local subsidiary of Vestas Wind Systems A/S, the world's largest manufacturer of wind turbines.

Vestas is the world's leading supplier of wind power solutions, having installed more than 41,000 wind turbines across the globe. Worldwide, Vestas employs more than 23,000 people in the design, manufacture, sales, installation, operation and maintenance of wind turbines. While the home country of Vestas is Denmark, we have significant operations all across the world and we are experienced in comparing policies and regulations in all our markets.

In Australia we have been responsible for the supply of more than half of the wind energy capacity to date. However Vestas is not a developer or owner of wind farms or wind energy projects, and so does not seek planning permits.

Vestas is a member of the Clean Energy Council (**CEC**), and in addition to our own submission we would also refer the Public Accounts Committee (the "**Committee**") to the CEC's submission to this inquiry.

Over the past decade in Australia, the wind energy industry has grown substantially in almost all states and territories, to the point where more than 2000 megawatts of installed wind capacity is now operating. A further 6000 megawatts of new wind energy projects are currently being investigated or are in the planning stages, many of them in New South Wales (**NSW**).

Part of the reason for the industry's growth has been the Federal Government's 20% Renewable Energy Target (**RET**) scheme, which has driven most of the investments in wind energy in Australia since 2001. The decision in 2009 by the Australian parliament to lift that target to 20% by 2020 will continue that growth over the next decade.

The other key driver behind this growth has been the policy imperative for all nations around the world to cut greenhouse emissions in an effort to reduce the impact of climate change. Wind power is the most cost-effective form of renewable energy, and is forecast to retain this status for many years to come.

However the development of the wind energy industry has been particularly successful in some states but less so in others such as NSW.

Terms of reference

The terms of reference for the inquiry are as follows:

That the Committee inquire into and report on the comparable economics of energy generation in New South Wales. In particular, the Committee will consider:

- i. the mix of energy sources used in New South Wales;*
- ii. a comparison of NSW's energy mix with other jurisdictions both in Australia and overseas;*
- iii. issues relating to long term energy security in New South Wales;*
- iv. the potential for NSW sourcing energy interstate;*
- v. the potential for, and barriers to, development of alternative forms of energy generation (e.g. tidal, geothermal) in New South Wales; and,*
- vi. best practice in alternative energy generation in other jurisdictions.*

The Vestas submission will address each of these in the order set out above, and will focus primarily on **electricity** rather than energy more generally.

The mix of energy sources used in New South Wales

NSW currently relies upon black coal to provide most of its electricity supply, and has done so for many years.

In 2010-11, coal and gas-fired generators accounted for approximately 89% and 5% respectively of electricity generated in NSW¹. Imports of electricity from other states are relatively small but significant, accounting for 14.4% of total consumption².

During the previous century, this heavy reliance on fossil fuels was not a big issue. However, the global move towards greenhouse gas emission reduction means that NSW has a significant “carbon risk” and would do well to diversify into other forms of electricity generation before this becomes a forced choice.

Even in the absence of greenhouse gas emission reduction targets, the fact that coal and gas have provided low-cost electricity during the previous century does not mean that this is likely to continue in this century. Labor costs, extraction costs and pollution costs are all relevant factors to consider in moving away from such a heavy reliance upon coal and gas.

In addition, the further expansion of coal mining and gas extraction has been facing increased community concern, particularly from farmers. Coal mining is an activity which is not able to coexist with farming activities in most cases, as it

¹ “Key Issues in Energy” Montoya & Wales, NSW Parliamentary Library, December 2011

² Ibid.

entails open cut methods or involves such significant activity at the mine mouth that growing crops or managing livestock becomes problematic, and in many cases impossible in the same location as the mining activity or gas extraction.

In addition, access to water is also a major factor that makes it difficult for coal mining and gas extraction to coexist with farming. Unlike other users of water, power stations often obtain their water at sub-commercial rates and this has been under challenge in recent years.

The National Water Commission has examined these issues and said electricity generators “should face the full economic costs of their consumption decisions, so they have incentives to invest in more efficient technologies”³. Coal-fired power stations use large volumes of water for cooling purposes, so this is no small issue.

By contrast, wind energy does not face these issues. Barely any water is required for the operation of wind turbines. They cause no air or water pollution. There are no greenhouse gas emissions from wind turbines. And wind energy, unlike many other forms of electricity generation, does not have a fuel cost.

As noted by independent think tank the Grattan Institute, other alternatives such as nuclear power and so-called carbon capture and storage technology for coal-fired generators are unlikely to be built in Australia unless government takes on most of the material risks of the project⁴. That is likely to be expensive and highly unpopular with taxpayers, particularly while lower-cost alternatives such as wind energy are ready to be built right now (the entire Grattan Institute report is worth reading for Committee members and staff, even though it does not have a specific focus on NSW).

All of these factors above mean that an increase in wind energy generation in NSW is an excellent strategic move in light of water and greenhouse gas constraints, and such a move will also act as a natural hedge against any increase in the fuel costs of coal and gas-fired power stations.

Comparison of NSW's energy mix with other jurisdictions

Vestas has little to say on this point, other than to reiterate the risks spelt out above from relying too heavily on coal and gas for electricity supplies.

Various countries and states will have different energy mixes and in many cases this is dictated by historical and geo-political factors. That said, the reliance by NSW on fossil fuels for electricity generation is significant, and is something that

³ “*Water and the Electricity Generation Industry: implications of use*” National Water Commission, 2009

⁴ “*No easy choices: which way to Australia’s energy future?*” Grattan Institute, February 2012

can certainly be changed because there are other viable electricity generation resources that can be deployed quickly.

While other states and countries do not have significant renewable energy resources, NSW does⁵. It would be prudent for the NSW Government to focus on diversifying into wind energy over the coming years, which appears to be the approach now being taken.

It has been pleasing to see that the NSW Premier and a number of his ministers have restated their support for the 20% RET and indicated their willingness to attract investment in renewable energy to help achieve the target.

Issues relating to long term energy security in New South Wales

Australia is blessed with many resources for energy production and NSW is no exception to this. Where there are issues of long term energy security, these relate primarily to the issues mentioned earlier in this submission: greenhouse gas emission reduction policies, and the moves to allocate water supplies on a fair and equitable basis for all users and remove any existing sub-market deals for electricity generators.

It is worth using this opportunity to discuss an additional issue, namely that of **investment attraction**.

Australia's electricity industry was largely designed, built and funded by state governments and later, state government-owned corporations. Over the past two decades this ownership structure has changed in many states, including NSW.

It is not controversial to point out that the attempted exit of the NSW government from electricity has been messy and troubled. Initial attempts during the late 1990s were unsuccessful. A proposal to privatise Snowy Hydro Limited in 2004 also failed. In 2008-9, the previous NSW Government attempted to sell parts of the electricity industry to the private sector again, which was also unsuccessful and culminated in the resignation of the Premier at the time⁶.

In late 2010 and early 2011, the NSW Government did finally manage to sell the retail electricity companies, together with rights to the output of state-owned electricity generators.

This was not a clean exit though, as it left the electricity network businesses and the generators in government ownership. The sales process also involved a commitment by the NSW Government to fund and build a new coal mine at

⁵ "Australian Energy Resource Assessment" Department of Resources, Energy and Tourism, 2010

⁶ "Power Crisis", Rodney Cavalier, Cambridge University Press, 2010

Cobbora to supply coal to the electricity generators in the future, which was quite unexpected by most other investors⁷.

The NSW Government is now in the process of selling its remaining interest in the electricity generation businesses but the Premier has stated publicly that he will not sell off the network businesses.

How does government ownership of energy businesses make a difference to investment attraction? It does so due to an inherent conflict, namely that the NSW Government not only expects to derive a return on its assets but it also has the power to set policy and take regulatory decisions that will not only have an impact on its own investments but will also affect the fortunes of those private sector investors who compete with government owned businesses or rely upon them for a service.

The conflict of interest is not simply a perceived one; it is a real one that has an impact on investment attraction in NSW. Former NSW Energy Minister Frank Sartor has revealed the extent of this conflict, noting that it was Treasury officials rather than his own department who took the lead on advising him on national energy reforms, and on other occasions the NSW Government had directed its network businesses to deliver additional dividends to Treasury, which came from additional charges to users⁸.

While the NSW Government continues to own electricity assets while also setting policy in this area, private sector investors in NSW face higher levels of regulatory risk and will accordingly seek a higher rate of return to match this or they will invest in other jurisdictions where this risk is lower.

The potential for NSW sourcing energy interstate

NSW already has electricity transmission links with its neighbouring states of Victoria, South Australia and Queensland. A significant amount of electricity is traded across these links each year. As noted earlier in this submission, during 2010-11 the amount of electricity consumed in NSW but imported from interstate was 14.4%, which is significant.

The Australian Energy Market Operator (**AEMO**) has in recent years been developing a proposal known as NEMLink, which is a planned transmission interconnector that would run through inland NSW and its neighbouring states to strengthen energy security and allow more renewable energy resources to connect in to the National Electricity Market (**NEM**). AEMO refers to the NEMLink proposal as the “backbone” of the NEM, as it will enable a truly national

⁷ “O’Farrell’s devilish dilemma”, Keith Orchison, www.businessspectator.com.au, 7 November 2011

⁸ “The Fog on the Hill”, Frank Sartor, Pan Macmillan Australia, 2011

market for electricity rather than the current series of interconnected regional markets⁹.

However, AEMO has become frustrated that NEMLink is unlikely to proceed while the current National Electricity Law and National Electricity Rules remain in their current form. AEMO CEO Matt Zema recently said “to realise the benefits of NEMLink and co-ordinated gas and electricity investment, changes are required to the regulatory and transmission frameworks.”¹⁰

The potential for, and barriers to, development of alternative forms of energy generation in NSW

To understand the various reasons for the slow start to the wind energy industry in NSW, Vestas has spoken to wind farm suppliers and developers in NSW, many of whom have successfully completed projects in other states and are in a good position to compare their experiences.

A number of issues are recurrent, and many are related to the process for obtaining a planning permit:

- A lack of coordination between Government departments and agencies adds complexity and time to the planning process;
- A lack of clear timeframes for decision making increases uncertainty for project developers;
- A lack of clear guidance about the approaches and methodologies that should be applied to assess the benefits and impacts of a proposed wind farm;
- The fees associated with planning are more significant than in other states.

There are other barriers to wind energy developments in NSW unrelated to the planning process. Most of these relate to electricity networks.

The process of connecting a wind farm to the distribution network and/or the transmission network is onerous, and poses a significant barrier to new wind farm developments.

In addition, there is a lack of transmission and distribution capacity in some areas of good wind energy potential.

Despite its significant wind resources, one of the biggest issues for NSW is its lack of transmission and distribution assets in a number of areas where the best wind energy sites are.

⁹ “2011 National Transmission Network Development Plan”, AEMO, December 2011

¹⁰ Ibid.

This is not a problem unique to NSW, but it is one that needs to be addressed if NSW is to reach its full potential in relation to wind energy generation.

The challenge is to trigger new electricity network investment to unlock NSW's significant untapped wind energy resources, which are in many cases located well away from existing power stations, transmission and distribution lines and load centres.

Additionally, as the Australian Energy Market Commission has stated, the existing model for bilateral negotiation for new connections will not cope efficiently with multiple connection applications.

The Ministerial Council on Energy has also recognised this, stating that transmission network providers “currently have no commercial incentive to build network connections to an efficient scale in anticipation of future connection”¹¹.

The challenge remains for energy policy officials and agencies like the AEMC and AEMO to work together to find a way through this issue that does not seek to place most or all the commercial risks on the new investors that NSW is seeking to attract.

One other significant barrier is the level of subsidies given to fossil fuels. In Australia this still remains enormous. The combined level of budgetary support for fossil fuels provided by state and federal governments in Australia has been estimated by the Australian Taxation Office to be \$8 billion per annum.¹²

To make the investments necessary to ensure Australia achieves the 20% Renewable Energy Target by 2020, the business community will need to see state and federal governments wind back fossil fuel subsidies and instead develop and implement “investment grade” energy policy.

To be “investment grade”, policy needs to tackle all the relevant factors that financiers assess when looking at a deal. It must be embedded in wider energy policy, and be stable across the lifetime of projects. Investors need to be confident, in a policy-driven market like the renewable energy sector, that governments are serious¹³.

Significantly scaling up renewable energy over the medium and longer term requires immediate government attention to the sequencing, planning and integration of the underlying infrastructure required to deploy renewable energy on a large scale.

¹¹ “Rule Change Request – Scale Efficient Network Extensions” MCE, February 2010

¹² “No easy choices: which way to Australia’s energy future?” Grattan Institute, February 2012

¹³ “Unlocking Finance for Clean Energy: The Need for ‘Investment Grade’ Policy”, Kirsty Hamilton, Chatham House, December 2009

That includes taking a fresh look at the NEM and the rules and regulations governing it, to remove barriers to entry for new investors in renewable energy projects and ensure they get connected to the power grid so that the 20% RET is met by 2020.

Best practice in alternative energy generation in other jurisdictions

Many of the issues referred to above have been faced by other jurisdictions around the world and solutions have been found.

With respect to the issue of planning and funding access to new transmission networks in remote areas, the most widely known and successful solution seems to be the concept of Competitive Renewable Energy Zones (**CREZs**) in Texas USA, administered by grid manager ERCOT.

Under that model, the regulatory body mandates investment in new transmission assets in area rich in renewable energy resources but poor in terms of transmission. This cost is initially passed on the end consumer of electricity, but as each new wind farm connects to the grid, the developer pays a connection fee and correspondingly reduces the amount paid by energy users.

Vestas considers that this approach should be adopted in NSW for both distribution and transmission access, and on a national basis for transmission lines across state borders.

Further questions

The continued growth of the wind energy industry will hopefully attract a number of significant investments to NSW, and will also create many new jobs in the planning, design, construction and operation of wind farms in NSW.

Vestas staff would be pleased to appear before the Committee to discuss our submission and answer any other questions Committee members may have. Contact details are on the covering email that attaches this submission.