About the Submitter:

Ventus Energy (NZ) Ltd is an independent wind farm developer working at developing and financing independent wind projects in the NZ market since 2003. It controls Kaimai Wind Farm Ltd. Ventus has two development projects in NZ:

Taumatatotara – a 20 MW consented wind farm south of Kawhia Harbour

Kaimai – a 130MW project currently in the resource consent process (www.kaimaiwind.nz)

Our submission relates to the following sections:

D1, D2, D3, D4, D5: The EPR paper concludes that vertical integration is not, in itself, a problem for the New Zealand electricity market. This conclusion is based upon sufficient progress in other areas which mitigate the market impact of vertical integration. We support this view provided the mitigating market improvements are actually implemented.

NZ has experienced very little in terms of independent wind farm development - NZ Wind Farms being a special case based upon the Windflow turbine research and development. It's clear when looking at the international experience that independent wind energy development brings many advantages to the market - particularly in terms of:

- breaking group think in terms of project timing and spend
- completing the development process at much lower cost
- sourcing independent equity
- utilising more turbine brands and models
- nimble and flexible

These features all lead to pushing the price of wholesale electricity down when compared to the incumbent developers.

The presence of independent developers then often leads to more vertically integrated operators in the market. This is then good for wholesale and retail market pricing. We have seen this occur in the Australian, Irish, British and Spanish markets. The Irish market is perhaps the closest example relative to NZ. In this market for which Ventus Energy is still a participant, independent generators were encouraged into the market by government backed PPAs available to small wind - sub 10MW - in the early to mid 2000s. This allowed new independent generation to get a foothold in the market - a notable example in Ireland was Airtricity (then bought by Scottish Southern Energy) https://sse.com. Ventus Energy sold a 7.5MW Irish development project to Airtricity who then financed and built that project.

The essential component of these PPAs was that debt finance was possible for these independent projects. Debt finance is not possible to obtain for wind energy projects in NZ based on the current spot market and 3 year hedge market. The key missing component is future price firming. The only parties that can price firm are the portfolio owners.

To begin a new generation portfolio (eg aggregating wind, solar, hydro etc) is an order of magnitude more complex (and risky) than taking a single project through a development project. This is due to many more spinning parts that need to be aligned.

A wind farm that sells forward contracts beyond 3 years is subject to spot market risk in the case that it's demand customers (or retail customer) requires generation and no wind is blowing. Then the wind farm must source from the spot market. Banks will not lend against this scenario. The situation can be improved by building a project with equity and then financing the asset as an operating company (rather than via non-recourse project finance). But then access to sufficient equity (which is also expensive) is required.

It is becoming more possible to forward sell electricity to independent retail companies, however the cost of debt finance is higher than to established vertically integrated incumbents.

The generation portfolio owners have a large market advantage as they can manage risk through their fuel sources and therefore source lower cost debt finance.

We therefore wish for some price firming arrangement to come into the market to allow the NZ market to mature. Market maturity is achieved when all market participants can play on an even field, this does definately not occur yet.

Arrangements for future price firming include:

- government supported PPAs ring fenced to independents for a time window of opportunity
- mandatory freeing up of incumbent generators storage (the 1989 reforms locked away the government funded storage from the market)
- government supported storage facility (likely to be batteries)

These measures would ideally be available only to independent generators for a window of opportunity to allow the market to mature. At some point the function would be discontinued or expanded to allow full market participation (especially in the case of battery storage).

The very real upside of government supported storage is that, if designed and located intelligently, it will increase the grid stability.

G1, G2: Government funding to progress and issues and options report on government storage would prove very useful for grid stability and levelling the field on wholesale market participation (and independent retailer stability).

E2 and E3: We also consider the present situation where distribution lines companies may build and own generation that connect to their own networks causes a considerable conflict of interest when assessing other partys applying for connection to that same network. We therefore advocate for market oversight on connection approval and costs. We do not think the present appeal process on connection difficulties to be effective where the applicant is often time constrained and the distribution company not time constained.

More detail on wholesale market treatment of wind generation

There are a number of structural issues that will limit or prevent new renewable wind generation being built in the New Zealand market.

One of the principal issues is the way the New Zealand Wholesale Electricity Market responds to wind generation. The wind resource that covers much of New Zealand's operating and consented wind farms is positively time correlated; that is, when it is windy in Wellington, it also tends to be windy in the Manawatu and Taranaki. Wind tends to be offered into the wholesale market at the minimum price ($0.01/MWh – and until recently this was mandated by market rules); when there is a lot of wind generation present in the market this lowly priced wind generation results in a lower market clearing price, and thus low revenues for wind generation. This is best expressed as a volume weighted average price (VWAP) reduction.

When the wind is not blowing (and this lowly priced generation is not available in the market) and higher value "storage" fuels such as variable hydro generation or gas are required to meet demand. The presence of wind in the market enables these variable fuels to be "turned off" and stored when the wind is blowing, for dispatch at periods of higher price.

This situation is exacerbated as more wind generation enters the market, particularly if it is located in areas where the resource is correlated (which is where the most attractive wind farming sites tend to be). More wind means more VWAP price compression. Any developer must factor this into their investment case. It gets worse; more wind results in poorer realised price from existing assets, creating a clear disincentive for existing wind farm asset owners to build or to see more wind farms built.

More wind generation enhances the value of stored fuels, and while this at least conceptually appropriately reflects their relative contribution in a multi-fuel market, the effect is too pronounced. For those with storage the effect is doubled; they can purchase lowly priced wind from the wholesale market when the wind is blowing, then receive enhanced value from their storage fuels when the wind is not. Accordingly, many market participants are keen to see more wind generation in the market; they simply want someone else to own it and suffer the poor investment case.

Using pure market theory, developers should build the fuel categories that offer the greatest economic return. This favours storage fuels, such as hydro and gas, which receive higher prices due to their dispatchable nature. However, few New Zealanders will thank the industry for seeking to build large new hydro storage or gas plants.

New Zealand has the enormous benefit of a network of huge state-funded hydro generation assets. These provide storage that uniquely enables New Zealand to achieve very high levels of renewable generation. The owners of these assets are the principal beneficiaries of new wind generation. The market structure effectively provides for open-ended value transfer from wind farmers (and other variable renewable generators including solar installations) to hydro and thermal storage owners. More wind generation means more value transfer. This

has and will continue to prove to be the single biggest reason why wind development will not occur at scale in New Zealand.

This effect is so pronounced that investors have no investment certainty. While the effect can be studied and understood (and factored into an investment case) for, say, a new wind farm in the Manawatu, if another wind farm is then built in Wellington it will cause further price compression thus destroying the investment case of the recently built Manawatu wind farm. Wind developers know this and won't invest.

A common answer to this problem is to advise wind developers to seek long term power purchase agreements with retailers or gentailers. While they can do this, the buyer has to factor in the very same effect into the price they offer the wind farmer, creating the same price outcome.

There are a number of ways that other markets address these issues. At the core is providing long term price certainty to renewables developers, whether they be independent investors or gentailers.

Wind farmers generally agree that dispatchable storage fuel is an essential accompaniment to variable renewables such as wind and solar to support a cohesive electricity system. All agree that New Zealand should be heading towards a more renewable future. What renewables developers seek is to limit the value transfer from renewables to existing state-funded storage.

There are a number of ways this could be achieved. The market could "cap and trade" this VWAP effect, limiting it to a certain level, and in doing so acknowledge the value renewables have in the overall generation mix. This would provide certainty to renewables developers.

Another alternative would be to make storage tranches available in the market to wind and solar renewables owners and developers – in essence allowing them to internalise the VWAP effect their renewables create. This could be a structured storage market alongside the current futures market.

Most markets where significant wind generation has occurred have features explicit subsidies for renewables. These are a somewhat draconian measure and would be a backward step for the New Zealand electricity market. New Zealand is fortunate in that it features exceptional wind resource; some delicate market evolution as described above can make a meaningful difference in seeing more renewable development occur.