Speaker 1 - Barry O'Neill.

Submission to PAC on Capital 2 Extension

I wish to object to the granting of an extension of time to construct the Capital 2 wind farm.

I base my objection on the fact that there is no demonstrated public interest in the granting of the extension and no evidence that the approval of additional renewable energy generation capacity is required. In five minutes I can only briefly touch on the public interest issues surrounding wind energy developments.

This is the fourth modification to the approval which has been sought in relation to this project – and it has not even commenced construction. Of course the three previous modifications have been approved, as has every wind farm proposal in NSW that has reached the PAC.

In support of its request for an extension Infigen has claimed that there is a public interest in granting it additional time to build the wind farm as the farm will reduce the emission of greenhouse gases and the Department has repeated this.

What is the public interest?

Under section 79C of the NSW *Environmental Planning and Assessment Act 1979* the decision maker is required to take into account the public interest.

The population of NSW in 2016 was 7.7 million. No doubt each of those people has a view on what the public interest is. As the NSW Ombudsman has said, sometimes an individual's person's rights can be in the public interest, for example, the right to a fair trial, or the right to free speech are individual rights that are accepted as being in the public interest. So too is the right to quiet enjoyment of one's property.

Let me expand.

As I have noted, the public interest in relation to wind farms as far as developers are concerned is simply that a wind farm contributes to savings in greenhouse gas emissions through renewable energy, and this is sufficient to make it acceptable to impose a huge negative impact on local communities through:

- The visual impact of massive, rotating wind turbines completely out of character in a rural landscape;
- Noise impacts on surrounding residents;
- Environmental harm;
- Community fracturing between hosts who benefit financially and neighbours who suffer all the ill effects; and
- Economic harm to local communities through freezing out other worthwhile development opportunities.

However, developers do not address:

- The unreliable and intermittent generation of power by a wind farm;
- The need to build additional, and at major cost, back-up power generation facilities, usually gas powered;
- The unreliability introduced to electricity transmission networks by wind power, as recently experienced in South Australia and predicted for NSW;
- Job losses in traditional electricity generation, coal mining and transportation;
- The fact that the all wind turbine components are imported;
- The huge subsidies to renewable power generators which have been a factor in the massive increases in the price of electricity suffered by industrial and domestic consumers in the last 10 years;
- The higher costs of electricity for industry which has eroded the competiveness of Australia's manufacturing sector to the extent that manufacturing in South Australia is now reduced to heavily subsidised defence projects;
- Community uncertainty through 'banking' of approvals and never ending modifications to approvals;
- The reduction in the competitiveness of Australian businesses through higher energy prices;
- The dampening effect on the economy of much higher energy prices for domestic consumers.

This is not a complete list, but let us talk about the greenhouse gas 'savings' from wind farms.

There is no assurance given that Capital 2 will ever be constructed to achieve the claimed savings in greenhouse gases.

There is no certainty that the wind farm will not be <u>additional</u> generating capacity, rather than replace coal-fired generation, in which case there will be no savings in greenhouse gas emissions.

What is the public interest in increased renewable energy generation?

NSW produced 191 million tonnes of saleable coal in 2015-16. Of this 142 million tonnes was thermal coal, ie the type used for electricity generation. The NSW coal industry employs about 20,000 people directly and a further 80,000 in mine and non-mine related services. The majority of this coal is exported, with a value of $13.2 billion in 2015-16. NSW received $1.3 billion in royalties from coal mining in 2015. (Statistics from the NSW Department of Industry, Resources and Energy, Mining NSW and the Australian Energy Regulator.)

Clearly the coal industry is vital to the public interest in NSW. It generates employment, income and electricity. Until the NSW Government makes a policy change, any new development which adversely impacts on the coal industry is not in the public interest.

The production of greenhouse gases is a worldwide issue.

The greenhouse emissions of China, India, America and Europe all contribute to global warming. Australia's emissions are around 1 per cent of global emissions. Unless there is a dramatic reduction of emissions by the rest of the world, Australia's efforts will be meaningless. In the process of doing the right thing Australia has thrown away the advantage it had of cheap electricity through the use of high quality coal. High quality coal burns with less carbon dioxide emissions than low quality coal.

It is not logical to 'save' greenhouse gas emissions in NSW by using wind power at the same time as exporting 142 million tonnes of coal which will be used to generate greenhouse gas emissions in other countries. The burning of 142 million tonnes of coal would release 338.16 million tonnes of CO_2-e (Carbon Dioxide equivalent), vastly more than will be 'saved' by the Capital 2 project. (The conversion factors are sourced from the 'National Greenhouse Accounts Factors' by the Commonwealth Department of the Environment, July 2014).

It is impossible to sustain a modern industrial economy using uneconomic, intermittent and unreliable power sources, as has been demonstrated in South Australia were high power prices and unreliable supply due to a high reliance on wind generated electricity have seen manufacturing industries leave the state and where domestic electricity supply has proved unreliable.

Where is the public interest in that?

There is a viable alternative to wind generation based on solar photo-voltaic power generation coupled with battery storages. These batteries can operate as a virtual power station in times of high demand. The Commonwealth Government is funding a development of this concept in South Australia and commercial firms are actively promoting it – see the article in the Canberra Times of 24 April 2017.

Over the last three weeks we have been experiencing the best of autumn weather in south east Australia. Beautiful clear days with not a breath of wind.

But this raises the question of how do we generate electricity when the wind does not blow?

The answer increasingly is to build gas turbine powered generating plants which can come on stream at relatively short notice.

Where do we get the gas for these turbines?

This is not easy as almost all east coast gas is now exported, leading to shortages for industry and large cost increases for all users. What is the response of the mining industry? To increase production through 'coal seam gas' which is industry code for 'fracking'.

Is this in the public interest?

I submit that the easy days of assessing the public interest exemplified in the Infigen application and the Department's report are over. It is a very complex issue and the superficial claims of wind farm developers barely begin to address it.

It is the responsibility of the PAC to undertake this task and I do not envy you. However, unless proper consideration is given to the public interest by the PAC I suggest that it should rather consider itself the Project Approval Commission.

Thank you.

Barry and Denise O'Neill
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Energy How battery storage can take on the electricity companies

Power to the people, not just the rich

Brian Robins

It was one of the disasters of recent energy policy: the boom in sales of air conditioners without taking into account the impact their mass sale would have in forcing up power prices for all.

Those without air conditioners have had thousands of dollars added to their electricity bill to pay for the network upgrades to cope with air conditioners, since much of the extra "poles and wires" are used only a few hours a year, when the weather is very hot or very cold.

Now, mass adoption of battery storage systems poses the same risk for those who don't install them. Their adoption will allow households to slash their use of the grid which will leave fewer users faced with higher bills to maintain the network.

Communities of users

But for German battery challenger Sonnen, batteries are only part of the energy equation. More fundamental is creating "communities" of connected battery users to create virtual power plants.

Or as Philipp Schroeder, managing director at Sonnen puts it "create a platform where private

Or as Philipp Schroeder, managing director at Sonnen puts it "create a platform where private citizens can share electricity and basically build a utility without a power plant".

Sonnen is already well established in Europe and the US and now it is ramping up its presence in Australia, going head to head with Elon Musk's Tesla, where Schroeder was, until recently, a senior employee.

"We believe Australia will be one of the leading markets when it comes to this style of development, of decentralised peer-to-peer communities," Schroeder says. Its product is more expensive than Tesla's battery system, for example, but as Schroeder puts it the choice is chalk and cheese – would you buy the cheapest car, or focus more on fuel efficiency?

It is a choice the likes of General Electric has also made since, via its GE Ventures arm, it recently took a slice of equity in Sonnen, which is on the Massachusetts Institute of Technology list of 50 most innovative companies.

Establishing critical mass

In Australia, Sonnen is establishing the "critical mass" in terms of installed battery units so that from around mid-year it will launch what it dubs its "community model": an installed base of around 2000 batteries means it will then be able to offer broader services in both the wholesale electricity market and the so-called frequency regulation market.

"There is probably no better market environment than Australia," Schroeder said due to the potential quick payback for rooftop solar and battery storage systems.

With "the highest penetration of PV [systems] extraordinary sun-hours, huge understanding of solar, and the extremely high cost for energy", this all adds up to make the market highly attractive.

"And you also have a grid issue. We can solve the grid issue – stabilise the grid."

For Sonnen's Schroeder the challenge is to create the awareness that installing stand-alone battery storage is not good, because you create "islands", which places additional costs on the grid.

"Why? Because the individual consumer is using less electricity. It is not optimising the grid; it is not even helping to stabilise the grid – rather, it is destabilising the grid," he says.

"Our mission statement is 'clean and affordable energy' for all. It is not 'I am a rich dentist, I can afford power storage and I don't give a damn about anyone else'.

Australia could be one of the leading markets when it comes to decentralised peer-to-peer communities. Photo: Justin McManus

"There are two issues with renewables. One is there is no sustainable business model. It lives off feed-in tariffs – subsidies. And no one is able to orchestrate the challenge of millions of decentralised assets which can only produce when there is wind or sun. But this is what we can do."

Renewable appeal

Pressure is building for a business model to emerge to take advantage of the large installed base of renewables energy and, increasingly, battery storage. In Adelaide, AGL is planning to link existing rooftop solar systems into a "virtual power station", using a government subsidy.

But Sonnen is already advancing down this path, without subsidies, while effectively guaranteeing those with rooftop solar systems and its battery systems pay nothing for their electricity while also having the promise of generating some income from ancillary services it is able to provide to the network.

"There's lots of value in grid services," Sonnen's Schroeder argues. "You don't have to take care of it; you just have to become part of a community of people who unite to replace utilities.

'There is probably no better market than Australia.'
Phillip Schroeder, Sonnen

"You never have to pay for electricity again," is the seductive sell.

Its networks not only take advantage of using rooftop solar systems to sell power into the grid when wholesale prices are high but it also opens the door to take advantage of those times when renewables such as wind generate power at times when there is negligible demand, such as at night.

In the world of renewable energy it is not uncommon for power prices to be negative, with wind farms producing large volumes of electricity during the night or the weekend when demand is low or non-existent. Battery systems are able to access this output and sell it at times when prices are high.

Then there is so-called "frequency regulation", with the need to supply ready volumes of electricity to the grid to make up for shortfalls from renewable energy to keep the grid-powered lights on.

Last week, the Australian Energy Markets Commission threw its weight behind changing the so-called 30-minute rule which had effectively blocked batteries from competing in this market, leaving it to the big power companies.

Sonnen's sell

"In the first phase, we sell the hardware, enabling the customer to save 70-80 per cent of their electricity bill. This enables them to amortise their investment within as short as five years, or even seven years, depending on where you live," Schroeder says.

"And then we give you the option to allow us to utilise that capacity to provide additional services."

Sonnen batteries are able to cycle – charge and discharge its batteries – three times a day, which is better performance than rival batteries offered by Tesla or LG, it argues. This extra cycling gives the company the ability to then participate in wholesale markets.

"The [potential] customer looks at a Sonnen battery and sees a Powerwall," Schroeder says. Buy the cheapest car or the price per kilometre? "On this basis, we are not even one-third the cost of a Tesla battery," Sonnen claims.

"Let's not build [battery storage] islands for rich dentists who can afford it, let's have a responsible platform that enables clean and affordable energy for everyone. Government cannot and will not tolerate 'islands for dentists'."

Tesla chief Elon Musk is vying to build Australia's largest storage battery. Photo: AP