Senator Nick Xenophon's Dissenting Report to the Select Committee into the Resilience of Electricity Infrastructure in a Warming World

"The Lights Aren't On, But Everyone's Home"

An Important Issue

1.1 Anthropogenic climate change is one of the greatest challenges of our time. There is a preponderance of considered scientific studies and literature that details the potential consequences of global warming, and the dire consequences of not dealing with it as a matter of utmost urgency.

1.2 For those that question the science, or doubt the consequences of climate change, the words of Rupert Murdoch *'we should give the planet the benefit of the doubt*', should at least resonate. That is, in a world of uncertainty it is important to understand the risks inherent in not doing all that is reasonable to address potential consequences of human induced climate change.

1.3 We should be mindful of Giddens' paradox. This is the central paradox of climate change politics, argued by the sociologist and a member of Britain's House of Lords, Anthony Giddens, that electorates can't grasp the significance of climate change because it is too abstract, and not dramatic enough (they need catastrophe footage), and won't — until it's too late.

1.4 Australia needs a national energy market framework, backed up by policies and rules, that are consistent with the Government's target of reducing emissions by 26–28 per cent (on 2005 levels) by 2030 and the further greater challenge of meeting the Paris Agreement targets by 2050.

1.5 Australia also desperately needs national energy market policies that enjoy bipartisan support so that crucial investment confidence, currently absent, is restored to the generation market. Australia now faces an effective drought in energy investment because of unnecessary uncertainty.

1.6 On the matter of investment uncertainty Professor Garnaut raised this issue when giving evidence to the inquiry:

> While there is such uncertainty there will not be new investments. If, for example, we had bipartisan support for a form of carbon pricing, which could be an emissions intensity scheme, and business had confidence that was going to last for quite a long time, then it would be much easier for business to calculate that there was going to be a role for gas for a certain

> period of time, which would justify investment. In current circumstances the extreme uncertainty about policy inhibits all investment.[1]

1.7 This inquiry has been most useful for establishing a much clearer understanding of the current electricity market environment, and inherent problems with it, including the factors which led to my home state of South Australia experiencing a complete blackout on 28 September 2016 and to experience load shedding on 8 February 2017. The inquiry has also helped identify solutions to our system price, security and reliability problems.

1.8 However, I believe the Chair's report is making a fundamental error in seeking to pit gas against renewables. Gas is an important transitional fuel to help us meet our climate change targets, that can complement, not necessarily compete with renewables. The consequences of the approach in the Chair's report will be that energy prices will be driven so high and reliability will be driven so low that it will lead to a damaging deindustrialisation of the Australian economy. Whilst our emissions will inevitably reduce with this deindustrialisation the paradox is that businesses will go offshore to other countries where the environmental standards and carbon pollution policies will not be as robust.

1.9 A practical alternative proposition must be advanced to provide political certainty, and with it, policy certainty.

Proceed with Care

1.10 South Australia serves as a good example of how to avoid the pitfalls inherent in reducing emissions without compromising grid stability.

1.11 The SA Government, in proceeding down the renewable pathway, carried out the relevant due diligence but then ignored the advice provided to it.

1.12 A Report prepared in 2009, recently revealed, to the South Australian Department of the Premier and Cabinet by McClennan Magasanik Associates (MMA), entitled 'Potential for Renewable Energy in South Australia'[2] unambiguously states:

> A level of 20% wind capacity is proposed as a level that can be achieved without compromising grid stability.

1.13 The MMA report also set out a number of measures and market developments that had to take place before that 20% level of intermittent wind energy could be exceeded without compromising grid stability. That clearly did not take place and as a consequence South Australia was left vulnerable.

1.14 A second independent report prepared in May 2009 (the same month as the MMA report) prepared for the Sustainability and Climate Change Division of the

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1 Professor Ross Garnaut, private capacity, *Committee Hansard*, 7 March 2017, p. 24.

2 McClennan Magasanik Associates, Potential for Renewable Energy in South Australia, *Report to South Australian Department of the Premier and Cabinet*, 11 May 2009, http://www.renewablessa.sa.gov.au/files/2009report_potential.pdf

Department of the Premier and Cabinet of South Australia came to similar conclusions. That report prepared by the National institute of Economic and Industry Research[3] sounded similar dire warnings. It stated:

> **Limitations on wind power output to ensure South Australian grid stability** is estimated to be associated with about a 20 per cent limit on wind capacity (emphasis in original).

1.15 The failure to heed the expert advice contained in the above two reports as well as other independent advice has led to serious price, security and reliability problems in South Australia which has required dramatic Government intervention. I believe such intervention would not have been necessary had these reports been heeded and acted upon.

Power Affordability and Security Scheme

1.16 Australia must adopt a scheme that ensures that the price of energy is affordable and is supplied reliably.

1.17 To ensure price affordability, gas must be used as a transitional energy until such time as renewables can offer the affordability and security that consumers and businesses require and expect.

1.18 Such a scheme would require high emission generators to buy credits from low and zero emission generators. The process would simultaneously raise the cost of the high emissions generators and lower the cost of low and zero emission generators. These offsetting costs mean prices stay the same. As old power stations are shut because of the costs of staying open is too high, the credits for cleaner generation will fund the investment in new generators. Having extra power stations operating pushes prices lower through greater competition.

1.19 Setting the baseline at current levels and dropping to zero between now and 2050, and leaving it on this trajectory will provide the investor the certainty needed for a secure power system.

1.20 Such a scheme would ensure all technologies compete in the same market. The only thing that will distinguish one technology from another is the price they charge for a credit and the value of the energy produced. Naturally, energy sources that provide more certain reliability will be valued by the market more than facilities where reliability is less certain.

1.21 The above approach was first described in work[4] that I jointly commissioned with the then Opposition Leader, the Hon Malcolm Turnbull, in 2009.

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3 National Institute of Economic and Industry Research, The future prospects for renewable energy in South Australia, *A report for the Sustainability and Climate Change Division of the Department of Premier and Cabinet of South Australia*, 14 May 2009, http://www.renewablessa.sa.gov.au/files/nieir-the-future-prospects-for-renewable-energy-in-south-australia.pdf

Essential Rule Changes

Professor Garnaut made the point to the Committee that the rules of the National Electricity Market were set for a world in which big coal based generators provided nearly all of the power. He went on to say:

> Some of the rules of our system systematically discriminate against new technologies that could help that; for example, an arcane Australian approach to settlement of pricing in the wholesale electricity markets, where the average price is over half an hour, when generators and users now bid every five minutes. That averaging takes away a lot of the value of a battery, which can respond in less than a second to requirements of power, whereas many of the coal based and gas based generators take much longer to respond.[5]

1.22 That is why pricing must be recalibrated to five minute settlement, but it must be done in an orderly manner such that it does not cause unintended consequences to the market.

1.23 Professor Garnaut also gave evidence that there could be a secondary market to ensure that renewables could provide 'backup power' in any contracts entered into, something supported by Mr Danny Price of Frontier Economics. Such an approach would be essential to provide greater grid stability and lower prices. The following exchange sets out the dilemma and what needs to be done:

> **Senator XENOPHON:** Professor Garnaut, we have had these debates and discussions over many years. As you remember, Mr Turnbull as opposition leader supported the emissions intensity scheme. Now he does not, and both parties have gone 180 degrees. Further to Senator McAllister's line of questioning, you talk about having two markets in respect of this. Wouldn't it make more sense to require changes in the market rules so that renewables need to bring with them market system security services when they connect? In other words, we would have the renewables but we would ensure that they have to provide that backup, whether it is battery or a contract with a thermal or gas generator, for instance. Wouldn't that be more efficient than having two markets that could be discordant with each other?
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> **Prof. Garnaut:** I think you are suggesting something that is entirely consistent with having two markets. If you required the large-scale supplier of intermittent energy to pay for the services that are necessary to balance it, they could pay for it either by putting in the battery themselves or contributing, through the Australian Energy Market Operator, to the costs of someone else contributing it. There you could get a lower cost response. If you required every wind farm to have a battery, you would not get the full value out of each of those batteries.

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4 Frontier Economics, *The economic impact of the CPRS and modifications to the CPRS*, Report for the Coalition and Senator Nick Xenophon, August 2009, http://www.frontier-economics.com.au/documents/2009/08/cprs-report.pdf

5 Professor Ross Garnaut, private capacity, *Committee Hansard*, 7 March 2017, p. 22.

> **Senator XENOPHON:** I understand now. So you are saying it does not matter how you get there; the most efficient way of getting there is to ensure that, in order for a supplier of intermittent renewable power—I hasten to add that the proposal for Port Augusta, the solar thermal, is not intermittent; that is effectively baseload. But, if it is an intermittent supply, so long as there is an efficient contracting mechanism to provide backup power, that would have the same effect.
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> **Prof. Garnaut:** Yes, and we do have in our electricity markets elements of that. We have got markets run by AEMO for frequency control ancillary services for what I would describe as slow-response frequency control ancillary services, but we do not have markets for fast-response services, which are the kind you need when you have got a large amount of wind and you get sudden changes in the contributions, or, similarly, large amounts of large-scale solar and suddenly the cloud goes over. You need quick responses.[6]

Reducing Gas Prices

1.24 An essential element to achieving greater energy affordability is to have affordable and fair gas prices, which tragically Australia doesn't have due to abject market and policy failures. Australia has an abundance of gas yet consumers and businesses are, in many cases, paying twice to three times as much as their counterparts overseas (some of whom are consuming exported Australian gas). This dries up personal disposable income that could otherwise be being spent in the general economy. This makes businesses uncompetitive by comparison to their international competitors. Prices are so high now that businesses and consumers are being hit hard, with an increasing number of energy intensive businesses facing economic ruin as a result.

1.25 Urgent policy measures needed for increasing the supply of gas and reducing prices include:

- Gas and gas pipeline market transparency so that consumers and businesses are not left negotiating in the dark.
- Ensuring gas company exports are subject to a public interest test, having regard to, amongst other things, the affordable, reliable, efficient and long-term domestic supply to Australian energy consumers. As an interim measure until such a test could be brought in and applied to new gas fields, the government should, short of an alternate domestic supply agreement from them, prohibit gas companies with extant gas export contracts from buying up domestic gas supplies to meet their export needs.
- Ensuring that the significant gas reserves are not left untapped by companies holding back from developing them because it is not in their commercial

6 Professor Ross Garnaut, private capacity, and Senator Nick Xenophon, *Committee Hansard*, 7 March 2017, p. 24.

interests to do so. A strict 'use it or lose it' test is required for retention leases in order to help address the commercial barriers to commercial development of gas fields. This test must be applied rigorously.

1.26 These and other approaches to deal with the failed market conditions must be brought in now.

Encouraging Renewables

1.27 There is a need to encourage renewables that supply the grid in a manner that meets consumers demand and in a way that adds, rather than detracts, from system security.

1.28 An example of such an approach is the solar thermal project under consideration by Government for installation at Port Augusta.

1.29 One exemplar is SolarReserve's proven solar thermal solution which uses a large array of tracking mirrors to heat molten salt which in turn drives a steam turbine generator. It's a solution that supplies to the grid without the sun shining and does so with 'inertia' which helps grid stability.

1.30 Such an installation at Port Augusta would serve as an iconic and lead example for other renewable projects providing more reliable energy.

Summary

1.31 In coming months, noting the closure of Hazelwood power station and a deeply flawed and dysfunctional energy market, there is the real prospect that Australian consumers and businesses in the eastern states will be subject to 20 to 30% increases in their energy bills compared to today's prices.

1.32 Australia needs to address the current energy price and security in a manner that recognises the reality of climate change and the need to transition to a renewable system in a calm and careful manner that brings the community along with it and does not destroy businesses and jobs along the way. The following recommendations are made.

Recommendation 1: That the National Electricity Market Rules be urgently reformed in order to ensure investment certainty, to drive greater power reliability, grid stability and lower prices whilst at the same time meeting our international agreements to reduce Carbon Emissions.

Recommendation 2: That in acknowledging that gas is an important transitional fuel to meet our carbon pollution reduction targets, that there be urgent reforms to gas market transparency, a strong public interest test involving exports, and a strict 'use it or lose it' approach to gas reserves.

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