Australia's Energy Tipping Point

Speech to Energy Policy Institute of Australia

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Thank you Bob.

Your Institute has a long history of emphasising and explaining the fundamental importance of energy in Australia.

Today's session focusing on decarbonisation, technologies, timings and costs is particularly relevant.

Only last month we saw a shortage of power generation and Victoria suffering rolling blackouts.

Hundreds of thousands of homes and businesses had their energy supply cut off, hours after the Victorian Government assured the community there was nothing to worry about.

I am going to focus today on Australia's energy policy: what has gone wrong, the potential solutions on offer and the best options for the future.

Before doing that, I want to reflect on Australia's world-leading energy export capacities and how a fashionable push to restrict energy choices for the developing world will in fact hurt the most vulnerable.

Australia is a major energy exporter

There is no doubt that Australia is an energy superpower.

This should be no surprise. Our energy resources and exports are the envy of many countries.

We are on the doorstep of the fastest growing region in the world, with rapid urbanisation and a power-hungry growing middle class driving massive growth in energy demand.

It's easy to see where the International Energy Agency gets its forecast that electricity demand will increase by up to 66 per cent within the next 20 years.

Australia, with its astounding bounty of energy resources, should be helping to provide power to the billions who want it and don't have it.

Yet we are facing a concerted effort by some people trying to stop this quest for progress and deny Australia the opportunities, jobs and community prosperity that come from supplying energy to the world.

Trying to restrict fuel and technology choices for people in the developing world is an attempt to undermine the greatest achievement of the past 40 years, and possibly of all time – the incredible transition where literally hundreds of millions of people have been lifted out of poverty.

These opponents of true progress have themselves benefited greatly from the supply of cheap and reliable power – yet want to deny those benefits to others.

Access to energy reduces the time women spend on back-breaking domestic chores.

It reduces the staggering number of women and children who die from cooking with biomass in closed environments, with the World Health Organisation estimating 3.8 million people dying prematurely from exposure to smoke from indoor cooking fires[1].

Electricity and particularly lighting allows children to study, allowing them to pursue educational goals that were previously unattainable and giving them opportunities their parents could not imagine.

Women and children right on our doorstep – some of our Asian neighbours.

Yet those who argue we shouldn't be selling our coal, uranium or gas to the developing world have no answer when asked what the developing world should do if denied these energy resources.

Keeping it in the ground means burying the hope of a better future for many in the developing world.

I ask you: is that fair? Is that reasonable?

The MCA advocates for a transition to a global low carbon outcome. We are strong advocates for Australia's support for the Paris Agreement and a 26-28 percent reduction on emissions by 2030.

We agree strongly that wind and solar are important elements of the global energy mix and fundamental to a global transition to clean energy.

Yet while storage technology remains in relative infancy, renewables won't meet the energy needs of developing countries or support their legitimate aspirations for economic development.

The suggestion that people in Australia would seek to deny energy choice to others who consume less than 10 per cent of what we do is no utopian or totalitarian fantasy.

In fact, it is fundamentally unethical for rich Westerners to promote policies which condemn people in South Asia and Africa to continued poverty.

[1] https://www.who.int/en/news-room/fact-sheets/detail/household-air-pollution-and-health

Australia's Chief Scientist Alan Finkel noted only last week[2]:

> *…the reality is that right now solar and wind provide only 6% of our worldwide electricity needs and storage systems are collectively a drop in the ocean.*
>
> *If we were to close down all the coal fired electricity generators in the next ten or twenty years, we could try to replace them through a massive commitment to building solar and wind, but it is difficult to conceive that we could build enough storage in that timeframe.*
>
> *Without this storage there would be electricity shortages and the political backlash that slows the path to the perfect world.*

As a leading developed country and a major energy exporter, Australia can help lift living standards and improve global political stability through developing and bringing to market low emission technologies. We need to see more projects on the ground that will lower emissions, like the Gorgon LNG project in WA and CarbonNet project in Victoria which use carbon capture and storage technologies.

We can also work with other countries in developing the full array of low emission technologies such as the Mission Innovation initiative and continuing our involvement with the Generation IV Nuclear Reactors Forum.

The Breakthrough Energy Coalition formed in 2016 is focused on all low emission technologies including renewables, storage, advanced nuclear reactors and CCS with the goal of delivering affordable and reliable energy with near zero emissions.

Their report from two weeks ago titled Advancing the Landscape of Clean Energy Innovation is inspiring stuff.

It examines a broad list of technologies related to the areas of energy supply and application and cross-cutting technology areas, identifying ten high-priority clean energy innovation areas including advanced nuclear reactors, electric grid modernization and smart cities, carbon capture, use and storage and biological sequestration.

In a globally competitive world where our governments should be taking the lead on genuine energy innovation and emissions reduction, it's a sad reflection on Australia that most of the things on this list barely rate a mention in our public discourse on energy.

If we are to massively decrease emissions levels around the world and increase standards of living for some of the poorest people in the world, all technology opportunities need to be endorsed.

[2] Alan Finkel, *Pursuit of Perfection will slow down the energy transition*, Cosmos Magazine, 15 February 2019.

Domestic Energy Policy

On behalf of our members who use 14 per cent of the electricity in the National Electricity Market to create jobs, support regional communities and lead the world in minerals processing, MCA has been active in the energy debate in Australia.

The minerals sector cannot hold its reputation as a reliable supplier to growing Asian markets when it cannot access low-cost reliable energy.

That's why in a country as energy rich as Australia, we have been asking serious questions such as:

- why are blackouts acceptable in a first-world country in 2019; and

- why has Australia jettisoned its competitive advantage on energy for some of the highest energy costs in the developed world?

Liddell Power Station will close in 2022 – that's just three years' time.

What seems to have been missing from the discussion so far is that we should expect more power stations to close much sooner than people expect.

This is because of the simple equation that older baseload plants are made uncommercial as the level of intermittent renewable energy sources increase.

The MCA has been warning for some time that the past is a reliable guide to the future.

The significantly higher wholesale power prices and lower reliability that followed Hazelwood's closure in 2017 are a fair guide to what is likely to happen in the near future.

To paraphrase Spanish philosopher Jorge Santayana, "those who want us to forget the past are doomed to repeat it."

We have also been saying that our older baseload plants are more likely to close quicker than expected.

To understand the inherent challenges we need to acknowledge the scale of transition underway.

Australia relies on fossil fuels to provide electricity, especially from baseload power generators –plants designed to operate 24/7 irrespective of weather.

For all the noise around energy supplies, we sometimes forget fossil fuels provided 77 per cent of all electricity in Australia in 2018.

But even that doesn't tell the whole story.

24/7 electricity is critical for the system security –ensuring the power grid is stable, and can restart even in the worst case.

Amid emerging technologies, we still need to maintain this baseload generation to ensure system reliability.

What is becoming increasingly apparent is the need to ensure we don't lose more baseload plant before replacement capacity is available.

And when that replacement capacity does arrive, it needs to be capable of providing electricity when and where we need it.

As we saw in Victoria and South Australia one month ago, the outage of some coal generators and low wind resulted in customers being taken off line.

There is 5,768 MW of wind installed in the National Electricity Market. From 9am to 9pm on 24 and 25 January, more than 4,000 MW of it was idle.

MCA supports renewable energy- it offers a clean energy solution for Australia and long term market for Australian metals and minerals.

In fact, a single 3 MW wind turbine needs 335 tonnes of steel (which means 200 tonnes of metallurgical coal), 4.7 tons of copper, 1,200 tons of concrete (cement and aggregates), 3 tons of aluminium, 2 tons of rare earth elements, aluminium, zinc and molybdenum.

Yet in an age when more power is needed at critical times for homes and businesses, at this stage wind and solar alone cannot match all of the demands of a modern economy.

Investing increasingly larger amounts in intermittent power sources without a clear sense of the enduring implications is not sensible

Our baseload coal fleet is old – the average age is more than 33 years.

We are effectively driving a VK Commodore a car built in 1984. Fine for its time, but long since superseded by superior technology – just like that being deployed throughout Asia to provide energy security and low-cost, reliable power while reducing emissions.

Our older 24/7 plants will close more quickly than expected.

As more intermittent energy sources are introduced, it becomes more difficult for older plants to operate commercially.

And as we saw with Hazelwood, when confronted with large capital investment requirements with payback periods of more than three to five years, the decision to remain open was difficult.

We need to be realistic about what is achievable in the short to medium term.

Pursuing aggressive renewable energy targets without understanding the real level of system-wide costs (transmission and distribution) will lead to higher prices.

When household budgets are already under pressure and many business margins are tight, this impact will reverberate right across the economy.

Australia's energy policy is not technology neutral, and this is negatively affecting investment decisions.

There is no doubt that Australia has severely constrained its options by pursuing an energy policy which is not genuinely technology neutral.

Providing big subsidies to promote a single group of technologies – wind and solar – has undermined another set of technologies – fossil fuels, low cost, 24/7 electricity to also invest to decarbonise.

And we have also banned a rapidly developing technology which offers low-cost, zero emissions, reliable power available around the clock – nuclear energy.

No one should be surprised that the private sector rushes to invest in those technologies where a return can more or less be guaranteed and has shied away from investing where a commercial return is imperilled.

The Finkel Review was delivered almost two years ago, and it contained many commonsense recommendations – not least, the importance of ensuring the reliability and security of the electricity grid.

However, with the benefit of hindsight, it may not have fully appreciated the urgency of keeping the existing 24/7 plants operating for as long as possible.

The National Energy Guarantee attempted to address this problem.

Industry as a whole, including MCA, wanted the Guarantee to work.

Yet perfection was sought and politics took over.

The Guarantee again fell short of providing the right environment for investing in the type of power systems capable of meeting the needs of Australian energy consumers, especially the 70 per cent of demand which is commercial and industrial.

The ACCC's Retail Electricity Pricing Report from July last year made a number of recommendations.

Recommendation 4 is probably the best known, not least because it called on government to address the policy risk confronting investment in low cost power capable of meeting the needs of commercial and industrial users mining, manufacturing, engineering and construction all make up 70 percent of total power consumption.

We had advocated for this approach and strongly support its implementation.

The Underwriting New Generation Investment program is giving effect to this important recommendation.

It is important to address claims that this will mean the taxpayer funding new 24/7 generation capacity.

Underwriting is another word for insurance. The Federal Government would only step in where there was insufficient demand for energy from these new plants.

But we don't have much time to get this right.

Building new generation does not happen quickly.

Large scale solar PV can be installed quickly, but getting it connected is another issue.

Wind takes longer to build, particularly when site design optimisation and planning is included.

Gas plants can be built in around two years, assuming planning and permitting has been achieved. Yet we haven't built any gas plant in the NEM for the last 8 years.

New low emissions coal generation with carbon capture and storage takes around 4-5 years to construct, not including permitting processes.

And as for nuclear, it was banned in Australia as part of an obscure late-night political deal to get the Environment Protection and Biodiversity Conservation Act through Parliament in 1998.

It was assumed at the time nuclear would never be needed because we had so much coal. Another great example of governments second-guessing the market and applying their long-term vision!

So given the need for urgent solutions, let me outline simply and clearly what needs to be done to keep us from reaching the tipping point beyond which low-cost reliable energy will be much harder to deliver.

There is a pressing need to keep existing baseload plant operating until new technologies naturally take over.

The need for upgrades at existing plants must be actively considered. This would provide a low-cost energy solution which supports reliability and system security while pursuing longer term clean energy solutions.

We need to start flicking the switch to genuine technology neutrality.

This means placing all energy sources on the same level playing field.

The Underwriting New Generation Investment program is a solid start: it is technology neutral and does not favour any specific technology.

Given the huge growth in domestic energy demand – much of it propelled by new technology, as well as airconditioners and big-screen TVs – investing in new generation capacity where there is a level playing field would seem a sensible business decision.

Technology neutrality also means the removal of the EPBC nuclear ban.

I've heard some people claim that nuclear will never be competitive in Australia.

How would they know if it's never been part of our energy market?

Lifting the ban would allow the market and the private sector to make decisions rather than misguided armchair theorists.

I am excited to see the developments in North America with a range of nuclear technologies offering real promise.

Small Modular Reactors are well on the way to being given regulatory approval as the next wave of nuclear power.

Terra Power, backed by Bill Gates, is working with the Chinese Government to build fourth-generation Travelling Wave Reactors.

These would use waste uranium instead of enriched uranium to generate energy, using less fuel per kilowatt hour of electricity than light-water reactors because of higher fuel burn, energy density, and thermal efficiency.

We should at least have the opportunity to explore the application of these cutting-edge technologies here.

Thank you for giving me the opportunity to speak to you today and I look forward to working with you to ensure Australia gets a better deal on energy in the years ahead.