



**AUSTRALIAN
CONSERVATION
FOUNDATION**

Leadership required

**The case for an Australian coal
transition plan**

Summary and conclusions from the Australian
2 Degree Energy Investment Forum 2015

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In August 2015 the Australian Conservation Foundation (ACF) convened a forum in Sydney that brought together people from the energy and investment sectors to discuss the implications for Australia's electricity mix if global warming is to be limited to two degrees.

Attendees at the forum included representatives of Australia's energy companies, superfunds, investment managers and financial services companies.

The forum examined the current and future state of Australia's electricity sector with a focus on the role of coal fired power. Participants agreed that the scientific evidence on climate change indicates that if coal remains as Australia's dominant source of power, Australia cannot responsibly play its role in helping limit global warming to less than two degrees, as agreed internationally. Coal, Australia's dominant energy source, presents challenges that need to be urgently addressed.

ACF would like to thank all the participants for their attendance and the open and honest way they addressed these complex issues. The forum was conducted under Chatham House rules, so names (other than forum presenters) have been withheld to respect confidentiality.

Forum proceedings

Geoff Cousins, ACF President, opened the forum by outlining that the current era is one of great disruption in the electricity sector. It has never been easier or cheaper for consumers to take control of their own power generation, Mr Cousins said. With the advent of home battery storage this will only accelerate. He referred to his own professional experience with Telstra, describing how the rapid and widespread take up of mobile phones dramatically changed the telecommunications sector.

Mr Cousins declared that technology always wins, in that, regardless of what a government wants, the advance of technology has the power to drive change. He said investors' interest in technology is an extremely powerful part of this process.

Mr Cousins was followed by a number of speakers, who covered:

- What Australia's energy sector might look in 2030, including how much demand for electricity there might be;
- Australia's renewables sector now and its future prospects;
- Barriers to phasing out coal power generation, including the costs of rehabilitating mine sites and power plants;
- Policy options for exiting high emissions technologies and providing incentives for renewable energy generation.

The final session of the day included free flowing discussion about the issues presented during the day. The discussion and feedback throughout the day informed the direction and conclusions of this paper.

Australia's energy mix

- Australia has an oversupply of electricity, predominantly due to lower demand and increased renewable energy entering the system.
- By world standards Australia has an old and carbon intensive fleet of coal fired power stations.
- Australia has the natural and human capital resources to transition to a zero emissions energy system with a considerably higher proportion of renewable energy as part of the mix.
- There is continued potential for investment in energy efficiency to bring down carbon emissions and to increase energy productivity.

Exiting coal and transitioning to renewable energy is inevitable

- The shut down of coal fired power stations is an inevitable consequence of the technological and market disruption that is already occurring; it is essential if Australia is to meet its international commitment to do its fair share to limit global warming to less than 2 degrees.

Hurdles to transition

- Hurdles to a smooth transition for Australia's electricity sector include the cost of closing down a coal fired power station permanently (and associated mines) and rehabilitation costs; the reluctance of operators to close down a power station and give an advantage to their competitors; and impacts on local communities and workers, especially in the Latrobe and Hunter valleys.
- The lack of policy frameworks and certainty was recognised as the greatest hurdle to increased investment in Australia's energy industry.

The market alone will not drive a smooth transition

- Leaving energy transition up to the market will not result in emissions efficient closure and will most likely result in the country's more polluting and profitable brown coal plants remaining open longer.
- Electricity over-supply and depressed wholesale price means that market forces will not deliver new renewable energy projects, particularly beyond 2020 after the existing Renewable Energy Target is met.

Planning for the energy transition

- Without intervention from the Federal Government, the inevitable transition will be highly disruptive, employment will suffer and Australia will not reap the advantage of the new industries that are developing across the world.
- A plan for the transition and policy certainty will allow better management of these disrupting forces and will ensure any transition away from coal fired power is done in a way that maximises carbon emissions reductions and investment opportunities, while minimising community and labour disruptions.
- Governments need to become more involved in the discussion around energy transition.

- Governments should establish an Energy Transition Advisory Group made up of representatives from Federal and State Governments, the energy sector, investors, environment groups, community groups and unions.

This group should commission research and provide advice to the Council of Australia Government's Energy Council on the best way to change the electricity sector so Australia is able to meet its international climate change commitments. The advice provided should be publicly released to allow for informed public debate.

- Using the above advice, by mid-2016 the Federal Government should develop a plan and policy suite to transition Australia's energy to net zero emissions by 2050.
- The Federal Government should provide certainty to investors and the renewable energy sector by removing the investment and risk restrictions placed on the Clean Energy Finance Corporation and by reversing its position to abolish both the Clean Energy Finance Corporation and the Australian Renewable Energy Agency.
- The Prime Minister, Environment Minister and the Energy Minister should instruct an independent panel to conduct an inquiry into the physical infrastructure and market structures of the National Electricity Market (NEM) to ensure it is prepared for increased decentralised renewable generation.

Introduction

Australia's ability to seize the opportunities available in clean energy is at a critical moment. As a result of new technology and economic forces the energy sector is in transition. ACF believes it is in Australia's interest to embrace the transition that is happening in the global energy sector. The transition away from coal is a necessity to limit global warming and presents an economic and transformative opportunity for Australia.

The forum, hosted by the ACF with attendees from across leading national and international companies in the energy and investment sector, recognised that the past few years of policy debate and indecision has been detrimental to Australia's energy sector, investors, our natural environment and affected communities all over Australia.

The choice for the energy sector, governments and the community isn't between changing our energy mix or not changing it – but rather about how we manage the inevitable transition to a cleaner mix. If managed properly we can be sure to seize opportunities for the environment, the economy and communities. But if we ignore the energy transition taking place, the opportunities will simply pass Australia by and the nation will be left with a significant carbon liability and substantial economic and societal disruption.

The recent elevation to the position of Prime Minister of Malcolm Turnbull may provide an opportunity.

On his first day as Prime Minister Malcolm Turnbull said in Parliament:

"We know that our future lies in technology. It lies in science. It lies in all of the new industries....The future is one of great opportunities, and that requires confidence and leadership."¹

In the context of the recent change of Prime Minister and cabinet, the paper provides timely recommendations for a way forward.

FOOTNOTES

¹ Malcolm Turnbull, House of Representatives Hansard, 15 September 2015, http://parlinfo.aph.gov.au/parlInfo/genpdf/chamber/hansardr/9b1d0612-2568-4a39-bfb6-9dc4c98c1222/0095/hansard_frag.

ACF organised this forum because we recognise that while there is widespread agreement on the science of climate change, it is arguable whether mainstream thinking has extended into how industries and investors adjust their businesses strategy and investments to a specific carbon budget. This includes thinking about the challenges and opportunities that arise if Australia is to meet its obligations to do its fair share to limit global warming to less than 2 degrees.

The 2 degree target was agreed to by 114 countries as result of negotiations at Copenhagen in 2009 (other countries have since signed up to the target) and was included in the Copenhagen accord. Australia was a signatory to this accord, which stated:

“We agree that deep cuts in global emissions are required according to science, and as documented by the IPCC Fourth Assessment Report with a view to reduce global emissions so as to hold the increase in global temperature below 2 degrees Celsius, and take action to meet this objective consistent with science and on the basis of equity.”²

There is bi-partisan support in Australia for the above commitment.³ ACF recognises that the latest scientific evidence indicates that even this 2 degree threshold is likely to result in an unsafe climate. Limiting global warming to below 1.5 degrees is a more appropriate limit. ACF supports efforts to strengthen the international agreement to reflect this stronger target. It is clear that emissions will need to be significantly reduced to meet even the 2 degree goal, let alone anything stronger that may be agreed to in the future.⁴

FOOTNOTES

² United Nations, Framework Convention on Climate Change, Report of the Conference of the Parties on its fifteenth session, held in Copenhagen from 7 to 19 December 2009. <http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf>

³ <http://www.businessspectator.com.au/news/2015/4/15/policy-politics/hunt-confirms-commitment-2-degree-goal>

⁴ United Nations, Framework Convention on Climate Change, ‘Report on the structured expert dialogue on the 2013-2015 review.’ May 2015 <http://unfccc.int/resource/docs/2015/sb/eng/inf01.pdf>

Australia's electricity sector under a 2 degree limit

An important element of the forum was looking forward to both 2030 and 2050 in a carbon constrained world and helping participants to envisage how the energy sector needs to be structured to ensure Australia is contributing to keep global warming to less than 2 degrees. It became clear throughout the forum that with the appropriate investment Australia can decarbonise its electricity generation sector, and that it is not only environmentally necessary to achieve this aim, it is also entirely possible with minimal interruption to the economy.

The forum was told that helping to keep global warming to less than 2 degrees means bringing Australia's electricity sector emissions down to near zero by 2050. The forum identified a number of elements that will contribute to the decarbonisation process. The key pillars to achieve decarbonisation of the electricity sector were:

- increased and expanded energy efficiency;
- continued growth of renewable energy; and
- closure of existing of coal fired power stations

It was noted that an important element of decarbonising Australia involves electrifying the transport fleet wherever possible, which will ultimately increase demand for renewable energy.

Increased energy efficiency has already contributed to energy savings especially across the household sector. It will continue to play a role in improving energy productivity and ensuring households are protected from potential price rises. The benefits of energy efficiency are well known and have been laid out previously.⁵ For example the Federal Government's Energy White Paper released this year stated that as a result of energy efficiency standards for new homes introduced in 2006 and 2010, "houses built after 2010 use around 30 percent less electricity than houses built before 2007."⁶ Climate Work's report 'Pathways to Deep Decarbonisation in 2050' outlined how ambitious energy efficiency can lead to a halving of energy intensity in the economy.⁷

The potential improvements in energy efficiency have not yet been fully realised in Australia. Many electricity consumers including business and households are using more electricity than they need to and extra pollution is being emitted. This means there are opportunities for investors in energy efficiency.

FOOTNOTES

⁵ Pitt and Sherry, *Pathway to 2020 for Increased Stringency in New Building Energy Efficiency Standards: Benefit Cost Analysis* (prepared for Department of Climate Change and Energy Efficiency). January 2012.

⁶ Australian Government, Department of Industry and Science, *Energy White Paper*, 2015, p.45 <http://ewp.industry.gov.au/sites/prod.ewp/files/EnergyWhitePaper.pdf>

⁷ Climate Works, *Pathways to Deep Decarbonisation in 2050, How Australia can prosper in a low carbon world*, September 2014. http://climameworks.com.au/sites/default/files/documents/publications/climameworks_pdd2050_initialreport_20140923.pdf

The second pillar of restructuring the electricity sector involves a large increase in clean renewable energy. At the moment this is being driven by the Renewable Energy Target, which is a target of 33,000 Gigawatt-hours (GWh) per year of electricity coming from renewable sources by 2020.⁸ Currently renewable energy is generating approximately 16,000 GWh, halfway towards the recently revised renewable energy target.⁹ Presenters at the forum expressed concern that after 2020 and the end of the current renewable energy target, less renewable energy would be incentivised to come into the system.

Under a 2 degree goal Australia's energy use is much more efficient and electricity emissions is at near zero levels. In a practical sense this means the current proportion of electricity generated through coal fired power stations is not sustainable and the vast majority of it will need to exit the market before 2050.

Is it possible to achieve a 2 degree scenario?

Technologies are already available that could help move Australia to achieve a 2 degree goal. The forum heard that an important stepping stone to total decarbonisation is reaching a 50 percent renewable energy target by 2030. Reaching this target involves an increased build of large scale renewable energy capacity per year above the previous best year of 2013. This will involve an acceleration of investment in renewables and the replacement of some coal assets.

The forum heard evidence that the annual capital expenditure needed to drive the increased build of renewables would be lower than the amount of capital expenditure that has been spent on LNG in the last few years. Therefore the success of the renewable sector is a matter of priorities in how investment in the energy sector is structured, what incentives are in place and how policy parameters intersect these issues.

FOOTNOTES

⁸ <https://www.environment.gov.au/climate-change/renewable-energy-target-scheme>

⁹ ACIL Allen Consulting, Report to the RET Review Expert Panel, *RET Review Modelling; Market modelling of various RET policy options*, p. 7. https://retreview.dpmc.gov.au/sites/default/files/files/ACIL_Report.pdf

Energy in Australia today

Australia's electricity sector has a large reliance on centralised emissions intensive coal fired generation. The advance of technology means the reliance on centralised electricity generation is being rapidly overtaken by decentralised generation both at a small and medium scale. This is already impacting the business model for power generation and delivery and therefore investment in the sector.

There is a large over supply of electricity in Australia resulting in low wholesale prices and reduced incentive for new large scale generation. Further information on the current market state of the market for electricity is provided at Appendix A.

The above trends means that large scale disruption is inevitable in the electricity sector. Transition will occur regardless of policy settings put in place by governments. However government policy can play a role in managing this transition. Appropriate management would also assist in mitigating the effects of this transition and disruption on communities.

Coal closure and more renewable electricity is inevitable

Participants at the forum from both the energy and investment sectors agreed that to meet a 2 degree goal coal fired power stations will have to close and more renewable energy will have to be introduced into the system. According to the science, electricity emissions will have to be at near zero levels by 2050 to limit warming to below 2 degrees. There was no discussion about timetables for transition and this paper does not endeavour to propose a time frame for transition. However the discussion in the remainder of this paper is based on the assumption that coal exiting and renewables entering is both desired and inevitable.

As pointed out by the Climate Council:

“There has been little public discussion on the increasing age of Australia's coal fuelled power stations and how they are to be replaced. Australia's coal fired power stations are ageing units using less efficient technology. Currently, the average age of Australia's coal power station fleet is over 30 years. By 2020, around 40% will be over 40 years old, and 15% over 50 years in age, and by 2030, average age will increase to over 40 years, with 40% of the fleet then over 50 years old. 2030 and beyond may seem like a long way into the future, but not when one considers that it takes around a decade to plan, permit, finance and build new power stations.”¹⁰

FOOTNOTES

¹⁰ Andrew Stock, Climate Council, *Australia's Electricity Sector: Ageing, Inefficient and Unprepared*, 2014, p.9 <http://www.climatecouncil.org.au/australia-s-electricity-sector-ageing-inefficient-and-unprepared>

The forum identified and discussed a number of hurdles to coal fired generation exiting the system. These barriers include:

- the cost of closing down a coal fired power station permanently and if relevant rehabilitating the mine that fed the power station;
- the reluctance of operators to close down a power station thus leaving their competitors better off;
- policy uncertainty; and
- impacts on workers and local communities.

As a result of the costs of closing down a coal fired power station a number of power stations have been ‘mothballed,’ that is they aren’t operating but if necessary can be brought back online. Others operate seasonally.¹¹ This allows plant owners to delay the costs of closure and maintain the option to re-enter the market due to favourable whole pricing. Owners can re-enter the market at a lower cost than new generators. Absence of any policy response to this prevents newer cleaner electricity sources coming on line and contributes to investment uncertainty.

In a market sense the only way this can be overcome is through an exit of coal fired generation. Considering the current level of oversupply, large amounts of generation would have to close for there to be any impact on the market. Closure of some of Australia’s smaller black coal generators is unlikely to stimulate an investment response.

Analysis presented to the forum on the ongoing viability of coal fired power stations demonstrated that being relatively less polluting and profitability do not align. Therefore, leaving closure purely up to market forces will likely result in the country’s more emissions intensive brown coal plants remaining open longer.¹²

The forum was also shown analysis about the potential cost of rehabilitation and environmental remediation costs. For Australian coal fired power, depending on the facility, rehabilitation costs could range from \$50 million to \$180 million. However for various reasons operators of power plants and mines that feed power stations do not publicly provide rehabilitation costs so it is difficult to ascertain exactly what the liabilities are for rehabilitation. There was concern amongst some participants about what would happen if a company was unable (e.g. through bankruptcy) or unwilling to pay for the costs of rehabilitation and remediation.

As canvassed in Appendix A the oversupply of electricity and the depressed wholesale electricity price has meant that market forces do not deliver new renewable energy projects. The Renewable Energy Target has provided the regulatory framework by effectively mandating the introduction of clean energy into the marketplace. However, as the target year is 2020, what happens to renewable energy beyond this point is uncertain.

FOOTNOTES

¹¹ Riesz et al, *Payments for Closure: Should Direct Action include payments for closure of high emission coal-fired power plants?* Centre for Energy and Environmental Markets Working Paper 2013, October 2013, p.16. <http://ceem.unsw.edu.au/sites/default/files/documents/Working%20paper%20-%20Payments%20for%20Closure%20-%202013-10-07a.pdf>

¹² Ben Potter, Australian Financial Review, *RET, no carbon price drives out black coal as brown coal thrives*, May 27 2015. <http://www.afr.com/business/energy/ret-no-carbon-price-drives-out-black-coal-as-brown-coal-thrives-20150527-ghanjn>

The lack of policy frameworks and certainty was recognised by participants as a significant hurdle to increased investment in Australia's electricity industry. The recent debate about the renewable energy target provides a case study in what policy uncertainty does to investment. Oliver Yates Chief Executive of the Clean Energy Finance Corporation said in July this year:

"In the last 12 months there hasn't been a renewable energy project financed in Australia because of RET uncertainty, that hasn't been financed without the assistance of the CEFC."¹³

This discussion of uncertainty is not new, there is widespread agreement amongst representatives from environment groups, investors and the energy sector about the opportunities in the transition and the need for government leadership. There is much common ground amongst these stakeholders.

"The key action for policy makers is to put policies in place that serve to reduce the scenario-uncertainty risk currently facing investors, which serves as a barrier to enacting the low-carbon transition that avoids the worst long-term impacts of climate risk."¹⁴

"Australia's generation industry has already been left virtually unbankable by prolonged uncertainty in the long-term direction of Australia's emission reduction strategy."¹⁵

"If you want big companies to invest hundreds of millions, billions of dollars in the new technology, which is being done everywhere else in the world, you've got to fix a target, you've got to give certainty. Money runs away from uncertainty and it runs towards certainty. So if you want big investment, you've got to deliver certainty."¹⁶

Attendees felt the Federal Government has thus far failed to engage in the energy transition debate in any substantive way. Their contribution in the Energy White Paper briefly canvassed the issues of the ageing coal fleet and indicated they wouldn't be paying for exit of surplus generation capacity and that the Council of Australian Governments Energy Council will "consider whether there are any material non-market barriers to orderly exit and permanent closure."¹⁷

Coal fired powers stations are concentrated in certain parts of the country such as the Latrobe Valley in Victoria and the Hunter Valley in New South Wales. Given the impact of the energy transition on workers and communities will be concentrated in these areas, it is important that closure is managed appropriately rather than allowing the market to wholly dictate the order of closure.

FOOTNOTES

¹³ Quoted in Lisa Main, 'RET uncertainty', *detering investment in wind power*, Clean Energy Finance Corporation CEO says, ABC News, 16 July 2015. <http://www.abc.net.au/news/2015-07-16/ret-uncertainty-detering-investment-in-wind-power-oliver-yates/6626208>

¹⁴ Mercer, *Investing in a time of climate change*, 4 June 2015, p. 72 <http://www.mercer.com.au/insights/focus/invest-in-climate-change.html>

¹⁵ Energy Supply Association of Australia, Media Release, *Credible Emissions reduction target needed*, 10 August 2015. http://www.esaa.com.au/media/credible_emissions_reduction_target_needed_1

¹⁶ Geoff Cousins, President, Australian Conservation Foundation, ABC Lateline, *Interview: ACF President Geoffrey Cousins on Australia's Top 10 Polluters*. 18 March 2015. <http://www.abc.net.au/lateline/content/2015/s4200406.htm>

¹⁷ Australian Government, Department of Industry and Science, *Energy White Paper*, 2015, p.56 <http://ewp.industry.gov.au/sites/prod.ewp/files/EnergyWhitePaper.pdf>

Good planning for the transition includes looking at the potential of some power station sites to be transformed for renewable electricity generation and the need for rehabilitation of mine sites. Appropriate planning will help facilitate employment, retraining and new industry investment within these regions.¹⁸

Further work is required on transition plans that take into account environmental and economic factors that ultimately provide communities with long term confidence about their future.

Australia's electricity generation sector is in transition and this involves consideration of a complex web of issues which stem from new technology and the decentralised nature of new electricity generation. Forum participants agreed that to limit global warming to below 2 degrees, the fuel mix of Australia's energy supply needs to change. They also agreed that market forces are drastically disrupting the sector and there is a need for this transition to be as managed as best as possible. Some issues beyond the main hurdles listed above that need to be considered in any conversation about the future of Australia's electricity sector are:

- leaving transition up to the market does not result in emissions efficient closure;
- disruption of the electricity sector through new technology;
- energy security;
- management of the National Electricity Market including its infrastructure; and
- tariff and pricing reform.

Many issues need to be considered in the transition. However the overwhelming majority of forum participants when asked to nominate the hurdle to an orderly transition of the electricity sector identified policy uncertainty (in their words: lack of government policies, lack of bipartisanship, lack of credible government policy, political establishment needs to understand the implication of failing to adjust). Leadership from federal and state governments should help to work through this complex web and deliver certainty to the energy sector and investors.

Without the involvement of government the inevitable transition will be much more disruptive than it has to be. It will mean Australia won't contribute to the global move to cleaner energy sources and will be playing catch-up rather than taking advantage of the new industries that are developing across the world.

FOOTNOTES

¹⁸ Environment Victoria, Preventing the Preventable: Policy Options for Accelerating Coal Mine Rehabilitation and Creating Jobs in the Latrobe Valley, October 2014, p. 7 <http://environmentvictoria.org.au/content/report-preventing-preventable>

Conclusion

As outlined above the forum participants felt the Federal Government was not providing leadership on the challenges faced by the electricity sector. There was consensus that the Federal Government must play a more active role in this space by clarifying the policy parameters and helping manage and coordinate the transition.

This paper has discussed the many factors pushing this transition in Australia. The pollution that is produced from the burning of coal for power is dangerous for the climate and human health. It is outdated and expensive technology that is rapidly becoming uneconomic. Australia's economic resilience is being tested by the end of the mining boom and the growth in renewable energy presents clear opportunities.

Cleaner decentralised energy production has the potential to transform the lives of Australian's through a cleaner environment and more productive power use. There is a definite role for the Federal Government to encourage and manage the transition in partnership with stakeholders and local communities. However energy sector leaders and investors are concerned a lack of government leadership on this issue has allowed the energy market to stagnate and is preventing investment opportunities and a managed process.

The transition away from coal fired power is inevitable, it can either be embraced as an opportunity or allowed to overwhelm communities and Australia's electricity system. Pretending change isn't happening is not a responsible option.

Appendix A: Australia's electricity market

Energy mix

Most of the electricity transmitted in the National Electricity Market (NEM) is generated through coal, gas, hydro or wind. The NEM is the electricity market in all Australian jurisdictions except Western Australia and Northern Territory. According to the Australian Energy Regulator's report *State of the Energy Market* published in December 2014:

- black and brown coal generators accounted for 53 percent of registered capacity but supplied 74 per cent of output;
- gas powered generators made up 21 per cent of registered capacity but supplied only 12 per cent output;
- hydroelectric generators made up 16 per cent of registered capacity and contributed 9 per cent of output; and
- wind generators accounted for 6.4 per cent of capacity and 4.4 per cent of output.¹⁹

Approximately 1.4 million households have installed small scale solar PV systems.²⁰ In 2013-14 this reduced consumption of electricity sourced from the grid by 2.9 per cent.²¹ The Australian Energy Regulator (AER) have forecast that by 2022 – 23 solar installations will equate to around 17 per cent of installed generation capacity and will contribute 6.3 per cent of the NEM's energy requirements at this time.²² Although rooftop solar in percentage terms only makes up a small amount of electricity generated it is having a dramatic impact on electricity through the changes it makes to the profile of the daily demand required from the grid. AEMO in their June 2015 Energy Update stated in relation to rooftop solar

“forecast uptake over the short term [is] set to move maximum demand times to later in the day in Queensland and Victoria, and shift the winter peak in Tasmania to the evening. The shift to an evening maximum demand peak has already started to occur in South Australia, which has the highest penetration of rooftop PV in the NEM.”²³

The advent of affordable battery storage is further expected to be a disruptive force in that it will allow some households to go off the grid, others to drastically reduce the electricity they receive from the grid and others the ability to access power charged into their battery at times of low tariff prices.

FOOTNOTES

¹⁹ Australian Energy Regulator, *State of the Energy Market 2014*, 19 December 2014, pp. 25 – 27.

²⁰ Clean Energy Regulator, *Postcode data for small-scale installations*, 17 August 2015. <http://www.cleanenergyregulator.gov.au/RET/Forms-and-resources/Postcode-data-for-small-scale-installations>

²¹ Australian Energy Regulator, *State of the Energy Market 2014*, 19 December 2014, p. 23

²² Australian Energy Regulator, *State of the Energy Market 2014*, 19 December 2014, p. 29

²³ Australian Energy Market Operator, *Energy Update*, June 2015, p.1

Demand for electricity

The current state and future potential of the electricity sector is in large part being driven by the drastic changes in demand that have been occurring across the past 15 years. This drop in demand has accelerated over the past 5 – 6 years. This drop in demand has occurred across household, general business and large industry sectors to varying degrees. It is also broadly consistent across all jurisdictions who participate in the NEM.

Across the three sectors the household sector has demonstrated the largest drop in demand. This is as a result of a number of factors. There has been large energy savings as result of advances in energy efficiency in appliances. This has largely been driven by regulatory measures that require for example star ratings systems on new appliances and changes in lighting. Retail electricity price increase of approximately 200% since 1999 have also focused consumers mind on the cost of electricity. The political debate since 2010 around energy and electricity has ensured the sensitivity of cost rises and the subsequent behavioural change has been heightened arguably beyond the normal expected reaction to pricing changes.

General business and large industry has also declined in their electricity demand, although not to the same extent as the household sector. This is despite the closure of two large aluminium smelters at Kurri Kurri and Point Henry.

While the falls in demand appear small, they are significant in that they go against long established trends that had demand for electricity increasing.

Despite the past few years of falling demands forecasts for electricity predict an increase in demand across the NEM. According to analysis from Pitt and Sherry:

“The main driver of the sharp increase in demand over the next few years is the use of electric motor drive for pumps and compressors used to collect and transport gas from the coal seam gas fields, for conversion to LNG at Gladstone.”²⁴

FOOTNOTES

²⁴ *Understanding Recent and Future Demand for Electricity*, paper by Pitt and Sherry commissioned by Australian Conservation Foundation for participants at the Energy Investment Forum.

²⁵ Australian Energy Market Operator, *Detailed Summary of 2015 Electricity Forecasts*, June 2015, p.15

In the residential and commercial sector consumption was expected to recover in the 2014-15 year for the first time since 2008-09. The Australian Energy Market Operator identified the drivers of this trend to be:

- “the repeal of the carbon price lowering average electricity prices, which increased underlying consumption; and
- A slowdown in uptake of rooftop PV in most regions, which reduced the offset in electricity drawn from the grid.”²⁵

Despite the predicted increase in demand assuming no major changes the supply of electricity will continue to far outweigh demand.

Impact on supply

The forum heard from a range of speakers who agreed that as a result of falling demand and the nature of the Australian electricity sector there is a large oversupply of electricity. According to the Australian Energy Market Operator (AEMO) there was “potentially between 7,650 MW and 8,950 MW of surplus capacity across the NEM in 2014-15.”²⁶ Since the publication of this number in their 2014 report AEMO revealed in their 2015 report that approximately 3,800 MW of capacity has been or will shortly be withdrawn from the market.²⁷

This oversupply has meant that real wholesale prices have been falling. This raises questions about the economic viability of some coal plants. It also means that the economic incentive for new generation such as renewables to enter the market is reduced.

Coal

As outlined above, coal is still the dominant source of power in the NEM. Alongside this the Australian coal fleet is one of the world’s most carbon intensive in the world. At present no coal fired power station in Australia uses the most efficient technology available.²⁸

This is largely as a result of the age profile of Australia’s coal fired power station fleet. The average age of brown and black coal power stations is 34.2 and 27.4 years respectively meaning some older coal plants are well beyond design life.²⁹

In their Energy White Paper the Government acknowledged that “with around three quarters of these [coal] plants operating beyond their original design life, some will require either costly refurbishment investment or decommissioning over the coming two decades.”³⁰

FOOTNOTES

²⁶ Australian Energy Market Operator, ‘Electricity Statement of Opportunities: For the National Electricity Market, August 2014, p. 1.

²⁷ Australian Energy Market Operator, ‘Electricity Statement of Opportunities: For the National Electricity Market, August 2015, p. 3.

²⁸ Ben Caldecott et al, *Subcritical Coal in Australia: Risks to Investors and Implications for Policymakers*, March 2015, p. 6. http://www.smithschool.ox.ac.uk/research-programmes/stranded-assets/Subcritical%20Coal%20in%20Australia_Investors&Policymakers.pdf

²⁹ Tim Nelson et al, ‘Energy-only markets and renewable energy targets: complementary policy or policy collision?’, *Economic Analysis and Policy*, Volume 46, June 2015. <http://www.sciencedirect.com/science/article/pii/S0313592615000156>

³⁰ Australian Government, Department of Industry and Science, *Energy White Paper*, 2015, p.55 <http://ewp.industry.gov.au/sites/prod.ewp/files/EnergyWhitePaper.pdf>

The growth of renewables and the fall in the demand for electricity has contributed to an oversupply of electricity and reduced wholesale price which impacts on the viability of coal fired power stations. The consequences of this have been seen in the mothballing and closure of plants and in the reduced capacity some plants are currently running that.³¹

In terms of reduced capacity the forum was told that coal fired power stations in NSW and Queensland have plenty of excess capacity while Victorian coal generators are at much higher capacity utilisation.

The closing of coal fired power stations is a necessary development to address climate change. Considering the current state of the electricity market it would be entirely practical for some coal fired power stations to be shut down while ensuring continued reliable supply of electricity. In the interest of reducing carbon emissions this should be the dirtiest coal fired power stations. However presentations from analysts modelling the profitability of different coal fired power stations demonstrated that many of the least profitable power stations are the relatively cleaner black coal power stations. Without appropriate policy intervention these are more likely to exit the market first ahead of the dirtier brown coal plants.

FOOTNOTES

³¹ <http://www.energyaustralia.com.au/about-us/media-centre/current-news/wallerawang-power-station-closure-november>

http://www.alcoa.com/australia/en/news/releases/2015_05_12_Anglesea.asp

<https://alintaenergy.com.au/about-us/news/flinders-operations-announcement>