

RESEARCH BRIEF

21 February 2016

29,000 jobs for SA: how strong climate policies create jobs and cut pollution

Research commissioned by the Australian Conservation Foundation and the Australian Council of Trade Unions indicates that strong policies on climate change and energy would generate an additional 29,700 additional jobs in South Australia by 2030, and 68,800 jobs by 2040. Many of these new jobs would be in regional areas. The research is based on comprehensive modelling by the National Institute of Economic and Industry Research.

Cutting pollution and powering SA with clean energy would help create a fairer, better SA in which communities and all living things can thrive. The state government is taking the first steps towards building that future, but would benefit from much stronger climate action nationally.

Project type	Description	Area	Total investment
Renewable energy	Hornsedale wind farm stages 2 and 3	Jamestown	\$800 million 250 jobs
	Tailem Bend Solar Farm	Tailem Bend	\$200 million 200 jobs
	Lincoln Gap Wind Farm	Port Augusta	\$350 million 400 jobs
Public transport	AdeLINK tram network expansion Major expansion of the tram network in Adelaide, creating a tram network around the CBD and inner suburbs.	Adelaide	\$3 billion 2000 jobs
	Gawler line rail upgrade The upgrade and electrification of the Gawler rail line between Gawler and Adelaide, including installation of a new signalling system.	Adelaide - Gawler	\$2.6 billion
	O-Bahn City Access Upgrade Improve and extend the O-Bahn busway system.	Adelaide	\$160 million 450 jobs

Table 1: Examples of current South Australian projects that are consistent with strong action on climate change.

Global warming has real potential to damage the communities and the natural heritage of South Australia. This is a fact exacerbated by fossil fuel and coal-fired generation companies continuing to extract fuels that should be left in the ground, with 85.4 per cent of Australia's electricity generated by fossil fuels.¹ This is a strong contrast to South Australia which has taken the lead with more than 40 per cent of the energy consumed in the state coming from renewable sources.²

Yet the federal government has recently pilloried South Australia for taking action that is consistent with Australia's Paris Climate Agreement commitments while it continues to pursue fundamentally inadequate climate policy. The federal government should be supporting South Australia. Instead federal frontbenchers, including the Prime Minister, have used natural disasters to cast doubts on the security of renewable energy, even when they know renewable energy has nothing to do with recent electricity blackouts.³

This approach is ill-informed political point-scoring at its worst. Energy experts and industry leaders like Andrew Vesey, CEO of AGL Energy, have pointed out that renewables *increase* energy security.⁴ The federal government's scare-mongering and lack of leadership is jeopardising security in the short and long-term.

By not backing strong climate action the federal government is also jeopardising opportunities for long-term prosperity. Our research indicates that strong national action on global warming, through supporting renewable energy, energy efficiency and public transport, would help curb global warming and generate 29,700 more jobs in South Australia by 2030 than the federal government's current weak climate policies. That jobs figure would climb to 68,800 by 2040.

This report shows how the South Australian Government, by taking strong climate action and looking to easily beat its target of 50 per cent renewable energy generation by 2025, has taken an effective step in securing sustainable jobs and the future prosperity of communities throughout the state. Further, it could do so in a way that increases energy and job security while lowering prices.

Unfortunately, the federal government continues to drag its feet by reducing the national RET to 23.5 per cent by 2020, backing un-investable fossil fuels and offering no national plan or credible policy to ensure a smooth and well-managed transition to clean energy.

This has stifled new energy investment, leaving the grid exposed to sudden coal closures, along with the price spikes and instability that they bring. By doing so the federal government has jeopardised energy security, our natural heritage and industries which could be the source of long-term prosperity for future generations.

¹ Clean Energy Council, [Clean Energy Australia Report 2015](#), June 2016, p.4

² Clean Energy Council, [Clean Energy Australia Report 2015](#), June 2016, p.7

³ Sydney Morning Herald, [Malcolm Turnbull and ministers told wind not to blame for South Australia blackout](#), February 2017

⁴ Australian Financial Review, [AGL Energy CEO Andrew Vesey says renewables are 'much more secure'](#), October 2016

The global challenge

In the Paris Agreement 195 nations agreed to work to limit the world's temperature rise to well below 2 degrees and to continue to pursue efforts to limit the temperature rise to 1.5°. ⁵

In the last few years there has been a massive global shift towards investment in new renewable energy and energy efficiency. More than 70 per cent of investment in new power plants – more than \$290 billion – went towards renewable energy projects in 2015. The price of renewables continues to plummet (for example, since 2011 the price of installed solar has dived 80 per cent) and 2015 was the first year investment in new renewables was more than enough to cover rising global electricity demand. ⁶

Unfortunately, Australia isn't pulling its weight in the international effort to address global warming. As part of the Paris Agreement, the Australian federal government committed to reduce Australia's emissions by 26–28 per cent on 2005 levels by 2030. This is much lower than the Climate Change Authority's recommendation of 40-60 per cent on 2000 levels by 2030⁷. Even this figure only offers a 67 per cent chance of keeping global warming below 2 degrees,⁸ an even stronger target of 80 per cent would be needed to provide certainty.

Since coming to office in September 2013 the Coalition has made no progress in reducing Australia's overall levels of climate pollution. In fact, there is an upward trend. In its first June quarter in Government (June 2014) emissions were at 131.5 million metric tonnes of carbon dioxide equivalent (Mt CO₂-e). In the June 2016 quarter, they were at 134.4 (Mt CO₂-e), an increase of 2.2 per cent. ⁹

A report by RepuTex shows existing policies, rather than cut emissions by 26–28 per cent, would in fact make Australia's climate pollution increase between now and 2030. ¹⁰

Australia's failure to take effective action has frustrated the international community. Prior to the recent UN climate summit in Marrakech, the Australian Government received more than 30 questions from key trading partners, asking why a downwards trend had become an upward one and how Australia plans to meet its 2030 targets. ¹¹

This failure to take effective action is unacceptable given the scale of the threat, one that is already becoming a reality, with 2016 officially the hottest year on record, surpassing 2015, which itself topped the previous hottest year, 2014. ¹²

⁵ UNFCCC, [Historic Paris Agreement on Climate Change](#), December 2015

⁶ ReNewEconomy, [Seven charts show new renewables outpacing rising demand for first time](#), September 2016

⁷ CCA, [Final report on Australia's future emissions reduction targets](#), July 2015, p.1

⁸ CCA, [Special Review Draft Report](#), April 2015, p.20

⁹ Department of the Environment, [Quarterly Update of Australia's National Greenhouse Gas Inventory: June 2016](#), p.29, December 2016

¹⁰ Reputex, [Framing Australia's 2030 Energy and Climate Policy Mix](#), September 2016, p.4

¹¹ UNFCCC, [Session SB145 \(2016\)](#), October 2016

¹² ['Scientists declare 2016 the hottest year on record. That makes three in a row.'](#) *Washington Post*, January 2017

Global warming is making bushfires more frequent, droughts more devastating and natural wonders like the Great Barrier Reef – which sustained the largest die-off in 2016, due to recent coral bleaching¹³ – more vulnerable to future damage. The impact on livelihoods from loss of coral reefs has the potential to be catastrophic and global.

To add to this, Australia is falling behind in the renewable energy race. The world is set to invest US\$28 trillion in renewable energy and energy efficiency by 2035 – more than coal, oil and gas combined.¹⁴

Australia should be a renewable energy super-power. Instead we are missing the chance to create thousands of jobs in South Australia, and hundreds of thousands across the nation.

The jobs potential of strong climate and energy policies

ACF's report [Jobs in a clean energy future](#), a collaboration with the Australian Council of Trade Unions (ACTU) using research by the National Institute of Economic and Industry Research (NIEIR), showed how strong energy policies can result in a million new jobs across Australia.

The research employed dynamic integrated economic modelling to show the effect on jobs of two different carbon abatement scenarios and compared these to business as usual (BAU) federal policy. The results for South Australia are summarised in the table below.

Scenario	Description	Abatement methods	Additional SA jobs by 2030	Additional SA jobs by 2040
'Business as usual'	Current federal policy without further intervention	Current	None	None
Medium policy response	CO ₂ abatement budget of \$10 billion per annum in real terms funded by the revenue from a modest carbon price	Increased renewable energy and battery storage, expanded public transport, reduced traffic congestion through strategic road investments and carbon pricing	14,900	23,900
Strong policy response	80% reduction on 2005 emission levels by 2040	As above with additional investment in general energy efficiency and the development of biofuel or biodiesel	29,700	68,800

Table 2: Additional jobs created in South Australia by stronger Federal climate action

¹³ ARC Coral Reef Studies Centre of Excellence Bleaching Mortality media release, 29 November 2016. <https://www.coralcoe.org.au/media-releases/life-and-death-after-great-barrier-reef-bleaching>

¹⁴ BZE, Renewable Energy Superpower, October 2015, p.VI

This shows strong climate and energy policies decouple climate pollution from economic growth, dramatically reduce emissions, create new high-quality jobs and improve industry efficiency.

Many of these jobs would be in regional areas and could provide employment opportunities needed for communities affected by the retirement of fossil-fuels. Nurturing the renewable energy industry will be one of the keys to addressing global warming and renewal for these communities.

South Australia energy and carbon reduction objectives

Encouragingly the South Australian Government has surged ahead of the inadequate ambitions of the federal government and is implementing policies which will help capitalise on the jobs potential of strong climate action described above. This includes targets to

- Get 50 per cent of the state's electricity from renewable energy by 2025.¹⁵
- Establish Adelaide as the world's first carbon neutral city.
- Achieve \$10 billion in low carbon investment by 2025.
- Improve energy efficiency of government buildings by 30 per cent by 2020.
- Achieve net zero carbon emissions by 2050.¹⁶

These targets are a big step towards strong climate action and towards building industries that could help secure the futures of communities throughout South Australia.

Strong foundations

These targets are ambitious but South Australia is already leading all the other states on renewable energy. State climate policies are estimated to have translated into \$6.6 billion of investment with 40 per cent of this being in regional areas (\$2.4 billion).¹⁷ This has happened despite years of backwards climate policy at the national level. Lowering the national Renewable Energy Target caused investments to fall in 2014-15 to nearly half the average annual investment in renewables from 2010 to 2013, with \$5–6 billion of foregone investments in total.¹⁸

There's still a lot of work to be done to hit the net zero emissions by 2050 target. With that work will come jobs in public transport, renewable energy and energy efficiency.

The potential

The SA Government is capitalising on the opportunities strong climate action creates.

¹⁵ Clean Energy Council, [Clean Energy Australia Report 2015](#), June 2016, p.11

¹⁶ South Australian Government, [Target Zero](#), 2016

¹⁷ Clean Energy Council, [Clean Energy Australia Report 2015](#), June 2016, p.11

¹⁸ Climate Council, [Game On: The Australian Renewable Energy Race Heats Up](#), May 2016, p.6

- Two new wind farms, Hornsdale 2 and 3 (102.4MW each), are being built creating 150 jobs and \$800 million of investment.^{19 20}
- A third new wind farm, Lincoln Gap, is being built near Port Augusta. This will generate 150–195MW. This will create 400 jobs and \$350 million of investment.
- Waterloo wind farm is receiving a 19.8 MW expansion.²¹
- A small 4MW joint solar and wind farm is being built at Coober Pedy, representing a \$37 million investment.²²
- A 100MW solar farm is due to be built at Tailem Bend, a \$200 million investment which will create 200 jobs.²³
- The Australian Energy Market Operator (AEMO) lists a further 2,951 MW of proposed wind farm projects in South Australia.²⁴ This is double the existing wind capacity and nearly three times the rest of the existing proposed capacity combined.

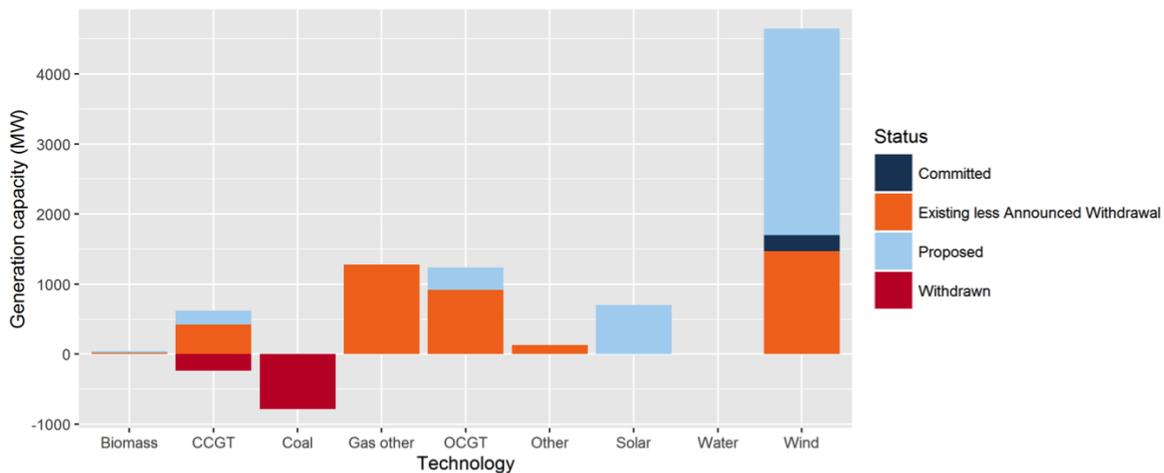


Figure 1: Installed, committed and proposed generation capacity in South Australia showing the huge volume of wind project proposals²⁵

¹⁹ Hornsdale Wind Farm, [Community](#), 2016

²⁰ Clean Energy Council, [New renewable energy projects point to biggest year for industry since Snowy Hydro](#), February 2017

²¹ Lincoln Gap Wind Farm, [About the Project](#), 2016

²² Clean Energy Council, [New renewable energy projects point to biggest year for industry since Snowy Hydro](#), February 2017

²³ Clean Energy Council, [New renewable energy projects point to biggest year for industry since Snowy Hydro](#), February 2017

²⁴ AEMO, [NEM AESOO 2016 - South Australia](#), August 2016

²⁵ AEMO, [NEM AESOO 2016 - South Australia](#), August 2016

There are also a wealth of large-scale solar opportunities with AEMO recording 702MW of proposed projects. These could create up to 4,450 jobs if funded.²⁶

Beyond Zero Emissions' and the Energy Research Institute's Zero Carbon Australia Stationary Energy Plan, released in 2010, shows solar thermal can provide more than 60 per cent of Australia's energy supply.²⁷ One of the sites proposed for a 3,500MW solar thermal plant is near Port Augusta.²⁸ If the Stationary Energy Plan were to be implemented it would create more than 5,416 jobs at peak installation and more than 2,250 ongoing jobs in operations and maintenance.²⁹ A solar thermal facility in Port Augusta would help remove the need for peaking gas plants which have been responsible for high price spikes, which some people have wrongly blamed on renewable energy.³⁰

Solastor has put forward a solid proposal for a \$1.2 billion, 110MW solar thermal power plant in Port Augusta, starting with a 1MW demonstration plant. This would help generate 300 jobs on-site during construction, another 300 off-site and 100 ongoing jobs.³¹

Solar Reserve has proposed a series of six solar thermal plants that would generate 660MW of electricity and store it. The plants would provide clean, dispatchable electricity to the state's grid, lower electricity prices over time (due to zero fuel costs) and create 24,000 jobs during construction.³² This series of plants is contingent on the construction of the first \$650 million plant at Port Augusta.³³

These opportunities for large scale renewables in regional areas would provide a much-needed boost for regional SA. There are also big opportunities for the growth of the domestic solar PV industry, especially as battery storage is expected to become more affordable and commonplace by 2020.³⁴ Solar PV has the potential to create jobs wherever there are rooftops. With a target to become a carbon neutral state by 2050, the large and small scale renewable energy industries are set to grow for decades to come, with South Australia having the potential to be powered by 100 per cent renewable energy in the next 20 years.³⁵

²⁶ Based on total investment amount for recent ARENA shortlisted projects of \$1.6 billion and jobs per million figures (3) from Tim Buckley, IEEFA, July 2016, assumes \$100,000 wage rate and 30% labor + services

²⁷ BZE, [Zero Carbon Australia Stationary Energy Plan](#), June 2010, p.45

²⁸ BZE, [Zero Carbon Australia Stationary Energy Plan](#), June 2010, p.46

²⁹ BZE, [Zero Carbon Australia Stationary Energy Plan](#), June 2010, p.108-109, total figures divided by twelve to represent 1 of the 12 proposed plants being centred in South Australia.

³⁰ Climate Council, [The Perfect Storm: Analysing the Role of Gas in South Australia's Power Prices](#), August 2016

³¹ ABC News, [Solar-thermal power station proposed by Solastor for Port Augusta](#), June 2016

³² ReNew Economy, [SolarReserve Aims To Build 6 Solar Tower Power Plants In South Australia](#), September 2016

³³ ABC News, [Port Augusta solar project needs \\$100 million in government funding to shine, firm says](#), September 2016

³⁴ BNEF, [Bloomberg New Energy Outlook 2016: Executive Summary](#), June 2016, p.3

³⁵ ReNew Economy, [South Australia to set path towards 100% renewable energy](#), December 2015

Efficiency

Strong climate action doesn't only mean jobs in renewable energy. There would also be significant growth in energy efficiency and public transport jobs too, both of which are key to tackling emissions. These would be located in regional and metropolitan areas.

The South Australian Government has already made a start on energy efficiency by setting targets of improving the energy efficiency of government buildings by 30 per cent by 2020 and recognising efficiency as a key strategy for achieving zero emissions. The Residential Energy Efficiency Scheme (REES) started in 2009 and was renamed the Retailers Energy Efficiency Scheme in 2015. The scheme sets targets for energy retailers to help households and businesses improve their energy efficiency.³⁶ It gives households and businesses access to free energy efficiency measures that could save millions a year and cut emissions.

These programs could just be the tip of the iceberg. Concerted investment in energy efficiency would pay dividends in money saved on electricity bills and could create thousands of jobs across the state.

Nuclear distractions

Plans to dump radioactive waste in regional South Australia are a dangerous distraction that have the potential to derail SA's growing clean, green reputation. In November 2016 two thirds of the members of a Citizens' Jury, set up by the SA Government to examine the high level international waste dump proposal, unequivocally rejected the move 'under any circumstances'. Unfortunately, Premier Weatherill has decided to ignore his own jury's recommendation and is keeping the door open to this unpopular plan. Research by the Australia Institute shows the economic case for hosting a radioactive waste dump is rubbery and has been compromised by the use of partisan nuclear industry consultants.³⁷ South Australia can do far better than be a dumping ground for some of the world's longest lived and most dangerous poisons. South Australia can and should have a bright future, not a glowing one.

Public transport driving growth up and emissions down

Public transport is another key source of carbon abatement and jobs. South Australia has great potential to expand in this area with public transport infrastructure mirroring a nationwide deficit. Three decades of under-spending on transport infrastructure nationally, coupled with poor planning and poor road administration, have increased congestion costs and travel times to work, reducing Australia's productivity growth rate from what would it would have been if expenditure rates had been maintained at pre-1984 levels.

³⁶ Department of State Development, [Retailers Energy Efficiency Scheme](#), January 2015

³⁷The Australia Institute, [Digging for answers: Radioactive waste storage and disposal facilities in South Australia](#), March 2016

There is accordingly much to be said for an investment campaign to rectify the deficiencies of the past three decades. Investing in public transport:

1. Minimises car and commercial vehicle travel times and CO₂ pollution
2. Reduces the use of cars and commercial vehicles by changing the structure of travel towards buses, trams and trains.

There are also considerable economic and social benefits that flow from public transport services. Encouragingly Infrastructure Australia and the South Australian State Government have a number of public transport initiatives on their list of priorities (see table 2).

Project	Purpose	Stage	Potential cost
AdeLINK tram network expansion	Major expansion of the tram network in Adelaide, creating a tram network around the CBD and inner suburbs.	Options assessment	\$3 billion
Gawler line rail upgrade	The upgrade and electrification of the Gawler rail line between Gawler and Adelaide, including installation of a new signalling system.	Business case development	\$2.6 billion
O-Bahn City Access Upgrade	Improve and extend the O-Bahn busway system.	Underway	\$160 million

Table 2: Upcoming public transport projects in South Australia. Sources: Infrastructure Australia³⁸ and South Australian Government³⁹

The AdeLINK tram expansion shows the South Australian Government's commitment to delivering infrastructure which has the potential to improve quality of life, reduce climate pollution and create thousands of construction and ongoing jobs. The positive flow-on effects are potentially even larger, with the AdeLINK tram expansion projected to create 2,000 jobs at peak of construction and boost South Australia's economy and Australian steel production.⁴⁰

Conclusion

Strong climate and energy policies are not a threat to jobs and growth – they present a viable future for communities throughout South Australia.

³⁸ Infrastructure Australia, [Australian Infrastructure Plan 2016](#), 2016

³⁹ Department of Planning, Transport and Infrastructure, [Public transport projects](#), 2016

⁴⁰ ABC news, [Election 2016: Adelaide tram network expansion gets \\$500 million pledge from Labor](#), May 2016

The South Australian government understands this and has taken solid steps that will yield good, sustainable jobs for the future, breathing life into communities and preserving our rich natural heritage in the same stroke.

But the federal government continues to cling to its inadequate and ineffective climate policies, paying polluters to deliver carbon abatement projects, many of which would likely have been delivered anyway.⁴¹ It is putting the interests of a dying fossil fuel industry ahead of the communities it claims to represent and future generations.

By pursuing climate policies that allow Australia's emissions to keep rising, the federal government is bequeathing economic, social and environmental chaos to our children, and squandering a golden opportunity to secure better jobs for communities throughout South Australia. The state government is working to increase investment in renewable energy, energy efficiency and public transport. However, the federal government's policies have put a drag on these efforts and its attacks on state governments that pursue renewable energy have slowed progress.

But it's not too late. By following the lead of states like South Australia and working to enable a transition to renewable energy rather than trying to block the transition, the federal government can help create a legacy that will secure the future of communities and the places we love and have a duty to preserve for future generations.

The federal government recently released the terms of reference for its 2017 climate change policy review. This is a prime opportunity to back in the efforts of states like South Australia with strong national policies to cut greenhouse gas pollution and grow clean energy.

⁴¹ Paul Burke, ANU, [Undermined by Adverse Selection: Australia's Direct Action Abatement Subsidies](#), April 2016