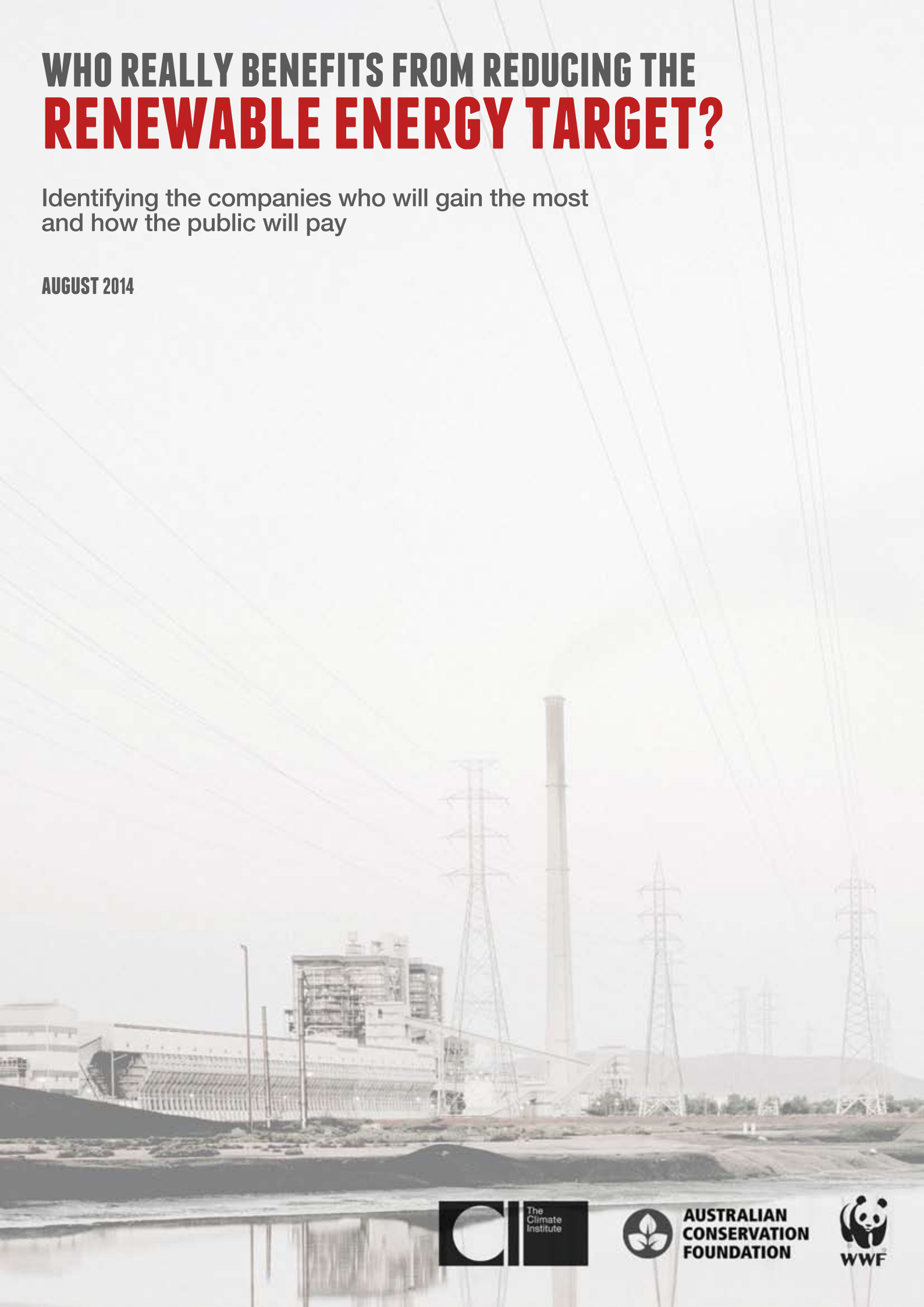


WHO REALLY BENEFITS FROM REDUCING THE **RENEWABLE ENERGY TARGET?**

Identifying the companies who will gain the most
and how the public will pay

AUGUST 2014



**AUSTRALIAN
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Policy Brief

August 2014

Accompanying Technical Report:

Jacobs, 2014, *Impacts of Changes to the RET on Electricity Market*

*Participants, Final Report for the Climate Institute, Australian Conservation Foundation
and WWF-Australia, August 2014.*

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Executive Summary

The Renewable Energy Target (RET) is a policy designed—with bipartisan backing—to reduce carbon pollution from the electricity sector and build Australia's renewable energy industry. Both these objectives are vital to achieving decarbonisation in line with Australia's national interest in avoiding dangerous climate change, and positioning the economy to remain competitive in a world moving to clean energy sources.

Some power companies and industry associations are now calling for renewable energy investment to be cut back by reducing the RET.¹ Others have called for the RET to be abolished completely.²

These claims are false and a distraction from who really benefits from reducing the amount of clean renewable energy produced in Australia. Based on independent modelling by Jacobs (see accompanying technical report) we find that reduction of the large-scale renewable energy target as proposed by some power companies has the following impacts (all \$2012)³:

- \$8 billion additional profit to coal and \$2 billion to gas generators (net present value of future profits 2015-2030). This is driven primarily by a 7 per cent increase in coal-fired power production and higher wholesale electricity prices. Under current ownership arrangements, EnergyAustralia is the company that stands to gain the most. EnergyAustralia's potential extra profit is worth about \$1.9 billion if the RET is reduced (and \$2.2 billion if it is abolished). However, if AGL purchases Macquarie Generation, it would become by far the biggest beneficiary of reducing the RET. The combined additional profits of AGL and Macquarie Generation would be worth \$2.7 billion if the RET is reduced. Origin Energy's total extra profit would be about \$1.5 billion. Origin owns the power station that would emit the largest amount of additional pollution under a reduced RET.

- No decline in electricity prices: in fact, they could increase slightly (wholesale prices increase by 15 per cent and retail prices by 2.5 per cent on average in the period to 2030). This is consistent with modelling commissioned by the Government and studies conducted independently by leading economic analysts.
- 150 million tonnes of additional carbon pollution by 2030, and 240 million tonnes by 2040. Higher levels of pollution lead to socialised costs we estimate conservatively to be \$14 billion.
- \$8 billion lost investment in new renewable energy capacity. New South Wales would be the biggest loser with over \$2 billion in foregone investment. South Australia would lose over \$2 billion and Queensland over \$1 billion.
- \$680 million of extra federal spending needed to reach Australia's minimum emission reduction target by 2020.

As this modelling demonstrates, reducing the RET is a step back from cleaner electricity generation that rewards owners of polluting coal stations at the expense of the wider community. Reducing the RET would improve the profits of power companies but escalate costs for the public through increased carbon pollution and the loss of billions of dollars of investment in the short term, without reducing electricity prices. Cutting the target would destabilise the policy environment for investors, which would raise the costs of power sector investment in the future. Outright abolition of the RET would further increase pollution and undermine clean energy investment.

Instead of reducing or abolishing the RET, the government should build on the policy's success in mobilising the development of clean energy. Australia's electricity sector needs to play its full role in achieving our long-term national interest in avoiding dangerous climate change and enhancing prosperity in a world of increasingly stringent carbon constraints.

Introduction

Over the last couple of years several major power companies and industry associations have called for the reduction of the scale of renewable energy investment in Australia through changes to the Renewable Energy Target (RET). Others have called for it to be abolished. Why do these companies, some of which were former supporters of the RET, now want to weaken the policy?

The RET was established by the Howard government to increase electricity generation from renewable sources and reduce carbon pollution from the electricity sector. It is succeeding at both these tasks: renewable electricity from wind and solar has tripled since the RET was expanded in 2009⁴, and the carbon intensity of the National Electricity Market has fallen by more than eight per cent over the same period (it should be noted that two years of carbon pricing also contributed to the decline in carbon intensity)⁵.

As the power sector is the single largest source of carbon pollution, its decarbonisation is central to meeting Australia's emission reduction goals. Short-term goals include Australia's commitment to reduce emissions by 5-25 per cent below 2000 levels by 2020. Although the federal government remains supportive of the global agreement to limit temperature rise to below 2°C, it is yet to articulate longer-term goals consistent with this aim. The government has stated it will outline post-2020 targets in 2015. The independent Climate Change Authority has recommended a 2030 target range of 40-60 per cent below 2000 levels, and a long term national limit, or 'carbon budget', of 10,100 Mt CO₂-e between 2013 and 2050.⁶

“Whatever policy mix we cook up, it has to be one that leads to the complete elimination of emissions to the atmosphere from the combustion of fossil fuels in the second half of the century.”

Angel Gurría
OECD Secretary-General
9 October 2013

Electricity decarbonisation is an essential precursor to deep emission reductions across the economy, as emission reductions in sectors like transport and buildings depend on the transition to a zero-carbon power supply. To keep within the global 2°C guardrail, the Intergovernmental Panel on Climate Change warns that, at a global level, zero- or near zero-carbon energy needs to comprise about 80 per cent of electricity by 2050.⁷ This transition has begun; around 40 per cent of global investment in the power sector was allocated to renewable energy technologies in 2013.⁸ Research by ClimateWorks and Australian National University, drawing on modelling by CSIRO and the Centre for Policy Studies, indicates that for Australia to play its fair part in avoiding 2°C the carbon intensity of the electricity sector must fall by 97 per cent to 2050 (from 773gCO₂/kWh to 23gCO₂/kWh).⁹

The government's proposed “safeguard mechanism”¹⁰ for the electricity sector could, if set with sufficient stringency, enforce gradual decarbonisation of Australia's power sector. However, in the absence of binding limits or regulations on pollution the RET remains the central mechanism for decarbonisation of this sector.

Due primarily to lower than expected demand for power, renewable energy is gaining a larger share of the electricity market than was originally forecast, winning market share from fossil fuel sources, particularly coal. Modelling by Jacobs finds that if the RET remains in place, renewable energy could contribute about 28 per cent of Australia's electricity in 2020. Coal's share would drop to about 64 per cent. (Rising gas prices are expected to reduce the role of gas irrespective of changes to the RET). This shift from coal to renewable energy would reduce carbon pollution by 40 Mt by 2020 and 200 Mt by 2030.

Yet these dynamics have caused many electricity providers to call for the RET to be reduced or abolished. These calls are often based on claims such moves would lower costs for customers. For example, EnergyAustralia has claimed that the RET is “costly to consumers”¹¹. Origin Energy says that lowering the target would “reduce costs to consumers”¹². Queensland's Stanwell Corporation has called for the RET to be “completely abolished in order to reduce electricity prices”¹³.

But, as analysis by Jacobs shows, the real beneficiaries of reducing the RET are not energy users but power companies that own coal and gas stations. This finding is consistent with other recent analyses by Bloomberg New



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Energy Finance¹⁴, ROAM Consulting¹⁵, Schneider Electric¹⁶ and ACIL Allen’s modelling for the government’s review of the RET¹⁷. Reducing or abolishing the RET, and thereby reducing competition from zero-carbon energy sources, offers the operators of existing power stations the chance to increase power production and profits. In contrast to claims like those cited above, customers would see no material reduction in electricity costs—in fact, they would pay slightly more over the medium term.

This report discusses the results of modelling by Jacobs that identifies which existing generators are set to win the most from reducing or abolishing the RET, and the extent to which these gains come at the expense of customers and citizens.¹⁸

Reducing the Renewable Energy Target benefits coal power stations

As currently legislated, the RET requires 41,000 gigawatt hours (GWh) of electricity to be sourced from large-scale renewables by 2020. The combined impact of the large-scale RET plus the share provided by pre-existing hydropower and small-scale solar PV panels is forecast to produce approximately 68,000 GWh of renewable power in 2020-21. This is equivalent to roughly 28 per cent of national electricity used—more than enough to power Australia’s eight million households, or equivalent to the total electricity use of the state of Queensland. As the share of renewable energy grows, the share of coal-fired power falls, from 74 per cent of electricity before the RET was expanded¹⁹ to 64 per cent in 2020.

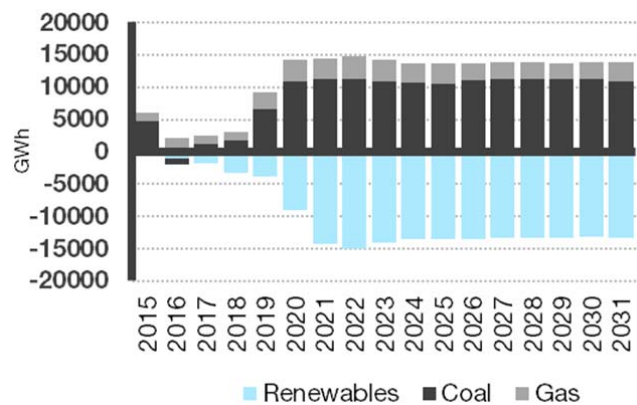
Reducing or abolishing the RET would enable existing coal stations regain market share that would have otherwise gone to renewables.

Several power companies and industry associations have proposed the RET’s binding targets for large-scale renewables be reduced to a level where total renewables would make up no more than 20 per cent of power in 2020. This reduction would see minimal new development. Abolition of the RET would prevent any further large wind or solar developments beyond those already operating or in construction. Modelling by Jacobs found that if the RET is reduced to cap renewable energy at no more than 20 per cent of electricity in 2020 (“Reduced RET” scenario), the decarbonisation of the electricity supply goes into reverse. Coal power rises by 7 per cent to make up 69 per cent of electricity in 2020. Over the rest of the following decade coal’s share remains around 67 per cent. Figure 1,

below, shows how the generation mix projected under the current RET (“Current RET” scenario) would change under the Reduced RET: the fall in renewably-sourced power is offset by a rise in coal and a small increase in gas. As rising gas prices mean that a significant amount of gas-fired electricity will effectively be priced out of the market, the debate over the future of the RET is primarily between renewables and coal.

Abolishing the RET (and grandfathering existing and committed projects) would limit generation by large-scale renewable energy to 16,000 GWh annually, or less than half of the legislated 41,000 GWh target. Under this scenario (“Abolished RET”), coal power would rise by 9 per cent to make up about 70 per cent of electricity, maintaining this level out to 2030. Both of these scenarios assume ongoing growth in the take-up of small-scale solar systems by households. A low demand sensitivity was also conducted.²⁰

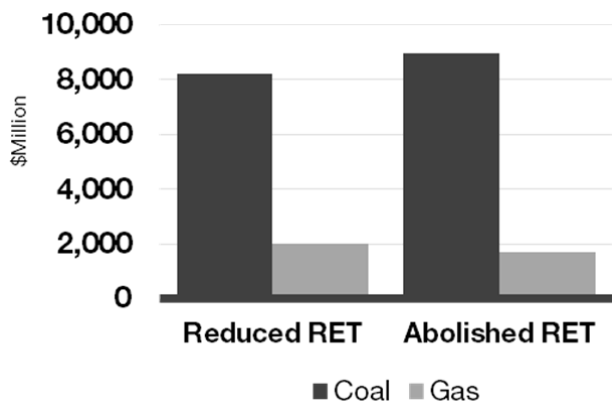
Figure 1. Change in electricity mix from current RET to Reduced RET scenario



The extra coal generation translates directly into extra profits for owners of coal stations. Reducing or abolishing the RET also boosts revenue by raising the wholesale price of power (this benefits all generators). The vast majority of additional profits are captured by coal stations, as high gas prices prevent most gas-fired power stations benefitting substantially from a reduction in the RET.

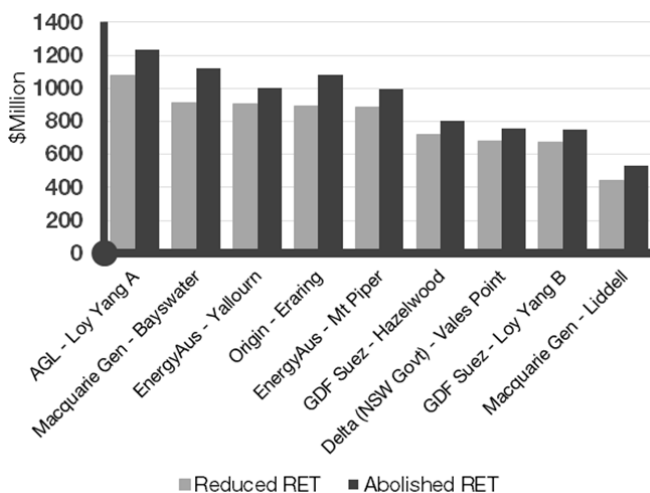
By 2030, the extra profits captured by coal stations total \$22 billion (Reduced RET) or \$25 billion (Abolished RET) in nominal terms. The net present value of these additional profits (calculated using a discount rate of 10 per cent) is \$8.2 billion if the RET is reduced, and \$9 billion if it is abolished. The net present value of additional profits to existing gas stations is about \$2 billion if the RET is reduced, and \$100 million if it is abolished.²¹

Figure 2. Additional profits (net present value) for coal and gas stations as a result of reducing or abolishing the RET



Nine coal stations capture about 80 per cent of the extra profits going to fossil fuels as a result of reducing the RET. Four of these—Loy Yang A and B, Hazelwood and Yallourn—use brown coal and are among the most carbon-intensive generators in the national electricity market. Reduction of the RET is worth some \$7.2 billion to these nine power stations, while abolition of the RET is worth \$8.3 billion.

Figure 3. Current value of increased profit, top nine coal beneficiaries of reducing the RET

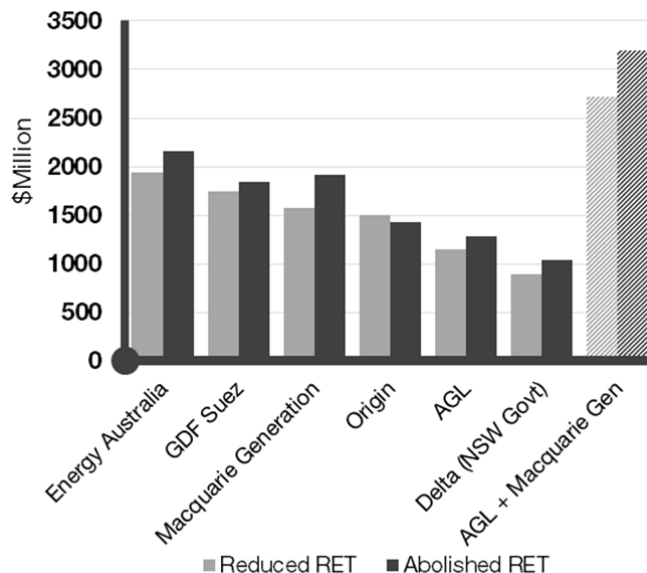


Some of these coal stations, such as Bayswater and Eraring, capture more profit because their power production increases; others like Loy Yang A and B produce roughly the same amount of power under all RET scenarios, but benefit from a reduced RET because of the consequent rise in wholesale prices. Under current ownership arrangements, EnergyAustralia is the company that stands to gain the most. EnergyAustralia’s potential

extra profit is worth about \$1.9 billion if the RET is reduced and \$2.2 billion if it is abolished.

However, if AGL purchases Macquarie Generation, it would become by far the biggest beneficiary of reduction or abolition of the RET. The combined additional profits of AGL and Macquarie Generation would be worth \$2.7 billion if the RET is reduced and \$3 billion if the RET is abolished.

Figure 4. Net present value of increased profit by company – top six companies with coal and gas assets



Reducing the Renewable Energy Target does not lower household power bills

While the major power companies clearly benefit, most customers would not.

Reducing the RET increases the wholesale electricity price by about 15 per cent on average over the years to 2030. Abolition of the RET raises wholesale prices by 18 per cent. The increase in wholesale prices is due to reduced competition from renewables, which have no fuel costs and can thereby outbid fossil generators. These results are consistent with previous modelling by Bloomberg New Energy Finance²², ROAM Consulting²³, Schneider Electric²⁴, and ACIL Allen²⁵ (conducted for the government’s review of the RET), which all found that reducing the RET would raise wholesale electricity prices.

Consistent with these independent analyses, modelling by Jacobs also found reducing the RET would raise retail electricity prices. The benefits of lower wholesale prices

are to some extent offset by the capital costs of building more renewable power stations. Nonetheless, if the RET is reduced, the effect of lower RET costs would be more than overwhelmed by higher wholesale prices, producing a net rise in retail electricity prices, which are paid by many large and small businesses and households.

For a household consuming 6.5 MWh of electricity annually (NSW average), reducing the RET would add about \$35 to the annual power bill, with most of this increase taking place after 2020. Abolition of the RET would add about \$80 a year.

Figure 5. Change in consumer power prices from Current RET

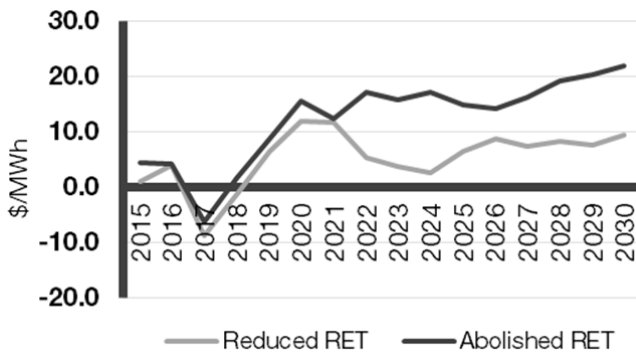


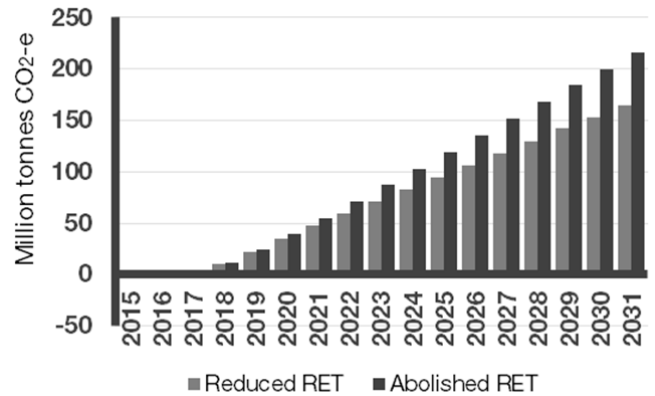
Table 1. Change in national average retail power price

	2015 - 2020	2021 - 2025	2026 - 2030
Change in price (\$/week for a household using 6.5 MWh)			
Reduced RET	+\$0.28	+\$0.74	+\$1.01
Abolished RET	+\$0.59	+\$1.93	+\$2.29
Change in price (\$/MWh)			
Reduced RET	+2.2	+5.9	+8.2
Abolished RET	+4.7	+15.4	+18.3
% Change			
Reduced RET	1.0%	2.7%	3.7%
Abolished RET	2.1%	7.0%	8.3%

The public faces the costs of more carbon pollution and climate damages

The increase in coal power generation will add significantly to the electricity sector’s carbon pollution. In the absence of a price or binding limit on pollution, reducing the RET is estimated to result in an extra 154 million tonnes of carbon pollution by 2030, or about 12 million tonnes every year. Abolition of the RET results in an additional 200 million tonnes by 2030, or over 15 million tonnes every year.

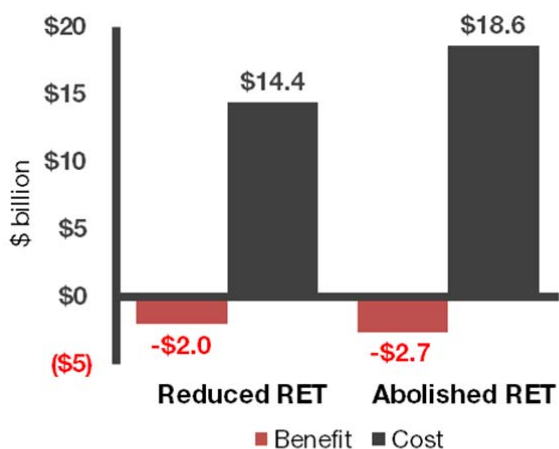
Figure 6. Cumulative additional emissions resulting from reducing the RET



The costs this pollution imposes on the broader community and future generations can be calculated from conservative estimates of the damages caused by carbon pollution. Known as the “social cost of carbon”, such estimates are used by the governments of the United States and Canada to evaluate the benefits of emission reduction policies.²⁶ The International Monetary Fund also uses a simplified version of the U.S. social cost of carbon to calculate the “corrective taxes” that should be applied to use of fossil fuels.²⁷ Social cost of carbon estimates exclude many of the likely consequences of carbon pollution because of lack of data and modelling limitations. The Intergovernmental Panel on Climate Change has warned that they very likely underestimate the real costs of climate damages and the U.S. government notes that they are lower-bound estimates.²⁸ Nonetheless their use ensures that some of the benefits of reducing emissions are factored into decision-making.

These estimates can be included in analysis of the impacts of reducing the RET. Although reducing the RET reduces the resource costs of electricity production in the short term, these savings are more than outweighed by the costs of greater climate damages. Applying the central U.S estimate of the social cost of carbon, we find that reducing the RET costs roughly \$14 billion in climate damages and abolishing it costs about \$19 billion between now and 2040. After accounting for resource cost savings, the net costs of reducing the RET are estimated to be approximately \$12 billion, while net costs of abolition are about \$16 billion. These costs (shown in Figure 7, below) are imposed on current and future generations. (See Appendix B for details on calculating the social costs of carbon.) Applying the U.S. government's more risk-averse estimate of the social cost of carbon would see the costs of reducing the RET triple. On the other hand, assuming a higher discount rate would reduce the net costs substantially.

Figure 7. Net costs of reducing the RET

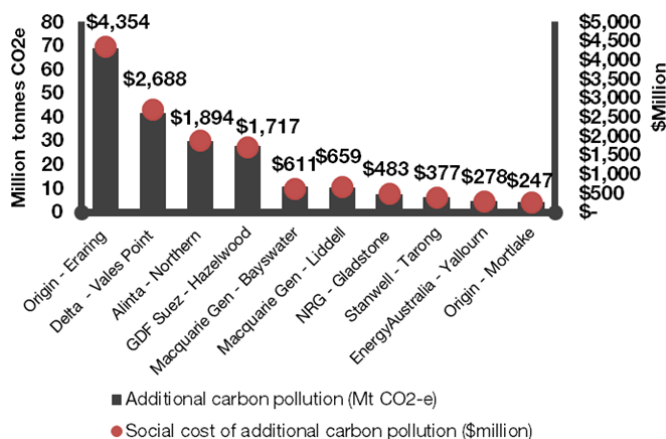


Resource costs are discounted at 7%. Social cost of carbon average discounted at 3% and converted to A\$2012. See Appendix B.

In the next few years Australians would also face the costs of compensating for these extra emissions by purchasing emission reductions elsewhere in order to meet Australia's international obligations. The federal government has estimated that meeting Australia's minimum commitment of a 5 per cent reduction in emissions by 2020 will require 421 million tonnes of emission reductions on the assumption that the current RET remains in place; any reduction in the RET will increase the amount of emission reductions needed to meet the target.²⁹ Under the current policy for emission reduction, reducing the RET would mean additional federal budget expenditure of around \$680 million (range of \$595 million to \$850 million) would be needed to meet the minimum 5 per cent reduction target to 2020. This estimate is derived from a generous assessment of the capability of the Emission Reduction Fund to source and ensure delivery of lowest cost abatement.³⁰

It is possible to identify which generators will create the most additional climate damage under a reduced or abolished RET. Figure 8, below, shows the ten power stations that would produce the most additional pollution over the years to 2040 under the Reduced RET. The social cost of the additional carbon pollution is also shown.

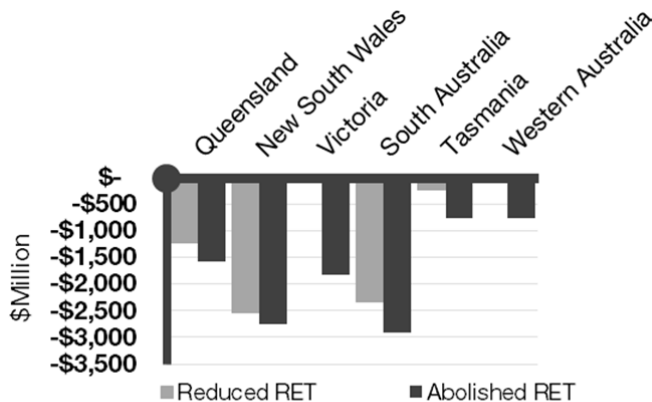
Figure 8. Top ten emitters of additional carbon pollution and the social cost imposed.



Investment in clean energy will decline

Reducing the RET will diminish investment in renewable energy in Australia out to 2040 by \$8 billion in present value terms. Abolition of the RET would see the loss increase to \$10.6 billion. NSW and South Australia are projected to be the states with the most to lose from reducing the RET, with each foregoing investment worth \$2 billion. Queensland would lose over \$1 billion.

Figure 9. Lost investment in renewable energy (net present value)



Calculated using a discount rate of 10 per cent

Conclusion: Build on the RET to further decarbonise the power supply

As this modelling demonstrates, reducing the RET would improve the profits of coal power stations but escalate costs for the public through increased carbon pollution; no reduction in electricity prices; the loss of billions of dollars of investment in the short term; and, by further destabilising the policy environment for investors, higher costs of power sector investment in the future. Outright abolition of the RET would further increase pollution and undermine clean energy investment.

Decarbonisation of the electricity sector is essential to Australia's national interests in avoiding a rise of 2°C or more in global temperatures and preserving competitiveness in the face of tightening global carbon constraints. The RET is currently the central policy for electricity decarbonisation, in the absence of a binding limit or price on carbon or the as yet undeveloped "safeguard mechanism" proposed as part of the government's Emission Reduction Fund.

The lack of such complementary policies increases the importance of the RET in driving a significant portion of the short-term investment necessary for decarbonisation, and allows for a future carbon policy (with either an explicit or implicit price) to take over in the longer term. It also deters investment in generation that might be stranded by stronger carbon policy in future.

However, the electricity market lacks a mechanism to encourage timely market exit by high-carbon generators. This absence appears to be central to the overcapacity now afflicting the electricity sector. In fact, uncertainty over the RET's future also contributes to overcapacity by encouraging struggling generators to remain in the market and their owners to lobby for a RET reduction.

Reducing the RET is not a solution to the issue of overcapacity. A better solution to overcapacity and for Australian energy policy is one that incorporates the goal of decarbonisation. The RET's success in mobilising investment in clean energy should be maintained and enhanced so that Australia's electricity sector can play its full role in achieving our long-term national interest in avoiding dangerous climate change.

Appendix A:

How the big three retailers would profit from reducing the RET

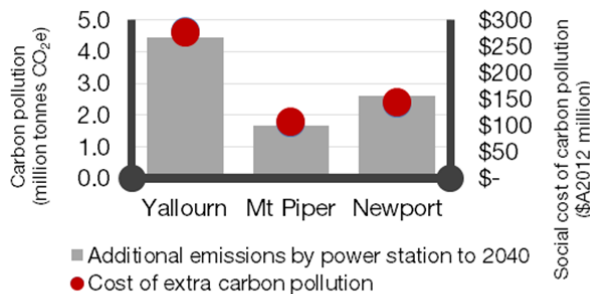
EnergyAustralia

EnergyAustralia has campaigned to reduce the RET since 2012. Then-managing director Richard McIndoe told *The Australian* that the RET is “costly to consumers” and reducing the target would save each customer \$840 on average (this number is produced by calculating certificate costs and excluding any impact on wholesale electricity prices).³¹ EnergyAustralia maintains this position in its recent statements.

Reducing the RET would significantly boost the profits EnergyAustralia could make, particularly from Yallourn, a brown coal station in Victoria’s Latrobe Valley that has been operating for over 30 years, and Mt Piper, a 20-year old black coal station in central west NSW.

EnergyAustralia’s total extra profit has a present value of nearly \$2 billion. This extra profit comes at the cost of an extra eight million tonnes of emissions between now and 2040. The social cost of this extra carbon pollution is estimated at \$530 million. Note that figure A1 shows pollution and climate damages from Newport station in Victoria, to which EnergyAustralia has gentrader rights, as well as EnergyAustralia’s power stations.

Figure A1. Additional carbon pollution and costs of climate damages by power station (Energy Australia)



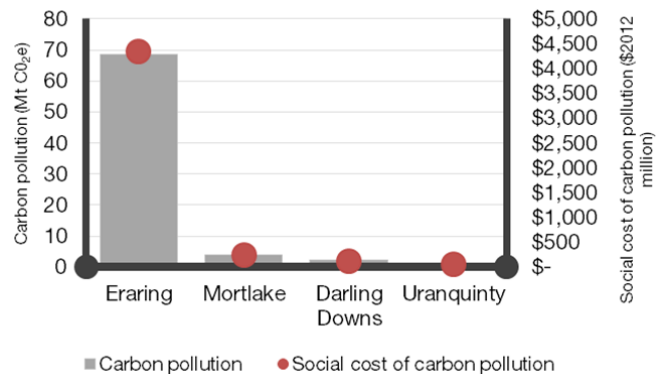
Social cost of carbon pollution uses U.S. government average estimate, 3% discount rate (See Appendix B)

Origin Energy

Origin Energy is a strong advocate of reducing the RET to achieve no more than 20 per cent renewable electricity by 2020.³² Origin’s CEO Grant King has claimed that lowering the RET to this level would “reduce costs to consumers”.³³

Reducing the RET would boost Origin’s profits, particularly from Eraring, a 30-year-old black coal station that is Australia’s largest power generator. Eraring’s extra profits would be worth an extra \$900 million. Origin’s Darling Downs gas station would also earn an extra \$400 million. The present value of Origin’s total extra profit would be about \$1.5 billion. These extra profits come at the cost of nearly 76 million tonnes of extra carbon pollution produced in the years to 2040. Over 90 per cent of this is produced by Eraring. Origin’s gas stations Darling Downs, Mortlake and Uranquinty produce the rest. The social cost of this extra carbon pollution is estimated at \$4.8 billion.

Figure A2. Additional carbon pollution and costs of climate damages by power station (Origin Energy)



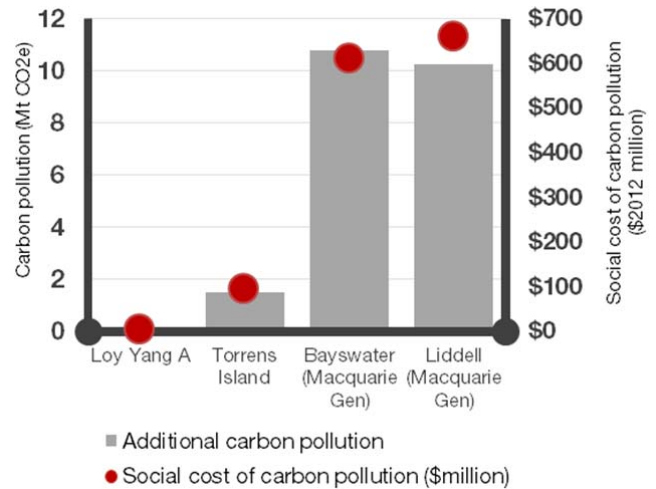
AGL and Macquarie Generation

AGL's position on the Renewable Energy Target has changed over the last couple of years. In 2012, AGL was an unambiguous supporter of the current RET.³⁴ Now, however, AGL has withdrawn support for the current policy settings, warning that "there is little point continuing with higher targets...in the future if the underlying economic fundamentals prevent investment in new renewable capacity"³⁵.

Reducing the RET would significantly boost the profits AGL could make, particularly from Loy Yang A, a brown coal station in Victoria's Latrobe Valley built in the 1980s. Reducing the RET would raise wholesale electricity prices, enabling Loy Yang A to earn more money for generating the same amount of power. These extra profits are worth about \$1 billion, but come at the cost of 1.5 million tonnes of extra carbon pollution to 2040. The social cost of this extra pollution is about \$94 million.

If AGL proceeds with its proposed acquisition of Macquarie Generation, it could also benefit from the extra profits generated under a reduced RET by Macquarie's Bayswater and Liddell power stations in NSW. Bayswater and Liddell would produce significantly more power and \$1.4 billion more profit—and an extra 19 million tonnes of carbon pollution under a reduced RET to 2040. This extra pollution comes at a social cost of \$1.3 billion.

Figure A3. Additional carbon pollution and costs of climate damages by power station (AGL and Macquarie Generation)



Appendix B: Using social cost of carbon estimates to calculate the costs and benefits of reducing the RET

The social cost of carbon (SCC) is an estimate of the economic damage caused by each additional tonne of CO₂ emitted into the atmosphere in a given year. The SCC increases over time because future emissions are expected to produce larger incremental damages as physical and economic systems become more stressed in response to greater climatic change.

The SCC is calculated using Integrated Assessment Models (IAMs), which integrate a simplified climate model and a simplified economic model into a cohesive numerical model to capture the feedback effects between the two.³⁶ It is intended to include (but is not limited to) changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services due to climate change.³⁷ The IPCC Fourth Assessment Report concluded that it is “very likely” that SCC estimates underestimate the damage costs because they cannot include many non-quantifiable impacts.³⁸

Given that SCC estimates are uncertain, the U.S. Government’s interagency working group on the SCC concluded that no single estimate should be used and that current estimates are likely to underestimate the benefits of reducing emissions. However the U.S. typically uses the 3 per cent average in summary statistics used for decision-making.

The US presents four discount rates/ranges:

- 5 per cent average of distribution
- 3 per cent average of distribution
- 2.5 per cent average of distribution
- 3 per cent 95th percentile of distribution (to represent high consequence, low probability outcomes)

The table below shows the costs and benefits of cutting the RET. Costs are calculated by applying the four U.S. price paths (converted to \$A 2012) to the additional carbon pollution produced by reducing the RET. Benefits are calculated by applying the range of discount rates recommended by the Australian Government to the reduction in resource costs resulting from cutting the RET. The discount rates used for estimates presented in the body of this report are shaded.

Note these estimates do not represent a full cost benefit analysis of changing the RET. SCC estimates should not be used in isolation to assess the value of a policy intervention particularly given avoided climate impact benefits are likely to be underestimates. Other costs and benefits of investment in renewables such as , reductions in local air pollution are also not included.

Table B1. Discount rate options in calculating resource costs and social costs of carbon.

	Resource costs discount rates	Benefit (NPV, \$b)		Cost (NPV, \$b)		
				5% av, SCC	3% av, SCC	2.5% av, SCC
Reduced RET	5%	-\$0.6				
	7%	-\$2.0		\$4.4	\$14.4	\$20.9
	10%	-\$3.1				\$43.7
Abolished RET	5%	-\$0.9				
	7%	-\$2.7		\$5.7	\$18.6	\$27.1
	10%	-\$4.0				\$56.6

ENDNOTES

- ¹ Such as EnergyAustralia, Origin Energy and AGL (see Appendix A) and industry associations including the Energy Supply Association of Australia (ESAA) (see ESAA 2014, 'Submissions to the Expert Panel's Review of the Renewable Energy Target').
- ² For example Stanwell Corporation (see endnote 13) and the Australian Chamber of Commerce and Industry (ACCI) (see 'Big business calls for changes to Renewable Energy Target', Sydney Morning Herald, 24 July 2014. <http://www.smh.com.au/federal-politics/political-news/big-business-calls-for-changes-to-renewable-energy-target-20140724-3chbt.html>)
- ³ Based on a target of 27,000 GWh which is roughly equivalent to around 20 per cent of generation in 2020. Jacobs, 2014. *Impacts of Changes to the RET on Electricity Market Participants—Final Report for The Climate Institute, Australian Conservation Foundation and WWF-Australia*. Jacobs, Melbourne.
- ⁴ Bureau of Resource and Energy Economics, 2014. 2014 Australian Energy Statistics Update. BREE, Canberra. Clean Energy Regulator, 2014. *Renewable Energy Target 2013 Administrative Report*.
- ⁵ Based on comparing the emission intensity of the NEM for Jan-May 2009 with the same period in 2014 using AEMO's Carbon Dioxide Equivalent Intensity Index. Comparisons cannot be made using AEMO data for periods after 31 May 2014 as from this point a new methodology was implemented. <http://www.aemo.com.au/Electricity/Settlements/Carbon-Dioxide-Equivalent-Intensity-Index>
- ⁶ Climate Change Authority, 2014. Reducing Australia's Greenhouse Gas Emissions: Targets and Progress Review—Final Report. Climate Change Authority, Melbourne.
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