

The Senate

Economics
Legislation Committee

Australian Renewable Energy Agency
(Repeal) Bill 2014 [Provisions]

September 2014

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Senate Economics Legislation Committee

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Chapter 1

Introduction and background

1.1 On 19 June 2014, the Senate referred the provisions of the Australian Renewable Energy Agency (Repeal) Bill 2014 (the Bill) to the Senate Economics Legislation Committee for inquiry and report by 4 September 2014.

1.2 The Bill would repeal the *Australian Renewable Energy Agency Act 2011* (ARENA Act), thereby closing the Australian Renewable Energy Agency (ARENA). Upon the closure of ARENA, the Commonwealth Minister and Department of Industry would assume responsibility for ARENA commitments, assets and liabilities. Any undecided applications for financial assistance from ARENA would lapse.

Background: About ARENA

1.3 Established on 1 July 2012, ARENA is an independent statutory authority with funding of approximately \$2.5 billion to 2022 to promote the research, development, demonstration, commercialisation and deployment of renewable energy and enabling technologies.¹

1.4 Various Commonwealth funded renewable energy bodies and programs have been consolidated within ARENA. In addition to incorporating measures previously managed by the Australian Solar Institute and the Australian Centre for Renewable Energy, nine federal government programs were consolidated within ARENA when it commenced operations.²

1.5 In its submission, ARENA explained that its objectives, as set out in the ARENA Act, are to:

- (a) improve the cost competitiveness of renewable energy; and
- (b) increase the supply of renewable energy in Australia.³

1.6 The ARENA Act also establishes ARENA's governance arrangements, which include an independent board of, as ARENA puts it, 'experienced and highly credentialed experts, with deep technical, commercial skills and a wealth of knowledge of the energy and resource sector.' The Secretary of the Department of Industry is a member of the board. ARENA's board is supported by a staff of

1 Australian Renewable Energy Agency, 'History', <http://arena.gov.au/about-arena/history/>, accessed 26 August 2014.

2 Australian Renewable Energy Agency, 'History', <http://arena.gov.au/about-arena/history/>, accessed 26 August 2014.

3 Australian Renewable Energy Agency, *Submission 90*, p. 1.

approximately 70 to 80 people, who have a range of private and public sector skills and experience.⁴

1.7 ARENA's funding schedule is contained in section 64(1) of the ARENA Act. This funding schedule was revised by the *Clean Energy Legislation (Carbon Tax Repeal) Act 2014*, which received assent on 17 July 2014. The amendments to the funding schedule included:

- a 2013 Budget measure to re-profile \$370 million in funding for ARENA over the forward estimates (2014–15 to 2016–17) into later years (2019–20 to 2021–22); and
- a reduction in funding for ARENA by \$434.9 million over the forward estimates (2014–15 to 2016–17).⁵

1.8 As the Minister noted in his second reading speech, over \$1 billion of funds have already been provided or committed by ARENA to nearly 200 projects across a suite of renewable energy types. This funding has in turn been matched by industry investment of \$1.8 billion, taking the total investment in Australian renewables as a result of ARENA's work to \$2.8 billion.

Financial impact

1.9 According to the Explanatory Memorandum, ARENA currently has \$2.357 billion of available funds, of which over \$1 billion is committed. As such, the closure of ARENA would result in a potential saving to the government of almost \$1.3 billion in uncommitted funding.⁶

Conduct of the inquiry

1.10 The committee advertised the inquiry on its website, and wrote directly to a range of individuals and organisations inviting written submissions by 16 July 2014. The committee received 132 written submissions, which are listed at the Appendix. The committee thanks all groups and individuals who took the time to make a written submission.

1.11 The committee did not hold any public hearings as part of its inquiry.

4 Australian Renewable Energy Agency, *Submission 90*, p. 4.

5 Explanatory Memorandum, *Clean Energy Legislation (Carbon Tax Repeal) Bill 2014 and related bills*, pp. 78–79.

6 Explanatory Memorandum, *Australian Renewable Energy Agency (Repeal) Bill 2014*, p. 1.

Chapter 2

Views on the Bill

2.1 As noted in the previous chapter, the committee received 132 written submissions. While the majority of submissions opposed the abolition of ARENA, several argued in support of the Bill or for revising ARENA's existing remit. The government's arguments in support of the Bill and the various views expressed in submissions are outlined in this chapter.

The rationale for abolishing ARENA

2.2 In his second reading speech, the Minister stated that given the substantial amount of taxpayer funding already committed to renewable energy projects, and in light of the pressing need to repair the budget, it was appropriate to close ARENA and return its uncommitted funding to consolidated revenue.

2.3 The Minister underlined the large amounts of money already provided or committed by ARENA, and the significant investments being made in the renewable sector more broadly. Specifically, the Minister noted that ARENA had already provided or committed over \$1 billion in funding to support renewable energy projects, and this funding had been matched by \$1.8 billion in industry funding:

This is a very significant amount of money in anyone's language and comes on top of direct and indirect support, which amounts to literally tens of billions of dollars over the life of the program, that has occurred through the renewable energy target scheme. As well as that there have been various other state and territory renewable energy schemes.¹

2.4 Pointing to these investments, the Minister stressed that contrary to what some may claim, 'Australia is not walking away from renewable energy.'²

2.5 A key consideration for the government, the Minister explained, is that it is 'facing a budget emergency and savings have to be achieved to return the budget to surplus'. In this connection, he explained that abolishing ARENA would deliver a saving of \$1.3 billion in uncommitted ARENA funds to the budget.³

2.6 In addition to the closure of ARENA providing a direct saving to the budget, the Explanatory Memorandum also suggests that the transfer of responsibility for

1 The Hon Ian Macfarlane MP, Minister for Industry, *House of Representatives Proof Hansard*, 19 June 2014, p. 6.

2 The Hon Ian Macfarlane MP, Minister for Industry, *House of Representatives Proof Hansard*, 19 June 2014, p. 6.

3 The Hon Ian Macfarlane MP, Minister for Industry, *House of Representatives Proof Hansard*, 19 June 2014, p. 6.

the administration of ARENA's commitments, assets and liabilities to the Department of Industry would 'deliver efficiencies and allow for greater oversight of this expenditure by the Minister'.⁴

Role of ARENA in supporting commercial investment in renewable energy

2.7 A large number of submitters argued that ARENA was uniquely placed and equipped to foster the commercialisation of renewable energy technologies. In particular, these submitters maintained that there are not enough investors in Australia willing or able to commit capital to as-yet unproven or uncommercial renewable energy technologies.

2.8 ARENA itself suggested that it alone performed several important roles in supporting the commercialisation of renewable energy technologies. These included reducing project risk to more acceptable levels for would-be investors in immature renewable energy technologies; funding research and development to bring renewable energy technologies to the brink of commercialisation; and overcoming 'early mover premiums'—that is, the 'premiums associated with doing something the first time which manifest as higher project financing costs, higher construction costs, and increased wages bills amongst other factors'. ARENA explained that the:

...effective development of technology from research to commercialisation is a long, generally multi-decade process. During this process, there are many times when it is not possible to secure the required levels of finance from commercial investors. This is widely recognised and is, in part, due to the lack of depth in risk capital in Australia.⁵

2.9 ARENA also emphasised that it was the only organisation providing support for renewable energy technologies across the entire innovation chain, from early stage research through to the brink of commercialisation.⁶

2.10 Many of the submissions received by the committee agreed with ARENA's characterisation of its role in supporting the development, demonstration and, ultimately, the commercialisation of emerging renewable energy technologies.⁷ For example, the Community and Public Sector Union (CPSU) explained in its submission that renewable energy projects typically:

...take a long time to reach maturity, especially large projects, and they rely on the current funding being available in the out years. ARENA investment

4 Explanatory Memorandum, *Australian Renewable Energy Agency (Repeal) Bill 2014*, p. 5.

5 Australian Renewable Energy Agency, *Submission 90*, p. 2.

6 Australian Renewable Energy Agency, *Submission 90*, p. 3.

7 In addition to the submissions referred to below, submissions making this argument included Mr David Liversidge, *Submission 14*, p. 1; All Energy Pty Ltd, *Submission 28*, p. 1; Clean Energy Council, *Submission 29*, p. 2; Smart Storage Pty Ltd (Ecoult), *Submission 40*, p. 1; Licella Pty Ltd, *Submission 67*, p. 1; SA Power Networks, *Submission 97*, p. 1; APA Group, *Submission 109*, p. 1; Australian Solar Council, *Submission 113*, p. 2.

overcomes early mover disadvantage including variable interest rates, higher supply chain costs and big construction contingency margins, as well as the limited availability of private sector finance to back research or technology solutions. Investing across the innovation chain has provided greater funding certainty and assisted in attracting investors to renewable energy projects in Australia.⁸

2.11 Sustainable Business Australia made a similar point, writing that ARENA had proven effective in driving private sector investment in the renewable energy sector:

[I]nnovation, development and effective transition from early stage research and development to competitive commercial deployment for renewable energy is naturally a slow and complex process. Only consistent, large-scale commitments from Government can drive private sector investment, effective development and competitive deployment in sectors where there is a significant incumbent advantage.

Stimulating large-scale investment and encouraging financial flows toward commercially viable low and zero-carbon energy technologies is key to Australia's sustainable economic growth, development and success. ARENA fulfils this critical role.⁹

2.12 SMA Australia suggested that a common problem in the commercialisation of renewable energy technologies was that while the investment community and energy markets often recognised the potential for renewable energy to be the lowest cost energy option in the long term, it was difficult to raise private investment without first demonstrating the viability of a particular technology. ARENA helped companies developing renewable energy technology overcome this barrier, by providing support to demonstrate the viability of technologies and in turn reduce investment risk.¹⁰ In this sense, ARENA operated as a:

...catalyst for attracting industry and private sector investment to build a portfolio of renewable energy technologies and applications that can create options to lower the future energy costs for Australians across all areas of society.¹¹

2.13 In its submission, Curtin University also raised concerns that the abolition of ARENA would undermine the prospects for the commercialisation of renewable energy technologies in Australia:

Reduction in early-stage commercialisation and pilot-scale deployment will result in a reduced capacity to collaborate with companies for commercial development of technology. The big concern over the repeal of the ARENA legislation is that ARENA is the only source of pre-commercialisation

8 Community and Public Sector Union, *Submission 66*, p. 1.

9 Sustainable Business Australia, *Submission 112*, p. 2.

10 SMA Australia Pty Ltd, *Submission 1*, pp. 1–2.

11 SMA Australia Pty Ltd, *Submission 1*, p. 2.

demonstration funding in Australia that links businesses with University research commercialisation. As a consequence of losing ARENA, Australia will be relegated to purchasing renewable energy products that are invented, developed and manufactured overseas. We will become price takers instead of price makers.¹²

2.14 The Institute for Sustainable Futures made a similar point. It noted that ARENA was the only government body in Australia dedicated to supporting the development, commercialisation and deployment of renewable energy technologies. Given the importance of this support, the Institute argued:

...the absence of ARENA funding and support at this stage of the commercialisation pathway would be economically detrimental and result in Australia being a 'technology adopter' from other nations.¹³

2.15 A common theme in submissions was that while emerging renewable energy technologies had the potential to be commercial in their own right, government support was needed to bring these technologies to maturity. Recurrent Energy, for instance, noted that while the cost of solar energy had declined significantly, it still required the support of bodies like ARENA in the immediate term in order to become cost-competitive with other sources of energy:

It is widely recognised that in cases of market failure there is a justification for government support for research and development and commercialisation of new technologies. In the power sector, proponents and financiers operate in a highly regulated environment and tend to be risk averse and wary of taking on technologies that may prove costlier in the short term. Further, market barriers to low-emission technologies are also created by existing energy infrastructure. Utility scale solar PV has unique advantages when compared against conventional sources. However, these benefits, such as clean power produced at just the right time, are not adequately valued in the current market.

With short term incentives, this disadvantage can be overcome. Emerging renewable technologies benefit from assistance programs, such as the support provided by ARENA, which greatly assists in overcoming market access and cost barriers faced when competing with more established renewable and conventional technologies. In the future, these technologies will travel down the cost reduction curve experienced by more mature renewable technologies as the costs of development, financing, interconnection, construction and operation reduce, a trend proven in energy markets worldwide. However a short term boost for emerging technologies is essential if cost competitiveness is to be achieved in the future.¹⁴

12 Curtin University, *Submission 81*, p. 2.

13 Institute for Sustainable Futures, *Submission 111*, p. 2.

14 Recurrent Energy, *Submission 86*, pp. 2–3.

2.16 The Australian PV Institute argued that ARENA was helping to provide the capital funds that would enable Australia to capture the economic benefit of its ingenuity in renewable energy technology:

Australia has been a world leader in research and development of renewable technologies for the past 30 years. However, Australia has lacked the commercialisation expertise to provide a cradle to grave supply chain, with many innovations travelling offshore to be commercialised. ARENA is a key part of changing this paradigm and enabling Australian researchers to commercialise their innovation and develop a rapidly growing worldwide industry.¹⁵

2.17 Several companies told the committee that the support of ARENA (and its predecessor bodies and programs) had been critical in informing their respective decisions to invest in the Australian renewable energy sector. FRV, an international developer of large scale solar projects, indicated that it was the Solar Flagships program—which became part of ARENA—which attracted it to the Australian market. The company noted that it had invested over \$50 million in its Australian operations, and suggested:

The business case for FRV investing in the Australian renewable energy sector has been underpinned by ARENA and the RET. Repeal of ARENA would almost certainly cause international investors in renewable energy other than wind to reassess the riskiness of investing in [...] Australia in not only the renewable sector, but across the economy in general.¹⁶

2.18 Abengoa Solar, an international company whose activities include the development, design, construction and operation of concentrated solar thermal power plants, also emphasised the importance of ARENA in its decision to invest in Australia. It noted, for instance, that with ARENA support it was currently working with the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and other Australian partners on a detailed study of the feasibility of a 20 MW solar thermal project in Western Australia. If the results of the study are positive, the intention of Abengoa Solar and its partners is to apply for ARENA funding to allow the project to be designed, built and put into operation as a commercial demonstration plant. Ultimately, this project might in turn provide a guide for the further development and implementation of solar thermal power plants elsewhere in Australia on a commercial basis:

Clearly ARENA fulfils an important public role in facilitating research, development and early stage deployment of next generation renewable energy. Without ARENA's continued support it is difficult to foresee how this demonstration project, and others like it, could be realized, and an opportunity for Australia to extend its already strong R&D capability in

15 Australian PV Institute, *Submission 93*, p. 2.

16 FRV Services Australia Pty Ltd, *Submission 26*, p. 1.

concentrated solar thermal technology into commercial deployment would be missed.¹⁷

2.19 Similarly, RayGen, a solar photovoltaic company, wrote that it had entered into a \$60 million sales contract with a Chinese manufacturer that would not have been possible without the support of the Victorian Government and ARENA. RayGen explained that it would not have been possible to secure the \$25 to \$30 million in capital to commercialise its technology without government grants to leverage matching private investment:

The point is that without the type of support provided by ARENA at this critical stage in a product commercialisation, ties to Australia are likely to become severed, and/or early stage investors may become wary of investing in the knowledge that the later investment doors have closed.¹⁸

2.20 Professor Ken Baldwin, Director of the Australian National University (ANU) Energy Change Institute, argued that in the absence of other support for renewable energy development, the abolition of ARENA would lead to the creation of stranded assets. These assets would include 'the intellectual potential of our researchers and their support facilities and infrastructure'. He noted further:

Australian taxpayers, universities, research organisations and innovators have made considerable investments in the future of Australian energy. It is in our national interests to capitalise on this and reap the benefits of future gains from this investment. The abolition of ARENA will destroy these future gains by breaking a crucial link in the innovation chain.¹⁹

ARENA's role in fostering a stable investment environment

2.21 In addition to evidence provided by companies suggesting their respective investment decisions had been informed by ARENA's existence and support, a range of submitters argued that the abolition of ARENA would create uncertainty in the renewable energy sector, and thereby compromise investor confidence. For example, the Sustainable Energy Association of Australia argued:

The renewable energy industry in Australia has suffered significant disruption as the result of policy uncertainty and changes over the last five years. The proposed dismantling of ARENA would be another abrupt policy shift negatively affecting long-term market stability. Policies and programs like ARENA and the Renewable Energy Target underpin significant investment in the sector, worth billions of dollars. Scrapping ARENA would certainly cause international organisations to reassess the risk of investing in Australia, both in the renewable sector and across the economy in general.²⁰

17 Abengoa Solar, *Submission 63*, p. 1.

18 RayGen Resources Pty Ltd, *Submission 55*, pp. 1–2.

19 Australian National University Energy Change Institute, *Submission 65*, p. 2.

20 Sustainable Energy Association of Australia, *Submission 77*, p. 1.

2.22 The Business Council of Australia (BCA), meanwhile, suggested that while a reduction in ARENA's funding 'to a more sustainable level is appropriate...ending its funding altogether would continue the stop/start approach to policy in an emerging technology sector that requires policy certainty to invest.'²¹

2.23 First Solar, the world's largest manufacturer of solar photovoltaic modules, and currently invested in several utility scale solar projects in Australia (the largest being in Nyngan and Broken Hill, New South Wales, with First Solar partnered with AGL), argued that the abolition of ARENA would be:

...an inequitable outcome for companies that have invested in the Australian renewable energy market based on the creation of ARENA and the existing LRET target. For example, First Solar established a presence in Australia in mid-2009, and has now invested significant capital in a localised engineering, procurement and construction team as well as an Australian supply chain capability. The decision to invest in the Australian market was directly linked to the nature and longevity of the ARENA programs and LRET target.²²

2.24 Goldwind Australia, a wind farm business established in 2009 by parent Chinese company Xinjiang Goldwind Science and Technology and with investments totalling \$400 million, stressed that ARENA helped assure foreign investors that Australia was a good place to invest in renewable energy:

Australia is a trusted investment destination. A key factor in foreign investment decisions is consideration of the country's risk and the ability to rely on the law of the country. Goldwind as a Chinese investor that has trusted the Australian investment environment. In the case of ARENA, Goldwind has undertaken project development activities in order to contribute to the achievement of ARENA program objectives. The repeal of the ARENA Bill would heighten sovereign risk concerns regarding investment based on Australian Government policy initiatives in Australia.²³

2.25 Similarly, Senvion Australia, the Australian arm of a large international developer and operator of wind farms in Australia, argued that ARENA, together with the RET, provided foreign investors with confidence they needed to invest in Australia:

Even though ARENA does not directly benefit our business, we believe that moving to a low carbon economy requires a long-term, stable and comprehensive policy framework that drives investment in mature technologies, accelerates the uptake of energy efficiency, and helps bring new technologies onto the market.

21 Business Council of Australia, *Submission 115*, p. 1.

22 First Solar (Australia) Pty Ltd, *Submission 84*, p. 2.

23 Goldwind Australia, *Submission 100*, p. 2.

In particular, we are concerned that closing the Agency [ARENA] down will send negative signals to investors in renewable energy—particularly while the RET is under review and the future of the RET is not clear.²⁴

The economic benefits of Australian innovations in renewable energy

2.26 A key theme in a majority of submissions was that ARENA's work was delivering or had the potential to deliver tangible economic benefits for Australia. As summarised below, various submissions argued that ARENA's work would help drive long-term improvements in energy affordability; help Australia capitalise on its existing strengths in the renewable energy sector as the world increasingly moves toward renewable energy; create new jobs and skills in renewable energy and supporting industries; and help stimulate new economic activity in rural, regional and remote areas.

Securing the benefits of the global transition to renewable energy

2.27 Associate Professor Evatt Hawkes explained that regardless of the level of consensus regarding climate change in Australia, there was a move internationally to invest in renewable energy research and deployment. With renewable energy capacity growing at double digit rates, he suggested that 'Australia has a lot to gain from this trend, but only if we are in the game early and seriously.' He suggested that renewable energy products could become Australia's main export in the future, and that Australia was well placed to develop, commercialise and export lucrative renewable energy technologies and knowledge. He wrote:

Continuing research and development at UNSW and in many other universities, in CSIRO, and in Australian industry would be derailed by closing down ARENA. As a result, this research will undoubtedly move overseas and the Australian economy will suffer—both in terms of lost income but also when technology developed and manufactured overseas is sold to Australians at a premium.²⁵

2.28 The Combustion Institute, Australia and New Zealand and the Australasian Fluid Mechanics Society made a similar argument, suggesting that abolishing ARENA would be a 'major setback' to Australia in the race to commercialise renewable energy technologies. The Institute concluded that:

...Australia can be a key player in this race, bringing significant benefits to our economy. The rapid pace of technology development implies that divesting from this area now would cripple Australia's long term prospects of ever competing. As such we submit to the Committee that abolishing

24 Senvion Australia, *Submission 101*, p. 2.

25 Associate Professor Evatt R. Hawkes, *Submission 48*, p. 2.

ARENA, and not replacing it with an equivalent organisation, would be a serious mistake.²⁶

2.29 The Melbourne Energy Institute noted a range of reasons for the world shifting to renewable energy, including energy security, cost and economic considerations and the need to combat climate change. It suggested that while Australia had many advantages that left it well placed to benefit from the global shift towards renewables, there was no guarantee 'that prosperity for the people of Australia will be an outcome of this energy revolution'. Given the international competition in the shift to renewable energy, it argued that Australia would need to 'move quickly' to ensure it took advantage of its position:

ARENA has been fulfilling a key role in ensuring Australia's future prosperity at this critical time. ARENA is the only organisation that has the role of supporting Australian researchers and industry to develop their ideas into profitable business ventures deployable at home and abroad. ARENA's work is necessary to ensure Australia has access to low-cost and secure renewable energy supplies while improving food, water, health, economic development, climate, and human equity outcomes.

ARENA's work must continue. Otherwise, as the world moves to its new energy future, Australia will lose the political, economic, social, and technical standing that it has gained internationally over recent decades.²⁷

2.30 Other submissions made the case that ARENA's work was helping to ensure Australia maintained its competitive advantage in researching, developing and deploying renewable energy technologies, and was thus well positioned to capture the economic benefits of the transition to renewable energy.²⁸ As Griffith University put it:

The Australian Renewable Energy Agency provides a mechanism by which innovative research into all aspects of renewable energy can be developed and translated for economic gain and community sustainability. [...]

Continued investment in and support for ARENA will help secure Australia's position as a national technology leader and create a competitive advantage underpinning future economic growth in the core agriculture, mining, construction and tourism sectors, through delivery of cleaner, cheaper, more reliable electricity to the energy grid and off-grid regions.²⁹

26 The Combustion Institute, Australia and New Zealand Section, *Submission 49*, pp. 2–3. Australasian Fluid Mechanics Society, *Submission 71*, p. 3.

27 University of Melbourne Energy Institute, *Submission 91*, p. 2.

28 Clean Energy Council, *Submission 29*, pp. 1–2; Mr Richard Corkish, *Submission 31*, p. 1; Mr Anthony Rawson, *Submission 37*, p. 1.

29 Griffith University, *Submission 76*, p. 1.

Job creation and skills development

2.31 Many of the submissions received by the committee emphasised the potential for ARENA-supported projects, and the renewable energy sector more broadly, to generate new jobs and an expansion of Australia's skills base. The Clean Energy Council, Ecoult and Geodynamics all suggested that the potential for job creation and skills development through ARENA's investments in the renewable energy sector was particularly pertinent in light of the decline in traditional employment sectors, such as the automotive and broader manufacturing sectors.³⁰ The Clean Energy Council referred to job creating potential of specific projects supported by ARENA, including the large scale solar projects in Broken Hill and Nyngan. The local procurement of \$66 million worth of equipment through these projects, it argued, would create:

...new business opportunities for manufacturers, which will be increasingly important over the next few years as activity in automotive manufacturing in Australia declines. For example, the Australian auto parts specialist IXL is branching into a new business with the opening of a new plant to assemble and deliver the mounting structures for the large-scale solar plants that are being built by First Solar in Broken Hill and Nyngan on behalf of AGL Energy. The Geelong-based company is facing the loss of a major strand of its business with the collapse of the Australian car manufacturing industry. The new plant in Salisbury South, South Australia will create about 40 local jobs and would not have been possible without support of ARENA.³¹

2.32 Similarly, Visy argued that ARENA provided support for new manufacturing jobs in the renewable energy sector, which was particularly important given broader trends in the Australian economy:

New capabilities in sustainable manufacturing, which include clean energy as a central component, will enhance Australia's economic profile, especially at a time when jobs and business activity are in need of some redirection from mining to other sectors.³²

2.33 In its submission, First Solar reported that the utility scale solar projects in Nyngan and Broken Hill that it was working on in partnership with AGL, and which represented a total investment of \$450 million including \$166.7 million of ARENA funding, were generating:

- Approximately 450 project construction jobs.
- Approximately 160+ permanent off-site jobs associated with supply chain and procurement from 12 different Australian suppliers that span a geographic footprint across SA, VIC and NSW.

30 Clean Energy Council, *Submission 29*, p. 1; Smart Storage Pty Ltd (Ecoult), *Submission 40*, p. 2; Geodynamics, *Submission 57*, p. 2.

31 Clean Energy Council, *Submission 29*, pp. 2–3.

32 Visy, *Submission 107*, p 2.

- Approximately 35 jobs associated with project site support.
- Approximately \$66 million spent on local procurement for both projects, which represents ~56% of the total procurement spend (excluding the panel supply).³³

2.34 The Global Change Institute also pointed to the projects at Nyngan and Broken Hill as excellent examples of the capacity of ARENA-funded projects to generate real economic activity and create new jobs and skills:

The AGL-First Solar utility-scale PV plant being built at two sites in NSW is ground breaking—generating new energy economy jobs, building knowhow and capacity, and delivering local and national economic benefit. This project is a case study for our energy future—administered by ARENA for the national good. The jobs of the future in the energy sector will be dominated by high technology manufacturing, distributed power and smart grids. No sensible first world economy can ignore this clear fact.³⁴

Remote and regional communities

2.35 In its submission, ARENA noted that 70 per cent of its funding had gone to projects in rural and regional Australia, in locations such as Weipa, Cooper Pedy, Broken Hill, Nyngan, King Island, Jemmalong and Port Augusta.³⁵

2.36 Submissions from Curtin University, Bioenergy Australia and Deakin University argued that the abolition of ARENA would deny rural and regional areas the opportunity to develop new industries and jobs as part of a shift to renewable energy generation.³⁶ The New South Wales Government also wrote that there were substantial benefits to regional communities from ARENA projects, including the aforementioned ARENA-supported AGL-First Solar utility scale solar projects at Nyngan and Broken Hill, to which the NSW Government was itself contributing \$64.9 million:

The benefits to regional communities are twofold in the direct employment created by the sector, as well as the indirect benefits. Much of the impact of the renewable energy industry in economic terms is by way of the indirect benefits across a diverse range of skill sets in areas as varied as manufacturing, installation, research and development and distribution.³⁷

2.37 Several submissions also highlighted the importance of ARENA funding in developing projects to fund the development and deployment of renewable energy

33 First Solar (Australia) Pty Ltd, *Submission 84*, p. 3.

34 Global Change Institute, University of Queensland, *Submission 94*, p. 3.

35 Australian Renewable Energy Agency, *Submission 90*, p. 4.

36 Curtin University, *Submission 81*, p. 2; Bioenergy Australia, *Submission 85*, p. 2; Deakin University, *Submission 125*, p. 2.

37 New South Wales Government, *Submission 89*, p. 2.

technologies in remote and off-grid locations. In particular, submissions from the Lord Howe Island Board, Hydro Tasmania, and Laing O'Rourke all reported on projects they had been involved in to develop off-grid renewable energy generation and reduce local reliance on expensive diesel generation—all three submissions suggested that ARENA's support was decisive in their respective projects proceeding.³⁸

2.38 Similarly, CAT Projects, an indigenous-owned engineering company based in Alice Springs and with experience working on large renewable energy projects in Australia, argued that the ARENA had proven effective in addressing the various structural barriers to the deployment of renewables in remote areas:

ARENA, as an Agency, [has] recognised the importance of incentivising innovation with respect to these barriers, with a specific focus on not simply 'throwing money' at the issues, [but] rather asking industry, utilities, and other government agencies to consider how different approaches to business can materially address the barriers previously identified.³⁹

2.39 Repower Port Augusta, a campaign to replace Port Augusta's ageing coal-fired power stations with concentrated solar thermal plants and wind stations, argued that the support of ARENA would be critical in helping Port Augusta make the transition to renewable energy:

This is an issue of critical importance to the creation of long-term jobs in our community, our community's health and doing our bit to act on climate change in a way that ensures coal communities like ours can transition to clean energy while retaining jobs and reducing carbon emissions. The Australian Renewable Energy Agency (ARENA) is a critical institution to making a transition to solar thermal in Port Augusta possible.⁴⁰

Diversifying energy supply and improving affordability

2.40 Several submissions contended that ARENA's support of the development and demonstration of renewable energy technologies was helping to drive the diversification of Australia's energy supply. This diversification, it was argued, was necessary in order to improve energy reliability and security and reduce Australia's dependence on increasingly expensive non-renewable energy sources.⁴¹

38 Lord Howe Island Board, *Submission 36*, p. 1; Hydro Tasmania, *Submission 38*, pp. 2–3; Laing O'Rourke, *Submission 99*, p. 1.

39 CAT Projects, *Submission 103*, p. 3.

40 Repower Port Augusta Alliance, *Submission 114*, p. 1.

41 FRV Services Australia Pty Ltd, *Submission 26*, p. 2; Clean Energy Council, *Submission 29*, p. 1; Tenax Energy, *Submission 34*, p. 2; Sustainable Energy Association of Australia, *Submission 77*, p. 2; Recurrent Energy, *Submission 86*, p. 3.

Universities and the research community

2.41 The committee received a large number of submissions from universities, students, teaching academics and researchers arguing against the abolition of ARENA.

2.42 As ARENA outlined in its submission, it is the major funding source for renewable energy technology research in Australia, particularly in areas where Australia is globally competitive. ARENA also noted that in addition to funding more than 190 projects, it also funds 83 fellowships and scholarships.⁴²

2.43 To highlight the challenges research institutions would face as a result of the abolition of ARENA, Professor Ken Baldwin, Director of the ANU Energy Change Institute, referred to the planned collaboration in photovoltaics research between the U.S. National Renewable Energy Laboratory, ANU and UNSW. This collaboration was recently announced by US President Barack Obama following a meeting with Prime Minister Tony Abbott on 12 June 2014. According to Professor Baldwin, if the Bill is passed, 'Australia will not be able to live up to its side of this collaboration'.⁴³

2.44 Submissions from various universities, including ANU, Swinburne University of Technology and the University of Sydney, argued that ARENA's support was critical in helping their respective universities attract and retain international students and researchers, deliver high-quality teaching and research outcomes, and build partnerships with industry and other research institutions in Australia and overseas.⁴⁴ Similar arguments were made by the Renewable Energy Society (RESOC), the student representative body of the University of New South Wales' (UNSW) School of Photovoltaic Energy and Renewable Energy Engineering (SPREE); a group of SPREE teaching academics; the Solar Photovoltaic and Solar Thermal Groups from the College of Engineering and Computer Science, ANU; and Dr Murad Tayebjee, an ARENA funded post-doctoral fellow.⁴⁵

2.45 The committee also heard from undergraduate and postgraduate students concerned about the impact the abolition of ARENA might have on the quality of education they and future students would receive, and on their future career prospects in Australia. For example, RESOC argued that the abolition of ARENA would:

42 Australian Renewable Energy Agency, *Submission 90*, pp. 4–5.

43 Australian National University Energy Change Institute, *Submission 65*, p. 1.

44 Australian National University, *Submission 41*, p. 1; Swinburne University of Technology, *Submission 96*, pp. 1–2; University of Sydney, *Submission 70*, p. 1.

45 Renewable Energy Society, School of Photovoltaic and Renewable Energy Engineering, University of New South Wales, *Submission 47*, p. 2; Australasian Fluid Mechanics Society, *Submission 71*, p. 1; Solar Photovoltaic and Solar Thermal Groups, College of Engineering and Computer Science, Australian National University, *Submission 82*, p. 1; Dr Murad Tayebjee, *Submission 122*, p. 1;

...lead to serious financial implications for SPREE with a definite flow-on effect to students. Establishment and maintenance of laboratories would become more difficult, research capacity would dwindle and the ability of the School to support postgraduate students would be seriously diminished. It is the expectation of RESOC that the abolition of ARENA would lead to a rapid acceleration of the phenomenon of 'brain drain', already the Achilles' heel of the Renewable Energy Industry in Australia. Already this drain is noticeable within the recent graduates of the School, with support from the Government waning and career prospects overseas attracting graduates away from domestic industry.⁴⁶

2.46 Undergraduate SPREE students, in a separate submission, argued that SPREE's reputation for research and teaching excellence was directly correlated to the support it received from ARENA. Moreover, undergraduate students were concerned about what the repeal of ARENA would mean for their future careers:

For graduating students across Australia interested in entering the renewable energy industry, the repeal of ARENA would have disastrous implications on [sic] our future career paths. The funding of ARENA is crucial to our short-term employment prospects, as it enables pre-commercial projects, demonstration projects, and research and development. Furthermore, we are acutely aware that without ARENA funding, the renewable energy sector in Australia will suffer, severely harming our long-term career prospects. This would lead many of us to pursue careers in other fields, and others to consider careers overseas in countries with a stronger commitment to the clean energy future towards which the world is moving.⁴⁷

2.47 A number of submissions expressed concern about the effect the abolition of ARENA would have on postgraduate and early career researchers in renewable energy fields, including their ability to pursue their careers in Australia. For example, a submission made by 49 early career researchers and 97 PhD students from ANU, UNSW and the University of Queensland working in the area of renewable energy, expressed 'deep concern' about the impact the abolition of ARENA would have on Australian teaching and research into renewable energy:

ARENA directly and indirectly funds our current research positions. Funding earmarked by ARENA for future R&D underlies our future careers. In the prolonged absence of ARENA funding (or an equivalent agency) a generation of scientists, engineers and professional staff will be lost either to Australia or to the renewable energy industry, with severe

46 Renewable Energy Society, School of Renewable Energy and Renewable Energy Engineering, University of New South Wales, *Submission 47*, pp. 2–3.

47 Renewable Energy Students' Society, School of Photovoltaic and Renewable Energy Engineering, University of New South Wales, *Submission 116*, p. 1.

consequences to future Australian participation in this enormous growth industry.⁴⁸

2.48 The researchers and PhD students added that repealing ARENA would force many of them to ultimately leave Australia, 'preventing effective capitalisation on the \$1bn already invested.'⁴⁹

2.49 A number of submissions from research schools focused on photovoltaic research were particularly concerned that the abolition of ARENA would undermine the lead Australia had built in solar energy research.⁵⁰ The Australian PV Institute, meanwhile, argued that ARENA's role in fostering knowledge sharing 'will not be filled by other programs and is a vital requirement of emerging and innovative technologies and market transformation.'⁵¹

Combating climate change

2.50 Several submissions made the case for ARENA's continued existence on the grounds that its support for renewable energy could help Australia reduce its carbon emissions and thereby mitigate the threat of climate change. Dr Alan Hawkes, from Imperial College London, emphasised that for Australia the threat of climate change was particularly pronounced:

Australia is a country that is particularly vulnerable to climate change. The development of renewable energy that can compete directly, without subsidies, on a cost-basis is arguably the most effective direct action strategy to combat climate change.⁵²

2.51 Academics from the School of Mechanical and Manufacturing Engineering at UNSW argued that the cost of reducing greenhouse gas emissions would only increase if ARENA was abolished:

Recent announcements in the United States suggest that it is now taking a serious position on reducing carbon emissions, and there are strong indications that China will follow suit, pointing to an emerging international consensus that emissions urgently need to be limited to prevent damaging climate change. If it is not shut down, ARENA will play

48 Early career researchers of the Australian National University, University of New South Wales and University of Queensland, *Submission 92*, p. 1. Similar arguments were made in Mr Rowan MacQueen, *Submission 123*, p. 1; and Dr Jonathon Dore, *Submission 128*, p. 1.

49 Early career researchers of the Australian National University, University of New South Wales and University of Queensland, *Submission 92*, p. 2.

50 Australian Centre for Advanced Photovoltaics, University of New South Wales, *Submission 106*, p. 3; Professor David Bagnall, School of Photovoltaic and Renewable Energy Engineering, University of NSW, *Submission 108*, pp. 2–3.

51 Australian PV Institute, *Submission 93*, p. 1.

52 Dr Adam Hawkes, Centre for Process Systems Engineering, Imperial College London, *Submission 80*, p. 1.

an important role in Australia's response to meeting future international emissions targets. In contrast, if ARENA is abolished, it will cripple the development of Australia's renewable energy industry, and Australia will be forced to mount a costly rear-guard action in the future in order to meet these targets.⁵³

2.52 The ACT Government argued that the 'overwhelming weight of scientific evidence indicates that our current patterns of production and consumption, particularly our burning of non-renewable fossil fuels, are not sustainable.' Agencies such as ARENA, it suggested, played an essential role in 'developing Australia's clean energy economy and addressing the challenge of climate change.'⁵⁴

Impact of placing ARENA in Department of Industry

2.53 As noted earlier, the Explanatory Memorandum suggests that closing ARENA as an independent agency and moving management of its existing functions and commitments into the Department of Industry would deliver efficiencies and allow for greater oversight of already-committed expenditure by the Minister.⁵⁵

2.54 A number of submitters challenged this reasoning, arguing that ARENA's independence was in fact central to its transparency and efficiency. In varying degrees, these submitters also pointed to ARENA's ability to draw on a range of different skills and expertise, including staff and board members with research, technical and managerial skills and experience in the academic, public and private sectors.

2.55 Dr John Wright, who serves as a member of the ARENA Advisory Committee, wrote in some detail about the process by which applications for ARENA funding are considered. He described a rigorous, transparent process that ensured 'only those applications that satisfy ARENA's stringent technical and economic conditions are recommended to the Board for funding.' A strength of ARENA, he suggested:

...is its robust assessment and analysis process conducted by a range of independent experts that look closely at the technical and economic viability of project applications. An important additional strength is the close consultation of ARENA staff with project proponents at all stages of the application process. This cooperative process brings out the best in the applications, generates project modifications that best suit ARENA requirements and increases value for money.⁵⁶

53 School of Mechanical and Manufacturing Engineering, University of New South Wales, *Submission 83*, p. 2.

54 ACT Government, *Submission 129*, pp. 1–2.

55 Explanatory Memorandum, *Australian Renewable Energy Agency (Repeal) Bill 2014*, p. 5.

56 Dr John Wright, *Submission 53*, p. 3.

2.56 Similarly, SMA Australia, FRV, RayGen, the Sustainable Energy Association of Australia and the CPSU all argued that ARENA's independent structure and ability to leverage both public and private sector expertise had been critical in driving its success to date.⁵⁷ As FRV explained:

ARENA has in large part been successful due to its independent structure and this ability to blend private and public investment and expertise, much of which will be lost if the initiative is repealed and existing projects returned to the Department of Industry.⁵⁸

2.57 Tenax Energy took this point further still, arguing that ARENA's independence provided a safeguard against the risk of political intervention in the funding process:

The design of ARENA as an independent government agency alleviates the risk of possible intervention in the decision making and the proponent funding process. Additionally, the independence of ARENA decision making through its Board structure encourages confidence in the administration of the programs and has ensured that the only avenue for political intervention in the determination of priorities or the awarding of funds is to demolish the Agency.⁵⁹

2.58 Mr Alan Pears AM, meanwhile, argued that the Department of Industry was not well placed to manage the complexity of ARENA's existing funding commitments:

The suggestion [in the Explanatory Memorandum] that shifting management of existing ARENA projects into the Department of Industry will reduce costs is not supported by any evidence, either. ARENA has built an expert team that understands its target sector and can respond efficiently and effectively. It also draws upon external expert advice, often at zero or low cost. Much of the benefit of such capacity for efficient ongoing project management risks being lost if no new projects are pursued, and if generalist departmental staff are tasked with management of these complex projects.⁶⁰

2.59 Bioenergy Australia argued that the complex, cross-portfolio nature of bioenergy, made a stand-alone body like ARENA necessary to the development of bioenergy technologies:

Bioenergy in particular requires a special purpose agency such as ARENA to support its development. Bioenergy spans numerous portfolio areas such

57 FRV Services Australia Pty Ltd, *Submission 26*, p. 2; SMA Australia Pty Ltd, *Submission 1*, p. 2; RayGen Resources Pty Ltd, *Submission 55*, p. 3; Community and Public Sector Union, *Submission 66*, p. 2; Sustainable Energy Association of Australia, *Submission 77*, p. 2.

58 FRV Services Australia Pty Ltd, *Submission 26*, p. 2.

59 Tenax Energy, *Submission 34*, p. 2.

60 Mr Alan Pears AM, *Submission 58*, p. 2.

as energy, infrastructure, waste management, wild fire mitigation, water, agriculture, forestry, trade, employment and regional development, and its assessment and support requires consideration by an agency that is geared up for such a task, rather than being relegated to within a government department with a narrower single portfolio responsibility.⁶¹

2.60 In making the case that ARENA was playing a 'vital role in Australia's transformation to a cleaner, and less carbon intensive future', Infigen Energy drew a comparison between ARENA's independence from government and the placement of predecessor programs and bodies within government departments:

Infigen Energy considers that ARENA will continue to be more successful in its current form rather than being incorporated into the Department of Industry. One of the predecessors of ARENA was the Renewable Energy Development Program (REDP) which was run by the previous Government's Department of Energy. While this program was successful in making announcements of grant 'winners', it was not successful progressing these projects to financial close and construction. Most of the projects awarded grants by the REDP were never built amongst these the Ocean Power Technologies project abandoned this week. On the other hand, ARENA has been much more successful selecting and progressing development projects to a successful outcome and construction of new plants including Carnegie Wave Energy's innovative Perth wave energy project and AGL's 155MW solar PV project in NSW.⁶²

2.61 The BCA wrote that ARENA had a proven track record in undertaking effective due diligence in the projects it invested in, and in its subsequent monitoring and management and the contracts it had entered into:

The BCA supports the government's imperative to get the budget back into surplus, but not at the expense of closing an institution that has commercial expertise, that is not readily available in a government department and which has been operating effectively, with so much potential ahead.⁶³

Criticism of ARENA's current operations

2.62 The committee received several submissions that were critical of ARENA's current focus and operations, including submissions from the Australian Chamber of Commerce and Industry (ACCI) and Gas Energy Australia that supported the proposed abolition of the agency.

2.63 ACCI argued strongly in favour of the Bill, on the basis that the investments made by ARENA in 'uncommercial renewable energy projects' imposed a burden on the taxpayer for no clear economic benefit. Indeed, ACCI argued that ARENA served

61 Bioenergy Australia, *Submission 85*, p. 2.

62 Infigen Energy, *Submission 119*, pp. 1–2.

63 Business Council of Australia, *Submission 115*, p. 1.

to distort the energy market, and further confuse an already incoherent policy approach to reducing greenhouse gas emissions:

Investment in renewable energy is already supported by both the Clean Energy Finance Corporation (CEFC) and the Renewable Energy Target (RET), and prospectively will benefit from abatement opportunities available under the Emissions Reduction Fund. ACCI believes that there is no economic justification for layering additional subsidies for the renewable energy sector on top of those already provided for in terms of financing of projects under the CEFC, and by artificially creating a market for renewable energy through the operation of the RET.

Funding for ARENA simply provides one distorting subsidy on top of a range of others and further complicates the disjointed and incoherent policy approach to carbon emissions. ACCI believes that Australia's carbon abatement policies need to be rationalised and consolidated into a coherent, integrated policy framework that is designed to achieve lowest cost abatement. The Emissions Reduction Fund provides a realistic prospect of achieving such an approach and provided it operates effectively should be the principal mechanism for limiting carbon emissions across the economy.⁶⁴

2.64 ACCI continued that there was a lack of transparency or accountability generally regarding the economic returns provided by the projects that ARENA was investing in:

ARENA has no clear economic justification for the investments it pursues and there is limited disclosure on returns to projects funded in their 2012–13 Annual Report. There are no clear benchmarks for success outlined in ARENA's annual report and it is not clear to ACCI that the agency is delivering an adequate return on taxpayer's funds.⁶⁵

2.65 Moreover, ACCI disputed the need for a funding body devoted specifically to the research, development and deployment of renewable energy technologies:

There are other vehicles available through the university sector and private sector research institutions to fund basic research and development and commercialisation of technologies. There are also a plethora of industry assistance and research programmes that already exist but are available more widely than to just the renewable energy sector. There is no specific market failure that is unique to the renewable energy sector that justifies its own special financing mechanism.⁶⁶

2.66 Gas Energy Australia argued that while it supported government initiatives to develop projects and technologies capable of reducing greenhouse gas emissions,

64 Australian Chamber of Commerce and Industry, *Submission 118*, p. 1.

65 Australian Chamber of Commerce and Industry, *Submission 118*, p. 2.

66 Australian Chamber of Commerce and Industry, *Submission 118*, p. 2.

it did not support the exclusion of gaseous fuel related projects and technologies from such initiatives:

Gas Energy Australia considers all technologies should be allowed to compete objectively on the basis of abatement performance and cost effectiveness. Government bodies such as ARENA that have been arbitrarily restricted to developing renewable energy sources are denied the opportunity to develop other projects and technologies capable of delivering superior abatement performance at a lower cost.⁶⁷

2.67 Unlike Gas Energy Australia, the Business Council of Australia (BCA) argued for the continued existence of ARENA, on the basis that there was a good policy case for government-funded investment in the research, development and early-stage deployment of energy technologies. However, like Gas Energy Australia, the BCA suggested that such investments should be technology-neutral:

The government's overarching energy and climate change policy should be open to targeted support for all forms of emerging low-emission technologies that offer opportunities for least-cost greenhouse gas abatement, not just isolated support for renewable energy.⁶⁸

2.68 While supporting the continued existence of ARENA under its current governance structure, the BCA acknowledged the need to reduce ARENA's funding to a more sustainable level. Specifically, it suggested that ARENA's funding be reduced to 'an ongoing rolling fund of \$100 million per annum and the rest of the funds be returned as a saving to the government's budget'.⁶⁹

2.69 The Energy Supply Association of Australia (ESAA), meanwhile, argued that while it supported the continued existence of ARENA, its funding should only be used to fund research, development and demonstration in renewable energies, rather than being used to support the deployment of commercial projects 'which may be commercial in their own right'. ESAA wrote:

In general, if a particular technology type has received support for a commercial-scale project in one funding round, then demonstration has been achieved and the same technology should not be eligible for further funding.⁷⁰

Committee view

2.70 The committee notes that \$1 billion of taxpayer funds have already been committed to nearly 200 renewable energy projects through ARENA, and that industry has in turn matched this investment by a further \$1.8 billion. This represents

67 Gas Energy Australia, *Submission 39*, p. 3.

68 Business Council of Australia, *Submission 115*, p. 1.

69 Business Council of Australia, *Submission 115*, p. 2.

70 Energy Supply Association of Australia, *Submission 127*, p. 3.

a very significant investment in renewable energy projects, and the committee notes that the government has indicated that it is keen to observe the outcomes from the projects that have already received funding or a funding commitment from ARENA. The committee also welcomes the Minister's advice in his second reading speech that, following the abolition of ARENA, the government will ensure projects that have received ARENA funding are well-managed, meeting their milestones, and generally contributing to the advancement of the renewable energy sector.

2.71 Giving the need to repair the budget, the committee recognises that savings have to be returned to the Budget. The Bill, if passed, would go some way to achieving this, delivering \$1.3 billion in savings to the budget.

2.72 The committee notes with interest the point made by Gas Energy Australia and the Business Council of Australia that ARENA's remit does not allow for investments in non-renewable technologies, even where such technologies might deliver greenhouse gas abatement at the least cost. The committee is of the view that non-renewable energy technologies should not be excluded from receiving government support, however that support is administered, if in fact those technologies offer opportunities to deliver low-cost greenhouse gas abatement.

Recommendation

2.73 The committee recommends that the Bill be passed.

Senator Sean Edwards
Chair

Dissenting Report by Labor Senators

1.1 Labor Senators note that the Chair's report contains flawed logic, false comparisons and actively ignores that the large majority of submissions support the retention of ARENA. The conclusions drawn by the government's report are disingenuous, misleading, and were clearly made before any submissions were received to this inquiry.

1.2 The vast majority of the 131 public submissions to the inquiry support maintaining ARENA and its funding; yet most of the report is devoted to a small number of submissions in favour of abolishing ARENA.

1.3 Many refute Minister Macfarlane's claim that transferring responsibility for the administration of ARENA's commitments, assets and liabilities to the Department of Industry would deliver efficiencies and allow for greater oversight of expenditure by the Minister.

1.4 Labor Senators note that Minister Macfarlane had advised that the Government's primary rationale for abolishing ARENA was to return \$1.3 billion in uncommitted funds to consolidated revenues. The government has admitted many times that the budget is not in crisis. There is no budget emergency.

1.5 The previous Labor Government established ARENA in 2012, as an independent agency to improve the competitiveness of renewable energy technologies in Australia and to increase the supply of renewable energy to Australia's electricity market.

1.6 ARENA has been successful in providing financial assistance for the research, development, demonstration and commercialisation of renewable energy and related technologies; developing skills in the renewable energy industry; and promoting renewable energy projects and innovation both nationally and internationally

1.7 ARENA currently supports more than 190 renewable energy projects that have drawn more than \$1.5 billion in private sector investment. There are currently a further 190 renewable energy projects in the pipeline, which have the potential to draw more than \$5 billion in private sector funding.

1.8 70 per cent of ARENA funding has gone to projects in rural and regional Australia, creating jobs for the future in these areas.

1.9 ARENA is part of a suite of policies that the previous government put in place, many of which were building upon Howard government policies to ensure that Australia was able to take the enormous opportunities in this area and become a world leader.

1.10 ARENA consolidated a range of programs including, notably, the Solar Flagships program of the then Department of Resources, Energy and Tourism (now

the Department of Industry). In time, it also became responsible for the work of the Australian Centre for Renewable Energy and the Australian Solar Institute. The proposed termination of ARENA will see advice channelled from the department through the minister's political advisers, as Minister McFarlane desires.

1.11 As noted in the report, many submitters maintained that ARENA's independence was in fact central to its transparency and efficiency. In varying degrees, these submitters also pointed to ARENA's ability to draw on a range of different skills and expertise, including staff and board members with research, technical and managerial skills and experience in the academic, public and private sectors.

1.12 SMA Australia, FRV, RayGen, the Sustainable Energy Association of Australia and the CPSU all argued that ARENA's independent structure and ability to leverage both public and private sector expertise had been critical in driving its success to date.¹ As FRV explained:

ARENA has in large part been successful due to its independent structure and this ability to blend private and public investment and expertise, much of which will be lost if the initiative is repealed and existing projects returned to the Department of Industry.²

1.13 Tenax Energy took this point further still, arguing that ARENA's independence provided a safeguard against the risk of political intervention in the funding process:

The design of ARENA as an independent government agency alleviates the risk of possible intervention in the decision making and the proponent funding process. Additionally, the independence of ARENA decision making through its Board structure encourages confidence in the administration of the programs and has ensured that the only avenue for political intervention in the determination of priorities or the awarding of funds is to demolish the Agency.³

1.14 Mr Alan Pears AM, meanwhile, argued that the Department of Industry was not well placed to manage the complexity of ARENA's existing funding commitments:

The suggestion [in the Explanatory Memorandum] that shifting management of existing ARENA projects into the Department of Industry will reduce costs is not supported by any evidence, either. ARENA has built an expert team that understands its target sector and can respond efficiently and effectively. It also draws upon external expert advice, often at zero or

1 FRV Services Australia Pty Ltd, *Submission 26*, p. 2; SMA Australia Pty Ltd, *Submission 1*, p. 2; RayGen Resources Pty Ltd, *Submission 55*, p. 3; Community and Public Sector Union, *Submission 66*, p. 2; Sustainable Energy Association of Australia, *Submission 77*, p. 2.

2 Tenax Energy, *Submission 34*, p. 2.

3 Tenax Energy, *Submission 34*, p. 2.

low cost. Much of the benefit of such capacity for efficient ongoing project management risks being lost if no new projects are pursued, and if generalist departmental staff are tasked with management of these complex projects.⁴

1.15 Bioenergy Australia argued that the complex, cross-portfolio nature of bioenergy, made a stand-alone body like ARENA necessary to the development of bioenergy technologies:

Bioenergy in particular requires a special purpose agency such as ARENA to support its development. Bioenergy spans numerous portfolio areas such as energy, infrastructure, waste management, wild fire mitigation, water, agriculture, forestry, trade, employment and regional development, and its assessment and support requires consideration by an agency that is geared up for such a task, rather than being relegated to within a government department with a narrower single portfolio responsibility.⁵

1.16 In making the case that ARENA was playing a 'vital role in Australia's transformation to a cleaner, and less carbon intensive future', Infigen Energy drew a comparison between ARENA's independence from government and the placement of predecessor programs and bodies within government departments:

Infigen Energy considers that ARENA will continue to be more successful in its current form rather than being incorporated into the Department of Industry. One of the predecessors of ARENA was the Renewable Energy Development Program (REDP) which was run by the previous Government's Department of Energy. While this program was successful in making announcements of grant 'winners', it was not successful progressing these projects to financial close and construction. Most of the projects awarded grants by the REDP were never built amongst these the Ocean Power Technologies project abandoned this week. On the other hand, ARENA has been much more successful selecting and progressing development projects to a successful outcome and construction of new plants including Carnegie Wave Energy's innovative Perth wave energy project and AGL's 155MW solar PV project in NSW.⁶

1.17 The BCA wrote that ARENA had a proven track record in undertaking effective due diligence in the projects it invested in, and in its subsequent monitoring and management and the contracts it had entered into:

The BCA supports the government's imperative to get the budget back into surplus, but not at the expense of closing an institution that has commercial expertise, that is not readily available in a government department and which has been operating effectively, with so much potential ahead.⁷

4 Mr Alan Pears AM, *Submission 58*, p. 2.

5 Bioenergy Australia, *Submission 85*, p. 2.

6 Infigen Energy, *Submission 119*, pp. 1–2.

7 Business Council of Australia, *Submission 115*, p. 1.

1.18 Instead, the government's report has chosen to highlight arguments claim that work being done by ARENA could be done by other agencies and mechanisms such as the CEFC and RET, while the government is actively seeking to also terminate these.

1.19 The rationale presented in this report to justify the abolition of ARENA lacks logic, is disingenuous, and misleading. The government is abolishing an agency that has been very effective in creating clean energy jobs and attracting private investment.

Recommendation

1.20 Labor Senators recommend that the Bill not proceed.

**Senator Sam Dastyari
Deputy Chair**

Dissenting Report from the Australian Greens

1.1 The Australian Greens agree with the near consensus position from public submissions made to this inquiry and oppose the Australian Renewable Energy Agency (Repeal) Bill 2014.

1.2 The abolition of the Australian Renewable Energy Agency (ARENA), like many of the government's budget measures was a broken election promise with very little public and parliamentary support. Of the 131 public submissions received, only two were supportive of the government's position: the Australian Chamber of Commerce and Industry and Gas Energy Australia. It was these two submissions alone that the government members have relied on to argue in support of the Bill.

1.3 The decision of the committee to not hold public hearings was evidently guided by the fact that the overwhelming support of industry, market participants and the research community would have further demonstrated the extent to how ill-conceived this broken election promise actually was. Public hearings would have also displayed how ideologically isolated the government is. Even the government's associates in the Business Council of Australia as well as their fellow conservatives in the New South Wales Government support the retention of ARENA.

1.4 ARENA was established as part of the Clean Energy Future package and was created at the insistence of the Greens in the Multi Party Climate Change Committee. We recognised the ongoing failure of flagship programs that were being managed within the Department and the need to have a specialised, independent body to progress projects from the research stage up to the commercialisation stage. The Greens are very proud of this institution that will serve Australia strongly into the future.

1.5 ARENA is responsible for ensuring that Australia remains at the global forefront of clean technology development and deployment. Its abolition provides no public policy benefit and would leave Australia incapable of taking advantage of future economic opportunities.

1.6 In a period of deep transition in global energy markets and Australia's vulnerable over-reliance on fossil fuel resource exports, ARENA acts both as our country's insurance and as a driver of abundant export potential as our trading partners increasingly adopt affordable energy technologies that do not generate greenhouse gas emissions.

1.7 ARENA is part of the chain of innovation, along with the CSIRO and the Clean Energy Finance Corporation that will produce and demonstrate those very low cost energy technologies that Australia can export to the world. Exporting affordable emissions-free technology will hasten the already declining prospects of thermal coal and LNG exports—that is the precise reason why the government is seeking to abolish or diminish these institutions.

1.8 In its very short time, ARENA has achieved far more success than was ever possible when the nine previous programs were run within departments where competing demands for time and resources meant that projects progressed very slowly—if at all. Returning ARENA's projects within the Department of Industry will reincarnate the exact problems that ARENA was designed to avoid.

1.9 ARENA has professionally and in a timely, cost-effective manner achieved a suite of Australian and world first projects leveraging private sector investment. Rio Tinto in partnership with ARENA has contracted for Australia's first mine powered by solar in Weipa. If fossil fuel subsidies under the Fuel Tax Credit were removed for mining companies we would see Rio Tinto's decision replicated right across the country without ARENA's assistance.

1.10 Similarly, BlueScope steel are integrating the world's first solar PV and thermal rooftop system. Carnegie have embarked on the world's first commercial-scale wave energy project that desalinates water as it creates electrons. They are now collaborating with European developers and manufacturers to progress the technology for deployment in overseas markets.¹

1.11 Not only is ARENA helping to push these types of technologies to commercial stage, but they are also making leaps and bounds in research and development.

1.12 In collaboration with the CSIRO, Australia has set the world record for the highest temperature steam ever produced using solar thermal heat. This supercritical steam pilot project could soon lead to the replacement of coal generators with solar thermal radiators to drive steam turbines. It was described by the CSIRO's Energy Director Dr Alex Wonhas as a game-changer for the industry and said 'it's like breaking the sound barrier.'²

1.13 There are more than 190 projects like those above that would generate \$5.3 billion of private sector investment for a total \$7.7 billion that would be lost to Australia if this Bill proceeded through the Parliament. There are a further 177 projects already contracted, but many are still at risk if this Bill proceeds because of the requirement for milestones to be achieved to qualify for payment. Without the support that ARENA can provide for proponents, many more projects would fall over

1 *Carnegie to collaborate with UK wave energy developers*, 28 August 2014, http://ecogeneration.com.au/news/carnegie_to_collaborate_with_bosch_rexroth_and_wave_energy_developers/088738/?utm_source=Newsletter-Update&utm_medium=email&utm_campaign=EcoGeneration-28_august_20142&utm_content=news:carnegie_to_collaborate_with_bosch_rexroth_and_wave_energy_developers

2 *CSIRO Newcastle solar breakthrough for supercritical steam*, accessed 3 September 2014, <http://www.abc.net.au/news/2014-06-03/csiro-newcastle-solar-breakthrough-for-supercritical-steam/5495744>

if a despondent department that has a directive to find budget savings is responsible for overseeing the advancement of projects.

1.14 The ability for ARENA to deliver these transformative changes has already been dealt a severe blow because of the decisions of the Palmer United Party, Senator Muir, Senator Day, Senator Leyonhjelm, Senator Madigan and government senators to reduce ARENA's funding over the next three years from just over \$1 billion down to \$341 million. This reduction of \$717 million means that over the next three years, ARENA will be incapable of working through their pipeline of projects until 2017. Our global competitors will have shot past us while Australia will be flailing in an innovation backlog. The government and listed crossbench senators have done our economy a great disservice and the original funding schedule should be immediately restored.

1.15 Australia is a country adorned with a great wealth of natural renewable resources—a sunburnt, windswept continent, surrounded by oceans and stores of geothermal heat. We are a clever country that has up until now invested heavily in our ground-breaking researchers and academics. We have a huge capacity to be applying our threatened manufacturing skills on high-end, smart manufacturing products that our global competitors are less equipped to do. All these assets and opportunities will be lost if the government's legislative program of destruction continues.

1.16 ARENA is essential to ensuring that all these physical and human resources are harnessed in the pursuit of limiting global warming to less than two degrees while ensuring Australia's economic prosperity continues well into the 21st century.

Recommendation 1

1.17 That the Australian Renewable Energy Agency (Repeal) Bill 2014 be opposed.

Recommendation 2

1.18 That the original funding schedule that existed prior to the passage of the Clean Energy Legislation (Carbon Tax Repeal) Bill 2014 be reinstated.

**Senator Christine Milne
Senator for Tasmania**

Dissenting Report by Independent Senator Nick Xenophon

1.1 Australia, as a leading developed nation, has a responsibility not only to those of us who live here but as a global citizen in facing the challenges of climate change. An integral part of rising to this challenge is ensuring we are investing in emerging, efficient and cost effective renewable technologies.

1.2 The Australian Renewable Energy Agency, since its establishment in 2012, has funded a number of worthy renewable energy projects and feasibility studies. One such proposal is that of the Repower Port Augusta Alliance in Port Augusta, South Australia. The two coal-fire power stations in the area are nearing the end of their working life, leaving an enormous opportunity to remove these outdated and polluting 'dinosaurs' and replace them with modern solar thermal plants. According to the Repower Port Augusta Alliance's website:

This will create 1800 jobs, save 5 million tonnes of greenhouse gas emissions, improve the health of the local community and ensure energy security and stable electricity prices.¹

1.3 I pay tribute to the vision and hard work of the former Mayor of Port Augusta, the late Ms Joy Baluch AM in her advocacy for such a project.

1.4 The Repower Port Augusta Alliance's submission to this inquiry explained their project in more detail:

Concentrated solar thermal towers with storage is a game-changing renewable energy technology due to its ability to store and dispatch heat energy to provide on-demand baseload renewable energy, even when the sun goes down. Solar thermal towers operate by concentrating the sun's rays to the top of a tower with a field of heliostats (mirrors). This heat then heats up a storage solution such as molten salt which is then stored and dispatched to boil water, spin a turbine and create electricity... The technology works in a similar way to a traditional coal-fired power station except it replaces the traditional coal heat source with the sun. This similarity makes the skills used to operate a coal-fired power station easily transferable to the skills used in a solar thermal plant. This transferability of skills from coal to solar would be of huge benefit to the Port Augusta community, allowing jobs to be transferred from the ageing coal station with a projected life of 2027, into a new solar thermal power station. Creating this transition pathway is a responsibility of the Government and ARENA is a critical agency for achieving it.²

1 *Repower Port Augusta: a solar future for Australia*, available at <http://repowerportaugusta.org/>, accessed on 3 September 2014.

2 Repower Port Augusta Alliance, *submission 114*, p. 2.

1.5 While funds previously allocated by ARENA to these projects are safe, the Repower Port Augusta Alliance has pointed out that Australia lags behind other nations such as the US, Spain, South Africa and Chile in terms of solar thermal technologies. Its submission continued:

Despite Australia's world-leading solar resource, we are yet to realise the potential benefits that solar thermal can play in our energy market due to a lack of investment in the technology by the Federal Government. Ongoing policy uncertainty has further contributed to Australia's failure to realise the opportunity provided by the technology. ARENA has been playing a role in bringing this technology to Australia with the targeted funding of studies and demonstration projects. Abolishing ARENA or any cuts to its funding will severely hamper the introduction of this technology to Australia.³

1.6 In stark contrast to solar thermal technologies, the wind energy sector is highly developed in Australia, and indeed there is a concern that an over reliance on wind energy, given its intermittence and unreliability, has caused distortions in the electricity market. South Australia alone has over 30 percent of the nation's wind farms, a statistic some praise while other bemoan. Wind energy is unreliable and I am concerned that putting so much of our renewable energy investment and hopes in one basket we are forgoing the opportunity to invest in developing technologies. Further, there are widespread and legitimate community concerns about the impact of wind energy which must not be ignored. Indeed, a unanimous Senate Community Affairs Committee report's recommendations included:

Recommendation 1

The Committee considers that the noise standards adopted by the states and territories for the planning and operation of rural wind farms should include appropriate measures to calculate the impact of low frequency noise and vibrations indoors at impacted dwellings.

Recommendation 2

The Committee recommends that the responsible authorities should ensure that complaints are dealt with expeditiously and that the complaints processes should involve an independent arbitrator. State and local government agencies responsible for ensuring compliance with planning permissions should be adequately resourced for this activity.

Recommendation 3

The Committee recommends that further consideration be given to the development of policy on separation criteria between residences and wind farm facilities.

Recommendation 4

The Committee recommends that the Commonwealth Government initiate as a matter of priority thorough, adequately resourced epidemiological and laboratory studies of the possible effects of wind farms on human health.

3 Repower Port Augusta Alliance, *submission 114*, p. 3.

This research must engage across industry and community, and include an advisory process representing the range of interests and concerns.

Recommendation 5

The Committee recommends that the NHMRC review of research should continue, with regular publication.

Recommendation 6

The Committee recommends that the National Acoustics Laboratories conduct a study and assessment of noise impacts of wind farms, including the impacts of infrasound.

Recommendation 7

The Committee recommends that the draft National Wind Farm Development Guidelines be redrafted to include discussion of any adverse health effects and comments made by NHMRC regarding the revision of its 2010 public statement.⁴

1.7 It appears that both the former government and this government have not appropriately implemented these recommendations. In my view there should be a moratorium on wind farm development pending the implementation of these recommendations.

1.8 Therefore while I do not support abolishing ARENA I believe that no further Federal Government funding should be directed towards wind projects, given ARENA is intended to focus on new and emerging technologies. It is time Australia looked past wind and focused on some of our other natural resources like solar, tidal and geothermal reserves.

Recommendation

1.9 That ARENA continues subject to it not funding wind energy given the maturity of the industry and legitimate concerns over its community impact.

Senator Nick Xenophon
Senator for South Australia

4 Senate Standing Committee on Community Affairs, *The Social and Economic Impact of Rural Wind Farms*, 23 June 2011.

APPENDIX

Submissions received

Submission Number	Submitter
1	SMA Australia Pty Ltd
2	Mr John Macdonald, DesignInc Melbourne
3	Mr Richard Romanowski, GreenBiz Advantage
4	Mr Steve Bawden, GTIS Pty Ltd
5	Dr Ricky Dunbar
6	Proteomics International Pty Ltd
7	Mr Peter Foster-Bunch
8	Mr Bill Gresham
9	Luke Electrical Pty Ltd
10	Natural Technology Systems
11	Ms Robin Friday
12	Ravertys Electrics Pty Ltd
13	Great Southern Solar
14	Mr David Liversidge
15	Mr Geoff Tosio
16	Carbon Reduction Ventures
17	Mr Bruce Hogben
18	Dr Robert Taylor, The University of New South Wales
19	Dr Tania Urmee, Murdoch University
20	Mr Tim Brown
21	Mr David Clarke
22	Mr Brett Haysom, True North Solar; KDP Fibre Optics; and KDP Electrical
23	Rainbow Power Company Ltd

24	Ms Sylvia Cooper
25	Mr Mark Spain
26	FRV Services Australia Pty Ltd
27	Ms Margery Street
28	All Energy Pty Ltd
29	Clean Energy Council
30	Mr Linnell Barelli
31	Mr Richard Corkish
32	Mr John Strain
33	Ms Felicity Davis
34	Tenax Energy
35	Zhenfa Australia Pty Limited
36	Lord Howe Island Board
37	Mr Anthony Rawson
38	Hydro Tasmania
39	Gas Energy Australia
40	Smart Storage Pty Ltd (Ecoult)
41	The Australian National University
42	Mr Gordon Payne
43	Kevenegy
44	Mr Greg McGarvie
45	Mr Geoff Andrews
46	Ms Emma Rooksby and Mr Keith Horton
47	Renewable Energy Society, School of Photovoltaic and Renewable Energy Engineering, University of New South Wales
48	Associate Professor Evatt R. Hawkes, School of Mechanical and Manufacturing Engineering, University of New South Wales
49	The Combustion Institute, Australia and New Zealand Section

50	Mr Tim Brown
51	Mr John Keskeridis
52	Mr Johnny Yao
53	Dr John Wright
54	Mr Nicholas Wardrop
55	RayGen Resources Pty Ltd
56	Mr Steve Bawden
57	Geodynamics Limited
58	Mr Alan Pears AM
59	PV Lighthouse Pty Ltd
60	Ms Sylvia Cooper
61	Ms Renate Egan
62	Mr Anthony Saunders
63	Abengoa Solar
64	Mr Anders Jensen
65	Australian National University Energy Change Institute
66	Community and Public Sector Union
67	Licella Pty Ltd
68	Active Research Pty Ltd
69	Mr Ross Edgar
70	University of Sydney
71	Australasian Fluid Mechanics Society
72	Ms Susan Barnett
73	Reposit Power Pty Ltd
74	School of Photovoltaic and Renewable Energy, University of New South Wales
75	Ms Geraldine Ryan
76	Griffith University

77	Sustainable Energy Association of Australia
78	Professional and technical staff, Centre for Sustainable Energy Systems, Australian National University
79	Renergi Pty Ltd
80	Dr Adam Hawkes, Centre for Process Systems Engineering, Imperial College London
81	Curtin University
82	Solar Photovoltaic and Solar Thermal Groups, College of Engineering and Computer Science, Australian National University
83	School of Mechanical and Manufacturing Engineering, University of New South Wales
84	First Solar (Australia) Pty Ltd
85	Bioenergy Australia
86	Recurrent Energy
87	Dr Dorothy Robinson
88	Mr Gregory Franks
89	New South Wales Government
90	Australian Renewable Energy Agency
91	University of Melbourne Energy Institute
92	Early career researchers of the Australian National University, University of New South Wales and University of Queensland
93	Australian PV Institute
94	Global Change Institute, University of Queensland
95	Global Impact Group
96	Swinburne University of Technology
97	SA Power Networks
98	Dr Niraj Lal, Professor Thomas Maschmeyer and colleagues
99	Laing O'Rourke Australia
100	Goldwind Australia

101	Senvion Australia
102	Associate Professor Matthew Boreland, School of Photovoltaic and Renewable Energy Engineering, University of NSW
103	CAT Projects
104	Ms Vikki McLeod
105	Mr Mark Keevers
106	Australian Centre for Advanced Photovoltaics, University of New South Wales
107	Visy
108	Professor David Bagnall, School of Photovoltaic and Renewable Energy Engineering, University of NSW
109	APA Group
110	Mr Michael Hayes
111	Institute for Sustainable Futures
112	Sustainable Business Australia
113	Australian Solar Council
114	Repower Port Augusta Alliance
115	Business Council of Australia
116	Renewable Energy Students' Society, School of Photovoltaic and Renewable Energy Engineering, University of New South Wales
117	Renewable Energy Advocate, NSW Government
118	Australian Chamber of Commerce and Industry
119	Infigen Energy
120	Professional Engineers and Technical Staff, School of Photovoltaic and Renewable Energy Engineering, University of New South Wales
	<ul style="list-style-type: none">• Supplementary Submission
121	Mr John Shiel
122	Dr Murad Tayebjee
123	Mr Rowan MacQueen

124	General Electric
125	Deakin University
126	National Roads and Motorists' Associations
127	Energy Supply Association of Australia
128	Dr Jonathon Dore
129	ACT Government
130	Mr Fangzhao Gao
131	Mr Jinping Tao
132	Confidential