

SUSTAINABILITY OF ENERGY SUPPLY AND RESOURCES IN NSW

Organisation: Community Power Agency

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The Committee Manager
Legislative Assembly Environment and Planning Committee
Parliament of New South Wales
Macquarie Street - Sydney NSW 2000 - Australia

To Whom It May Concern:

Please find attached Community Power Agency's Submission to the Legislative Assembly Committee on Environment and Planning's *Inquiry into sustainability of energy supply & resources in NSW*.

Should you have any questions about anything contained within the submission, or if there is any way we can assist the committee please do not hesitate to get in touch.

Please note that this submission does not contain confidential materials.

Kind regards,



on behalf of the Community Power Agency team.

Dr. Franziska Mey
Director at Community Power Agency

 or 



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Submission to Legislative Assembly Committee on Environment and Planning

Community Power Agency

Introduction

Thank you for the opportunity to provide a submission to the Legislative Assembly's Environment and Planning Committee *Inquiry into sustainability of energy supply and resources in NSW*. Community Power Agency believes that this is a timely inquiry since urgent and unprecedented action is needed to tackle the climate crisis and provide a just transition path for the most affected communities and households. This is particular the case, since New South Wales (NSW) has numerous regional communities where coal mining is a big employer. These communities are at risk as global customers, whom we export our thermal coal to, shift their energy systems towards renewable energy. In addition, our own coal fire power stations are ageing and becoming increasingly unreliable, ultimately requiring replacement with lowest-cost technologies available – which is now wind and solar PV generation. If we do not prepare for this change, then regional communities will suffer, but planning and investment can offset those impacts and ensure that affected communities can benefit, diversify and grow.

In our submission we would like to highlight the actions that NSW Governments can and must take to ensure a fast, fair and affordable transition from a fossil-fuelled electricity system to one based on renewables. We strongly believe that for a just transition, it is essential that workers and communities involved in the fossil fuel sector are well supported throughout the transition period.

In our submission we focus on the following three main points:

- Essentials of a just transition and what it requires,
- Development opportunities for coal dependent communities, and
- Recommendations for NSW government to take action.

About Community Power Agency

The Community Power Agency (CPA) was established in 2011 to grow a vibrant community energy sector in Australia. We work to support Australian communities to establish community clean energy projects through the provision of resources, advice, training, workshops and mentoring. To date we have worked directly with more than 50 Australian community energy groups. We also helped found and coordinate the Coalition for Community Energy which now has over 90 member organisations.

Community Power Agency has significant experience in energy policy design and implementation with particular focus on community energy and clean energy access. Examples include:

- Helping the NSW Government design their three community energy grant programs,
- Development of the ARENA funded National Community Energy Strategy,
- Playing a review and assessment role in all of the ACT Government's Reverse Auction,
- Assisting in the design of the community engagement and community benefit component of the Victorian Renewable Energy Auction Scheme, including the publication of the guide *Community Engagement and Benefit Sharing in Renewable Energy Development* (2017),
- Evaluating the Victorian Community Power Hubs Pilot Program (interim and final evaluation), and
- Managing the ARENA and NSW Government funded Social Access Solar Gardens project. This project led to CPA developing recommendations for enabling all Australians to access renewable energy.

Please also find at the end of this document ([Appendix 1](#)), a short list of further resources and material with more details about community and citizen energy.

1. Energy transition is inevitable, and doable

Coal-fired power closure is necessary to get Australia in line with the global effort to slow down and reverse dangerous climate change. Indeed, eight in ten Australian's (81%) are concerned about the impacts of global warming.¹ Whole communities in Australia and across the world are saying no to companies digging up and burning dirty fuels like coal, oil and gas. They don't want to shoulder the environmental, economic and social costs of burning coal and gas any longer. In fact, coal mining and coal combustion are two of the chief causes of poor air quality in the Hunter region, which is damaging people's health.² Consequently a majority of Australians (68%) agree that the Government should plan for an orderly phase-out of coal so that workers and communities can be prepared.³ In addition, coal mining uses vast amounts of water, which is at odds with wise water use in a time of increasing drought. We need to preserve water resources for food production and ecosystems that fulfil many of societies most basic needs for fresh air, water and food.

However, with the completion of the RET, there is a complete absence of federal policy to support a fast and fair transition to a new clean energy. Instead, the Federal Government continues to put their trust in polluting coal-fired power stations.

Yet, inevitably, the energy system is changing. Around the world, wind and solar are the fastest growing sources of energy by far. Plummeting technology prices are a game-changer while many countries make shifts in their energy systems towards renewable energy. Ageing coal-fired plants won't be replaced with more of the same. Coal fired power has had its day.

The most recent forecast from the Office of the Chief Economist shows likely declines in coal imports in our three biggest coal customers: Japan, South Korea and China. In addition, four of NSW's five coal fired power stations are also expected to close in the next 17 years. All of them are in the greater Hunter region – two in Lake Macquarie and two in Muswellbrook. Hence, it's no longer a question of whether it gets phased out, but when. This puts some NSW communities in a vulnerable position.⁴ If the Hunter region does not prepare for these global changes over 5,000 jobs and \$705m in wages and salaries could be lost if predicted global declines in coal occur.⁵

This gives New South Wales Government a key role to play in implementing an orderly and timely transition.

And indeed, experts agree that shifting to an energy system powered by the sun and wind is technically feasible and economically responsible. Nine different expert organisations, from the University of New South Wales to the Australian Energy Market Operator, have all conducted studies that show 100% renewable energy for Australia is 100% doable.

NSW Government could be at the forefront of planning a well-executed just transition and creating a better, fairer system that meets the needs of all households in the state. This energy transition is a chance to ensure that the benefits of clean energy are widely shared and giving power back to all people, communities and businesses. It's also a chance to ensure that those who have worked hard to supply NSW's electricity during the fossil fuel era get the benefit of a well-managed and orderly transition, rather than being unjustly subject to the uncertainty of surprise closures.

¹ Climate of the Nation Report 2019. Link: <https://www.tai.org.au/content/climate-nation-2019>

² NSW Annual Air Quality Statement 2018. Link: <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Air/annual-air-quality-statement-2018-190031.pdf>

³ Ibid.

⁴ Based on latest [Coal Services NSW](#) export volumes, emissions from NSW coal exports in 2017 are estimated at 393.12Mtpa CO₂, compared with [reported NSW emissions](#) of 131.6 Mtpa

⁵ Dr Neil Perry. *Weathering the Storm*. January 2019. Available here: <https://www.lockthegate.org.au/weathering-the-storm-transforming-the-hunter-valley>

2. Make it a just transition

2.1 What is a just energy transition?⁶

If we are serious about putting people at the centre of the energy debate, it is paramount to make the energy transition fairer. This means a truly just transition to a more equitable, fair, affordable and clean energy system where nobody is left behind.

Just transition ensures environmental sustainability as well as decent work, social inclusion and poverty eradication in the process of industrial or economic change. It also means that NSW communities don't just survive the energy transition, but drive it – generating stronger, more secure work, and futures particularly for fossil fuel affected regions. Specifically, taking an energy justice approach means we must ensure a number of things in the process of delivering a more sustainable electricity system:

- **Polluter pays:** the onus for cutting emissions should be on those most responsible for producing them. It would be unjust to place burden for cutting emissions onto those who have contributed least to the problem and future generations. For example, there is a very real fear that Australia's most vulnerable households and communities, who are least responsible for causing climate change, are going to be those left paying for the profits of big energy companies, because they are the least able to access clean energy solutions such as solar, storage and energy efficiency.
- **A fair distribution of the benefits.** This means that no one should be locked out of the potential benefits of clean energy. It also means that those most affected such as climate impacted communities and those who through no fault of their own are most affected by the transition away from fossil-fuels should receive the most support.
- **Rectify broader injustice:** Where possible, the transition is used to rectify broader injustice, poverty and inequality – not further entrench it. For too long, some Australian communities, particularly Aboriginal communities have been given two choices: support extractive and environmentally and socially destructive industries such as mining, or live in poverty. This does not have to be the case with renewable energy technologies, as they offer a real path to economic development and social and environmental regeneration.

*All Australians, no matter what they earn or where they live,
deserve access to affordable clean energy.*

2.2 Taking everyone along

Australia has a history of doing structural adjustment badly. We often wait until a company or an entire sector goes under before offering training or financial assistance to retrenched workers. In some cases, governments have deliberately washed their hands of responsibility for the consequences of their lack of foresight on the fate of coal-fired power.

Undoubtful, something like the sale of NSW government-owned Vales Point coal fired power station at the knock-down price of \$1 million to dodge liabilities for decommissioning and worker redundancy should not happen again. The same goes for sudden closures such as the Alinta's operations in Port Augusta, which illustrated the inadequacy of an unplanned transition away from coal-fired power.

Since 2012, 11 coal power stations across Australia have closed, with most giving four months' notice or less to workers and community.

⁶ Note parts of this section are drawn from the Repower Australia Plan.

In fact, the history of coal and industrial transitions shows that abrupt change brings a heavy price for workers and communities. Typically, responses only occur after major retrenchments, when it is already too late for regional economies and labour markets to cope.⁷ Coal communities often have little economic diversity and the flow-on effects to local economies and businesses are substantial. It is easy to find past cases where as many as one third of workers do not find alternative employment.

We often hear about power stations, but there are almost 10 times as many workers in coal mining, where there is a much higher concentration of low and semi-skilled workers. The 2016 Census found almost half of coal workers are machinery operators and drivers. The demographics of coal mining workers in Australia suggest natural attrition through early retirements will not be sufficient: 60% are younger than 45. Mining jobs are well paid and jobs in other sectors are very unlikely to provide a similar income, so even under the best scenarios many will take a large pay cut.

Another factor is the long tradition of coal mining that shapes the local culture and identity for these communities. Communities are particularly opposed to change when they experience it as a loss of history and character without a vision for the future. Lastly, the local environmental impacts of coal mining can't be neglected. The pollution of land, water and air due to mining operations and mining waste have created brownfields and degraded land that needs remediation.

A just transition not only addresses the challenges and needs of coal communities, it also considers those households that are locked out from the transition. This applies in particular to renters, apartment dwellers, homeowners without solar access or those who have inappropriate roofs. Some parts of our community struggling to afford their energy costs. Many of Australia's lowest income and most vulnerable households have been unable to access or afford energy efficiency upgrades or household solar, leaving them exposed to soaring and increasingly unaffordable bills. As the Australian Council of Social Services puts it, for the estimated 13.3% of Australians living in poverty, "energy affordability is a growing, and sometimes crushing, problem."

2.3 People are leading

More than in other countries, everyday Australians leading the transition to renewable energy. 2.17 million Australians are getting on with the job of repowering their homes, their businesses and their communities with clean energy. An estimate of 19.6% of houses in NSW have already solar PV installed contributing to more than 2.3 GW of energy capacity in the state.

In addition, many communities and community enterprises are engaging, driving and implementing medium scale renewable energy projects, thereby contributing to the achievement of national and international efforts on climate change. In the last decade an impressive community renewable energy sector has emerged in Australia. The sector combines both supply (energy generation, distribution and retail) and demand side (energy use, including energy efficiency) activities. Across the country, there are 105 community energy groups and 36 of these are based in NSW. Responsive policies and programs have enabled these groups to learn about community energy and plan projects that will benefit them.

It is time for NSW government to join the people and support their efforts by demonstrating strong and consistent leadership towards renewable energy and energy efficiency.

Coal communities are taking a stand and pushing to participate in and benefit from renewable energy. The community in Port Augusta has been campaigning for five years for the town's polluting coal-fired power stations to be replaced with a concentrated solar thermal plant. In 2016, Port Augusta's two coal power plants, Northern and Playford B, shut their doors without a transition plan in place. Instead the community campaigned for a just transition which would benefit everyone not only coal workers. The campaign was greatly successful in creating awareness and strong local support for renewable energy deployment and opening new opportunities for jobs, and a healthy environment for everyone.

⁷ Mey and Briggs (2018): What would a fair energy transition look like? The Conversation. Link: <https://theconversation.com/what-would-a-fair-energy-transition-look-like-107366>

New South Wales and other states have seen broad-scale opposition to coal seam gas extraction, including from communities in the Northern Rivers, Pilliga and Gloucester. Community Power Agency does not support coal seam gas extraction and we firmly believe there is no need for coal seam gas in the future energy mix. The same applies for nuclear power.

3. Opportunities of the clean energy transition

Starting early and making a plan is essential. The transition to a clean and more efficient energy system offers many potential benefits for coal-communities as well as NSW more broadly, including opportunities for economic diversification, enhancing local resilience, generating local benefit and building community participation and empowerment.

In addition we see three main opportunities:

3.1 Economic diversification

Diversifying the regional economy is an essential ingredient for a just transition. We need to steer away from the mentality that a single, large new industry will replace the old. Not only will diversification bring a range of new job and work opportunities drawing on a range of local opportunities, it will also increase regional economic resilience. Resilience is crucial in times of economic and environmental flux. International studies show that in many coal regions there is in fact little prospect for large-scale renewable energy, because the best solar and wind resources are located elsewhere.⁸ This means workers will not necessarily seamlessly transfer to new energy jobs.

Instead, it is paramount to build on existing strengths of local industries and local resources, and to develop skills and capacities of coal workers in related or new industries. This includes regional diversification plans to plan for new industries, mapping out a pathway that reduces vulnerability to coal declines and lays the groundwork for the future. It is crucial that a system is put in place to ensure any workers that are likely to be affected by changes in coal mining and power stations are provided skills and training and are supported to find alternative employment in well-paid and fulfilling jobs.

For example, expert research has shown that if action is taken now to prepare for change, and a clear plan is developed, the Hunter region could see 595 more new jobs created than are lost from coal mining and local wages and salaries increase by \$315 million in 2040.⁹ This scenario builds on the regions existing strengths in the agriculture, wine-tourism and manufacturing industries and on the strong skills base already present of machinery operators, drivers and technicians and trade workers. Replacing coal power stations and rehabilitating ash dams can also bring new jobs and affordable energy to the Hunter region with targeted support. Raising the standard of mine rehabilitation can provide a crucial jobs “bridge” for coal workers while new industries are building.¹⁰

International case studies provide some indication how such a transition is doable. For example, the phase-out of hard coal in the German Ruhr Valley has been managed over several decades, involving communities, stakeholders and unions in an orderly process. In fact, the ultimate decision was taken in 2007, with an orderly closure of all coal mines until 2018. In the same year, German Federal Government has established a Coal Commission to plan for the closure of the remaining mostly brown coal mining and power production. The Commission is made up of local community representatives, companies, experts and environmentalists and has released a plan with funding and environmental protections which will become law until the end of 2019.¹¹

⁸ Briggs, Dominish and Mey (2019): How to transition from coal: 4 lessons for Australia from around the world. Link: <https://theconversation.com/how-to-transition-from-coal-4-lessons-for-australia-from-around-the-world-115558>

⁹ Dr Neil Perry. Weathering the Storm. January 2019.

¹⁰ See Industrial Relations Research Centre. October 2017. *The Ruhr or Appalachia? Deciding the future of Australia's coal power workers and communities.*

¹¹ BMWE 2019. Kohleausstieg und Strukturwandel. Link: <https://www.bmwi.de/Redaktion/DE/Artikel/Wirtschaft/kohleausstieg-und-strukturwandel.html>

Examples from Australia's Latrobe Valley also highlight the need for a participation of the local community. Worker assistance and support for re-training and re-employment is crucial.

However, adjusting regional economies is a big job and it is not easy – regional communities have been seeking major government investment and strong diversification planning, with direct community participation and leadership.

3.2 Large scale renewables are an important component¹²

Although not every region has the potential for large-scale wind and solar, we need these projects to transition to a clean energy system as fast as possible. Placing large-scale projects in the right place will help secure energy supply as well as local jobs and regional economic development.

However, to avoid the trap of simply replicating the traditional approach of a large centralised electricity production owned by large, foreign companies, local communities should have an active stake in these developments in such a way that retains benefits locally. The reason is simple: local support and involvement can ensure that large wind and solar projects get off the ground more quickly and benefits are more equally shared, all the while stimulating regional economic development. Wind energy for example gives farmers a more stable source of income to rely on through the year, creates jobs for local technicians and electrical engineers, and some wind farms are even becoming tourist attractions for regional communities. In fact, research has shown that successful community involvement in large-scale clean energy projects has two dimensions – the fair sharing of financial benefits and including locals in the decision making processes of the projects.

Sapphire Wind Farm – a partnership between the local community and the project developer - leverages the best of both worlds while creating benefits for the community and the environment. CWP Renewables and Partners Group has enabled community investment into their 270 MW Sapphire Wind Farm in the New England region. They offered community members a minimum investment of \$1,250 and a maximum investment of \$200,000. The minimum aggregate investment is \$3,500,000, and a cap of \$10,000,000 for the total aggregate investment. The large scale project provides clean energy to power around 115,000 homes and displaces 700,000 tonnes of CO₂ each year, while bringing economic benefits to the local NSW New England region and the ACT. In addition, Sapphire Wind Farm's approach to community engagement and benefit sharing has focused on building long-term community support for the project with e.g. creating a community benefit fund and Community Legacy Projects. This community-developer model could also be applied in other communities across NSW. Further lessons learnt on community engagement and benefit-sharing can be found in:

- The Clean Energy Councils project "[Enhancing Positive Social Outcomes from Wind Farm Development](#)" and
- The Victorian Government's [Community Engagement and Benefit Sharing in Renewable Energy Development Guide](#).

3.3 Empowering communities to benefit & lead

Developing community energy projects and initiatives is one of the main ways that communities across NSW (and around the world) are driving and benefiting from the energy transition locally.

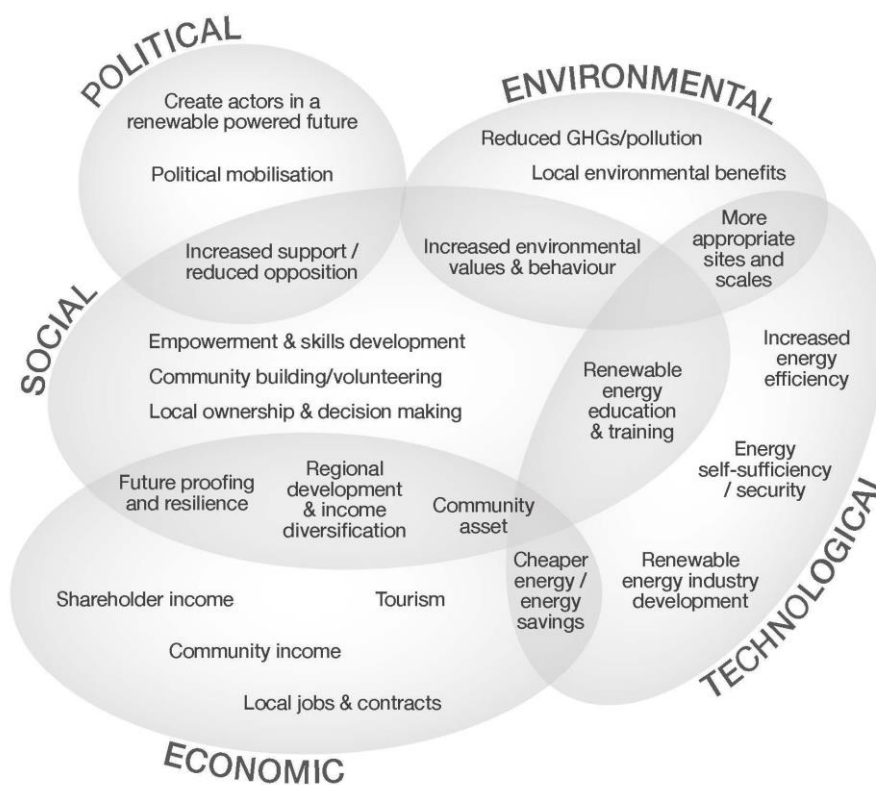
The Coalition for Community Energy defines community energy as: "The wide range of ways that communities can develop, deliver and benefit from sustainable energy."

¹² Note parts of this section are drawn from the Repower Australia Plan.

A key characteristic of community energy projects in Australia is the deviation from the norm of conventional power production, which has been large-scale, centralized and mono- or oligopoly owned either by the state or large corporate bodies. Indeed, individually or collectively owned energy projects offer a number of benefits at local level and empower consumers to influencing the social context of the energy transition.

International studies confirm that communities are strongly motivated by taking control of their own electricity supply to contribute to a range of positive environmental and social outcomes (Figure 1): these encompass direct and indirect local economic benefits; employment opportunities; new pathways for environmental volunteering and climate action; and, new model to engage around renewable energy, benefitting the broader renewable energy sector and consequently the climate. A wide range of benefits has been demonstrated to flow from community renewable energy projects, due to their unique ability to involve people in renewable energy generation. The range of benefits is outlined in Figure 1 below.

Figure 1: The range of benefits of community energy projects.



Source: Hicks and Ison, 2012, p.194.

In a nutshell, community energy has the potential to leverage the organisational resources – time, money, land, rooftops – of thousands (if not millions) of new actors in deploying renewables and other clean energy solutions to reduce emissions. It also means putting people at the centre of the energy transition and consequently ensuring that everyone can participate and benefit.

There are already a number of community energy projects and models in NSW that enable communities to play a more active role in the National Electricity Market. The following table presents a non-exhaustive list provides a selection of citizen and community energy projects in Australia.

Table 1: Community energy models for deployment in NSW

Examples	Contribution to Community Development
BULK BUY PROJECTS are one of the most popular ways to engage citizen in renewable energy generation in Australia. These multi-household projects are where a community group aggregates households to bulk-buy and install renewable energy technology.	For example the New England bulk buy and Victor Harbour Council led to 40% of residence having solar installation and saving substantially on their electricity bill, and secured jobs of local suppliers for several months. Bulk buy programs support local households and businesses to access trusted information and suppliers, thereby simplifying and easing the process of installing solar PV and/or batteries. Important, the community energy group plays the role of a trusted broker.
COMMUNITY INVESTMENT PROJECTS: community investment projects are typically initiated and led by a community organisation such as a cooperative or company. Funds are raised by opening up the project to community investors on the expectation that they will receive a certain return on their investment.	Repower Shoalhaven is one of the most renowned community groups implementing investment projects. Their model creates a proprietary company for each project, enabling up to 50 community members to co-invest in this “special purpose vehicle” (SPV). They have already set up seven projects, which have installed solar PV on the roofs of local businesses and organisations. The organisation created 2-3 local jobs and helps to secure the work of local solar suppliers. Link: https://www.repower.net.au/
Zero Net Energy Towns (Z-NET) or 100% RENEWABLE TOWNS are pioneering initiatives throughout rural and regional Australia which aim to meet (or offset) all their energy needs through clean energy installations. Apart from local energy generation, these initiatives deliver demand response services and energy efficiency measures for their communities.	Z-Net Uralla in NSW is an initiative that aims to assist the shire of Uralla to become energy-self-sufficient. The initiative is based on four main pillars: use less energy; generate renewables energy on-site; import renewables and generate renewables nearby. The initiative has particularly shown that cost-effective strategies, such as LED lighting, insulation upgrades and on-site solar PV, can achieve 40 to 70% of the objective while saving businesses and residents money, and building deep community engagement. This also includes a significant increase of energy literacy supporting behaviour change and ultimately influences local energy demand.
MINI or MICRO GRIDS: Community initiatives that support grid stability and providing alternatives to conventional network upgrades are mini or micro grids, embedded networks or islanded systems in which a group of households are equipped with an individual energy generation (solar panels) and storage capability (battery).	A successful example is the Totally Renewable Yackandandah (TRY) group in Victoria which is developing one of Australia’s first commercially operated mini grids in Yackandandah. TRY has established a partnership with Mondo Power , an energy retailer which facilitates community mini-grids and regional energy hubs. Both organisations have worked closely on the town’s renewable energy journey, e.g. supporting a solar and battery bulk buy. Mondo Power has

<p>For this, establishing partnerships with energy retailers or network companies is an important element. It will help to also ensure communities are enabled to influence the local energy services incl. grid stability and reliability and offering alternatives of conventional network investments. In addition, research and capacity building in form of feasibility studies are essential to investigate the economic viability and technical feasibility to progress their project idea.</p>	<p>developed a device (Ubi) which monitors electricity usage, generation, export and battery storage.</p> <p>This example could be also established in NSW.</p>
<p>PEER-TO-PEER TRADING: Incentivise using the local grid through revised tariffs and peer-to-peer trading, for example Solar Gardens. This model works by installing a central solar array, generally near a population centre. Consumers can purchase a share of the array, with the electricity generated credited on their bill. Solar Gardens are the only model that we know of that can support all locked-out energy users (e.g. renters, apartment dwellers) to access the benefits of solar.</p>	<p>Community Power Agency and the Institute for Sustainable Futures has recently completed an ARENA funded feasibility analysis of Solar Gardens working with:</p> <ul style="list-style-type: none"> • Community energy groups, such as Community Owned Renewable Mullumbimby, Repower Shoalhaven and Pingala • Community (and community friendly) retailers such as Enova Energy and Powershop, • Councils and lawyers. <p>This research found that Solar Gardens are feasible in Australia and viable with support.</p>

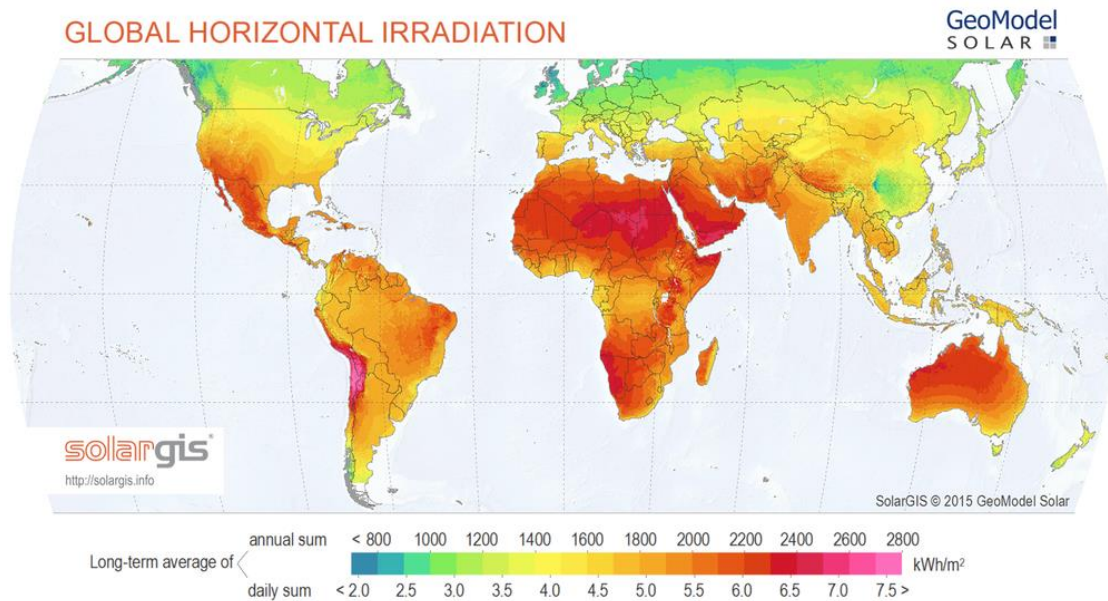
3.4 NSW's potential to become a Renewable Superpower

Global investment in renewable energy totalled USD 288.9 billion in 2018 representing the ninth successive year in which investment in renewables exceeded USD 230 billion, and the fifth in which it topped USD 280 billion. In fact, the overall investment in clean energy capacity once again far exceeded that in fossil fuel capacity. The total dollar amount invested in renewable power was almost exactly three times higher than the amount invested in new coal- and gas-fired generators combined.¹³

NSW is ideally positioned to take advantage of this flood of investment. With amazing solar radiation, we have the potential to generate solar energy at a lower cost than in many other developed countries. Across Australia, just 0.1% of this radiation, converted into electricity, would be enough to power the nation (see Figure 2). We also have millions of hectares of very affordable land suitable for large-scale installations, a strong research base in solar technology and design, and we're close to major export markets. In addition, NSW is at the centre of the NEM and thus can export to neighbouring states, as well as our international trading partners.

¹³ REN21. 2019. Renewables 2019 Global Status Report. Link: https://www.ren21.net/wp-content/uploads/2019/05/gsr_2019_full_report_en.pdf

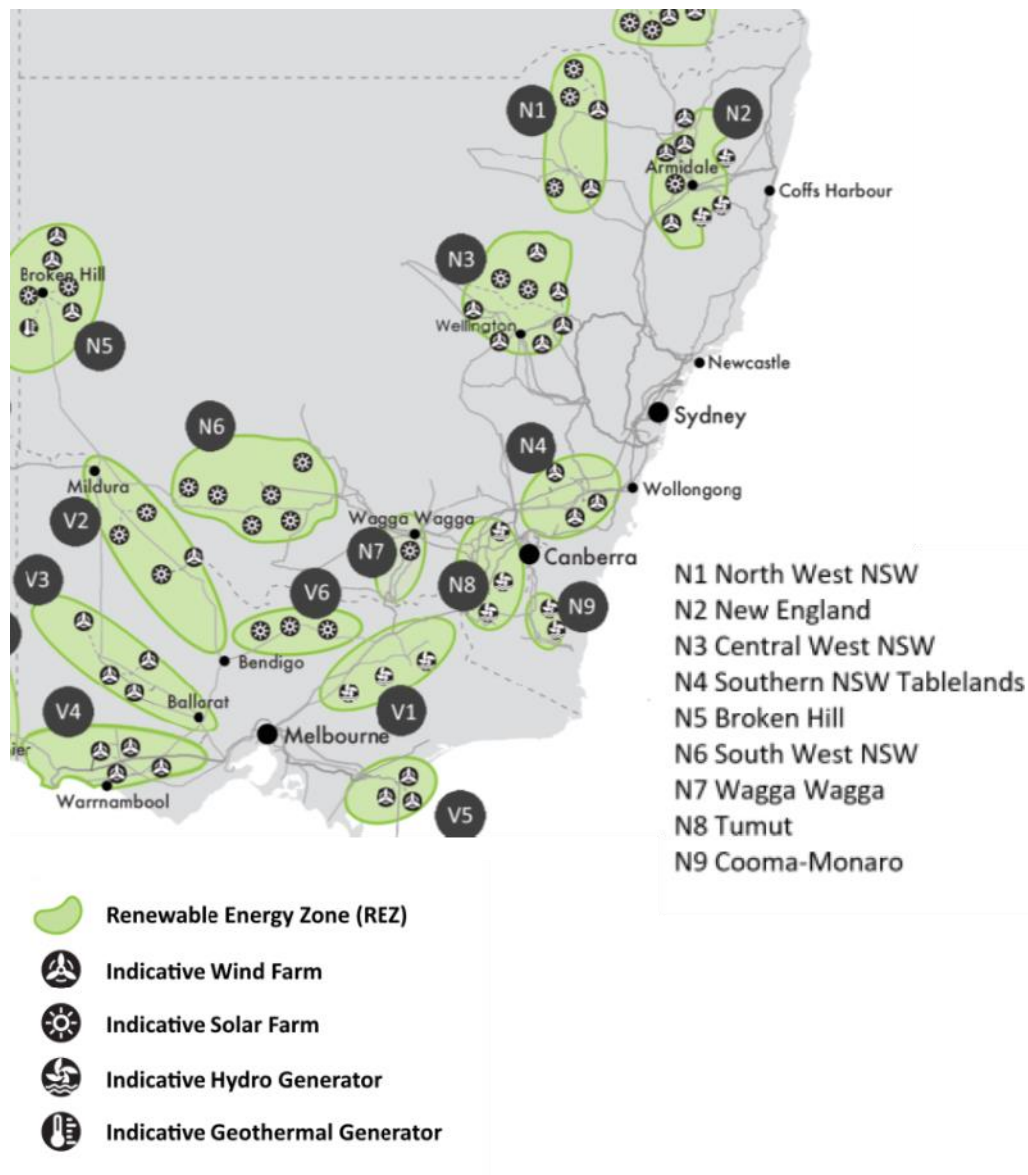
Figure 2: Australia has some of the best sunshine in the world.



AEMO has identified nine renewable energy zones - areas in the NEM where clusters of large-scale renewable energy can be efficiently developed, promoting economies of scale in high-resource areas, and capturing important benefits from geographic and technological diversity in renewable resources.¹⁴

¹⁴ AEMO 2019 forecasting and planning scenarios, inputs, and assumptions. Link: https://www.aemo.com.au/-/media/Files/Electricity/NEM/Planning_and_Forecasting/Inputs-Assumptions-Methodologies/2019/2019-20-Forecasting-and-Planning-Scenarios-Inputs-and-Assumptions-Report.pdf

Figure 3: REZ candidates for 2019-20 ISP in NSW



Source: AEMO 2019 forecasting and planning scenarios, inputs, and assumptions

Becoming a renewable energy superpower gives NSW many opportunities for the development of new industries and jobs. Good industrial policy can position NSW at the leading edge of the transition to clean, renewable energy and doing so will bring a range of benefits.

International examples demonstrate the power of renewable energy to create jobs. Germany's transition policy has led to over 338,500 new jobs in the renewable energy sector (2016).¹⁵ Back at home, 13,233 Australians were employed full-time in the renewable energy sector in 2018,¹⁶ larger by far than the coal-fired power station workforce.

¹⁵ BMW 2018. Erneuerbar beschäftigt in den Bundesländern.

<https://www.bmwi.de/Redaktion/DE/Publikationen/Studien/erneuerbar-beschaeftigt-in-den-bundeslaendern.html>

¹⁶ CEC 2019. Clean Energy Australia Report 2019. Link:

<https://assets.cleanenergycouncil.org.au/documents/resources/reports/clean-energy-australia/clean-energy-australia-report-2019.pdf>

In fact, solar PV generates five times as many jobs in operation and maintenance per megawatt as coal or gas. Solar thermal PV generates five times as many jobs in operation and maintenance per megawatt as coal or gas. Solar thermal has four times the number of jobs per megawatt, and wind twice the number. While the renewable industry has the potential to create thousands of new jobs, they won't necessarily be the same jobs or in the same places as previously provided by the fossil fuel industry. This makes a just transition plan essential.

No doubt, NSW is well placed to become a global leader in renewable exports – particularly the emerging renewable hydrogen and ammonia export industry, which is basically liquid sunlight. There are significant job opportunities in research and development, technology commercialisation and deployment, and potential spinoff industries such as a home-grown fertiliser industry.

4. NSW Government action needed

We believe the NSW Government should enact the following recommendations to aid coal communities to tackle the climate crisis and provide a just transition path for the most affected communities and households.

1. Support the [Hunter Renewal roadmap](#)

This roadmap is trying to do something not attempted in Australia before: involving and preparing the community and economy for structural adjustment before it happens, so the Hunter can be vibrant and resilient. The NSW Government should put its efforts and funding behind this process to build strong and resilient post-coal communities.

2. Seek and apply national and international lessons learnt

The Committee should seek experience and recommendations from others places, and ensure those lessons are applied to support the NSW communities. For example, the German coal regions will receive more than 40 billion Euro public funding in the next decade to aid the transition process. How this money is allocated and spent effectively could be an important lesson from those regions. Further experience can be drawn from community participation, worker re-training and re-employment and diversification planning.

3. Create a Just Transition Authority

The Committee should urge the NSW Government to establish a dedicated Minister for Transition similar to Victoria, which can ensure communities have the support they need to prosper as NSW moves towards a zero-carbon economy.

4. Unlock clean energy

NSW Government should unlock clean energy investments through:

a) *Clean Energy Auctions with a carve-out feed-in-tariff for community energy projects (see below Section e))*

This involves, that the NSW Government contract at least 4000MW of new large-scale renewable energy and storage in NSW in this term of government. This should be underpinned by a clean energy auction (held twice a year), which ensures that approximately 10% of this capacity is from firm-clean energy (more details see [Appendix 2](#)).

It will unlock approximately 1875 construction jobs each year¹⁷ the majority of which will be based in regional NSW and at least 280 ongoing jobs. And ensure that there is enough renewable energy capacity built in the case of coal power plant failure.

b) *Corporate PPAs*

That the NSW Government adopt a suit of policy measures to help NSW businesses and manufacturers lower their energy bills and build their capability to become more

¹⁷ 7500 job years, which equates to 1875 jobs per year for the four-year term of government.

internationally competitive, while helping the industrial sector to lower its overall emissions and contributing to unlocking private-sector investment in renewables and achievement of Australia's National Energy Productivity Target. More details see [Appendix 3](#).

c) Support for NSW household

A combination of energy efficiency, solar PV, demand management and battery storage are the best ways for households to take control of their energy future, lower their electricity bill. NSW Governments should incentivise these technologies for household.

In addition, a just transition also has include those most vulnerable. Hence we recommend to expand the NSW Solar for Low-income Households Trial to trial new models for providing solar to locked-out energy users such as renters, people who live in apartments and those with shaded roofs.

- Solar Gardens
- A model where landlords and tenants split the benefit ([similar to in Victoria](#))
- An apartment micro-grid
- Rates-based financing
- Virtual Power Plant for social housing (TBD based on lessons from recent NSW experience)

d) Upgrade and build the grid infrastructure

Large-scale renewable energy projects are currently facing challenges associated with being located away from load centres, often in weak grid areas. This is reflected in the current discussion about Marginal Loss Factors (MLFs), grid congestions and the deliberate curtailment of generation capacity of selected wind and solar projects across the NEM.¹⁸ Ultimately these projects are experiencing reduced revenues, which in turn is having a negative impact on their economics, and on their ability to source finance.

Hence the NSW Government should upgrade the grid infrastructure in areas with favourable renewable energy sources.

e) Increase community energy support

- To ensure a continuous growth of renewable energy capacity and reap the benefits of renewables locally, the NSW Government should help to increase the amount of medium-scale projects distributed across many communities in NSW.

To this purpose, we recommend to expand the current *NSW Regional Community Energy Program* to:

- Include metro areas
- Provide additional grant funding for community energy projects, including through the feasibility stage of project development.
- Establish 5 Regional Clean Energy Hubs across the state with at least one located in the Hunter region.
- Establish a capacity building program

This program approach can be thought of as Landcare for Clean Energy. The National Landcare program that the NSW Government has supported for more than 25years, consists of 56 NRM organisations (Hubs), supporting thousands of volunteer Landcare and Coastcare Groups, connected by a National Landcare Network (capacity building network).

¹⁸ Parkinson, Giles, 2019. Confusion, uncertainty grips market as marginal loss factors changed again. Accessible at <https://reneweconomy.com.au/confusion-uncertainty-grips-market-as-marginal-loss-factors-changed-again-65439/>

- Establish a Feed-in-Tariff (FiT) for mid-scale community energy projects of 6-7c premium above PPA/wholesale rate for 15 years.

The proposed criteria for the Community Energy FiT are:

- community-led project or community/developer partnership
- local shareholding inclusive of community investment (minimum 20%), including council, water authority, etc. (> 50% total)
- project scale > 1MW - 10MW
- local control and decision-making power related to the project
- local distribution of the social and economic benefits generated through the project.
- project is appropriately scaled to the local environment and/or community
- project harnesses the skills and capital of the local community

5. Commit to climate justice and energy justice principles

The Committee should urge the NSW Government to commit to the following climate justice principles and make it the fundamental guide for their actions.

- **Polluters' pays:** the onus for cutting emissions should be on those most responsible for producing them. It would be unjust to place burden for cutting emissions onto those who have contributed least to the problem and future generations. For example, there is a very real fear that Australia's most vulnerable households and communities, who are least responsible for causing climate change, are going to be those left paying for the profits of big energy companies, because they are the least able to access clean energy solutions such as solar, storage and energy efficiency.
- **A fair distribution of the benefits.** This means that no one should be locked out of the potential benefits of clean energy. It also means that those most affected such as climate impacted communities and those who through no fault of their own are most affected by the transition away from fossil-fuels should receive the most support.
- **Rectify broader injustice:** Where possible, the transition is used to rectify broader injustice, poverty and inequality – not further entrench it. For too long, some Australian communities, particularly Aboriginal communities have been given two choices: support extractive and environmentally and socially destructive industries such as mining, or live in poverty. This does not have to be the case with renewables, they offer a real path to economic development and social and environmental regeneration.

For more information

For more about please contact:

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or Franziska Mey from Community Power Agency – [REDACTED]

Appendix 1

Further resources

C4CE (2015) [National Community Energy Strategy](#). Sydney

C4CE (2017) [Small-Scale Community Solar Guide](#). Sydney.

Community Power Agency. [Renewables for All. Resources.](#)

Hicks, J. and Ison, N. (2018) '[An exploration of the boundaries of "community" in community renewable energy projects: Navigating between motivations and context](#)', Energy Policy. Elsevier Ltd, 113(June 2016), pp. 523–534. and

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Lane T., Hicks J., Memery C. and Thompson B. (2015) [Guide to Community-Owned Renewable Energy for Victorians](#). Melbourne.

Mey F., Hicks J. and Ison N. (2018) Taxonomy of Citizen and Community Energy: Analysing the drivers, models and real world outcomes of community and citizen energy initiatives in Australia, Germany, Denmark and Scotland. Paper presented at the IPSA Conference in Brisbane July 2018.

Rutovitz, J., McIntosh, L., Ison, N., Noble, E., Hicks, J., and Mey, F. 2018. [Social Access Solar Gardens for Australia. Institute for Sustainable Futures](#), University of Technology Sydney.

Further resources on the Social Access Solar Gardens can be found on the project website: <https://www.uts.edu.au/research-and-teaching/our-research/institute-sustainable-futures/our-research/energy-and-climate/social-solar-gardens>

Further links:

<http://c4ce.net.au/>

www.cpagency.org.au

<https://www.mefl.com.au>



Appendix 2

Policy Proposal: Clean Energy Auctions

Proposed policy

That the NSW Government contract at least 4000MW of new large-scale renewable energy and storage in NSW in this term of government. This should be underpinned by a clean energy auction (held twice a year), which ensures that approximately 10% of this capacity is from firm-clean energy.

This will

- Unlock approximately 1875 construction jobs each year¹⁹ the majority of which will be based in regional NSW and at least 280 ongoing jobs.
- Ensure that there is enough renewable energy capacity built in the case of coal power plant failure.

Why Clean Energy Auctions?

When well designed, Reverse Auctions meet the principles of a liberalised market and supports free competition of market actors. It allows for an efficient use of public budgets by delivering the largest volumes of production of clean electricity against the lowest cost and a range of other important policy priorities.

Unlocks investment

Clean energy auctions unlock investment in renewables and storage both by directly contracting renewables and by stimulating competition.

To build a new clean energy or storage project requires a project to be bankable. A typical requirement for bankability is to have an offtake agreement. A contract-for-difference by the NSW Government is one of the most bankable off-take agreements possible. This has the added benefit of reducing the project risk and lowering the cost of capital, which further lowers the cost of the project and thus electricity bills.

If the NSW Clean Energy Auction program specifically targets new market entrants as the ACCC recommends (in its similar proposal around underwriting new generation), this will also encourage market incumbents to invest in clean energy to help them maintain their current market share.

Experience has also shown that auctions deliver additional clean energy capacity above what is contracted. Renewable energy developers will typically submit part of their project to the clean energy auction program. Then if successful, they will use the contract-for-difference as an anchor contract to secure finance for a much larger renewables project and take the risk of going merchant for the remainder of the capacity.

Least-cost – lowering power bills

Clean energy auctions have consistently delivered the least-cost renewables around the world. Increasing cost efficiency due to price competition in the tender process.

The policy mechanism also increases market efficiency and lowers power prices. It does this firstly because there is zero incentive to price gouge as auction winners don't make any more money by doing so. If companies charge prices above their fixed contract-for-difference price, they have to hand that extra revenue straight over to the government.

Secondly, it's easy for auction winners to bid in at the bottom of the market and push out higher-cost competitors, since governments will pay the difference, thus lowering the wholesale cost for consumers.

¹⁹ 7500 job years, which equates to 1875 jobs per year for the four-year term of government.

Win-win for government

Clean energy auctions are a no regrets policy mechanism for government. The structure of a contract for difference (or similar) means that either:

1. The NSW Government is making money if wholesale electricity prices are high, money that can be reinvested into programs such as energy efficiency to help lower people's power bills.
OR
2. Wholesale prices are low, lowering power bills for all NSW consumers.

Flexible to energy system needs

The design of clean energy auction rounds can be tailored to the needs of the energy system. They can focus on more or less dispatchable capacity. They can also be geographically targeted. For example France has just undertaken a clean energy auction round specifically for off-shore wind. This flexibility allows for alignment of renewable energy development and infrastructure planning, particularly in relation to delivering the Integrated System Plan.

Delivers additional benefits

Clean energy auction design offers the chance to select a preferred bidder on criteria other than, or as well as, price. This can help to achieve multiple policy objectives e.g. higher community involvement, local employment, local revenue distribution, local ownership, supply-chain benefits etc. Ultimately, including provisions such as local content conditions can support specific types of projects which deliver significant co-benefits but which would otherwise be excluded from renewable energy and storage projects delivered through other policy mechanisms. Note Community Power Agency has helped both the ACT and Victorian Governments design their community benefit sharing criteria as part of their auction programs.

The most popular clean energy policy globally

Reverse auctions are becoming the preferred policy tool for supporting deployment of large-scale renewable energy projects around the world. By the end of 2015, at least 64 countries had held renewable energy auctions, with record bids in terms of both low price and high volume seen across the world's developed and emerging economies.²⁰ In Australia, the SA, Vic, QLD and ACT governments as well as ARENA have undertaken reverse auction processes.

The policy shift to auction schemes in the last six years has enabled dramatic and sustained price decreases and increased competitiveness of renewable energy generation technologies. For example, the Victorian auction round contracted for wind projects of \$56.52 per megawatt-hour and \$56.85/MWh for solar projects. Internationally, solar bids through auctions have been as low as USD 0.03 per kWh. In France, the 2019 off-shore wind auction delivered prices of USD \$0.05 per kWh, this is just over half the price that the IEA thought offshore wind would reach by 2050.

How clean energy auctions work

The concept

A 'reverse auction' turns the concept of an auction on its head – that is, the typical role of the buyer and seller at an auction are swapped around. Instead of buyers bidding high enough to win, sellers bid low enough to win the chance to supply what the buyer wants.

In this case the 'buyer' is the NSW government and what it wants is megawatt hours (MWhs) of on-demand clean electricity supply. Note some governments are using the process to procure generation to meet their own electricity needs. However, reverse auctions for new generation don't need to be backed by a specific electricity demand (or load) to be useful, as we explain in the Contract for Difference section below.

²⁰ REN21, 2016, *Renewables 2016. Global Status Report*. Paris.

Implementation process

The implementation of clean energy auctions involves the following three steps:

1. **Choose and publish selection criteria for successful bids.** The criteria should include:
 - **Responsiveness** – the ability to supply electricity in a short response or dispatch time of less than five minutes.
 - **Location** – based on analysis undertaken by AEMO or ARENA, projects should be located in areas that most need both on-demand electricity and additional ancillary services such as frequency control, fast frequency response, and/or inertia.
 - **Public interest** – an indication of how the ownership and operational strategy of the infrastructure would increase competition in the wholesale electricity market to keep prices lower and reduce the number of price spikes. In addition, this could include local community ownership, job creation, content requirements, supply-chain benefits and other potential benefits to the state such as investments in research and training.
2. **Companies and organisations tender** for a certain capacity (MWs) or volume (MWhs) of renewable generation and/or storage.
3. **The lowest-price bids that meet the criteria win a power sale contract that is locked in** for a period of at least 15 years. In this way, reverse auctions provide the bankability and certainty needed to secure finance at competitive rates (one of the factors that keeps down the cost of the policy).

Note we understand that the NSW Department of Planning and Environment has already developed a clean energy auction program design, but it has never been implemented.

Contracting

One of the key innovations in the design of clean auction policy is the structure of the contract. In Australia to date a 'contract for difference' (CfD) has been favoured. A CfD works whereby the successful renewable energy project sells energy on the wholesale electricity market and the federal or state government agrees to top up the contract price offered by the winning bidder when the wholesale price is lower than the contract price. When the wholesale price is greater than the contract price, the generator agrees to pay back the difference to the government.

There are variations on a CfD such as cap and collar contracts which would also deliver similar benefits. In addition, the NSW Government should deliver firm/dispatchable clean energy and storage through this policy. Contracts structures for dispatchable clean energy might need to differ slightly from existing CfDs for variable renewables to incentivise the export of electricity at times when it is most needed. One way to do this would be to structure the CfD around cap future contracts rather than wholesale electricity contracts. For an 'on-demand' reverse auction, the contract could be structured around participating in this existing market practice. This was proposed as one approach by the Melbourne Energy Institute as part of the Victorian Government's Renewable Energy Auction Scheme consultation.

An alternative approach could be to specify in the contract conditions that the contract price is only paid during demand spikes, supply drops, or price spikes. Note this doesn't prevent the contracted generators from exporting electricity to the NEM during other times, it's simply that the government contract would not cover that period. The contract could also include a minimum annual revenue guarantee to make it more bankable.

There are a number of contract structures that could be used to underpin a NSW Clean Energy Auction program.

More information please contact:

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Appendix 3

Policy Proposal – Clean Energy Solution Centre Package

A policy that unlocks investment in clean energy, saves industry money and cuts climate pollution!

Policy Proposal

That the NSW Government adopt a suit of policy measures to help NSW businesses and manufacturers lower their energy bills and build their capability to become more internationally competitive, while helping the industrial sector to lower its overall emissions and contributing to unlocking private-sector investment in renewables and achievement of Australia's National Energy Productivity Target.

The Clean Energy Solution Centre Package includes five elements:

1. The establishment of a Clean Energy Solutions Centre
2. Expanded Energy Savings Action Plan Program
3. An industrial clean energy grants and financing program
4. Government renewables underwriting in partnership with CEFC
5. An energy management training program

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1. Case for Action

The proposed Clean Energy Solutions Centre will assist with a range of benefits from industry cost savings to stimulating renewables, global competitiveness, and jobs creation. With the national Renewable Energy Target scheme about to end, large energy users offer a significant opportunity to simultaneously reduce climate emissions in the state and provide much-needed investment capacity in renewable energy. NSW has enormous untapped renewable energy resources, and this program offers a useful means of unlocking new investment in the sector, helping to achieve the state government's renewable energy ambitions and meet its net zero by 2050 climate goal.

1.1 Cost Savings

The savings potential from energy efficiency and renewable energy opportunities combined are massive, and many opportunities remain untapped.

The Energy Efficiency Council's recently released report "The World's First Fuel" finds that if Australia adopts well-established energy management policies, practices and technologies from overseas we can save Australian families and businesses over \$7.7 billion each year through lower energy bills and create over 120,000 job years of employment. Energy management could deliver half of the abatement required to meet Australia's target to reduce emissions by 26-28 per cent by 2030.²¹

In addition, ClimateWorks Australia's Energy Productivity Index for Companies - Guide for Investors report²² (2016) found:

- 70 percent of companies had significant room for energy use improvement;
- One-third of companies analysed could increase profits by five percent per year if they were to match the performance of sector leaders;
- Discounting capital costs, savings in energy costs could lead to between two and 10 percent growth in annual profits for each year of implementation.²³

Another ClimateWorks study - Australia's Industrial Energy Efficiency Data Analysis (IEEDA) project²⁴ (2013) uncovered significant savings opportunities, outlined below. Electricity and gas prices have more than doubled since 2013, so the value of these savings would be substantially higher today.

- Energy savings across the industrial sector, represented around 11% of total energy use.
- The majority of opportunities offered a payback below 2 years.
- The energy savings equated to a decrease in annual energy costs of \$3.3 billion per year.²⁵
- Not all savings identified will be implemented, due to a range of factors that influence business decision-making.
- Based on company reports, only 40% of the opportunity identified – worth \$1.2 billion – is likely to be implemented. The remainder – \$2.1 billion – is not expected to be taken up in current business implementation plans.²⁶ **This represents a real market failure.**

Importantly, it should also be noted that the 60% of savings that were identified but not implemented would now have a substantially reduced payback period (e.g., 18 months reduced to approx. 9 months), making them even better prospects.

The Australian Alliance to Save Energy (A2SE) estimates that if Australia doubles energy productivity by 2030 there will be a 2.8% increase in real GDP (\$2000 per capita), a \$30 billion savings in energy spend and a 20% reduction in greenhouse gas emissions.²⁷

1.2 Supporting industry competitiveness & capability

Australia's comparatively poor performance in energy efficiency translates into higher costs for industry and has broader impacts on competitiveness and the Australian economy.

The latest American Council for an Energy-Efficient Economy (ACEEE) *2018 International Energy Efficiency Scorecard*, shows Australia has gone backwards on energy efficiency, leaving it ranked the worst performing major developed country in the world, even lagging behind developing nations such as India, Indonesia, and China. Australia scored particularly poorly in industrial energy efficiency (22nd out of 25), meaning that industry is paying more than it should to service its energy needs.²⁸

According to the Australian Alliance to Save Energy 'failure to act now risks locking in competitive disadvantage for decades to come. With national income growth forecast to halve over the next

²¹ Energy Efficiency Council, *The World's First Fuel*, June 2019.

²² This report was an analysis of 70 companies across multiple sectors including construction, aviation, paper and steel.

²³ ClimateWorks Australia: <https://www.climateworksaustralia.org/business-and-investors>

²⁴ This study reviewed five sectors (mining, metals manufacturing, chemicals and energy manufacturing, freight and air transport, and other manufacturing, construction and services) representing around 50% of Australia's total energy consumption in 2010-11.

²⁵ In 2010 real dollars — not including implementation costs and based on common energy prices.

²⁶ ClimateWorks Australia: <https://www.climateworksaustralia.org/project/industrial-energy-efficiency/industrial-energy-efficiency-data-analysis>

²⁷ <https://www.a2se.org.au/component/content/article/53-media/media-releases/406-doubling-energy-productivity-by-2030-saving-30-billion-each-year>

²⁸ AFR, Australia deemed a world laggard in energy efficiency available here: <https://www.afr.com/business/energy/australia-deemed-a-world-laggard-in-energy-efficiency-20180626-h11vpo>

decade, the continued deterioration in Australia's energy competitiveness will have implications for Australia's national income, job creation/retention and, ultimately, living standards.²⁹

The IEA also state that through investment and cost reduction effects, the macroeconomic benefits of energy efficiency measures manifest in increased economic activity, higher employment, advantageous price impacts and favourable trade balance.³⁰

What's also clear is that energy savings can have a multiplier effect on other resource inputs. The IEA has estimated the multiplier effect of energy savings to other resource inputs of 0.5 to 2.5 times.³¹

A recent study by ClimateWorks Australia revealed that in some global industry sub-sectors, firms whose energy productivity (economic output per unit of energy use) was among the worst in their sector could achieve growth in annual profits of 2.2% to 13.8% by increasing energy efficiency to bring it into line with that of their best-performing peers.³²

1.3 Creating jobs with a future

Renewable energy and energy efficiency products and services offer a range of new job opportunities. According to the International Energy Agency the global market for smart energy products and services is more than \$290 billion per annum and growing rapidly.³³ If Australia captured just one per cent of the global market it would deliver \$2.9 billion in income every year and create thousands of jobs.³⁴ California now has more than 321,000 people employed in energy efficiency, with employment growing six per cent per annum in recent years.³⁵

Looking overseas, the ACEEE has stated that if the United States were to invest whole-heartedly in energy efficiency, especially new technologies, there could be a net increase of 1.3 to 1.9 million jobs in energy efficiency industries by 2050.³⁶

According to IEA, analysis of GDP changes due to large-scale energy efficiency policies show positive outcomes with economic growth ranging from 0.25% to 1.1% per year. The potential for job creation ranges from 8 to 27 job years per EUR 1 million invested in energy efficiency measures.³⁷

2. Barriers to industry action

While some businesses are finally starting to see clean, renewable electricity as an opportunity, barriers remain for many companies.

2.1 Stories of success

In the last two years, the following companies have made significant steps towards a renewable business future:

- Bluescope Steel has signed a PPA to take the majority of the 133MW Finley Solar Farm near Albury output, to help power Port Kembla Steelworks.³⁸
- Telstra, has signed a deal for a 70 MW solar farm and that is just the beginning of their plans.³⁹

²⁹ Australian Alliance to Save Energy, 2XEP: Australia's Energy Productivity Opportunity, September 2014.

³⁰ OECD/IEA, Capturing the Multiple Benefits of Energy Efficiency, 2014

³¹ OECD/IEA, Capturing the Multiple Benefits of Energy Efficiency, 2014

³² ClimateWorks Australia, 2016

³³ International Energy Agency 2017 Energy Efficiency Market Report, IEA, Paris

³⁴ Energy Efficiency Council, Save Energy, Cut Bills, Improve Reliability: 2017-18 policy priorities for an energy efficient Australia.

³⁵ Advanced Energy Economy Institute 2014 California Advanced Energy Employment Survey, Advanced Energy Economy Institute, Washington DC.

³⁶ Environmental Energy and Study Institute, 2015 Fact Sheet at <https://www.eesi.org/papers/view/fact-sheet-jobs-in-renewable-energy-and-energy-efficiency-2015>

³⁷ OECD/IEA, Capturing the Multiple Benefits of Energy Efficiency, 2014

³⁸ <https://reneweconomy.com.au/steel-giant-bluescope-turns-to-solar-with-major-ppa-deal-37396/>

³⁹ <http://www.afr.com/business/energy/solar-energy/telstras-solar-contract-part-of-bigger-power-play-20170530-qwg0ul>

- Sun Metals, one of the biggest energy users in QLD, is building a 116 MW solar farm that will provide around one-third of their electricity needs and underpin the expansion of their QLD based zinc refinery.⁴⁰
- Whyalla Steel's new owner Sanjeev Gupta has purchased a controlling stake in clean energy company ZEN, with plans to build 1 GW of large-scale solar, battery storage, pumped hydro and demand management for the steelworks and other big energy users in SA, with plans to expand to other states.⁴¹
- The owners for Fosters, VB and Carlton United Breweries have committed their companies to be powered by 100% renewable electricity by 2025 at the latest.⁴²
- Nestle Australia is using spent coffee grounds from their coffee factory in Gympie, Queensland as an energy source to run their factory. Approximately 70% of the energy used at the factory is now from a renewable source. They have also partnered with Uncle Tobys cereal to improve efficiency of truck movements, reducing the number of trucks on roads by 15% and reducing fuel use by 20,000 litres per year.⁴³
- Melbourne University has implemented 300 energy reduction projects since 2008, including 210 kW of solar panels and more than 5,800 LED light replacement, saving over \$3.13million per annum.⁴⁴

While the shift to renewables and greater energy efficiency is encouraging, it is still a struggle for many companies and many energy efficiency options are still not being taken up.

2.2 Barriers to action

Four of the biggest barriers preventing businesses taking action on energy efficiency and clean energy are:

1. **Complexity.** There are a huge range of technologies, options and approaches to lowering a company's energy use, costs and emissions. There are also a range of government and private sources of funding to make these options viable. In fact, there are so many options it can be bamboozling, making it difficult for businesses to know where to begin. Governments can make it much more straightforward for businesses to adopt cleaner, cheaper energy alternatives, by helping them navigate this complexity.
2. **Access to finance.** According to the EEC a number of manufacturers are finding it difficult to secure private sector finance for even highly attractive energy efficiency and renewable investments. The ACCC also found this in their review of electricity prices. Where finance is offered, charges and higher interest rates can undermine project viability.
3. **Lack of industry capability.** Given that energy has historically been cheap in Australia, most companies lack the energy literacy needed to identify and assess energy savings options. According to the EEC and EEO program reviews, companies often lack the skills and internal capability needed to develop the business case for energy upgrades, engage suitably qualified consultants and consider proposals put to them by consultants.⁴⁵

⁴⁰<http://reneweconomy.com.au/sun-metals-says-new-solar-farm-will-underpin-zinc-refinery-expansion-28753/>

⁴¹<http://reneweconomy.com.au/time-for-australia-to-wake-up-to-scale-and-pace-of-clean-energy-transition-49862/>

⁴²<http://reneweconomy.com.au/no-small-beer-fosters-vb-to-go-100-renewable-by-2025-2025/>

⁴³<https://www.nestle.com.au/creating-shared-value/environmental-impact/green-house-gas-emissions>

⁴⁴https://sustainablecampus.unimelb.edu.au/_data/assets/pdf_file/0004/2277292/CEFC-Melbourne-Case-Studies-2016-web.pdf

⁴⁵ According to ClimateWorks Australia's EEO Program Additionality Analysis Technical Report (mid-cycle EEO review), April 2013, "Sites lack specific skills and knowledge to assess and implement energy efficiency opportunities... EEO mid-cycle review shows that the lack of technical skills within organisations decreased as a barrier from greater than 20% to 10%."

4. **No requirement to take action.** With the removal of the EEO and the NSW Energy Savings Action Plan program and no carbon price there is now no requirement for large energy users to seriously consider energy efficiency, renewable energy or emissions reductions. Current and past performance suggests we cannot rely on voluntary action alone. A light-touch regulatory approach combined with incentives will help overcome the cultural barriers to action that continue to impede energy efficiency and renewables uptake, despite the positive payback opportunities.

3. Package Part 1: Clean Energy Solutions Centre

The Clean Energy Solutions Centre would be a one-stop-shop that gives coordinated, integrated clean energy and energy efficiency advice for large energy users to raise industry capability. It would be staffed by experts in renewable energy, energy efficiency and financial decision-making and establish an independent panel of experts that industry could call on for advice. The Clean Energy Solutions Centre would be a state-based organisation, responsible for working with companies that are required to report under an expanded NSW Energy Savings Action Plan Program (see Package Part 2).

The Clean Energy Solutions Centre would help ensure that audits and options assessments identify the best opportunities and they would support companies to upskill and navigate the range of players (state and fed government, non-profit and private) that can assist.

3.1 Clean Energy Solutions Centre - Recommended approach

Table 4: Proposed features of the Clean Energy Solution Centre

Design feature	Recommended approach
Structure	The Clean Energy Solutions Centre should be a new independent state government agency, with its own board.
Staffing	The Solutions Centre should be staffed by experts in industrial energy efficiency, renewables and clean energy finance. The right expertise is essential. A global search would help to identify the best person to lead the Centre, which should include significant experience helping manufacturers reduce their emissions and their costs. For example, Japan and Germany are known to have expertise in these areas. In addition, the Solution Centre should establish a panel of International and Australian leading efficiency experts to provide independent advice. If possible, CEFC staff should be on an advisory council or expert panel to ensure maximum alignment.
Pre-audit & independent panel	<p>Highly qualified (leading) energy efficiency and renewable energy experts should be enlisted through the establishment of an Expert Panel to work with those responsible within each participating company to identify areas and opportunities that each company should focus on as a priority and to understand possible pitfalls. Expertise should include:</p> <ul style="list-style-type: none"> ● Technical experts that can assist engineering staff in gathering and analyzing energy data and developing tenders to put to market ● Experienced executives that can translate technical proposals into financial and strategic proposals that executives and boards can consider ● Experts in facilitating organisational change. <p>This pre-audit advice would not substitute for advice from energy efficiency</p>

	consultants. Rather, they would undertake work that is rarely offered in the private sector and act on behalf of the company to help them engage consultants where appropriate. This pre-audit assistance will ensure the program delivers the best outcomes and will increase the energy literacy of the companies.
Audit/assessment & planning	<p>The Clean Energy Solution Centre would help connect participating companies to accredited auditors. It would also provide a framework and useful resources for companies to assess opportunities and report, specific to their business needs. For example, it would provide energy cost projections, technology cost projections for common technologies and more.</p> <p>Based on the audits, the Solution Centre would help each company make a plan specific to their needs and to access funding. These plans should include a baseline emissions and energy trajectory for each company and outline the cost-effective (<4 year payback) emissions and energy reduction opportunities available as identified in the audits.</p>
Referrals & access to programs	<p><i>Finance and funding:</i> The Solution Centre would support companies to get access to dedicated grants through ARENA and other relevant programs and finance through the CEFC and other relevant private-sector financing programs (see Section 6 below).</p> <p><i>Bulk purchasing:</i> The Solution Centre would help businesses participate in bulk-buys for solar and common energy efficiency upgrades such as lighting across an entire sector or location. They would also be able to refer companies to outfits such as the new Business Renewables Centre (see Appendix A) that helps coordinate direct renewable power-purchase arrangements.</p> <p><i>Government underwriting:</i> If a company is having trouble signing a longer-term contract arrangement particularly for new renewables, the Solution Centre would work with them to potentially underwrite the contract in the later years, as proposed by the ACCC's recommendation (see Section 8 below for details on this). Although the ACCC's recommendation was made to the federal government, a state-based underwriting program would make a valuable contribution to helping projects secure finance.</p>
Events & training	<p>The Solution Centre would host regular events to encourage information sharing between companies.</p> <p>The Solution Centre should be responsible for working with relevant industry organisations to deliver the training packages for Executives and Energy Managers in large businesses (see more in Section 7 below).</p>
Reporting	The Solution Centre would be responsible for ensuring that companies report as per their obligations under the expanded and reintroduced NSW Energy Savings Action Plans Program

4. Package Part 2: Expanded Energy Savings Action Plan Program

The second part of the proposed Clean Energy Solutions Centre Package is to re-introduce an expanded NSW Energy Savings Action Plan Program. This program is related to the successful National Energy Efficiency Opportunities scheme (EEO), and some of those successes are outlined below along with recommendations for expanding and re-introducing the previous NSW program.

4.1 Success of the national EEO

- The EEO was introduced nationally in 2006 and required any energy users consuming more than 0.5PJ of energy (total, not just electricity) to undertake audits to identify opportunities to reduce their energy use. Companies then had to report on the actions they took on all options with payback periods of less than 4 years.
- As an example of perverse reasoning, this program was scrapped by the Abbott Government in 2014, citing its closure as a way to reduce costs for business, despite the fact that the program had actually identified \$1.2 billion in savings for business, of which \$808 million were taken up.⁴⁶ These savings represent an average net financial benefit of approximately \$98 per tonne of CO₂ -e reduced.⁴⁷ The program as a whole had a Cost Benefit Analysis Ratio of 3.67 for the first cycle.⁴⁸
- According to ClimateWorks Australia, the EEO program delivered an additional \$291 million in annual net financial savings for participating businesses. The energy savings enabled by EEO account for around 41% of all energy savings achieved in the sector.⁴⁹ Table 1 shows the split of these benefits by industry sector. See Appendix B for case studies that document companies reducing their energy use under the original EEO, and outline some of the many successes of the EEO program.

Table 1: Savings and financial benefits of the EEO by sector

Industry sector	Adopted savings (PJ)	Percentage	Net annual financial benefits (\$m)	Percentage	\$ per GJ
Metals Manufacturing	20.0	22.5	162.3	20.1	8.13
Oil and gas	20.7	23.3	95.3	11.8	4.6
Food Manufacturing	4.7	5.3	21.1	2.6	4.53
Metal Ore Mining	6.3	7.1	109.8	13.6	17.56
Transport (Road, Rail, Water and Air)	10.2	11.5	93.8	11.6	9.19

⁴⁶ <https://www.eex.gov.au/large-energy-users/energy-management/energy-efficiency-opportunities>

⁴⁷ Energy Exchange (2018) 'Energy Efficiency Opportunities Program', Australian Government

⁴⁸ ACIL Tasman (2013) 'Energy Efficiency Opportunities Program Review', Prepared for Department of Resources, Energy and Tourism, p69

⁴⁹ Climate Works Australia, *Energy Efficiency Opportunities (Repeal) Bill 2014 Submission 17*

Petroleum and Coal Manufacturing	5.0	5.6	30.6	3.8	6.18
Chemical Manufacturing	4.3	4.8	31.1	3.9	7.18
Ceramic, Glass and Cement Manufacturing	2.9	3.3	24.6	3.0	8.43
Coal Mining	3.5	3.9	86.6	10.7	24.93
Services	4.4	5.0	84.9	10.5	19.11
Other	6.8	7.7	67.4	8.4	9.84
All Sectors	88.8	100	807.6	100	9.09

According to the Energy Efficiency Council the EEO was considered a global leader in light-touch regulation and forms the basis of programs that were introduced in the UK and other European countries.

4.2 Expanded NSW ESAP – Recommended Approach

The original NSW Energy Savings Action Plan (ESAP) program ran from October 2005 to December 2012. The program successfully saved NSW businesses and organisations 441.6GWh of electricity per year. However, with an increase in electricity and gas prices, a reduction in technology costs and a focus on both supply and demand side energy solutions, an expanded and reintroduced Energy Savings Action Plan program could help NSW businesses reduce costs, emissions and become more cost competitive. Table 3 outlines the proposed design of an expanded ESAP.

Table 3: Proposed features of expanded ESAPs

Policy feature	Original ESAP	New Expanded ESAP
Participation threshold:	Companies were required to participate in the ESAP if they used more than 10GWh of electricity annually. Local Governments with populations of more than 50,000 people were also required to participate.	The threshold for participation in the ESAP should be expanded to cover gas intensive NSW businesses as well as electricity intensive businesses. Councils should not be covered unless they meet the energy thresholds.
Scope of technology solutions:	Energy efficiency opportunities, specifically demand-side solutions.	The scope should be expanded beyond energy efficiency to include other clean energy options, including renewable energy (onsite and purchasing), sustainable transport, storage, demand management, energy management systems and technologies and fuel switching.
Audit type:	Participating companies had to develop and register an Energy	Participating companies should have the option to either develop an ESAP

	Savings Action Plan with the NSW Office of Environment and Heritage.	or register under the ISO 50001 Energy Management Standard. Where a company has undertaken an audit/assessment under ISO 50001 in the two years preceding the reintroduction of the ESAP, companies may submit this instead of a new plan.
Mandating training	N/A	The new EEO should mandate training for a minimum number of people within energy management roles in each participating company.
Reporting:	Cost-effective energy savings measures reported in the Plan were those that exceeded the organisation's hurdle rate of return (cost of capital). Generally measures with a payback period of less than 2 to 4 years were cost-effective	No change recommended. With rising electricity and gas costs and falling technology costs the number of options that will fall into this cost-effective requirement will have increased substantially.
Compliance:	Organisations were required to submit a plan identifying cost effective energy saving options, then submit annual reports on the implementation of energy efficiency opportunities for the three years following the approval of their Plans.	Where ESAP reporting includes overlaps with other government reporting programs e.g. National Greenhouse and Energy Reporting (NGERs) streamlined options that reduce duplication should be introduced.
Responsible agency:	NSW Office of Environment and Heritage	New Clean Energy Solution Centre (see above)
Legislation:	The Energy Savings Action Plan (ESAP) program was established in the <i>Energy Savings Order 2005</i> under the <i>Energy and Utilities Administration Act 1987</i>	The original legislation would need to be revised to apply to the state of NSW along with minor amendments to accommodate the proposed changes outlined in this table (and in subsequent sections in this briefer).

5. Package Part 3: Industry clean energy grants program & access to finance

Grants and low-interest loans are highly effective at turning potential investments into actual projects. It is likely that having some degree of grant funding and access to finance will be critical to secure support from industry for participating in clean energy programs, particularly around energy efficiency.

5.1 Industry clean energy grants and finance – recommended approach

Table 5: Proposed priorities for grants

Suggested program	Detail
Energy management grants	Many companies have a track record of failing to invest in the technologies and systems that would make energy management easier. Metering and data analytics are essential to the success of both demand and supply-side clean energy options. As such, State Government grants that provide 25-50% of the cost for companies to install and set-up the basics of energy management and increase industrial capability are proposed.
Trials	<p>The Clean Energy Solution Centre should work closely with ARENA and develop grant programs or bespoke grants that would:</p> <ul style="list-style-type: none"> • Fund trials of new energy savings technologies and solutions, • Help fund more costly options (paybacks >4 years) that represent significant emissions reduction opportunities, and/or • Fund cost reduction technologies that would help a large number of large companies (aka have a significant sector-wide impact). <p>Note: this will require a mandate change for ARENA and additional funding. Energy productivity would need to be explicitly included in ARENA's mandate and sufficient funds provided to continue their current focus as well as deliver this expanded scope. The NSW state government should advocate strongly with the federal government for this ARENA funding.</p>
Finance	The Clean Energy Solution Centre should work with the CEFC to establish a dedicated manufacturing energy efficiency finance program. This program should be open to small manufacturers as well as large companies. It should provide low-cost finance for energy efficiency upgrades, capital works and other solutions. It should also work with the finance sector to increase skills in financing energy efficiency options for manufacturers and work with companies to increase their skills in developing a sound financial case.

6. Package Part 4: Government Underwriting

In June 2018 the Australian Competition and Consumer Commission (ACCC) released the findings of its inquiry into retail electricity pricing titled: [Restoring electricity affordability and Australia's competitive advantage](#). Recommendation 4 of this report proposed that government underwrite 'firm' energy generation projects by entering into offtake agreements for the latter years of projects at a low fixed price. Specific criteria would be attached to these projects.

As noted in table 5, government underwriting is proposed as one of several means to assist companies gain access to finance and could be assisted by the Clean Energy Solutions Centre. As outlined below, the ACCC recommendation 4 provides a framework for government underwriting projects in later years.

Purpose: The ACCC determined that commercial and industrial (C&I) energy users can enter 5-year offtake agreements from new generators like wind and solar farms with storage, but this did not

provide enough certainty for new projects to secure finance. Adding government offtake agreements or financial underwriting that kick in where necessary in later years to fill this gap would assist projects to get finance, add competition and lower prices.

More dispatchable, 'on demand' power is needed alongside cheap wind and solar to support the transition to clean energy. This includes solutions like large batteries installations, pumped hydro, concentrating solar thermal, sustainable bioenergy and demand response.

Proposed approach: Although the ACCC's recommendation was made to the federal government, such a program could be implemented at state level. There are a few options for deliver:

1. The NSW Government could partner with the CEFC which from conversations we understand could provide such finance, where there is a 5-year offtake agreement from C&I customers. NSW could create the program and support the C&I businesses to develop a tender/proposal through the Clean Energy Solution Centre and the Business Renewables Centre. This would then be submitted to the CEFC for finance.

2. The NSW Government could include an underwriting component as an additional strand in a Clean Energy Auction program.

3. The NSW Government could create its own dedicated C&I renewables underwriting program.

To ensure these programs are effective in supporting investment in clean dispatchable energy, not a perverse role in supporting dirty 'baseload' power like coal, which is not what the energy system or the climate needs. These requirements for implementing Recommendation 4 should include:

- Projects to be considered must be 'firm' and/or 'dispatchable', not 'baseload'⁵⁰ power.
- Coal should be banned outright.
- Alternatives to generation should also be considered, such as demand side management as a firming option.
- In underwriting/signing a Power Purchase Agreement (PPA) for any new generation the government should not indemnify the proponent (generator) from any possible future climate risk, such as a possible future carbon price.

Further, the following ACCC requirements for a project to qualify should also apply:

- have at least three customers who have committed to acquire energy from the project for at least the first five years of operation;
- not involve any existing retail or wholesale market participant with a significant market share (say a share of 10 per cent or more in any NEM region);
- be of sufficient capacity to serve the needs of a number of large customers;
- can provide a firm product so that it can meet the needs of C&I customers.

1. Package Part 5: Training package

7. Package Part 5: Training

A lack of energy literacy, skills and knowledge are a critical barrier to Australia's manufacturing sector, particularly their ability to reduce their energy costs and their emissions. This training package, targeting energy managers, energy consultants and company executives should be part of a broader energy-sector training package.

⁵⁰ "Baseload refers to a type of power plant that is slow to ramp generation up and down and operates most efficiently if it runs all the time—like coal-burning power stations. More baseload is the opposite of what we need for a modern, reliable and efficient energy system... In the future, there will be little to no room for baseload power as it will be crowded out by renewable energy supply from wind and solar that operates at close to zero marginal cost. This will be supplemented by the 'on demand', dispatchable and firm generation and storage that the ACCC report talks about, that is quick to start up and deploy" (Extract from [this](#) article by Nicky Ison).

Table 6: Proposed training priorities

Training program focus	Detail
Energy managers	A new suite of trainings should be developed in the basics of energy management with more tailored trainings for different sectors in key sector-focused opportunities and challenges. These should be open to energy managers at companies of all sizes but should be mandated for energy management staff in companies required to participate in the EEO.
Company executives	There is a growing acknowledgement that company executives need to take into account climate risk. This must include understanding how to manage their company's energy use. This package should support the development and uptake of a training program for company executives in energy management and change.
Energy auditors and advisors	There are many excellent energy auditors and advisors in Australia, however, there are not many that specialise in manufacturing, nor ones who can cover the full suite of demand and supply-side options. To realise the job potential of this package, investment is needed in good quality training through a reinvigoration of TAFE.

More work is needed to identify the detailed training needs and the best placed training providers. It will likely be a mixture of TAFE, peak energy bodies such as the Energy Efficiency Council and the Clean Energy Council and perhaps other accredited training providers.

8. Costings

Table 7 outlines indicative costings of the Clean Energy Solution Centre Package over a 6-year period.

Table 7: Clean Energy Solution Centre Package Costings

Item	Assumptions	Cost
Clean Energy Solution Centre - establishment and operations	10-15 staff	Approx. \$5 million per annum
Detailed up-front advice for each company	50 companies x \$20,000 per company 5 new companies per year added to the program	\$1 million first 2 years \$100,000 per year after
Energy management grants	50% grants for companies to install and set-up the basics of energy management. Note this grant program should be expanded beyond those required to participate in the expanded NSW EEO, for example the top 100	\$3 million

	energy using companies.	
Funding for trials etc ⁵¹	See Table 5	\$10million for matching funding from NSW. \$100 million (federally funded – requires state government advocacy)
Training program - companies (managers and executives)		\$3 million
Broader energy management TAFE package for auditors and advisors		\$5 million
Total		\$42.2m over 4-year period

9. For more information

For more about this policy package please contact:

Nicky Ison from Community Power Agency - [REDACTED]

Suzanne Harter from the Australian Conservation Foundation- [REDACTED]

Appendix A: The Business Renewables Centre

Building on the success of the Rocky Mountain Institute's (RMI) Business Renewables Centre (BRC), the Business Renewables Centre - Australia is an Australian resource centre and market platform to accelerate Australian corporate uptake of large-scale off-site renewable energy.

The Business Renewables Centre - Australia is a partnership between the Rocky Mountain Institute's (RMI) Business Renewables Centre (BRC), the Institute of Sustainable Futures (ISF) - a Research Centre of University of Technology Sydney, WWF-Australia and Climate-KIC Australia. It is supported by the NSW Government and ARENA. Its goal is to accelerate renewable energy uptake by organisations and achieve 5.5 gigawatts of new renewable energy generation (installed capacity) in Australia by 2030.

For Australian organisations, a business-as-usual energy purchasing model is no longer a smart or low-risk procurement strategy. This has been driven by numerous factors including a doubling of energy prices [in the 2016-17 financial year](#), and significant reductions in the levelised cost of solar and wind generation. Industry is responding; last year (2017) [large-](#)

⁵¹ This is part of a broader package to refund ARENA. This should start with at least returning the \$500million cut from ARENA's budget

[scale renewable energy projects commencing construction](#) totalled over 3,500 MW of new power, representing \$AUD7.5 billion in investment.

In 2017 ARENA [surveyed](#) Australia's top 400 companies. This survey found that whilst 46% of companies purchase renewable energy, for most it represents only 10% or less of their electricity use. Nevertheless, many are encouraged by the recent large-scale PPA successes of corporate giants Telstra (70MW), Kleenheat (30MW), Sun Metals (116MW) and others. The number of PPA tenders has boomed in last year, and almost half of the companies surveyed say they intend to increase their renewable energy use in the next 12-18 months.

The renewables industry is struggling to execute corporate PPAs despite interest from both renewable developers and Australian corporates.

Companies while motivated, are still unsure how to proceed as they are hampered by a lack of knowledge about the complex energy market, market volatility and a general lack of intimate knowledge of company power profiles.

Overall, there is a lack of experience, coordination and a fundamental disconnect between developers and corporate purchasers regarding expectations and PPA terms and conditions. This creates the need for a facilitator and educator. The Business Renewables Centre – Australia is intending to play this role running demand side and developer boot camps, developing tools and running industry events.

