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The motto of the coat of arms for the state of New South Wales is “Orta recens quam pura nites”. It is written in Latin and means “newly risen, how brightly you shine”.

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Membership

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Chair's foreword

NSW's energy supply is changing. We currently rely on an ageing power generation system that's dominated by fossil fuels, especially coal. Renewable energy technologies are cleaner, less expensive, more cost effective, and more reliable. The cheapest form of power generation is no longer coal or gas, but renewables - solar and wind generation. Our current energy infrastructure needs modernisation to accommodate a substantial transition to renewable sources.

We acknowledge that coal communities, like those in the Hunter and Illawarra regions, have powered our state for a long time, but we also recognise that coal-fired power generation produces emissions that worsen climate change and have other significant environmental impacts. The lack of forward planning and economic diversification in coal dependent communities from state and federal governments, has delayed energy transition and done so at a great cost to those communities, their health, and the environment.

Community expectations are also changing. There is significant and urgent need to address climate change, especially the immediate and long term risks it poses to our land, water, and health. There's also significant pressure to ensure electricity is affordable and reliable for households, businesses, and industry.

Energy transition is a significant task, and planning is crucial. We heard several examples of successful and unsuccessful energy transitions, in Australia and internationally. Germany's Ruhr Valley was referred to as the gold standard for the closure of coal mining and power generation sites, due to ongoing community engagement and participation from the very early stages of transition planning. This was contrasted with the Appalachian region of the United States where communities suffered protracted and severe economic and social consequences due to poorly planned coal closures. It is very clear that we have both the responsibility and the opportunity to act to avoid these outcomes for communities in NSW.

We heard that global thermal coal demand has passed its peak and is now declining and this will see the closure of coal mines. Some regions in the Hunter are vulnerable to future economic shock with very little economic diversity.

NSW must undertake locally-led, proactive, and detailed planning for our energy transition that ensures no-one is left behind. Transition planning must include significant investment to bring new renewable energy jobs to regions impacted by energy transition, including in alternative export industries, re- and up-skilling workforces, and education and training for future generations. We heard that mining and power workforces have and can develop transferable skills that will allow them to move to new industries, especially jobs in renewable energy. Stakeholders stressed that a skills audit must be done as soon as possible. Understanding the skills of current energy sector workforces is essential to planning for their future.

As well as communities in existing mining and power generation sites, communities in proposed renewable energy sites (especially Renewable Energy Zones) should participate in planning and consultation. We heard that successful renewable energy projects rely as much on community support as they do planning. Community concerns about new projects should be heard and appropriately addressed. Communities across NSW will have different needs,

priorities, and concerns. These need to be managed and given due consideration, which stresses the importance of locally-led planning.

We heard differing views on what NSW's energy mix could look like in the future. It was concerning to hear evidence about the burning of forest biomass for power generation. Although this is a small industry in NSW at present, steps must be taken to ensure it doesn't become a major energy source, and that it's not eligible for renewable energy credits. It's not economically or environmentally sustainable, and it generates significant carbon emissions. There are a variety of genuinely renewable energy sources that should be incorporated in future energy planning. Renewable energy technologies (generation and storage) can meet NSW's energy needs into the future if they are appropriately introduced into grid infrastructure.

Our inquiry started in 2019 and followed a policy of just transition for New South Wales put forward by the Independent members of the Legislative Assembly, Mr Greg Piper (Lake Macquarie), Dr Joe McGirr (Wagga Wagga), and Mr Alex Greenwich (Sydney).

The Committee notes that legislative reforms have been introduced since then – especially the *Electricity Infrastructure Investment Act 2020*. While we welcome these steps, we have highlighted further areas for reform to ensure both a just transition and a strong foundation for future energy supply in this state.

We've made several recommendations throughout this report that highlight areas of particular concern. In particular, we think transition planning should begin as soon as possible, and involve local communities in a 'from the ground up' approach.

We heard evidence from a range of stakeholders. We thank everyone who made a submission and those who appeared at our public hearings for their participation in the inquiry. I also thank Committee members for their constructive work during the inquiry, and Committee staff for supporting us in our work, including through the challenges of the COVID-19 pandemic.



Alex Greenwich MP
Chair

Summary

Recognising the contribution coal has made to NSW

Several communities in NSW grew around mining and power generation sites, especially in the Hunter Valley and Illawarra regions. Coal mining has a long history in these areas, and it's a significant part of their economy, history, and identity. We acknowledge the historical importance of coal and the mining industry's contributions to these communities and the state at large.

Due to market forces, consumer preference changes, rapid advancement and declining costs in renewable energy technology and changes in Government policies both domestically and internationally, the energy mix in NSW is changing. Historically, it's been dominated by fossil fuels - coal and gas fired power generation. However, we heard that these energy sources are being superseded by renewable energy generation technology.

There's growing concern about the long-term negative impacts of fossil fuels on human health and the environment. As well as this, renewable energy technology is developing rapidly and becoming increasingly more affordable and efficient. This is making renewables a competitive option for supplementing or replacing fossil fuel generation sources in NSW as they age or are decommissioned or when renewable energy reliability and stability can be achieved.

Although the technology now exists for large-scale renewable energy generation and battery storage, it's hindered by our existing grid infrastructure. The NSW electricity grid is complex and it isn't designed for large scale connection of renewables; it's not ready to adapt to any significant change in energy supply. There's also concern about regulating the renewable energy sector, the lack of energy policy and guidance from state and federal governments, and the impact on the reliability and cost of electricity in NSW.

In this context, our report examines the opportunities that renewable energy presents for NSW. The inquiry generated a lot of interest from a broad range of stakeholders. What we heard from them generally stemmed from three issues – transition planning, infrastructure, and government support. A lot of work is being done in this space, and there are different views about what the future will or should look like. We heard overwhelmingly that thorough and clear planning is crucial, whatever the future.

During the inquiry the *Electricity Infrastructure Investment Act 2020* was passed. We commend this as an important step in the right direction. It addresses some of the concerns stakeholders raised with us, particularly related to transition planning. We urge the NSW Government to continue its work. It's vital that all of NSW is prepared for the reality of changes to our energy supply.

Understanding the changing role of coal and the impact of regional dependency

It is, however, becoming clear that the demand for coal is changing due to changes in consumer preferences, financial market investments, increasing renewable energy technology competitiveness and government policy changes both domestic and international. Communities are becoming more aware of the impacts of fossil fuel generation, but also understanding the need to ensure that energy is reliable and stable to meet retail and

wholesale demands in particular during peak times. More countries are committing to zero-emissions targets, which impacts the future international demand for coal. As renewables become increasingly cost-competitive, and we work towards meeting our own emissions reduction targets, domestic demand for coal is also coming under pressure.

It's clear to us that regional reliance on coal also produces some unintended consequences. Coal communities generally don't have diversified economies given the high level of economic concentration in the coal industry and its associated supply chain industries. The high proportion of regional workforces employed in the coal industry means there's a lower level of diversity in the regional skills mix. These factors mean the community and its workforce face significant risks, including high unemployment and socio-economic declines, when there are changes to demand for coal and coal-fired power generation. We note that NSW's coal-fired power stations are scheduled for closure in the next few decades: Liddell, in 2022, followed by Vales Point in 2028, Eraring in 2035, and Bayswater in 2036.

These factors further reinforce the importance of ensuring regional communities historically and heavily reliant on fossil fuel energy generation receive ongoing support and significant resources as the energy mix and market demand for energy production continues to change.

Sourcing and exporting renewable energy

NSW has an abundance of natural resources, and we're well-placed to adopt a range of renewable energy technologies. Renewable Energy Zones (REZs), outlined in the Government's Renewable Energy Roadmap and the *Electricity Infrastructure Investment Act 2020*, are an important step. We heard that they'll facilitate the uptake of renewable energy across NSW. REZs are 'modern power stations' and they'll have the capacity to provide most of our power supply in the future, but they're limited by current infrastructure and a lack of investment. Some of the Act's provisions aim to address these problems, and we're pleased to see the work being done in this area by the NSW Government.

The use of forest biomass and natural gas were also brought to our attention, because they're touted as alternatives to coal-fired power. They're not renewable energy sources, and we recommend that the NSW Government doesn't rely on them for future energy planning. We also specifically recommend that the government takes steps to declassify forest biomass as a form of renewable energy and ensure it's not eligible for renewable energy credits. There are alternative sustainable options, such as battery storage, that could be used to ensure energy reliability in NSW.

The Committee acknowledges former Australian Chief Scientist Professor Alan Finkel AO's extensive and evidence based review into our energy industry and the move towards lowering our carbon emissions. In particular, we note that the Independent Review into the Future Security of the National Electricity Market stated that flexible, gas-fired generation will have a role in supporting renewable energy technology in the short to medium term.

We heard that NSW could capitalise on the generation and export of renewable energy, particularly hydrogen. Hydrogen fuel is a fast-growing market internationally with increasing demand for green hydrogen. Development of this industry could help further diversify the future energy mix and provide growing economic and employment opportunities in regional areas formerly reliant on fossil fuel energy industries.

Improving our energy efficiency

Sources of energy are only one half of the problem. NSW, like a lot of Australia, isn't efficient in its energy usage. This puts demand on the generation side, which results in more stress on our electricity generation and distribution infrastructure.

Changes in energy supply will put varying levels of stress on the grid, and this is likely to have flow-on impacts on the consumer side. Better energy efficiency will manage the demand and affordability of energy in NSW, and it will help reduce carbon emissions.

The NSW Government has a draft policy to improve energy efficiency standards. We're recommending that the *Draft plan to save NSW energy and money* is finalised and implemented, and that the government supports higher energy efficiency standards in the 2022 National Construction Code for new homes.

Planning for workforce transition

Understanding workforce strengths and ensuring the relevance and accessibility of education, training and ongoing support will be a crucial part of ensuring regional communities are able to maintain an economic quality of life and employment opportunities as the demand for energy sources changes.

We're recommending that the NSW Government conducts a skills audit. This will help to identify areas of future employment growth, including demand for training and education. As part of this, we also recommend that the audit focuses on workers who will be most impacted by energy transition – the fossil fuel power generation and mining workforces.

We heard that education and training can't meet the renewable energy sector's needs now or in the future. We recommend the NSW Government invest in education and training programs designed for work in the renewable energy sector, which could be considered by the NSW Government's Royalties for Rejuvenation Expert Panel. We heard that government support and involvement of industry and research bodies has been crucial to developing better programs in other jurisdictions. NSW Government investment can complement investments in workers' skills by industry and employee representatives.

Up- and re-skilling the existing fossil fuel workforce is a top priority. These workers need appropriate skills before they can obtain stable employment in other industries. We heard that the existing skillsets of fossil fuel workers lacks diversity, which presents challenges in their employment mobility. These factors mean that these workforces face a real challenge in the future, and we must support them with adequate education, training and potential income support where appropriate as they adjust to new employment opportunities.

We think it's vital that these processes – the skills audit, and investment in education and training – are set in motion as soon as possible. They must also be well-funded and have long-term government support.

Planning and coordinating the transition for communities

The importance of planning was repeatedly stressed to us throughout the inquiry. We heard good and bad examples of energy transitions from Australia and internationally. We recognise that locally led, locally focused, long-term, and early planning is essential to provide the best support to communities. It will also need to occur at each level of government. We recognise the importance of work currently being undertaken by councils and community organisations.

Local government cannot coordinate or manage energy transition on its own, however, and we focus on several areas where the NSW Government can and should provide assistance. The City of Sydney has undertaken work to use 100 per cent renewable energy; we recommend that the state government develops a support plan for other councils to follow suit. The Hunter Joint Organisation (HJO) told us about their plans for supporting communities in Hunter Valley local government areas, called the 2050 Foundation. We commend the proactive work of the HJO, and are calling on the government to provide funding for the Foundation.

We also learnt that NSW local councils are prevented from implementing financial support programs, notably Special Charge Schemes. These Schemes have been used successfully by Victorian councils to make renewable energy more accessible, particularly rooftop solar panels. We recommend that the government consider amending the *Local Government Act 1993* to overcome this barrier.

Information about renewable energy co-operatives should be more widely available. We think they're an important way for consumers who are otherwise 'locked out' of the renewable energy market – like renters and low income households – to access the benefits of renewable energy. They also help promote ownership and involvement in renewable energy, which is important for communities.

Considering the economic potential of renewables

The renewable energy sector presents a significant economic opportunity for NSW, especially as part of our economic recovery from the impact of COVID-19. Most importantly, the sector has potential to create a significant number of jobs, mainly in regional and rural NSW. The nature of renewable energy generation means projects of all scales can be built wherever natural resources are available.

The *Electricity Infrastructure Investment Act 2020* specifies that, in REZs, projects must link with transmission infrastructure where possible, to make best use of the existing grid. The establishment of REZs will also encourage projects to be built in coal-dependent regions like the Hunter and the Illawarra.

These regions currently have a high proportion of workers employed in the mining and power generation industries. It's even more important to capitalise on the substantial potential of renewable energy projects in these areas to create jobs and stimulate economic diversification and growth. We understand that diversifying industry and employment will be key to the successful socio-economic transition of coal communities. We acknowledge that REZs will play an important role in this transition.

It will be important for the Government to prioritise the use of local suppliers and workforces in REZs. We consider that REZs should look at ways to stimulate local industry and manufacturing through procurement of local content, where viable. The Government should report to Parliament on the number of jobs created, and the development of NSW supply chains for the provision of renewable energy generation and transmission infrastructure.

The NSW Government's Electricity Infrastructure Roadmap is an important policy document for transition planning in NSW and we welcome the NSW Government's establishment of the Expert Panel for Royalties for Rejuvenation as a mechanism to protect jobs and industries and support communities.

We heard repeatedly that considering the immediate needs of affected workers is key to successful transition planning. This is because they'll need ongoing support –before, during, and after moving to new employment – to minimise the impacts of structural change on them and their communities. Several stakeholders pointed to examples, especially the Ruhr Valley, that indicate the importance of jobs guarantees. The Latrobe Valley Authority in Victoria, however, instead implemented several initiatives in response to the closure of Hazelwood power station and mine at short notice, with a focus on funding for training and worker transfers.

We're recommending that the NSW Government consider a jobs guarantee proposal and its utilisation in other jurisdictions. Along with other relevant Government agencies, this could be undertaken within the Expert Panel for Royalties for Rejuvenation's work to protect jobs and industries, support communities and identify future opportunities that can be built off the back of the mining legacy.

We note that several funding programs targeted at the economic diversification of mining communities were announced by the NSW Government during this inquiry. Community consultation on the allocation and use of this funding will be vital to the success of these programs.

Many stakeholders also told us about the potential for 'on-site' industries, particularly mine site rehabilitation as a way to stimulate regional economies and promote future employment opportunities. We're recommending that mine operators be required to rehabilitate and reuse infrastructure on mines and power generation sites. Rehabilitation work can create employment opportunities for mining and power generation workforces on the same site as their existing jobs. It also addresses the environmental impacts of mining. We note the NSW Government's work in this area, and we think that mandating mine void rehabilitation will be important to provide regional economic stability.

We are also recommending that the NSW Government undertake work to remove barriers that prevent the development of a container terminal by the Port of Newcastle. We heard evidence that the Port needs to diversify its trade base, but there are policy barriers that prevent this. We understand that the Port is an important part of infrastructure in the Hunter region and evidence has been provided that it needs to be able to diversify in alignment with changes in the regional and state economy, and global trends in coal export and demand.

Upgrading NSW's existing transmission infrastructure

Grid infrastructure in NSW was designed for centralised large-scale energy generation using fossil fuels. The nature and design of renewable energy generation differs significantly. Unless the existing infrastructure is upgraded, renewable energy projects won't be able to connect to the grid. This is especially important for the areas designated as REZs.

We heard concerns that upgrades will increase the cost of electricity and potentially cause issues with supply and demand that will be borne by NSW consumers. The NSW Government should closely monitor the implementation of upgrades and infrastructure projects under its Electricity Infrastructure Roadmap and the *Electricity Infrastructure Investment Act 2020*. While we acknowledge that work on NSW's grid infrastructure is important, it must not result in long-term or substantial price rises, or impact on the reliability of the electricity network.

Stakeholders told us about the importance of stand-alone power systems (SAPS), especially for regional and rural communities. These areas are at risk of being cut off from the grid in the event of damage to, or the ageing of, their connection infrastructure. We heard that during the 2019-20 bushfires many communities were left depending on SAPS as the only reliable source of power.

Because they reduce reliance on the primary network and don't need long tracts of infrastructure (poles and wires) to access connections, SAPS and electricity microgrids could lower overall network costs for NSW consumers. We understand the importance of these systems for future energy supply and we're recommending the work being done to improve the regulatory framework governing SAPS in NSW be continued.

Involving the whole community

We understand the importance of involving communities in renewable energy projects. We heard that communities are more likely to accept new projects if developers effectively consult and engage with the local community. Further, there must be practical evidence and examples of the economic opportunities the renewable energy sector can deliver for regions most affected by the change in the energy mix.

Small-scale renewables, such as rooftop solar panels, can significantly reduce energy costs for consumers. Because of this, we think it's important to ensure more of our community can access renewables. Lower income households or those that are locked out of accessing renewable energy (like renters) are at risk of shouldering the costs of network upgrades while being unable to access the benefits they will provide. We're recommending that the NSW Government looks at extending eligibility programs for solar energy and battery storage especially for lower or moderate income households. The energy transition will impact all NSW residents, and it's important that everyone benefits from it and that regional communities most impacted obtain the level of support, resources, and economic opportunities they deserve.

Findings and recommendations

Finding 1	1
Coal mining plays a significant role in the NSW economy, but this is changing due to trends in consumer demand, renewable energy technology advancements, price competitiveness of more sustainable energy sources, financial market investments, and domestic and international government policy directives to reduce carbon emissions.	
Finding 2	7
Fossil fuel power generation has scientifically been proven to produce adverse environmental outcomes.	
Finding 3	10
As renewable energy technology continues to advance and becomes more price competitive for consumers this is expected to impact the demand for fossil fuel energy sources in the long run, both domestically and internationally.	
Recommendation 1	10
That the NSW Government monitors changes in the coal export market to plan for the impact of a decline in coal exports and especially its impact on affected regional communities.	
Finding 4	13
Renewable Energy Zones will provide NSW with secure and sustainable energy supply.	
Finding 5	16
Forest biomass is not a renewable, sustainable source of energy.	
Recommendation 2	16
That the NSW Government amends the definition of <i>native forest biomaterial</i> under the Protection of the Environment Operations (General) Regulation 2009 to prevent the burning of wood from native forests to generate energy.	
Recommendation 3	16
That the NSW Government works with other jurisdictions to exclude native forest biomass from being classed as renewable energy and ensure it is not eligible for renewable energy credits.	
Finding 6	18
We note that the Independent Review into the Future Security of the National Electricity Market stated that flexible, gas-fired generation will have a role in supporting renewable energy technology in the short to medium term.	
Recommendation 4	19
That the NSW Government prioritises sustainable sources such as battery technology, and other emerging technologies, to firm intermittent energy sources.	

Finding 7	21
There is potential for NSW to export renewable energy, such as green hydrogen, due to the state's significant renewable energy resources.	
Finding 8	23
Energy efficiency reforms are a key part of reducing energy demand and generation.	
Recommendation 5	23
That the NSW Government progresses energy efficiency reforms by finalising and implementing the <i>Draft plan to save NSW energy and money</i> .	
Recommendation 6	23
That the NSW Government supports higher energy efficiency standards for new homes in the 2022 National Construction Code, through the Australian Building Codes Board.	
Finding 9	27
The renewable energy and energy management sectors have the potential to provide a substantial number of jobs for workers that are impacted by the energy transition.	
Finding 10	32
We welcome the NSW Government's establishment of the Expert Panel for Royalties for Rejuvenation as a mechanism to protect jobs and industries and support communities.	
Recommendation 7	32
That the NSW Government be required to:	
a. Prioritise the use of local content in renewable energy generation, transmission and firming projects in NSW Renewable Energy Zones when conducting the competitive tender process for Long-term Energy Service Agreements.	
b. Publish the recommendations of the NSW Renewable Energy Sector Board prepared under s7(4) of the <i>Electricity Infrastructure Investment Act 2020</i> .	
c. Report at least annually to the NSW Parliament on the number of jobs created and the development of NSW supply chains for the provision of renewable energy generation and transmission infrastructure.	
d. Publish and report to the NSW Parliament at least annually on the work of the Electricity Infrastructure Jobs Advocate appointed under the <i>Electricity Infrastructure Investment Act 2020</i> .	
Recommendation 8	32
That the NSW Government consider a jobs guarantee proposal and its utilisation in other jurisdictions. Along with other relevant Government agencies, this could be undertaken within the Expert Panel for Royalties for Rejuvenation's work to protect jobs and industries, support communities and identify future opportunities that can be built off the back of the mining legacy.	
Recommendation 9	34

That the NSW Government requires mine operators, or site operators/owners, to rehabilitate and reuse existing infrastructure on mines and power generation sites to allow for the reuse of facilities worth billions, which could assist with making sites more attractive for new commercial and industrial activities and their associated employment.

Recommendation 10 _____ 36

That the NSW Government undertake work to remove barriers that prevent the development of a container terminal by the Port of Newcastle.

Recommendation 11 _____ 37

That the NSW Government conducts a skills audit to assess areas of future workforce growth, and plan to retrain or reskill workers impacted by the energy transition.

Recommendation 12 _____ 39

That the NSW Government invests in education and training programs to meet the needs of the renewables sector, and retrain workers impacted by the energy transition.

Recommendation 13 _____ 43

That the NSW Government funds long-term plans to diversify the economies of communities that will be impacted by the energy transition. The plans should be led by local communities and tailored to the needs of each community.

Finding 11 _____ 48

Consultation with local government, community groups, local business chambers and unions is essential in determining how funds for economic diversification will be allocated.

Recommendation 14 _____ 49

That the NSW Government appoints a coordinator to manage the development of energy transition plans for communities that will be impacted by the transition.

Finding 12 _____ 52

Local government organisations are playing a key role in the energy transition.

Recommendation 15 _____ 52

That the NSW Government works with the City of Sydney to develop a plan to support other local councils to move towards 100% renewable energy.

Recommendation 16 _____ 54

That the NSW Government provides funding for the Hunter Joint Organisation's proposed 2050 foundation.

Recommendation 17 _____ 55

That the NSW Government amends the *Local Government Act 1993* to allow local councils to establish Special Charge Schemes, for example, to increase residents' access to solar power.

Recommendation 18 _____ 56

That the NSW Government ensures that content about government business programs on agency websites includes information on co-operatives.

Finding 13 _____ 59

Transmission infrastructure upgrades are a key part of the energy transition.

Recommendation 19 _____ 61

That the NSW Government monitors the implementation of the framework for transmission infrastructure projects under the *Electricity Infrastructure Investment Act 2020* and Electricity Infrastructure Roadmap, and considers the need for further reform.

Finding 14 _____ 66

Stand-alone power systems and microgrids could lower network costs and provide reliable power for regional communities.

Recommendation 20 _____ 66

That the NSW Government continues to implement changes to the state's regulatory framework to encourage stand-alone power systems.

Recommendation 21 _____ 68

That the NSW Government considers extending eligibility for programs for low income households to access solar energy and batteries.

Finding 15 _____ 70

Community consultation is a key part of planning for renewable infrastructure projects.

Chapter One – Contribution of coal to NSW

Coal mining plays an important role in communities like the Hunter

Coal mining should be recognised and valued

Summary

There are several regional communities in NSW that are built on coal mining. It's an integral part of their economy, history, culture, and identity. Coal is an important section of NSW's export and royalty revenue.

Finding 1

Coal mining plays a significant role in the NSW economy, but this is changing due to trends in consumer demand, renewable energy technology advancements, price competitiveness of more sustainable energy sources, financial market investments, and domestic and international government policy directives to reduce carbon emissions.

- 1.1 Coal mining has made a significant contribution to the NSW economy, and Australia more broadly. It has had a particularly important role in communities with long histories of coal mining, like those in the Hunter Valley and Illawarra regions.
- 1.2 Coal mining began in Australia in Newcastle in 1801, and in the past two hundred years it has become 'embedded in the fabric of the communities of the Hunter'. Samaritans told us that these are generational coal mining communities, where mining 'has played a central role in the economic, cultural, social, and physical development ... over many generations'.¹
- 1.3 Lock the Gate said that it's important to recognise the 'social, cultural and economic embeddedness of coal mining' in generational coal mining communities in the Blue Mountains, Illawarra and Hunter regions.²
- 1.4 We heard that coal has helped shape the identity of mining regions, providing a sense of place and social and cultural institutions. The shared history and experience of the Hunter Valley's mining community had some social connections to the mining culture in Britain, where some early miners came from.³
- 1.5 It's also important to note the key role coal miners have played in the Australian Labor Party and the trade union movement.⁴ Mining unions were among the first trade unions formed in Australia in the early nineteenth century. In NSW, the Hunter River District Coalminers', Lithgow Miners', and Illawarra Miners' Mutual Protective Associations, and the Barrier Miners' Association were all established

¹ Submission 150, Samaritans, p 5

² Submission 133, Lock the Gate, p 20

³ Submission 133, Lock the Gate, p 20; Submission 82, Ms Sinead Francis-Coan, p 8

⁴ Submission 83, Bathurst Community Climate Action Network, p 3

by 1885. These unions were important in the development of Australian trade unionism. This in turn led unions in NSW and Queensland to establish the Labor Party in the 1890s to give their members a political voice.⁵

- 1.6 We believe that the role of coal mining must be acknowledged and should be the basis of planning to diversify economies. Lock the Gate said that diversification should be 'continuous with the proud mining history of these regions, building on their knowledge, traditions and identities, as has occurred in Germany's Ruhr Valley.'⁶
- 1.7 Inquiry participants said that the heritage and contribution of coal mining communities and associated industries should be honoured when regions move away from coal mining. Other countries have done this by establishing museums and heritage sites on mining sites. Samaritans pointed to the South Wales Miners' Museum of the coal mining industry and its workforce, and world heritage sites in France and Germany. The German site preserves a complete historical coal-mining site, including infrastructure, while the French site includes mining pits and infrastructure, railway stations, workers' estates, mining villages and community facilities.⁷

Coal mining contributes to our economy and local communities

- 1.8 Coal mining plays a significant role in the NSW economy, providing over 22,000 direct jobs and around 89,000 indirect jobs. Most coal mined in NSW is thermal coal used for power generation and to make cement. It's exported to Japan, China, Taiwan and South Korea. Metallurgical coal, used to make steel, makes up around 15 per cent of coal mined in NSW.⁸
- 1.9 Inquiry participants told us that coal is the state's largest export earner in value terms, worth about \$17 billion in 2017-18. Royalties from coal mining contributed around \$1.8 billion to the state budget in 2017-18.⁹
- 1.10 Some inquiry participants argued that coal is a minor contributor to most aspects of our economy. The Australia Institute said that, although coal exports make up 19 per cent of NSW export value, the whole mining industry represents just 3 per cent of our gross state product (GSP). GSP represents the value added to the economy by all industries in NSW. They also noted that only half of one percent of people employed in NSW work in coal mining. However, the Institute noted that the coal export industry has 'significant impacts on regional development',

⁵ Australian National University, Archives Library, [Coal and Shale Miners – Forgotten Trades: selected records of early Australian trades](#), accessed 29 March 2021; S Cosic, [Trade Union Movement in Australia in Museums Victoria Collections](#), Museums Victoria, 2014, accessed 29 March 2021; Parliament@Work, [Australian Labor Party \(ALP\)](#), Australian Government Department of Education, Employment and Workplace Relations, accessed 29 March 2021

⁶ Submission 133, Lock the Gate, p 20

⁷ Submission 150, Samaritans, pp 7-8; Mr Brad Webb, CEO, Samaritans, [Transcript of evidence](#), 26 August 2020, p 21. See also UNESCO, [Nord-Pas de Calais Mining Basin](#), and [Zollverein Coal Mine Industrial Complex in Essen](#), viewed 19 January 2021

⁸ NSW Government, [Strategic statement on coal exploration and mining in NSW](#), p 4, viewed 18 January 2021; Submission 244, NSW Government, p 9; Submission 138, Australasian Institute of Mining and Metallurgy, pp 1-2, 19

⁹ Submission 138, Australasian Institute of Mining and Metallurgy, p19; Submission 141, CFMEU Mining and Energy, p 1

especially in the Hunter Valley.¹⁰

- 1.11 The Hunter Business Chamber said that the resources and energy sectors 'make a significant contribution to the Hunter region economy through employment, direct and indirect economic benefits, payments to local councils and philanthropic contributions to community organisations.' The Chamber cited NSW Minerals Council research finding that mining companies inject about \$4 billion in direct expenditure into the regional economy, and around \$9 billion in total economic benefit.¹¹
- 1.12 The Hunter's 21 coal mining operations make up around 11 per cent of globally traded thermal coal, and are a significant part of the Hunter's economy. Over \$19 billion in coal is exported through the Port of Newcastle, the largest coal export port in the world. In the Hunter Valley, the coal sector provides direct employment for up to 11,000 people, and up to 40,000 indirect jobs.¹²
- 1.13 The Construction, Forestry, Maritime, Mining and Energy Union (CFMEU) observed that coal mining jobs 'have significant multipliers – both through the spending of those good wages in regional areas, and through the activities of suppliers to the mines and power stations'. Lock the Gate estimated that up to 40 per cent of people in the Hunter Valley rely on the mining industry for their livelihoods.¹³
- 1.14 We heard that thousands of local businesses rely on income from supplying goods and services to the mining industry and its workers. In 2019 Glencore spent over \$2.5 billion on procuring goods and services in NSW, much of which was from small and medium sized businesses close to its operations.¹⁴
- 1.15 Coal mining has also played an important role in Lithgow, Gunnedah, and the Illawarra. We heard that in Lithgow, mining accounted for 11 per cent of employment in 2016, down from 15 per cent in 2011. In Wollongong, around 1,200 people are employed in mining.¹⁵
- 1.16 Coal power generation is also an important industry in the Hunter region. Around 80 per cent of the state's power is from coal fired-power stations. The Hunter has four thermal coal-fired power stations, which produce over 60 per cent of our power, employ around 2,200 people, and contribute up to 14,000 indirect jobs.¹⁶
- 1.17 AGL's Bayswater and Liddell power stations in the Upper Hunter Valley employ around 600 people. The power stations have been a major source of direct and indirect employment over the last 40 years, and contribute over \$1.35 billion to

¹⁰ Submission, 147, Australia Institute, pp 12-13

¹¹ Submission 228, Hunter Business Chamber, p 6

¹² Submission 243, Hunter Joint Organisation, p 2

¹³ Submission 141, CFMEU Mining and Energy, p 2; Submission 133, Lock the Gate, p 7

¹⁴ Submission 239, Hunter Renewal Project, p 1; Submission 254, Glencore, p 4; Submission 147, Australia Institute, pp 13-14

¹⁵ Submission 133, Lock the Gate, p 7

¹⁶ NSW Government, [Strategic statement on coal exploration and mining in NSW](#), p 4, viewed 18 January 2021; Submission 141, CFMEU Mining and Energy, p 2; Submission 138, Australasian Institute of Mining and Metallurgy, p 19; Submission 243, Hunter Joint Organisation, p 2

the regional economy each year.¹⁷

- 1.18 We heard that coal mining and energy workers have good pay and conditions. Workers in the coal mining industry are typically paid between \$100,000 and \$150,000 per year. The CFMEU said that wages are higher than in other industries to attract and retain workers in an 'intensive shift-work context'.¹⁸
- 1.19 Over 8,000 people work in the coal power sector nationally, including contractors working in power stations and coal mines that supply power stations (rather than export coal). Wages are usually well over \$100,000, ranging to \$200,000 a year.¹⁹
- 1.20 The Australian Manufacturing Workers' Union (AMWU) said that most coal and power generation workers have 'secure, well-paid, and highly-skilled jobs, where good pay and conditions have been fought for and won over generations'. These workers are protective of their hard-won pay and conditions.²⁰
- 1.21 We acknowledge concerns that jobs in the renewable energy sector won't have equal pay and conditions to jobs in the fossil fuels sector, and they won't be decent work.²¹ 'Decent' work as defined by the United Nations Framework Convention on Climate Change includes adequate incomes and protections, safe working conditions, and respect for rights at work.²² Although many jobs in coal mining and power generation are described as 'lower-skilled', we recognise that they are decent work and represent generations of campaigning by employees and unions to secure good pay and working conditions.²³
- 1.22 We heard that coal mining and energy companies contribute to community organisations. Samaritans cited Minerals Council data from 2017-18, finding that the NSW mining sector made \$7.3 million in community contributions. In the Hunter, about \$3.5 million was contributed to 375 community organisations covering health, sport, and social services.²⁴
- 1.23 Glencore has invested nearly \$100 million over the past 14 years in community partnerships in NSW and Queensland. This includes \$650,000 to the Aussie Ark conservation project in the NSW Upper Hunter, \$1 million to the John Hunter Hospital's Neonatal Intensive Care Unit and over \$1 million to the Galuwa

¹⁷ Ms Elizabeth Molyneux, General Manager, Policy and Markets Regulation, AGL Energy, [Transcript of evidence](#), 29 September 2020, p 22

¹⁸ Submission 141, CFMEU Mining and Energy, p 2

¹⁹ Submission 141, CFMEU Mining and Energy, p 2

²⁰ Submission, 145, Australian Manufacturing Workers' Unions NSW Branch, p 5; Ms Chloe Smith, Special Projects Officer, Australian Manufacturing Workers' Union, [Transcript of evidence](#), 26 August 2020, p 5

²¹ Submission 145, Australian Manufacturing Workers' Union NSW Branch, p 2; Submission 245, Maritime Union of Australia, p 8; Submission 141, CFMEU Mining and Energy, p 5; P Sheldon, R Junankar & A De Rosa Pontello, [The Ruhr or Appalachia? Deciding the future of Australia's coal power workers and communities](#), 2018, p 19

²² United Nations Framework Convention on Climate Change, [Just transition of the workforce, and the creation of decent work and quality jobs](#), 2016, p 14; [The Ruhr or Appalachia?](#), 2018, p 2

²³ Submission 145, Australian Manufacturing Workers' Union NSW Branch, p 5; Submission 133, Lock the Gate Alliance, p 26; Ms Smith, [Transcript of evidence](#), 26 August 2020, p 5; Dr Amanda Cahill, Chief Executive Officer, Next Economy, [Transcript of evidence](#), 26 August 2020, p 13; [The Ruhr or Appalachia?](#), 2018, pp 19-20

²⁴ Mr Webb, [Transcript of evidence](#), 26 August 2020, pp 19-20; Submission 150, Samaritans, pp 6-7

Aboriginal Scholarship Program.²⁵

- 1.24 Operators of power stations also contribute to local communities. Delta Electricity provides sponsorships and donations, and invests in community activities, services, and facilities, often in partnership with local councils. Origin Energy, the operator of the Eraring coal-fired power station, supports around 20 local organisations and activities each year. The Origin Foundation has distributed \$25 million to the community over the past 10 years.²⁶

Case study 1: Contribution of coal mining

I have been part of the coal industry for over 20 years, my father was part of it before me, my grandfather before him and now my sons are part of it.

The industry has provided income and revenue for my family, the local community, NSW and Australia.

I have and a lot of other families have relocated to mine communities like Muswellbrook where if it wasn't for mining there probably wouldn't be a Muswellbrook.

Should the industry shut down there will be a huge amount of unemployment to deal with as there is a large flow on effect in associated business that could not be sustained.²⁷

My husband and son both had careers in the NSW Coal industry. In regional NSW it offers great employment and economic opportunities. There are around 40,000 miners & their families who rely heavily on mining for their livelihood Our economy relies on high quality NSW coal to meet our energy needs. There are 7,100 local businesses that supply the mining industry in NSW.²⁸

Over-reliance on coal mining creates a lack of economic diversity

Summary

Communities that rely on coal mining are have less economic diversity, which impacts their workforces. They're at a much higher risk of negative impacts when there's market change.

- 1.25 We recognise the contribution of coal mining to our economy and local communities. However, it's important to acknowledge that the cost of relying heavily on coal is a lack of diversity in local economies and workforce skills.
- 1.26 Dependence on coal mining in Muswellbrook and Singleton is 'severe', with mining making up 58 per cent of economic output and employing around 40 per cent of people. The dominance of coal mining makes these towns vulnerable and

²⁵ Submission 254, Glencore, p 18

²⁶ Submission 174, Delta Electricity, p 16; Submission 247, Origin Energy, p 3

²⁷ Submission 55, Mr Troy Greedy, p 1

²⁸ Submission 64, Ms Vicki Riddy, p 1

less able to adapt to change than other areas of the Hunter.²⁹

- 1.27 Lock the Gate told us that a lack of economic diversity in Muswellbrook and Singleton limits opportunities for workers to find other employment. Lower coal prices from 2008 to 2014 meant employment in coal mining fell by 25 per cent. This had 'flow on effects across the economy of the Upper Hunter'.³⁰
- 1.28 Singleton Council said that the local economy's reliance on coal mining makes it 'highly susceptible to resource market trends.' The council argued that a wider mix of industries would make Singleton's economy more resilient, create investment opportunities, and increase skills and employment.³¹
- 1.29 EnergyAustralia noted that 'coal generation is concentrated in a handful of regions with lower diversity of income than is typical in our major cities'. EnergyAustralia operates in Lithgow, where the unemployment rate is 9 per cent and youth unemployment close to 14 per cent – among the highest in NSW. Coal mining and electricity generation make up around 50 per cent of Lithgow's gross regional product and 20 per cent of employment. We heard that 'changes to these industries will have a profound impact on this local community'.³²
- 1.30 Inquiry participants argued that coal mining has had a negative social impact in some towns in the Hunter. Lock the Gate observed that Muswellbrook has lower levels of education attainment than NSW, and higher unemployment. It also ranks poorly compared to other local government areas in break-and-enter, drug offences, domestic violence, and property damage.³³
- 1.31 We heard that 60 per cent of mine workers come from outside these areas. Hunter Renewal said that poor community facilities and infrastructure mean people choose not to live in Singleton and Muswellbrook, preferring to 'drive in & drive out'. This has a negative impact on the regional economy.³⁴
- 1.32 The Minerals Council argued that mining helps provide economic diversification and stimulus during difficult times for the agriculture sector, such as the drought. The Council argued that economic diversification should be supported by developing metalliferous mines and moving domestic coal suppliers to export markets if domestic demand falls.³⁵
- 1.33 The NSW Government's *Strategic Statement on Coal Exploration and Mining* acknowledges the need to diversify coal-reliant regional economies 'to assist with the phase-out of thermal coal mining'. The statement includes support to diversify regional economies as one of four areas of government action.³⁶
- 1.34 We heard that the role of coal will diminish due to changing energy supply needs,

²⁹ Submission 133, Lock the Gate, pp 7-8

³⁰ Submission 133, Lock the Gate, p 20

³¹ Submission 172, Singleton Council, p 1

³² Submission 136, EnergyAustralia, pp 14-15

³³ Submission 133, Lock the Gate, p 21

³⁴ Submission 239, Hunter Renewal Project, p 3

³⁵ Submission 229, NSW Minerals Council, pp 16, 19

³⁶ NSW Government, [Strategic statement on coal exploration and mining in NSW](#), p 8, viewed 18 January 2021

and the depletion of coal reserves in NSW. We discuss this in chapter 2.

Coal mining has negative health and environmental impacts

Summary

Coal mining and burning coal for power is detrimental to human and environmental health and generates significant carbon emissions.

Finding 2

Fossil fuel power generation has scientifically been proven to produce adverse environmental outcomes.

- 1.35 Coal mining and coal fired power stations have significant health impacts on the people of NSW. The combustion of coal for power generation creates coal dust. The dust contains fine particles made up of air pollutants that cause lung cancer, heart attack, stroke, and a range of respiratory diseases. This not only impacts local communities near coal mines and power stations, but people living in cities kilometres away.³⁷
- 1.36 Alarmingly, we were told that there will be 3,429 additional deaths in NSW between now and the closure of the last coal fired power station (in 2042), due to emissions from the stations.³⁸
- 1.37 The economic costs of health damage from coal are significant. The Public Health Association of Australia told us that the estimated cost of health damage associated with coal combustion for electricity in Australia is over \$2.6 billion annually.³⁹
- 1.38 Coal mines and coal power stations also negatively impact the local environment through air quality, waste, land degradation, decreased water quality, and coal ash waste. According to the NSW Environment Protection Authority, the main direct human-made source of particulate matter emissions in the Greater Sydney, Newcastle, and Wollongong region is from coal mining.⁴⁰
- 1.39 We heard that coal mining and power stations use large volumes of water and contribute to water insecurity across local communities in NSW. For example, the Maules Creek coal mine is experiencing difficulty in obtaining water for its operations and is buying groundwater licences at higher than average prices. This has coincided with periods of drought, when reliance on groundwater intensifies,

³⁷ Submission 132, Ms Robyn Bird, p 1; Submission 153, Correct Planning & Consultation for Mayfield Group, p 3; Submission 184, Beyond Zero Emissions, p 16; Submission 237, Nature Conservation Council of NSW, p 7; Submission 238, Doctors for the Environment Australia, p 12

³⁸ Submission 83, Bathurst Community Climate Action Network, p 2

³⁹ Submission 140, Public Health Association of Australia, p 8

⁴⁰ Submission 106, Ms Denise Fitzgerald, p 2; Submission 7, Northern Lakes Disability Tourism Precinct, p 2; Submission 29, Mr Malcolm Donaldson, p 1; NSW Environment Protection Authority and Office for Environment and Heritage, [Consultation Paper: Clean Air for NSW](#), October 2016, p 20

and caused concern for other industries that compete with mining for natural resources.⁴¹

- 1.40 Coal power stations are the single biggest source of carbon pollution in NSW. They create 39 per cent of the state's annual total emissions, about 50 million tonnes of carbon dioxide a year.⁴²
- 1.41 We heard from many inquiry participants across NSW who were concerned about the local environmental impacts of coal mining and power stations.⁴³ Stakeholders told us about the destruction of natural landscapes for open-cut coal mining, draining of water tables, and pollution of local waterways.
- 1.42 We heard that coal ash is a significant contaminated waste issue in NSW, particularly affecting Lake Macquarie and surrounding communities. The Hunter Community Environment Centre said that coal ash 'contains numerous toxic trace elements including heavy metals, which cause a range of human health and ecological impacts when over-exposure occurs'.⁴⁴
- 1.43 Accumulating heavy metals and the coal-ash waste stored on the shores of Lake Macquarie – amounting to over 60 million tonnes – are affecting ecology and recreational use of the lake.⁴⁵
- 1.44 Not all mining impacts are direct. We heard that 'community impacts of mining build over time [and] impacts accrue and accumulate to leave a legacy of compounded and complex economic, social and environmental costs'.⁴⁶ These impacts affect other industries like agriculture, wineries, and the equine industry.
- 1.45 Lock the Gate told us that, although the government has policies for land acquisition and development for open cut mines, communities are bought out or forced to stay near air and noise polluted areas. As a result, 'extensive areas of farmland, rural properties and villages are being emptied of people and productivity'.⁴⁷
- 1.46 The Bathurst Community Climate Action Network expressed concern about the wider environmental impact of mining, stating that the coal industry 'is placing the health of the entire planet at risk and renewables represent cheaper, cleaner alternatives'.⁴⁸

⁴¹ Submission 115, City of Sydney, p 4; Submission 133, Lock the Gate, p 16; Submission 239, Hunter Renewal Project, p 3; Submission 124, Hunter Environment Lobby, p 4.

⁴² Mr Chris Gambian, Chief Executive Officer, Nature Conservation Council, [Transcript of evidence](#), 25 August 2020, p 12.

⁴³ Submission 104, Blue Mountains Conservation Society, p 2; Submission 139, NSW Council of Social Service, p 2; Submission 199, Mudgee District Environment Group, p 2; Submission 223, Mauls Creek Community Council, p 2; Submission 218, Jonathan Paul Marshall, p 2

⁴⁴ Submission 156, Hunter Community Environment Centre, p 3

⁴⁵ Submission 156, Hunter Community Environment Centre, p 3; Submission 194, Newcastle Greens, p 9

⁴⁶ Mayor of Cessnock, Bob Pysant, quoted in Submission 133, Lock the Gate Alliance, p 17

⁴⁷ Submission 133, Lock the Gate Alliance, p 17; Submission 147, Australia Institute, p 13

⁴⁸ Submission 83, Bathurst Community Climate Action Network, p 3

- 1.47 However, we heard from other inquiry participants that the industry attempts to reduce its impact on the environment and its dust and noise emissions, and undertakes mine rehabilitation work. Glencore, NSW's largest coal producer, acknowledged the impacts that mining has, and stated that it places a significant focus on mitigating them as much as possible.⁴⁹
- 1.48 Delta Electricity said that dust and noise levels are monitored and kept below standards set under strict regulations. This also applies to coal power plants, which operate under 'strict environmental licence conditions that protect public health and local ecosystems'.⁵⁰
- 1.49 We heard that mining companies are committed to mine rehabilitation. Companies work with government authorities to decide the post-mining use of mining land, and develop a plan for rehabilitating the land. These plans have objectives that are agreed to by the community and government. Final uses for mine voids have included creating recreational lakes, wildlife conservation, irrigation, water storage, aquaculture, and hydro-electric power generation.⁵¹
- 1.50 The Minerals Council argued that the impact of the coal industry is relatively low. They noted that the mining industry uses 6.3 gigalitres of water from the Hunter River, compared to the 111.7 gigalitres used for other industries and town water supply. Further, mining uses about 0.1 per cent of all state land, compared to 77 per cent used by agriculture, and 5 per cent for biodiversity conservation.⁵²
- 1.51 We share inquiry participants' concern about the negative impacts of coal mining and coal fired power stations. The Hunter Renewal Project's consultation with coal miners highlights the impact of over-reliance on coal for both our environment and the health of local communities:

When we speak to young coal miners about the future of the industry, they tell us that they know that the good times won't last, so they're making hay while the sun shines, and then they plan to leave. When we speak to older or retired miners, they tell us that they made good money, but their health has suffered, and they'd like to move elsewhere for retirement where the landscape is not a moonscape. They do not expect the future of the Upper Hunter to be one of prosperity and healthy communities.⁵³

⁴⁹ Submission 254, Glencore, p 15

⁵⁰ Submission 174, Delta Electricity, pp 16-17

⁵¹ Submission 138, Australasian Institute of Mining and Metallurgy, p 23; Submission 254, Glencore, p 15

⁵² Submission 229, NSW Minerals Council, pp 8-9

⁵³ Submission 239, Hunter Renewal Project, p 2

Chapter Two – Forecasting for energy for domestic use and export

Demand for coal power will decline

Summary

Demand for coal is declining in Australia and internationally. There's more countries committing to zero-emissions targets and global demand for coal is changing.

Finding 3

As renewable energy technology continues to advance and becomes more price competitive for consumers this is expected to impact the demand for fossil fuel energy sources in the long run, both domestically and internationally.

Recommendation 1

That the NSW Government monitors changes in the coal export market to plan for the impact of a decline in coal exports and especially its impact on affected regional communities.

- 2.1 During the inquiry we heard that demand for coal for domestic use is declining, and global demand for thermal coal is also predicted to drop. We recommend that the NSW Government monitors changes in the coal export market to plan for the impact of a decline in coal exports.
- 2.2 Domestic demand for coal is declining due to a number of factors, including the scheduled shutdowns of coal fired power stations, the lower cost of renewable energy, better firming technology, and zero emissions targets.⁵⁴
- 2.3 Four of NSW's five coal fired power stations are expected to close in the next 14 years.⁵⁵ The closure of these stations accelerates the 'historic transition' in the NSW energy sector. Mr Cameron O'Reilly, Department of Planning, Industry and Environment told us that 'over the next 20 years or so 10,200 megawatts of coal generation is scheduled to retire in NSW.'⁵⁶
- 2.4 Several inquiry participants observed that the lower cost of renewable energy will contribute to the decline of domestic demand for coal. Origin Australia said

⁵⁴ Submission 6, Mr Adrien Ingleby, p 2; Submission 88, ITK Services, p 1; Submission 122, Institute for Energy Economics and Financial Analysis, p 1; Submission 133, Lock the Gate Alliance, pp 1-2; Giles Parkinson, [Bad news for coal-huggers: Renewables at 50% by 2030](#), 17 July 2018, viewed 12 January 2021

⁵⁵ The scheduled shutdowns for the power stations are Liddell in 2023, Vales Point in 2029, Eraring in 2032, and Bayswater in 2035.

⁵⁶ Mr Cameron O'Reilly, Executive Director, Energy Reform & Investment Energy, Climate Change and Sustainability, Department of Planning, Industry and Environment, [Transcript of evidence](#), 24 August 2020, p 1

that 'renewables are now clearly the lowest cost form of new build generation.'⁵⁷

- 2.5 We acknowledge that some stakeholders disputed the lower cost of renewables and were concerned about their volatility. We heard that a key challenge with renewable energy is firming its supply from other sources, in the event of intermittency issues.⁵⁸ Firming means guaranteeing supply from other energy sources in the event of poor sun or wind generation.
- 2.6 Despite this, there was confidence that improvements in firming technologies will address challenges with firming renewables. Energy Estate, a renewable energy developer, told us that advances in energy storage and firming technologies 'will increasingly render the need for older firming technologies obsolete.'⁵⁹
- 2.7 Another factor in the decline of coal power is growing support for zero emissions targets, both in Australia and internationally. Under the Paris Agreement, countries, including Australia, committed to keeping global average warming to below 2 degrees. This requires net zero emissions by 2050. The NSW Government aims to reach this target; several local governments have also declared their own net zero targets. The Government's Strategic Statement on Coal acknowledges the international trend of reducing emissions.⁶⁰
- 2.8 Many stakeholders told us about the growing public demand to support zero emissions targets through using renewable technologies for their electricity needs. Fifteen per cent of households in NSW have rooftop solar, compared to two per cent a decade ago. This increase represents more people in NSW meeting some or all of their power needs from their own rooftop solar photovoltaic systems.⁶¹
- 2.9 We were also told that industries that are traditionally reliant on coal are moving to decarbonise. These industries include the aviation, maritime, transport, and agriculture sectors.⁶²
- 2.10 Financial institutions like superannuation funds and insurance companies are also moving away from coal, and towards 'cleaner' or renewable investments. We heard that there is increasing liability from climate risk, including pressure from shareholders who are concerned about climate change.⁶³
- 2.11 Most coal mined in NSW is for export. We heard conflicting evidence on the long term prospects for coal exports, with some inquiry participants arguing that

⁵⁷ Submission 122, Institute for Energy Economics and Financial Analysis, pp 1, 9; Submission 152, Public Interest Advocacy Centre, p 10; Submission 184, Beyond Zero Emissions, p 10; Submission 194, Newcastle Greens, p 3; Submission 215, Mr Geoff Miell, p 6; Submission 240, Energy Estate, p 5; Submission 247, Origin Australia, p 2

⁵⁸ Submission 174, Delta Electricity, p 2; Submission 229, NSW Minerals Council, p 5

⁵⁹ Submission 240, Energy Estate, pp 7-8

⁶⁰ NSW Government, [Statement on Coal](#), 2020, p 3

⁶¹ Submission 194, Newcastle Greens, p 3; Submission 244, NSW Government, p 12; Submission 251, Ryde Gladesville Climate Change Action Group, p 2; Submission 253, Clean Energy Council, p 1

⁶² Submission 127, Bioenergy Australia, p 5; Submission 174, Delta Electricity, p 8

⁶³ Submission 6, Mr Adrian Ingleby, p 11; Submission 115, City of Sydney, p 3; Submission 122, Institute for Energy Economics and Financial Analysis, p 2; Submission 184, Beyond Zero Emissions, pp 9, 14; Submission 194, Newcastle Greens, p 8; Submission 240, Energy Estate, p 8

demand for coal will decline, and others predicting that demand will be stable.⁶⁴

- 2.12 The Australia Institute told us that a moratorium on new coal mines would be prudent policy until the future of the coal market is clearer. The Institute argued that a moratorium would put upward pressure on international coal prices, and discourage investments in coal-fired power 'that would lock in emissions for decades'.⁶⁵ Other stakeholders argued that new mine and coal fired generation projects shouldn't be approved, due to concerns about fossil fuels, lack of economic diversification in their regions, and the lower prices of renewable energy.⁶⁶
- 2.13 The NSW Government told us that future long-term global demand for NSW coal will depend to a large extent on international policies. They added that according to Government forecasts, thermal coal demand is due to increase.⁶⁷
- 2.14 While we note these differing views, we consider that there is a need to prepare for the decline of thermal coal exports and monitor the long-term prospects for coal.
- 2.15 Many countries that are Australia's main export markets are moving to zero emissions targets and reducing their reliance on coal. The Institute for Energy Economics and Financial Analysis told us that Australia's four largest thermal coal export destinations – Japan, China, South Korea and Taiwan – comprised 90 per cent of 2018 exports. These nations are set to use less thermal coal, or to replace imports with domestic coal in the long term. Demand for coal in smaller electricity markets in south and southeast Asia won't increase enough to make up for the decline in these markets.⁶⁸
- 2.16 China's recent ban on imports of Australian coal illustrates the fragility of export markets, and the risk of overdependence on coal. China was NSW's second largest thermal coal destination in 2018, with shipments increasing to make up almost 20 per cent of coal exports. Mr Michael Lord, Beyond Zero Emissions, told us that it's a 'risky strategy' to assume that demand will continue from China and other countries that buy Australia's coal.⁶⁹
- 2.17 We note that mining companies have looked into other opportunities in mining

⁶⁴ Two thirds of Australia's thermal coal exports come from NSW, with Australia being the world's second largest exporter. Submission 194, Newcastle Greens, p 7; Submission 138, Australasian Institute of Mining and Metallurgy, p 4; Submission 174, Delta Electricity, p 14; Submission 228, Hunter Business Chamber, p 6; Submission 244, NSW Government, p 10; Submission 254, Glencore, p 2; Mr David Frith, Director Policy, NSW Minerals Council, [Transcript of evidence](#), 25 August 2020, p 20; Dr David Harris, Research Director, Energy Technologies, CSIRO Energy Centre Newcastle, [Transcript of evidence](#), 29 September 2020, p 3

⁶⁵ Submission 147, The Australia Institute, p 11; Mr Rod Campbell, Research Director, Australia Institute, [Transcript of evidence](#), 25 August 2020, p 25

⁶⁶ Submission 88, ITK Services, p 1; Submission 205, Mr Bruce McQueen, p 1; Submission 208, Goulburn River Stone Cottages, p 1; Submission 223, Maules Creek Community Council, p 3; Submission 251, Ryde Gladesville Climate Change Action Group, p 4

⁶⁷ Submission 244, NSW Government, p 10

⁶⁸ Submission 122, Institute for Energy Economics and Financial Analysis, p 1

⁶⁹ Mr Michael Lord, Head of Research, Beyond Zero Emissions, [Transcript of evidence](#), 24 August 2020, p 28; A Tillett, [China bans Australian coal as trade war worsens](#), AFR, 14 December 2020, viewed 12 January 2021; Submission 122, Institute for Energy Economics and Financial Analysis, p 17

minerals and metals, which play an essential role in building technology and infrastructure for renewable energy.⁷⁰ The NSW Minerals Strategy flags this as an alternative employment area. These opportunities are discussed in chapter 4.

- 2.18 We heard that Hunter coal reserves may be exhausted in the next 30 years as mines reach their end of life. Coal prices have dropped, and coal companies have reduced or stopped production and sold mines. The planned fourth coal terminal at Newcastle was cancelled in 2018.⁷¹
- 2.19 Mining communities in NSW are aware that coal power is declining. Hunter Renewal told us that 9 out of 10 people in Singleton and Muswellbrook agree that the region needs a plan to diversify and prepare for a future beyond coal.⁷²
- 2.20 We note that there are some Government programs to help mining communities diversify. Key support programs are the Upper Hunter Futures project and Resources for Regions. The Department of Planning, Industry and Environment told us that 'diversification is really important [and the Government] understands that those communities that have been heavily coal reliant are going to transition and there has been and is a lot of work that the Government is doing to help them through that.'⁷³
- 2.21 We acknowledge the government's work to assist coal communities with economic diversification, particularly in the Hunter region. However, we support calls for more government action, and support to diversify the region.

Renewable energy zones are key to our future energy supply

Summary

Renewable energy zones are 'modern power stations'. They could provide most of NSW's power supply in the future.

Finding 4

Renewable Energy Zones will provide NSW with secure and sustainable energy supply.

- 2.22 We heard from a significant number of stakeholders about the current and

⁷⁰ Submission 229, NSW Minerals Council, pp 4-5; Submission 254, Glencore, p 1

⁷¹ Submission 88, ITK Services, p 17; Submission 184, Beyond Zero Emissions, p 10; Submission 239, Hunter Renewal Project, p 2; N Perry & G Hewitson, *Weathering the storm: The case for transforming the Hunter Valley*, School of Business, Western Sydney University, 2019, p 4

⁷² Submission 29, Mr Malcolm Donaldson, p 1; Submission 124, Hunter Environment Lobby Inc, p 2; Submission 132, Ms Robyn Bird, p 2; Submission 141, CFMEU Mining and Energy, p 4; Submission 153, Correct Planning & Consultation for Mayfield Group, pp 4-6; Submission 160, Ms Sarah Robertson, p 1; Submission 161, Tree Frog Permaculture, p 1; Submission 179, Port of Newcastle, p 2; Submission 194, p 4-5; Submission 199, Mudgee District Environment Group p 1; Mr Peter Colley, National Research Director, Mining and Energy Division, Construction, Forestry, Maritime, Mining and Energy Union (CFMMEU), [Transcript of evidence](#), 26 August 2020, p 3; Submission 239, Hunter Renewal Project, p 5

⁷³ Mr Chris Hanger, Executive Director, Energy Reform & Investment Energy, Climate Change and Sustainability, DPIIE, [Transcript of evidence](#), 24 August 2020, p 8

potential benefits of renewable energy.⁷⁴ Renewable energy sources include wind, solar, hydrogen, and bioenergy.

- 2.23 Renewable energy is abundant in Australia, including NSW. It is predominantly used as an electricity source, and is a key factor in the changing electricity mix in NSW. The Clean Energy Council told us that 'from 2017 to 2019, the share of renewable energy [in the electricity mix] in NSW climbed from 11 per cent to 17 per cent.' The share of wind and solar in NSW electricity generation tripled from 2012-13 to 2017-18.⁷⁵
- 2.24 Many stakeholders, including businesses and local governments, told us about their projects to transition to renewable energy and investments.⁷⁶
- 2.25 The most popular sources of renewable energy are solar and wind. We also heard about other renewable sources, such as bioenergy. Bioenergy uses organic renewable materials (known as biomass) to produce heat, electricity, biogas, and liquid fuels. However, there has been some concern about some of these sources, for example, the location of waste-to-energy plants close to residential areas.⁷⁷
- 2.26 We acknowledge the work that the Government has done in investing and commissioning large-scale renewable energy projects.⁷⁸ In particular, we support the passing of the *Electricity Infrastructure Investment Act 2020* (the Act), which outlines the state's energy roadmap and recognises changes in energy supply.
- 2.27 The Act aims to encourage private sector investment in energy generation, and to meet loss of supply caused by power station closures. The Act provides for yearly energy security targets for the next 10 years.
- 2.28 A key feature of the Government's strategy in electricity infrastructure is the state's first five Renewable Energy Zones (REZs) in Central-West Orana, New England, the South-West, Hunter-Central Coast, and Illawarra regions.⁷⁹
- 2.29 REZs act as 'modern-day power stations.' We were told that these energy zones could provide most of the state's future energy supply. They combine renewable energy generation, storage, and high-voltage poles and wires in order to supply energy to homes, businesses, and industry. By connecting multiple generators and storage in the same location, REZs capitalise on economies of scale to

⁷⁴ Submission 152, Public Interest Advocacy Centre, pp 4-5; Submission 163, Solar Citizens, p 2; Submission 180, Geni Energy, p 1; Submission 194, Newcastle Greens, pp 3-5; Submission 215, Geoff Miell, p 6; Submission 223, Voices of the Valley, p 5; Submission 228, Hunter Business Chamber, p 3; Submission 235, Wodonga Albury Towards Climate Health (WATCH), p 1; Submission 237, Nature Conservation Council of NSW, p 1; Submission 238, Doctors for the Environment Australia Inc, p 4

⁷⁵ Submission 244, NSW Government, p 6; Submission 253, Clean Energy Council, p 2; Beyond Zero Emissions, [Renewable Energy Superpower](#), 2015, p vii in Submission 69, Dr Michael Schien; Submission 88, ITK Services, p 2

⁷⁶ Submission 228, Hunter Business Chamber, p 4; Submission 115, City of Sydney, p 1; Submission 224, Randwick Council p 1; Submission 137, Shoalhaven City Council p 2; Submission 194, Newcastle Greens, p 5

⁷⁷ Australian Renewable Energy Agency, [Bioenergy and energy from waste](#), viewed 13 January 2021; Ms Jennifer Purdie, Executive General Manager, Gas Distribution, Jemena, [Transcript of evidence](#), 24 August 2020, p 35

⁷⁸ Mr Reilly, [Transcript of evidence](#), 24 August 2020, pp 1-2

⁷⁹ Energy NSW, [Renewable Energy Zones](#), viewed 13 January 2021

provide cheap, reliable, and clean electricity.⁸⁰

- 2.30 Many inquiry participants supported REZs. Ms Anna Freeman, Clean Energy Council told us that, through REZs, the government is creating the framework for how the renewable energy sector will be shaped, as well as enabling investor confidence and investment in the REZ locations.⁸¹
- 2.31 We heard from various stakeholders about the benefits of REZs, which include lower-cost energy for residential users and industry, stimulating local regional economies and providing jobs, creating extra income for farmers/landholders, and providing certainty for energy investors.⁸²
- 2.32 The Public Interest Advocacy Centre highlighted that large scale projects can provide a long term foundation to revitalise regional communities through employment, investment, increasing skills and education, and diversifying regional economies.⁸³
- 2.33 We were pleased to hear of the positive long-term impact these zones will have in regional communities. However, we were concerned to hear about the barriers for renewable energy projects. Some barriers cited by inquiry participants were the timeframe and cost of project assessments, biodiversity offsets, onerous compliance conditions once a project is operational, and access to transmission and grid connection.⁸⁴
- 2.34 Stakeholders also raised the need for policy certainty and regulatory reform. Transgrid said that, while the regulatory system is 'struggling to keep up' with change in the energy sector, the Government's Electricity Strategy seeks to address some of these issues.⁸⁵
- 2.35 Another barrier is opposition from local communities. We discuss this issue in chapter 5.

Gas and forest biomass aren't sustainable, zero emissions energy sources

Summary

Native forest biomass isn't a renewable energy source. It reduces the ability of NSW forests to absorb atmospheric carbon, and produces carbon emissions.

⁸⁰ Energy NSW, [Renewable Energy Zones](#), viewed 13 January 2021; Submission 244, NSW Government, p 21

⁸¹ Submission 92, Professor Andrew Blakers, p 1; Submission 158, Transgrid, p 2; Mr Seán McGoldrick, Executive Manager, Major Projects, Transgrid, [Transcript of evidence](#), 24 August 2020, p 42; Mr Gambian, [Transcript of evidence](#), 25 August 2020, p 17; Ms Anna Freeman, Director, Energy Generation, Clean Energy Council, [Transcript of evidence](#), 24 August 2020, p 15

⁸² Submission 92, Professor Andrew Blakers, p 5; Submission 158, Transgrid, p 4

⁸³ Submission 152, PIAC, p 5

⁸⁴ Ms Freeman, [Transcript of evidence](#), 24 August 2020, p 15; Mr McGoldrick, [Transcript of evidence](#), 24 August 2020, p 43; Submission 88, ITK Services, p 2

⁸⁵ Mr McGoldrick, [Transcript of evidence](#), 24 August 2020, p 42; Submission 158, Transgrid, p 3

Finding 5

Forest biomass is not a renewable, sustainable source of energy.

Recommendation 2

That the NSW Government amends the definition of *native forest biomaterial* under the Protection of the Environment Operations (General) Regulation 2009 to prevent the burning of wood from native forests to generate energy.

Recommendation 3

That the NSW Government works with other jurisdictions to exclude native forest biomass from being classed as renewable energy and ensure it is not eligible for renewable energy credits.

Forest biomass

- 2.36 Biomass energy, or bioenergy, is a broad term to describe the burning of materials that are plant and animal based. This includes agricultural waste, crops, wood waste, forest and plantation biomass, sewage sludge, and animal by-products.⁸⁶
- 2.37 We consider that energy from native forest biomass is not sustainable, and should not be classed as a renewable source. Many inquiry participants told us that this form of bioenergy leads to deforestation, produces more emissions than fossil fuels, reduces the number of older trees that can reabsorb carbon from the atmosphere, and negatively impacts on biodiversity. It is also an expensive form of energy generation.⁸⁷
- 2.38 Energy from native forest biomass is obtained by burning wood, with large volumes needed on an ongoing basis. We heard that the definition of 'forest residues' and 'wood waste' allows whole trees in native forests to be classed as waste. We were told that intact native forests are being used as biomass.⁸⁸
- 2.39 A large number of stakeholders told us of their concerns about burning wood waste as it adds to greenhouse emissions and negatively impacts the environment.⁸⁹ We share these concerns.

⁸⁶ [Bioenergy and energy from waste](#), Australian Renewable Energy, viewed on 6 May 2021

⁸⁷ Partnership for Policy Integrity, [Carbon emissions from burning biomass for energy](#), viewed 5 February 2021; Submission 120, South East Region Conservation Alliance Inc, p 2; Submission 80, Mr Ian Dixon, p 1; Submission 97, Mr Scott Sledge, p 1; Ms Peg Putt, Coordinator - Forests, Climate and Biomass Energy Working Group, Environmental Paper Network, [Transcript of evidence](#), 25 August 2020, pp 5-6; P Graham, J Hayward, J Foster & L Havas, [GenCost 2019-20: preliminary results for stakeholder review](#), CSIRO, 2019, viewed 14 January 2021

⁸⁸ Submission 236, Australian Forests and Climate Alliance (AFCA), p 3; AFCA, [Impacts Of Using Native Forest Biomass For Energy – Fact Sheet](#), viewed on 18 March 2021

⁸⁹ Submission 90, Ms Gwyn Hooper, p 2; Submission 105, Ms Miranda Mills, p 1; Submission 12, Yass Earthmovers, p 3; Submission 121, Ms Jane Dargaville, p 1; Submission 134, National Parks Association of NSW, p 1; Submission 144, Shaunti Kiehl, p 1; Submission 159, Ms Susie Hearder, p 1; Submission 175, No Electricity from Forests, p 2; Submission 176, North Coast Environment Council, p 3; Submission 177, Midcoast Environment Group, p 2; Submission 192, Mr Gregory Hall, p 2; Submission 205, Mr Bruce McQueen, p 1; Submission 206, Dr Fiona McCormick, p 1; Submission 215, Mr Geoff Miell, p 9; Submission 236, Australian Forests and Climate Alliance, p 2; Submission 238, Doctors for the Environment Australia, p 20; Ms Putt, [Transcript of evidence](#), 25 August 2020, p 5

- 2.40 We are recommending that the government amends the definition of native forest biomaterial under the Protection of the Environment Operations (General) Regulation 2009 to prevent the burning of wood from native forests to generate energy.⁹⁰
- 2.41 Stakeholders told us that advocates for the use of forest or wood waste argue that it can reduce carbon emissions through carbon sequestration. This means replacing trees that are used or cut down for electricity, and over time, the new tree sequesters a similar amount of carbon to the used tree. However, we consistently heard contrary evidence on this issue.⁹¹
- 2.42 Ms Gwyn Hooper told us that trees capture and store carbon emissions so that they don't contribute to the gases that cause climate change. This is called carbon sequestration. Removing trees reduces this opportunity to capture carbon: 'If you plant a tree for each one you cut down it would take thirty years or more to grow to a state where it would store the same amount of carbon that was stored in the one you had cut down.'⁹²
- 2.43 There is significant debate around the world about the impact of forest biomass. Governments are considering restricting forest biomass, but they're also confirming it as a source of renewable energy.⁹³
- 2.44 However, we heard there is ongoing concern from communities, advocates and scientists.⁹⁴ They argued that because forest biomass isn't a renewable source of energy and produces significant carbon emissions, the 'loophole' classifying it as a renewable energy source should be removed.
- 2.45 That is why we are recommending that the government works with other jurisdictions to exclude native forest biomass from being classed as renewable energy, and ensure that it is not eligible for renewable energy credits.

Gas

Summary

Gas is a fossil fuel and it generates carbon emissions. There are alternative renewable technologies available that can provide firming energy for the NSW grid.

⁹⁰ [Protection of the Environment Operations \(General\) Regulation 2009](#) (NSW), Part 3, s96

⁹¹ Submission 90, Ms Gwyn Hooper, p 2; Submission 120, South East Region Conservation Alliance, p 2; Submission 121, Ms Jane Dargaville, p 1; Submission 176, North Coast Environment Council, p 3; Submission 236, Australian Forests and Climate Alliance, p 2; Submission 215, Mr Geoff Miell, p 9; Ms Putt, [Transcript of evidence](#), 25 August 2020, p 6

⁹² Submission 90, Ms Gwyn Hooper, p 2

⁹³ Submission 176, North Coast Environment Council, p 2; A Sherrad, [Biomass bodies welcome European Court of Justice ruling](#), Bioenergy international, 2020, viewed 5 February 2020

⁹⁴ Submission 120, South East Region Conservation Alliance, p 3; Ms Putt, [Transcript of evidence](#), 25 August 2020, pp 5-6; Submission 97, Mr Scott Sledge, p 1; Submission 105, Ms Miranda Mills, p 1; Submission 107, Mr Tom Ferrier, p 1; Submission 109, Ms Jane McIntyre, p 1; Submission 134, National Parks Association of NSW, p 2; Submission 159, Ms Susie Header, p 1; Submission 165, Earth Learning, pp 1-2

Finding 6

We note that the Independent Review into the Future Security of the National Electricity Market stated that flexible, gas-fired generation will have a role in supporting renewable energy technology in the short to medium term.

- 2.46 We are also concerned about the sustainability of gas as an energy source. Several types of gas are used for power: NSW predominantly uses natural gas.⁹⁵ As fuel, it's converted to electricity in gas-fired power stations. It's also supplied to buildings using pipelines, where it's burnt for domestic and commercial heating, and used in other industrial processes.⁹⁶ Australia also produces liquid natural gas (LNG), with most of it for export. The LNG export market is a growing industry, with Australian government data showing a 16.2 per cent increase in LNG production for export over the past 10 years.⁹⁷
- 2.47 We heard that gas can work with renewable electricity to stabilise the grid and respond to peak demand.⁹⁸ Any electricity system reliant on solar or wind capacity will require large storage capacity, and gas plants are a costly source of dispatchable energy. Therefore, there is a need to firm intermittent renewable energy through battery storage or pumped hydro.
- 2.48 We received some evidence that gas produces fewer emissions than coal.⁹⁹ However, we note that gas is a fossil fuel, and is not a zero emissions energy source. We also heard about the negative health and environmental impacts of gas extraction.¹⁰⁰
- 2.49 The Public Interest Advocacy Centre (PIAC) told us that gas extraction is a 'water intensive operation that competes for scarce water resources with agriculture, the environment and regional communities' needs. PIAC observed that in regional communities 'bush firefighters are having to make decisions regarding whether and how to fight fires based on access to water resources'.¹⁰¹
- 2.50 However, we did receive some submissions about the environmental benefits of gas, including biogas and hydrogen. We note that there is long-term potential for hydrogen, as it can be produced using wind and solar energy, and used as a secure power supply for electricity. Natural gas also has a much lower

⁹⁵ Australian Electricity Market Commission, [Gas](#), viewed 1 April 2021; Australian Pipelines and Gas Association, [Gas Facts and Figures: The role of natural gas in Australia](#), viewed 1 April 2021

⁹⁶ Submission 143, Jemena Gas Networks (NSW), p 1; Matthew Clemow, AEMO, [Energy Live: There's more to gas than you thought!](#), 28 March 2018, viewed 1 April 2021; Australian Energy Regulator, [Networks & pipelines](#), viewed 1 April 2021

⁹⁷ Submission 140, Public Health Association of Australia, p 6; Department of the Environment and Energy, [Australian Energy Update 2018](#), 2018, viewed 8 April 2021, p 27

⁹⁸ Submission 125, Australian Gas Infrastructure Group, p 2

⁹⁹ Submission 198, Centre for Air Pollution, Energy and Health Research, p 5; Submission 113, Gas Energy Australia, pp 2-3; Submission 125, Australian Gas Infrastructure Group, p 2; Submission 228, Hunter Business Chamber, p 2; Submission 244, NSW Government, p 13; Submission 247, Origin Energy, p 2

¹⁰⁰ Submission 140, Public Health Association of Australia, p 9; Submission 184, Beyond Zero Emissions, p 11; Submission 234, Mr Tom Stayner, p 1; Submission 238, Doctors for the Environment Australia, p 18; Dr John Van Der Kallen, Doctors for the Environment, [Transcript of evidence](#), 25 August 2020, p 11

¹⁰¹ Submission 152, Public Interest Advocacy Centre, pp 11-12

greenhouse gas intensity than coal.¹⁰²

- 2.51 Industry stakeholders told us about the move to decarbonise gas through projects like the Malabar wastewater plant (case study below). This transition is due to customer expectations, both in residential and industrial electricity use. Mr Ben Wilson, from the Australian Gas Infrastructure Group, told us that a number of customers have indicated that they will disconnect from the gas network and electrify if green gas products aren't made available.¹⁰³

Case study 2: Malabar wastewater project¹⁰⁴

Biogas from the Sydney Water's Malabar wastewater plant will be converted into biomethane and injected into the gas network under a new initiative by Jemena and Sydney Water.

The project, the first of its kind in Australia, will clean and upgrade biogas produced at the Malabar plant to a standard where it can be injected into Jemena's gas pipelines.

About half of all biogas currently produced at the Malabar plant is used to produce electricity for the site, or heat for the digestion process. The remainder is flared (burnt) to reduce its environmental impact.

If captured, that energy could have a big impact. A recent International Energy Agency report stated that biogas and biomethane resources could meet 20 per cent of global gas demand, while reducing greenhouse gas emissions.

The project will also look at opportunities to trade renewable gas, by linking users with production facilities. This could provide trading mechanisms for 'green gas' markets across other networks.

The Malabar plant is expected to supply the first biomethane for the gas network in early 2022.

Battery storage

Summary

Battery storage should be used to firm the grid. It is a sustainable alternative to gas and could ensure the network's stability and reliability.

Recommendation 4

That the NSW Government prioritises sustainable sources such as battery technology, and other emerging technologies, to firm intermittent energy sources.

¹⁰² Submission 113, Gas Energy Australia, p 2; Submission 125, Australian Gas Infrastructure Group, p 2; Submission 127, Bioenergy Australia, p 3; Submission 222, Institute for Sustainable Futures (University of Technology Sydney), p 2; Submission 245, Maritime Union of Australia, p 11; Submission 90, Ms Gwyn Hooper, p 1

¹⁰³ Mr Ben Wilson, Chief Executive Officer, Australian Gas Infrastructure Group, [Transcript of evidence](#), 24 August 2020, pp 34-35; Ms Purdie, [Transcript of evidence](#), 24 August 2020, pp 34-35; Mr McGoldrick, [Transcript of evidence](#), 24 August 2020, p 42

¹⁰⁴ ARENA, [Greener gas from Malabar wastewater plant](#), 2020, viewed 15 January 2021

- 2.52 We note that investment in new dispatchable generation will be required during the energy transition, including storage to firm intermittent renewable generation.¹⁰⁵ Dispatchable generators work in addition to core grid generation. They can raise or lower their output to the grid to meet changes in demand, like periods of high electricity usage. They also 'firm' the output of renewable energy sources, because renewables don't have the flat generation baseload that fossil fuels do. This means it's more important for energy systems based on renewable generation to have dispatchable generation for firming.¹⁰⁶
- 2.53 We understand that the choice of firming infrastructure is based on economic considerations. In our view, prioritising sustainable energy sources should be a key consideration. Because of this, we're recommending the NSW Government prioritises sustainable sources, such as battery technology, to firm intermittent energy sources.
- 2.54 The cost of battery storage is declining, making it a cheaper long-term choice, while the cost of gas is rising. Battery storage can support the grid with firming, and can replace gas plants that are currently used for the same purpose. We heard that household rooftop solar and batteries, as well as electric vehicle batteries, could be used alongside large batteries to support the reliability and stability of the grid.¹⁰⁷
- 2.55 Pumped hydro also can also support reliable energy supply through long-duration storage. The Bathurst Community Climate Action Network told us that the Federal Snowy Hydro Mark 2 will have a 'powerful national impact on energy reliability, but so would the expansion of a regionally dispersed system of pumped hydro.'¹⁰⁸
- 2.56 We were encouraged to hear that there are many pumped storage sites in NSW that can assist with energy storage. We also heard that there are opportunities to expand pumped hydro storage in the Great Dividing Range and the Snowy Mountains region, as noted above.¹⁰⁹
- 2.57 We also note that the Minister for Energy and Environment, Mr Matt Kean MP, has identified the potential for hydrogen plants to play a role in firming energy in the long term.¹¹⁰

¹⁰⁵ Submission 136, EnergyAustralia, p 8

¹⁰⁶ K Lovegrove, G James, D Leitch, A Milczarek A Ngo, J Rutovitz, M Watt, and J Wyder, [Comparison of Dispatchable Renewable Electricity Options: Technologies for an orderly transition](#), ARENA, 2018, viewed 8 April 2021, pp vii-viii

¹⁰⁷ Submission 6a, Mr Adrian Ingleby, p 16

¹⁰⁸ Also known as Snowy 2.0, the Snowy Scheme is a series of interconnected dams and power stations in the Snowy Mountains; Submission 83, Bathurst Community Climate Action Network, p 2; Submission 92, Professor Andrew Blakers, pp 3-4

¹⁰⁹ Submission 184, Beyond Zero Emissions, p 4

¹¹⁰ New South Wales, Legislative Assembly, [Second reading speech](#), 10 November 2020 (Matt Kean, Minister for Energy and Environment)

There are potential new export markets for green hydrogen

Summary

Renewable energy, in the form of hydrogen, is a growing global market. NSW is well placed to develop a hydrogen generation and export industry.

Finding 7

There is potential for NSW to export renewable energy, such as green hydrogen, due to the state's significant renewable energy resources.

- 2.58 We heard about the potential for new export markets in renewables, including hydrogen and green steel, as global demand for renewable energy sources increases.¹¹¹
- 2.59 The Australian Renewable Energy Agency estimated that Australian hydrogen exports could contribute \$1.7 billion per year to the economy, and provide 2,800 jobs by 2030. They identified Japan, China, Korea, and Singapore as prospective markets, because these countries are looking to import hydrogen on a large scale.¹¹²
- 2.60 Many stakeholders also told us about the positive environmental benefits of hydrogen. Hydrogen produces no carbon emissions when burned, only water vapour and heat. It also produces more energy per kilogram than natural gas. 'Green' hydrogen can be produced with renewable electricity by electrolysis (using an electric current), or by using fossil fuels, with emissions captured and sequestered. Hydrogen could then be exported by liquefying it, or converting it to a carrier such as ammonia.¹¹³
- 2.61 Some states and territories have already recognised the opportunity to export hydrogen. Victoria, Queensland, and Western Australia have hydrogen strategies and associated infrastructure projects underway.¹¹⁴
- 2.62 Many stakeholders told us that the Hunter region is well placed to become a key renewable energy generation and hydrogen production and export hub.¹¹⁵

¹¹¹ Submission 6, Mr Adrian Ingleby, p 26; Submission 90, Ms Gwyn Hooper, p 1; Submission 143, Jemena Gas Networks (NSW) Limited, p 1; Submission 149, Energy Networks Australia, p 5; Submission 152, Public Interest Advocacy Centre, p 8; Submission 164, Climate Rescue of Wagga, p 11; Submission 115, City of Sydney, p 2; Submission 184, Beyond Zero Emissions, p 27; Submission 222, Institute for Sustainable Futures (University of Technology Sydney), p 3; Submission 235, Wodonga Albury Towards Climate Health, p 2; Submission 242, The Next Economy, p 6; Dr Harris, [Transcript of evidence](#), 29 September 2020, p 4

¹¹² [Opportunities for Australia from Hydrogen Exports](#), ACIL Allen Consulting for Australian Renewable Energy Agency (Australian Government), 2018, p vi

¹¹³ Submission 6, Mr Adrian Ingleby, p 8; Submission 164, Climate Rescue of Wagga, p 11; Australian Renewable Energy Agency, [Hydrogen offers significant exporting potential for Australia](#), 2018, viewed 15 January 2021

¹¹⁴ Includes WA, SA, NT, QLD, VIC, in COAG Energy Council, [Australia's National Hydrogen Strategy](#), 2019.

¹¹⁵ Submission 179, Port of Newcastle, p 4; Submission 184, Beyond Zero Emissions, p 27; Submission 222, Institute for Sustainable Futures (University of Technology Sydney), p 3; Submission 240, Energy Estate, p 5; Dr Chris Briggs, Research Principal, Institute for Sustainable Futures, [Transcript of evidence](#), 24 August 2020, p 31; Professor Alan Broadfoot, Executive Director, Newcastle Institute for Energy and Resources, University of Newcastle, [Transcript of evidence](#), 29 September 2020, p 11

- 2.63 Energy Estate said that the Hunter is home to an established manufacturing base with expertise in advanced manufacturing production processes. This makes it an ideal location for investment. We heard the region has a technically skilled workforce, especially in the energy and resources sector, a large-scale port ideally placed for hydrogen exports to Asia, and available land and existing renewable energy sites close by. As well as this, existing energy production sites in the region could be repurposed for the hydrogen industry. This would make use of existing transport infrastructure.¹¹⁶
- 2.64 We're pleased to note the Minister's recent announcement of a green hydrogen hub in the Hunter. The hub will give hydrogen users common infrastructure for the local production, use, and distribution of hydrogen.¹¹⁷ Funding and developing hydrogen hubs in the Hunter and Illawarra regions is a key part of the NSW Government's Net Zero Industry and Innovation Program, released in early 2021. 'Implementation' of hydrogen hubs is expected in early 2023.¹¹⁸
- 2.65 The consultation paper released as part of the Program notes advice from the Office of the NSW Chief Scientist and Engineer that 'a clean hydrogen industry is an essential part of our future economy'. The paper states that one of the objectives of the hydrogen hubs is to 'build foundational knowledge, skills and supply chains that will accelerate the development of the hydrogen industry in NSW and enable the State to capture long term opportunities from the hydrogen export market'.¹¹⁹
- 2.66 Green hydrogen also has potential to enable the development of a green steel industry. Green steel is made using hydrogen, rather than coal, to strip the oxygen from iron, which means that it is a zero emission commodity.¹²⁰
- 2.67 We note that the Government's Net Zero Industry and Innovation Program includes targeted development around hydrogen hubs to maximise demand, including industry such as steel.¹²¹
- 2.68 Mr Peter Colley, Construction, Forestry, Maritime, Mining and Energy Union (CFMMEU) said that it is 'much more cost effective to produce the hydrogen here, and use it to make steel here, than it is to ship the hydrogen overseas'.¹²²
- 2.69 The Clean Energy Council told us about the economic and environmental opportunities of green steel. They said that gaining about 6.5 per cent of the global steel market would create around \$65 billion in annual export revenue and

¹¹⁶ Submission 240, Energy Estate, p 5

¹¹⁷ Mr Matt Kean MP, [Hunter hydrogen hub to drive jobs, investment and a net zero future](#), media release, viewed 17 March 2021

¹¹⁸ NSW Government, Department of Planning, Industry and Environment, [Developing hydrogen hubs for NSW: Partnering with industry for a clean industrial revolution](#), 2021, p 7, viewed 26 May 2021; NSW Government, Department of Planning, Industry and Environment, [Net Zero Industry and Innovation Program: Driving a clean industrial revolution](#), 2021, pp 28-29, viewed 26 May 2021

¹¹⁹ Developing hydrogen hubs for NSW, 2021, p 1, viewed 26 May 2021

¹²⁰ Grattan Institute, [Green steel is no longer a fantasy](#), 2020, viewed 18 January 2021; Submission 242, The Next Economy, p 5; Submission 253, Clean Energy Council, p 7

¹²¹ *Net Zero Industry and Innovation Program*, 2021, p 31, viewed 26 May 2021

¹²² Mr Colley, [Transcript of evidence](#), 26 August 2020, p 7

25,000 manufacturing jobs – 10,000 of which could be located in the Hunter Valley.¹²³

- 2.70 We also heard about the potential for hydrogen to be used in Australia. Energy Estate told us that hydrogen can be used in metals processing, synthetic fuel production, and glass manufacturing, and that it could also be a lower-cost, cleaner alternative to natural gas for domestic and commercial use.¹²⁴
- 2.71 We were encouraged to hear about national coordination of hydrogen export opportunities through the National Hydrogen Strategy. However, we note that hydrogen is a longer term option. It's expected that large-scale and rapid deployment of hydrogen technologies will emerge from 2030 onwards.¹²⁵

Energy efficiency reforms can reduce energy demand and carbon emissions

Summary

Better energy efficiency in NSW will help manage future energy demand and affordability, and also reduce carbon emissions.

Finding 8

Energy efficiency reforms are a key part of reducing energy demand and generation.

Recommendation 5

That the NSW Government progresses energy efficiency reforms by finalising and implementing the *Draft plan to save NSW energy and money*.

Recommendation 6

That the NSW Government supports higher energy efficiency standards for new homes in the 2022 National Construction Code, through the Australian Building Codes Board.

- 2.72 Improving energy efficiency and reducing energy demand is an important element of reducing emissions. It could also reduce associated health costs, and create jobs in the energy sector.¹²⁶
- 2.73 According to the Energy Efficiency Council 'reducing the demand for energy and better aligning when we generate and use energy will dramatically reduce the

¹²³ Submission 253, Clean Energy Council, pp 6-7

¹²⁴ Submission 240, Energy Estate, p 13

¹²⁵ Submission 149, Energy Networks Australia, p 4; COAG Energy Council, [Australia's National Hydrogen Strategy](#), 2019, p 7, viewed 15 January 2021

¹²⁶ Energy Efficiency Council, [The world's first fuel, how energy efficiency is reshaping global energy systems](#), 2019, p 12, viewed 18 January 2021

cost of generation, storage and network infrastructure.¹²⁷

- 2.74 We also heard that energy efficiency reforms will create jobs. The Public Interest Advocacy Centre explained that an energy efficiency retrofit program 'requires employment in construction and installation trades, building product manufacture, delivery and logistics, sales and administration, household assessment, and accreditation'.¹²⁸
- 2.75 More consumers are proactively transforming the energy sector. Individuals, businesses, and local governments are moving from the old model of privately owned, centralised coal and gas power stations to a new model that's based on local renewable energy generation, storage, and trading.¹²⁹ This is due to concerns about lowering emissions, as well as cost efficiency.
- 2.76 However, many stakeholders called for more efficient energy management from the Government. We heard that, over the last two decades, Australia has made far less effort to improve energy management than other major economies. As a result, Australians pay higher energy bills. It's also impacted on public health, emissions reductions, and industry productivity.¹³⁰
- 2.77 The Energy Efficiency Council has made recommendations to governments to ensure that our energy systems are affordable, reliable, and sustainable.¹³¹ We note these recommendations, and agree that energy management needs to be at the centre of government strategies for energy, emissions reduction, and economic growth.
- 2.78 We acknowledge the NSW Government's 2016 *Draft plan to save NSW energy and money*, and its ambitious energy efficiency targets. The Draft Plan aimed to save 16,000 of 1300 gigawatt hours of electricity per year by 2020, and around \$17 billion in bill savings by 2050. Unfortunately, we heard that this Draft Plan hasn't been finalised and implemented.¹³²
- 2.79 The Government told us that it has implemented 'an extensive energy affordability package for households and small businesses to help with energy bill pressures', including the Energy Savings Scheme (ESS).¹³³
- 2.80 The ESS creates financial incentives for households and businesses to be more energy efficient. In 2018, the scheme created energy savings of 2,577 GW hours. This translated to benefits of \$231 million in avoided cost of electricity generation, and \$36.6 million in deferred network investment. By 2028, the

¹²⁷ Energy Efficiency Council, [The world's first fuel, how energy efficiency is reshaping global energy systems](#), 2019, p 8, viewed 18 January 2021

¹²⁸ Submission 152a, Public Interest Advocacy Centre, p 3

¹²⁹ Submission 194, Newcastle Greens, p 4

¹³⁰ Submission 99, Australian Sustainable Built Environment Council, p 3; Submission 106, Ms Denise Fitzgerald, p 3; Submission 115, City of Sydney, p 3; Submission 135, Energy Efficiency Council, p 1; Submission 152a, Public Interest Advocacy Centre, p 3; Submission 164, Climate Rescue of Wagga, p 17; Submission 184, Beyond Zero Emissions, p 5

¹³¹ *The world's first fuel*, Energy Efficiency Council, 2019, pp 10-11, viewed 18 January 2021

¹³² NSW Office of Environment and Heritage, [A draft plan to save NSW energy and money](#), 2016

¹³³ Submission 244, NSW Government, p 20

Government estimates that projects completed under the ESS will provide energy bill savings of \$6.2 billion.¹³⁴

- 2.81 We acknowledge the announcement of increased targets under the ESS scheme, from the current 8.5 per cent to 13 per cent by 2030. The Minister says this will increase savings for consumers, 'injecting an additional \$1 billion into the state's economy and delivering a \$2.4 billion boost to bill savings.' We hope this increase will allow the targets in the Draft Plan to be met.¹³⁵
- 2.82 Inquiry participants also called for stronger energy efficiency standards for new buildings and renovations. We heard that, while the building sector uses less energy than the industrial sector, it accounts for 57 per cent of Australia's electricity use. This means that improving the energy efficiency of buildings will have a large impact on the reliability and affordability of the electricity system.¹³⁶
- 2.83 Energy efficiency impacts the health and wellbeing of a building's occupants. According to the Energy Efficiency Council, more than 3,000 Australians are estimated to die each year during periods of hot and cold weather, and building quality has been implicated as a causal factor.¹³⁷
- 2.84 Mr Craig Memery from the Public Interest Advocacy Centre told us that there are many cost-effective ways to strengthen standards for new homes and renovations. These will have positive outcomes on people's health and wellbeing, improve energy affordability, and reduce demand on the energy system.¹³⁸
- 2.85 We heard that a challenge in improving building energy efficiency is the gap between the minimum standards in the National Construction Code and best practice. The Australian Sustainable Built Environment Council told us that the Code does not specify 'smart design', which involves designing living space for comfort, convenience, and energy efficiency.¹³⁹
- 2.86 This is why we are recommending that the NSW Government supports higher energy efficiency standards for new homes in the 2022 National Construction Code, through the Australian Building Codes Board.
- 2.87 We also support proportionate concession schemes for disadvantaged persons, to encourage less energy use. We heard that the switch to renewable energy may not be as easily accessible to disadvantaged groups.¹⁴⁰
- 2.88 We were told that persistent barriers have prevented people on low incomes from investing in energy efficiency as a way to reduce costs. These barriers

¹³⁴ Submission 244, NSW Government, p 18

¹³⁵ Mr Matt Kean MP, [New energy savings targets to cut bill costs](#), media release, viewed 17 March 2021

¹³⁶ *The world's first fuel*, Energy Efficiency Council, 2019, p 40, viewed 18 January 2021; Submission 99, Australian Sustainable Built Environment Council, p 2; Submission 164, Climate Rescue of Wagga, p 17

¹³⁷ *The world's first fuel*, Energy Efficiency Council, 2019, p 40, viewed 18 January 2021

¹³⁸ Mr Craig Memery, Leader, Energy and Water Consumers' Advocacy Program, Public Interest Advocacy Centre, [Transcript of evidence](#), 24 August 2020, p 21

¹³⁹ Ms Suzanne Toumbourou, Executive Director, Australian Sustainable Built Environment Council, [Transcript of evidence](#), 26 August 2020, p 25

¹⁴⁰ Submission 242, p 4; Mr Memery, [Transcript of evidence](#), 24 August 2020, p 23

include lack of access to capital for high value energy efficiency upgrades, and the inability of tenants to improve the energy efficiency of rental properties.¹⁴¹

- 2.89 We are pleased that the NSW Government has acknowledged these barriers and has targeted programs that assist lower income and disadvantaged groups to improve energy efficiency.¹⁴² We discuss improving access to renewable energy in chapter 5.

¹⁴¹ Mr Memery, [Transcript of evidence](#), 24 August 2020, p 2; Australian Council of Social Service, [Energy Efficiency & People on Low Incomes](#), 2013, p 1, viewed 8 February 2021

¹⁴² Submission 244, NSW Government, p 17

Chapter Three – Economic and employment opportunities of renewable energy

Renewable energy and energy management can create jobs

Summary

Renewable energy can create a significant number of jobs, including for people currently employed in fossil fuel industries.

Finding 9

The renewable energy and energy management sectors have the potential to provide a substantial number of jobs for workers that are impacted by the energy transition.

- 3.1 We heard the renewable energy and energy management sectors could provide jobs for workers impacted by the energy transition. Inquiry participants cited two key research papers – the *Million Jobs Plan* and *Clean Energy at Work*.
- 3.2 The Beyond Zero Emissions' *Million Jobs Plan* found that the renewable energy sector can create jobs quickly, especially in the context of the COVID-19 recovery, by using projects that are already in the planning stage. It highlights wide opportunities to adopt and use renewable energy in energy efficiency, transport, manufacturing, and land use. It includes a detailed case study of opportunities in the Hunter region.¹⁴³
- 3.3 The Clean Energy Council's *Clean Energy at Work* is the largest study of the renewable energy sector in Australia. The report looked at potential jobs, the existing skills mix, and whether current workforces and infrastructure have the capacity to transition to new industries.¹⁴⁴
- 3.4 We heard about a range of renewable energy based industries that could create new jobs. Research from the Climate Council uses a scenario where 50 per cent of Australia's electricity is derived from renewable sources by 2030. It finds there would be an approximate net total of 11,000 jobs created in NSW, some of the largest forecast growth in jobs per capita.¹⁴⁵ A large part of this figure represents new jobs, because it's more than the number needed to compensate for jobs lost in fossil fuels sectors.¹⁴⁶
- 3.5 Many of the potential industries we heard about are linked to existing grid connection, transmission, and power generation sites. Many of them would be located in specific geographical regions like the Hunter. They could form regional

¹⁴³ Beyond Zero Emissions, [The Million Jobs Plan](#), 2020, viewed 19 March 2021

¹⁴⁴ Clean Energy Council, [Clean Energy at Work](#), 2020, viewed 19 March 2021

¹⁴⁵ Dr G Sinden & Z Leffler, [Renewable Energy Jobs: Future Growth in Australia](#), Climate Council, 2016, p 19, viewed 19 March 2021

¹⁴⁶ *Renewable Energy Jobs*, 2016, pp ii, 19-21; Submission 146a, Caldera Environment Centre, p 1

industry clusters, which are shown to be drivers of job creation.

- 3.6 Industry clusters cover 1.2 per cent of NSW's geographic area, but generate 12 per cent of the state's jobs. Development of industrial cities internationally has demonstrated the power of clusters in boosting regional economies.¹⁴⁷ They're positioned to make best use of existing infrastructure, and promote regional economic growth as well as creating jobs.
- 3.7 We note that elements of the Government's roadmap focus on creating jobs. The Electricity Infrastructure Investment Act creates a renewable energy sector board, with objectives including maximising employment of suitable qualified local workers.¹⁴⁸
- 3.8 The Act also provides for an electricity infrastructure jobs advocate to consider workforce development, education and training, investment and development in the Hunter and Central Coast, Illawarra, Far West, and Central West regions.¹⁴⁹ These areas are designated REZs and largely correlate with existing transmission infrastructure. They are regions that will be most affected by changes to NSW's energy mix.
- 3.9 Renewable energy projects tend to have more short-term than long-term jobs, but we heard that regional stakeholders welcome all associated economic activity.¹⁵⁰ Short term construction jobs have flow on effects in accommodation, hospitality, and retail businesses. Business chamber and council representatives have already seen that jobs created by projects in the Central-West Orana REZ helped mask some of the economic impacts of ongoing drought.¹⁵¹
- 3.10 There are a range of potential new industries associated with current power generation and mining industries, which we discuss below. We think that these would promote the creation of jobs and stimulate regional economies in NSW during the energy transition.

Fly ash reuse

- 3.11 Fly ash is a by-product of coal combustion in power stations. The fly ash reuse industry uses a similar skill set to the coal mining and power industries. It's an 'on-site' industry that continues to locate work in the same areas. We heard it's a particularly accessible employment alternative for workers in the coal power generation sector.¹⁵²
- 3.12 Coal-fired power generation in Australia has produced fly ash stockpiles that would form a viable supply for at least 20 years of domestic cement production. Creating an industrial-scale fly ash reuse facility in the Hunter could see 400 full-

¹⁴⁷ Jobs for NSW, *Jobs for the Future: Adding 1 million rewarding jobs in NSW by 2036*, 2016, pp 36-37, viewed 19 March 2021; AlphaBeta, *Global Gateway for NSW: the economic impact of a container terminal at the Port of Newcastle*, 2018, p 36, viewed 19 March 2021

¹⁴⁸ *Electricity Infrastructure Amendment Act 2020 (NSW)*, pt 2 ss 6-9

¹⁴⁹ *Electricity Infrastructure Amendment Act 2020 (NSW)*, pt 2, ss 10-11

¹⁵⁰ Submission 168, The Australia Institute and the University of Sydney Environment Institute, pp 2-3

¹⁵¹ Submission 168, The Australia Institute and the University of Sydney Environment Institute, p 3

¹⁵² Submission 156, Hunter Community Environment Centre, p 7

time positions created within five years of project commencement, with 40 to 80 jobs created in the initial project phases at Eraring power station alone. A coal ash reuse industry would have environmental and economic benefits similar to that of mine site rehabilitation.¹⁵³

Pumped hydro power generation and storage

- 3.13 Mine voids can be used for pumped hydroelectricity power generation and large-scale storage.¹⁵⁴ These projects would also be located on the same site as former power stations and mines. Beyond Zero Emissions told us that involving local workforces in transforming and operating sites would provide important opportunities for ongoing employment and skills development.¹⁵⁵
- 3.14 AGL have started feasibility and geotechnical studies into converting mining voids to pumped hydro sites in Bells Mountain, near Muswellbrook. This work is being done in anticipation of planned closures at the AGL Macquarie site, and generation from planned projects could begin as early as 2026. This could create employment opportunities for AGL's workforces impacted by closures.¹⁵⁶ We discuss mine voids further at paragraph 3.33.

Offshore wind

- 3.15 The Maritime Union of Australia told us that floating offshore wind farms present a significant opportunity to create jobs that use existing workforce skills. Offshore wind energy generation creates 2.5 to 3 times more jobs than onshore wind energy generation.¹⁵⁷
- 3.16 Offshore wind has a lot of ongoing jobs in maintenance. We heard that a local workforce with existing skills in power generation and manufacturing, like that of the Hunter Valley, could be easily transferred and upskilled to work on offshore wind projects. Because offshore wind farms need to link in with transmission infrastructure, they would be located near existing communities, enabling labour mobility in the Hunter region.¹⁵⁸
- 3.17 In Victoria, an offshore wind project will be plugged into the state's electricity grid using existing transmission infrastructure formerly connected to coal power sites in the Latrobe Valley.¹⁵⁹ A similar link would work in the Newcastle-Hunter Valley area.

¹⁵³ *The Million Jobs Plan*, 2020, p 109, viewed 19 March 2021; Submission 156, Hunter Community Environment Centre, p 4, 7

¹⁵⁴ N Perry & G Hewitson, [Weathering the storm: The case for transforming the Hunter Valley](#), School of Business, Western Sydney University, 2019, p 25, viewed 19 March 2021; *The Ruhr or Appalachia?*, 2018, p 63, viewed 19 March 2021

¹⁵⁵ Dr John Shiel, Lead Volunteer Researcher, Heavy Industry, Hunter Diversification Project, Beyond Zero Emissions, [Transcript of evidence](#), 24 August 2020, pp 28-29

¹⁵⁶ Mr John McCormack, Head of Government, AGL Energy, [Transcript of evidence](#), 29 September 2020, pp 26, 29; AGL Energy, [MoU signals next step in proposed Bells Mountain Pumped Hydro project](#), 26 July 2019, viewed 11 March 2021

¹⁵⁷ Submission 245, Maritime Union of Australia, p 21

¹⁵⁸ Mr Will Tracey, Deputy National Secretary, Maritime Union of Australia, [Transcript of evidence](#), 26 August 2020, p 1; Submission 145, Maritime Union of Australia, p 21

¹⁵⁹ Submission 245, Maritime Union of Australia, pp 15-16

Other industries

- 3.18 There are other potential industries that can create jobs. A report commissioned by the Energy Efficiency Council found that expanding the energy efficiency management industry in Australia would create around 120,000 job-years of employment.¹⁶⁰ Beyond Zero Emissions estimates 10,000 jobs could be created for five years retrofitting homes for energy-efficiency in the Hunter Valley.¹⁶¹
- 3.19 We heard the bioenergy sector is growing internationally and could create many jobs, particularly in regional Australia. In Europe, bioenergy projects are expected to create 550,000 associated jobs between 2021 and 2030.¹⁶²
- 3.20 Grattan Institute research estimates that a green steel industry could create as many as 25,000 jobs, with 10,000 located in the Hunter Valley.¹⁶³ The *Million Jobs Plan* outlines a potential 5,000 construction and 1,500 permanent jobs if two integrated steel works are built in the Hunter. Development of commercial steel works that use new molten oxide electrolysis processes could employ 1,000 people in the Hunter by 2030.¹⁶⁴ Industry development will have flow-on benefits to associated local industries, such as manufacturing, also creating indirect jobs.¹⁶⁵

COVID-19 economic recovery

Summary

Renewable energy could help NSW's economic recovery from the impact of COVID-19. It has lots of potential to create jobs.

- 3.21 The employment and investment opportunities of the renewable energy sector would be a vital stimulus measure to address the impact of COVID-19 on our economy and job market. Stakeholders emphasised the opportunity that stimulus presents for boosting uptake and construction of renewable energy projects in NSW. Adequate funding will be important if the sector is to play its expected part in NSW's economic recovery.¹⁶⁶ Many planned renewable energy projects in NSW have been cancelled due to economic downturn.¹⁶⁷
- 3.22 Industry bodies like Transgrid have emphasised the job creation opportunities of major transmission projects aimed at upgrading the grid and ensuring it's 'renewables-ready'.¹⁶⁸ Stakeholders told us that renewables industries like fly ash

¹⁶⁰ Submission 135, Energy Efficiency Council, p 1; Green Energy Markets, [Energy Efficient Employment in Australia: An analysis of the current and potential jobs created by saving energy in Australia](#), 2019, p 5, viewed 19 March 2021

¹⁶¹ The *Million Jobs Plan*, 2020, pp 104-105, viewed 19 March 2021

¹⁶² Submission 127, Bioenergy Australia, pp 4, 6

¹⁶³ T Wood & G Dundas, [Start with steel: A practical plan to support carbon workers and cut emissions](#), The Grattan Institute, 2020, p 26, viewed 19 March 2021; Submission 253, Clean Energy Council, p 8

¹⁶⁴ The *Million Jobs Plan*, 2020, pp 110-111

¹⁶⁵ Submission 253, Clean Energy Council, pp 7-8; Submission 242, The Next Economy, p 5; Submission 220a, Illawarra Region Citizens, p 3

¹⁶⁶ Submission 253, Clean Energy Council, p 11; Submission 146a, Caldera Environment Centre, p 1

¹⁶⁷ Mr Tracey, [Transcript of evidence](#), 26 August 2020, p 1; Ms Howard, [Transcript of evidence](#), 26 August 2020, p 7

¹⁶⁸ Submission 253, Clean Energy Council, p 9; Mr McGoldrick, [Transcript of evidence](#), 24 August 2020, p 42

processing are 'shovel ready' projects that can immediately create employment at existing power generation and mining sites.¹⁶⁹ Similarly, energy efficiency programs can be set up relatively easily and could be used to find local employment for workers impacted by the pandemic.¹⁷⁰ COVID-19 recovery presents an opportunity for the NSW Government to invest in renewable energy and create new jobs in renewable industries.¹⁷¹

- 3.23 Workers employed in fossil fuel industries are not exempt from the economic impact of the COVID-19 pandemic. The pandemic had a marked and unexpected impact on the NSW coal mining and export industry.¹⁷² We heard that mine companies put employees on JobKeeper, downsized their workforces, halted production and closed sites unexpectedly.¹⁷³ The recovery is an opportunity to start transitioning workforces into new renewable energy industries.
- 3.24 Fossil fuel power and mining don't present many opportunities for economic stimulus. As noted in chapter two, global demand for coal is forecast to decline and fossil fuel projects aren't considered to be good investments.¹⁷⁴
- 3.25 In comparison, the renewable energy sector is growing. The National Institute of Economic and Industry Research estimates that investment in the renewable energy industry could create between 131,900 and 202,400 jobs in Australian non-metropolitan local government areas, with GDP between six and nine per cent higher by 2030.¹⁷⁵ Renewable energy is an important and cost-effective opportunity to create jobs and stimulate investment and economic activity as part of the COVID-19 recovery.¹⁷⁶

Government planning for the energy transition should include a focus on job creation and workforce transition, and consider a jobs guarantee

Summary

The NSW Government should ensure a focus on job creation and workforce transition, including utilising mechanisms within the Electricity Infrastructure Roadmap and Royalties for Rejuvenation.

¹⁶⁹ Submission 156a, Hunter Community Environment Centre, pp 7, 9

¹⁷⁰ Mr Rob Murray-Leech, Head of Policy, Energy Efficiency Council, [Transcript of evidence](#), 29 September 2020, p 25; Submission 152a, Public Interest Advocacy Centre, pp 2-3

¹⁷¹ Submission 152a, Public Interest Advocacy Centre, p 2

¹⁷² Mr Colley, [Transcript of evidence](#), 26 August 2020, p 5; Ms Sue Moore, Mayor of Singleton, Chair Economic Transition Subcommittee, Hunter Joint Organisation of Councils, [Transcript of evidence](#), 29 September 2020, p 10

¹⁷³ Ms Coleman, [Transcript of evidence](#), 29 September 2020, p 21

¹⁷⁴ Submission 115, City of Sydney, p 3; Submission 164, Climate Rescue of Wagga, p 17; Submission 251, Ryde Gladesville Climate Change Action Group, pp 2-3

¹⁷⁵ Australian Conservation Foundation and the Australian Council of Trade Unions, [Jobs in a clean energy future](#), 2016, pp 18, 20, viewed 19 March 2021

¹⁷⁶ Dr Van Der Kallen, [Transcript of evidence](#), 25 August 2020, p 11

Finding 10

We welcome the NSW Government's establishment of the Expert Panel for Royalties for Rejuvenation as a mechanism to protect jobs and industries and support communities.

Recommendation 7

That the NSW Government be required to:

- a. Prioritise the use of local content in renewable energy generation, transmission and firming projects in NSW Renewable Energy Zones when conducting the competitive tender process for Long-term Energy Service Agreements.**
- b. Publish the recommendations of the NSW Renewable Energy Sector Board prepared under s7(4) of the *Electricity Infrastructure Investment Act 2020*.**
- c. Report at least annually to the NSW Parliament on the number of jobs created and the development of NSW supply chains for the provision of renewable energy generation and transmission infrastructure.**
- d. Publish and report to the NSW Parliament at least annually on the work of the Electricity Infrastructure Jobs Advocate appointed under the *Electricity Infrastructure Investment Act 2020*.**

Recommendation 8

That the NSW Government consider a jobs guarantee proposal and its utilisation in other jurisdictions. Along with other relevant Government agencies, this could be undertaken within the Expert Panel for Royalties for Rejuvenation's work to protect jobs and industries, support communities and identify future opportunities that can be built off the back of the mining legacy.

- 3.26 We recognise that the Government's roadmap is an important step in prioritising and addressing concerns about structural change in the mining and energy sectors. We further recognise the Expert Panel for Royalties for Rejuvenation provides a mechanism to protect jobs and industries and support communities.
- 3.27 We heard from witnesses that including a jobs guarantee in the roadmap would help to ensure a just transition for affected workers in NSW. The Next Economy told us that 'economic support mechanisms', such as job guarantees, should be part of transition planning.¹⁷⁷ The Nature Conservation Council said that providing a jobs guarantee and backing it with funding is how to 'translate' acknowledgement and support for the contribution of coal communities 'into action'.¹⁷⁸ The Australian Manufacturing Workers' Union (AMWU) said they believe the state of NSW has a responsibility to 'support those workers who have supported our economy for so long'.¹⁷⁹

¹⁷⁷ Submission 242, The Next Economy, p 12

¹⁷⁸ Mr Gambian, [Transcript of evidence](#), 25 August 2020, p 12

¹⁷⁹ Submission 145, Australian Manufacturing Workers' Union, p 5

- 3.28 Unions voiced strong support for a jobs guarantee. The Maritime Union of Australia pointed to Germany's experience as a suggested model for incorporating job guarantees in transition planning. They suggested that in NSW, this should take the form of collective agreements, with no forced redundancies and compensation for salary differences or other 'bridging' issues.¹⁸⁰ We heard that workers 'see' a transition coming, and they want planning to include jobs guarantees.¹⁸¹
- 3.29 The Manufacturing Workers' Union of Australia said a jobs guarantee would act as a 'safety net' for workers during transition. They noted this would be particularly important for affected workers who live in communities with pre-existing high unemployment rates, because they are likely to struggle to find new work.¹⁸²
- 3.30 The 2007 agreement in Germany dictated a 'socially acceptable' phasing-out of coal mining. This included a guarantee for workers that, as mines closed, there would be no lay-offs, with workers receiving income assistance, assistance to move into alternative employment, and the provision of financial assistance to those of retirement age.¹⁸³
- 3.31 The Latrobe Valley Authority in Victoria implemented several initiatives in response to the closure of Hazelwood power station and mine at short notice. A Worker Transfer Scheme aimed to move Hazelwood workers to vacancies, created by early retirements, at other power generation sites in the Latrobe Valley. A Back To Work Scheme provided businesses with funding to employ and train unemployed people from the Latrobe Valley, at a maximum of \$9,000 per worker. The Worker Transition Service provides ongoing support for Hazelwood workers and their family members. It's delivered in partnership with Gippsland employment services, TAFE, and the Victorian government.¹⁸⁴ These schemes have elements of a jobs guarantee, but didn't commit to the key aspect - ensuring all affected workers were redeployed or retired.
- 3.32 We note that the NSW Government's Electricity Infrastructure Roadmap includes a Consumer Trustee to act in the long-term financial interests of NSW electricity customers to improve the affordability, reliability, security and sustainability of electricity supply.
- 3.33 We recommend that the NSW Government consider a jobs guarantee proposal and its utilisation in other jurisdictions. Along with other relevant Government agencies, this could be undertaken within the Expert Panel for Royalties for Rejuvenation's work to protect jobs and industries, support communities and identify future opportunities that can be built off the back of the mining legacy.
- 3.34 We were pleased to see that policy initiatives outlined in the Government's

¹⁸⁰ Ms Penny Howard, National Research Officer, Maritime Union of Australia, [Transcript of evidence](#), 26 August 2020, p 4; Submission 245, Maritime Union of Australia, pp 8-9

¹⁸¹ Mr Tracey, [Transcript of evidence](#), 26 August 2020, p 6

¹⁸² Submission 145, Australian Manufacturing Workers' Union, p 5

¹⁸³ OECD, [Germany's effort to phase out and rationalise its fossil-fuel subsidies](#), 2017, p 23, viewed 24 May 2021

¹⁸⁴ Latrobe Valley Authority, [Latrobe Valley Community Report: Transitioning to a strong future, November 2016-November 2019](#), 2019, pp 3-4, viewed 24 May 2021

roadmap have begun to be implemented with the passing of the Electricity Infrastructure Investment Act, which we discuss below.

Requiring mine operators to rehabilitate mining sites

Summary

Rehabilitating mine sites and power generation infrastructure, particularly mine voids, should be a requirement for mine operators. It provides employment opportunities for mining and power generation workers, as well as significant environmental benefits.

Recommendation 9

That the NSW Government requires mine operators, or site operators/owners, to rehabilitate and reuse existing infrastructure on mines and power generation sites to allow for the reuse of facilities worth billions, which could assist with making sites more attractive for new commercial and industrial activities and their associated employment.

- 3.35 Mines and power generation sites have considerable amounts of road, rail, buildings and other infrastructure that could be rehabilitated and reused for other industries. This would assist in the creation of future employment on sites that have reached the end of their economic lives. Current mine rehabilitation requirements and regulation do not allow for the reuse of such infrastructure to occur easily.
- 3.36 Sites should be required to be safe, secure, and non-polluting. The NSW Government should also plan for the employment future of these sites, assisting with the master planning, and removing barriers to infrastructure rehabilitation and reuse on sites where employment levels can be retained or grow.
- 3.37 We're recommending that rehabilitation of mine and power generation sites, especially mine voids, is a requirement for all mine operators in NSW. Mine operators have generally committed to rehabilitating mine sites at the end of their life, but at the time of this report's writing they're not required to.
- 3.38 'Mine voids' are depressions of varying depths that remain a feature of the landscape after site rehabilitation is completed. Voids represent specific opportunities for site reuse, such as for hydro-electric energy generation.¹⁸⁵
- 3.39 Rehabilitation represents an important opportunity to create jobs and to address the environmental and social impacts of mine activity. We note that legacy mines may also benefit from rehabilitation work.¹⁸⁶
- 3.40 Mine sites, including rehabilitation guidelines, are regulated by the *Mining Act 1992* (NSW) and the *Environmental Planning and Assessment Act 1979* (NSW). We note that the NSW government published a discussion paper on the issue of

¹⁸⁵ NSW Mining, [Mine Voids: NSW Minerals Council Fact Sheet](#), 2020, viewed 25 May 2021; Submission 138, Australasian Institute of Mining and Metallurgy, p 22

¹⁸⁶ NSW Mining, [Rehabilitation](#), viewed 25 May 2021; NSW Government Mining, Exploration and Geoscience, [Regulatory Framework](#), viewed 25 May 2021

mine rehabilitation requirements in 2017, but its policy principles haven't been implemented.¹⁸⁷

- 3.41 Mine rehabilitation and land use falls largely under the scope of the NSW Resources Regulator (the Regulator). Stakeholders drew our attention to work being done by this agency to amend regulations under the Mining Act.¹⁸⁸
- 3.42 The proposed Mining Amendment (Standard Conditions of Mining Leases— Rehabilitation) Regulation 2020 (NSW) (the Regulation) is due to commence in the second half of 2021. The Regulation creates new conditions on lease holders to 'develop, implement and achieve rehabilitation outcomes and implement a forward program to ensure progressive rehabilitation across mines in NSW'.¹⁸⁹
- 3.43 We think this is a positive step and strongly encourage the NSW government to continue work in this area. We note that there were concerns raised about the scope and detail of the Regulation's requirements, transparency of processes, and minimum standards - particularly that site owners/operators would be responsible for determining the extent of rehabilitation work they commit to.¹⁹⁰
- 3.44 Stakeholders told us that rehabilitating mine sites and power stations presents many employment opportunities. Rehabilitation of physical sites benefits the environment and promotes ongoing land use by local communities. It has flow on benefits to other industries that rely on the area's attractiveness, like the tourism and hospitality sectors. It also increases the viability of land use for large campuses or clusters (universities and technology or business parks) which draw more investment into the area.¹⁹¹
- 3.45 We heard from the Australian Institute of Mining and Metallurgy that mines in NSW work with government to develop and implement rehabilitation plans that 'return the land to a safe, stable and self-sustaining condition'.¹⁹² Glencore told us that closure planning, including rehabilitation and future land usage, forms part of their resourcing, budgeting and project delivery of mine site projects. They said they 'go above and beyond Government requirements' in their rehabilitation programs, and they have 'a number of examples of leading practice mine rehabilitation in NSW'. They pointed to their work rehabilitating the Mount Owen open-cut mine in the Upper Hunter as an example. They told us that it's

¹⁸⁷ NSW Government, Department of Planning, Industry and Environment, [Improving mine rehabilitation in NSW](#), November 2017, pp 9-10, 17, viewed 25 May 2021

¹⁸⁸ Ms Coleman, [Transcript of evidence](#), 29 September 2020, p 17; NSW Government Mining, Exploration and Geoscience, [Regulatory Framework](#), viewed 25 May 2021

¹⁸⁹ NSW Resources Regulator, [New compliance and reporting reforms](#), 2021, viewed 25 May 2021; Draft [Mining Amendment \(Standard Conditions of Mining Leases – Rehabilitation\) Regulation 2020](#) (NSW), public consultation draft, 2020, viewed 25 May 2021;

¹⁹⁰ NSW Resources Regulator, Public consultation - operational rehabilitation reforms: [Submission 5](#), Environmental Defenders Office, pp 1, 4-5, viewed 26 May 2021; [Submission 9](#), Lock the Gate, pp 1-2, viewed 25 May 2021; [Submission 12](#), Muswellbrook Shire Council, pp 2-4, viewed 26 May 2021; [Submission 13](#), NSW Minerals Council, pp 5-7, viewed 26 May 2021; [Submission 15](#), Singleton Council, p 3, viewed 25 May 2021

¹⁹¹ P Sheldon, R Junankar & A De Rosa Pontello, [The Ruhr or Appalachia? Deciding the future of Australia's coal power workers and communities](#), 2018, pp 10, 62, viewed 19 March 2021

¹⁹² Submission 138, Australasian Institute of Mining and Metallurgy, pp 21-22

recognised internationally, and used as a model example for industry guidelines on re-establishing native vegetation on disturbed land.¹⁹³

- 3.46 We consider that in the context of energy transition, requiring all mine operators to undertake a uniform, high level of rehabilitation work would be beneficial for transition planning, particularly for affected mining and power generation workforces. The work uses many of the skills that the local workforce already has, and the work location is at or near existing job sites. Because of this, we heard that mine rehabilitation could be a useful short-term jobs 'bridge' for semi-skilled workers employed in coal mining and power generation who might struggle to find alternative employment.¹⁹⁴
- 3.47 Mandating rehabilitation will help to ensure proper planning and funding, which will unlock the employment potential of these projects. It's vital that these projects are backed by significant funding from both mine operators and government. The biggest limit on the effectiveness of rehabilitation is funding, which is shown to limit how many jobs they create.¹⁹⁵

Constraints on the Port of Newcastle

Summary

It's important that the Port of Newcastle diversifies its trade base, but its ability to build a container terminal is constrained.

Recommendation 10

That the NSW Government undertake work to remove barriers that prevent the development of a container terminal by the Port of Newcastle.

- 3.48 We heard that diversifying the Port of Newcastle is critical to realising the full economic opportunities of renewable energy in the Hunter region.¹⁹⁶ The Port of Newcastle is currently unable to construct a container terminal. We recommend that work be undertaken to remove these barriers preventing the Port of Newcastle from diversifying its trade base.
- 3.49 Port Kembla has been identified as a future container terminal to supplement Port Botany, NSW's primary container port.¹⁹⁷ Port Kembla does not have appropriate existing infrastructure and it would need significant investments into its rail and road network and into the infrastructure of the port itself.¹⁹⁸

¹⁹³ Submission 254, Glencore, pp 15-16

¹⁹⁴ *The Ruhr or Appalachia?*, 2018, p 10, viewed 19 March 2021; Submission 153, Correct Planning & Consultation for Mayfield Group, p 7; Submission 133, Lock the Gate Alliance, p 26

¹⁹⁵ *The Ruhr or Appalachia?*, p 65, viewed 19 March 2021; Environment Victoria, [Preventing the Preventable: Policy Options for Accelerating Coal Mine Rehabilitation and Creating Jobs in the Latrobe Valley](#), 2014, p 7, viewed 19 March 2021

¹⁹⁶ Submission 228, Hunter Business Chamber, p 9

¹⁹⁷ NSW Government, [NSW Freight and Ports Plan 2018-2023](#), 2018, pp 39-40, 81, viewed 19 March 2021

¹⁹⁸ Deloitte, [NSW Container and Port Policy: Port of Newcastle](#), 2018, Port of Newcastle, pp 58-59, viewed 19 March 2021

- 3.50 Research on the infrastructure and investment requirements for major NSW ports shows the Port of Newcastle has the required road and rail connections, as well as appropriate land and sea channel resources. It doesn't need significant investment or construction. The Port of Newcastle told us that global shipping is moving towards ultra-large vessels, and that Newcastle is the only deep water port in Australia that can handle ultra-large vessels.¹⁹⁹
- 3.51 The Port of Newcastle is the world's largest coal export port and it's linked to more than 10,000 jobs across NSW.²⁰⁰ A container terminal at the Port could create more than 4,600 additional jobs in the Hunter region alone.²⁰¹ It would also help streamline construction of solar projects across NSW, as a lot of solar power components are shipped in containers.²⁰²
- 3.52 We note that this has recently been considered as a matter by the Federal Court and the judgement is being considered by the ACCC.

Skills and education for the renewables sector and mining workforce

Auditing skills to plan for the future workforce

Summary

A skills audit is an essential first step in transition planning.

Recommendation 11

That the NSW Government conducts a skills audit to assess areas of future workforce growth, and plan to retrain or reskill workers impacted by the energy transition.

- 3.53 Stakeholders emphasised that a skills audit should be a first step in transition planning. Workers with different skillsets face different challenges. We heard that it's easier for skilled workers to find other employment while semi-skilled workers may struggle to do so.²⁰³
- 3.54 A skills audit would help develop a transition plan that focuses on the workforce strengths of affected regions. It's important to consider future requirements against the existing skills mix when planning a workforce transition. Efficiency is key to effectively transfer workers from one industry to another.²⁰⁴ Building on workers' existing and transferrable skills helps keep regions stable and promotes ongoing economic growth.²⁰⁵ It's vital that a skills audit is done as soon as possible.

¹⁹⁹ Submission 179, Port of Newcastle, p 4

²⁰⁰ Submission 228, Hunter Business Chamber, p 9

²⁰¹ AlphaBeta, *Global Gateway for NSW*, 2018, p 36, viewed 19 March 2021; Submission 133, Lock the Gate Alliance, p 25

²⁰² Submission 179, Port of Newcastle, p 2

²⁰³ Submission 233, Voices of the Valley, p 3

²⁰⁴ Mr Colley, [Transcript of evidence](#), 26 August 2020, p 10

²⁰⁵ *Weathering the storm*, 2019, pp 16, 22

- 3.55 The skills audit could also consider skills shortages in the renewable energy industry. We heard that renewable energy projects struggle to recruit workers with relevant experience and appropriate training. The Clean Energy Council attributes this to several factors, including policy uncertainty, 'project-based' employment, remote location, and salary competition.²⁰⁶ There is also limited information available on employment in the renewable energy sector in Australia.²⁰⁷ This contributes to difficulties in transition planning.
- 3.56 Jobs in the renewable energy sector won't be a direct replacement for jobs lost in coal industries.²⁰⁸ We heard about the importance of planning to ensure the delivery of new viable employment opportunities for affected workforces.²⁰⁹
- 3.57 We heard conflicting views about the transferability of skills from fossil fuel sectors. Some stakeholders argued that, because there isn't a strong correlation in the skills mix, the fossil fuel workforce doesn't have transferrable skills. The Clean Energy Council states there isn't a direct employment match for the 'core' coal mining workforce, who are semi-skilled machine operators.²¹⁰
- 3.58 Some submissions noted that workers employed in coal power generation and mining have some transferrable skills, but they'll need more training to upskill or reskill for alternate employment in the renewable sector.²¹¹
- 3.59 Beyond Zero Emissions told us about research done by the Grattan Institute that showed 'good correlation' between coal mining and manufacturing skillsets. They said that there's a broad overlap in skills, especially in green steel manufacturing.²¹² Many stakeholders said that the existing power generation and mining workforces are 'highly skilled', but didn't comment on whether this would translate to new industries.²¹³

Investing in education and training programs

Summary

Education and training courses can't meet the current and future needs of the renewable energy sector. Government investment and support is crucial to making sure they do.

²⁰⁶ *Clean Energy at Work*, Clean Energy Council, 2020, pp 26-27, viewed 19 March 2021

²⁰⁷ Submission 222, Institute for Sustainable Futures, p 7

²⁰⁸ *Clean Energy at Work*, Clean Energy Council, p 34, viewed 19 March 2021

²⁰⁹ Submission 115, City of Sydney, pp 1, 4; Submission 145, Australian Manufacturing Workers' Union, p 2

²¹⁰ *Clean Energy at Work*, Clean Energy Council, p 34, viewed 19 March 2021

²¹¹ Submission 233, Voices of the Valley, p 3; Submission 228, Hunter Business Chamber, p 11; Dr Shiel, [Transcript of evidence](#), 24 August 2020, p 26

²¹² Mr Lord, [Transcript of evidence](#), 24 August 2020, p 26; *Start with steel*, 2020, pp 28-29, viewed 19 March 2021

²¹³ Ms Coleman, [Transcript of evidence](#), 29 September 2020, p 15; Professor Broadfoot, [Transcript of evidence](#), 29 September 2020, p 11; Submission 127, Bioenergy Australia, p 15; Submission 179, Port of Newcastle, p 4; Submission 184, Beyond Zero Emissions, pp 4, 5; Submission 208, Goulburn River Stone Cottages, p 2; Submission 243, Hunter Joint Organisation, pp 4, 8, 9; Submission 253, Clean Energy Council, p 8; Dr B Smith, L Porter, V Paredes Aponte, [Repowering Our Regions: A clean-energy road map to #Repower NSW](#), Nature Conservation Council, 2017, p 19, viewed 16 April 2021

Recommendation 12

That the NSW Government invests in education and training programs to meet the needs of the renewables sector, and retrain workers impacted by the energy transition.

- 3.60 We recommend that the NSW Government invests in education and training programs for the renewable energy sector. We heard that education and training programs for jobs in the renewable energy industry don't meet the sector's needs. University and TAFE courses need to be restructured to include gaps identified by skills audits. There also needs to be a focus on retraining workers who'll be impacted by the energy transition as they'll need to up- or re-skill soon. NSW Government investment can complement investments in workers' skills by industry and employee representatives.²¹⁴
- 3.61 The availability and quality of training is key to ensuring that people can transfer across jobs. Structural change will mean many workers need retraining for new employment. They will need to access and undertake training while they're still employed.²¹⁵ This will increase pressure on education providers. It's important that workers aren't disadvantaged because they can't access programs.
- 3.62 The Hunter Joint Organisation told us about the Hunter Employment Facilitator (HEF), which looks at workforce planning, education, and training in the region. They told us the HEF doesn't have enough funding to deal with the challenge that the energy transition presents to the Hunter.²¹⁶
- 3.63 Existing problems with training opportunities are compounded by issues in project planning. We heard renewable energy projects don't plan to incorporate training and employment opportunities that would help transition workers from high-emissions sectors.²¹⁷
- 3.64 The education sector, especially TAFEs and universities, is crucial to the development of the renewable energy industry in NSW.²¹⁸ It's vital that workers can move across industries during an energy transition. Investment must be significant and it must be ongoing to best support communities and the economy.²¹⁹
- 3.65 Stakeholders emphasised the need for access and funding to education in regional areas, particularly TAFE courses.²²⁰ They told us that regional TAFEs have

²¹⁴ Ms Coleman, [Transcript of evidence](#), 29 September 2020, p 16; Ms Smith, [Transcript of evidence](#), 26 August 2020, p 10

²¹⁵ *Weathering the storm*, 2019, p 36, viewed 19 March 2021; Submission 242, Next Economy, p 12; Ms Smith, [Transcript of evidence](#), 26 August 2020, p 10

²¹⁶ Submission 243, Hunter Joint Organisation, p 10

²¹⁷ Submission 245, Maritime Union of Australia, p 5

²¹⁸ Ms Smith, [Transcript of evidence](#), 26 August 2020, p 4; Submission 242, The Next Economy, p 7; Submission 233, Voices of the Valley, p 7

²¹⁹ Ms Smith, [Transcript of evidence](#), 26 August 2020, p 3; Ms Coleman, [Transcript of evidence](#), 29 September 2020, p 16; Ms Howard, [Transcript of evidence](#), 26 August 2020, p 10

²²⁰ Submission 245, Maritime Union of Australia, p 8

been underfunded for a long time.²²¹ This has limited course offerings and caused the closure of campuses. People, especially young people, can't access the training they need. This causes low demand for these courses, which means they're less likely to be run in the future. We also heard that universities are cutting courses due to the impacts of COVID-19.²²²

- 3.66 We were told about different examples of training for the renewable energy sector. The AI Group developed a Diploma of Applied Technologies with the Victorian government in 2018, and an advanced manufacturing diploma with TAFE and the NSW Government in 2020.²²³ The University of Newcastle has introduced a renewable energy engineering degree.²²⁴ Federation University in Ballarat, Victoria, is developing a specialist course for wind technicians.²²⁵ Increased dialogue between universities, TAFEs, and industry is needed to ensure training is developed to fill existing gaps, instead of widening them.²²⁶

Educated, diverse, and skilled workforces are more adaptable

Summary

Coal mining and power generation workforces will face challenges during the energy transition because they lack diverse skillsets. It's important that we begin to address this as part of transition planning.

- 3.67 Educated and skilled workforces are resilient to the pressures of industry decline so they're more capable of transferring to new industries.²²⁷ Stakeholders emphasised differences between the fossil fuel power generation and mining workforces. Power generation has a smaller, ageing workforce. Coal mining has a much larger workforce and a higher proportion of semi-skilled labour - younger, less qualified, and higher paid than comparative workers in other industries.²²⁸ It's important to consider these differences when discussing a plan for energy transition as workers have different needs when transferring to new employment.
- 3.68 Census data indicates 34 per cent of employees in the Hunter didn't have any education or were still studying; the highest proportion (31.4 per cent) of educated employees had attained a certificate level, and only 15.5 per cent had a Bachelor-level degree.²²⁹ We heard that certificate level qualifications are often very specific and don't transfer to new industries.²³⁰ Attainment levels for

²²¹ Ms Smith, [Transcript of evidence](#), 26 August 2020, p 10; Submission 145, Australian Manufacturing Workers Union, p 6; Submission 153, Correct Planning & Consultation for Mayfield Group, p 10

²²² Professor Broadfoot, [Transcript of evidence](#), 29 September 2020, p 13

²²³ Submission 184, Beyond Zero Emissions, p 18

²²⁴ Dr Shiel, [Transcript of evidence](#), 24 August 2020, p 27

²²⁵ Ms Freeman, [Transcript of evidence](#), 24 August 2020, p 17

²²⁶ Dr Cahill, [Transcript of evidence](#), 26 August 2020, p 13; Hunter Energy Transition Alliance, [Blueprint Report](#), 2016, p 6

²²⁷ Submission 243, Hunter Joint Organisation, p 11

²²⁸ Submission 239, Hunter Renewal Project, p 2; Submission 222, Institute for Sustainable Futures, p 8

²²⁹ Submission 243, Hunter Joint Organisation, p 11

²³⁰ Dr Cahill, [Transcript of evidence](#), 26 August 2020, p 13

university and diploma level education are far below state and national averages in several Hunter Valley local government areas.²³¹

- 3.69 Studies from across the world show lower-skilled workers struggle to find alternative employment and are at a higher risk of displacement, particularly in regional areas.²³² This is compounded by geographic limitations on labour mobility, and that many growing industries require workers with higher-level qualifications. Research indicates that many workers respond to these stresses by leaving the area, but this isn't an accessible option for all workers, and it's extremely damaging to regional economies.²³³
- 3.70 The evidence we received indicates that coal communities such as those in the Hunter region lack diversely skilled workers. This leaves these communities extremely vulnerable to structural change.²³⁴ We discuss examples of workforce diversification in the case studies below.

Case study 9: Hazelwood plant's closure in the Latrobe Valley²³⁵

The Latrobe City Council noted as early as 2010 that a disproportionate amount of jobs in the area were reliant on coal mining and power industries. Over 20 per cent of the region's gross regional product was derived from the coal power industry. A lack of economic diversity and dependence on fossil fuel industries had already caused extreme economic instability and growing unemployment when the state's electricity sector was privatised in the 1990s.

In 2017 the Hazelwood power station closed with five months' notice. The short timeframe for closure was compounded by the fact that the workforce lacked formal qualifications and experience. There was little opportunity for community-led and appropriate transition planning, which led to a significant increase in unemployment and had flow-on impacts to the region's economy.

The Victorian government's response included a worker transfer scheme (WTS) administered by the Latrobe Valley Authority. This aimed to address the immediate impact of the closure on Hazelwood's workforce of around 750 people.

A survey by the Authority of former employees in August 2017, five months after the power station closed, showed only 55 per cent of respondents said they were working. Around a quarter of the Hazelwood workforce was still unemployed in 2019.

Economic diversification takes time. More than three years after Hazelwood's closure alternative industries are still developing. We heard that given more time to

²³¹ Submission 239, Hunter Renewal Project, p 2; Submission 145, Australian Manufacturing Workers' Union, p 2

²³² S Jones & C Tee, [Experiences of structural change](#), Australian Treasury, 2017, p 16, viewed 19 March 2021

²³³ [Experiences of structural change](#), 2017, p 16, 21-22, viewed 19 March 2021

²³⁴ Submission 243, Hunter Joint Organisation, p 11

²³⁵ Submission 133, Lock the Gate Alliance, pp 21, 22; Latrobe City Council, [Positioning Latrobe City for a Low Carbon Emission Future](#), pp 8, 13, viewed 19 March 2021; Submission 233, Voices of the Valley, p 2; Submission 161, Tree Frog Permaculture, p 1; Submission 245, Maritime Union of Australia, p 5; Submission 222, Institute for Sustainable Futures (University of Technology Sydney), pp 9-10; Latrobe Valley Authority, [Worker Transfer Scheme gives Hazelwood workers a new start](#), 30 August 2017, viewed 9 March 2021; Latrobe Valley Community Report, 2019, p 3, viewed 19 March 2021; Dr Briggs, [Transcript of evidence](#), 24 August 2020, p 29; Mr Colley, [Transcript of evidence](#), 26 August 2020, pp 3-4

plan, the transition would have had a less negative and less protracted impact on the communities and economy of the Latrobe Valley.

Case study 10: AGL measures to help Liddell workers retrain²³⁶

Closure of AGL's Macquarie site begins with the Liddell power station in 2023. We heard that AGL has started a transition project, which includes measures to help retrain and transition the current Liddell workforce.

AGL told us that they're strongly focused on implementing programs to address gaps identified in a skills audit. They have an online resource hub for employees to access resources in a range of areas. These include financial and superannuation support, career counselling, resume and job application workshops, education pathway information and courses, and personal counselling services for workers and their families.

They also told us there won't be forced redundancies when Liddell closes. They are planning to provide opportunities for impacted employees to undertake training and move into other roles with AGL, including at the Bayswater power station, which isn't due to close until 2035.

Case study 11: Supporting Ruhr Valley workers to retrain²³⁷

The German federal Commission on Growth, Structural Change and Employment (the Commission) implemented a number of education and training initiatives as part of its transition planning and process.

Planning work recognised the importance of education, training, and vocational qualifications to successful structural change. The Commission noted that a well-informed perspective of the region and its skillset was necessary to identify skills gaps and future education needs of its workforce. They understood the importance of this to ensuring the success of new industries.

Recognising ongoing concerns about the cost of reskilling workforces in the Ruhr, the federal government passed the Skills Development Opportunities Act 2019 (Germany). This acknowledged the financial strain on businesses resulting from the transition, and allows the Federal Employment Agency to subsidise employers' costs for necessary and targeted training to upskill or reskill employees. The Commission's work also emphasised the importance of full and meaningful cooperation from mine owners and operators to plan and provide appropriate retraining and upskilling for their workforces.

Initiatives such as SCHOOL&INDUSTRY Germany and Create STEM Future aim to diversify future employment areas and prevent generational disadvantage in the Ruhr. They promote alternative careers and skills development for young people in areas affected by structural change.

²³⁶ Mr McCormack, [Transcript of evidence](#), 29 September 2020, pp 24-25, 26-27; AGL Energy, [Rehabilitation: AGL's approach to rehabilitation of power generation infrastructure](#), 2018, p 11, viewed 19 March 2021

²³⁷ Commission on Growth, Structural Change and Employment, [Final Report \(English\)](#), 2019, pp 98-100, viewed 19 March 2021; [Skills Development Opportunities Act \(Qualifizierungschancengesetz\) 2019](#), (Germany); Submission 248, Professor Barbara Praetorius, p 1

Chapter Four – Long-term support for communities through the energy transition

A locally led long-term plan is needed to help communities

Summary

Good planning is essential to support communities through energy transition. It must be locally led, locally focused, long-term, and started as early as possible.

Recommendation 13

That the NSW Government funds long-term plans to diversify the economies of communities that will be impacted by the energy transition. The plans should be led by local communities and tailored to the needs of each community.

- 4.1 Change is underway in the energy sector, and we need to start planning now and not leave it too late. We heard that coal and industrial transitions in other jurisdictions indicate that early planning and diversification is essential to manage the impacts on communities.²³⁸
- 4.2 Transition from coal power generation and mining requires the development of alternative industries and the retraining and redeployment of workers, which takes time. Delaying transition planning may result in mass redundancies and regional labour markets left unable to cope with the volume of displaced workers.²³⁹
- 4.3 Many inquiry participants warned us about the lack of planning for the closure of the Hazelwood power station in Victoria's Latrobe Valley. Similar to coal mining regions in NSW, the Latrobe Valley was the centre of the energy industry in Victoria. We heard that lack of government planning and coordination left the region 'economically depressed'.²⁴⁰
- 4.4 Mr Jason Linnane, Singleton Council, told us that transition planning in the Latrobe Valley started too late. This meant that stakeholders did not have an opportunity to come together 'aiming at that common goal—that common objective of what they needed their future to look like'.²⁴¹
- 4.5 Studies of transitions in coal communities across the world show that, without adequate planning and support, regions have been left with below-average wages and wage stagnation.²⁴² Workers are also affected by long periods of

²³⁸ Submission 222, Institute for Sustainable Futures (University of Technology Sydney), p 1

²³⁹ Submission 222, Institute for Sustainable Futures (University of Technology Sydney), p 1

²⁴⁰ Submission 233, Voices of the Valley, p 2

²⁴¹ Mr Jason Linnane, General Manager, Singleton Council, [Transcript of evidence](#), 26 August 2020, p 32

²⁴² Mr Tracey, [Transcript of evidence](#), 26 August 2020, p 6; Submission 133, Lock the Gate Alliance, pp 22-23; Submission 141, CFMEU Mining and Energy, p 4; Submission 220a, Illawarra Region Citizens, p 2; Submission 239, Hunter Renewal Project, p 7

unemployment and long-term earnings reductions of as much as 30 percent.²⁴³ Good planning and support were key factors in the successful transition of Germany's Ruhr Valley. Although the region had an annual economic growth of 1.3 per cent between 1957 and 2000, it managed to avoid regional economic collapse, and an almost equal number of jobs to those lost in mining were created in other industries in the Ruhr, such as the service sector.²⁴⁴

Case study 3: Coal transition in the Ruhr Valley²⁴⁵

Successful transition of Germany's Ruhr Valley from coal dependence has been attributed to a number of factors. The first is collaborative and ongoing management and support from state and federal governments, including legislative reforms, and the investment of significant long-term funding.

Detailed planning and an open dialogue throughout the process involved a wide range of stakeholders (coal industry, trade unions, workforces, local communities) in decision making. This helped to create broad acceptance of, and support for transition initiatives.

Structural decline of coal mining in the Ruhr Valley began in the late 1950s. Transition of the region occurred in 3 phases. The first consisted of reactionary responses from government and industry. Towards the end of the century, long term planning began to address the concept of 'transition' in a more holistic way. There was a focus on supporting workers and communities, and economic diversification. Due to a reluctance to accept its decline, significant investments were made to 'prop up' the coal industry.

Kohlerunde ('coal roundtables') were held in 1987, 1993, and 2007. These formalised dialogue between regional stakeholders and were supported by trade unions, industry, and government. The second phase of transition was a formal end to black coal mining. At the 2007 Kohlegipfel ('coal summit') Germany's federal and state governments, the German Coal Association, and the Mining, Chemical and Energy Industrial Union formally agreed to stop black coal mining by 2018. The agreement did not include coal-fired power generation, or brown coal (lignite) mining.

As part of the agreement, the coal mining industry was consolidated into a single entity, the RAG-Stiftung. RAG-Stiftung coordinated the phase-out of black coal mining, and was financially responsible for 'perpetual obligations' (Ewigkeitslasten)

²⁴³ Submission 239, Hunter Renewal Project, p 5

²⁴⁴ P Sheldon, R Junankar & A De Rosa Pontello, [The Ruhr or Appalachia? Deciding the future of Australia's coal power workers and communities](#), 2018, pp 29-30

²⁴⁵ *The Ruhr or Appalachia?*, 2018, pp 29-34, viewed 20 May 2021; H Brauers, P Herpich, C von Hirschhausen, I Jürgens, K Neuhoff, P-Y Oei & J Richstein, [Coal Transition in Germany: Learning from past transitions to build phase-out pathways](#), 2018, pp 4, 26, viewed 20 May 2021; Foundation for Ruhr Valley History, [Decommissioning and adjustments](#), viewed 20 May 2021; S Mercier, [Four Case Studies on Just Transition: Lessons for Ireland](#), National Economic & Social Council, 2020, p 18, viewed 20 May 2021; OECD, [Germany's effort to phase out and rationalise its fossil-fuel subsidies](#), 2017, p 23, viewed 20 May 2021; Federal Ministry for Economic Affairs and Energy, [Coal](#) (English), 2021, viewed 20 May 2021; Australian Council of Trade Unions, [Sharing the challenges and opportunities of a clean energy economy: A Just Transition for coal-fired electricity sector workers and communities](#), 2016, p 21, viewed 20 May 2021; RAG-Stiftung, [Statutes](#) (English), 2008, viewed 20 May 2021; *Structural Reinforcement Act for Mining Regions (Strukturstärkungsgesetz Kohleregionen)* 2020 (Germany); K Büter, [Cluster policy and cluster initiatives in North Rhine-Westphalia](#), Rheinische Friedrich-Wilhelms-Universität Bonn, 2012, p 139-142, viewed 21 May 2021; Regional Health Centre of North Rhine-Westphalia, [Healthcare in NRW](#), 2 August 2019, viewed 21 May 2021; Coal Transition in Germany, 2018, p 26, viewed 21 May 2021

associated with the mining sector, including environmental rehabilitation, economic diversification, and regional development initiatives. The agreement also stipulated 'socially acceptable' phasing-out of industry jobs. This involved significant planning and investment, with workers supported to retrain and relocate, 'redeployed' to other jobs, or helped to retire.

The third transition phase began in 2018, when the federal government appointed a Commission on Growth, Structural Change and Employment (the Commission). The Commission oversaw the decommissioning of coal-fired power generation, and the phase-out of brown coal mining. It also focused on supporting the ongoing economic diversification of coal regions, and promoting renewable energy policy. The Structural Reinforcement Act for Mining Regions was passed in July 2020 to ensure assistance for ongoing structural change in brown coal mining regions.

Even though coal mining work has largely ceased, work continues to support communities and regions that have been affected by structural change, such as ongoing economic diversification. One example is the joint 'MedEcon Ruhr' initiative. MedEcon Ruhr focuses on developing the health sector. It's a 'bottom-up' initiative, coordinated by cities in the Ruhr region, and supported by government. In 2015, the health sector in the state employed more than 1.4 million people. Health generated one-sixth of the state's additional economic output between 2006-2017; one in four new jobs created were in the health sector.

- 4.6 The Hunter Business Chamber told us that the decline of other major industries in the Hunter region have demonstrated similar legacy impacts. These include high unemployment and underemployment, and high proportions of people on or below minimum wage.²⁴⁶ A similar outcome is expected for unsupported coal communities in an energy transition, and emphasises the importance of appropriate and detailed planning.
- 4.7 The NSW Government has acknowledged that a plan is needed. The Strategic Statement on Coal states that the Government is 'taking a responsible approach to the global transition to a low carbon future, consistent with Australia's ambition under the Paris Agreement, and is planning to manage the impact for coal-reliant communities.'²⁴⁷
- 4.8 We are encouraged by the NSW Government's commitment to this transition, especially through the passing of the Electricity Infrastructure Investment Act. The Act gives effect to the NSW Electricity Infrastructure Roadmap, a policy framework to deliver a 'modern electricity system for NSW'.²⁴⁸
- 4.9 The Government has emphasised that new energy infrastructure will support and contribute to communities, while reducing costs, and moving to a more sustainable energy system. Mr Matt Kean MP, Minister for Energy and

²⁴⁶ Submission 228, Hunter Business Chamber, p 7

²⁴⁷ NSW Government, [Strategic statement on coal and mining exploration in NSW](#), 2020, p 4

²⁴⁸ NSW Government, [Electricity Infrastructure Roadmap](#), 2020, viewed 21 January 2021

Environment said, 'the road map will support NSW in attracting huge investment in new low-carbon industries'.²⁴⁹

- 4.10 While we acknowledge the environmental and economic benefits of this reform, we consider that more work is needed to prepare coal-dependent communities for the energy transition. In our view, planning for the transition requires funding, clear leadership, and the involvement of state and local governments and key stakeholders.
- 4.11 We heard calls for a long-term, locally-led diversification strategy suitable for each region. Stakeholders across NSW, including from the Hunter, Lithgow, Goulburn, and Illawarra regions, called for the NSW Government to work with communities, industry, and unions on long-term planning.²⁵⁰
- 4.12 The transition of the Hunter region is of particular concern. Some stakeholders told us that there have been numerous transition plans, but they haven't been successful and didn't engage with the community. Lock the Gate said that attempts to plan for diversification have failed as the public were not included in their development and implementation: 'diversification requires transparent investment of funding, policy and time, driven by local knowledge.'²⁵¹ We heard that government support for these initiatives is vital to their success.²⁵²
- 4.13 We note that a key finding in the recent report of the Liddell Taskforce is that the transition in the Hunter region may be more efficient and effective with a local body leading, coordinating, and facilitating cooperation among the various organisations working towards the transition.²⁵³ We agree that local communities should lead transition plans in affected regions.
- 4.14 We acknowledge the work that the NSW Government has done in the Hunter, including the Upper Hunter Futures project and the Upper Hunter Economic Diversification Action Plan (the Plan). The Plan identified economic development opportunities in both new and existing industries for Dungog, Singleton,

²⁴⁹ New South Wales, Legislative Assembly, [Second reading speech](#), 10 November 2020 (Matt Kean, Minister for Energy and Environment)

²⁵⁰ Submission 8, The Colong Foundation for Wilderness Ltd, p 1; Submission 77, Ms Gillian Sullivan, p 1; Submission 83, Bathurst Community Climate Action Network, p 3; Submission 115, City of Sydney, p 3; Submission 130, Environmental Defenders Office NSW, p 2; Submission 139, NSW Council of Social Services, p 5; Submission 145, Australian Manufacturing Workers' Unions NSW Branch, p 4; Submission 153, Correct Planning & Consultation for Mayfair Group, p 7; Submission 168, The Australia Institute and the University of Sydney Environment Institute, p 3; Submission 178, Mrs Kathryn Teagle, p1; Submission 189, Climate Action Newcastle, p 7; Submission 220, Illawarra Region Citizens, p 6; Submission 228, Hunter Business Chamber, p 3; Submission 233, Voices of the Valley, p 3; Submission 238, Doctors for the Environment Australia, p 9; Submission 240, Energy Estate, p 7; Submission 242, The Next Economy, p 9; Submission 245, Maritime Union of Australia, p 4; Ms Howard, [Transcript of evidence](#), 26 August 2020, pp 4-5; Dr Peter Tait, Member, Core Group, Ecology and Environment Special Interest Group, Public Health Association of Australia, [Transcript of evidence](#), 26 August 2020 p 20

²⁵¹ Submission 133, Lock the Gate Alliance, p 3; Submission 239, p 6; Ms Georgina Woods, NSW Co-ordinator, Lock the Gate Alliance, [Transcript of evidence](#), 25 August 2020, p 12

²⁵² Ms Coleman, [Transcript of evidence](#), 29 September 2020, p 15; [Hunter Renewal Roadmap](#), Hunter Renewal, 2019; Submission 133, Lock the Gate Alliance, p 26

²⁵³ The Federal and NSW Governments established the Liddell Taskforce in August 2019 to assess the impacts of AGL's closure of its Liddell power plant. Australian Government, Department of Industry, Science, Energy and Resources & NSW Planning, Industry & Environment, [Report of the Liddell Taskforce](#), 2020, viewed 21 January 2021, p 18

Muswellbrook, and the Upper Hunter. Local industry and employment in these areas are focused heavily on mining and power generation.²⁵⁴

- 4.15 However, some stakeholders were critical of these plans. Lock the Gate told us the Plan didn't commit to policy change, or ensure financial support from the NSW Government. They argued that, while the Plan identified potential problem areas – such as conflict over land use – it didn't suggest any actions or policies to address them. Hunter Renewal welcomed the initiative, but were critical of the Plan's scope, scale, and timeframes. They also argued the Plan didn't address the urgency of the situation. Both stakeholders expressed concern that the development of the Plan hadn't engaged with local communities, and the development and planning processes weren't transparent.²⁵⁵
- 4.16 We understand that everyone, including communities and industry, will have a role in transition planning and staging. However, we support calls for more government leadership in planning and ongoing coordination. We also agree that it's critical that transition plans should include 'local voice, leadership and participation'.²⁵⁶
- 4.17 Mr Joe James, the CEO of the Hunter Joint Organisation, said that 'the best results occur where local leadership is instrumental in solutions, invariably some balance of local political, industry, and institutional leaders. Local leadership brings local knowledge, a network of local actors, and vested interest in the success of their communities to the challenges at hand.'²⁵⁷
- 4.18 During the inquiry, the Government told us that it is working with mining communities across NSW. We heard that the Government is in partnership with these communities, and any strategy should be a 'place-based- approach' that focuses on identifying job creation opportunities specific to the local community.²⁵⁸ While we were encouraged to hear this, we also heard evidence about the lack of overall coordination across the state, and in particular, the Hunter region.²⁵⁹

²⁵⁴ The Upper Hunter Economic Diversification Action Plan sets priorities for business growth and sustainable economic transition. It represents the Upper Hunter's response to the Government's Regional Development Framework, aiming to harness its skilled workforce, major industries, research and development capabilities, infrastructure and connectivity to build opportunities for sustainable long term regional development: NSW Government, [Upper Hunter Economic Diversification Action Plan: Implementation Priorities](#), 2018

²⁵⁵ Submission 133, Lock the Gate Alliance, p 25; Submission 239, Hunter Renewal Project, p 7

²⁵⁶ Submission 168, The Australia Institute and the University of Sydney Environment Institute, p 4; Submission 189, Climate Action Newcastle, p 7; Submission 194, Newcastle Greens, p 6; Dr Cahill, [Transcript of evidence](#), 26 August 2020, p 15; Mr Webb, [Transcript of evidence](#), 26 August 2020 p 19; Submission 178, Ms Kathryn Teagle, p 1

²⁵⁷ Mr Joe James, CEO, Hunter Joint Organisation of Councils, [Transcript of evidence](#), 29 September 2020, p 6

²⁵⁸ Mr Hanger, [Transcript of evidence](#), 24 August 2020, p 9

²⁵⁹ Mr Lord, [Transcript of evidence](#), 24 August 2020, p 27; Ms Smith, [Transcript of evidence](#), 26 August 2020, p 4; Mr Tracey, [Transcript of evidence](#), 26 August 2020, p 4

Consulting with local communities on economic diversification funding

Summary

The NSW Government has announced programs to support diversification of coal communities, and ways for these communities to have input on funding allocation and guidelines. Local communities must have a say in how this funding will be allocated. .

Finding 11

Consultation with local government, community groups, local business chambers and unions is essential in determining how funds for economic diversification will be allocated.

- 4.19 We were pleased to see that the NSW Government has announced a Royalties for Rejuvenation Fund, which will see 'a minimum of \$25 million set aside per year' for the development of 'other industries' in NSW's mining communities.²⁶⁰ As part of this, a Hunter Expert Panel will be established to 'design the terms of reference, policy, direction and guidelines for investments' from the Fund.²⁶¹
- 4.20 Stakeholders who told us about the importance of community consultation have responded positively to this announcement.²⁶² Lock the Gate noted that the Expert Panel is a 'key goal' of the Hunter Renewal Roadmap, and said that it's a 'crucial commitment' from the NSW Government in transition planning.²⁶³ Stakeholders also said that although this is a positive step, more will need to be done to effectively plan for the future of coal communities. The CFMEU Mining and Energy Division expressed concern that the Fund 'comes with no plan for the jobs coal workers are supposed to 'transition' into.'²⁶⁴
- 4.21 We heard extensive evidence about the importance of workforce planning for transition scenarios, and consider that this should be a focus of the Panel's work. The Hunter Joint Organisation (HJO) said that support for local businesses and workers impacted by changes, particularly support for them to 'move into new opportunities in the region', should be an 'immediate priority' for the panel.²⁶⁵
- 4.22 The Fund's resources will be split across many NSW mining communities. Hunter Renewal has raised concerns that more funding, including from the federal government, will be needed to effectively support individual regions like the Hunter. The HJO noted that, alongside the Fund, attracting 'substantial' private

²⁶⁰ NSW Government, [Royalties for Rejuvenation funding the future for coal mining communities](#), media release, 21 April 2021, viewed 21 May 2021

²⁶¹ NSW Government, [Expert Panel for Royalties for Rejuvenation](#), media release, 19 May 2021, viewed 21 May 2021

²⁶² Ms Coleman, [Transcript of evidence](#), 29 September 2020, p 16

²⁶³ Lock the Gate Alliance, [Lock the Gate welcomes announcement of statutory panel to oversee Hunter region rejuvenation](#), media release, 20 May 2021, viewed 21 May 2021

²⁶⁴ CFMEU Mining and Energy, [Nationals 'spare change' transition fund won't support coal jobs](#), media release, 21 April 2021, viewed 21 May 2021

²⁶⁵ Hunter Joint Organisation, [Local leaders to get the chance to deal with Hunter energy industry changes](#), media release, 20 May 2021, viewed 21 May 2021

sector investment will be vital for economic growth and job creation in the region.²⁶⁶

- 4.23 In addition to the Royalties for Rejuvenation fund, the Resources for Regions Program has begun Round Eight. This is a separate fund, aimed at supporting infrastructure and economic development in regional mining communities. A minimum of \$1 million is available to the 24 local government areas (LGAs) covered by the program. This includes Singleton, Cessnock, Lithgow, Muswellbrook, and the Upper Hunter. Additional funding is allocated based on the impact of mining on each LGA, determined using Location Quotient data.²⁶⁷
- 4.24 We heard that a strategic review was done of the program after its first six rounds, and that the criteria used to identify communities that are identified as 'most mine impacted' have been updated.²⁶⁸
- 4.25 The Department of Regional NSW told us that the program has moved towards projects that provide service delivery, different to earlier rounds' focus on economic infrastructure.²⁶⁹ We think that the expanded scope provides another important way for communities to have a say in development of their regions. We encourage the government to continue creating avenues for locally led decision making, as part of ongoing transition planning and support.

Appointing a coordinator to manage energy transition plans

Recommendation 14

That the NSW Government appoints a coordinator to manage the development of energy transition plans for communities that will be impacted by the transition.

- 4.26 We consider that there is a need for a coordinator to work with impacted communities and manage the development of energy transition plans for the regions that will be impacted by the transition.
- 4.27 We note that under the *Energy and Utilities Administration Act 1987*, a special or standing committee may be created to advise the Minister on matters, including diversifying the economy, and supporting employees and local communities affected by changes in electricity generation.²⁷⁰
- 4.28 The recent Electricity Infrastructure Investment Act also provides for the Minister to establish a board for the renewable energy sector, particularly to oversee the manufacture and construction of relevant infrastructure, and the operation of

²⁶⁶ Hunter Renewal, [The Hunter Region should have its own energy transition fund](#), media release, 22 April 2021, viewed 21 May 2021; Hunter Joint Organisation, media release, 20 May 2021, viewed 21 May 2021; Mr James, [Transcript of evidence](#), 29 September 2020, p 9

²⁶⁷ NSW Government, [Resources for Regions: Round Eight Program Guidelines](#), 2020, p 13, viewed 21 May 2021; NSW Department of Planning, Industry and Environment, [Resources for Regions – Strategic Review](#), 2019, p 3, viewed 21 May 2021

²⁶⁸ Mr Hanger, [Transcript of evidence](#), 24 August 2020, p 12; Resources for Regions – Strategic Review, 2019, p 3, viewed 21 May 2021

²⁶⁹ Mr Hanger, [Transcript of evidence](#), 24 August 2020, p 12

²⁷⁰ [Energy and Utilities Administration Act 1987](#) (NSW), s 34W

renewable energy sites. The board will prepare a plan for the sector, monitor and review the plan, and make recommendations to the Minister about its implementation.²⁷¹

- 4.29 We acknowledge the steps that the NSW Government is taking to ensure coordination and leadership in this transition, particularly the creation of the board and standing committee as noted above. However, our recommendation to create a coordinator involves a more holistic approach to oversee long-term transition for whole communities; not just the operation of the energy sector. This recommendation comes after many stakeholders called for a just transition authority.²⁷² We heard evidence from unions about the authority's role in encouraging investment and workforce development.²⁷³
- 4.30 As such, the coordinator should focus on overseeing the implementation of a locally-led transition framework. This should cover skills, training and strategic planning for diversification. The coordinator should work with stakeholders, including the environment sector, unions, local government, chambers of commerce, and mining and coal companies. Coordination of transition should happen at a local level, instead of a top-down approach telling communities what to do.
- 4.31 The coordinator should work with communities to overcome barriers for proposed projects that would boost local employment. We heard from many stakeholders about these opportunities, which include developing a coal ash reuse industry, off shore wind, green steel, and the Gardens of Stone proposal in Lithgow.²⁷⁴ The case studies below outline two of the proposals.

Case study 4: Hunter Renewal Roadmap²⁷⁵

The Hunter Renewal Roadmap was created to bring people, businesses, and organisations in the Hunter Valley together to envision a diverse, resilient, and thriving future for the region.

The roadmap aims to protect the region and its resources including its expertise in energy, civil engineering, manufacturing, food production, wine growing, tourism and agriculture, and ports for export; create new jobs and produce a diverse economy that can withstand shocks and uncertainty in mining, be they short-term declines or longer term trends.

²⁷¹ [Electricity Infrastructure Investment Act 2020](#) (NSW), Part 2; The Board has recently been appointed: Mr Matt Kean MP, [Renewable energy sector board to boost local manufacturing and jobs](#), media release, viewed 17 March 2020

²⁷² Submission 115, City of Sydney, p 4; Submission 130, Environmental Defenders Office NSW, pp 2-3; Submission 145, Australian Manufacturing Workers' Union NSW Branch, p 4; Submission 152, Public Interest Advocacy Centre, p 11; Submission 225, Inner West Council, p 2; Submission 242, The Next Economy, p 13; Ms Kristy Walters, Advocacy and Training Lead, Community Power Agency, [Transcript of evidence](#), 24 August 2020, p 12; Mr Tracey, [Transcript of evidence](#), 26 August 2020, p 6; Ms Coleman, [Transcript of evidence](#), 29 September 2020, p 21

²⁷³ Ms Smith, [Transcript of evidence](#), 26 August 2020, p 3

²⁷⁴ Submission 178, Ms Kathryn Teagle, p 1; Submission 245, Maritime Union of Australia, p 7; Dr Briggs, [Transcript of evidence](#), 24 August 2020, p 26

²⁷⁵ G Woods, [Hunter Renewal Roadmap](#), Lock the Gate Alliance, viewed 9 February 2021; Submission 239, Hunter Renewal Project, p 5

The Roadmap seeks support from local, state and federal government, business and civil society for:

- A policy framework to support a positive transformation and create more jobs, including:
 - a community-driven process that builds on the region's strengths and has strong community participation.
 - support for workers affected by the mining decline and training and alternative employment in well-paid and fulfilling jobs.
 - allocating existing programs such as renewable energy development and education and skills training towards the Hunter.
- At least \$2 billion from the Snowy Hydro Legacy Fund or other sources for coal mining regions for infrastructure upgrades for energy generation, grid connectivity, manufacturing, transport and communications.
- A Hunter Regional Diversification Taskforce with representatives from the community, unions, employers and government to coordinate the transformation of the region, create new jobs and facilitate community participation.
- A Hunter Regional Diversification Plan building on existing strengths and encouraging development of industry clusters, labour-intensive projects and education, training and technology hubs.
- Stronger laws for mine rehabilitation and power stations that increase financial bonds, improve standards, and boost jobs in environmental restoration.

Case study 5: Developing Lithgow's tourism economy²⁷⁶

Lithgow is working to expand and diversify its economy and local employment opportunities, preferably those 'linked to the unique character and advantages' of the region. Tourism in particular has significant growth potential.

The Lithgow Community Plan 2030 lists 'Turning Lithgow into a hub for visitors to the Blue Mountains region' as a Priority Project. Developing the Gardens of Stone State Conservation Area would achieve this goal by creating a new, large and diverse attraction close to the Blue Mountains, with vehicle access planned to make Lithgow the gateway community.

Lithgow is less than an hour by road or train from the Blue Mountains, which has five million visitors a year. Crowding is starting to diminish the amenity of many sites in the 'core' Blue Mountains area. The Gardens of Stone, in the forests beside Lithgow, can disperse tourists to more accessible and family-friendly areas in the region.

The Gardens of Stone is a unique opportunity to protect a landscape of rare pagoda rocks, gorges, forests and swamps and a large number of threatened plants, animals and ecological communities. Several of these biological highlights aren't found anywhere else in the world; making Destination Pagoda a potential international tourist attraction and opportunity to diversify the region's economy.

²⁷⁶ Submission 8, The Colong Foundation for Wilderness, pp 2-6; Submission 83, Bathurst Community Climate Action Network p 3; Submission 104, Blue Mountains Conservation Society, pp 3-4

- 4.32 We are concerned that without a coordinating body, coal dependent communities will bear a disproportionate burden resulting from the energy transition. We heard examples of what has and hasn't worked in other countries, particularly the Ruhr Valley in Germany, and the Appalachia region in the eastern USA. Stakeholders told us that the German transition was successful and sets a good example to follow. In contrast, unmanaged and unplanned coal closures in the Appalachia resulted in widespread and long term patterns of poverty and social dysfunction.²⁷⁷

Supporting local organisations through the energy transition

Working with local government to plan for the energy transition

Summary

Local governments are taking proactive steps to plan for energy transition. They face limitations and would benefit from more government support.

Finding 12

Local government organisations are playing a key role in the energy transition.

Recommendation 15

That the NSW Government works with the City of Sydney to develop a plan to support other local councils to move towards 100% renewable energy.

- 4.33 Local governments and communities play a key role in the energy transition, because they are increasingly committing to ambitious carbon emission targets and/or renewable energy goals. Thirty-one local government organisations in NSW have made renewable energy and carbon reduction commitments beyond NSW's formal target, which is to reach net zero carbon emissions by 2050.²⁷⁸ During this inquiry a number of local councils told us about their goals and the progress they've made as part of the energy transition.²⁷⁹
- 4.34 We recognise that both metropolitan and regional councils are being proactive in addressing issues related to energy transition in their communities. Dr Cahill of the Next Economy explained to us that 'there has been some interesting work that is being led, at the moment, by inspired regional councils ... so it is coming from the ground up.'²⁸⁰
- 4.35 We were encouraged to hear about the City of Sydney's work to switch to 100 per cent renewable electricity, and their collaboration with regional businesses (see case study below). The Lord Mayor of the City of Sydney, Ms Clover Moore,

²⁷⁷ Submission 132, Ms Robyn Bird, p 2; Submission 133, Lock the Gate Alliance, p 22; Submission 139, NSW Council of Social Service, p 4; Submission 141, CFMEU Mining and Energy, p 3

²⁷⁸ 100% Renewables, [Ambitious climate action commitments by states, local governments and communities](#), 2020, viewed 25 January 2021

²⁷⁹ Submission 115, City of Sydney, p 1; Submission 117, Central NSW Joint Organisation, p 3; Submission 137, Shoalhaven City Council, p 2; Submission 194, Newcastle Greens, p 6; Submission 224, Randwick City Council; Submission 225, Inner West Council, p 1

²⁸⁰ Dr Cahill, [Transcript of evidence](#), 26 August 2020, p 12

told us that the switch will save \$500,000 each year, and provide jobs in regional NSW. Ms Moore said that the project is 'an example of city and country working very constructively together, in the interest of our country's future.'²⁸¹

- 4.36 We heard that the City of Sydney sets an example for other councils to follow. Mr Darren O'Connell of Shoalhaven City Council told to us that the City of Sydney's work on power purchase agreements (PPAs) has encouraged other councils:

These purchase agreements can take many years to get underway ... a lot of that effort is something that other councils look at and go, 'We have more confidence now, because someone has done that. Someone we respect, the largest council in NSW... so it must not be such a bad thing. We are certainly following suit.'²⁸²

- 4.37 This is why we are recommending that that the NSW Government works with the City of Sydney to help other councils move towards 100% renewable energy.

- 4.38 The NSW Government could also help local councils to coordinate PPAs.²⁸³ Renewable energy PPAs are increasingly available in Australia. By locking in longer-term contracts, they can provide significant advantages in reducing electricity price risk, reducing energy bills, and meeting emissions targets.²⁸⁴

- 4.39 However, local governments generally have low tolerance for risk, or operate on smaller scales. Because of this, arranging PPAs and developing new procurement processes can be difficult. The City of Sydney called on the NSW Government to help councils switch to renewable energy because the government has more substantial buying power. They observed that assisting local councils would help NSW to reach its current zero-emissions target.²⁸⁵

Case study 6: City of Sydney's switch to renewable electricity²⁸⁶

Since July 2020, the City of Sydney has used 100 per cent locally sourced renewable energy to power street lights, pools, sports fields, depots, buildings, and the Sydney Town Hall.

The switch is expected to save up to half a million dollars a year over the next 10 year. It will reduce carbon emissions by around 20,000 tonnes a year. This is approximately the amount of power used by 6,000 average households.

The renewable energy is sourced from three NSW generators – the Bomen Solar Farm in Wagga Wagga, the Sapphire Wind Farm near Inverell and the Shoalhaven Solar Farm in Nowra. Around three-quarters of the power will be wind-generated; the rest will be solar.

²⁸¹ Ms Clover Moore, Lord Mayor, City of Sydney, [Transcript of evidence](#), 26 August 2020, p 29

²⁸² Mr Darren O'Connell, Energy Management Coordinator, Shoalhaven Water, Shoalhaven City Council, [Transcript of evidence](#), 26 August 2020, p 36

²⁸³ A PPA is an agreement between an independent power generator (or vendor) and a purchaser (often called the 'off-taker') for the sale and supply of energy. They can be used to supply any type of energy, but are now more often used for renewable energy. In Law Quarter Australia, [A Short Guide To Power Purchase Agreements \(PPA\) In Australia](#), 2020, viewed 22 January 2021

²⁸⁴ Submission 194, Newcastle Greens, p 5; Submission 224, Randwick City Council, p 2; Mr O'Connell, [Transcript of evidence](#), 26 August 2020, p 29

²⁸⁵ Ms Clover Moore, [Transcript of evidence](#), 26 August 2020, p 30

²⁸⁶ City of Sydney, [We've made the switch to 100% renewable energy](#), 2021, viewed 22 January 2021

The switch was done through a power purchase agreement with Flow Power. The agreement will create jobs, support communities impacted by COVID-19, and create new opportunities in drought-affected regional NSW.

Flow Power estimates that the Sapphire Wind Farm created 200 jobs during construction, and will provide 150 ongoing jobs. The Bomen Solar Farm in Wagga Wagga created 250 jobs during construction, and will create 150 ongoing jobs. Ninety Bomen employees were previously unemployed, including 38 Aboriginal workers, and 18 women.

Case study 7: Southern Lights NSW²⁸⁷

Southern Lights aims to replace over 75,000 street lights with state-of-the-art LED lighting and smart controls technology across 41 local government areas from the South Coast to Broken Hill.

The deployment began in late 2019. By late 2020 it had installed almost 40,000 lights. It is expected to be completed by late 2022.

Council street lighting charges are expected to drop by around \$7 million (about 33 per cent) from 1 July 2020. Roughly 50 per cent of this is expected to flow to member councils as recurrent savings.

Funding the Hunter Joint Organisation's 2050 foundation

Recommendation 16

That the NSW Government provides funding for the Hunter Joint Organisation's proposed 2050 foundation.

- 4.40 We were also pleased to hear about the work being done by the Hunter Joint Organisation (HJO). The HJO is made up of ten local councils from the Hunter region. They have developed the Hunter 2050 Foundation (the Foundation), which aims to provide local leadership for the region's economic diversification and transformation.²⁸⁸
- 4.41 The Foundation's proposed focus is securing new investment and supporting local jobs. It is intended to be founded by local leadership with collaborative support from all levels of government. The HJO explained that the Foundation's board would aim to support new industries and business opportunities. It would also work to help locals, especially in the mining and energy sectors, find meaningful employment by creating a 'regional scale sustainable workforce supporting capability'. Another focus would be working with the mining, energy, and broader industrial sectors, to reuse and repurpose mine sites for new industries.²⁸⁹
- 4.42 The HJO told us that the region cannot do it alone and it requires the collaboration of other levels of government. More support is needed to match the funding that local councils have invested in this foundation. We heard that, to implement the project, the HJO needs \$5 million in seed investment from the

²⁸⁷ Southern Lights NSW, [Project benefits](#), viewed 4 March 2021

²⁸⁸ Hunter Joint Organisation of Councils, [The Hunter 2050 Foundation](#), 2021, viewed 22 January 2021

²⁸⁹ Mr James, [Transcript of evidence](#), 29 September 2020, p 6

state government over a period of three years, matched by a similar sum from the federal government and the region.²⁹⁰ We support these calls, and we're recommending that the government provides the funding required for the Foundation.

- 4.43 Many stakeholders across NSW called for more government support, and increased leadership for their regions. Shoalhaven City Council told us that the 'business as usual' approach towards energy management in local government is no longer a sustainable model. Local councils will need to rely on the state government to support their transition to a sustainable energy supply in the future.²⁹¹ We heard that there has been some limited government support for regional councils and their communities in this sector.²⁹² There needs to be more support and more funding from the NSW Government for local governments to implement planned initiatives.
- 4.44 We heard repeatedly that funding is a significant barrier for local governments. The Central NSW Joint Organisation told us about members councils' projects to transition to renewable energy. They said a lack of funding was a key barrier, and that they have sought more government funding for these projects.²⁹³
- 4.45 We acknowledge that the NSW Government has done work to directly support local councils, including creating the Regional Community Energy Fund. This fund provides grants to regional projects that are 'innovative or generate on-demand renewable energy and provide benefit to the local community.'²⁹⁴ We were pleased to hear about this fund and support its continuation, but we also think that more needs to be done.

Improving access to solar power through local council initiatives

Summary

Special Charge Schemes make it easier for households to access renewable energy, especially solar. NSW councils aren't allowed to run them currently, and this should change.

Recommendation 17

That the NSW Government amends the *Local Government Act 1993* to allow local councils to establish Special Charge Schemes, for example, to increase residents' access to solar power.

- 4.46 We are recommending that the Local Government Act is amended to allow SCSs to be established in NSW. It will assist local councils to increase their renewable energy options and enable better access to renewable energy for their residents. This is particularly important because it will encourage more residents,

²⁹⁰ Mr James, [Transcript of evidence](#), 29 September 2020, pp 6, 9

²⁹¹ Submission 137, Shoalhaven City Council, p 1; Submission 9, EcoEnviro Pty Ltd, p 2; Submission 241, Eurobodalla Shire Council, p 3; Ms Woods, [Transcript of evidence](#), 25 August 2020, p 10

²⁹² Submission 218, Mr Jonathan Paul Marshall, p 4

²⁹³ Submission 117, Central NSW Joint Organisation, p 3; Submission 137, Shoalhaven City Council, p 5; Submission 233, Voices of the Valley, p 2

²⁹⁴ Submission 244, NSW Government, p 16

particularly renters and those from lower-socio economic backgrounds, to access rooftop solar panels and battery storage installations for their homes.

- 4.47 Regulatory barriers also prevent local governments from helping their residents access and adopt renewable energy. In particular, we heard that the *Local Government Act 1993* doesn't currently allow for the creation of Special Charge Schemes (SCS).²⁹⁵ We are recommending that the NSW Government considers amending the Local Government Act to allow councils to establish SCSs.
- 4.48 SCSs are a way for local councils to seek landowner contributions for costs associated with particular infrastructure projects. They're set up when the proposed work will be of special benefit to a small group of properties. This is opposed to a rises in general rates, which is aimed at funding infrastructure projects of benefit to the community at large.²⁹⁶
- 4.49 We heard that SCSs are an important way for local government to provide financial assistance for installation of renewable energy technology, particularly rooftop solar panels. Shoalhaven City Council told us about the importance of SCSs in promoting uptake of solar panels in the City of Darebin, in north Melbourne. The council's Solar Savers Program, launched in 2014, enabled residents to install rooftop solar panels, with the council making upfront payment for system costs and facilitating access to approved suppliers and components. Participating residents then pay back costs, with no interest, through their rates notices over a maximum period of 10 years. Almost 1,400 households participated in the first three rounds of the 'rates stream' of the Program.²⁹⁷
- 4.50 They also said that under section 163 of Victoria's *Local Government Act 1989*, councils can establish an SCS to recover costs associated with renewable energy related works or programs. We note that in NSW there isn't a mechanism in the Local Government Act that allows a program of repayments via rates notices, and we support calls for the Act to be amended.²⁹⁸

Providing more information on co-operatives

Summary

Information about renewable energy co-operatives should be more available. They're a way for communities to access renewables.

Recommendation 18

That the NSW Government ensures that content about government business programs on agency websites includes information on co-operatives.

²⁹⁵ Submission 137, Shoalhaven City Council, p 6; City of Darebin, [Development Contributions Plan](#), 2003, revised 2015, p 6, viewed 1 June 2021

²⁹⁶ Yarra Ranges Council, [Special Charge Scheme FAQs](#), 2021, viewed 1 June 2021

²⁹⁷ Mr O'Connell, [Transcript of evidence](#), 26 August 2020, p 32; City of Darebin, [Darebin Solar Saver \(Rates stream\) Frequently Asked Questions](#), 3 August 2020, viewed 1 June 2021; City of Darebin, [Energy and Climate](#), 2016, viewed 1 June 2021

²⁹⁸ Submission 137, Shoalhaven City Council, p 6; [Local Government Act 1989](#) (VIC), part 8 s 162

- 4.51 We were encouraged to hear about the success of co-operatives and their contribution to the energy transition. We consider that more information should be available to the public about the work of co-operatives, as well as regulatory guidance for co-operative members and the community.
- 4.52 We heard about the work of co-operatives (or co-ops) on micro-grids and stand-alone systems (SAPs). Co-ops and mutual enterprises are businesses that are owned by members rather than shareholders. We were told that the co-op model has a number of advantages for ownership of renewable energy assets.
- 4.53 Mr Anthony Taylor from the Business Council of Co-operatives and Mutuals told us that co-ops allow community participation and ownership, which can 'build social licence for innovative solutions'. Co-ops can include more of the community, like renters, in the ownership of renewable energy:
- It keeps wealth, services, and employment local, and builds local resilience. It harnesses local know-how and capital investment and it is a scalable and replicable model of community ownership.²⁹⁹
- 4.54 We heard that there is a lack of comprehensive information about co-ops on government websites. In particular, we were told that government business support websites do not provide adequate information and guidance about co-ops, including about capital raising and disclosure requirements.³⁰⁰
- 4.55 We also heard calls for the NSW Government to modernise and streamline the regulation of co-ops. This would allow communities to have greater investment in local assets, particularly renewable energy assets.³⁰¹ We support these calls.
- 4.56 We are recommending that the NSW Government ensures that content about government business programs on agency websites includes information on co-operatives.
- 4.57 The case study below highlights the benefits of co-ops.

Case study 8: Hepburn Wind³⁰²

Hepburn Wind is an example of community energy, where co-op members raised \$10 million for the operation of its two wind turbines. The Government supplemented the project through grants of \$1.5 million and a bank loan of \$3.1 million.

Since it began operating it has returned around \$250,000 to community causes from its profits and has abated around 90,000 tons of carbon dioxide emissions. It also returned around \$250,000 in dividends to members who invested in the co-op in 2019-2020 financial year.

²⁹⁹ Mr Anthony Taylor, Policy and Research Adviser, Business Council of Co-operatives and Mutuals, [Transcript of evidence](#), 25 August 2020, p 42

³⁰⁰ Submission 232, Business Council of Co-operatives and Mutuals, p 5; Mr Taylor, [Transcript of evidence](#), 25 August 2020, p 42

³⁰¹ Mr Taylor, [Transcript of evidence](#), 25 August 2020, p 42

³⁰² Mr Taylor, [Transcript of evidence](#), 25 August 2020, p 42

Hepburn Wind is now starting to pay off its debts and pay dividends to members and is also looking at how it can invest in new energy projects.

Chapter Five – Impact of energy transition on transmission infrastructure

Upgrading infrastructure as part of the transition

Summary

Current infrastructure needs to be upgraded, otherwise it won't allow more renewable energy connections.

Finding 13

Transmission infrastructure upgrades are a key part of the energy transition.

- 5.1 Modernising our electricity infrastructure is key to the energy transition. This is recognised in the Electricity Infrastructure Investment Act, which identifies three types of infrastructure that need replacement: transmission infrastructure to support diversifying the grid to renewable-rich areas; renewable generation; and long duration storage to complement intermittent renewables.³⁰³
- 5.2 The Act's objectives for energy infrastructure include minimum generation and long duration storage by 2034. The aim of these is to achieve the generation needed to lower electricity costs; long duration storage to meet the National Energy Market's (NEM) Reliability Standard; and firming infrastructure to meet the NSW Energy Security Target and reliability standard.³⁰⁴
- 5.3 We were told that the government should accelerate upgrades of electricity infrastructure, particularly expanding capacity for renewables generation and distribution.³⁰⁵ As noted in chapter 2, challenges for the renewable energy industry include grid connection, a congested and inadequate transmission network, and the planning assessment and compliance regime.³⁰⁶
- 5.4 The Act addresses many of the challenges raised by inquiry participants, by providing an approach to coordinate investment in new generation, transmission, long duration storage, and firming projects. Renewable energy zones (REZs) are a mechanism to coordinate investment and build new transmission infrastructure. As noted by the Minister, REZs combine generation, transmission, storage and

³⁰³ New South Wales, Legislative Assembly, [Second reading speech](#), 10 November 2020 (Matt Kean, Minister for Energy and Environment)

³⁰⁴ New South Wales, Legislative Assembly, [Second reading speech](#), 10 November 2020 (Matt Kean, Minister for Energy and Environment)

³⁰⁵ Submission 88, ITK Services, pp 1 -2; Submission 115, City of Sydney, pp 2, 5; Submission 149, Energy Networks Australia, p 1; Submission 136, Energy Australia, pp 3-4; Submission 224, Randwick City Council, p 2; Submission 241, Eurobodalla Shire Council, p 3; Submission 158, Transgrid, pp 2-3; Submission 164, Climate Rescue Wagga, pp 2 & 6; Submission 184, Beyond Zero Emissions, pp 4, 19; Submission 194, Newcastle Greens, p 6; Submission 235, Wodonga Albury Towards Climate Health (WATCH), p 2; Submission 242, The Next Economy, pp 3-4; Submission 245, Maritime Union Australia, pp 8, 25 & 28; Submission 253, Clean Energy Council, pp 3, 9

³⁰⁶ Submission 136, Energy Australia, pp11-12, Submission 149, Energy Networks Australia, p1, Submission 158, Transgrid, pp 4-5, Submission 253, Clean Energy Council, p 9

system strength services to ensure a secure, affordable and reliable energy system.³⁰⁷

- 5.5 The Electricity Infrastructure Roadmap, Electricity Strategy and Transmission Infrastructure Strategy provide a framework for the first five REZs. Planning and consultation will be guided by the NSW Energy Corporation.³⁰⁸
- 5.6 Mechanisms in the Roadmap will coordinate investment in renewable energy mixes in the zones. A REZ Transmission Development Scheme will ensure there is more transmission capacity to accommodate generation from REZs. The National Electricity Law or the National Electricity Rules will be adapted so that new shared transmission or distribution in a REZ will be subject to rules for network connection, access, planning and economic regulation.³⁰⁹
- 5.7 The Transmission Infrastructure Strategy will accelerate the development of four priority transmission projects, in order to access low cost energy from other states and the Snowy region. The strategy aims to upgrade interconnectors between Victoria and NSW, and Queensland and NSW, by 2022. New interconnection infrastructure will also be built between South Australia and NSW by 2023, and from Snowy Hydro to Bannaby via Wagga Wagga by 2024.³¹⁰
- 5.8 A key part of the energy transition will be augmenting the transmission network to improve export capacity from REZs. Transmission system operators will need approval for scale-efficient transmission upgrades. Investment proposals will be assessed under a regime similar to the Australian Energy Regulator's (AER) regulatory investment test for transmission (RIT-T) and cost recovery provisions in the National Electricity Rules for REZ transmission projects. This takes the form of a specific NSW Transmission Efficiency Test. Transmission route design will be led by the NSW Energy Corporation. They will aim to establish routes that are best for renewable energy and storage resources, and subject to criteria including community support.³¹¹
- 5.9 The NSW Transmission Infrastructure Strategy aligns with priorities identified by the Australian Energy Market Operator (AEMO) to ensure the National Energy

³⁰⁷ New South Wales, Legislative Assembly, [Second reading speech](#), 10 November 2020 (Matt Kean, Minister for Energy and Environment); NSW Department of Planning, Industry and Environment, [NSW Electricity Infrastructure Roadmap](#), viewed January 2020

³⁰⁸ NSW Department of Planning, Industry and Environment, [NSW Transmission Infrastructure Strategy](#), viewed January 2020; NSW Department of Planning, Industry and Environment, [NSW Electricity Strategy](#), viewed January 2020; Energy NSW, [Renewable Energy Zones](#), viewed January 2020

³⁰⁹ NSW Department of Planning, Industry and Environment, [NSW Electricity Infrastructure Roadmap](#), p 26, viewed January 2020; New South Wales, Legislative Assembly, [Second reading speech](#), 10 November 2020 (Matt Kean, Minister for Energy and Environment)

³¹⁰ NSW Department of Planning, Industry and Environment, [NSW Transmission Infrastructure Strategy](#), p 8, viewed January 2020. Interconnectors are large scale transmission connections, consisting of high voltage poles and wires, with other states, allowing the lowest cost energy to be sold and sent to where it's needed.

³¹¹ NSW Department of Planning, Industry and Environment, [NSW Electricity Infrastructure Roadmap](#), p 38, viewed January 2020

Market (NEM) is efficient and reliable.³¹²

- 5.10 The AEMO published its first Integrated System Plan (ISP) in 2018, to be updated every two years. AEMO's 2020 ISP included measures to boost connection between states, increase resilience, and achieve a more flexible and adaptable system across the NEM.³¹³
- 5.11 The NSW Energy Security Target will signal how much firm capacity is needed for a reliable electricity system. Fast-tracking transmission infrastructure will implement projects that AEMO considers necessary to respond to a possible breach of the Energy Security Target during the phase-out of coal-fired power generation.³¹⁴
- 5.12 The ESB's 2020 report on the NEM noted that system stability (security) and investor confidence remain critical issues. In this context, the introduction of a NSW Electricity Infrastructure Investment Safeguard scheme creates a signal for investors to support expanding and modernising electricity infrastructure.³¹⁵

Monitoring the framework for infrastructure upgrades

Network costs

Summary

The NSW Government should make sure that transmission infrastructure projects don't result in price rises for consumers, or impact on network reliability.

Recommendation 19

That the NSW Government monitors the implementation of the framework for transmission infrastructure projects under the *Electricity Infrastructure Investment Act 2020* and Electricity Infrastructure Roadmap, and considers the need for further reform.

- 5.13 In our view, it's important to monitor the impact of the Electricity Infrastructure Roadmap on network market performance and pricing for business, industrial, and residential consumers. Given the number of national oversight authorities, and a possible change to the role of the Independent Pricing and Regulatory Tribunal (IPART), it will be vital to clarify who will review the modernisation of electricity infrastructure, including network costs borne by consumers. We note that the Minister has recognised the need for more work on the details of the

³¹² NSW Department of Planning, Industry and Environment, [NSW Transmission Infrastructure Strategy](#), p 8, viewed January 2020, New South Wales, Legislative Assembly, [Second reading speech](#), 10 November 2020 (Matt Kean, Minister for Energy and Environment)

³¹³ Australian Energy Market Operator, [Integrated System Plan 2018](#), viewed January 2021; Australian Energy Market Operator, [Integrated System Plan 2020](#), viewed January 2021. The Integrated System Plan (ISP) is a whole-of-system plan for eastern Australia's power system and the development of the NEM over the next 20 years.

³¹⁴ New South Wales, Legislative Assembly, [Second reading speech](#), 10 November 2020 (Matt Kean, Minister for Energy and Environment)

³¹⁵ Energy Security Board, Media Release, 5 January 2021, [Restoring the health of the national electricity market](#), viewed January 2021; NSW Department of Planning, Industry and Environment, [NSW Electricity Infrastructure Roadmap](#), p 29, viewed January 2021

Electricity Infrastructure Roadmap.³¹⁶

- 5.14 Renewing generation and transmission infrastructure involves high capital costs, long lead times, and increased risk. We heard that consumers bear the price shocks arising from these risks but are not empowered to manage them.³¹⁷
- 5.15 Inquiry participants expressed concern about possible cost increases due to network upgrades and system services. Delta Electricity said that the high total cost of renewable capacity (firming, system services and network upgrades) would push up electricity prices. EnergyAustralia told us that the cost of firming renewables may have been underestimated and needs more consideration.³¹⁸
- 5.16 However, we heard that the NSW Government's focus on new generation is ensuring that the maximum amount is paid by the private sector, and costs passed on to consumers are regulated and scrutinised so that the transition occurs at the lowest cost to them. The Department of Planning, Industry and Environment noted that wholesale energy savings should offset any additional costs of grid enhancements.³¹⁹
- 5.17 The NSW Transmission Efficiency Test aims to determine the cost of building and operating a specific REZ transmission line or upgrade, and protect consumers from paying more than necessary, while creating incentives for the line to be built quickly and efficiently.³²⁰
- 5.18 Industry stakeholders agreed on the importance of the RIT-T assessment process, given the economic impact on consumers. EnergyAustralia cautioned against fast-track planning which could jeopardise the rigour of the assessment process.³²¹
- 5.19 Essential Energy pointed to the need for lower network charges and customer bills, as affordability is a challenge for consumers. The Maritime Union of Australia stressed the importance of rapid and planned development of the grid in the public interest and at an affordable price.³²²
- 5.20 We heard that excessive spending on monopoly infrastructure (gold-plating) provided high returns to network businesses, with household electricity bills rising by 35 per cent from 2007/8 to 2017/8. EnergyAustralia told us that gold-

³¹⁶ New South Wales, Legislative Assembly, [Second reading speech](#), 10 November 2020 (Matt Kean, Minister for Energy and Environment)

³¹⁷ Submission 246, Australian Energy Market Commission, pp 2 & 4; NSW Department of Planning, Industry and Environment, [NSW Electricity Infrastructure Roadmap](#), pp 17, 29, viewed January 2021

³¹⁸ Submission 174, Delta Electricity, p 1; Submission 136, Energy Australia, p 6

³¹⁹ Mr O'Reilly, [Transcript of evidence](#), 24 August 2020, pp 1-2, 7; Australian Energy Regulator, [Regulatory Test for Transmission and application guidelines 2010](#), viewed January 2020. The Australian Energy Regulator (AER) assesses transmission projects under its regulatory test for transmission (RIT-T), which identifies the transmission investment option that maximises economic benefits and meets the jurisdictional or Electricity Rule based reliability standards.

³²⁰ NSW Department of Planning, Industry and Environment, [NSW Electricity Infrastructure Roadmap](#), p 38, viewed January 2021

³²¹ Submission 136, EnergyAustralia, p 12; Submission 142, Essential Energy, p 3; Submission 174, Delta Electricity, p 2; Mr McGoldrick, [Transcript of evidence](#), 24 August, 2020, p 43

³²² Submission 142, Essential Energy pp 1, 7; Submission 245, Maritime Union of Australia, pp 8-9

plating may recur without robust benefits cases for new transmission projects.³²³

- 5.21 Network costs in NSW make up around 40 per cent of residential electricity bills. From 2013-14 to 2017-18, network costs fell by an average of 20 per cent across distribution networks.³²⁴
- 5.22 IPART monitors the NSW retail electricity market. We heard that IPART tracks competition and reviews prices to see that increases reflect the growth in costs. However IPART has recommended removing the requirement for it to conduct annual monitoring reviews of the retail electricity market, as the same issues are being addressed by other regulators. It suggested that the NSW Government request IPART to review or investigate NSW-specific energy matters if needed.³²⁵
- 5.23 The Minister has said that as a result of the NSW Government's roadmap, between 2023 and 2042 residential customers are expected to save around \$130 a year, and small businesses around \$430 per year. This is after accounting for new schemes for transmission, generation, and storage. He also noted that protecting the financial interests of consumers was a key aim of the Electricity Infrastructure Investment Act.³²⁶

Distributed energy resources

- 5.24 Distributed energy resources (DER) like rooftop solar, batteries, electric vehicles, and smart energy management devices are a significant and growing part of our energy system. DER require re-thinking how energy network infrastructure is used.³²⁷
- 5.25 Mr Benn Barr, Chief Executive of the Australian Energy Market Commission, (AEMC) told us that issues for the future grid include technology changing how energy is consumed and created, integrating DER, and the evolving two-way market. He said that the Energy Security Board (ESB) is modelling the market to address concerns that consumers who don't have solar panels are paying for other people. The AEMC have recommended that electricity is an essential service and customers should receive protections, no matter how they get their electricity.³²⁸
- 5.26 We were pleased to hear that the AEMC is considering requests for changes to the National Energy Rules (NER), aimed at more flexibility in managing and

³²³ Submission 136, EnergyAustralia, p 12

³²⁴ Submission 244, NSW Government, pp 11 & 17. The NSW Government has introduced the network price guarantee, under which total network charges in 2018-2019 were guaranteed to be lower than in 2013-2014 for the Ausgrid and Endeavour Energy networks.

³²⁵ Mr O'Reilly, [Transcript of evidence](#), 24 August 2020, p 7; Independent Pricing and Regulatory Tribunal (IPART), [Review of the performance and competitiveness of the NSW Retail Energy Market 2018-19](#), pp 2 & 10; IPART, [Electricity reviews](#), viewed January 2020. IPART also sets retailer solar feed-in tariffs paid to households and businesses for excess electricity that solar PV systems export to the grid.

³²⁶ New South Wales, Legislative Assembly, [Second reading speech](#), 10 November 2020 (Matt Kean, Minister for Energy and Environment)

³²⁷ Submission 246, Australian Energy Market Commission, p 8; Energy Security Board, [Post 2025 Electricity Market Design Project](#), viewed January 2021

³²⁸ Mr Benn Barr, Chief Executive, Australian Energy Market Commission, [Transcript of evidence](#), 25 August 2020, pp 30, 32

regulating the NEM and efficient integration of DER in the grid.³²⁹

- 5.27 Much of the work on DER integration is the result of the Distributed Energy Integration Program (DEIP), coordinated by ARENA. The DEIP includes government agencies, market authorities, industry, and consumer associations, and aims to 'maximise the value' of DER for all energy users across Australia.³³⁰ As a result of community consultations in 2019, South Australian Power Networks, the St Vincent de Paul Society, the Total Environment Centre and the Australian Council of Social Services made requests for rule changes. Draft rule determinations in response to these requests are being reviewed by AEMC, with a decision expected in mid-2021. The proposed changes aim to support decarbonisation of the electricity sector, access, pricing and incentive arrangements for DER integration, and clarify network and service providers' roles.³³¹
- 5.28 Inquiry participants raised the need for NSW to participate in the redesign of the National Energy Market (NEM). We heard that the NSW Government has introduced measures to address the impact of DER on the electricity system. In particular, we heard that they have co-funded a trial to explore how households can get more value from their solar, batteries, and other smart technologies through virtual power plant and demand aggregation services.³³²
- 5.29 The NSW Government is also looking at how to support data collection for AEMO's register of DER devices at residential or business locations, as part of work to better integrate DER into the grid.³³³
- 5.30 We heard that the sector is also working on initiatives to design the energy system post 2025, including measures that would allow DER to participate in different markets and determine, via price signals, which use of customers' resources has the highest value to the system.³³⁴

³²⁹ Answers to question on notice, [Australian Energy Market Commission](#), 29 September 2020

³³⁰ ARENA, [Distributed Energy Integration Program](#), 22 April 2021, viewed 26 May 2021

³³¹ Australian Energy Market Commission, [Draft Rule Determination – Access, pricing and incentive arrangements for DER](#), 25 March 2021, pp i-ii, viii-ix, viewed 26 May 2021; Australian Energy Market Commission, [New plan to make room on grid for more home solar and batteries](#), media release, 25 March 2021, viewed 26 May 2021; Australian Energy Market Commission, [Public consultation update: distributed energy resources](#), media release, 6 May 2021, viewed 26 May 2021

³³² Submission 115, City of Sydney, pp 3, 5; Submission 136, EnergyAustralia, pp 13-14; Mr McGoldrick, [Transcript of evidence](#), 24 August 2020, pp 45-46; Submission 142, Essential Energy, pp 5-6; Submission 149, Energy Networks Australia, pp 2-3; Submission 185, Professor James Goodman, p 3; Submission 224, Randwick City Council, p 2; Submission 245, Maritime Union of Australia, p 25; Submission 246, Australian Energy Market Commission; pp 2, 4-5, 8, Submission 244, NSW Government, pp 13, 20

³³³ Submission 244, NSW Government, p 20; Australian Energy Market Operator (AEMO), [Distributed Energy Resource Register](#), viewed February 2021

³³⁴ Submission 142, Essential Energy, pp 6-7

Tariff reform

Summary

The current tariff system needs to be changed so consumers don't have to pay for costs they didn't incur. Tariffs should be cost reflective and transparent.

- 5.31 We heard that electricity pricing is critical to efficiency and fairness in the transformation of the electricity sector.³³⁵
- 5.32 Energy Networks Australia (ENA) told us that over \$16 billion in network savings could be achieved by 2050 if new tariffs and retail pricing options are introduced, along with a framework for networks to buy grid services from customers with DER.³³⁶
- 5.33 Rule changes being reviewed by the Australian Energy Market Commission (AEMC) would mean networks could charge for exports, for example, if customers' solar exports needed to be curbed. We heard that this would be revenue neutral, and other customers would not pay the charge. ENA supported considering negative tariffs to reward customers above their feed-in tariff for exporting solar when it contributes value to the network.³³⁷
- 5.34 ENA outlined reforms needed for a cost reflective pricing system, where people who incur costs, or cause costs to be incurred, must pay them. These include enabling consumers to participate in a range of markets; improving tariffs and creating new tariffs and pricing options, and allowing networks to buy grid services from DER customers. ENA noted that tariff reform is essential to ensure the fair sharing of electricity, and success for rural and regional consumers and community energy projects.³³⁸
- 5.35 Inquiry participants supported a demand response mechanism to improve distribution network management and allocate cost benefits more equitably.³³⁹
- 5.36 The Public Interest Advocacy Centre told us that tariff reform would support system efficiency by ensuring that costs of certain consumption are clearly signalled and recovered from those who incur them. They said that tariff reform,

³³⁵ Submission 149, Energy Networks Australia, p 7; Submission 142, Essential Energy, p 4; Submission 246, Australian Energy Market Commission, p 2; Submission 115, City of Sydney, pp 2-3; Submission 136, EnergyAustralia, p 13; [Answers to questions on notice](#), 9 October 2020, Public Interest Advocacy Centre, p 1; [Answers to questions on notice](#), 29 September 2020, Australian Energy Market Commission, pp 1-2

³³⁶ Mr Chris Gilbert, Senior Economic Advisor, Energy Networks Australia, [Transcript of evidence](#), 25 August 2020, p 34

³³⁷ Mr Gilbert, [Transcript of evidence](#), 25 August 2020, pp 35-36

³³⁸ Submission 149, Energy Networks Australia, pp 7-8; Mr Gilbert, [Transcript of evidence](#), 25 August 2020, p 36.

³³⁹ Submission 115, City of Sydney, p 3; Submission 136, Energy Australia, p 13; Submission 142, Essential Energy, pp 4-5; Submission 149, Energy Networks Australia, pp 2, 8; Submission 224, Randwick City Council, p 3; Submission 246, Australian Energy Market Commission, p 2; [Answers to questions on notice](#), Public Interest Advocacy Centre, 9 October 2020, pp 1-2; [Answers to questions on notice](#), Australian Energy Market Commission, 29 September 2020, pp 1-2

including demand response pricing, gives households more ways to control their energy use and their bills while benefitting the energy system.³⁴⁰

- 5.37 We heard that the AEMC has proposed changes to the National Electricity Rules to implement a mechanism that would allow demand response service providers to participate in the wholesale market as a substitute for generation, and be paid for this service.³⁴¹
- 5.38 Essential Energy supported re-examining how distribution network services could be appropriately valued. This could be rewarding customers when their DER contributes to the network (reducing peak demand) and charging for costs imposed by increased solar penetration (causing voltage issues). Essential Energy said that until recently, growing customer demand required more network capacity, however, a tariff could be a more efficient way to solve network problems like the saturation of rooftop solar.³⁴²
- 5.39 We agree that network pricing or tariff reform should ensure cost transparency. The rules governing the NSW network and the National Energy Market should manage current and future developments in the power system to make it more sustainable and ensure that the interests of consumers are protected.

Encouraging stand-alone power systems

Summary

Stand-alone power systems are important for regional and rural communities to be able to access a reliable source of power. They don't have a good regulatory framework in NSW, which needs to be addressed.

Finding 14

Stand-alone power systems and microgrids could lower network costs and provide reliable power for regional communities.

Recommendation 20

That the NSW Government continues to implement changes to the state's regulatory framework to encourage stand-alone power systems.

- 5.40 The NSW Government should monitor the effectiveness of regulatory and policy support for stand-alone power systems (SAPS) to ensure that energy users have equal consumer protection. More consideration should be given to the contribution that distributed networks can make to the power supply system's resilience during bushfires and other unforeseen climate emergencies.
- 5.41 SAPS include individual power systems, which relate only to a single customer, and microgrids, which supply electricity to multiple customers. SAPS are likely to

³⁴⁰ [Answers to questions on notice](#), Public Interest Advocacy Centre, 9 October 2020, p 2

³⁴¹ Submission 244, NSW Government, p 19

³⁴² Submission 142, Essential Energy, pp 4-5

be beneficial in rural areas where it is expensive to deploy and maintain long expanses of poles and wires.³⁴³

- 5.42 There was strong support from individuals, energy providers, local government, and communities for measures to enable the development of SAPS.³⁴⁴
- 5.43 Energy Australia urged that regulatory and market frameworks be reviewed to better support lower cost options, like SAPS, when network investment decisions are made. We heard that 17 per cent of Essential Energy's network length is needed to service around half a per cent of regional customers. Larger-scale use of SAPS could improve reliable supply to grid customers, lower the cost to maintain the network, lower bushfire risk, and improve the network's resilience.³⁴⁵
- 5.44 Until recently, national energy laws and rules have only applied to the interconnected electricity grid in eastern Australia, which underpins the National Energy Market (NEM). SAPS not connected to the grid, generally in remote areas, are regulated by states and territories. Some states have well-developed supporting legislation and regulatory frameworks, but we were told that this has not been the case in NSW.³⁴⁶
- 5.45 In 2019 the AEMC recommended changes to both national energy law and jurisdictional legislation to support the use of SAPS, protect consumers, and maintain service standards. The AEMC noted that jurisdictions will decide appropriate conditions for microgrids that supply small towns or very small groups of customers. It encouraged them to start the process as soon as possible to realise the benefits.³⁴⁷
- 5.46 A rule change was confirmed in early 2020, allowing network businesses to establish SAPS where there was a demonstrable need. We heard that this would encourage more SAPS in bushfire-affected areas.³⁴⁸
- 5.47 In 2020, IPART began a review of the reliability standards in the operating licences of NSW electricity distributors. As part of the review, IPART has proposed standards for distributor-led SAPS customers. This would mean changing NSW and national energy laws to ensure that SAPS customers have the same protections as the distributors' other customers.³⁴⁹

³⁴³ Submission 149, Energy Networks Australia, p 8. A SAP is an electricity supply arrangement that is not physically connected to the national grid. A typical set-up for a SAP is an array of solar panels, a large battery and a backup diesel generator.

³⁴⁴ Submission No 6, Mr Adrian Ingleby, p 6; Submission 142, Essential Energy, p 6; Submission 149, Energy Networks Australia, p 8; Submission 164, Climate Rescue of Wagga, p 8; Submission 184, Beyond Zero Emissions, p 20; Submission 241a, Eurobodalla Shire Council, pp 2-3

³⁴⁵ Ms Natalie Lindsay, Head of Regulatory Affairs, Essential Energy, [Transcript of evidence](#), 24 August 2020, p 40

³⁴⁶ Submission 149, Energy Networks Australia, p 8

³⁴⁷ Australian Energy Market Commission (AEMC), [Review of stand-alone power systems](#), 31 October 2019, viewed January 2021. Third parties can include community groups, local councils, developers or ring-fenced affiliates of the local distribution business, or NEM participants.

³⁴⁸ Mr Barr, [Transcript of evidence](#), 25 August 2020, p 31

³⁴⁹ Independent Pricing and Regulatory Tribunal (IPART), [Review of the Electricity Distribution Reliability Standard: Draft report](#), October 2020, pp 1, 10, viewed January 2020

Ensuring the transition doesn't unfairly impact disadvantaged consumers

Summary

Some households, especially those with low incomes, struggle to access renewable energy such as solar and battery storage. They're also at risk of shouldering the costs of network upgrades. Eligibility programs will provide help, but they need ongoing government support.

Recommendation 21

That the NSW Government considers extending eligibility for programs for low income households to access solar energy and batteries.

- 5.48 We recommend the NSW Government considers extending eligibility for programs for low income households to access solar energy and batteries. Low income households and tenants can find it harder to access renewable energy. Inquiry participants supported widening programs that support access for households, including renters and low-income households.
- 5.49 Renewable energy is becoming more popular as households have more choice about their energy supply.³⁵⁰ However, we consider that it should be equal and accessible to all consumers.
- 5.50 We were told that there are a lot of cost-effective opportunities to improve affordability, health, energy savings, and reduce energy costs and system demand. PIAC told us that one opportunity is for more households to be able to generate some of their own energy, and offset energy through rooftop solar and home batteries.³⁵¹
- 5.51 Many inquiry participants told us about the benefits that household batteries have to the grid. Household batteries offer can 'peak shave' load, increase grid resilience, and act as a cheaper replacement for peaking plants. They can also lead to cheaper energy prices.³⁵²
- 5.52 However, the cost of new infrastructure shouldn't be borne by consumers who can't afford renewables, specifically renters and low-income households. We heard that energy costs make up a higher percentage of expenses for lower-income households. On average, low-income households spend 6.4 per cent of their income on energy, while high-income households spend a much lower average of 1.5 per cent.³⁵³
- 5.53 Essential Energy told us that there is a big gap between the electricity bills paid by customers with solar and those without. Installing rooftop solar can be

³⁵⁰ Submission 142, Essential Energy, p 3

³⁵¹ Mr Memery, [Transcript of evidence](#), 24 August 2020, p 21

³⁵² Peak shaving refers to levelling out peaks in electricity use by industrial and commercial consumers. Power consumption peaks are important for grid stability, but they affect power procurement costs: Next Kraftwerke, [What does peak shaving mean?](#), viewed 29 January 2021. Submission 88, ITK Services, pp 3; Submission 244, NSW Government, p 12; Australian Energy Market Operation, [Integrated System Plan](#), 2018, viewed 28 January 2021

³⁵³ Mr O'Reilly, [Transcript of evidence](#), 24 August 2020, p 7; Australian Council of Social Service & Brotherhood of St Laurence, [Energy Stressed in Australia](#), 2018, p 4, viewed 29 January 2021

expensive.³⁵⁴ This presents an equity issue, as solar customers are more likely to be homeowners and therefore asset rich, relative to non-solar households.

- 5.54 Solar exports can create extra costs for the network. We were told that there is no way for distribution networks to appropriately allocate the costs imposed by solar exports. This is because distribution network service providers can't impose use of system charges for electricity that is generated by users and exported into the distribution network.³⁵⁵
- 5.55 We heard that renters and apartment dwellers face barriers in accessing rooftop solar. In Australia, at least 29 per cent of households rent, and 13 per cent live in apartments.³⁵⁶ Government incentives generally target homeowners, and options are limited by landlord/tenant relationships. Local councils with large populations living in medium to high density areas told us of barriers their residents face in accessing renewable energy.³⁵⁷
- 5.56 Randwick Council said that 'an enormous proportion of the community [are] currently locked out, but quite interested in or inclined' to access opportunities to participate in renewable energy.³⁵⁸
- 5.57 We heard from stakeholders who supported tariff reform to improve energy equity. These proposals are discussed from paragraph 5.31.
- 5.58 The NSW Government told us about two programs to ensure affordable access to renewable energy for low-income households, which are outlined below.³⁵⁹

NSW Government programs – access to renewable energy ³⁶⁰	
Solar for Low Income Households trial	Eligible households can access affordable clean energy through free solar systems, which can cut electricity bills by up to \$600 a year. Households must meet specific criteria and be in the following regions: Central Coast, North Coast, Sydney – South, Illawarra – Shoalhaven and South Coast. Total funding allocated for trial is \$15 million. As of 16 September 2020, the program had 1,348 applications and installed 301 solar systems, with another 174 systems to be installed in 2020.
Empowering Homes program	Homeowners in eligible postcodes get interest-free loans to install solar batteries. The program aims to support installation of up to 300,000 battery and solar-battery systems over the next 10 years and lower bills. The program will unlock up to \$3.2 billion in clean energy investment, adding up to 3,000 MW hours of storage to the energy system.

³⁵⁴ Submission 142, Essential Energy, p 7; Submission 148, Southcoast Health and Sustainability Alliance, p 1

³⁵⁵ Submission 142, Essential Energy, p 4

³⁵⁶ Australian Bureau of Statistics, 2071.0 - Census of Population and Housing: Reflecting Australia - Stories from the Census, 2016, viewed 29 January 2021

³⁵⁷ Submission 224, Randwick City Council, p 2; Submission 225, Inner West Council, p 1; Submission 251, Ryde Gladesville Climate Change Action Group, p 4

³⁵⁸ Submission 224, Randwick City Council, p 2

³⁵⁹ Submission 244, NSW Government, p 17; Mr O'Reilly, [Transcript of evidence](#), 24 August 2020, p 7

³⁶⁰ [Answers to questions on notice](#), Department of Planning, Industry and Environment, 29 September 2020, p 8; Submission 244, NSW Government, pp 16-17; NSW Government, [Empowering homes solar battery loan offer and Solar for low income households](#), viewed 17 March 2021

Applicants can get an interest-free loan of up to \$14,000 for a solar PV and battery system (repayable over a term up to 8 years), or \$9000 to retrofit a battery system to an existing solar PV system (repayable over a term up to 10 years).

- 5.59 Many inquiry participants supported these programs, noting they help households lower energy costs, create more comfortable and resilient homes, reduce load on the energy grid, and reduce emissions.³⁶¹ We consider that eligibility for these programs should be widened, so that more households can access the benefits of renewable energy.

Community consultation is vital to new infrastructure projects

Summary

Involving local communities should be a central part of renewable energy projects and project planning. This will help promote the uptake of renewable energy across NSW.

Finding 15

Community consultation is a key part of planning for renewable infrastructure projects.

- 5.60 Community consultation should be a key part of planning for renewable infrastructure projects. In chapter 2, we noted that opposition from local communities is a key barrier to the success of renewable energy projects. Some inquiry participants told us about a lack of consultation with local communities on new infrastructure projects from both businesses and the NSW Government.³⁶²
- 5.61 While new developments generally have economic benefits, the impact on the community must be considered. These include environmental impacts, landscape and visual amenity, and noise.
- 5.62 Stakeholders told us how their community felt 'great anxiety'³⁶³ and 'a state of despair and sense of helplessness'³⁶⁴ with the lack of consultation about new renewable projects in their area. Geni Energy said that 'large scale developments (including renewable energy developments) rarely begin with community at the centre and equally engaged at all levels'.³⁶⁵
- 5.63 Some stakeholders suggested that the government should be more transparent about new projects and provide better access to information, particularly for rural communities, and those with limited internet access. Others called for more

³⁶¹ Submission 88, ITK Services, p 3; Submission 136, EnergyAustralia, p 13; Submission 152a, Public Interest Advocacy Centre, p 8; Submission 164, Climate Rescue of Wagga, p 20; Submission 180a, Geni Energy, p 8

³⁶² Submission 241, Eurobodalla Shire Council, p 2; Submission 242, The Next Economy, p 11

³⁶³ Submission 102, Hills of Gold Preservation Inc, p 1

³⁶⁴ Submission 187, Sutton Solar Action Group p 2

³⁶⁵ Submission 180, Geni Energy, p 1

coordination and local engagement in the process.³⁶⁶

- 5.64 We also received evidence contrary to this. EnergyAustralia called for a streamlined, transparent, and fact-based planning process, and regulations that balance the interests of the environment and social factors with economic growth. They said that large sums are needed to fund renewable developments and supporting dispatchable generation, and investors harmed by policy interventions or market conditions are unlikely to return.³⁶⁷
- 5.65 We note the importance of clear benefits flowing back to the community to ensure these projects can be developed. Inquiry participants told us that involving the community and local residents will mean less opposition to new projects.³⁶⁸
- 5.66 The CSIRO has stated that community acceptance could be increased if developers and government adopted a 'social licence to operate' or similar frameworks for transparent and well-structured community engagement.³⁶⁹
- 5.67 Focusing on a 'social licence to operate' for new developments would promote ongoing approval from the local community and other stakeholders.³⁷⁰ This approach would address some of the tensions between communities and developers of new infrastructure.
- 5.68 We are encouraged by provisions in the Electricity Infrastructure Investment Act that focus on community support. For example, one of the objects of the Act is to foster local community support for investment in new generation, storage, network, and related infrastructure. Speaking on the Bill, the Minister said that the infrastructure planner responsible for designing and developing REZs will coordinate 'community and stakeholder management, helping to establish the social licence for the new renewable energy zone infrastructure'.³⁷¹
- 5.69 The infrastructure planner will be able to prohibit the connection of proposed infrastructure in a REZ. The Minister stated that this will 'assure local communities that only those projects which are in appropriate locations and whose proponents take the time to genuinely engage communities and build

³⁶⁶ Submission 102, Hills of Gold Preservation Inc, p 1; Submission 112, Mr Lachlan Mcphie, p 1; Submission 154, Vacy Village Action Group, p 2; Submission 168, the Australia Institute and the University of Sydney Environment Institute, p 1; Submission 242, The Next Economy, p 8

³⁶⁷ Submission 136, EnergyAustralia, p 4

³⁶⁸ Submission 218, Jonathan Paul Marshall, pp 2, 3; Submission 232, Business Council of Co-Operatives and Mutuals, p 4; Ms Walters, [Transcript of evidence](#), 24 August 2020, p 15

³⁶⁹ N Hall, P Ashworth & H Shaw, [Exploring community acceptance of rural wind farms in Australia: a snapshot](#), CSIRO, 2012, p16

³⁷⁰ Social Licence to Operate (SLO) describes ongoing acceptance or approval for a development from the local community and other stakeholders. An SLO is 'ongoing' as it's a dynamic approval that must be continually renegotiated as beliefs, opinions and perceptions can change when new information is acquired: N Hall, P Ashworth & H Shaw, [Exploring community acceptance of rural wind farms in Australia: a snapshot](#), CSIRO, 2012, p 16

³⁷¹ New South Wales, Legislative Assembly, [Second reading speech](#), 10 November 2020 (Matt Kean, Minister for Energy and Environment)

local support will go ahead.³⁷²

5.70 Finally, the consumer trustee set up under the Act will be able to require that a proportion of revenue from access fees for REZs is earmarked for community purposes.³⁷³

³⁷² New South Wales, Legislative Assembly, [Second reading speech](#), 10 November 2020 (Matt Kean, Minister for Energy and Environment)

³⁷³ Access schemes authorise or prohibit access to and use of specified network infrastructure in a REZ. The consumer trustee determines fees payable to the scheme financial vehicle by participants in scheme: EII Act, Division 2.

Appendix One – Terms of reference

That the Committee on Environment and Planning inquire into and report on the sustainability of energy supply and resources in NSW, including:

1. The capacity and economic opportunities of renewable energy, including for workforces, industries and the wider economy impacted by COVID-19.
2. Emerging trends in energy supply and exports, including investment and other financial arrangements.
3. The status of and forecasts for energy and resource markets.
4. Effects on regional communities, water security, the environment and public health.
5. Opportunities to support sustainable economic development in regional and other communities likely to be affected by changing energy and resource markets, including the role of government policies.
6. Any other related matters.

Appendix Two – Conduct of inquiry

The inquiry was self-referred and the Committee resolved to conduct the inquiry on 16 July 2019.

The Committee called for submissions through a media release and wrote to key stakeholders inviting them to make a submission. Information about the inquiry was posted on the Legislative Assembly's Facebook page and Twitter feed.

Submissions to the inquiry closed on 15 September 2019. The Committee received 254 submissions from the community, government departments, energy companies and industry bodies, unions, academics, and community groups from across Australia. A list of submissions is at Appendix Four, and submissions are available on the [Committee's webpage](#).

The Committee also received over 200 form letters that represented the significant public interest in the inquiry's topic. The three templates for these letters can be found on the [Committee's webpage](#).

Site visits to the University of Wollongong's Sustainable Buildings Research Centre and EnergyAustralia's Tallawarra Power Station were conducted on 25 November 2019. These are outlined in Appendix Three.

The Committee held four public hearings at Parliament House on 24, 25, 26 August and 29 September 2020. Representatives of government agencies, research and policy bodies, unions, peak industry bodies, energy companies, community groups, and academics appeared before the Committee via a combination of in person and videoconferencing.

Appendix Five is a list of witnesses who appeared at the hearings. Transcripts of evidence taken at the hearings are on the [Committee's webpage](#).

Appendix Three – Site visits

Monday 25 November 2019

Meeting with Mr Canio Fierravanti, Director, Government Relations, Sustainable Buildings Research Centre, at the University of Wollongong Innovation Campus, North Wollongong.

The Sustainable Buildings Research Centre (SBRC) is a multidisciplinary research facility at the University of Wollongong. It works with researchers, students, and industry to address challenges in building design and performance. They aim to develop technology that transforms the sustainability, resilience, and ecological impact of residential and commercial built environments.

The following issues were discussed:

Sustainable buildings

Sustainable buildings are energy efficient, especially in thermal design and material. Part of the SBRC's work is developing, prototyping and testing new technologies and materials aimed at reducing building footprints. They're looking at developing tools to consider the ecological costs of new buildings, architecturally and structurally. This includes modelling tools, designed to promote sustainable design, new control systems and sensor technologies to improve building performance, and analyse thermal design and theory.

Energy efficiency and changing energy demands

Changes to the demand side can have an impact on energy consumption and sustainability. These include replacing devices with energy efficient ones, changing the behaviour of building occupants, adding solar panels etc. Provided they are not cost-prohibitive, these methods will help cushion and support changes to the supply side of NSW's energy market. They can significantly help reduce energy consumption and the resulting pressure placed on the grid.

Research

The facility houses a lot of research and laboratories that are developing new technologies and materials. The SBRC itself is housed in a net zero emissions and net zero water usage building. We saw laboratories that are developing sustainable building technologies and products. These include looking at different ways of using energy in buildings and appliances.

Meeting with Mr Simon Davey, Policy and Advocacy Manager, EnergyAustralia, and Ms Sarah Hafez, Community Relations Lead, Tallawarra Power Station, at the Tallawarra Power Station, Yallah

The Tallawarra Power Station is a gas fired power station run by EnergyAustralia in Yallah, south of Wollongong. It has a 435 MW generation capacity, which is enough electricity to supply up to 200,000 homes. The site was a coal-fired power station until 1989, and gas power

operation began on the site in 2009. The Committee was invited to tour the station and discuss issues around energy supply and transition with staff.

The following issues were discussed:

How gas power stations work

A tour of the Tallawarra site gave us real-world understanding of how gas fired power stations work, including how they're connected to the grid. We discussed how different types of energy work and the impact this has on their operational timeframe and how quickly they can connect to the grid. This also has implications for broader network infrastructure.

Energy policy

EnergyAustralia discussed the need, as a major energy company, for a national energy policy that is effective and considered. There's also confusion in state and national policy around gas power specifically. NSW black coal presents risks as a future fuel source and this compounds the problems and impact of policy uncertainty. There are also concerns about the short- and long- term reliability of newer energy sources.

The impact of energy transition

The interaction between existing gas and coal based energy production and new renewable sources will change as the energy mix changes, and as more renewables come online. New generation investment will be required and it needs support, including interconnection of grid assets.

We were also able to speak to people who have first-hand experience and will be impacted by the issues that this inquiry deals with. They are concerned about the management of energy transition, especially with the impending retirement of the Liddell power station. As an energy supplier, EnergyAustralia is also concerned about significant risks to reliability and system security issues that unplanned transition will create.

Appendix Four – Submissions

No.	Author
1	Mr Grant Mistler
2	Chloe Taylor
3	Mr Anthony Learmonth
4	Ms Maria Bradley
5	Mr Barrie Hill
6	Mr Adrian Ingleby
6a	Mr Adrian Ingleby
7	Northern Lakes Disability Tourism Precinct
8	The Colong Foundation for Wilderness Ltd
9	EcoEnviro Pty Ltd
10	Mr Trevor Woolley
11	Mr Andrew Field
12	Yass Earthmovers
13	Lyndin Hume
14	SMR NuclearTechnology Pty Ltd
15	Ms Claudia Koller
16	Ms Jo Anne Jaworowski
17	Ms Gillian Sain
18	Ms Melisse Reynolds
19	Ms Dianne Montague
20	Ms Stephanie Britton
21	Mr Kerry O'Brien
22	Ms Janice Dutton
23	Peter Thompson
24	Ms Helen Banks
25	Name suppressed
26	Mr Neil Bryant
27	Mrs Rhonda Green
28	Name suppressed
29	Malcolm Donaldson
30	Confidential
31	Mr Shane Verran

No.	Author
32	Confidential
33	Mr Paul Hopkins
34	Hugh and Pauline Burton
35	Ms Helen Evans
36	Frances Myers
37	Kairo Byrne
38	Mr Harry Johnson
39	Ms Jane Stevenson
40	Mr Scott Bonney
41	WYNERGY
41a	WYNERGY
42	Olivier La Mer-Adair
43	Ms Elaine Saunders
44	Ms Diane O'Mara
45	Mr Christopher Anderson
46	Mr Ian Napier
47	Professor Peter Sheldon
48	Ivan Heron
49	Mr Geoff Hardes
50	Mr Richard Bowdler
51	Confidential
52	Mr Duane Thompson
53	Ray Coppins
54	Mr Andrew Lewis
55	Mr Troy Greedy
56	Mr Allan Pryor
57	James Beecher
58	Mr Aaron Ham
59	Dr Ross Halatchev
60	Confidential
61	Mr Barry Naylor
62	Michael Nadalin
63	Confidential
64	Ms Vicki Riddy
65	Mr Phillip Enderby

No.	Author
66	Mr Ashley McLeod
67	Mr Robert Newman
68	Confidential
69	Dr Michael Schien
70	Mrs Hanna Kay
71	Mr Allan Evans
72	Confidential
73	Mr Doug Storer
74	Ms Helen Borland
75	Ms Rosemary Vass
76	Mr Jack Thieme
77	Ms Gillian Sullivan
78	Ms Vicki Bourke
79	Mr Daniel Endicott
80	Mr Ian Dixon
81	Mr Stephen Bows
82	Ms Sinead Francis-Coan
83	Bathurst Community Climate Action Network
84	Ms Nicole Hunter
85	Ms Lynda Row
86	Mr Robert Hatton
87	Ms Wendy Spencer
88	ITK Services
89	Mr Henry Gillard
90	Ms Gwyn Hooper
91	Ms Beverley Atkinson
92	Professor Andrew Blakers
93	Confidential
94	Mr Richard Aldous
95	Confidential
96	The Hon Mark Latham
96a	The Hon Mark Latham
97	Mr Scott Sledge
98	Mrs Rhonda Foster
99	Australian Sustainable Built Environment Council

No.	Author
100	Confidential
101	Groundswell Gloucester
102	Hills of Gold Preservation Inc
103	Confidential
104	Blue Mountains Conservation Society
105	Ms Miranda Mills
106	Ms Denise Fitzgerald
107	Mr Tom Ferrier
108	Ms Marilyn Lebeter
108a	Ms Marilyn Lebeter
109	Ms Jane McIntyre
110	Ms Christine Aus
111	Mr Tom Whelan
112	Mr Lachlan Mcphie
113	Gas Energy Australia
114	Star Scientific
115	City of Sydney
116	Mr Greg Piper MP
117	Central NSW Joint Organisation
118	Dr Janet Roden
119	Mr Denis Rothwell
120	South East Region Conservation Alliance Inc
121	Ms Jane Dargaville
122	Institute for Energy Economics and Financial Analysis (IEEFA)
123	Australian Energy Council
124	Hunter Environment Lobby Inc.
125	Australian Gas Infrastructure Group
126	Mr Glen Higson
127	Bioenergy Australia
128	Ms Tracie Hendriks
129	Mr Steve Board
130	Environmental Defenders Office NSW (EDO NSW)
131	Ms Pamela Seccombe
132	Ms Robyn Bird
133	Lock the Gate Alliance

No.	Author
134	National Parks Association of NSW
135	Energy Efficiency Council
136	EnergyAustralia
137	Shoalhaven City Council
138	Australasian Institute of Mining and Metallurgy
139	NSW Council of Social Service
140	Public Health Association of Australia
141	CFMEU Mining and Energy
142	Essential Energy
143	Jemena Gas Networks (NSW) Limited
144	Shaunti Kiehl
144a	Shaunti Kiehl
145	Australian Manufacturing Workers' Unions NSW Branch
146	Caldera Environment Centre Inc.
146a	Caldera Environment Centre Inc.
147	The Australia Institute
148	Southcoast Health and Sustainability Alliance
149	Energy Networks Australia
150	Samaritans
151	Dr Virginia Reid
152	Public Interest Advocacy Centre
152a	Public Interest Advocacy Centre
153	Correct Planning & Consultation for Mayfield Group
154	Vacy Village Action Group
155	Ms Wendy White
156	Hunter Community Environment Centre
156a	Hunter Community Environment Centre
157	Ms Johanna Lynch
158	Transgrid
159	Ms Susie Hearder
160	Ms Sarah Robertson
161	Tree Frog Permaculture
162	Mr Wayne Riley
163	Solar Citizens
164	Climate Rescue of Wagga Inc

No.	Author
165	Earth Learning
166	Mr Michael Dillon
166a	Mr Michael Dillon
167	Confidential
167a	Confidential
168	The Australia Institute and the University of Sydney Environment Institute
169	Impact Investment Group
170	Mr Granville Taylor
171	Ms Sophie Nichols
172	Singleton Council
173	Name suppressed
174	Delta Electricity
175	No Electricity from Forests
176	North Coast Environment Council
177	MEG Midcoast Environment Group
178	Mrs Kathryn Teagle
179	Port of Newcastle
180	Geni Energy
180a	Geni Energy
181	Ms Alana West
182	HydroSun Holdings Pty Ltd
183	Cr Sarah Lukeman
184	Beyond Zero Emissions
184a	Beyond Zero Emissions
185	Professor James Goodman
186	Medical Association for Prevention of War
187	Sutton Solar Action Group
188	Mrs Rosemary Miller
189	Climate Action Newcastle
190	Professor Peter Reeves
191	Ms Su Morley
192	Mr Gregory Hall
193	Dr John Shiel
194	Newcastle Greens
195	New England Greens Armidale Tamworth

No.	Author
196	Mr David Hazell
197	David Hazell
198	Centre for Air pollution, energy and health Research (CAR)
199	Mudgee District Environment Group
200	Ms Maria Larratt
201	Mr John Clarke
202	Dr Don More
203	Lynn Benn
204	Bruce and Noeleen Hazell
204a	Ms Noeleen Hazell
204b	Ms Noeleen Hazell
205	Mr Bruce McQueen
206	Dr Fiona McCormick
207	Confidential
208	Goulburn River Stone Cottages
209	Mr Peter J. Brown
210	Nicola Chirlian
211	Climate Action Wagga (CAW)
212	Confidential
213	Dr Michael Crawford
214	Mrs Sue Abbott
215	Mr Geoff Miell
215a	Mr Geoff Miell
215b	Mr Geoff Miell
216	Community Power Agency
217	Confidential
218	Jonathan Paul Marshall
219	Mr David Mehan
220	Illawarra Region Citizens
220a	Illawarra Region Citizens
221	Pelena Energy
222	Institute for Sustainable Futures (University of Technology Sydney)
223	Maules Creek Community Council
224	Randwick City Council
225	Inner West Council

No.	Author
226	Professor Heidi Norman
227	Anna Nadolny
228	Hunter Business Chamber
229	NSW Minerals Council
230	CLEAN Cowra Inc
231	Braidwood Greens
232	Business Council of Co-Operatives and Mutuals
233	Voices of the Valley
234	Mr Tom Stayner
235	Wodonga Albury Towards Climate Health (WATCH)
236	Australian Forests and Climate Alliance
237	Nature Conservation Council of NSW
238	Doctors for the Environment Australia Inc.
239	Hunter Renewal Project
240	Energy Estate
241	Eurobodalla Shire Council
241a	Eurobodalla Shire Council
242	The Next Economy
243	Hunter Joint Organisation
244	NSW Government
245	Maritime Union of Australia
246	Australian Energy Market Commission
247	Origin Energy
248	Professor Barbara Praetorius
249	Alan Shane
250	Mr Bob Hill
251	Ryde Gladesville Climate Change Action Group
252	Mr Rafe Champion
253	Clean Energy Council
254	Glencore

Appendix Five – Witnesses

24 August 2020

Parliament House, Jubilee Room, Sydney, NSW

Witness	Position and Organisation
Mr Cameron O'Reilly	Executive Director, Energy Reform & Investment, Energy, Climate Change and Sustainability, Department of Planning, Industry and Environment
Mr Michael Wright	Deputy Secretary, Mining, Exploration and Geoscience, Department of Regional NSW
Mr Chris Hanger	Deputy Secretary, Department of Regional NSW
Ms Anna Freeman	Director, Energy Generation, Clean Energy Council
Mr Craig Memery	Leader, Energy and Water Consumers' Advocacy Program, Public Interest Advocacy Centre
Mr Douglas McCloskey	Policy Officer, Energy and Water Consumers' Advocacy Program, Public Interest Advocacy Centre
Mr Michael Lord	Head of Research, Beyond Zero Emissions
Dr John Shiel	Lead Volunteer Researcher, Heavy Industry, Hunter Diversification Project, Beyond Zero Emissions
Dr Chris Briggs	Research Principal, Institute for Sustainable Futures (University of Technology Sydney)
Mr John Griffiths	Chief Executive Officer, Gas Energy Australia
Mr Ben Wilson	Chief Executive Officer, Australian Gas Infrastructure Group
Ms Jennifer Purdie	Executive General Manager, Gas Distribution, Jemena Gas Networks (NSW) Limited
Mr Seán McGoldrick	Executive Manager, Major Projects, Transgrid
Ms Natalie Lindsay	Head of Regulatory Affairs, Essential Energy
Mr Greg Everett	Managing Director, Delta Electricity
Mr Anthony Callan	Executive Manager Marketing, Delta Electricity

25 August 2020

Parliament House, Jubilee Room, Sydney, NSW

Witness	Position and Organisation
Dr Christine Cowie	Environmental Epidemiologist, Centre for Air pollution, energy and health Research (CAR)
Ms Frances Pike	Co-ordinator, Australian Forests and Climate Alliance
Ms Peg Putt	Australian Forests and Climate Alliance

Mr Chris Gambian	Chief Executive Officer, Nature Conservation Council of NSW
Ms Georgina Woods	NSW Coordinator, Lock the Gate Alliance
Dr John Van Der Kallen	NSW Chair, Doctors for the Environment Australia (DEA)
Mr Ian Hore-Lacy	Senior Advisor at the World Nuclear Association, Australasian Institute of Mining and Metallurgy
Mr David Frith	Director Policy, NSW Minerals Council
Mr Rod Campbell	Research Director, The Australia Institute
Mr Benn Barr	Chief Executive, Australian Energy Market Commission
Mr Oliver Nunn	Senior Economist, Australian Energy Market Commission
Mr Chris Gilbert	Senior Economic Advisor, Energy Networks Australia
Dr Jill Caine	General Manager Networks, Energy Networks Australia
Mr Henry Anning	CEO, ResourceCo Energy Systems, Bioenergy Australia
Mr Anthony Taylor	Policy and Research Adviser, Business Council of Co-Operatives and Mutuals

26 August 2020

Parliament House, Jubilee Room, Sydney, NSW

Witness	Position and Organisation
Mr Will Tracey	Deputy National Secretary, Maritime Union of Australia
Ms Penny Howard	National Research Officer, Maritime Union of Australia
Mr Peter Colley	National Research Director, Mining and Energy Division, CFMEU Mining and Energy
Ms Chloe Smith	Special Projects Officer, Australian Manufacturing Workers' Union
Ms Kristy Walters	Advocacy and Training Lead, Community Power Agency
Dr Amanda Cahill	CEO, The Next Economy
Mr Brad Webb	CEO, Samaritans
Dr Patrick Harris	NSW Branch President, Public Health Association of Australia
Dr Peter Tait	Former Co-Convenor, PHAA Ecology and Environment Special Interest Group, Public Health Association of Australia
Ms Suzanne Toumbourou	Executive Director, Australian Sustainable Built Environment Council
Mr Michael Li	Senior Project Manager (Cities and Policy), ClimateWorks, Australian Sustainable Built Environment Council
Clr Clover Moore	Lord Mayor, City of Sydney
Mr Chris Derksema	Sustainability Director, City of Sydney

Mr Darren O'Connell	Energy Management Coordinator, Shoalhaven Water, Shoalhaven City Council
Mr Jason Linnane	General Manager, Singleton Council

29 September 2020
Video Conference, Jubilee Room, Sydney, NSW

Witness	Position and Organisation
Dr David Harris	Research Director, Energy Technologies, CSIRO Energy Centre, Newcastle
Dr Damian Barrett	Research Director, Energy Resources Program, CSIRO Energy Centre, Newcastle
Mr Joe James	Chief Executive Officer, Hunter Joint Organisation
Mr Bob Pynsent	Chair, Mayor of Cessnock, Hunter Joint Organisation
Ms Sue Moore	Chair of Economic Transition Sub-Committee, Mayor of Singleton, Hunter Joint Organisation
Professor Alan Broadfoot	Executive Director, Newcastle Institute for Energy and Resources, University of Newcastle
Ms Johanna Lynch	Coordinator, Hunter Community Environment Centre
Mr John Hayes	Long-term volunteer, Climate Action Newcastle
Ms Danielle Coleman	Project Coordinator, Hunter Renewal Project
Ms Elizabeth Molyneux	General Manager, Policy & Markets Regulation, AGL Energy
Mr John McCormack	Head of Government, AGL Energy
Mr Bob Hawes	Chief Executive Officer, Hunter Business Chamber
Mr Rob Murray-Leach	Head of Policy, Energy Efficiency Council

Appendix Six – Extracts from minutes

MINUTES OF MEETING No 2

1:03 pm, 16 July 2019

Room 1254

Members present

Mr Greenwich, Mr Chanthivong, Mr Griffin

Ms Wilson and Mr Smith (by teleconference)

Officers in attendance

Dora Oravec, Madeleine Dowd, Jacqueline Isles, Ilana Chaffey

1. Confirmation of minutes

Resolved on the motion of Mr Griffin, seconded Ms Wilson: That the minutes of the meeting of 20 June be confirmed.

2. Proposed inquiry – sustainability of energy supply and resources in NSW

Terms of reference

The Chair briefed members on the draft terms of reference for the inquiry as previously circulated.

Discussion ensued.

The Committee agreed to add the words "including investment and other financial arrangements" at the end of the second term of reference.

The Committee agreed to amend the fifth term of reference by inserting the words "and other" after the word "regional" and before "communities" and by adding the words "including the role of government policies" at the end of the sentence.

Resolved on the motion of Mr Griffin, seconded Mr Smith: That the Committee on Environment and Planning inquire into and report on the sustainability of energy supply and resources in NSW, including:

1. The capacity and economic opportunities of renewable energy.
2. Emerging trends in energy supply and exports, including investment and other financial arrangements.
3. The status of and forecasts for energy and resource markets.
4. Effects on regional communities, water security, the environment and public health.
5. Opportunities to support sustainable economic development in regional and other communities likely to be affected by changing energy and resource markets, including the role of government policies.
6. Any other related matters.

Call for submissions

The Chair invited members to comment on the proposed list of stakeholders, previously circulated.

Discussion ensued.

Committee members proposed additional stakeholders. The secretariat undertook to update the list and recirculate it. Members agreed to:

- agree on stakeholders by email;
- add an additional investment/funding category of stakeholders.

Resolved on the motion of Ms Wilson, seconded Mr Chanthivong: That the Committee call for submissions to be received by 15 September 2019 from stakeholders to be agreed in writing.

The Chair briefed members on additional arrangements for the inquiry including the proposed draft timeline already circulated. The Committee agreed to the proposed arrangements.

The Chair noted that a media release announcing the inquiry would be issued the following day. Discussion ensued.

3. Next meeting

The Committee agreed to hold the next meeting at a date to be advised.

The meeting adjourned at 1:28 pm.

MINUTES OF MEETING No 3

1:17 pm, 26 September 2019

Room 1254

Members present

Mr Greenwich, Mr Chanthivong, Mr Griffin, Ms Wilson and Mr Smith

Officers in attendance

Clara Hawker, Dora Oravec, Kieran Lewis, Ilana Chaffey

1. Confirmation of minutes

Resolved on the motion of Mr Greenwich, seconded Mr Chanthivong: That the minutes of the meeting of 16 July be confirmed.

2. Inquiry into sustainability of energy supply and resources in NSW

2.1 ***

2.2 Form letters

The Committee noted the receipt of three form letters:

- Form letter 1 – 101 received
- Form letter 2 – 105 received
- Form letter 3 – 15 received

Resolved on the motion of Mr Griffin, seconded Ms Wilson: That the Committee publish samples of form letters 1, 2 and 3.

2.3 Submissions 1 to 200

The Chair noted the updated list indicating recommended publication orders for submissions 1 to 200.

Resolved on the motion of Ms Wilson, seconded Mr Griffin, in globo:

That the Committee publish submissions numbered 1 to 6, 8 to 15, 17 to 24, 26 and 27, 29, 31, 33 to 50, 52 to 59, 61 and 62, 64 to 67, 69 to 71, 73 to 92, 94, 96 to 99, 101, 104 to 152, 154 to 159, 161 to 165, 168 to 172, 174 to 194, 196, and 198 to 200 in full.

That the Committee publish submissions numbered 25, 28 and 173 with the authors' names suppressed.

That the Committee publish submission number 7 with the name of an individual and company redacted in paragraph 4 on page 4.

That the Committee publish submission number 102 with all of paragraph 8 on page 3 redacted.

That the Committee publish submission number 153 with the photograph on page 11 redacted.

That the Committee publish submission numbers 16 and 160 with the names of the authors' employers in the first paragraph redacted.

That the Committee publish submission number 166 with vehicle registration plates and other identifying details in photographs on pages 2 to 5 redacted, and the image of a man in the photograph on page 2 blurred.

That the Committee publish submission number 166a with the vehicle registration plates in the photograph on page 2 redacted, and the images of men in the same photograph blurred.

That the Committee publish submission number 195 with the email below the submission text redacted.

That the Committee publish submission number 197 with the documents attached on pages 2 and 3 redacted.

That submission numbers 30, 32, 51, 60, 63, 68, 72, 93, 95, 100, 103 and 167 remain confidential to the Committee and not be published.

That publicly available documents included with submissions 5, 69, 112, 121, 133, 135 and 180 be listed at the end of the submissions, and not published.

3. Next meeting

The Committee agreed to meet in October on a date to be advised.

The meeting adjourned at 1:31 pm.

MINUTES OF MEETING No 4

1:19 pm, 24 October 2019

Room 1254

Members present

Mr Greenwich, Mr Chanthivong, Mr Griffin, Ms Wilson and Mr Smith

Officers in attendance

Clara Hawker, Dora Oravec, Madeleine Dowd, Jacqueline Isles, Ilana Chaffey

1. Confirmation of minutes

Resolved on the motion of Ms Wilson, seconded Mr Chanthivong: That the minutes of the meeting of 26 September 2019 be confirmed.

2. ***

3. Inquiry into sustainability of energy supply and resources in NSW

3.1 Correspondence – Energy Watch Group report (attached)

The Committee noted the September 2019 report on natural gas and climate change, forwarded by a submission maker for the Committee's attention.

3.2 Consideration of submissions 201 to 246

Resolved on the motion of Ms Wilson, seconded Mr Griffin *in globo*:

That the Committee publish submissions numbered 201 to 205, 208 to 210, 214 to 216, 218 to 219, 221, 223 to 228, 230 to 238, and 240 to 246 in full.

That the Committee publish submission number 206 with vehicle registration plates and other identifying details in the photographs on page 3 redacted, and the images of men in the first photograph blurred.

That the Committee publish submission number 213 with letters on pages 2 to 31 redacted.

That submission numbers 207, 212 and 217 remain confidential to the Committee and not be published.

That submission number 164, included with submission 211, be listed at the end of submission 211 and not republished.

That publicly available documents included with submissions 220, 222, 229 and 239 be listed at the end of the submissions, and not published.

3.3 Arrangements for site visits and hearings

The Committee discussed options for the timing and location of site visits and hearings, including suggestions from committee members, outlined in a document previously circulated.

The Committee agreed to undertake a one day site visit in November to the following Wollongong locations suggested by Mr Chanthivong:

- Bluescope Steel manufacturing facility, Port Kembla
- Sustainable Buildings Research Centre, Wollongong University

The Committee also agreed to hold a hearing and site visit in the Hunter Valley next year followed by Sydney hearings, on dates depending on members' availability.

The Committee discussed other possible locations for site visits.

The Chair invited members to submit suggestions for site visit locations and witnesses to appear at future public hearings, based on submissions received, with a view to finalising the invitation list at the next meeting.

The Chair advised that he would issue a media release noting the publication of submissions and the Committee's intention to hold public hearings in regional areas.

4. Next meeting

The Committee agreed to meet again in November at a date to be advised.

The meeting adjourned at 1:48 pm.

MINUTES OF MEETING No 5

1:19 pm, 20 November 2019

Parkes Room

Members present

Mr Greenwich, Mr Chanthivong, Mr Griffin and Mr Smith

Apologies

Ms Wilson

Officers in attendance

Clara Hawker, Dora Oravec, Madeleine Dowd, Jacqueline Isles, Ilana Chaffey

1. Confirmation of minutes

Resolved on the motion of Mr Smith, seconded Mr Chanthivong: That the minutes of the meeting of 24 October 2019 be confirmed.

2. ***

3. Inquiry into sustainability of energy supply and resources in NSW

3.1 Consideration of submission number 215a

Resolved on the motion of Mr Smith, seconded Mr Chanthivong: That the Committee publish submission number 215a in full.

3.2 Arrangements for site visits and hearings – Wollongong, Hunter Valley and Sydney

The Committee noted the circulated schedule for the Wollongong site visit on Monday 25 November.

The Committee considered the list of suggested witnesses for hearings in the Hunter Valley and Sydney, and site visit locations in the Hunter Valley. The Chair noted feedback received from members.

Discussion ensued.

Resolved on the motion of Mr Griffin, seconded Mr Chanthivong: That the Committee invite the listed stakeholders to give evidence at a public hearing, and conduct the proposed site visit, in the Hunter Valley on dates to be confirmed in February or March 2020.

Resolved on the motion of Mr Smith, seconded Mr Chanthivong: That the Committee

invite the listed stakeholders to give evidence at Parliament House on dates to be confirmed in February or March 2020.

4. ***

5. **Next meeting**

The meeting adjourned at 1:31 pm to a date to be determined.

MINUTES OF MEETING No 6

3:54 pm, 5 December 2019

Room 1254

Members present

Mr Greenwich (room 1254)

Mr Chanthivong, Mr Griffin, Ms Wilson (by teleconference)

Apologies

Mr Smith

Officers in attendance

Dora Oravecz, Madeleine Dowd, Jacqueline Isles, Ilana Chaffey

1. **Confirmation of minutes**

Resolved on the motion of Mr Chanthivong: That the minutes of the meeting of 20 November 2019 be confirmed.

2. ***

2.1 ***

2.2 **Inquiry timelines**

The Committee noted an updated timeline for the inquiry into sustainability of energy supply and resources in NSW. The Chair proposed that public hearings and a site visit for the inquiry be deferred until March/April, with arrangements to be discussed.

3. **Next meeting**

The meeting adjourned at 4:07 pm to a date to be determined.

MINUTES OF MEETING No 7

2:35 pm, 3 February 2020

Room 1254

Members present

Mr Greenwich, Mr Chanthivong (by telephone), Mr Griffin, Ms Wilson and Mr Smith

Officers in attendance

Clara Hawker, Dora Oravecz, Madeleine Dowd, Jacqueline Isles, Ilana Chaffey

1. ***

2. **Confirmation of minutes**

Resolved on the motion of Mr Chanthivong: That the minutes of the meeting of 5 December 2019 be confirmed.

3. ***

4. **Inquiry into sustainability of energy supply and resources in NSW**

4.1 Publishing submission

Resolved on the motion of Mr Griffin, seconded Mr Smith: That the Committee publish submission number 247 in full.

The Chair suggested that the Committee write to additional stakeholders to invite submissions on the topic of transition for workforces dependent on the coal industry. The Chair invited members to suggest stakeholders to committees staff.

4.2 Correspondence

5. **General business**

The Committee discussed stakeholder engagement and hearing locations for the inquiry into sustainability of energy supply and resources. Discussion ensued. Members agreed to further discuss the plans for regional hearings and witness selection at the conclusion of the public hearing on 21 February.

6. **Next meeting**

The meeting adjourned at 3.02 pm to reconvene on Thursday 20 February.

MINUTES OF MEETING No 10

9:56 am, 21 February 2020

Macquarie Room

Members present

Mr Greenwich, Ms Wilson, Mr Griffin, Mr Smith and Ms Catley (substituting for Mr Chanthivong)

Officers in attendance

Clara Hawker, Dora Oravec, Madeleine Dowd, Jacqueline Isles, Ilana Chaffey

1. ***

2. ***

3. **Deliberative meeting**

3.1 ***

3.2 Inquiry into sustainability of energy supply and resources

The Committee discussed stakeholder engagement and site visits and hearings for the inquiry into sustainability of energy supply and resources.

The Committee agreed to undertake the following site visits and hearings:

- Newcastle and the Hunter – 29 and 30 April
- Appin – 11 May
- New England – 18 and 19 May

The Committee agreed to write to the following stakeholders seeking submissions on diversifying coal reliant economies:

- Business Council of Australia
- Sanjeev Gupta
- AI Group – Hunter Region
- Zenviron Pty Ltd
- Blackrock Australia
- Citigroup
- Ports NSW
- Van Eck
- Newcastle Institute for Energy and Resources, University of Newcastle.

4. ***

5. **Next meeting**

The meeting adjourned at 1:15 until a date to be determined.

MINUTES OF MEETING No 11

2:32 pm, 30 April 2020

Room 1254

Members present

Mr Greenwich (room 1254), Ms Wilson, Mr Griffin, Mr Smith and Mr Chanthivong (via videoconference)

Officers in attendance

Clara Hawker, Dora Oravec, Ilana Chaffey (room 1254); Madeleine Dowd, Jacqueline Isles (via videoconference)

1. **Confirmation of minutes**

Resolved on the motion of Mr Smith, seconded Mr Griffin: That the minutes of the meeting of 21 February 2020 be confirmed.

2. **Inquiry into sustainability of energy supply and resources in NSW**

2.1 Amending terms of reference

The Chair proposed amending the terms of reference for the inquiry to include consideration of the impacts of COVID-19.

Resolved on the motion of Mr Griffin, seconded Mr Chanthivong: That the Committee amends the terms of reference for the inquiry into sustainability of energy supply and resources in NSW to include consideration of the impacts of COVID-19, as follows:

1. The capacity and economic opportunities of renewable energy, including for workforces, industries and the wider economy impacted by COVID-19.
2. Emerging trends in energy supply and exports, including investment and other financial arrangements.

3. The status of and forecasts for energy and resource markets.
4. Effects on regional communities, water security, the environment and public health.
5. Opportunities to support sustainable economic development in regional and other communities likely to be affected by changing energy and resource markets, including the role of government policies.
6. Any other related matters.

2.2 ***

2.3 Publishing submission

Resolved on the motion of Mr Griffin, seconded Mr Smith: That the Committee publishes submission number 215b to the inquiry into sustainability of energy supply and resources in full.

3. General business

The Committee discussed timeframes for the committee's current inquiries. The Chair noted that arrangements would depend on the wider COVID-19 measures currently in place.

4. Next meeting

The meeting adjourned at 2:42 pm until a date to be determined.

MINUTES OF MEETING No 12

11.33am, 13 July 2020

Room 1254 and videoconference

Members present

Mr Greenwich (room 1254), Ms Wilson, Mr Griffin, Mr Smith and Mr Chanthivong (via videoconference)

Officers in attendance

Clara Hawker, Dora Oravec, Madeleine Dowd, Jacqueline Isles, Ilana Chaffey (room 1254)

1. Confirmation of minutes

Resolved on the motion of Mr Smith, seconded Mr Chanthivong: That the minutes of the meeting of 30 April 2020 be confirmed.

2. ***

3. Inquiry into sustainability of energy supply and resources in NSW

3.1. ***

3.2 Publishing submissions

Resolved on the motion of Ms Wilson: That the Committee publishes submission numbers 6a, 41a, 96a, 144a, 146a, 152a, 156a, 220a, 241a, 249, 250, 251, 252 and 253 in full.

Resolved on the motion of Ms Wilson: That submission number 167a remain confidential to the Committee and not be published.

3.3. Hearings and site visits

The Committee discussed options for public hearings and site visits, noting the circulated list of suggested witnesses.

Resolved on the motion of Mr Smith: That the Committee invites the listed witnesses to give evidence at public hearings to be held at Parliament House on dates to be confirmed in August.

The Committee agreed to conduct two site visits in September, to the Appin coal mine and the Dubbo renewable energy zone.

The Committee agreed that a further public hearing and site visit in the Hunter region would be scheduled for a later date subject to future COVID-19 control measures in the community.

4. Next meeting

The meeting adjourned at 11.51am until a date to be determined.

MINUTES OF MEETING No 13

9.25 am, 24 August 2020

Jubilee Room and videoconference

Members present

Mr Greenwich, Mr Chanthivong, Mr Smith (Jubilee Room)

Ms Wilson, Mr Griffin (by videoconference)

Officers in attendance

Clara Hawker, Dora Oravec, Madeleine Dowd, Jacqueline Isles, Ilana Chaffey

1. Deliberative meeting

1.1 Confirmation of minutes

Resolved on the motion of Mr Chanthivong, seconded Mr Smith: That the minutes of the meeting of 13 July 2020 be confirmed.

1.2 Media orders

Resolved on the motion of Mr Smith, seconded Ms Wilson: That the Committee authorises the audio-visual recording, photography and broadcasting of the public hearing on 24 August 2020, in accordance with the Legislative Assembly's guidelines for the coverage of proceedings for parliamentary committees administered by the Legislative Assembly.

1.3 Answers to questions taken on notice

Resolved on the motion of Mr Chanthivong, seconded Ms Wilson: That witnesses be requested to return answers to questions taken on notice and supplementary questions within one week of the date on which the questions are forwarded to the witnesses.

The meeting concluded at 9.30 am.

2. Public hearing: Inquiry into sustainability of energy supply and resources in NSW

Witnesses were admitted. The Chair opened the public hearing at 9.34 am and made a short opening statement.

Mr Cameron O'Reilly, Executive Director, Energy Reform and Investment Energy, Climate Change and Sustainability, Department of Planning, Industry and Environment, was sworn and examined.

Mr Michael Wright, Deputy Secretary, Mining, Exploration and Geoscience, Department of Regional NSW, was sworn and examined.

Mr Chris Hanger, Deputy Secretary, Public Works Advisory and Regional Development, Department of Regional NSW, was affirmed and examined by videoconference.

Ms Anna Freeman, Director Energy Generation, Clean Energy Council, was affirmed and examined by videoconference.

Mr Craig Memery, Leader, Energy and Water Consumers' Advocacy Program, Public Interest Advocacy Centre, was affirmed and examined.

Mr Douglas McCloskey, Policy Officer, Energy and Water Consumers' Advocacy Program, Public Interest Advocacy Centre, was affirmed and examined.

Mr Michael Lord, Head of Research, Beyond Zero Emissions, was affirmed and examined by videoconference.

Dr John Shiel, Lead Volunteer Researcher, Heavy Industry, Hunter Diversification Project, Beyond Zero Emissions, was affirmed and examined by videoconference.

Dr Chris Briggs, Research Principal, Institute for Sustainable Futures, was affirmed and examined by videoconference.

Mr John Griffiths, Chief Executive Officer, Gas Energy Australia, was affirmed and examined by videoconference.

Mr Ben Wilson, Chief Executive Officer, Australian Gas Infrastructure Group, was affirmed and examined by videoconference.

Ms Jennifer Purdie, Executive General Manager, Gas Distribution, Jemena, was sworn and examined by videoconference.

The Committee questioned the witnesses. Evidence concluded and the witnesses withdrew.

The hearing adjourned at 3 pm.

3. Deliberative meeting

The Committee commenced a deliberative meeting at 3.02 pm.

3.1 ***

3.2 Publishing submission

Resolved on the motion of Ms Wilson: That the Committee publishes submission number 180a in full.

3.2 Site visits

The Committee discussed the timing and location of site visits for the inquiry into sustainability of energy supply and resources in NSW. The Committee agreed not to conduct site visits in September. The Committee agreed to consider options for site visits after the upcoming hearings for the inquiry.

The meeting concluded at 3.09pm.

4. Public hearing: Inquiry into sustainability of energy supply and resources in NSW

The public hearing resumed at 3.31pm.

Mr Seán McGoldrick, Executive Manager, Major Projects, Transgrid, was affirmed and examined.

Ms Natalie Lindsay, Head of Regulatory Affairs, Essential Energy, was affirmed and examined by videoconference.

Mr Greg Everett, Managing Director, Delta Electricity, was affirmed and examined.

Mr Anthony Callan, Executive Manager Marketing, Delta Electricity, was affirmed and examined.

The Committee questioned the witnesses. Evidence concluded and the witnesses withdrew.

The public hearing concluded at 4.30 pm.

5. Deliberative meeting

Publication orders

Resolved on the motion of Mr Chanthivong, seconded Mr Smith: That the corrected transcript of public evidence given today be authorised for publication and uploaded on the Committee's website.

6. Next meeting

The meeting adjourned at 4.32 pm until 9.25 am on 25 August in the Jubilee Room.

MINUTES OF MEETING No 14

9.29 am, 25 August 2020

Jubilee Room and videoconference

Members present

Mr Greenwich, Mr Chanthivong, Mr Griffin, Mr Smith

Ms Wilson (by videoconference)

Officers in attendance

Clara Hawker, Dora Oravec, Madeleine Dowd, Jacqueline Isles, Ilana Chaffey

1. Deliberative meeting

1.1 Confirmation of minutes

Resolved on the motion of Mr Griffin, seconded Mr Smith: That the minutes of the meeting of 24 August 2020 be confirmed.

1.2 Media orders

Resolved on the motion of Mr Griffin, seconded Mr Smith: That the Committee authorises the audio-visual recording, photography and broadcasting of the public hearing on 25 August 2020, in accordance with the Legislative Assembly's guidelines for the coverage of proceedings for parliamentary committees administered by the Legislative Assembly.

1.3 Answers to questions taken on notice

Resolved on the motion of Ms Wilson, seconded Mr Smith: That witnesses be requested to return answers to questions taken on notice and supplementary questions within one week of the date on which the questions are forwarded to the witnesses.

The meeting concluded at 9.31 am.

2. Public hearing: Inquiry into sustainability of energy supply and resources in NSW

Witnesses were admitted. The Chair opened the public hearing at 9.33 am and made a short opening statement.

Dr Christine Cowie, Environmental Epidemiologist, Centre for Air Pollution Energy and Health Research, was affirmed and examined.

Ms Frances Pike, Co-ordinator, Australian Forests and Climate Alliance, was affirmed and examined.

Ms Peg Putt, Coordinator - Forests, Climate and Biomass Energy Working Group, Environmental Paper Network, was affirmed and examined by videoconference.

Mr Chris Gambian, Chief Executive Officer, Nature Conservation Council, was sworn and examined.

Ms Georgina Woods, NSW Coordinator, Lock the Gate Alliance, was affirmed and examined by videoconference.

Dr John Van Der Kallen, NSW Chair, Doctors for the Environment, was affirmed and examined.

Mr Ian Hore-Lacy, Senior Advisor at the World Nuclear Association, Australian Institute for Mining and Metallurgy, was sworn and examined by videoconference.

Mr David Frith, Director Policy, NSW Minerals Council, was affirmed and examined.

Mr Rod Campbell, Research Director, Australia Institute, was affirmed and examined by teleconference.

Mr Benn Barr, Chief Executive, Australian Energy Market Commission, was affirmed and examined.

Mr Oliver Nunn, Senior Economist, Australian Energy Market Commission, was affirmed and examined.

Mr Chris Gilbert, Senior Economic Advisor, Energy Networks Australia, was affirmed and examined by videoconference.

Dr Jill Cainey, General Manager Networks, Energy Networks Australia, was affirmed and examined by videoconference.

Mr Henry Anning, CEO ResourceCo Energy Systems, Bioenergy Australia, was affirmed and examined by videoconference.

Mr Anthony Taylor, Policy and Research Adviser, Business Council of Cooperatives and Mutuals, was affirmed and examined.

The Committee questioned the witnesses. Evidence concluded and the witnesses withdrew.

The public hearing concluded at 4.13 pm.

3. Deliberative meeting

3.1 Publishing transcript

Resolved on the motion of Mr Chanthivong, seconded Ms Wilson: That the corrected transcript of public evidence given today be authorised for publication and uploaded on the Committee's website.

3.2 Accepting tendered documents

The Committee agreed to accept the following documents:

- *Letter to Prime Minister regarding post COVID-19 recovery* – Doctors For the Environment Australia
- Folder of documents to assist presentation – Australian Forests and Climate Alliance.

4. Next meeting

The meeting adjourned at 4.15 pm until 10.25 am on 26 August in the Jubilee Room.

MINUTES OF MEETING No 15

10.26 am, 26 August 2020

Jubilee Room and videoconference

Members present

Mr Greenwich, Mr Chanthivong, Mr Griffin

Ms Wilson until 12.30pm, Mr Smith from 1.25pm (by videoconference)

Officers in attendance

Clara Hawker, Dora Oravec, Madeleine Dowd, Jacqueline Isles, Ilana Chaffey

1. Deliberative meeting

1.1 Confirmation of minutes

Resolved on the motion of Mr Griffin, seconded Mr Chanthivong: That the minutes of the meeting of 25 August 2020 be confirmed.

1.2 Media orders

Resolved on the motion of Mr Chanthivong, seconded Ms Wilson: That the Committee authorises the audio-visual recording, photography and broadcasting of the public hearing on 26 August 2020, in accordance with the Legislative Assembly's guidelines for the coverage of proceedings for parliamentary committees administered by the Legislative Assembly.

The meeting concluded at 10.27 am.

2. Public hearing: Inquiry into sustainability of energy supply and resources in NSW

Witnesses were admitted. The Chair opened the public hearing at 10.30 am and made a short opening statement.

Ms Penny Howard, National Research Officer, Maritime Union of Australia, was affirmed and examined.

Mr Will Tracey, Deputy National Secretary, Maritime Union of Australia, was affirmed and examined.

Mr Peter Colley, National Research Director, Mining and Energy Division, CFMEU Mining and Energy, was sworn and examined by videoconference.

Ms Chloe Smith, Special Projects Officer, Australian Manufacturing Workers' Union, was affirmed and examined by videoconference.

Ms Kristy Walters, Advocacy and Training Lead, Community Power Agency, was affirmed and examined.

Dr Amanda Cahill, CEO, Next Economy, was affirmed and examined by videoconference.

Mr Brad Webb, CEO, Samaritans, was sworn and examined by videoconference.

Dr Patrick Harris, NSW Branch President, Public Health Association of Australia, was affirmed and examined.

Dr Peter Tait, Member, Core Group, Ecology and Environment Special Interest Group, Public Health Association of Australia, was affirmed and examined by videoconference.

Ms Suzanne Toumbourou, Executive Director, Australian Sustainable Built Environment Council, was affirmed and examined by videoconference.

Mr Michael Li, Senior Project Manager (Cities & Policy), ClimateWorks, was affirmed and examined by videoconference.

Clr Clover Moore, Lord Mayor, City of Sydney, City of Sydney, was affirmed and examined.

Mr Chris Derksema, Sustainability Director, City of Sydney, was affirmed and examined.

Mr Darren O'Connell, Energy Management Coordinator, Shoalhaven Water, Shoalhaven City Council, was affirmed and examined by videoconference.

Mr Jason Linnane, General Manager, Singleton Council, was sworn and examined by videoconference.

The Committee questioned the witnesses. Evidence concluded and the witnesses withdrew.

The public hearing concluded at 4.02 pm.

3. Deliberative meeting

The Committee commenced a deliberative meeting at 4.05 pm.

3.1 Answers to questions taken on notice

Resolved on the motion of Mr Chathivong: That witnesses be requested to return answers to questions taken on notice and supplementary questions within one week of the date on which the questions are forwarded to the witnesses.

3.2 Publishing transcript

Resolved on the motion of Mr Griffin, seconded Mr Smith That the corrected transcript of public evidence given today be authorised for publication and uploaded on the Committee's website.

3.3 Accepting tendered documents

Resolved on the motion of Mr Griffin, seconded Mr Chanthivong: That the Committee accept the following documents:

- *Putting the 'justice' into 'just transition': tackling inequality in the new renewable economy* – Maritime Union of Australia
- *Health issues relating to the Narrabri gas project* – Public Health Association of Australia
- *Framework for a National Strategy on Climate, health and well-being for Australia* – Public Health Association of Australia.

4. General business

The Committee discussed the upcoming hearing to be held on 29 September.

Resolved on the motion of Mr Chanthivong, seconded Mr Griffin: That the Committee invite the following witnesses to give evidence at a hearing to be held at Parliament House.

- CSIRO Energy Centre, Newcastle
- Newcastle Institute for Energy and Resources, University of Newcastle
- Port of Newcastle
- Hunter Joint Organisation of Councils
- Hunter Workers
- Hunter Community Environment Centre
- Climate Action Newcastle
- Hunter Renewal
- Glencore
- Centennial Coal
- AGL Energy
- Hunter Business Chamber
- Energy Efficiency Council.

5. Next meeting

The meeting adjourned at 4.08 pm until 29 September 2020.

MINUTES OF MEETING No 16

10.28 am, 29 September 2020

Jubilee Room and videoconference

Members present

Mr Greenwich

Mr Griffin, Mr Smith, Mr Chanthivong from 1.20 pm (by videoconference)

Officers in attendance

Clara Hawker, Dora Oravec, Frances Arguelles, Jacqueline Isles, Ilana Chaffey

1. Apologies

Ms Wilson

2. Deliberative meeting

2.1 Confirmation of minutes

Resolved on the motion of Mr Smith: That the minutes of the meeting of 26 August 2020 be confirmed.

2.2 Media orders

Resolved on the motion of Mr Griffin: That the Committee authorises the audio-visual recording, photography and broadcasting of the public hearing on 29 September 2020, in accordance with the Legislative Assembly's guidelines for the coverage of proceedings for parliamentary committees administered by the Legislative Assembly.

2.3 Answers to questions on notice

Resolved on the motion of Mr Smith: That witnesses be requested to return answers to questions taken on notice and supplementary questions within one week of the date on which the questions are forwarded to the witnesses.

The meeting concluded at 10.30 am.

3. Public hearing: Inquiry into sustainability of energy supply and resources in NSW

Witnesses were admitted. The Chair opened the public hearing at 10.35 am and made a short opening statement.

Dr David Harris, Research Director, Energy Technologies, CSIRO Energy Centre, Newcastle was affirmed and examined by videoconference.

Dr Damian Barrett, Research Director, Energy Resources Program, CSIRO Energy Centre, Newcastle, was affirmed and examined by video conference.

Mr Joe James, Chief Executive Officer, Hunter Joint Organisation of Councils, was sworn and examined.

Councillor Robert Pynsent, Chair, Mayor of Cessnock, Hunter Joint Organisation of Councils was sworn and examined by videoconference.

Councillor Susan Moore, Chair, Economic Transition Sub-Committee, Mayor of Singleton, Hunter Joint Organisation of Councils was sworn and examined by videoconference.

Professor Alan Broadfoot, Executive Director, University of Newcastle was sworn and examined.

Ms Johanna Lynch, Coordinator, Hunter Community Environment Centre was affirmed and examined by videoconference.

Mr John Hayes, Long term volunteer, Climate Action Newcastle was sworn and examined by videoconference.

Ms Danielle Coleman, Project Coordinator, Hunter Renewal was affirmed and examined by videoconference.

Ms Elizabeth Molyneux, General Manager, Policy and Markets Regulation, AGL Energy was affirmed and examined by videoconference.

Mr John McCormack, Head of Government, AGL Energy was sworn and examined.

Mr Robert Hawes, Chief Executive Officer, Hunter Business Chamber was affirmed and examined by videoconference.

Mr Robert Murray-Leach, Head of Policy, Energy Efficiency Council was affirmed and examined by videoconference.

The Committee questioned the witnesses. Evidence concluded and the witnesses withdrew.

The public hearing concluded at 3.05 pm.

4. Deliberative meeting

The Committee commenced a deliberative meeting at 3.07 pm.

4.1 Publication orders

Resolved on the motion of Mr Griffin, seconded Mr Smith: That the corrected transcript of public evidence given today be authorised for publication and uploaded on the Committee's website.

4.2 ***

4.4 Publishing submissions

Resolved on the motion of Mr Chanthivong, seconded Mr Smith: That the Committee publishes submissions 204a, 204b and 254 in full.

4.5 Publishing answers to questions on notice and additional questions

Resolved on the motion of Mr Smith, seconded Mr Chanthivong: That the Committee publishes answers received from the following organisations:

- Australian Energy Market Commission
- Australian Manufacturing Workers' Union
- Business Council of Cooperatives and Mutuals
- CFMEU Mining and Energy
- Community Power Agency
- Department of Planning, Industry and Environment
- Department of Regional NSW.

5. ***

6. Next meeting

The meeting adjourned at 3.13 pm until a date to be confirmed.

MINUTES OF MEETING No 17

1:36 pm, 21 October 2020

Room 1254

Members present

Mr Greenwich, Mr Chanthivong (in person), Mr Smith (via telephone)

Officers in attendance

Dora Oravec, Frances Arguelles, Jacqueline Isles, Ilana Chaffey

1. Apologies

Mr Griffin, Ms Wilson

2. Confirmation of minutes

Resolved on the motion of Mr Chanthivong, seconded Mr Smith: That the minutes of the meeting of 29 September 2020 be confirmed.

3. Inquiry into sustainability of energy supply and resources in NSW

3.1 ***

3.2 Publishing answers to questions on notice and additional question

Resolved on the motion of Mr Chanthivong, seconded Mr Smith: That the Committee publishes answers to questions on notice and additional questions received from:

- Maritime Union of Australia
- Construction, Forestry, Mining and Energy Union
- Public Interest Advocacy Centre.

3.3 Inquiry report

The Chair proposed that the report for the inquiry cover the four topics below:

- Contribution of coal to NSW
- Forecasting for energy for domestic generation and export
- Long-term support for communities through the energy transition

- Economic and employment opportunities of renewable energy.

Discussion ensued.

On the suggestion of Mr Chanthivong, the Committee agreed to include a fifth chapter on the following topic:

- Impact of energy transition on transmission infrastructure.

4. Next meeting

The meeting adjourned at 1.45 pm until a date to be determined.

MINUTES OF MEETING No 18

12.02 pm, 31 May 2021

Room 1254

Members present

Mr Greenwich (in person)

Ms Wilson, Mr Griffin, Mr Chanthivong, Mr Smith (via videoconference)

Officers in attendance

Clara Hawker, Dora Oravec, Ilana Chaffey, Vanessa Gasiewski

1. Confirmation of minutes

Resolved on the motion of Mr Griffin, seconded Mr Smith: That the minutes of the meeting of 21 October 2020 be confirmed.

2. Inquiry into sustainability of energy supply and resources in NSW

2.1 ***

2.2 Discussion of report

The Committee discussed the finalisation of the inquiry report. Members agreed that staff would contact their offices to arrange a meeting to consider the draft report in the coming week.

3. Next meeting

The meeting adjourned at 12.12 pm until a date to be determined.

UNCONFIRMED MINUTES OF MEETING No 19

1.03 pm, 5 August 2021

Videoconference

Members present

Mr Greenwich (Chair), Ms Wilson, Mr Chanthivong, Mr Griffin, Mr Smith

Officers in attendance

Clara Hawker, Dora Oravec, Ilana Chaffey

1. ***

2. Confirmation of minutes

Resolved, on the motion of Ms Griffin, seconded Ms Wilson: That the minutes of the meeting of 31 May 2021 be confirmed.

3. Inquiry into sustainability of energy supply and resources in NSW

Consideration of Chair's draft report

Mr Greenwich moved: That the draft report be the report of the Committee and that it be signed by the Chair and presented to the House.

Question put.

The Committee divided.

Ayes 2 [Mr Greenwich, Mr Chanthivong]

Noes 3 [Mr Griffin, Mr Smith, Ms Wilson]

Question resolved in the negative.

The Committee agreed to consider the report chapter by chapter.

Discussion ensued.

Resolved, on the motion of Ms Wilson: That the fourth paragraph under the heading 'Sourcing and exporting renewable energy' on page vi be amended by inserting "with increasing demand for green hydrogen." after "Hydrogen fuel is a fast-growing market internationally".

Resolved, on the motion of Ms Wilson: That the third paragraph under the heading 'Planning for workforce transition' on page viii be amended by:

- Inserting "which could be considered by the NSW Government's Royalties for Rejuvenation Expert Panel." after "education and training programs designed for work in the renewable energy sector,".
- Inserting "NSW Government investment can complement investments in workers' skills by industry and employee representatives." at the end of the paragraph.

Resolved, on the motion of Ms Wilson: That the fifth and sixth paragraphs under the heading 'Considering the economic potential of renewables' on pages viii and ix be amended by omitting:

The NSW Government's Electricity Infrastructure Roadmap is an important policy document for transition planning in NSW. We're recommending it includes a jobs guarantee for workers in the coal mining and energy sectors. We heard repeatedly that considering the immediate needs of affected workers is key to successful transition planning. This is because they'll need ongoing support –before, during, and after moving to new employment – to minimise the impacts of structural change on them and their communities. Several stakeholders pointed to examples, especially the Ruhr Valley, that indicate the importance of jobs guarantees.

We note that several funding programs targeted at the economic diversification of mining communities were announced by the NSW Government during this inquiry. Community consultation on the allocation and use of this funding will be vital to the success of these programs.

And inserting instead:

The NSW Government's Electricity Infrastructure Roadmap is an important policy document for transition planning in NSW and we welcome the NSW Government's establishment of the Expert Panel for Royalties for Rejuvenation as a mechanism to protect jobs and industries and support communities.

We heard repeatedly that considering the immediate needs of affected workers is key to successful transition planning. This is because they'll need ongoing support – before, during, and after moving to new employment – to minimise the impacts of structural change on them and their communities. Several stakeholders pointed to examples, especially the Ruhr Valley, that indicate the importance of jobs guarantees. The Latrobe Valley Authority in Victoria, however, instead implemented several initiatives in response to the closure of Hazelwood power station and mine at short notice, with a focus on funding for training and worker transfers.

We're recommending that the NSW Government consider a jobs guarantee proposal and its utilisation in other jurisdictions. Along with other relevant Government agencies, this could be undertaken within the Expert Panel for Royalties for Rejuvenation's work to protect jobs and industries, support communities and identify future opportunities that can be built off the back of the mining legacy.

Resolved, on the motion of Ms Wilson: That the last paragraph under the heading 'Considering the economic potential of renewables' on page ix be amended by:

- Omitting "the Port of Newcastle be allowed to develop a container terminal.", and inserting instead "the NSW Government undertake work to remove barriers that prevent the development of a container terminal by the Port of Newcastle."
- Inserting "and evidence has been provided that" after "important part of infrastructure in the Hunter region."

Resolved, on the motion of Ms Wilson: That the heading "Government planning for the energy transition should include a jobs guarantee" after paragraph 3.25 be omitted and the heading "Government planning for the energy transition should include a focus on job creation and workforce transition, and consider a jobs guarantee" be inserted instead.

Resolved, on the motion of Ms Wilson: That the summary box below the heading under paragraph 3.25 be amended to omit "The NSW Government's Electricity Infrastructure Roadmap should include a jobs guarantee." and insert instead "The NSW Government should ensure a focus on job creation and workforce transition, including utilising mechanisms within the Electricity Infrastructure Roadmap and Royalties for Rejuvenation."

Resolved, on the motion of Ms Wilson: That the following new finding be inserted before recommendation 7:

We welcome the NSW Government's establishment of the Expert Panel for Royalties for Rejuvenation as a mechanism to protect jobs and industries and support communities.

Ms Wilson moved: That recommendation 7 reading "That the NSW Government's Electricity Infrastructure Roadmap should include a jobs guarantee for workers in the coal mining and energy sectors." be omitted and the following new recommendation be inserted after recommendation 8:

That the NSW Government investigate the Unions' jobs guarantee proposal and its utilisation in other jurisdictions as part of the Expert Panel for Royalties for Rejuvenation's work to protect jobs and industries, support communities and identify future opportunities that can be built off the back of the mining legacy.

Discussion ensued.

Resolved, on the motion of Ms Wilson: That recommendation 7 reading "That the NSW

Government's Electricity Infrastructure Roadmap should include a jobs guarantee for workers in the coal mining and energy sectors." be omitted and the following new recommendation be inserted after recommendation 8:

That the NSW Government consider a jobs guarantee proposal and its utilisation in other jurisdictions. Along with other relevant Government agencies, this could be undertaken within the Expert Panel for Royalties for Rejuvenation's work to protect jobs and industries, support communities and identify future opportunities that can be built off the back of the mining legacy.

Resolved, on the motion of Ms Wilson: That paragraph 3.26 be amended to omit "We recommend that it include a jobs guarantee." and insert instead "We further recognise the Expert Panel for Royalties for Rejuvenation provides a mechanism to protect jobs and industries and support communities."

Resolved, on the motion of Ms Wilson: That paragraph 3.27 be amended by inserting "from witnesses" after "We heard".

Resolved, on the motion of Ms Wilson: That the following paragraphs be inserted below paragraph 3.31:

We note that the NSW Government's Electricity Infrastructure Roadmap includes a Consumer Trustee to act in the long-term financial interests of NSW electricity customers to improve the affordability, reliability, security and sustainability of electricity supply.

We recommend that the NSW Government consider a jobs guarantee proposal and its utilisation in other jurisdictions. Along with other relevant Government agencies, this could be undertaken within the Expert Panel for Royalties for Rejuvenation's work to protect jobs and industries, support communities and identify future opportunities that can be built off the back of the mining legacy.

Resolved, on the motion of Ms Wilson: That the heading after paragraph 3.45 be amended to omit "Developing a container terminal in" and insert instead "Constraints on".

Resolved, on the motion of Ms Wilson: That the summary box below the heading under paragraph 3.45 be amended to omit "but it's currently prevented from building the necessary container terminal to do this." and insert instead "but its ability to build a container terminal is constrained."

Resolved, on the motion of Ms Wilson: That recommendation 10 be amended by omitting:

That the NSW Government removes barriers that prevent the development of a container terminal by the Port of Newcastle.

and inserting instead:

That the NSW Government undertake work to remove barriers that prevent the development of a container terminal by the Port of Newcastle.

Resolved, on the motion of Ms Wilson: That paragraph 3.46 be amended by omitting:

Current NSW Government policy doesn't allow the construction of a container terminal at the Port of Newcastle. We recommend that these barriers preventing the Port of Newcastle from diversifying its trade base are removed.

and inserting instead:

The Port of Newcastle is currently unable to construct a container terminal. We recommend that work be undertaken to remove these barriers preventing the Port of Newcastle from diversifying its trade base.

Resolved, on the motion of Ms Wilson: That the following paragraph be inserted below paragraph 3.49:

We note that this has recently been considered as a matter by the Federal Court and the judgement is being considered by the ACCC.

Resolved, on the motion of Ms Wilson: That paragraph 3.57 be amended by inserting "NSW Government investment can complement investments in workers' skills by industry and employee representatives." at the end of the paragraph.

Mr Greenwich moved that:

1. The draft report, as amended, be the report of the Committee and that it be signed by the Chair and presented to the House.
2. The Chair and committee staff be permitted to correct stylistic, typographical and grammatical errors.
3. Once tabled, the report be posted on the Committee's website.

Question put.

The Committee divided.

Ayes 4 [Mr Greenwich, Ms Wilson, Mr Griffin, Mr Chanthivong]

Noes 1 [Mr Smith]

Question resolved in the affirmative.

4. General business

The Committee thanked Committee staff for their work during the inquiry.

The Chair noted that the report would be tabled out of session.

5. Next meeting

The meeting adjourned at 2.28 pm until a date and time to be determined.