

# **The Australian Local Power Agency Bill 2021**

**Submission to the House of  
Representatives Standing Committee  
on the Environment and Energy**

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# Introduction

The Australia Institute welcomes the opportunity to make a submission on the Australian Local Power Agency Bill 2021 (the Bill).

The Bill recognises the increasing inevitability that Australia will continue making the transition from coal to clean electricity. It provides a mechanism for maximising economic benefits of the transition for regional Australian communities. The Bill would establish an Australian Local Power Agency. This new agency would drive investment in community energy projects, ensure that regions receive benefit from large-scale renewable energy projects and provide research and information for community energy projects.

The Australia Institute recognises both that the renewable energy transition is inevitable and that it has the potential to change the lives of regional Australians. Investment in utility-scale renewable energy, transmission, storage, community-scale energy and green hydrogen projects will create jobs.

This submission situates community renewable energy in the context of the future development of the National Electricity Market (NEM). We then focus on how the community-scale energy projects that would be supported by the passage of this Bill are important for regional Australia and could contribute to grid security and reliability.

## Energy grid transition

The Australian Energy Market Operator's (AEMO) Integrated Systems Plan (ISP) 2020 is the closest thing Australia has to a national emissions or transition policy for the electricity sector. It is principally a network development plan and does not set out any new policies required to deliver any particular outcome beyond augmentations, interconnector developments and new Renewable Energy Zone (REZ) transmission.

The ISP provides five divergent scenarios for the development of generation, storage and transmission out to 2040. It uses forecasts of technology change and models the least cost pathway that will maintain reliability as coal is displaced by clean generation and storage. In all scenarios, there is significant growth of clean energy capacity in dedicated Renewable Energy Zones in each state. The direct economic benefits of the clean transition will mostly be located in these REZs in regional Australia.

The Australian Local Power Agency would empower regional communities to have equity in new generation and storage and participate more actively in the transformation of the electricity sector.

Australia's existing coal-fired power stations are increasingly unreliable. Between December 2017 to December 2019 there were 227 breakdowns across the NEM, including more breakdowns from so-called 'High-Efficiency, Low-Emissions', supercritical coal-fired power stations than from older power stations.<sup>1</sup> Callide C, the coal-fired power station in Queensland that caused a blackout across the state impacting half a million customers in May 2021, is the newest coal-fired power station in the NEM and the only to have not submitted an estimated closure date.<sup>2</sup>

Coal profitability will continue to decline as more renewable energy supply becomes available, increasing the likelihood of early coal-fired power station closures.<sup>3</sup> EnergyAustralia recently brought forward the closure date of Victoria's Yallourn brown coal-fired power station by four years and committed to building a giant battery.<sup>4</sup>

In all but the slowest transition scenario modelled in the ISP (Slow Change), around 26 GW of new grid-scale renewables will be needed to replace the 15 GW or 63% of existing coal-fired generation that will likely retire by 2040. The pace of coal retirements is likely to be much faster than predicted in the 2020 ISP, as a result of the declining economics of coal generators and the rapid REZ build out being pursued by NSW.

In all scenarios there is 6-19 GW of new dispatchable resources such as pumped hydro, large-scale battery systems, distributed batteries and demand side participation, which will firm up variable generation. Distributed energy resources are expected to double or triple, providing 13-22% of total energy consumption.<sup>5</sup>

Modelling by AEMO and the CSIRO projects that it would be cheaper to generate 90% of electricity from solar and wind in 2030 than build new coal or gas power stations, even when the additional costs of new connecting infrastructure are included. This is consistent with solar and wind being the cheapest new energy sources in most parts of the world.<sup>6</sup>

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<sup>1</sup> Ogge, Quicke, & Browne (2020) *Coal Out: Fossil fuel power station breakdowns in Queensland*, <https://australiainstitute.org.au/report/coal-out-fossil-fuel-power-station-breakdowns-in-queensland/>

<sup>2</sup> Joshi (2021) *A new flagship coal plant failed spectacularly – but it won't be the last time*, <https://reneweconomy.com.au/a-new-flagship-coal-plant-failed-spectacularly-but-it-wont-be-the-last-time/>

<sup>3</sup> Edis (2021) *Fast Erosion of Coal Plant Profits in the National Electricity Market*, [https://ieefa.org/wp-content/uploads/2021/02/Coal-Plant-Profitability-Is-Eroding\\_February-2021.pdf](https://ieefa.org/wp-content/uploads/2021/02/Coal-Plant-Profitability-Is-Eroding_February-2021.pdf)

<sup>4</sup> Whittaker (2021) *Battery in, coal-fired power out as energy giant closes plant four years early*, <https://www.abc.net.au/news/2021-03-10/yallourn-power-station-early-closure/13233274>

<sup>5</sup> AEMO (2020) *2020 Integrated System Plan*

<sup>6</sup> Graham (2020) *Up to 90% of electricity from solar and wind the cheapest option by 2030: CSIRO analysis*, <http://theconversation.com/up-to-90-of-electricity-from-solar-and-wind-the-cheapest-option-by-2030-csiro-analysis-151831>

Replacing coal-fired power stations in the National Electricity Market (NEM) involves large-scale investment and deployment of new generation infrastructure and connecting new generation to the grid.

All scenarios in the ISP point towards an electricity grid dominated by renewable energy and storage. This transition will significantly impact regional Australia.

## Renewable Energy Zones

Most of the new large-scale renewable energy will be developed in Renewable Energy Zones (REZ). REZs are located in areas with a large solar, wind or hydro resources and these clusters take advantage of economies of scale in transmission infrastructure and their distribution across states provides increased reliability through geographical diversity.<sup>7</sup>

While REZs will concentrate large-scale renewables geographically, renewables will still likely be more widely distributed than coal generation currently is. NSW, Victoria and Queensland are now implementing state policies to accelerate REZs that could see up to a thousand renewable energy generators built in new areas. REZs can provide significant regional employment during construction.

NSW's first REZ is in the Central-West Orana region and will unlock 3,000 MW of new electricity capacity in the next five years, enough to power 1.3 million homes and support 3,900 construction jobs in the region.<sup>8</sup>

The Australian Local Power Agency would enhance REZs, engaging regional communities financially, sharing benefits from large-scale renewable projects and also establishing small- and medium-scale renewable energy projects to complement new REZ generation.

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<sup>7</sup> AEMO (2020) *2020 Integrated System Plan*

<sup>8</sup> NSW Government (n.d.) *Renewable Energy Zones*, <https://energy.nsw.gov.au/renewables/renewable-energy-zones>

# Grid reliability and security benefits of community-scale renewables

In addition to their positive social and environmental impacts, community-scale renewable energy projects provide benefits to the electricity system. In this section we provide information about these benefits.

The energy projects developed with the support of this Bill could be used to strengthen the grid in regional areas. The mechanism in the Bill for developing new projects is the Underwriting New Community Investment scheme (UNCI). This would enable government underwriting of medium-scale renewables projects that are 1-10MW and at least 51% locally owned.

These 'community-scale' projects would, like larger commercial projects, be subject to the usual planning and connection regime managed by the Australian Energy Market Operator (AEMO), transmission networks and increasingly, state governments through their REZ policies. These processes are responsible for ensuring that the growth of variable renewable energy capacity supports grid security.

## Small-scale projects are valuable projects

Community-scale projects can be located in places that cannot host larger projects. In weak parts of the distribution grid, a community-scale project can help improve resilience. AEMO already recognises the value of small projects that are generating electricity that is close to consumers as more valuable than the grid average.

For example, the community-owned Hepburn Wind project in Victoria was granted a premium for electricity it generated on the basis that its output is more valuable than the grid average in Victoria. How this worked is AEMO gave Hepburn Wind a transmission and distribution loss factor uplift, reflecting its value for the system.<sup>9</sup> These loss factors account for the fact that around 10% of electricity generated by large power stations is lost due to resistance and heat by the time it gets to consumers. The Hepburn Wind project is located close to consumers so its generation is more valuable than the grid average in Victoria.

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<sup>9</sup> Hepburn Wind (2019) *Hepburn Wind Annual Report 2019*, p.10

## Community energy can contribute to system security in the National Electricity Market

Community-scale renewable energy can help maintain grid security as coal retires. Independent research commissioned recently by the Australia Institute confirms that batteries and renewable energy can replace security provided by synchronous coal-fired power stations.<sup>10</sup> The two key security services are inertia, which maintains frequency, and system strength, which maintains voltage.

The inverters used in community-scale and large-scale battery and renewable energy projects are a security resource for the grid. The Energy Security Board is currently working on the Post-2025 redesign of the NEM and this includes a new regime for 'essential system services'. The new system services mechanisms will ensure that over the period of transition, as coal-fired power stations retire, new sources of inertia and system strength will be procured. These mechanisms could be designed carefully to ensure community-scale assets can compete. These new markets can create additional revenue for community renewable energy.

## Grid forming inverters can maintain supply in regions during grid failures

In addition to supporting reliability and security broadly, community-scale renewables could help maintain electricity supply for their local communities during a state-wide blackout. Batteries and renewable energy can be engineered with 'grid forming' capabilities to safely power a small region in the event of a catastrophic failure to the network.

For example, the ESCRI battery and 90 MW Wattle Point Wind Farm in South Australia's Yorke Peninsula are designed to supply and trade energy with the state grid and also operate autonomously to supply local households and businesses if the grid goes down. Between 2018 to 2020, the ESCRI battery helped maintain reliability during 29 system events, including a transmission failure.<sup>11</sup>

## Geographic diversity increases system resilience

The AEMO ISP is designed to utilise geographic weather diversity to improve the resilience of the NEM, as coal retires.<sup>12</sup> REZs in different parts of the country will experience different

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<sup>10</sup> Mountain & Percy (2021) *Inertia and System Strength in the National Energy Market: A report prepared for The Australia Institute*

<sup>11</sup> (2021) *Electranet SA battery shows the way forward*, <https://www.energy.gov.au/news-media/news/electranet-sa-battery-shows-way-forward>

<sup>12</sup> Australian Energy Market Operator (2020) *2020 Integrated System Plan*, AEMO, p.26

wind and solar conditions and this will increase resilience; often when one area is still and cloudy, other areas will be windy and sunny.

Community-scale generators can contribute to this geographic diversity within REZs. They are generally smaller than commercial generators and this means they are dispersed over a wider area.

## Grid resilience for climate impacts

Climate change is increasing the frequency and intensity of many natural disasters in Australia, including fires, floods, heatwaves, drought and other extreme weather events. Climate change will continue to pose threats to the electricity grid and the forecast energy transition offers opportunities to increase grid resilience. Chronic underinvestment in electricity infrastructure maintenance<sup>13</sup> must also be reversed in addition to building new generation and transmission infrastructure.

Electricity supply is interdependent with other essential services including water and waste systems, transport, banking/finance and communications systems, with the Royal Commission into National Natural Disaster Arrangements finding that a wide range of services are disrupted when electricity supply is impacted by natural disaster events.<sup>14</sup>

As climate impacts become more severe, distributed generation and community-scale renewables could play an increasingly important role in grid resilience. For remote communities at risk of being cut off from the grid during outages, particularly those caused by weather events such as bushfires where power supply cannot be easily restored, community-scale renewables could also provide a solution to ensure essential services such as telecommunications remain accessible to those communities.

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<sup>13</sup> Armistead, Richardson, & Stanford (2021) *Missing a Stitch in Time: The Consequences of Underinvestment in Proper Upkeep of Australia's Electricity Transmission and Distribution System*

<sup>14</sup> Commonwealth of Australia (2020) *Royal Commission into National Natural Disaster Arrangements*

# Conclusion

The Australia Institute reaffirms its support for the Bill to establish the Australian Local Power Agency. The Bill would ensure that as Australia continues to transition from coal to renewable electricity, the economic benefits of renewable energy are maximised for regional Australia. Community-scale renewable energy projects can support grid security and reliability, and improve grid resilience to ensure regional and remote communities can access essential interdependent services.