



SUBMISSION
Victorian Renewable Energy Zones

Directions Paper

31 March 2021

Executive Summary

Electricity distribution network, Powercor, has responded to the *Victorian Renewable Energy Zones Development Plan, Directions Paper* (February 2021) with a proposal to connect renewable energy in a way which is fast and easy to deliver, generates improved reliability for customers and considerable benefits to regional communities.

The Powercor network spans a region representing greater than 60% of the State and incorporating some of the most prospective solar and wind resourced areas in four of the identified REZ regions. A total of 2GW of large-scale renewable generation is already connected to the Powercor network.

In order to meet the Victorian Government's objectives to maximise connection outcomes in the shortest possible time to support emissions reduction targets, Powercor has identified opportunities to unlock greater capacity at a distribution network level.

Stage 1. Proposal to deliver 1.3GW of generation capacity in two years with system strength support

Stage 1 as described by the Directions Paper, sets out transmission network investments to improve system strength, alleviate connection constraints short-term and prepare for more renewables in the medium-term.

While fully recognising the role transmission plays in an efficient and reliable electricity market, our experience in working on large-scale renewable generation connections over the past 20 years has revealed two important differences between distribution and transmission network developments:

1. **Faster application process:** up to 6 months for distribution connections compared to up to 2 years for transmission connections.
2. **Speed of delivery:** with distribution network projects completed in 12 months or less compared to at least two years for transmission network projects.

Accordingly, the Powercor proposal offers to deliver 1.3GW of generation capacity by 2025, with some of that capacity delivered within 12 months, through a package of distribution network projects across four REZ regions.

At an estimated cost of \$93 million per GW of capacity unlocked, these include:

- introducing a fleet of eight (8) synchronous condensers to ensure system strength on the sub-transmission network, provide greater redundancy and through this, support the performance of renewable generators of all sizes
- augmenting our 66kV network to enable a greater number of solar and wind projects to connect particularly within the Geelong, Shepparton, Terang, Ballarat and Bendigo regions.

We currently have over 2.3GW of active connection enquiries or applications for wind and solar generation projects ranging in size from 1MW to 150MW across our network.

Some are already committed, however will compete for limited distribution network capacity. Other proponents will need to invest in upgrading local infrastructure as part of their project. Without distribution network augmentation many projects will not progress if faced with further costs for 66kV network upgrades to enable exports from their projects.

Importantly, the proposed package of works to unlock 1.3GW of capacity on the distribution network will also have flow on benefits to transmission network developments by:

- alleviating current and future network constraints for capacity and system strength as synchronous condensers connected to the distribution network can be shared by generators on either transmission or distribution networks
- complementing construction of new transmission level investments
- unlocking greater export capability of existing or new distribution connected generators.

Table: Powercor – Overview of proposed projects and renewable energy benefits

Renewable Energy Zones	Stage 1		Stage 2		Overall	
	Renewable capacity unlocked	Synchronous condensers	Storage	Synchronous condensers	Estimated total capacity supported	
Murray River (V2)		2	Up to 370MW	1	Solar	974MW
Western Victoria (V3)	<ul style="list-style-type: none"> Ballarat 300MW (wind) Bendigo 280MW (solar) 	3	Up to 150MW		Solar Wind	350MW 1,682MW
South-West (V4)	<ul style="list-style-type: none"> Geelong 250MW (wind) Terang 220MW (wind) 	3	Up to 250MW	3	Wind	3,072MW
Central North (V6)	<ul style="list-style-type: none"> Shepparton 280MW (solar) 		Up to 350MW	4	Solar	1,104MW
Total benefits	1.32GW	8	1.12GW	8		7.18GW

Source: Powercor

Stage 2. Potential for 1.1GW of energy storage and further support for system strength

The Powercor proposal also incorporates plans for delivering 1.1GW of scalable, large energy storage on our existing network as part of the second stage of the REZ Development Plan, together with a fleet of an additional eight (8) synchronous condensers.

Positioned in or neighbouring 20 of our existing zone substations, these assets would provide further benefits to regional communities particularly in locations where traditional augmentation cannot be justified via the Australian Energy Regulator’s investment frameworks.

Our preliminary assessment is that the optimum positions for the batteries to benefit from close proximity to the end-use customer load are in Nhill and Charam, Cobram and Robinvale, Boundary Bend and Ouyen. This storage will also be of higher value in the market, given its closer proximity to end customer load.

Dispersing storage capacity across the network in this way will help enable increasing distributed energy resources (DER) penetration, improve reliability for regional customers by an estimated average of 22% and also meet transmission storage needs.

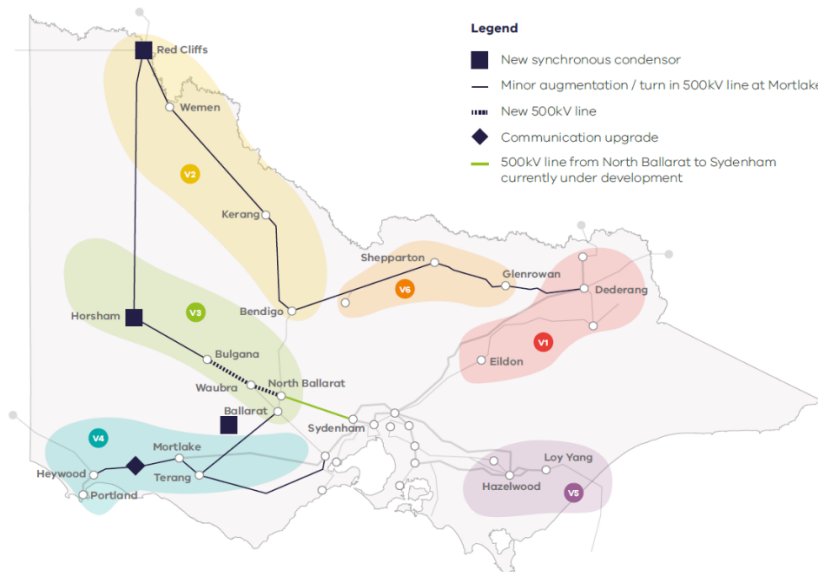


Figure: Victorian Government Renewable Energy Zones

Source: Victorian Government REZ Directions Paper

Generating greater community acceptance

The Powercor proposal also offers direct advantages in delivering benefits for regional communities through:

1. the geographic dispersion of multiple distribution level investments and associated renewable energy projects to support a diversity of communities and customers
2. the availability of current easements, land and assets that can be utilised to ensure no additional impacts on visual amenity, noise, natural and agricultural environments
3. the potential to generate significant numbers of jobs and local spending in both construction and operation, to support regional economies.

For example, more than 300 people (largely locals) were employed for the 112MW Karadoc Solar Farm in north-western Victoria connected to the Powercor network. Many of these employees and apprentices, have subsequently built careers on other renewable generation projects.

Significantly, the flow on effects of the proposed network investments and renewable energy developments also offer the potential for other localised benefits:

- greater network capacity to accommodate community energy projects, stand-alone power systems, community battery programs, and electric vehicle charging stations, to connect to the distribution network and help achieve objectives for emissions reduction, lower energy costs and energy equity
- improved power reliability and quality for a large proportion of Powercor's 844,000 household and business customers through improvements to the high voltage network supplying regional communities.



Photo: The growing number of local community energy projects across the Powercor region, such as the pioneering, Renewable Newstead, could potentially benefit from greater capacity on the distribution network as a flow on benefit of REZ developments.

About Powercor

Powercor moves electricity to and from around 844,000 homes and businesses across the western suburbs of Melbourne and through central and western Victoria. Our network is made up of almost 90,000 kilometres of wires and more than 588,000 poles and associated infrastructure, and supports 11,200 medium, commercial and industrial businesses and 106,500 small businesses.

We acknowledge our role in facilitating new energy technology benefitting the environment and the communities we serve. As a result, the Powercor network is facilitating new ways of generating, using and transporting electricity to enable homes and businesses to maximise the benefits of low emissions opportunities and technologies. We are also focused on building a resilient network to ensure we can sustain high levels of electricity reliability while environmental conditions become increasingly challenging.

Our teams operate from 13 depots, our Bendigo-based customer contact centre and our CBD headquarters, to deliver reliable, safe and affordable electricity by operating, managing and maintaining all network assets and metering services. This means managing a network that is reliable and safe, particularly in relation to bushfire risks.