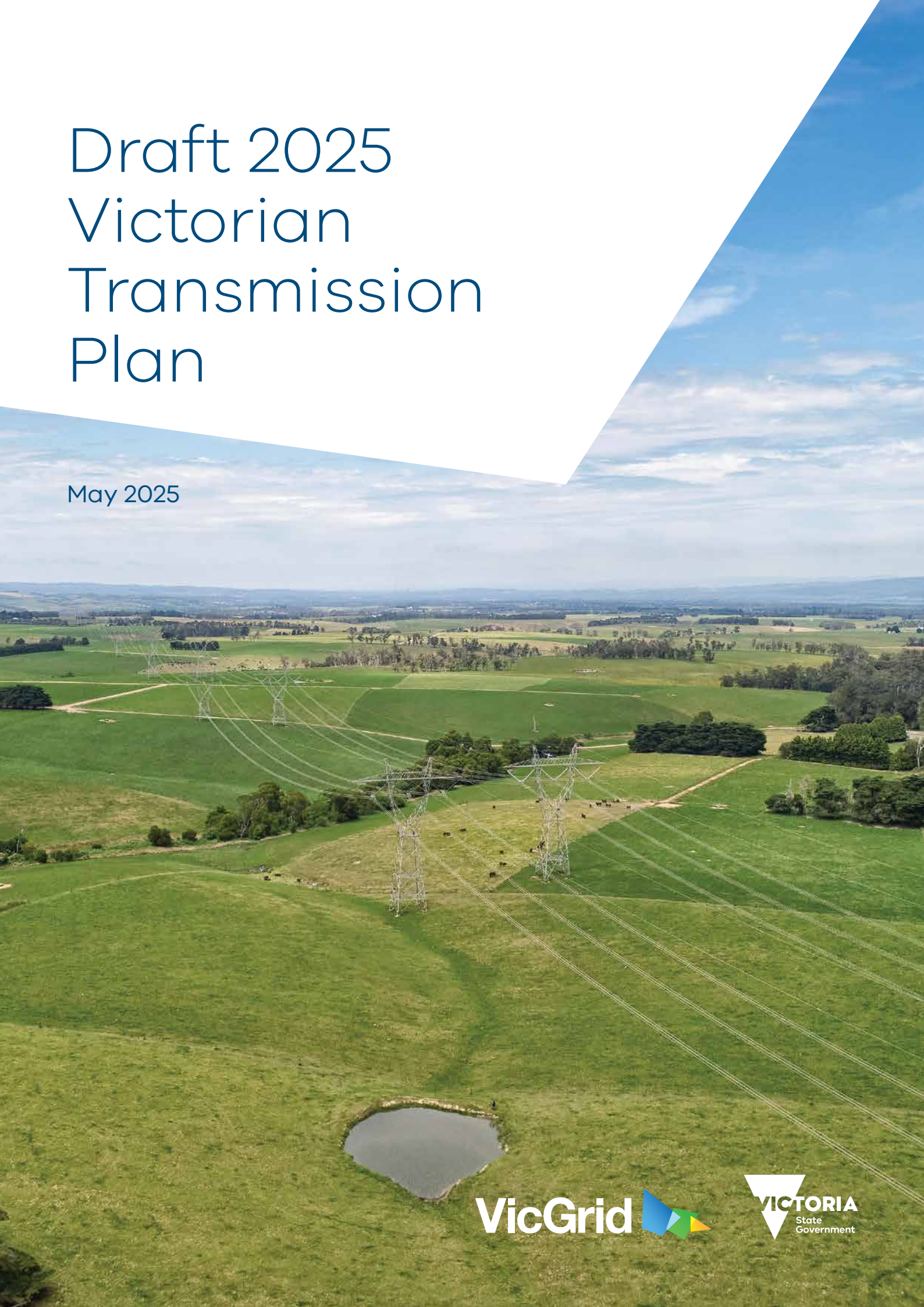
Draft 2025 Victorian Transmission Plan

May 2025



VicGrid

VICTORIA State Government

Acknowledgment of Traditional Owners

We acknowledge and respect Victoria's Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it. We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

We are committed to genuinely partnering and meaningfully engaging with Victoria's Traditional Owners and First Peoples to support the protection of Country, the maintenance of spiritual and cultural practices and their broader aspirations in the 21st century and beyond.

Our commitment to Victoria's First Peoples and Traditional Owners

We acknowledge we have more work to do to support meaningful participation of Traditional Owners and First Peoples in the development of future Victorian Transmission Plans and renewable energy zones.

The first phase of the Victorian Transmission Plan strategic land use assessment included only publicly available datasets for Aboriginal and historical cultural heritage. As such, the information in the draft Victorian Transmission Plan relating to Aboriginal cultural heritage is limited and does not capture or reflect all known heritage values.

We will continue ongoing conversations with Traditional Owners to design an appropriate process for incorporating further cultural heritage information into renewable energy zone development and subsequent Victorian Transmission Plans, in alignment with principles of data sovereignty. We have heard how critical cultural heritage mapping is, and we are committed to making sure this process is Traditional Owner-led.

Disclaimer:

This draft 2025 Victorian Transmission Plan is published by the State of Victoria pursuant to amendments to the *National Electricity (Victoria) Act 2005*, which implement the first stage of Victorian Transmission Investment Framework reforms and empowers the CEO VicGrid to develop a Victorian Transmission Plan. It has been prepared for the purposes of consultation and comment, in connection with the Victorian Transmission Plan Guidelines.

While the State of Victoria has made reasonable efforts to ensure the quality and accuracy of the information in this publication, the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore, to the extent permitted by law, disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

This publication does not include all of the information that an investor, participant or potential participant in the National Electricity Market might require, and does not amount to a recommendation of any investment. The modelling work included herein inherently requires assumptions about future behaviours and market interactions. Anyone proposing to utilise this publication should note that there may be differences between estimated and actual results which may be material, and between this draft and final publication of the Victorian Transmission Plan.

Anyone proposing to use the information in this publication (which includes information and forecasts from third parties) should independently verify its accuracy, completeness and suitability for purpose, and obtain independent and specific advice from appropriate experts.

The draft maps at Figures 1, 2, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21 and 22 show locations of draft proposed renewable energy zones (REZs). Data used to develop these maps was sourced on 25 March 2025 and is subject to change. The draft proposed REZ boundaries are indicative only and have been prepared for the purposes of public consultation.

The draft maps at Figures 1, 3, 11, 14, 16, 18, 20, 22 and 23 show proposed alignments for the Western Renewables Link (WRL), Victoria to New South Wales Interconnector West (VNI West), Marinus Link and offshore wind transmission as at the time of publication. These alignments are subject to assessment through relevant planning and environmental approvals processes and, together with the identified locations of existing and committed generation projects, are indicative only.

Please visit **vicgrid.vic.gov.au** for the latest updates.

Contents

Acronyms

Term	Definition
AEMO	Australian Energy Market Operator
CER	Consumer energy resources
CIS	Capacity Investment Scheme
CDP	Candidate development pathway
DSN	Declared Shared Network
DNSP	Distribution Network Service Provider
ESOO	Electricity Statement of Opportunities
EV	Electric vehicle
GW	Gigawatt (one million kilowatts)
GWh	Gigawatt hour (one million kilowatt hours)
GSOO	Gas Statement of Opportunities
IAP2	International Association of Public Participation
IASR	Inputs, Assumptions and Scenarios Report
ISP	Integrated System Plan
MCA	Multi-criteria analysis
MW	Megawatt (one thousand kilowatts)
MWh	Megawatt hour (one thousand kilowatt hours)
NEM	National Electricity Market
NER	National Electricity Rules

Term	Definition
NEVA	National Electricity (Victoria) Act 2005
ODP	Optimal development pathway
PSS/E	Power system simulation for engineering
PV	Photovoltaic solar
RAP	Registered Aboriginal Party
REZ	Renewable energy zone
SLUA	Strategic land use assessment
TNSP	Transmission Network Service Provider
TW	Terawatt (one billion kilowatts)
TWh	Terawatt hour (one billion kilowatt hours)
VAPR	Victorian Annual Planning Report
VEU	Victorian Energy Upgrades
VGPR	Victorian Gas Planning Report
VNI WEST	Victoria to New South Wales Interconnector West
VPP	Virtual power plant
VRET	Victorian Renewable Energy Targets
VTIF	Victorian Transmission Investment Framework
VTP	Victorian Transmission Plan
WRL	Western Renewables Link

How to read this document

Part A

A new approach to planning Victoria's energy grid

Part A introduces the context for the 2025 Victorian Transmission Plan (VTP). It provides an overview of VicGrid's methodology for developing the VTP and describes how VicGrid is working with First Peoples, communities and industry as part of the process. Part A also summarises key themes from feedback that VicGrid has received to-date and how these have helped to shape the draft 2025 VTP.

Part B

Our draft plan for renewable energy zones and transmission projects

Part B presents the draft outputs of the 2025 VTP. This includes details on each of the draft proposed renewable energy zones (REZs) for Victoria, the priority programs of transmission upgrades needed over the next 15 years, and the draft proposed shoreline REZ to enable the development of offshore wind in Gippsland.

Part C

Delivering the VTP

Part C provides information about the next steps following public consultation and finalisation of the 2025 VTP. This includes information on what to expect as renewable energy zones are formally declared and developed, as well as next steps for planning transmission projects identified in the 2025 VTP.

Part D

Engagement on the draft 2025 VTP

Part D outlines how to provide feedback on the draft 2025 VTP and the further analysis that is planned before the VTP is finalised later in 2025.

Supporting technical information can be found in the Appendices, available on Engage Victoria at **engage.vic.gov.au/vicgrid**

Executive Summary

VicGrid is developing a new strategic plan for renewable energy infrastructure to deliver better outcomes for Victorian consumers and communities.

This is our first Victorian Transmission Plan (VTP) – a long-term plan for renewable energy zones (REZs) and transmission to ensure we have the right infrastructure in the right place at the right time to support the transition to renewables. This VTP is a draft because we are seeking further feedback from communities and industry on what is important.

The VTP is a big change to how energy infrastructure has been planned in the past.

Victoria needs a significant amount of new renewable energy generation and storage capacity – supported by upgrades to Victoria's transmission network – to replace retiring coal-fired power stations and ensure Victoria's electricity system is affordable, reliable, safe and sustainable.

Planning for this new energy infrastructure needs to balance a range of factors, including the impacts on local communities, landholders, First Peoples, agriculture and industry, while ensuring we protect the natural environment, biodiversity and cultural heritage.

We also need to avoid under or over-investing, so we can maintain energy security and control costs to avoid unnecessary bill increases for all Victorians.

The VTP is a new approach to planning that considers important factors including land use, environmental impacts and community views much earlier in the process. This aims to minimise negative impacts to regional communities, landholders and rights holders, keep costs low for consumers and give industry the certainty it needs to invest in the renewable energy Victoria requires for the future.

Our draft plan aims to deliver the best overall outcome for all Victorians.

We plan to develop, refine and deliver the VTP in a way that creates benefits for Victorians and encourages the critical investment we need to maintain reliable and affordable energy. Early and meaningful engagement is at the heart of our approach. We are committed to partnering with First Peoples and Traditional Owners, and engaging early and often with landholders, communities and industry.

The draft 2025 VTP is a long-term plan based on a future energy mix that responds to changing needs as coal-fired generation retires, meets growing demand from new sources such as data centres, clean fuel production and electric vehicles and meets Victoria's targets for renewable generation, storage and offshore wind. Our plan is based on scenarios identified in the VTP Guidelines published in 2024, and is designed to be flexible as the energy needs of Victorian homes and businesses change in the future.

Feedback on this draft VTP will inform a final 2025 VTP that we will publish later this year. This final VTP will set out the plan for Victoria's renewable energy zones and the transmission infrastructure required to enable an orderly energy transition.

We will publish an updated VTP in 2027, and every 4 years after that to ensure the plan remains up-to-date with new technology developments and changes in energy demand.

Additional renewable generation and storage capacity in our draft plan

By 2040, we are planning for:

5.8 GW
of new onshore wind

9 GW
of new offshore wind

2.7 GW
of new utility-scale solar

3.4 GW
of new short and long duration (utility) storage capacity

These figures include new capacity from already-committed projects across Victoria and the additional new generation and storage capacity that we are planning for by 2040.

What's included in the draft VTP?

The draft VTP sets out what renewable energy technologies and transmission should be built, when, where, and in what capacity to meet Victoria's future energy needs over the next 15 years.

The draft VTP sets out:

Draft proposed renewable energy zones, which are areas identified as most suitable to host new onshore renewable generation and storage.

Establishing renewable energy zones will deliver new benefits for local communities and provide a signal to industry on where to focus when developing new projects. By coordinating development in renewable energy zones, we can streamline grid connections and plan transmission upgrades to make the best use of Victoria's existing network. It will also help minimise environmental and community impacts.

The design process for draft proposed renewable energy zones considered economic costs, land use, community preferences, regional development opportunities, generator interest, existing levels of development, wind and solar resource potential and community and industry feedback.

Read more about how community and industry engagement so far has shaped the draft proposed renewable energy zones, and how you can provide feedback, in Section 6.

Proposed new transmission investments required in the next 15 years to support renewable energy zone development and deliver network security and reliability.

The draft plan recognises that significant new investment in transmission will be required to strengthen and modernise Victoria's grid. These transmission upgrades will unlock new network capacity in the right places to support investment in renewable generation and storage, and ensure Victorians continue to have access to secure and reliable energy.

In this VTP we are proposing just 4 new transmission projects: a second radial line and tie in loop in Gippsland to facilitate offshore wind, a new line between Sydenham and Tarrone, a new line between Truganina and Deer Park, and an additional short line between Hazelwood and Yallourn.

Read more about the proposed programs of transmission investments, and how you can provide feedback, in Section 8.

A **draft proposed renewable energy zone on Gippsland's shoreline**, which is needed to support offshore wind generation.

A shoreline renewable energy zone supporting offshore wind is different to an onshore renewable energy zone and is not designed to host onshore wind and solar projects. The draft proposed renewable energy zone on the Gippsland shoreline signals to offshore wind developers where to locate their onshore connection infrastructure (for example onshore cables), while their wind turbines will be located offshore.

The shoreline renewable energy zone will facilitate coordination, help deliver benefits for the local community, provide a clear signal to project developers, and minimise the impact on areas outside of the zone.

Read more about the draft proposed Gippsland shoreline renewable energy zone, and how you can provide feedback, in Section 7.

Our draft plan for renewable energy zones

Where are the draft proposed renewable energy zones?

We have identified 7 draft proposed renewable energy zones for Victoria: Central Highlands, the Central North, Gippsland, the North West, the South West, Grampians Wimmera and Wimmera Southern Mallee.

In total, the draft proposed renewable energy zones cover 7% of Victoria's land area. On average statewide, we will need about 11% of the land area of renewable energy zones to host wind and solar projects to meet our expected renewable energy capacity to 2040. However, only a fraction of the land within project sites will be needed for infrastructure. For example, on a typical wind farm, the turbines themselves along with access roads and other infrastructure occupy only about 2% of the project site. Figures will vary by individual REZs and projects.

Table 1 describes the additional wind and solar generation capacity we are planning for in each of the 7 draft proposed renewable energy zones by 2040, and Figure 1 illustrates their locations across Victoria.

Feedback we have received from regional communities so far has helped shape the size and location of the draft proposed renewable energy zones. Community feedback stressed the importance of minimising impacts on biodiversity and water systems, protecting farmland, and minimising cumulative impacts on regional communities. We also received feedback about infrastructure development in regions prone to natural hazards, including bushfires and flooding. At the same time, we consulted with industry to understand where current projects are in development. We also considered studies of wind and solar resource potential, to ensure the draft proposed renewable energy zones are suitable for new renewable development.

We are prioritising early engagement and involvement of Traditional Owners and First Peoples in planning for renewable energy and transmission infrastructure. This engagement and involvement has started, and we are committed to walking together with First Peoples over the years ahead.

The location of draft proposed renewable energy zones also takes into account access to transmission infrastructure, including the new transmission capacity that will be unlocked by the proposed programs of transmission upgrades set out in this draft plan.

The overall size of renewable energy zones is an important consideration. There is a trade-off between smaller zones with more concentrated infrastructure development, and larger zones that affect a wider area but result in less concentrated development within each zone. Based on feedback received and our assessment of different land use considerations, we have designed draft proposed renewable energy zones that are relatively smaller. We would like to hear your feedback on our renewable energy zone sizes.

The draft proposed onshore renewable energy zone in Gippsland is separate to the draft proposed Gippsland Shoreline Renewable Energy Zone, which is designed to host onshore connection infrastructure linking offshore wind generation with Victoria's transmission network. For more information on the proposed shoreline renewable energy zone, see page 17 and Section 7.

Table 1: Additional generation we are planning for in each draft proposed renewable energy zone by 2040

Draft proposed renewable energy zone	Wind capacity (MW)	Solar capacity (MW)
Central Highlands	1,820 – 2,070[1]	125[1]
Central North	60 - 100	-
Gippsland	320 - 480	-
North West	320 - 480	930 - 1,390
South West	1,280 - 1,920	-
Grampians Wimmera	320 - 480	-
Wimmera Southern Mallee	320 - 480	-

[1] The Central Highlands additional generation capacity includes Golden Plains Wind Farm (East and West) and Elaine Solar Farm which are currently under development. Other committed projects located outside renewable energy zones will provide an additional 0.6 GW of wind capacity and 1.5 GW of solar capacity.

Draft proposed renewable energy zones

Figure 1: We have identified 7 draft proposed renewable energy zones across Victoria for onshore renewable energy and a shoreline renewable energy zone to coordinate offshore wind connections

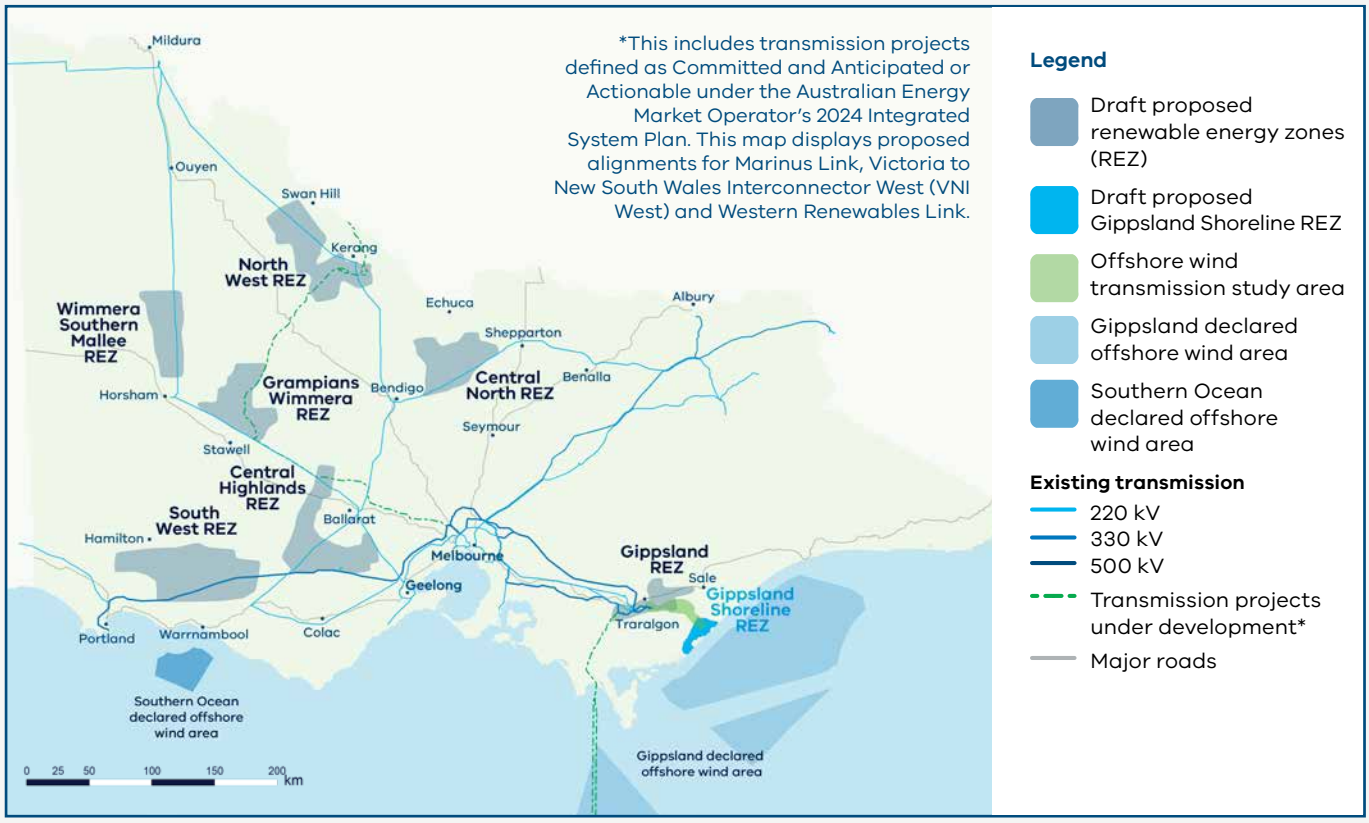
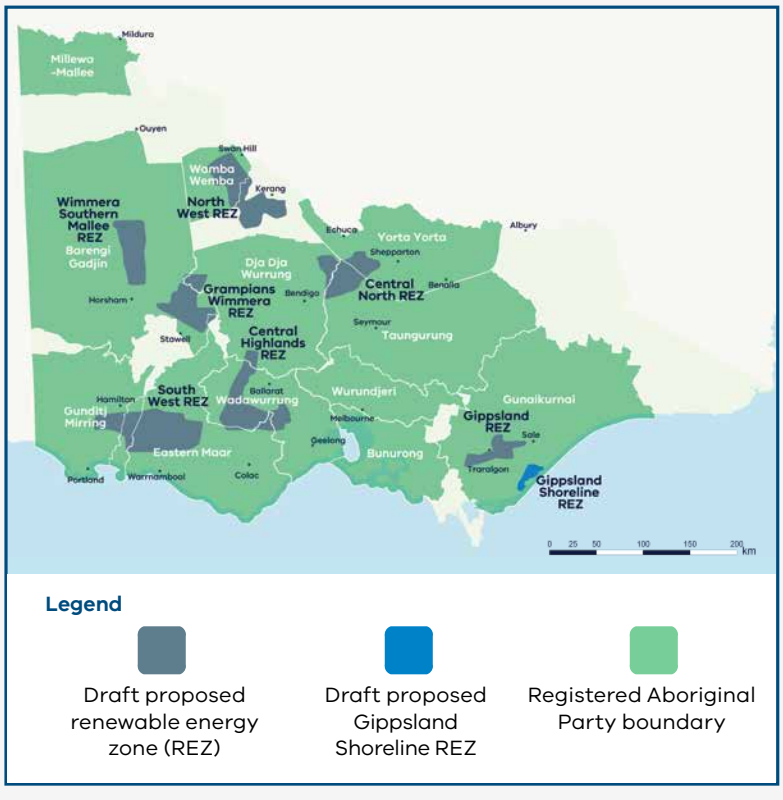


Figure 2: Draft proposed renewable energy zones and Registered Aboriginal Party boundaries



How will the final renewable energy zones be decided?

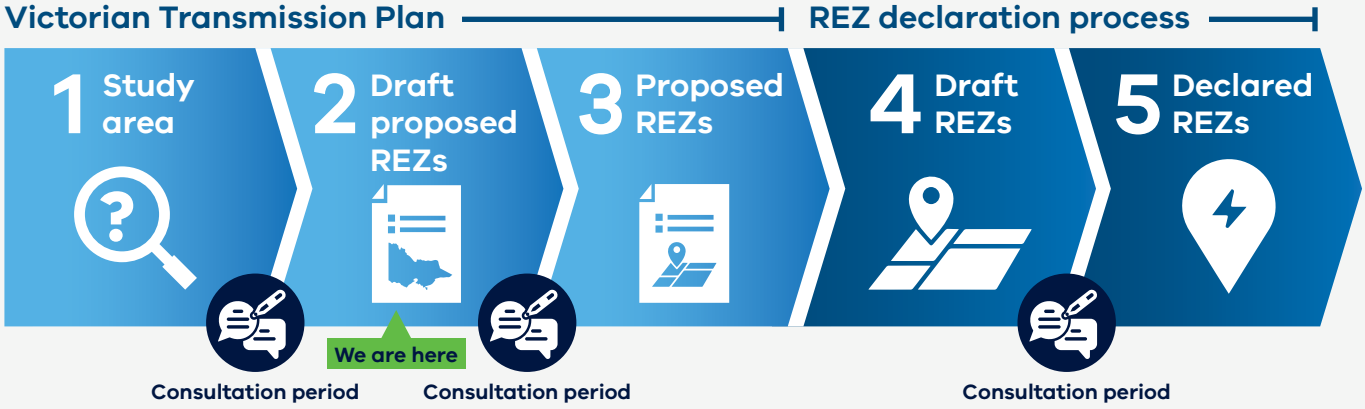
This draft plan is an important step in determining where Victoria's renewable energy zones will be located. We are now seeking feedback on the draft proposed renewable energy zones as part of public consultation on the draft 2025 VTP.

Following your feedback, the proposed renewable energy zones may be refined further as we develop the final 2025 VTP. This refinement will also take into account further modelling and analysis.

Following the final VTP, there will be a statutory process for each renewable energy zone to be declared. This process provides a further opportunity for consultation prior to any renewable energy zone being declared.

Disclaimer: The Registered Aboriginal Party boundaries shown in the draft Figure 2 are a computer representation. The boundaries show the general vicinity of land and waters subject to the *Native Title Act 1993* (Cth) and *Traditional Settlement Act 2010* (Vic) as at the time of publication and could conceivably change. For more details, please see full disclaimer on Page 4.

The process to refine and finalise renewable energy zones (REZs)



What will the renewable energy zones mean for me?

Introducing renewable energy zones will shape how renewable development occurs in Victoria. This will have different impacts for regional communities and landholders, First Peoples and industry.

Communities in declared renewable energy zones will see increased investment in renewable generation and storage infrastructure over time.

Project proponents will need to negotiate with landholders for rights to develop projects on their land, and a landholder has a right to say no to having new renewable generation on their property. Landholders who do agree to new renewable development will receive financial compensation that is negotiated with the developer.

VicGrid is implementing new benefits for communities that host renewable energy zones. New Renewable Energy Zone Community Energy Funds are proposed to support projects that improve energy supply, reliability, efficiency and affordability for businesses, communities and households. They will also support initiatives that create economic development opportunities from the energy transition, for example projects that build renewable energy supply chains, create jobs in the energy sector, promote renewable energy research and innovation, or help attract renewable energy investment. For more information, see **engage.vic.gov.au/vtif-rez-community-benefits**

First Peoples are distinct rights holders to Country and Sea Country and these rights must be upheld. We are committed to walking together with Traditional Owners and First Peoples in a way that is grounded in respect and enables self-determination and shared benefits.

We are working in partnership with Traditional Owners to consider models for dedicated benefits for Traditional Owners affected by renewable energy zones and transmission projects. This process aims to go beyond inclusion, to give First Peoples control over how funds are spent to ensure they deliver economic empowerment and support self-determination.

The development of renewable energy zones will require an ongoing dialogue with Traditional Owners to ensure we minimise impacts to Country. We will continue to work with Traditional Owners to develop a process for incorporating cultural heritage into renewable energy zone planning.

Responsible project developers will be critical to the success of the renewable energy zones. VicGrid is introducing reforms which will give generators within renewable energy zones greater certainty over their ability to get their energy to market.

Once renewable energy zones are declared, projects within the zones will benefit from special network access arrangements that will help protect against generators being constrained off – when generators need to limit the energy they supply due to constraints on the transmission network. Projects located outside of declared renewable energy zones will be subject to a Grid Impact Assessment, and will need to demonstrate that their project would not result in generators located within renewable energy zones being constrained off.

The new access arrangements will also set clear expectations and requirements for how project developers should engage with communities, Traditional Owners and landholders as well as provide meaningful benefits.

Our draft plan for transmission infrastructure investments

What transmission infrastructure investments are needed?

The draft VTP sets out 7 programs of transmission infrastructure investments to be implemented over 2025-2040 to enable the development of renewable energy zones and offshore wind.

The proposed transmission investments will support renewable generation and help to ensure a smooth transition as coal-fired power plants close and Victoria's electricity demands grow.

Our proposed plan for transmission has been carefully chosen to deliver a path forward that keeps costs as low as possible for Victorians while providing flexibility to adapt to changing energy needs in the future. Transmission programs may be altered, added or removed as the energy transition and demand evolves over time.

We prioritised upgrades along existing transmission lines where possible. In this VTP we are proposing just 4 new transmission projects across 3 programs: a second radial line and tie in loop in Gippsland to facilitate offshore wind, a new line between Sydenham and Tarrone, a new line between Truganina and Deer Park, and an additional short line between Hazelwood and Yallourn.

A number of the proposed programs are needed urgently to prepare for coal-fired power stations to retire and avoid bottlenecks in delivering new generation and storage infrastructure, including new renewables projects supported by the Australian Government's Capacity Investment Scheme. Of the 7 programs, 2 are needed by 2030, 3 by 2035 and 2 by 2040.

Table 2 describes each of the transmission programs, their proposed implementation timing, and why they are needed. Figure 3 illustrates the locations of these programs across Victoria.

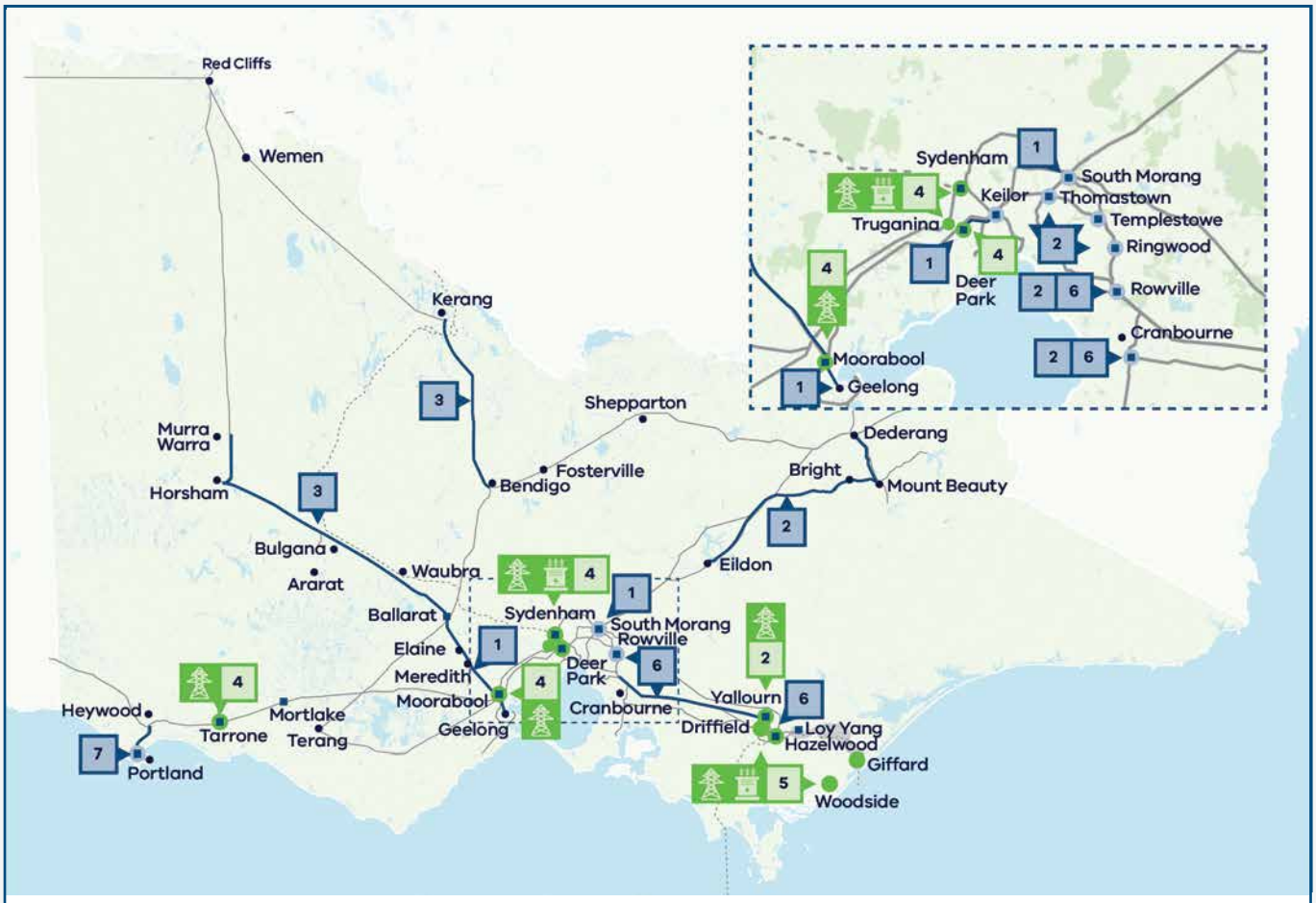
There may be some changes between the draft and final 2025 VTP, as we complete further modelling and analysis, investigate system strength needs and consider consultation feedback.

The 7 priority programs below describe what is needed over and above existing transmission projects that are already under development across Victoria. Marinus Link Stage 1, Victoria to New South Wales Interconnector West, Western Renewables Link, and the transmission infrastructure required for the first 2 GW of offshore wind in Gippsland have all been factored in as inputs to the 2025 VTP.

Table 2: The 7 priority programs of transmission upgrades to unlock renewable generation

Program	Why it is needed	Proposed year needed by
1 Western Victoria reinforcement program A collection of 4 network augmentations and upgrades of existing infrastructure.	To support connection of onshore wind and solar generation in the draft proposed Wimmera Southern Mallee, Grampians Wimmera, Central Highlands and South West renewable energy zones and reinforce the network supply to metropolitan Melbourne.	**2028**
2 Eastern Victoria reinforcement program A suite of network augmentations and upgrades of existing infrastructure, as well as an additional line between Hazelwood and Yallourn.	To meet increased demand in eastern metropolitan Melbourne, respond to shifting supply from the east of Victoria to the west of Victoria and ensure connection and security of supply from the Gippsland and Central North draft proposed renewable energy zones and the Gippsland offshore wind area.	**2028 – 2029**
3 North West strengthening program Replacement of sections of the existing single circuit transmission with a new high-capacity double circuit line.	To support additional generation in the Wimmera Southern Mallee, Grampians Wimmera and North West draft proposed renewable energy zones and facilitate its transfer to areas of high energy demand.	**2035**
4 South West expansion program A new double circuit 500 kV line in South West Victoria.	To meet significant demand for high-quality wind generation in Victoria's west, including additional generation in the South West and Central Highlands draft proposed renewable energy zones.	**2033**
5 Gippsland offshore wind transmission stage 2 program A new transmission loop to support offshore wind.	Building on the first Gippsland offshore wind transmission project, this new program is required to connect additional offshore wind generation in the Gippsland offshore wind area to meet Victoria's 2035 and 2040 offshore wind targets.	**2033 – 2038**
6 Latrobe Valley strengthening program New power flow controllers and dynamic load rating devices in the Latrobe Valley.	To allow for easier integration of wind and solar into the grid, manage significant power flows and address network congestion. It supports connection and transfer of generation from the Gippsland draft proposed renewable energy zone and Gippsland offshore wind area.	**2034 – 2035**
7 Offshore wind upgrade Uprating of existing lines from Heywood to Portland.	To connect offshore generation from the Southern Ocean offshore wind area to Portland.	**2038**

Figure 3: Map of the 7 VTP priority transmission programs



Legend

- New infrastructure
- New transmission connection point (specific location to be determined through consultation with communities, landholders and First Peoples)
- New transmission line and substation (specific location to be determined through consultation with communities, landholders and First Peoples)
- Upgrades to existing infrastructure
- Works occurring within an existing substation
- Existing substation
- Town location
- Upgrade to existing transmission network
- Existing transmission network
- Transmission projects under development*
- Study area for Gippsland offshore wind transmission project

Victorian Transmission Plan program** number

1 Western Victoria reinforcement program

2 Eastern Victoria reinforcement program

3 North West strengthening program

4 South West expansion program

5 Gippsland offshore wind transmission stage 2 program

6 Latrobe Valley strengthening program

7 Offshore wind upgrade

** Each program includes multiple transmission projects. See Appendix A for further details about the proposed works included in each program.

*This includes transmission projects defined as Committed and Anticipated or Actionable under the Australian Energy Market Operator's 2024 Integrated System Plan. This map displays proposed alignments for Marinus Link, Victoria to New South Wales Interconnector West (VNI West), Western Renewables Link and the Gippsland offshore wind transmission stage 1.

Next steps for VTP transmission projects

Once the 2025 VTP is finalised, VicGrid will begin detailed planning for the projects under each priority program. There will be further opportunities for consultation as these transmission projects are planned and developed.

Under proposed reforms, VicGrid will be responsible for coordinating the procurement of VTP transmission projects. We are currently considering changes to improve the procurement process for transmission projects in Victoria and will release further details later in 2025.

The proposed projects include new transmission as well as upgrades to existing transmission lines.

VicGrid is introducing new benefits arrangements for landholders, neighbours, communities and Traditional Owners significantly affected by new transmission.

These new benefits will be in addition to existing compensation arrangements under the *Land Acquisition and Compensation Act 1986*, *Traditional Owner Settlement Act 2010* and the *Native Title Act 1993* (Cth), as well as any discretionary payments made by transmission project developers. For more information, see **engage.vic.gov.au/vtif-rez-community-benefits**

Planning for offshore wind connections

The 2025 VTP process takes into account the planning that is already under way to develop offshore wind in Victoria.

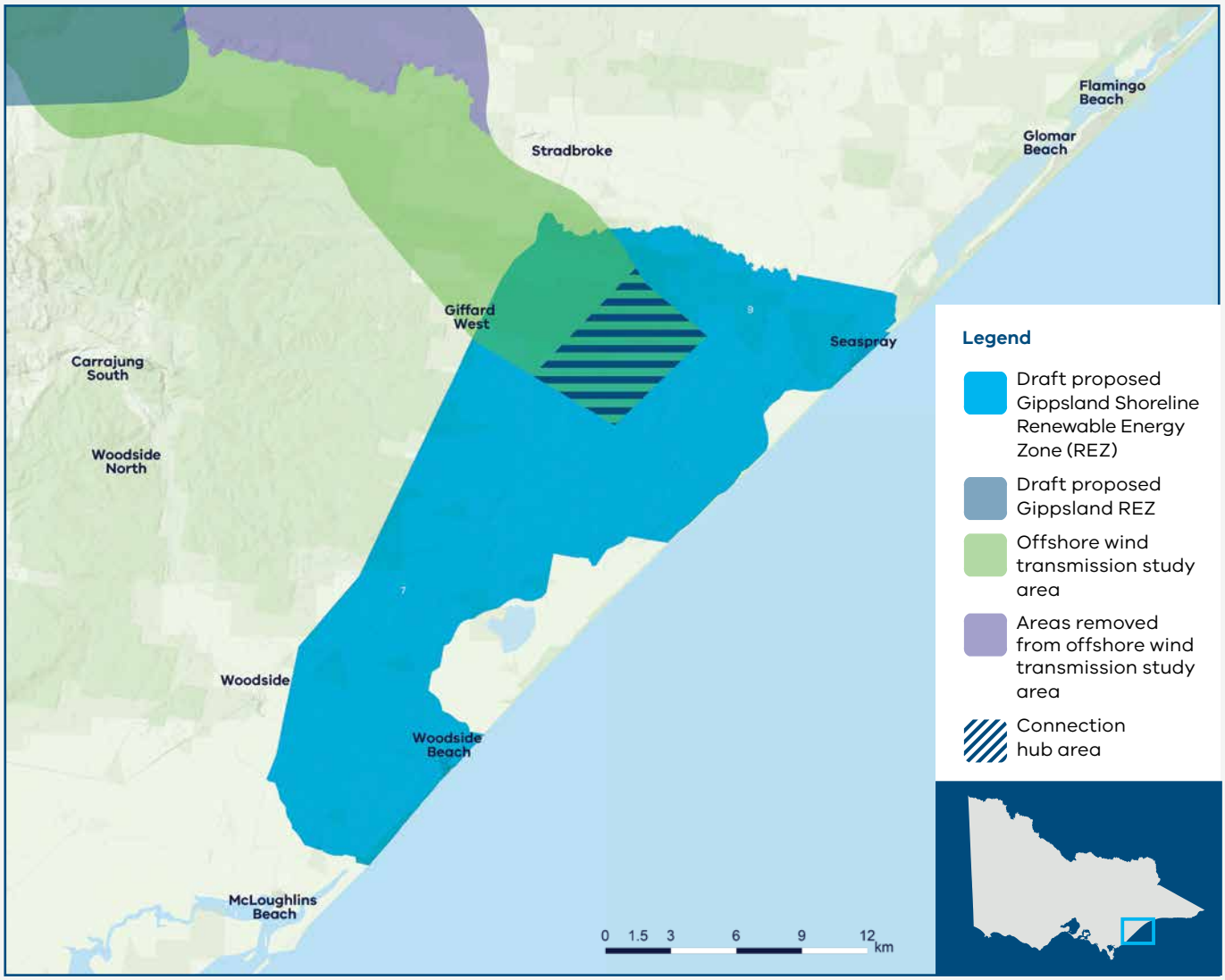
The Australian Government has declared 2 offshore wind areas in Victoria, off the coast of Gippsland and in the Southern Ocean off the coast of South West Victoria. Planning is most advanced in Gippsland, and the next step is to set out suitable shoreline locations for offshore wind developers to connect their infrastructure to the grid.

As part of the draft 2025 VTP, we are seeking feedback on a draft proposed renewable energy zone near the shoreline in the south of Gippsland. This shoreline renewable energy zone for offshore wind is different to the 7 draft proposed renewable energy zones we have identified to host onshore wind and solar generation. It sets out a designated area for offshore wind developers to site their onshore connection infrastructure, rather than for hosting new onshore generation. The wind turbines themselves will be hosted in Commonwealth waters off the coast of Victoria.

The boundaries of the proposed shoreline renewable energy zone reflect a range of factors. This includes technical considerations around shore crossings for offshore wind cables and underground cable routes to the transmission connection hub, exclusion of towns and environmentally and culturally sensitive areas such as waterways and wetlands, and minimising crossings of major roads such as the South Gippsland Highway.

There will be designated areas within the draft proposed Gippsland Shoreline Renewable Energy Zone where offshore wind export cables are allowed to cross the shore. VicGrid is coordinating further work to narrow down suitable shore crossing locations to ensure protection of environmentally and culturally sensitive areas along the coast.

Figure 4: Draft proposed Gippsland Shoreline Renewable Energy Zone



Next steps for the draft proposed Gippsland Shoreline Renewable Energy Zone

We are inviting feedback on the draft proposed Gippsland Shoreline Renewable Energy Zone as part of consultation on the draft VTP. For more information on how to provide your feedback, see Section 11.

After the final 2025 VTP is released, the Victorian Minister for Energy and Resources can consider whether to proceed with formal declaration of the proposed shoreline renewable energy zone. The declaration process will include opportunity for further consultation.

VicGrid will soon consult on a draft renewable energy zone access scheme for offshore wind developers. It is important to note that – unlike for other renewable energy zones – this access scheme will apply only to offshore generation, and new onshore generation projects located within the boundaries of the shoreline renewable energy zone will still be subject to the Grid Impact Assessment that applies elsewhere in Victoria.

Communities impacted by the renewable energy zone on Gippsland's shoreline will receive new dedicated benefits, similar to our approach for onshore renewable energy zones. These benefits will be in addition to any discretionary benefits paid by offshore wind developers.

Have your say on the draft 2025 VTP

We will consider feedback, along with further technical checks, as we finalise the proposed renewable energy zones and transmission investment programs prioritised in the 2025 VTP.

We plan to publish the final VTP later this year. We will report back on what we heard and how community and industry engagement has informed the final plan.

We are inviting feedback through a submissions process, in-person consultation and other engagement activities.

Key areas we are seeking feedback on include:

- the 7 draft proposed renewable energy zones. See Section 6.2
- the 7 proposed programs of transmission investments needed to support renewable energy zone development and meet Victoria's energy needs over the next 15 years. See Section 8.1
- the draft proposed Gippsland Shoreline Renewable Energy Zone. See Section 7.3

The deadline to provide feedback is **Tuesday 24 June 2025**.

For more information about the ways you can make a submission, provide feedback and participate in other engagement activities, visit Engage Victoria, the Victorian Government's online consultation platform: **engage.vic.gov.au/vicgrid**

Part A

A new approach to planning Victoria's energy grid

PART A

1. Victoria's renewable energy future

Victoria's energy system is changing rapidly. As ageing and increasingly unreliable coal-fired power stations retire and our electricity demand increases, our electricity system must evolve. The Victorian Government has recognised that significant large-scale renewable energy generation and storage investment is required to provide reliable and affordable electricity.

To enable renewable energy generation in the most suitable areas, we need the timely coordination of investment in transmission, generation and storage.

1.1 Planning for the energy transition

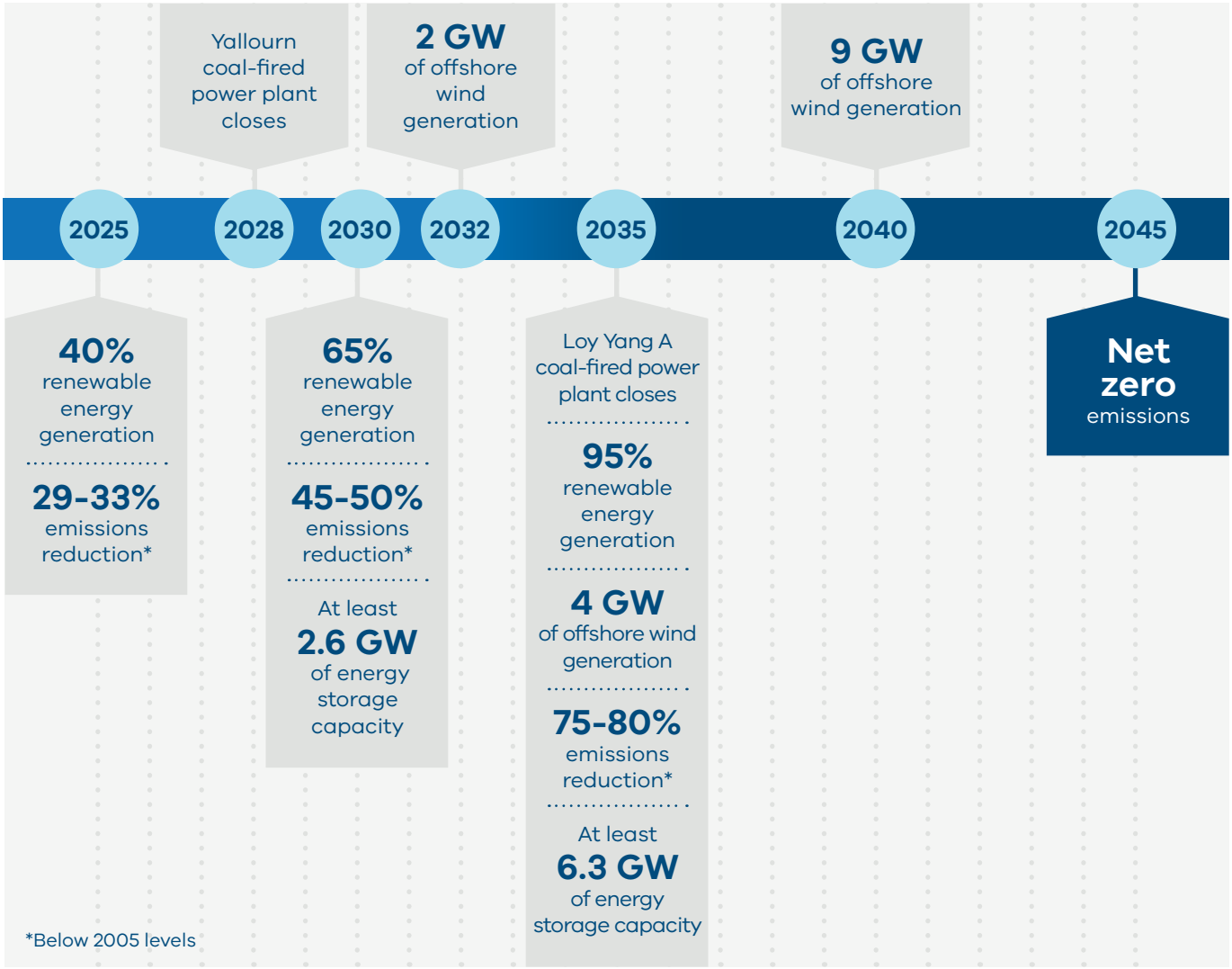
As our aging coal-fired power stations retire, they are being replaced by new renewable energy such as wind and solar as well as batteries and other energy storage. At the same time, consumer demand for electricity is changing, as households move away from gas appliances, electric vehicles become more common, and new sources of demand such as data centres emerge.

The Victorian Government has set ambitious targets for renewable energy generation to achieve the world-leading climate target of net zero emissions by 2045. To reach this target, we are planning for 65% of the state's electricity to come from renewable sources by 2030 and 95% by 2035.

The transition to renewables is already under way. Renewable energy generation in Victoria has tripled in the past decade, and the state has exceeded its target to reach 25% renewable electricity by 2020. Victoria is on track to meet the next 40% renewable electricity target in 2025. The government must continue supporting an orderly transition to deliver affordable, reliable energy for communities, businesses and industry.

The government's vision for Victoria's future electricity system is laid out in Cheaper, Cleaner, Renewable: Our Plan for Victoria's Electricity Future. It provides a whole-system view of the Victorian Government's actions and the private sector's investment opportunities through to 2035.

Figure 5: Victoria's energy transition timeline



1.2 Why we need a new approach to planning energy infrastructure

As Victoria's energy system changes, the way we plan and develop energy transmission and generation also needs to change to adapt to this new landscape.

The previous transmission planning framework was not designed to meet Victoria's long-term energy needs in a system transitioning to renewable energy. The planning process was not designed to anticipate the significant changes to the energy system and network that we are now seeing. It also did not involve First Peoples, communities, landholders and regional stakeholders early enough to minimise impacts.

We need to take a long-term, statewide view to make sure we build the right amount of energy infrastructure in the right places, at the right time, to keep the lights on and deliver power to Victorian homes and businesses.

We also need to ensure we do not build more infrastructure than Victoria needs – so we can minimise impacts on communities, industries and the environment, and keep down costs to reduce impacts on power bills.

VicGrid is putting in place a new approach to planning renewable energy zones (REZs) and transmission infrastructure through the delivery of the Victorian Transmission Investment Framework (VTIF). This new approach features a long-term strategic plan (this VTP), early and meaningful engagement with landholders and local communities, partnerships with First Peoples, fairer community benefit arrangements and certainty for investors.

Our approach is designed to give communities and stakeholders a real voice in the process so we can minimise impacts on landholders, the environment, cultural heritage and important regional industries such as agriculture.

At the same time, the new approach supports a strong investment environment for renewable energy in Victoria. The VTP is designed to improve certainty for investors in renewable energy by providing clear signals on where to invest, and how we will unlock new generation capacity through investing in Victoria's transmission system.

The energy transition will have different impacts for Victorians

Planning for new energy infrastructure needs to balance the range of different impacts on regional communities, landholders, First Peoples, agriculture and industry, while ensuring we protect our environmental and cultural heritage. We also need to avoid under or over-investing, so we can maintain energy security and affordability for all Victorians as coal-fired power stations retire.

1.3 The role of transmission in supporting the energy transition

We urgently need to change our power grid to carry energy from new renewable sources and storage across the state to Victorian homes, businesses, hospitals, schools and other vital services.

Victoria's current transmission network was designed to deliver power from coal-fired power stations in the Latrobe Valley to homes and businesses.

New sources of renewable generation, such as wind and solar, are spread across Victoria and are not always located close to the existing transmission network.

We need to deliver new transmission and network upgrades to modernise the grid in areas where sun and wind are abundant so more renewable energy can flow to where it's needed across Victoria.

1.4 The role of renewable energy zones

Renewable energy zones (REZs) will be areas of the state with abundant renewable energy resources, such as wind or solar, that have the potential to host new electricity generation infrastructure while minimising the impact on communities and the environment. REZs will have a critical role to play in supporting Victoria's energy transition and delivering economic benefits for regional communities. REZs will help coordinate investment in renewable energy generation with transmission network upgrades, provide greater certainty to communities and industry, and ensure projects align with Victoria's infrastructure and environmental planning objectives.

Importantly, coordinating generation and storage investments through REZs will allow Victoria to reduce the total amount of transmission infrastructure required to connect new sources of energy supply, reducing the infrastructure costs that are ultimately passed on to consumers and minimising impacts on communities and the environment.

REZs will also allow for appropriate consultation, community benefits and compensation arrangements for landholders, communities and First Peoples, while providing greater certainty for project developers to encourage investment.

PART A

2. The Victorian Transmission Plan: our new approach to planning transmission infrastructure

VicGrid is developing a new integrated approach to planning and developing transmission infrastructure in our state. The Victorian Transmission Plan (VTP) sits at the heart of this new approach, setting out the strategic plan for renewable energy infrastructure and transmission investments over the next 15 years.

2.1 Introducing the VTP

As part of Victoria's new approach to transmission planning, VicGrid is required to prepare and publish a VTP at regular intervals. This is a draft of the first VTP.

The final 2025 VTP will set out:

Proposed renewable energy zones (REZs): The geographic areas we will prioritise to meet Victoria's needs for future renewable generation and storage development in the coming 15 years. The REZs will enable us to coordinate the right amount of transmission development in the right places.

A proposed shoreline REZ in Gippsland: This shoreline REZ is needed to host onshore connection infrastructure linking offshore wind generation with Victoria's onshore transmission network.

The optimal development pathway: The transmission projects that we will need to connect REZs and offshore wind to the grid over the next 15 years, and proposed sequencing for these projects. Transmission projects can include new transmission lines or upgrades, and will be chosen to ensure Victoria's future renewable energy needs are met while maintaining reliability and minimising costs for consumers.

Through the 2025 VTP, we aim to:

- Provide greater certainty for communities and industry about when and where new renewable generation and transmission infrastructure will be developed.
- Give First Peoples, landholders, communities and industry a voice throughout the planning process and incorporate a range of perspectives into REZ and transmission planning.
- Provide transparency about the methodology we have used to prepare the plan.

2.2 The VTP will be updated over time

The 2025 VTP is a first step along the path of long-term transmission planning in Victoria, covering the period from now until 2040. We have taken an accelerated approach to developing the 2025 VTP, to provide certainty as we prepare for coal-fired power stations to retire over the coming years.

The 2025 VTP takes a 15-year view of Victoria's transmission and renewable energy generation needs, to enable a timely and smooth transition from coal-fired power. The second plan, to be published in 2027, will take a 25-year view, as will subsequent plans published every 4 years.

Legislative requirements for the 2025 VTP

The *National Electricity (Victoria) Act 2005* (NEVA) sets out certain requirements that the VTP must meet (see sections 59 and 60). These are summarised below.

The Victorian transmission planning objective

VicGrid must have regard to the Victorian transmission planning objective, which is defined in the NEVA as follows:

a. to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to

i. price, quality, safety and reliability and security of supply of electricity and

ii. the reliability, safety and security of the national electricity system and

b. the delivery of transmission services consistent with a least-regrets development pathway and

c. the achievement of targets set by Victorian legislation

i. for reducing Victoria's greenhouse gas emissions or

ii. that are likely to contribute to reducing Victoria's greenhouse gas emissions.

Analysis

VicGrid must carry out the following types of analysis and have regard to the results of these assessments:

- Strategic land use assessment
- Multi-criteria analysis
- Robustness analysis
- Cost-benefit analysis

Consultation

VicGrid must undertake any consultation required by the Victorian transmission plan guidelines and consider the results of that consultation.

Other requirements for future VTPs

The first VTP must be a 15-year plan and subsequent VTPs must plan over a 25-year period. Subsequent VTPs must meet certain additional requirements set out in section 59 (2) of the NEVA. Although these are not mandatory for the 2025 VTP, we have adopted a number of these requirements, including:

- identification of areas for renewable energy development
- use of scenarios and sensitivities
- development of a viable plan for each scenario that integrates economic, social and environmental factors including least-cost system design, technical system requirements, strategic land use assessment and wider factors
- inclusion of the specified projects for that plan.

2.3 Scenarios: how we determine how much energy is needed and when

There are many plausible and different possible futures for Victoria's energy landscape. Factors such as the adoption of consumer energy resources (such as solar panels, batteries and electric vehicles) and changes in industry and technology will impact our demand for renewable energy.

We have developed 3 hypothetical scenarios to help us determine how much new renewable energy we need and when. Planning for a range of potential futures helps us consider the risks of under-investment and over-investment. It ensures the combination of projects we identify can respond to future uncertainties. Table 3 summarises the scenarios that have been used to develop the 2025 VTP.

All 3 of the scenarios are aligned with the Australian Energy Market Operator's (AEMO's) 2024 Integrated System Plan (ISP) scenarios, adapted to meet Victoria's needs in line with the Victorian Transmission Investment Framework (VTIF).

The scenarios are not forecasts and do not represent our view on how the energy transition will occur, nor does the VTP endorse one scenario over another. There are many plausible and different possible futures. Recognising this, VicGrid has also undertaken sensitivity analysis to test what would happen if we made different assumptions to those considered in the scenarios. Scenarios and sensitivity analysis are important tools for planning and managing future risks and uncertainties.

The 2024 VTP Guidelines provide further details on the inputs and assumptions of each scenario.

These scenarios will be updated for future VTPs to reflect new technology developments and the latest information on consumer energy demand. As these scenarios evolve, so will the VTP modelling and outputs, ensuring the pathway of future transmission projects accounts for changing circumstances.

The 3 hypothetical scenarios used in the 2025 VTP

Scenario 1

Considers a potential future where the Victorian energy sector evolves in line with AEMO's national step change trends. The 2024 ISP describes this scenario as representing a transition pace that enables Australia's efforts to limit global temperature rise below 2°C, with consumer energy resources modelled to be a key contributor to the transition. Victoria's renewable energy targets, offshore wind targets and storage targets are met.

Scenario 2

Considers a potential future where new energy-intensive industries are established in regional and central Victoria at scale, such as data centres, hydrogen production and green aluminium. Demand in this scenario is based on AEMO's national green energy export trends forecast, which models a rapid decarbonisation pathway and the development of low emission energy exports.

Scenario 3

Considers a potential future where there may be delays of up to one year in delivering new energy infrastructure. There is reduced growth in coordinated consumer energy resources and to reflect broad challenges across the National Electricity Market (NEM), other NEM-Government policies and targets are generally delayed as well.

Table 3: Summary of key factors considered in each scenario

Parameters	Scenario 1	Scenario 2	Scenario 3
Demand			
AEMO demand scenario	AEMO's step-change	AEMO's green exports with revisions to treatment in other states	AEMO's step-change
2050 operational demand (TWh)	73.7	110.3	73.7
Other key factors			
Victorian Renewable Energy Targets (2025, 2030 and 2035)	Achieved		
Storage targets (2030 and 2035)	Achieved		
Offshore wind targets	Achieved	Achieved	Achieved but delayed up to one year
Capacity Investment Scheme Victorian allocation (2030)	Achieved		
Gas constraints	As per AEMO's 2024 ISP		
Interconnection	As per announcements / AEMO's ISP	Marinus Link (ML) Stage 2 – July 2037	WRL, VNI-West and Marinus Link (ML) Stage 1 delayed up to one year, no ML Stage 2
NEM coal closure	As per announcements / Victorian Renewable Energy Target		
Non-VIC government policies	Aligned with announcements		Generally delayed due to various challenges associated with the energy transition. For example, Snowy Hydro is delayed by one year.

2.4 Our approach to developing the VTP

The process we have used to develop the VTP is set out in the VTP Guidelines. VicGrid released the final guidelines for this VTP in September 2024, following public consultation.

The guidelines include 5 key steps to develop the 2025 VTP, outlined in Table 4 and Figure 6. Developing the VTP is an iterative process that considers which areas are most suitable to host REZs, how much new generation will be required in each REZ, and the transmission upgrades required to connect these REZs to the grid.

The VTP development process considers 3 different scenarios of future energy requirements across Victoria, to ensure the VTP is robust across a range of possible futures. These scenarios are described in detail in the guidelines and summarised in Section 2.3.

The VTP Guidelines will be updated over time as we prepare future VTPs. You can view the 2024 VTP Guidelines and learn more about how we developed them at **vicgrid.vic.gov.au**

Table 4: The 5 Steps to develop the 2025 VTP[2] (continued on next page)

Key analytical steps	Description
Step 1 **Identifying areas for investigation** **Key outputs:** • REZ study area • REZ areas for investigation	The first step to develop the VTP involved assessing the broad geographic areas that may be suitable to host renewable generation and narrowing this down to areas for investigation for hosting REZs. This was a 2-part process: **1.** A broad study area was identified using a strategic land use assessment. The assessment took into account existing land uses and landscape features across the state from several, and sometimes competing, perspectives, including environment, cultural heritage, social, land use and engineering. The assessment identified areas that we should avoid considering due to land use and landscape constraints, areas that we should investigate further for renewable energy development, and features that provide investment opportunities. **2.** The study area was then narrowed to areas for investigation. To do this, we undertook energy market modelling (see Figure 7) to identify smaller areas within the study area that are most suitable to host generation from an economic standpoint (referred to as a least-cost generation mix). This identified the generation types and locations to meet Victoria's energy requirements at the lowest cost to consumers. Unlike traditional planning processes, this least-cost analysis took broader land use factors into account. Areas that had been deprioritised due to land-use constraints during the strategic land use assessment were excluded from the least-cost analysis.

[2] Note that this table includes some updates compared with the version presented in the 2024 VTP Guidelines. A second phase of strategic land use assessment to identify draft areas of interest for transmission projects is no longer undertaken under Step 4, given that the majority of candidate development projects consist of network augmentations and may not require new transmission easements. We have also added additional detail and clarified the process to refine REZ candidate areas into draft proposed REZs.

Table 4: The 5 Steps to develop the 2025 VTP (continued from previous page)

Key analytical steps	Description
 **Step 2** **Developing draft proposed REZs** **Key outputs:** • REZ candidate areas • Preliminary generation resource plans for each scenario • Draft proposed REZs	Our next step was to refine the REZ areas of interest into potential REZ candidate areas, and then narrow these down further into draft proposed REZs. To do this, we took an iterative approach that considered how much generation would be needed across different scenarios of future demand, as well as a range of local factors related to land use, community preferences, generator interest and regional economic development. Refining the areas of interest into draft proposed REZs was a 4-part process: **Spatial multi-criteria analysis** **1.** Using the areas for investigation as an input, we first completed a spatial multi-criteria analysis to further consider broader qualitative factors in addition to the least-cost generation outcome. This provided valuable information on whether certain areas should be reprioritised based on factors such as: • Community preferences relating to the development of renewable energy generation and transmission infrastructure across Victoria • Land use, through detailed land-use information from the strategic land use assessment • Generator/developer interest, including information obtained from a survey for developers of generation and storage projects, and • Regional development indicators to assess the comparative strengths of Victoria's regions in relation to REZ development, and how hosting a REZ could support other regional development opportunities. **Calibration checks** **2.** Next we completed calibration checks on the results of the multi-criteria analysis. This considered 2 key factors: • The size and location of in-service and committed generation projects. This allowed us to consider cumulative impacts from the overall level of development concentrated in a given region when determining the most appropriate locations for siting future generation across the state. • A network planning review to evaluate transmission corridor feasibility. Certain areas were infeasible for generation and storage development, for reasons such as they would require transmission lines to traverse a national park, or the required length of new transmission was considered prohibitive.

Table 4: The 5 Steps to develop the 2025 VTP (continued from previous page)

Key analytical steps	Description
Step 2 continued from previous page **Step 2** **Developing draft proposed REZs** **Key outputs:** • REZ candidate areas • Preliminary generation resource plans for each scenario • Draft proposed REZs	**Preliminary generation resource plans** 3. We completed further energy market modelling to develop the preliminary generation resource plans for each of the 3 VTP scenarios, building on the results of the multi-criteria analysis and calibration checks. These plans included: • which technologies to build (including storage) • how much capacity to build • when this capacity should be built • the location of the new generation build The preliminary generation resource plans provided a more refined picture of the suitable areas for REZ development, taking into account a range of land-use factors and generator interest in addition to cost and technical constraints. Alongside feedback we received on the study area from communities, First Peoples and industry, these detailed plans helped us to narrow the REZ areas for investigation into a set of REZ candidate areas. **Refinement into draft proposed REZs** 4. The final sub-step was to further refine the boundaries of the REZ candidate areas to develop the draft proposed REZs for consultation. This involved a carefully considered assessment of regional and local factors for each candidate area, which aimed to balance a range of perspectives and trade-offs. In addition to detailed energy market modelling, we considered: • stakeholder views collated from engagement with formally recognised Traditional Owner groups; local communities through drop-in sessions, feedback form responses and submissions; and local councils and industry bodies through briefings and submissions • alignment with regional and local economic development strategies • existing and committed generation projects, and potential for cumulative economic, social and environmental impacts due to the concentration of projects in a region • transmission network design and utilisation, including feasibility of network augmentation, community acceptance and overall deliverability of the plan • environmental, cultural heritage and other land-use constraints (based on available data) • level of developer interest and support in a region.

Table 4: The 5 Steps to develop the 2025 VTP (continued from previous page)

Key analytical steps	Description
Step 3 **Identifying candidate development pathways** **Key outputs:** • Candidate development pathways for each scenario	In Step 3, we considered what transmission upgrades would be needed to enable the generation amounts and locations identified in the preliminary generation resource plans and draft proposed REZs from Step 2. We did this for each of the VTP scenarios, creating a 'candidate development pathway' for each scenario. These pathways identify the potential transmission projects needed and by when, to maintain secure operation of the power system, meet supply requirements and deliver reliable power to Victorian homes and businesses. To achieve this, we assessed the capacity of the existing transmission network against the maximum additional generation identified in Step 2. Where we identified constraints, we completed transmission network planning to identify feasible project options. The technical feasibility of these transmission project options was then assessed through power systems analysis (see Figure 8). Where necessary, the results of this network planning and feasibility analysis were then used to further refine the generation resource plans and draft proposed REZs from Step 2. This in turn fed into finalising the 3 candidate development pathways. This iterative approach across Steps 2 and 3 helped us select draft proposed REZ locations, generation resource plans and transmission pathways that would deliver the best overall outcome.

Table 4: The 5 Steps to develop the 2025 VTP (continued from previous page)

Key analytical steps	Description
 **Step 4** **Assessing candidate development pathways** **Key outputs:** • Draft optimal development pathway	In this step, we evaluated the 3 candidate development pathways to select the draft 'optimal development pathway': the pathway that performs best when considering the Victorian transmission planning objective, including technical feasibility, benefits for Victorians, costs to energy consumers and robustness across a range of future scenarios. We used 4 different tools to assess the candidate development pathways: • Further energy market modelling across all scenarios. • Cost-benefit analysis to compare the costs and benefits of the candidate development pathways, taking into account capital and operating costs for both generation and transmission, as well as benefits from reduced carbon emissions and improved system reliability. • Robustness analysis – also known as a least-regret analysis – to identify the pathway that minimises the net cost across all scenarios and is least sensitive to future uncertainties. A preliminary robustness analysis was undertaken to determine the draft optimal pathway.
 **Step 5** **Developing the final proposed REZs and optimal development pathway** **Key outputs:** • Final proposed REZs • Final optimal development pathway	Feedback received during consultation on the draft 2025 VTP will be taken into account to finalise the optimal development pathway and proposed REZs. We will also complete some additional power systems analysis and robustness checks before finalising the 2025 VTP (see Section 12 for further detail).

Figure 6: The 5 steps of 2025 VTP development

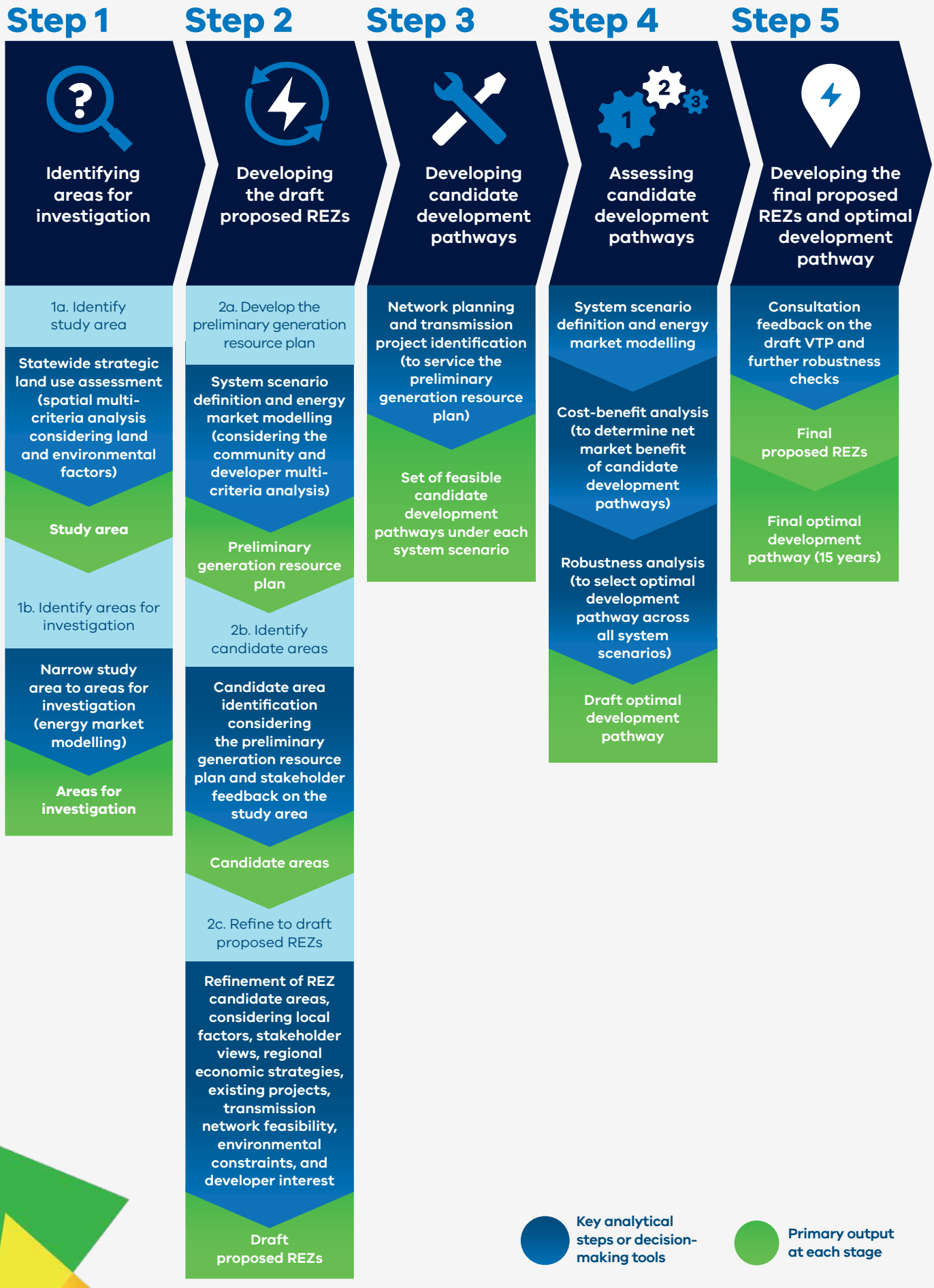


Figure 7: What is energy market modelling?

What is energy market modelling?

Energy market modelling is a method used to simulate and forecast how energy markets will behave in response to future changes. We have used energy market modelling software called PLEXOS that is widely used in industry. It helps to analyse how different factors such as energy demand, consumer energy resource uptake, government policies and generator capital and operating costs can influence the supply and demand of energy, and consequently the types and capacity of energy generation development in the future. This type of modelling is crucial for understanding the future dynamics of the energy market and provides insights that assist stakeholders including policymakers, energy companies, and investors in strategic decision-making. These models enable us to forecast the impact different transmission options have on future developer investment and operational decisions. We use energy market modelling to produce the generation sector costs used in the cost-benefit analysis.

Figure 8: What is power system modelling?

What is power system modelling?

Power system modelling is a specialised approach used to represent the intricate workings of electrical power systems through computer simulation of generation, transmission lines, substations, and end-users of electricity.

By employing these simulations, we can predict how the system will behave under different conditions, assess reliability, plan upgrades, and integrate renewable energy sources. This process is crucial for ensuring that the power grid remains stable and efficient, minimising outages, and adapting to the evolving energy demands of Victoria. To do this, we have used a power system simulation for engineering (PSS/E) software, which is an advanced tool widely used within the industry for this purpose.

Strategic land use assessment: Our new approach to identifying land use and landscape values to support the 2025 VTP

The strategic land use assessment is a new planning tool VicGrid is introducing to help identify areas to protect and avoid and areas that are more suitable to host renewable energy and transmission infrastructure.

It recognises important values many Victorians place on our land and landscape, including culture and heritage, livelihoods, ecosystems and biodiversity, food and fibre, recreation, strategic minerals and many others.

How the strategic land use assessment helped to shape the draft 2025 VTP

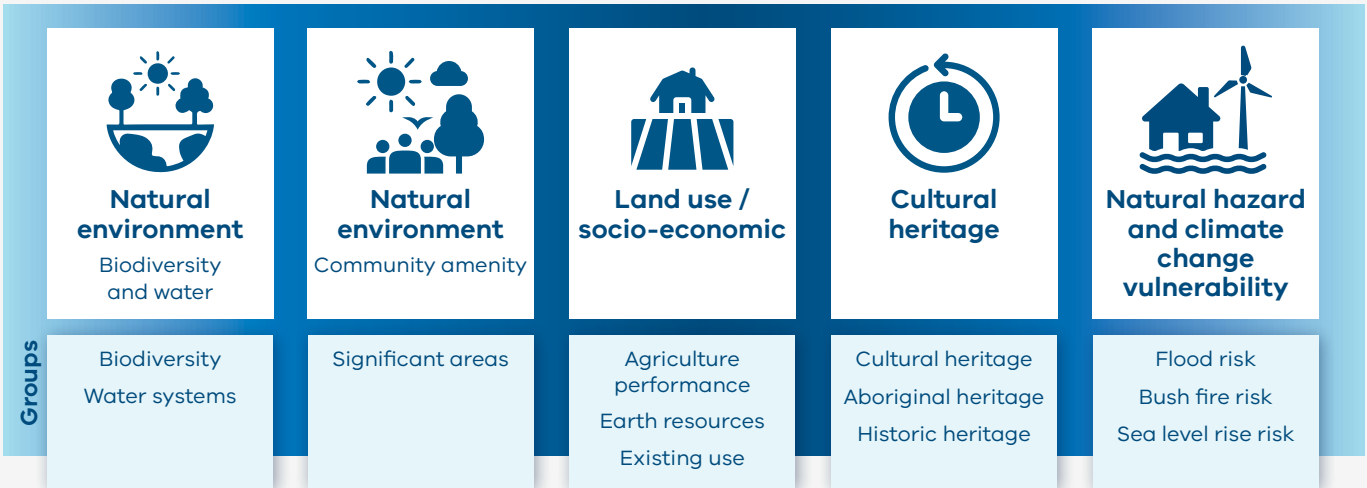
A statewide strategic land use assessment was used to identify the REZ study area published in the 2024 VTP Guidelines. This included a high-level, statewide mapping of land use constraints and opportunities for renewable energy development, using spatial datasets across a range of environmental, cultural heritage, social, land use (including agriculture) and engineering themes. The methodology and outputs are published in Appendix A of the 2024 VTP Guidelines.

The strategic land use assessment was also used to support investigations at a regional level, as we narrowed the study area to draft proposed REZs. At this stage, the assessment was expanded to include some additional considerations based on feedback we received during consultation on the VTP Guidelines. These additional considerations included:

- **Distinctive area landscapes:** the following distinctive landscapes in the Victorian Planning Provisions were added as avoidance areas: Bass Coast, Bellarine Peninsula, Surf Coast, and Macedon Ranges.
- **Major (named) rivers and inland lakes:** these existing criteria were reclassified as avoidance areas.
- **Significant landforms:** extended to include additional areas of known high significance from publicly available data.
- **Residential growth areas**: additional residential growth areas identified during engagement with local governments.
- **Agricultural compatibility:** the relative compatibility (i.e., impact) of different farming practices with different renewable energy technologies, identified through engagement with agricultural groups and stakeholders. For more information about how farmland and agriculture has been considered, see Section 5.
- **Aggregated housing density:** indirect representation of dwelling density based on census housing count statistics.

It is important to note that this is a strategic assessment using available, authoritative data, mostly from public sources, and does not consider the full breadth of issues related to siting individual renewable energy projects, including property-level constraints. Further inputs or updates to the strategic land use assessment may be included in future plans or mapping exercises.

Strategic land use assessment themes



PART A

3. The policy context for the Victorian Transmission Plan

The Victorian Transmission Plan (VTP) is designed to align with and complement other existing state and national policy processes.

3.1 Relationship with other statutory planning and environmental frameworks

The draft 2025 VTP sets out the proposed high-level plan for renewable energy zones (REZs) and future transmission investments. It does not replace statutory planning and environmental approval processes, including approvals and engagement requirements under the *Planning and Environment Act 1987* and *Environment Effects Act 1978*.

The VTP process is intended to support these approval processes by incorporating community consultation and environmental, land use and social factors early in identifying the most suitable locations for transmission and generation infrastructure.

The Victorian Government is working to maximise the benefits of siting generation and storage projects within REZs. For project proponents, this means policy support and new network access arrangements that provide greater certainty about grid connection and reduce the risk of excessive curtailment. The new access arrangements in REZs will also set clear expectations about community engagement and benefits requirements, improving outcomes for local communities, stakeholders and project developers. For further details, see Section 9.

Speeding up planning and environmental approval processes

The Development Facilitation Program is a new accelerated planning assessment pathway for eligible projects to inject investment into the Victorian economy. Renewable energy is one of the priority sectors under the program. For more information, see **planning.vic.gov.au/planning-approvals/planning-enquiries-and-requests/development-facilitation-program**

The Victorian Government is also speeding up assessment review times for Environment Effects Statements (EESs), targeting a review time of no longer than 18 months. Making the EES system faster, cheaper and more predictable will encourage investment and shorten development time for renewable energy infrastructure and other projects important to the Victorian economy, while continuing to protect Victoria's environment. For more information on the EES reforms, see **vic.gov.au/action-two-cut-red-tape**

3.2 Integration with other planning processes, programs and projects

The draft 2025 VTP has factored in how existing Victorian and Commonwealth policies and programs will contribute to Victoria's energy mix over the coming decade, along with other state and national electricity transmission and generation planning frameworks. Table 5 summarises how we consider these energy policy initiatives in the VTP.

In addition, we considered a range of broader Victorian Government strategies and initiatives when deciding the location of draft proposed REZs (for example, impacts on agriculture and irrigation, tourism and mineral resources, and delivering local benefits in line with the Victorian Energy Jobs Plan). For more detail, see Section 5.

Table 5: How the VTP considers other planning processes, programs and projects

Processes, program or project	Description	How we've considered it in the VTP
Australian Energy Market Operator's (AEMO) Integrated System Plan (ISP)	The overarching plan for required investments in generation, storage and network infrastructure across the National Electricity Market. The ISP takes a 20-year development outlook and is published every 2 years.	We have broadly aligned our inputs, assumptions and scenarios with the 2024 ISP. This avoids duplication and allows the VTP to build on the extensive existing analysis and stakeholder consultation that has informed the ISP. The sequencing of future ISPs and future VTPs will allow them to inform one another. This will help ensure consistency between national and Victorian transmission development, which remains critical for planning transmission developments across the National Electricity Market, including transmission interconnectors with other states. Future ISPs will also consider REZs that have been identified through the VTP and declared in Victoria.
AEMO's Victorian Annual Planning Report (VAPR)	Published annually in October, the VAPR assesses the adequacy of the existing Victorian transmission network to meet reliability and security requirements. It identifies limitations over the next 10 years that need to be addressed through network upgrades.	VAPR reports have informed the longlist of transmission projects we considered when creating the VTP candidate development pathways. For details, see Appendix A. Roles and responsibilities for the VAPR are likely to change in the future to support alignment with the VTP. Under the new Victorian Transmission Investment Framework (VTIF), the Victorian Government proposes to transfer transmission network planning functions such as the VAPR from AEMO to VicGrid. Legislation to enact these reforms is expected to be introduced to the Victorian Parliament later in 2025.
Other AEMO planning documents	AEMO publishes several planning documents for East Coast electricity and gas markets, including the Electricity Statement of Opportunities (ESOO), Gas Statement of Opportunities (GSOO) and the Victorian Gas Planning Report.	As set out under the *National Electricity (Victoria) Act 2005*, VicGrid has had regard to these planning documents when performing REZ planning functions, including the preparation of the VTP.

Table 5: How the VTP considers other planning processes, programs and projects (continued from previous page)

Processes, program or project	Description	How we've considered it in the VTP
Victorian Renewable Energy Targets (VRET)	Victoria has legislated targets to increase the share of electricity generated from renewables (see Section 1). To support achieving these targets, the Victorian Government has implemented the VRET2 auction scheme. The VRET2 is designed to provide long-term contracts that create investment certainty for new energy generation projects. Six projects have been successful under VRET2.	The VTP scenarios and modelling are designed to be consistent with the achievement of Victoria's renewable energy targets. The VTP also factors in the existing (Glenrowan Solar Farm) and anticipated capacity from the VRET2 projects (totalling more than 500 MW of additional generation capacity and 600 MWh of battery storage).
Offshore wind targets	The Victorian Government is working closely with the Australian Government to coordinate development of Victoria's offshore wind industry. To date, the Australian Government has declared 2 offshore wind areas off the coast of Victoria, which are separate to the onshore REZs that are proposed in the VTP. VicGrid is coordinating transmission infrastructure development for these areas.	All VTP scenarios factor in meeting Victoria's offshore wind targets, and transmission requirements to connect the Australian Government's declared offshore wind zones in the Southern Ocean and Gippsland have been incorporated. As part of the draft 2025 VTP, we are consulting on a draft proposed shoreline REZ in Gippsland, which is needed to host onshore connection infrastructure linking offshore wind generation with Victoria's onshore transmission network. For more information, see Section 7.
Capacity Investment Scheme (CIS)	To support its target to reach 82% renewable generation nationally by 2030, the Australian Government has committed to provide revenue underwriting for 32 GW of new renewable generation and storage capacity under the Capacity Investment Scheme (CIS). Project proponents in Victoria can bid for Australian Government revenue underwriting support in a series of competitive tenders from 2024 to 2027.	The Victorian and Australian Governments have agreed that at least 5.0 GW / 11 TWh of generation capacity and 1.7 GW / 6.8 GWh of storage capacity will be tendered under the CIS from 2024 to 2026, for delivery in Victoria by 2030. A maximum of 1.5 GW worth of solar projects will be awarded to ensure an overall mix of generation types that supports energy system reliability in Victoria. The CIS target capacities have been factored in as an input to the VTP development process, helping to shape the sequencing of priority transmission projects over the next 5 years.

What is different between the 2024 ISP and the VTP?

One important distinction between the 2024 ISP and the VTP is how each refers to REZs. As part of the ISP process, AEMO has identified potential REZs across the National Electricity Market, including 6 in Victoria. These areas have been based largely on desktop studies considering a mix of resource potential, technical, and other engineering considerations. These are different to the Victorian REZs discussed in this document, which have a particular meaning under Victorian legislation.

The REZs discussed in the Victorian transmission planning process will ultimately be formally declared by the Victorian Minister for Energy following the final 2025 VTP. The declared REZs will reflect more precise geographical areas refined through a process that includes partnering with First Peoples and engaging with landholders, communities and industry through several stages of consultation. Special community benefits arrangements will apply to declared REZs, as well as network access arrangements that increase certainty for investors. For more information, see Section 9.

Relationship with distribution network planning

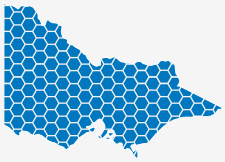
The VTP and VAPR focus on planning for the high-voltage transmission network that is needed to transport electricity over long distances. The draft proposed REZs identified in this VTP are designed around connecting generators to this high-voltage transmission network.

Generators may also connect to the distribution network – the poles and wires that carry lower-voltage electricity to homes and businesses. However, planning for the distribution network is the responsibility of individual distribution network service providers (DNSPs) and is not part of the VTP process.

In Victoria there are 5 DNSPs that each cover different geographic areas: Ausnet, Citipower, Jemena, Powercor and United Energy. Planning information for distribution networks can be found in DNSPs' Distribution Annual Planning Reports.

The relationship between electricity network planning documents in Victoria is summarised in Figure 9.

Figure 9: Relationship between electricity network planning documents in Victoria

Entity	AEMO	VicGrid	AEMO	AusNet, Citipower, Jemena, Powercor, United Energy
Document	Integrated System Plan	Victorian Transmission Plan	Victorian Annual Planning Report[3]	Distribution Annual Planning Reports
Coverage				
Scope	 National Electricity Market	 REZ identification and associated transmission	 Existing transmission network and other projects	 Existing distribution network and other projects
Time horizon	**20 years and beyond**	**15/25 years**	**10+ years**	**5+ years**

[3] The Victorian Transmission Investment Framework reforms propose that the responsibility for planning Victoria's declared shared network, and all of AEMO's associated declared network functions will be transferred to VicGrid from AEMO. Once implemented, this will end AEMO's role as Victoria's transmission network service provider. Legislation to enable this transfer is expected to be introduced to the Victorian Parliament later this year.

PART A

4.VicGrid is working with First Peoples

VicGrid is committed to early engagement with and involvement of Traditional Owners and First Peoples in planning renewable energy and transmission infrastructure.

Walking together with Traditional Owners and First Peoples is critical to the successful delivery of the 2025 Victorian Transmission Plan (VTP) and future VTPs. Meaningful engagement will help us plan renewable energy generation and transmission in a way that minimises impacts to Country, protects cultural heritage and delivers tangible benefits.

We have received strong feedback through ongoing engagement as we have been developing the VTP. This feedback has helped to inform the draft 2025 VTP and will also inform our engagement approach moving forward.

Our work with Traditional Owners and First Peoples does not end with the first VTP. We will continue to build on the conversations started with the first VTP and embed processes through which Traditional Owners can shape decisions about subsequent VTPs and renewable energy zone (REZ) development.

4.1 Principles for walking together

Our vision is to walk together with Traditional Owners as respected partners in development and delivery of policy and projects. We are committed to doing this in a way that upholds transparency, mutual respect and shared benefits.

First Peoples are distinct rights holders to Country and Sea Country and their rights must be upheld as laid out under the *Charter of Human Rights and Responsibilities Act 2006*, the *Traditional Owner Settlement Act 2010*, *Aboriginal Heritage Act 2006* and *Native Title Act 1993* (Cth). VicGrid's activities will be underpinned by respectful, long-term relationships with Traditional Owners that supports the realisation of their goals and objectives for Country, Sea Country, and Culture. This is our unwavering commitment. VicGrid is also committed to respecting the outcomes of Treaty negotiations in Victoria.

VicGrid's engagement with Traditional Owners is guided by the following principles:

- Self-determination
- Free, prior and informed consent
- Respectful and meaningful engagement
- Transparency and accountability
- Cultural respect and safety

VicGrid is also committed to the Department of Energy, Environment and Climate Action's Pupangarli Marnmarnepu 'Owning Our Future' Aboriginal Self-Determination Reform Strategy. With the support and leadership of Traditional Owners, we will together identify key considerations, concerns, benefits and opportunities to enable Traditional Owners to play an active role in Victoria's energy transition. This includes through the development of the 2025 VTP.

4.2 The role of First Peoples in shaping the VTP

Engagement with Traditional Owners has helped to shape the first VTP and will be crucial to shape future VTPs and as we design REZs.

Themes from engagement with Traditional Owners ahead of the first VTP included the protection of cultural heritage, the importance of delivering tangible benefits and the need for more meaningful and longer-term support for Traditional Owners to engage with future VTPs and REZ development.

We acknowledge we have more work to do to support meaningful participation of Traditional Owners and First Peoples in the development of future VTPs and REZs. It is our commitment to work closely with Traditional Owner groups to understand their priorities and aspirations, so that we can deliver on our vision to walk together.

Protecting cultural heritage as REZs are developed will continue to be a key focus for this work. The first phase of the VTP strategic land use assessment included only publicly available datasets for Aboriginal and historical cultural heritage. As such, the data relating to Aboriginal cultural heritage is limited and does not capture all known heritage values.

VicGrid has worked to establish relationships with Registered Aboriginal Parties (RAPs) as well as the Victorian Aboriginal Heritage Council to supplement the publicly available data. To support this, we held 6 individual and group briefing sessions with formally recognised Traditional Owner groups as part of consultation on the draft VTP Guidelines and study area during 2024.

We will continue ongoing conversations with both formally recognised and non-formally recognised Traditional Owner groups to design an appropriate process for incorporating further cultural heritage information into REZ development and subsequent VTPs, in alignment with principles of indigenous data sovereignty. We have heard how critical cultural heritage mapping is, and we are committed to making sure this process is Traditional Owner-led.

Integrating a self-determined approach to cultural heritage will be an ongoing process that we will continue to build on collaboratively throughout the lifecycle of the 2025 VTP, subsequent VTPs and through the process for declaring REZs. The development of REZs will require an ongoing dialogue with Traditional Owners to ensure we minimise impacts to Country.

Another key focus of our engagement with Traditional Owners to date has been how we can deliver lasting, tangible benefits from the energy transition for First Peoples.

As part of the Victorian Transmission Investment Framework (VTIF) reforms, VicGrid is working in partnership with Traditional Owners to consider models for dedicated benefits for Traditional Owners affected by REZs and transmission corridors. This process aims to give Traditional Owners control over how funds are spent to ensure they deliver economic empowerment and support self-determination.

These dedicated benefits are expected to be funded by mandatory contributions from transmission, generation and storage companies. They will be in addition to any discretionary payments by energy companies to Traditional Owners.

An important milestone in our engagement with Traditional Owner groups was a Traditional Owner Forum, held in September 2024. This was an opportunity to bring together Traditional Owners and representatives from VicGrid, the Department of Energy, Environment and Climate Action and other agencies, to openly discuss the renewable energy transition in Victoria and the impact on Victoria's Traditional Owner communities. The conversations at this forum were critical in shaping VicGrid's thinking about the impacts of renewable energy and transmission, the opportunities for the future and the real harms that must not be repeated.

Feedback from the forum and through ongoing conversations with Traditional Owner groups has informed our approach to developing the 2025 VTP and will continue to shape work to protect cultural values and develop a dedicated model for benefits for Traditional Owners.

This work does not end with the first VTP and we are committed to building on this foundation to establish more meaningful partnerships with Traditional Owners and First Peoples.

PART A

5. Engaging with communities and industry

Engaging with landholders, communities and industry, and seeking to partner with First Peoples, is critical to the successful delivery of the 2025 Victorian Transmission Plan (VTP) and future VTPs.

Our new approach to planning has at its core a commitment to give First Peoples, landholders, communities and regional stakeholders a real voice in the process. Meaningful engagement and incorporating community views earlier will help us plan renewable energy generation and transmission in a way that minimises impacts and delivers tangible benefits.

We have received extensive feedback through ongoing engagement as we have been developing the VTP.

Feedback has provided valuable insights to inform the draft 2025 VTP and draft proposed renewable energy zones (REZs). It will also continue to shape decisions about the final 2025 VTP, subsequent VTPs, REZ development and the development of the transmission projects identified in the VTP.

5.1 Our comprehensive engagement model

We know that the process used to plan transmission under the previous framework has not adequately considered community, cultural, land use and environmental values early in the process.

Under the Victorian Transmission Investment Framework (VTIF), we are implementing a new approach that includes partnerships with First Peoples and place-based engagement with landholders and local communities. We are committed to listening to and considering all feedback, balanced against technical and financial requirements of planning future transmission infrastructure projects.

Our approach is guided by the Victorian Government's Public Engagement Framework 2021-2025. The Public Engagement Framework focuses on meaningful, principled and inclusive public engagement, and aligns with the best practice approaches set out by the International Association of Public Participation (IAP2). The framework embodies 6 principles that guide our engagement with First Peoples, communities and industry:

- **Meaningful:** The process of public engagement is genuine and informs the final decisions.
- **Inclusive:** The engagement is respectful, inclusive and accessible.
- **Transparent:** The engagement is clear and open about what the public can and cannot influence.
- **Informed:** The engagement provides relevant and timely information to the public.
- **Accountable:** The engagement is high quality and responsive to the public.
- **Valuable:** The engagement creates value for the community and government. This can include social, economic and environmental values.

5.2 Engaging with local communities to develop the VTP

We are using a place-based approach to incorporate early, deeper and ongoing community engagement in the planning process. Our goal is to ensure regions and communities have the agency and opportunity to meaningfully participate in developing the VTP, REZs and transmission projects, and share in the benefits of the energy transition. To achieve this, VicGrid's community engagement model has 6 objectives:

- To raise community awareness and understanding of REZs and why large-scale transmission is critical to the energy transition.
- To facilitate community input into key stages of the planning and investment lifecycle for transmission projects, including through the strategic land use assessment and consultation on the draft 2025 VTP.
- To enable First Peoples to be resourced with the capacity and capability to participate in REZ discussions and make decisions.
- To support the delivery of community benefits to ensure impacted host communities and First Peoples directly benefit.
- To foster government-industry-community partnerships to unlock regional development opportunities in line with local aspirations and build local adaptive capacities.
- To facilitate a cross-sectoral and multi-level governance response to issues and provide an escalation point for resolving issues throughout the end-to-end planning and development process.

To work towards these objectives, we are engaging with regional communities and stakeholders using many channels.

Engagement on the Victorian transmission planning process began in November 2023 with the Renewable Energy Planning Survey, which was open from 17 November 2023 to 16 February 2024. We invited Victorians to identify areas and landscapes important to them through the survey and an interactive map. We received 2,015 survey responses and 2,465 pin-drops on the map. Results highlighted the significance communities place on protecting Victoria's natural environment, parks, water systems (rivers and lakes), and biodiversity. Minimising impacts on agricultural land and farming communities was also highlighted as a key concern. This feedback informed the process to identify the REZ study area, and will continue to support decision-making.

On 22 July 2024, we released the draft VTP Guidelines and renewable energy study area map for feedback. This started a formal 5-week community and industry engagement consultation period for the guidelines (from 22 July to 25 August 2024) and a 10-week consultation period for the study area (from 22 July to 30 September 2024). We received more than 1,300 feedback form responses, more than 170 submissions, and held conversations with more than 450 community members during in-person drop-in sessions across Victoria.

Victorians were invited to provide feedback about guiding principles, which shaped our approach to narrowing the study area to draft proposed REZs. Community feedback emphasised the importance of minimising land use, cultural, and environmental impacts, and avoiding over-development to minimise cumulative impacts. People also told us about places to avoid, protect or prioritise for investigation within the study area.

Feedback from community members and local government stakeholders revealed 8 key themes, summarised on the next page.

Engagement results overview: Community and local government

Responses to the community feedback forms, submissions and feedback from the community drop-in sessions revealed themes across the following key areas. The themes are in order from most common to least common feedback.

Biodiversity and natural environment: We heard concerns about impacts of infrastructure development on biodiversity, water systems and endangered species' habitats.

Agriculture and land use: Respondents stressed the need to protect valuable farmland and raised concerns about impacts to farming activities and farm productivity.

Impact on regions: We heard concerns about burden on regional areas to service metropolitan energy demands, socioeconomic concerns related to energy and community division linked to prior experiences with renewable energy development.

Natural hazard vulnerability: Feedback raised concerns about development in relation to natural hazards, including bushfires and flooding, and firefighting.

Engagement: We received feedback about the engagement channels we use, how we raise awareness about engagement opportunities, and doubts about how feedback would influence the VTP.

Cost of transition: Respondents provided feedback on the cost of power, including potential impacts of renewable energy on electricity prices and other associated costs.

Energy source: Feedback was received about different types of energy sources, and generation and transmission technologies.

Regional opportunity: There was both support for how regions might benefit economically from hosting generation or transmission, and doubts about the actual benefits communities would receive.

This feedback provided valuable insights into regional concerns, values and priorities as well as location-specific risks and factors related to topography, wildlife and infrastructure. The feedback was also analysed by region and local government area, and validated through engagement with local councils. For more information about engagement with communities and local governments, read the Draft VTP Guidelines Final Engagement Report.

This information has been considered, alongside other modelling inputs, to help narrow the study area to draft proposed REZs.

Communities will have further opportunities to participate in place-based engagement to shape decisions about transmission projects and proposed REZs identified in the 2025 VTP, and to engage on future VTPs.

5.3 Energy industry engagement

The energy industry plays a crucial role in the transmission planning process. Industry stakeholders include developers of generation and storage projects, transmission owners and operators, existing generators and retailers, market and regulatory bodies, construction companies, investors and all businesses involved in the supply chain for new transmission infrastructure.

VicGrid is committed to ensuring industry perspectives, expertise and knowledge are considered as we develop the 2025 VTP and future VTPs. Through meaningful engagement, we aim to give investors and developers confidence that transmission infrastructure will be developed in the places, and in the timeframes, to support new renewable energy and storage connection in Victoria and meet our renewable energy and emissions targets.

Through previous engagement on the VTIF, industry stakeholders have voiced support for Victoria's new strategic approach to transmission planning, and its aim to deliver better engagement and benefits for Traditional Owners and communities. We also heard industry feedback about the importance of keeping energy affordable for all Victorians and ensuring the Victorian planning process could work in coordination with national and other state planning processes.

Engagement on the VTP Guidelines included briefings with peak bodies, key stakeholders, and an industry webinar. VicGrid also engaged renewable energy developers through a survey to understand their plans for proposed new projects in Victoria. We received 47 submissions from industry stakeholders to the draft VTP Guidelines and 28 responses to the generator and developer survey.

Feedback from energy industry stakeholders revealed 9 key themes, summarised on the following page.

Engagement results overview: Industry

Submissions and feedback on the VTP Guidelines from industry and peak body briefing sessions, and responses to a generator and developer survey, revealed themes across the following areas:

Need for holistic engagement on related policy development including network access, connections and community benefits.

Appropriateness of scenarios including robustness and consideration of potential delays to infrastructure delivery.

Flexibility of the VTP process and impacts on accounting for uncertain futures including emerging technologies.

Modelling suggestions and feedback on the role it plays in developing the VTP.

Engagement and importance of genuine, transparent approach.

Transmission planning and urgency to deliver transmission to support the transition.

Process for identifying draft proposed REZs and input about different areas of the state.

Need to support developer confidence to promote investment in transmission projects.

Regulatory complexity at both state and federal levels, and its potential to delay timely investment decisions.

The feedback provided valuable insights that have shaped development of the draft 2025 VTP, including by informing iterations to inputs and assumptions.

For more details about industry feedback that has shaped the VTP, read the Draft VTP Guidelines Final Engagement Report and 2024 VTP Guidelines Changes Summary Report.

5.4 Agriculture and other industry engagement

VicGrid recognises the crucial contribution the agriculture sector makes to Victoria's economy, regional communities, food security and way of life.

We are committed to engaging closely with landholders and agriculture industry groups to make sure they have a voice in the planning of energy infrastructure.

In developing the VTP Guidelines and draft 2025 VTP, VicGrid has engaged with agriculture industry stakeholders to understand the potential impacts of development on farming systems and agricultural operations. Engagement included briefings with peak bodies and meetings with landholder groups, as well as submissions from individuals and organisations focusing on the value and importance of farmland.

Feedback from farmers and agriculture industry stakeholders called for a more detailed approach to assessing the potential impacts of renewable energy and transmission infrastructure on the agriculture industry in different regions and on different types of farming enterprises.

As part of the statewide strategic land use assessment that informed the REZ study area, VicGrid considered statewide datasets related to agricultural land use. This included data on farmgate output, biophysical land capability (e.g., soil quality and rainfall), access to irrigation water, and farm infrastructure investment. For more information see Appendix A of the 2024 VTP Guidelines.

In response to feedback, VicGrid also undertook further research and engagement with agriculture stakeholders to understand the potential compatibility of different types of farming with the co-location of renewable energy infrastructure. We engaged with regional, state and national groups representing farmers from the livestock grazing, dairy, cropping, horticulture, nursery and garden, and forestry sectors.

This engagement found that farming practices, uncertainties, infrastructure and farm scale all influence compatibility, but experiences on individual farms vary greatly. In general, the more complex and intensive the agricultural land use, the more challenging it is to host renewable energy infrastructure on-farm. Dairy, intensive animals, nurseries and aquaculture were identified among the least compatible with renewable infrastructure. Livestock grazing and dryland broadacre cropping were identified as more compatible. In all cases, biosecurity and farm access should be carefully managed.

VicGrid also engaged with groups and peak bodies representing other industries, including minerals, forestry, manufacturing and education. Feedback focused on the importance of minimising land use conflicts, maintaining energy security and affordability, and opportunities to support economic and skills development.

For more details about agriculture sector feedback that has shaped the VTP, read the Draft VTP Guidelines Final Engagement Report.

5.5 How you can engage and provide feedback on the draft 2025 VTP

The draft 2025 VTP is open for public consultation until **Tuesday 24 June 2025**.

VicGrid is seeking feedback from First Peoples, landholders, communities and industry. See Section 11 for more information about engagement opportunities, how to provide feedback about this draft and how feedback will be taken into account and shape decisions as we finalise the 2025 VTP.

Part B

Our draft plan for renewable energy zones and transmission projects

6. What areas are we proposing for future renewable energy generation development?

The draft 2025 VTP sets out draft proposed renewable energy zones (REZs), areas we have identified as most suitable to host new renewable generation project development over the next 15 years.

We have identified 7 draft proposed REZs in Victoria to support onshore renewable projects.

Their size and location are designed to accommodate Victoria's requirements for renewable energy generation as part of our state's overall energy mix from 2025 to 2040.

In total, the draft proposed REZs cover 7% of Victoria's land area (see Figure 13 on page 58). On average statewide, we will need about 11% of the land area of REZs to host wind and solar projects to meet our expected renewable energy capacity to 2040. However, only a fraction of the land within project sites will be needed for infrastructure. For example, on a typical wind farm, the turbines themselves along with access roads and other infrastructure occupy only about 2% of the project site. Figures will vary by individual REZs and projects.

To identify locations for the draft proposed REZs, we investigated parts of Victoria to understand and balance factors including existing land uses, the environment, publicly available cultural heritage information, generator interest, renewable energy resource potential such as wind and sun, technical requirements for transmission infrastructure, regional development opportunities, and costs to energy consumers. We also considered feedback received from communities and industry during consultation on the REZ study area in 2024.

The overall size of REZs is an important consideration. There is a trade-off between smaller zones with more concentrated infrastructure development, and larger zones that affect a wider area but result in less concentrated development within each zone. Based on feedback received and our assessment of different land use considerations, we have designed draft proposed REZs that are relatively smaller.

We are seeking feedback on the draft proposed REZs and our approach to REZ sizes as part of public consultation on the draft 2025 VTP. For more information about how to provide feedback, see Section 11.

What will the REZs mean for me?

Communities in REZs may see increased investment in renewable generation and storage infrastructure over time. Importantly, just some of the land within a REZ will be needed for new renewable projects.

Landholders will still have the right to say no to having new wind, solar or battery projects on their land, and developers will need to negotiate with landholders for rights to build projects on their property.

REZs will also deliver benefits for landholders, Traditional Owners, neighbours and communities.

For project developers, generation and storage projects can be developed inside and outside of REZs. However, developers seeking to connect new plant outside of REZs will be subject to a Grid Impact Assessment.

For more information, see Section 9.

6.1 Victoria's future energy mix informed our REZs

An important step in identifying the draft proposed REZs was to consider how much additional renewable generation will be needed to meet Victoria's future energy needs, and by when. To do this, we analysed the mix of technologies that would best meet future energy demand and Victorian policy targets from 2025 to 2040. We considered factors such as:

- capital and operating costs and their impact on consumer energy bills
- land use constraints
- community preferences and cumulative impacts of development
- generator and developer interest
- regional economic development opportunities
- technical feasibility
- energy reliability.

For more details on the methodology, see Section 2.

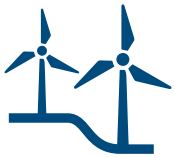
The resulting generation mix is presented in Figure 10. Under our draft plan, onshore wind and solar generation will have a key role in Victoria's overall generation mix over the next 15 years, delivering 13.6 GW or 48% of total grid-supplied generation capacity by 2040 and 34.8 TWh or 48% of total grid generation output[4]. This means we are planning for 5.8 GW of new onshore wind and 2.7 GW of new utility-scale solar to connect to the grid. Offshore wind will also be important, contributing 9 GW or 32% of grid-supplied generation capacity by 2040 and 34.4 TWh or 47% of grid-supplied generation output.

This generation mix is designed for scenario 1 (see Section 2 for more information on how we used scenarios to develop the draft VTP). We also considered generation needs for scenario 2 and 3, which are presented in Appendix B. In scenario 2, Victoria's energy needs are greater, requiring larger future investments in onshore wind, solar and storage infrastructure.

While renewable generation in REZs will have a leading role, offshore wind, storage and backup generation technologies, and energy imported from other states will all help to maintain a reliable and affordable electricity supply in the coming years. The growth of consumer energy resources such as rooftop solar and batteries will also help to limit the amount of energy that needs to be supplied from the transmission system.

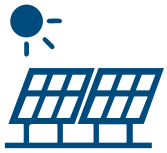
Additional renewable generation capacity in our draft plan

By 2040, we are planning for:



5.8 GW
of new onshore wind, or
970
wind turbines

9 GW
of new offshore wind, or
500
wind turbines



2.7 GW
of new utility-scale solar, or
5.2 million
solar panels

Notes: These figures include new capacity from already committed projects across Victoria and the additional new generation capacity that we are planning for by 2040.

Some figures have been rounded. Infrastructure figures are indicative and assume 6 MW turbines for onshore wind, 18 MW turbines for offshore wind and 525 W (AC) solar panels.

[4] Percentages are calculated based on the share of grid-scale generation capacity or output in FY41. This includes wind (onshore and offshore), utility-scale solar, gas and hydro projects that service operational demand.

The role of other technologies in supporting wind and solar generation

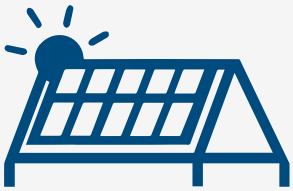
Several other technologies will be needed over the next 15 years to complement renewables and ensure we maintain a reliable and secure energy mix:

Energy firming technologies

Batteries and long-duration storage such as pumped hydro will have an important role in helping balance variable renewable output from wind and solar to meet demand – known as firming. Our projected energy mix includes a total of 4.1 GW of short and long-duration storage in 2040[5], supported by 3.6 GW of gas-fired power generation to meet periods of peak demand or low renewables output.

Interconnectors

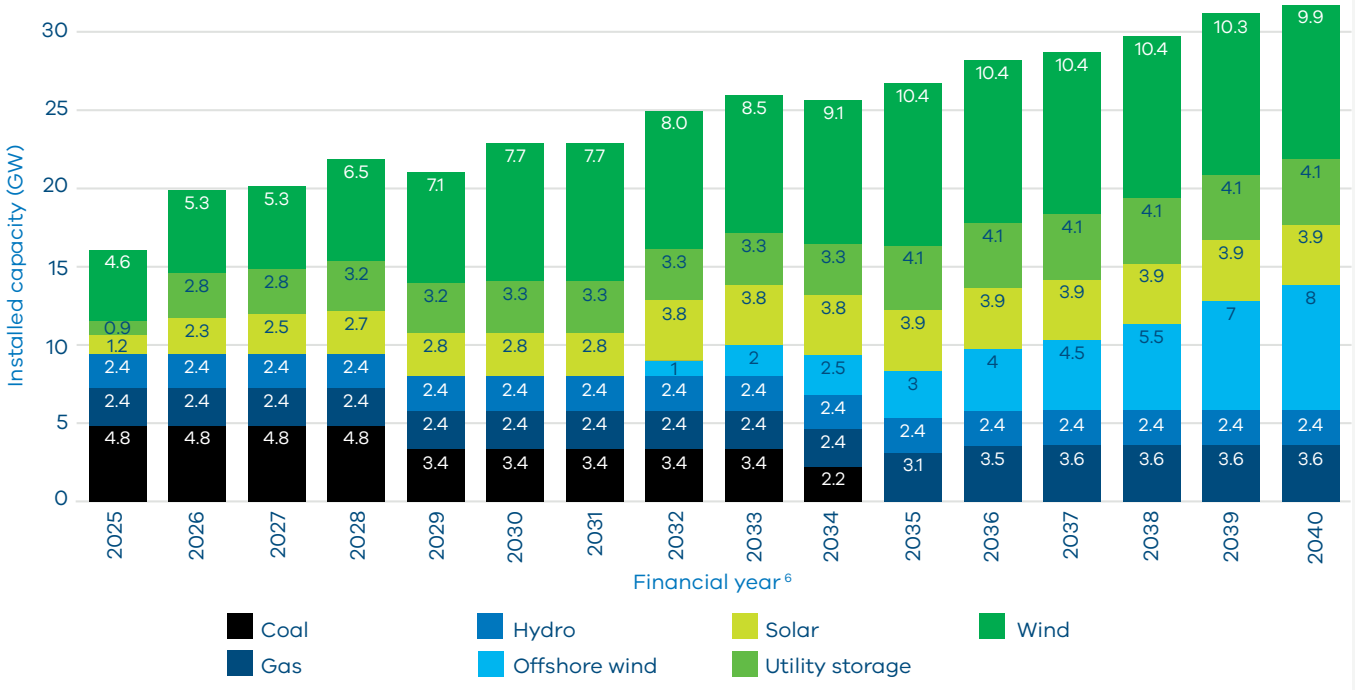
Under our draft plan, interconnectors such as Victoria to New South Wales Interconnector West (VNI West) and Marinus Link will provide Victoria access to additional diverse renewables and firming capacity from other National Electricity Market (NEM) jurisdictions.



Consumer energy resources

Household uptake of technologies such as rooftop solar and batteries will help limit the amount of new grid-scale generation and storage that's needed. Our projected generation mix for Victoria's grid factors in growth in consumer energy resources in line with the Australian Energy Market Operator's scenarios, which sees up to 16 GW in distributed solar by 2040.

Figure 10: Victoria's future energy grid under scenario 1



[5] By 2035, our projected energy mix includes a total of 6.6 GW of storage capacity, including 4.1 GW of utility short and long-duration storage and 2.5 GW of distributed storage.

[6] Years shown are for financial years ending in June. For example, the values for 2040 indicate modelled capacities as at June 2040.

Managing periods of low renewable generation

Wind and solar generation are inherently variable, and it is not uncommon to experience periods when there is little wind and sunshine. This is most likely in winter, when energy demand is also high to provide heating during cold weather.

The risk of limited periods of low renewable generation is an important planning consideration for modern electricity networks. In Victoria, this risk will become more pronounced in the late 2030s, following the retirement of coal-fired power plants. There are well-documented examples of periods such as these in Australia, Europe and the United States. VicGrid will seek to learn from these examples as we plan for the future.

The VTP considers the risks of periods of low renewable generation in its approach to energy market modelling. As noted above, our modelled energy mixes for the 3 VTP scenarios include a significant share of batteries and new long-duration storage technologies that will help to address seasonal variability in renewable generation. Interconnectors providing energy from other states will also help smooth Victoria's energy supply, along with a small but important role for gas-fired power generation to provide critical power supply when it is needed, and to meet periods of peak demand.

Transmission upgrades within the Victorian network also provide an important solution, helping ensure energy generated in different regions can be transferred to other locations across the state to meet demand when weather conditions vary.

VicGrid is undertaking further work ahead of the final 2025 VTP to analyse and test the planned system's ability to maintain reliability through a period of low renewable generation in the late 2030s. This will include further stress-testing of the appropriate mix of generation, firming and transmission investment required in the late 2030s.

6.2 Where are the draft proposed REZs?

The 7 draft proposed REZs are areas we have identified as being most suitable to host the new onshore wind and solar generation Victoria will need over the next 15 years.

They are the Central Highlands, Central North, Gippsland, North West, South West and Grampians Wimmera and Wimmera Southern Mallee draft proposed REZs. See Figure 11. Details of each are presented in the following pages.

Details about the draft proposed Gippsland Shoreline REZ are presented in Section 7. It is designed to coordinate the onshore connection infrastructure of offshore wind generators and is separate from the 7 draft proposed REZs for onshore generation discussed in this section.

A wide range of factors have been considered to determine the proposed size and location of each of the 7 REZs. We conducted energy market modelling to understand the suitability of different locations from an economic and technical perspective. We considered cultural significance, environmental constraints, sensitive land uses and landscape values.

We also sought to balance engagement feedback and regional economic development priorities with technical inputs on the location of current and future generation projects and transmission infrastructure.

We acknowledge we've considered only publicly available datasets for Aboriginal and historical cultural heritage and we have more work to do to support meaningful participation of Traditional Owners and First Peoples in the development of REZs. Protecting cultural heritage as REZs are developed will continue to be a key focus for this work.

We also acknowledge the potential for renewable energy facilities such as wind turbines, wind monitoring towers, solar farms and associated transmission infrastructure to interact with a wide range of aviation activities that may be conducted in their vicinity. VicGrid will work with stakeholders on ways to manage these as REZs are developed. This could include setting expectations that developers consider potential aviation impacts and consult with relevant stakeholders in the planning stage of generation projects.

Table 6 below summarises the different factors we considered in identifying the draft proposed REZs, and Section 2 provides further detail on our methodology.

Table 6: Factors we considered in determining the location of draft proposed REZs

Processes, program or project	Description
Agricultural land use	We considered farmland at a statewide and regional level, taking into account data including farmgate output, soil quality, rainfall, access to irrigation water and farm infrastructure investment. We also considered the compatibility of different types of farming with the co-location of renewable energy infrastructure. See Section 5 for more information.
Land use and landscape values	Where possible, we avoided areas such as national parks, world heritage sites, Ramsar wetlands, residential areas and other areas of significance. We sought to minimise impacts to areas of high biodiversity value, and prioritised areas with relatively fewer land use constraints.
Generation projects in planning	We sought to include projects in planning within draft proposed REZ boundaries and gave greater consideration to more developed projects and projects that are larger in size.
Modelled generation build	We considered the results of energy market modelling of which technologies are needed (including storage), how much capacity to build, and when and where this capacity should be built.
Transmission network requirements	We preferenced areas that are close to the existing transmission network and assessed what additional or upgraded transmission infrastructure would be needed to accommodate additional renewable energy generation in different areas.
Engagement feedback	We considered feedback from communities, industry and local governments (see box below).
Partnering with Traditional Owners	Where possible, we sought to avoid known areas of high cultural significance or sensitivity based on publicly available Aboriginal cultural heritage information and prioritise areas with fewer known constraints. VicGrid is seeking to partner with Traditional Owners and First Peoples to supplement limited public datasets on Aboriginal cultural heritage and integrate a self-determined approach to protecting cultural heritage during REZ design and development. See Section 4 for more information.
Regional development considerations	We considered the readiness of different regional economies to host REZs, taking into account existing housing, social and transport infrastructure in each area as well as local workforce profiles. We sought to prioritise areas where there was strong alignment with regional economic development strategies.

Figure 11: We have identified 7 draft proposed REZs across Victoria for onshore renewable energy and a shoreline REZ to coordinate offshore wind connections

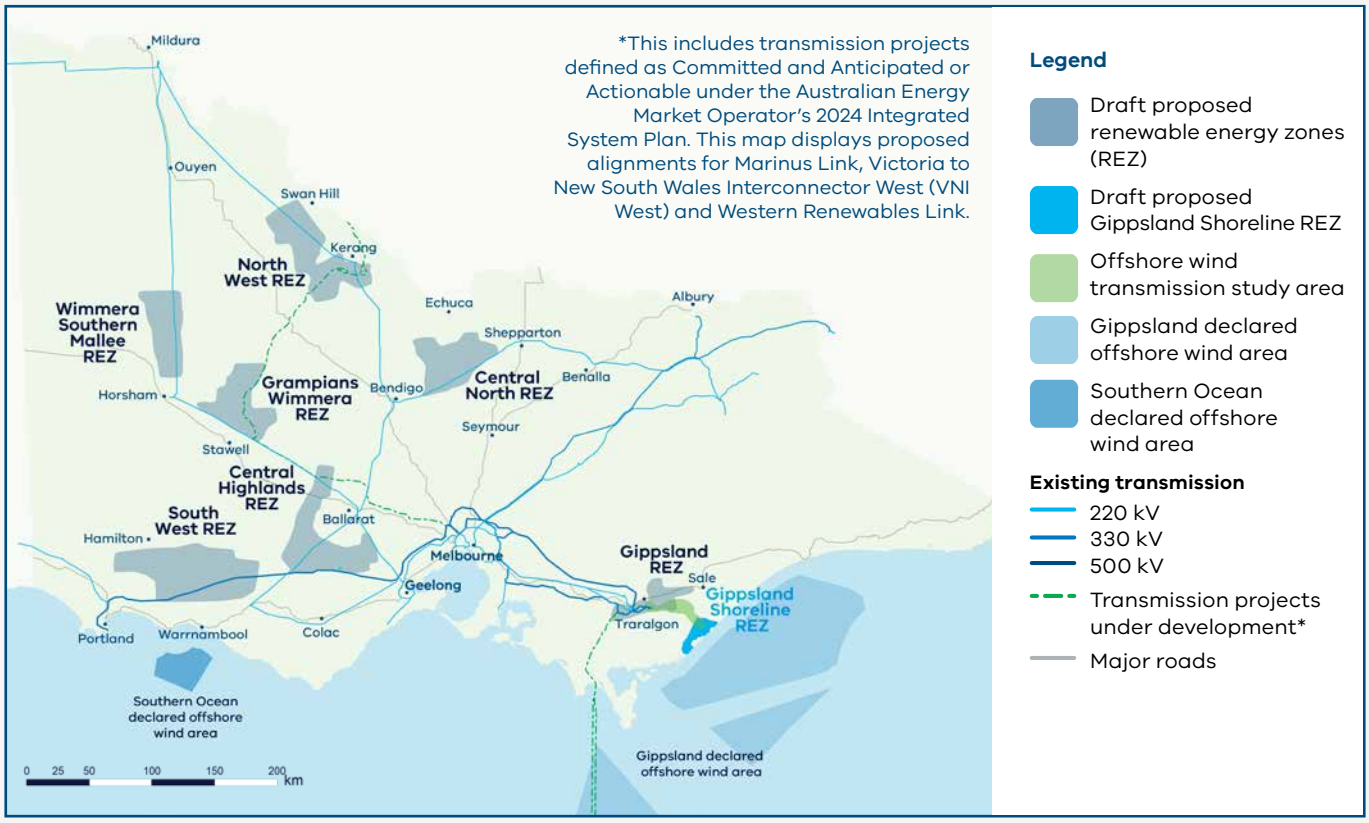
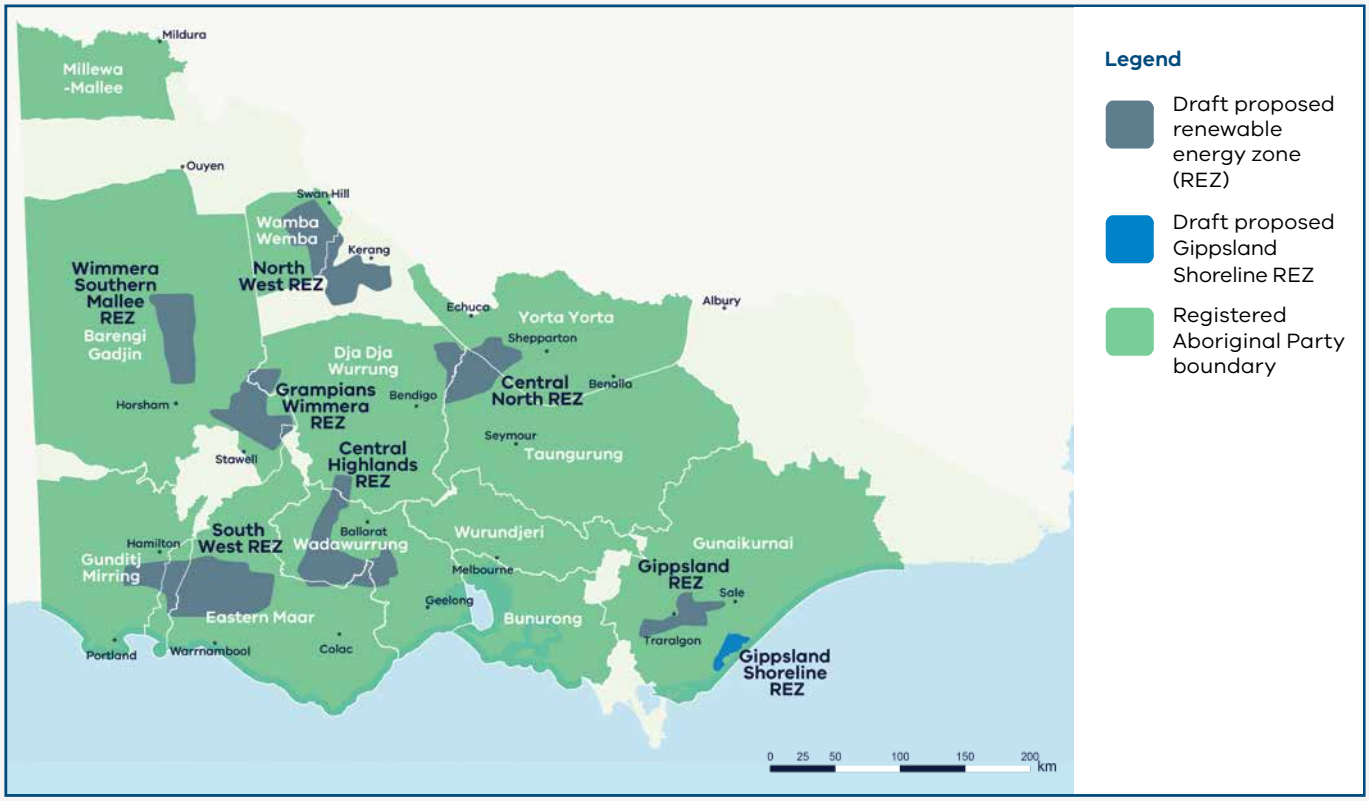
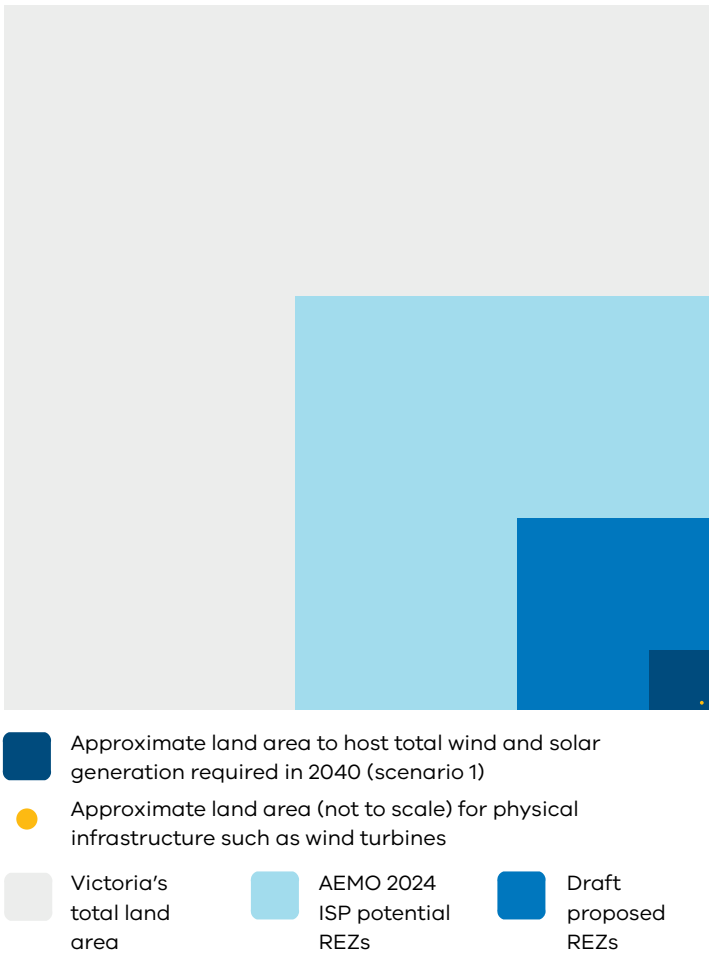


Figure 12: Draft proposed renewable energy zones and Registered Aboriginal Party boundaries



Disclaimer: The Registered Aboriginal Party boundaries shown in the draft Figure 12 are a computer representation. The boundaries show the general vicinity of land and waters subject to the *Native Title Act 1993* (Cth) and *Traditional Settlement Act 2010* (Vic) as at the time of publication and could conceivably change. For more details, please see full disclaimer on Page 4.

Figure 13: How much land is needed for renewable generation?



The 7 draft proposed REZs cover approximately 1.6 million hectares, which is 7% of Victoria's total land area of 22.8 million hectares. In comparison, the potential REZs identified in the Australian Energy Market Operator's 2024 Integrated System Plan (AEMO ISP) would cover approximately 8.5 million hectares, or 37% of Victoria's total land area.

Under scenario 1, about 11% of the combined area of the 7 draft proposed REZs would host wind and solar generation in 2040. Those land parcels will not be fully occupied. In fact, 0.06% of Victoria's total land area is required for the physical infrastructure such as wind turbines, solar panels, access roads and others*. The estimated area of the land parcels in which onshore renewables will be hosted by 2040 (both inside and outside a REZ) is approximately 230,000 hectares, or about 1% of Victoria's total land area.

Notes: The total land area for committed and existing onshore wind and solar projects is derived from data provided by the Department of Transport and Planning. Note that: (i) only projects that service operational demand have been included in this calculation and (ii) any existing projects that are expected to be decommissioned by FY41 have not been included in this figure.

The total land area for new entrant projects has been approximated using capacity density values of 0.05 MW/ha and 0.5 MW/ha for onshore wind and solar respectively. This is an estimate only, and the actual size of new projects may differ for a range of reasons including site-specific considerations and the development of technology over time. Data on Victoria's total land area is sourced from VicGov Region.

*The land area required for physical infrastructure is an estimate based on 2% for an onshore wind farm and 75% for a solar farm. The figures are consistent with a review of studies on land impacts of renewable energy generation in Australia and overseas. VicGrid acknowledges that these estimates are evolving as technology and construction techniques change over time.

Indicative generation allocations across the draft proposed REZs

The table below shows the modelled generation we will need in each of the 7 draft proposed REZs by 2040 to meet energy demand most efficiently. This includes the existing pipeline of committed generation projects, as well as the additional capacity that we are planning for beyond the committed project pipeline. The ranges indicate the likely scale of new generation within each REZ based on our modelling, noting that that the final figures may sit outside this range.

The figures are not caps or limits. These are quantities of generation that could be supported in each REZ, having regard to the land area, transmission network transfer capacity and the renewable resource. A cap on the new generation that can connect within each REZ – called an access limit – will be defined for each REZ as part of REZ access schemes. For more information about access limits, see Section 9.

Table 7: Modelled additional generation capacity we are planning for in each draft proposed REZ by 2040

Draft proposed REZ	Wind capacity (MW)	Solar capacity (MW)
Central Highlands	1,820 – 2,070[7]	125[7]
Central North	60 - 100	-
Gippsland	320 - 480	-
North West	320 - 480	930 - 1,390
South West	1,280 - 1,920	-
Grampians Wimmera	320 - 480	-
Wimmera Southern Mallee	320 - 480	-

[7]The Central Highlands additional generation capacity includes Golden Plains Wind Farm (East and West) and Elaine Solar Farm which are currently under development. Other committed projects located outside REZs will provide an additional 0.6 GW of wind capacity and 1.5 GW of solar capacity.

Feedback across Victoria

We have carefully considered feedback from communities and industry during the process of narrowing the REZ study area into draft proposed REZs.

Agricultural land use feedback helped inform all of the draft proposed REZs, including feedback from both communities and the Victorian Farmers Federation about areas to be considered for avoidance across the state. Protecting biodiversity was also a common concern across all regions, and biodiversity feedback and data has informed the draft proposed REZs.

We heard a body of feedback concerning natural hazard vulnerability, specifically fire and floods. This ranged from region-specific insights to concerns about firefighting and renewable energy infrastructure broadly. Natural hazards and climate vulnerability were considered in our assessments, and this feedback has been considered when refining the study area.

We also considered current and planned energy generation and transmission projects across all of Victoria, with the dual aims of preventing any region from being overburdened by energy infrastructure and maintaining momentum in Victoria's energy transition. All regions provided feedback about cumulative impacts and the need to take existing and planned energy projects into account.

Much of the feedback from communities highlighted factors that could influence and support the planning of renewable generation, storage and transmission infrastructure within REZs over time. This feedback will continue to support decisions as the REZs are developed.

For more details about the community and industry feedback that has helped shape the draft proposed REZs, read the Draft VTP Guidelines Final Engagement Report.

Central Highlands

The draft proposed Central Highlands REZ is in an area with high-quality wind resources and offers access to existing transmission network capacity. The local region has a diverse mix of land uses and landscapes, including productive farmland, national and state parks, wetlands, plains and river valleys, which have been taken into account in defining its shape and location.

It sits within the Registered Aboriginal Party (RAP) boundary of the Wadawurrung Traditional Owners Aboriginal Corporation, Eastern Maar Aboriginal Corporation and Dja Dja Wurrung Clans Aboriginal Corporation.

The draft proposed REZ is situated west and south of Ballarat, in an area of relatively lower land use constraints than its surrounds. It includes parts of the Golden Plains, Corangamite and Pyrenees local government areas. Small sections of the REZ also sit within the Moorabool, Ballarat and Hepburn local government areas. The southern boundary runs along the existing 500 kV transmission line from Moorabool towards Haunted Gully and takes in a section of the 220 kV line from Ballarat to Terang. The eastern and northern sections align with the 220 kV transmission network running from Moorabool to Ballarat and Waubra.

Agriculture production in the area includes cropping and grazing. There are nearby areas of cultural and historical significance. Scattered wetlands in the surrounding area provide habitat for important species including the brolga.

We considered many factors when refining the shape of the draft proposed REZ

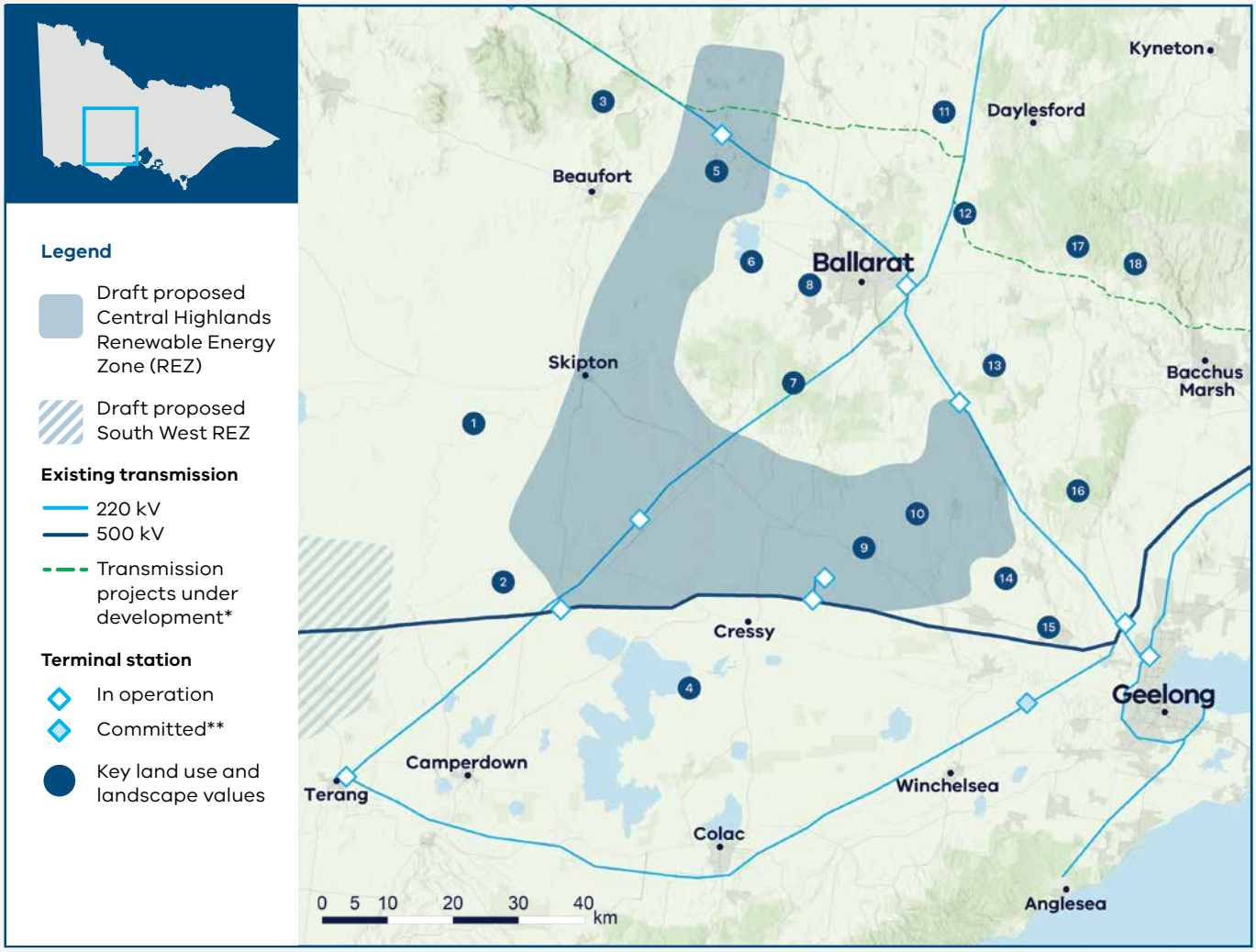
In addition to the overarching factors outlined in Table 6, we carefully considered regional and local factors and engagement feedback to help refine the REZ shape. These factors included but were not limited to:

- the area's high-quality wind resources
- productive farmland and compatibility of farming practices with renewable energy infrastructure
- wetlands, national and state parks and forests
- areas with significant biodiversity, cultural and social values
- residential growth areas and dwelling density
- projects in planning
- transmission network capacity
- cumulative impacts of energy infrastructure development.

We are committed to having ongoing conversations with Wadawurrung Traditional Owners Aboriginal Corporation, Eastern Maar Aboriginal Corporation and Dja Dja Wurrung Aboriginal Corporation to incorporate further cultural heritage information into REZ development and subsequent VTPs, in alignment with the principle of self-determination.

Figure 14 shows a map of the draft proposed Central Highlands REZ, including some of the significant land use and landscape values that influenced its size and shape.

Figure 14: Draft proposed Central Highlands REZ



Key land use and landscape values

1 **Biodiversity**: Wetlands scattered across region with high biodiversity value, home to native flora and fauna including brolgas

2 **Biodiversity/cultural:** Wetlands and volcanic landscape around Mount Elephant

3 **Biodiversity:** State forests and parks, home to native flora and fauna

4 **Biodiversity/cultural:** Western District Lakes Ramsar-listed wetlands, home to native flora and fauna including brolgas

5 **Agriculture:** High productivity agriculture, particularly horticulture farming

6 **Biodiversity/cultural:** Lake Burrumbeet and surrounding areas of sensitivity

7 **Biodiversity:** State parks and forests across the region, home to native flora and fauna

8 **Community:** Area with higher aggregated dwelling density

9 **Biodiversity:** Scattered wetlands and other areas of high biodiversity value

10 **Biodiversity:** Area with high biodiversity values including protected biodiversity area

11 **Heritage:** Victorian Goldfields

12 **Agriculture:** High productivity agriculture, particularly horticulture farming

13 **Cultural:** Lal Lal Falls

14 **Biodiversity:** Wetlands including protected biodiversity area, home to native flora and fauna

15 **Community:** Potential residential growth areas

16 **Biodiversity/cultural/community:** Brisbane Ranges National Park

17 **Biodiversity:** Wombat State Forest and surrounding bushland, home to native flora and fauna

18 **Bushfire risk:** Higher bushfire risk within densely vegetated state forests and parks

* This includes transmission projects defined as Committed and Anticipated or Actionable under the Australian Energy Market Operator's 2024 Integrated System Plan. This map displays the proposed alignment for Western Renewables Link.
** This includes new terminal stations on the Victorian Declared Shared Network that are proposed to be operational in the coming years, as identified by AEMO Victorian Planning in its Terminal Stations in Victoria report dated 2 September 2024.

What we heard

Community feedback from this region focused on the importance of minimising impacts on productive farmland and agriculture, and protecting biodiversity and the natural environment. Biodiversity concerns included the wedge-tailed eagle, the brolga and the Wombat State Forest. There was feedback about natural hazard vulnerability, in particular bushfires. We also heard about the impact increased renewable infrastructure could have on the region. The development of the Western Renewables Link (WRL) project is also contributing to impacts for local communities.

Feedback from the agriculture sector raised concerns about potential impacts on local horticulture production, particularly potato farming near Ballarat, and the compatibility of farming practices with energy infrastructure. Feedback from local shires focused on the strategic importance of preserving high-quality soils for food production and asked for residential and industrial growth areas highlighted in council strategies to be considered.

What we did

When designing the draft proposed Central Highlands REZ, we considered agricultural land across the region and aimed to include areas with fewer land use and environmental constraints. To the north, we've taken into account high productivity farmland, including important horticulture production around Ballarat and Ballan, which has been identified as less compatible with renewable energy infrastructure. We also aimed to protect wetlands, lakes, parks and reserves to the south of the draft proposed REZ, as well as areas of high environmental, cultural and biodiversity value. We considered areas of high habitat value for biodiversity, such as the brolga.

The eastern border near Geelong and outer Melbourne has been shaped by areas of higher dwelling density and future residential growth.

Existing and planned generation projects across the region were considered as we designed the draft proposed REZ. It includes several existing and planned large-scale wind farms, and seeks to coordinate new development south and west of Ballarat to streamline future connections at several possible points on the existing network.

South West

The draft proposed South West REZ has some of the strongest wind resources in the state. It is in an area characterised by farmland, lakes and volcanic plains. It sits within the RAP boundaries of Eastern Maar Aboriginal Corporation and Gunditj Mirring Traditional Owners Aboriginal Corporation.

South West Victoria has seen wind project development over the past several decades. Existing wind projects in the region contribute about 12% of Victoria's current energy generation capacity[8], and 23% of the renewable generation capacity[9]. The Southern Ocean offshore wind declared area is located off the coast of the draft proposed REZ, and one project has been awarded an offshore wind feasibility licence in this area by the Australian Government.

The draft proposed South West REZ stretches from Darlington in the east to Branxholme in the west, and covers parts of the Moyne, Glenelg, Southern Grampians, Corangamite and Ararat local government areas. The existing 500 kV line that runs from Mortlake to Tarrone terminal stations runs through its southern portion.

The broader area surrounding the draft proposed REZ includes national parks, Ramsar wetlands, tourist attractions and agricultural land, with one of the state's leading dairy-farming areas in southern Corangamite and Moyne shires.

We considered many factors when refining the shape of the draft proposed REZ

In addition to the overarching factors outlined in Table 6, we carefully considered regional and local factors and engagement feedback to help refine the REZ shape. These factors included but were not limited to:

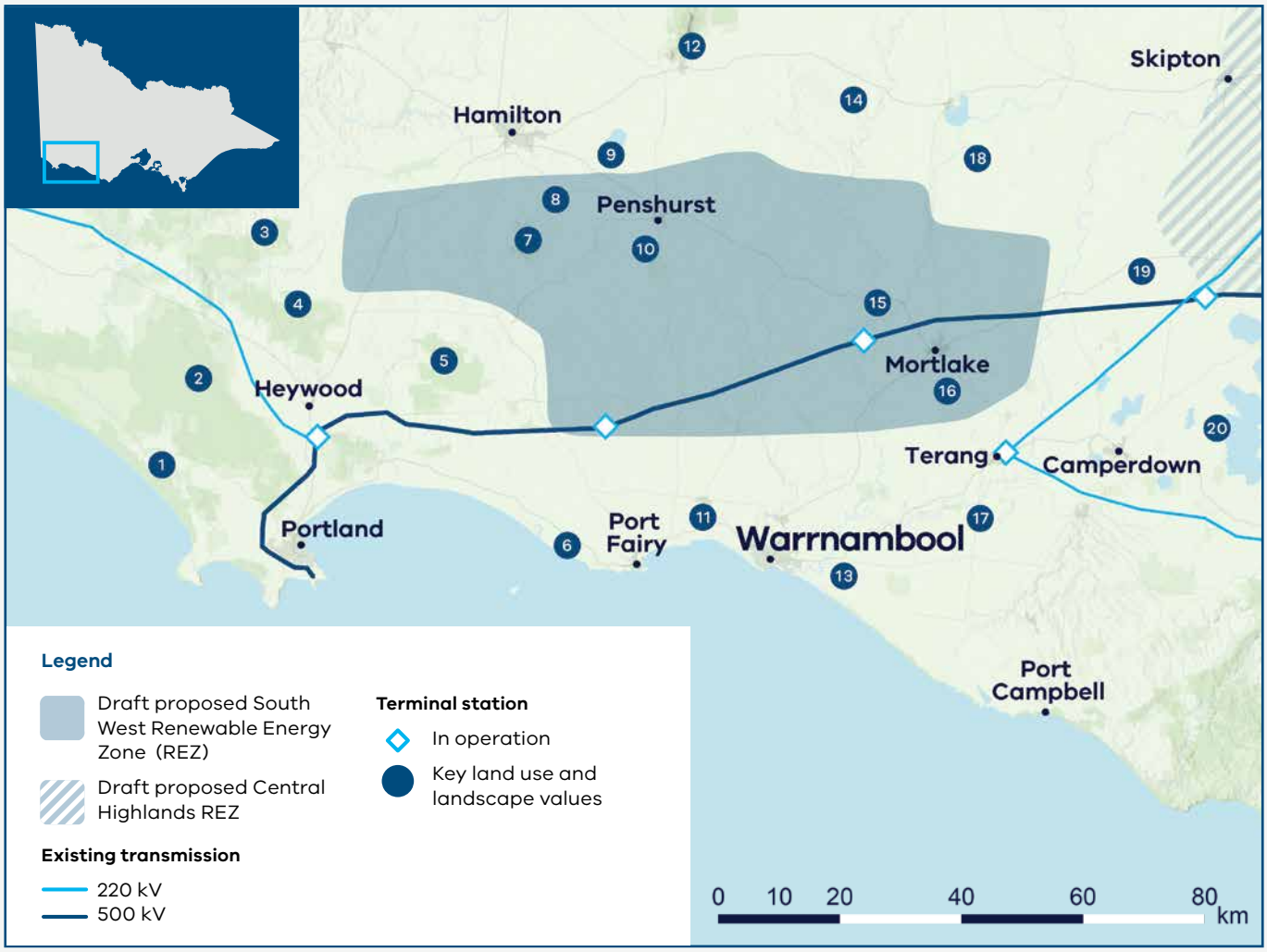
- the area's very high-quality wind resources
- cumulative impacts of existing projects and infrastructure
- farmland, particularly local dairy production, and compatibility of farming practices with renewable energy infrastructure
- areas of high biodiversity value
- significant cultural sites
- transmission network capacity.

We are committed to having ongoing conversations with Eastern Maar Aboriginal Corporation and Gunditj Mirring Traditional Owners Aboriginal Corporation to incorporate further cultural heritage information into REZ development and subsequent VTPs, in alignment with the principle of self-determination.

Figure 15 shows a map of the draft proposed South West REZ, including some of the significant land use and landscape values that influenced its size and shape.

[8] Calculated based on the generation capacity of onshore wind, solar, gas, coal and hydro projects that service operational demand.
[9] Calculated based on the generation capacity of onshore wind, solar and hydro projects that service operational demand.

Figure 15: Draft proposed South West REZ



Key land use and landscape values

1 **Biodiversity/community/cultural:** Discovery Bay Coastal Park

2 **Biodiversity/community:** Cobboboonee and Lower Glenelg National Parks

3 **Biodiversity:** State parks and forests, home to native flora and fauna

4 **Bushfire risk:** Higher bushfire risk across parks and forested areas

5 **Cultural heritage:** Budj Bim World Heritage Cultural Landscape

6 **Community/biodiversity/cultural:** Coastal parks, reserves and tourism sites

7 **Biodiversity:** Mount Napier State Park, including protected biodiversity area

8 **Biodiversity:** Public Conservation and Resource Zone Area

9 **Biodiversity/cultural:** Lake Linlithgow and surrounding lakes, home to native flora and fauna including brolgas

10 **Cultural:** Western volcanic cones and lava flows from Mount Rouse

11 **Biodiversity/cultural:** Tower Hill Wildlife Reserve, home to native flora and fauna

12 **Cultural/biodiversity/community:** Grampians (Gariwerd) National Park – significant landform and landscape

13 **Land use:** Wind farm prohibition area within 5 km of the coast east of Warrnambool (Victorian Planning Provisions)

14 **Mining:** Mining retention licence

15 **Biodiversity/cultural:** Hopkins River and surrounding areas of sensitivity

16 **Agriculture:** High agricultural productivity dairy farming area with relatively lower compatibility with renewables

17 **Agriculture:** High productivity dairy farming area with relatively lower compatibility with renewables

18 **Biodiversity/cultural:** Lake Bolac and surrounding wetlands and reserves, home to native flora and fauna including brolgas

19 **Biodiversity/cultural:** Wetlands and volcanic landscape around Mount Elephant

20 **Biodiversity/cultural:** Western District Lakes Ramsar-listed wetlands, home to native flora and fauna including brolgas

What we heard

Community feedback from this region focused on the significant role it has played in Victoria's energy transition so far, noting the large number of existing and proposed local renewable projects. Concerns were raised about the cumulative impacts of wind projects, particularly on visual amenity, and how potential overdevelopment might affect peoples' sense of place and way of life.

Feedback also stressed the importance of minimising impacts on agriculture, including the region's dairy farmland, recognising the sector's contribution to the local economy and to food security. Community members also raised concerns about biodiversity, including the brolga and Southern Bent-Wing Bat.

Local governments mirrored community feedback, stressing the importance of protecting dairy farmland south of the Princes Highway and minimising cumulative impacts of renewable development.

What we did

When developing the shape and size of this draft proposed REZ, we aimed to carefully balance the need to harness the strongest winds in the state while managing the amount of new development to reduce cumulative impacts for the region.

To address concerns about agricultural land, the size and location of the draft proposed REZ takes into account areas of concentrated dairy farming in southern Corangamite Shire, and east of Warrnambool in southern Moyne Shire.

In response to biodiversity feedback, we considered a range of significant landscapes and landforms, including Budj Bim World Heritage Site, the Grampians (Gariwerd) National Park, Lake Corangamite and the Great Otway National Park. We also considered coastal areas and their cultural, biodiversity and social (tourism) values for communities and Traditional Owners. Areas with important biodiversity values, including known brolga habitat and areas with a high concentration of wetlands to the east and north-east of the draft proposed REZ, have also been considered.

Grampians Wimmera

The draft proposed Grampians Wimmera REZ offers strong wind resources and maximises access to existing and planned transmission capacity. It is in an area that is characterised by diverse farmland, mining, areas of conservation and natural reserves, bordered by national parks. The draft proposed REZ sits within the RAP boundaries of the Barengi Gadjin Land Council and Dja Dja Wurrung Clans Aboriginal Corporation.

The draft proposed REZ is located north of Stawell and extends towards Donald, with its southern boundary following an existing 220 kV transmission line and its eastern boundary following the VNI West corridor. It is mainly located within the Northern Grampians Shire and also intersects with Yarriambiack and Pyrenees local government areas. Its shape and location could maximise the use of the state's transmission infrastructure and provide opportunity for coordinated connections to the 500 kV network at Bulgana terminal station. This would help match future generation with planned network capacity, reduce connection complexity and minimise costs for consumers.

Agricultural production in the area includes cropping and grazing. The surrounding area also has substantial critical mineral resources.

We considered many factors when refining the shape of the draft proposed REZ

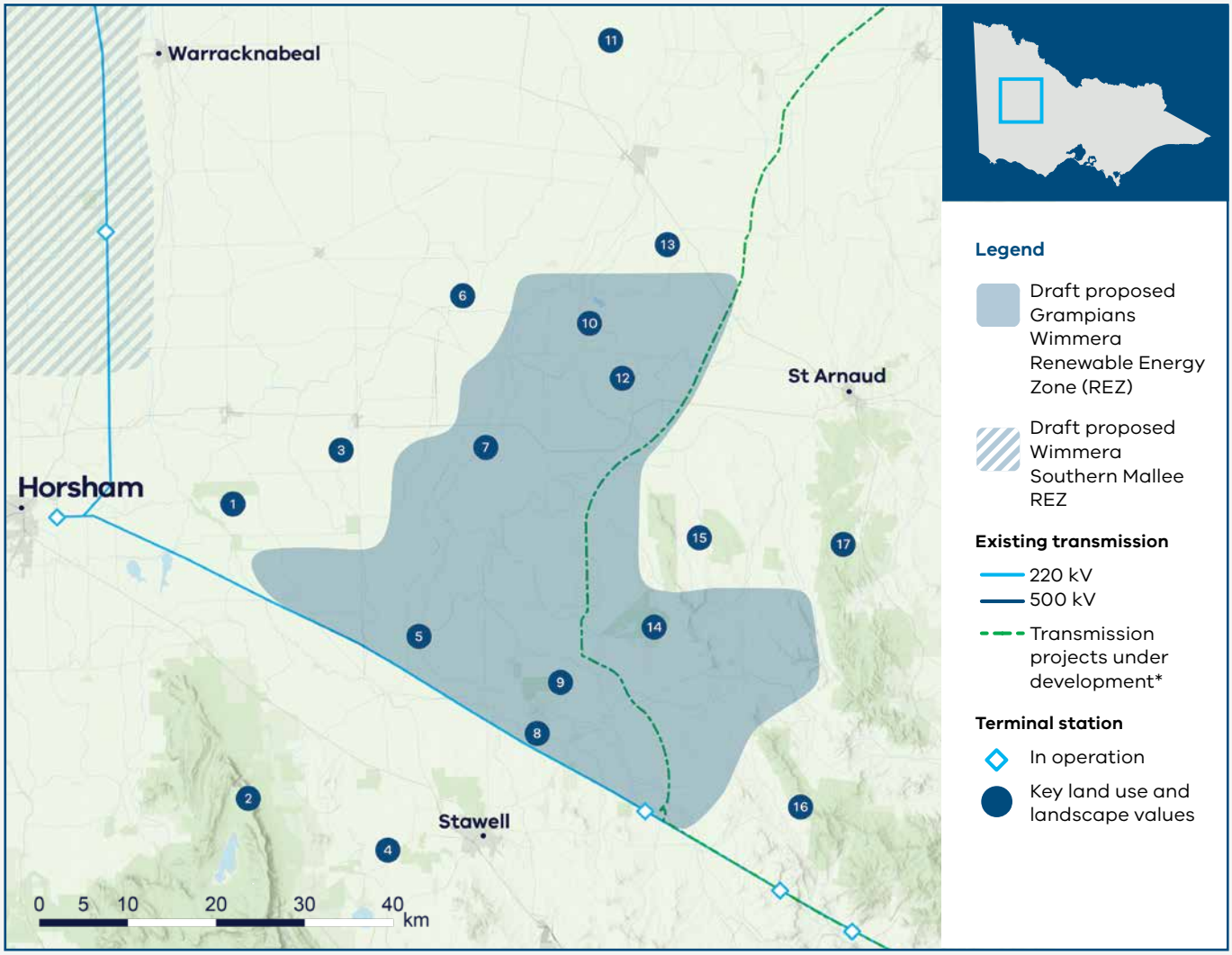
In addition to the overarching factors outlined in Table 6, we carefully considered regional and local factors and engagement feedback to help refine the REZ shape. These factors included but were not limited to:

- potential impacts on biodiversity, conservation areas and wetlands
- compatibility of farming practices with renewable energy infrastructure
- feedback from communities already impacted by development of VNI West
- transmission network capacity
- other land uses and natural resources
- regional development opportunities.

We are committed to having ongoing conversations with Barengi Gadjin Land Council and Dja Dja Wurrung Clans Aboriginal Corporation to incorporate further cultural heritage information into REZ development and subsequent VTPs, in alignment with the principle of self-determination.

Figure 16 shows a map of the draft proposed Grampians Wimmera REZ, including some of the significant land use and landscape values that influenced its size and shape.

Figure 16: Draft proposed Grampians Wimmera REZ



Key land use and landscape values

1 **Biodiversity:** Barrabool Flora and Fauna Reserve and Marma State Forest, protected biodiversity area for native flora and fauna

2 **Biodiversity/cultural/community:** Grampians (Gariwerd) National Park – significant landform and landscape

3 **Mining:** Mining retention licence and critical minerals deposits

4 **Biodiversity:** Conservation reserves and wetlands, home to native flora and fauna

5 **Mining:** Mining retention licence and critical minerals deposits

6 **Mining:** Active mine site

7 **Biodiversity/cultural:** Richardson River and surrounding areas of sensitivity

8 **Biodiversity/cultural:** Wimmera River and surrounding areas of sensitivity

9 **Biodiversity:** Glynwylln State Forest and areas of high biodiversity value for native flora and fauna

10 **Biodiversity/cultural:** Wetlands including Lake Batyo Catyo and surrounding lakes

11 **Biodiversity/cultural:** Lake Buloke and surrounding areas of sensitivity

12 **Flooding risk:** Floodway and land subject to inundation

13 **Biodiversity/cultural:** Wetlands including Lake Cope Cope and Waltons Lakes

14 **Biodiversity:** Morrl Morrl Nature Conservation Reserve, protected biodiversity area for native flora and fauna

15 **Biodiversity:** Mount Bolangum and Big Tottington Nature Conservation Reserves, home to native flora and fauna

16 **Biodiversity:** Pyrenees State Forest and Landsborough Nature Conservation Reserve, home to native flora and fauna

17 **Biodiversity/cultural/community:** Kara Kara National Park

* This includes transmission projects defined as Committed and Anticipated or Actionable under the Australian Energy Market Operator's 2024 Integrated System Plan. This map displays proposed alignments for Victoria – New South Wales Interconnector West (VNI West) and Western Renewables Link.

What we heard

Feedback from this region centred strongly on the impact of energy infrastructure on agriculture production. Feedback also referenced negative experiences with previous and planned generation and transmission development. The community highlighted the biodiversity values of the area, including recognition of the Grampians National Park and bird species such as the wedge-tailed eagle. There was also feedback about protecting bio-links between nature conservation reserves, national and regional parks and other areas of high conservation value in the region including the lakes system in Buloke Shire from both a biodiversity and tourism perspective.

Local councils raised concerns about flood risk and impact on surface water flows. The community also raised concerns about mineral sands mining and subsequent competing land use.

Community engagement, particularly from Stawell, St Arnaud and Donald, reflects strong concerns about infrastructure development. We recognise the impact of VNI West development and related community opposition.

What we did

The draft proposed REZ considers sensitive landscapes and landforms with high cultural, biodiversity and community significance including the Grampians (Gariwerd), national and state parks including Kara Kara National Park and natural conservation reserves around Stawell, Avoca and St Arnaud (east of VNI West), and Lake Buloke. The draft proposed REZ also considers sensitive land uses and landscapes around the Bulgana terminal station, including areas along the Wimmera River, which will require further consideration during REZ and project design to minimise impacts. The north-west edge of the draft proposed REZ is shaped to limit impacts to strategic mineral sands resource areas.

We have heard the depth of community feedback and concerns about renewable energy development in this region. Some trade-offs were required in seeking to avoid national parks and state forests, harness the strong wind resources in the region and reduce the need for new transmission and associated impacts on energy bills. The location of the draft proposed REZ is designed to work together with other proposed areas in the state as part of a long-term plan to meet Victoria's energy needs. VicGrid will continue to work with local communities to explore these issues further and work together to minimise impacts to the region, and engage throughout planning and development of REZs. It should also be noted that it remains the choice of individual landholders to host renewable energy generation.

At the northern end of the draft proposed REZ there are some sensitive wetlands recognised for their biodiversity value. These areas will need to be carefully managed in planning for generation. Further flood studies and mapping will also be required and additional planning approvals at a project level will also help address these issues.

Land use conflicts associated with several large mining tenements and proposed mine sites west and southwest of the draft proposed REZ have been taken into account. These challenges and opportunities will require further consideration and engagement with relevant groups to minimise impacts.

This draft proposed REZ could support wind projects in planning and facilitate access to WRL and VNI West with a connection into the 500 kV network at Bulgana terminal station, capitalising on planned network capacity and reducing connection complexities and network costs.

Wimmera Southern Mallee

The draft proposed Wimmera Southern Mallee REZ offers strong wind resources and access to the existing transmission network. It is in an area with flat terrain and large broadacre farming properties, as well as mining, areas of conservation and national parks. It sits within the RAP boundaries of the Barengi Gadjin Land Council.

The draft proposed REZ is located north of Horsham, stretching from Dooen north towards Rainbow and Beulah along the 220 kV transmission line from Horsham to Ouyen, allowing for connections into the network at Murra Warra. Its eastern edge follows the Henty Highway, and the Yarriambiack Creek sits outside its east boundary. It is located within the Yarriambiack, Hindmarsh and Horsham Rural City local government areas.

The area is in Victoria's wheatbelt with dryland broadacre farming, particularly grains, lamb and wool, underpinning the local economy. The surrounding area also has critical mineral resources.

We considered many factors when refining the shape of the draft proposed REZ

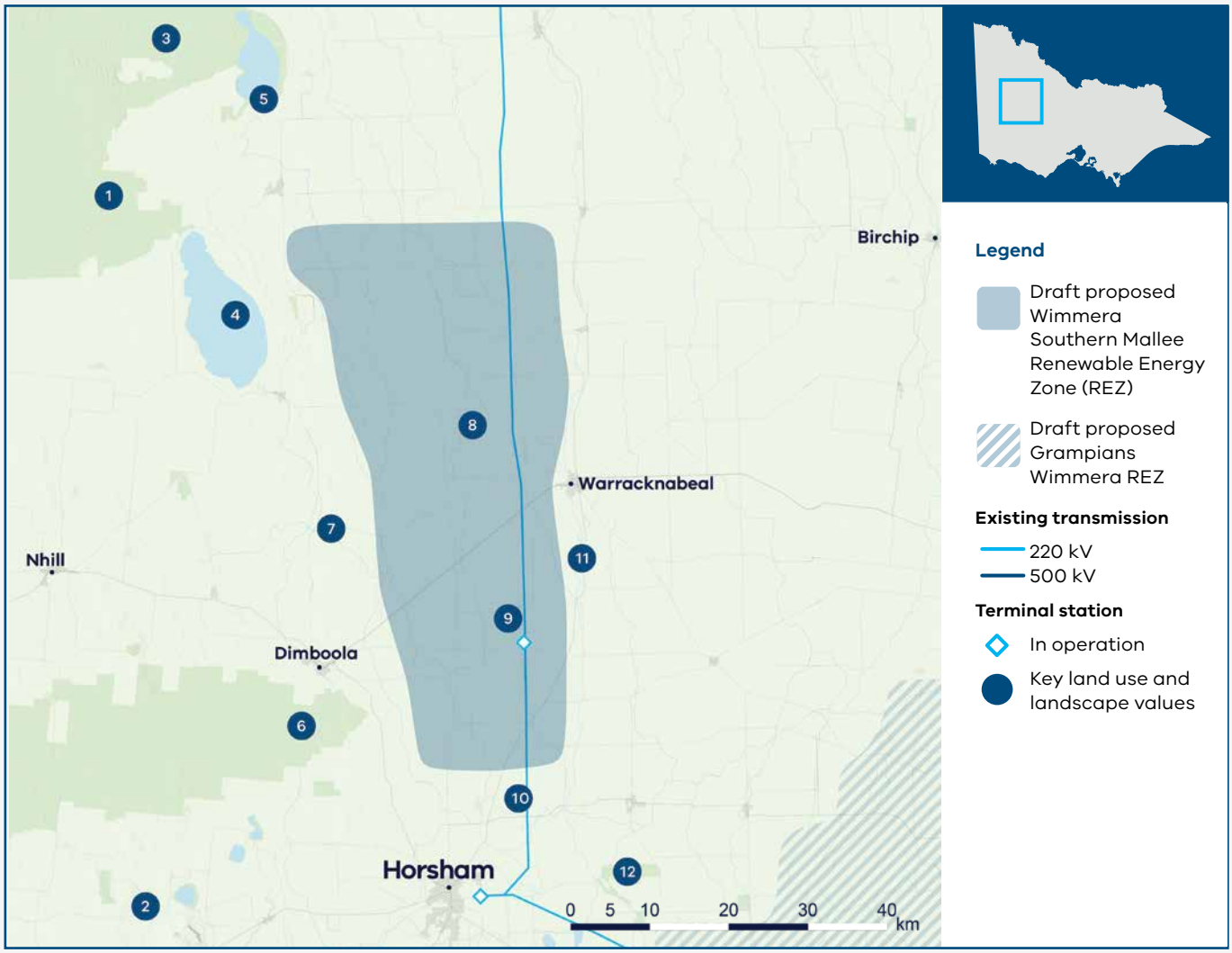
In addition to the overarching factors outlined in Table 6, we carefully considered regional and local factors and engagement feedback to help refine the REZ shape. These factors included but were not limited to:

- feedback from communities impacted by generation development
- compatibility of farming practices with renewable energy infrastructure
- potential impacts on biodiversity
- transmission network capacity
- existing generation and developer interest in the area
- other land uses and natural resources
- regional development opportunities.

We are committed to having ongoing conversations with Barengi Gadjin Land Council to incorporate further cultural heritage information into REZ development and subsequent VTPs, in alignment with the principle of self-determination.

Figure 17 shows a map of the draft proposed Wimmera Southern Mallee REZ, including some of the significant land use and landscape values that influenced its size and shape.

Figure 17: Draft proposed Wimmera Southern Mallee REZ



Key land use and landscape values

1 **Biodiversity/community:** Big Desert State Forest

2 **Biodiversity/cultural:** Multiple parks, reserves and wetlands, including protected biodiversity areas, home to native flora and fauna

3 **Biodiversity/cultural/community:** Wyperfeld National Park

4 **Biodiversity/cultural:** Lake Hindmarsh and surrounding areas of sensitivity

5 **Biodiversity:** Lake Albacutya Ramsar-listed wetland

6 **Biodiversity/community:** Little Desert National Park

7 **Biodiversity/cultural**: Wimmera River and surrounding areas of sensitivity

8 **Mining:** Mineral sands deposits

9 **Biodiversity:** Protected biodiversity area

10 **Mining:** Mining tenement and mineral sands deposits

11 **Biodiversity/cultural:** Yarriambiack Creek and surrounding areas of sensitivity

12 **Biodiversity:** Barrabool Flora and Fauna Reserve and Marma State Forest, including protected biodiversity area, home to native flora and fauna

What we heard

Feedback from this region highlighted the need to minimise the impact of renewable energy development on agricultural land, noting the area includes highly productive soils. There were suggestions that areas in the north-west with more marginal soils would be better suited to infrastructure development and that farmers in the area increasingly used advanced technology giving them the ability to boost productivity with less rain. Concerns were raised about the impact of renewable energy infrastructure on use of these technologies.

Negative experiences with previous and planned generation and transmission development were often raised. There was also some interest in better understanding how renewable energy and transmission development could bring economic and social benefits to the region.

Local councils raised concerns about potential impacts on Horsham Airport's expansion plans, and the importance of protecting the surrounding flight descending zone. Local councils also echoed community concerns about protecting agricultural land and potential impacts on precision farming technology.

What we did

The location of the draft proposed Wimmera Southern Mallee REZ seeks to balance many factors including community feedback, opportunity to harness the area's strong wind resource, developer interest, opportunity to co-locate infrastructure with existing farming practices and proximity to the 220 kV line. It also avoids the Little Desert National Park and the Yarriambiack Creek.

The draft proposed REZ predominantly contains broadacre agricultural land. Engagement with agricultural groups and peak bodies so far has suggested broadacre dryland cropping operations have more potential to be compatible with co-locating renewable energy infrastructure. However, further work through project planning stages will be required to understand issues related to precision farming technology.

Proximity to Horsham Airport and other aviation activities means wind projects will need to consider and propose mitigations to potential aviation impacts in the planning stage. VicGrid will continue to work with stakeholders on development of the draft proposed REZ.

North West

The draft proposed North West REZ has wind and solar resources, and provides access to existing and planned transmission network capacity. It is in an area with rivers, floodplains and dry landscapes, with broadacre dryland agriculture in its north-west section and irrigated farming in the east. It sits within the RAP boundaries of Wamba Wemba Aboriginal Corporation and across areas of Country to the east that do not have a formally recognised Traditional Owner group. Wetlands, rivers, lakes and national parks provide habitat for important species and have cultural and social value for Traditional Owners and local communities.

The draft proposed REZ stretches from south of Kerang to Swan Hill in the north, following the natural shape of Victoria's border. It includes parts of the Swan Hill, Gannawarra and Loddon local government areas and is transversed by the Loddon and Avoca Rivers. It also includes part of the corridor for the new VNI West transmission line and part of the existing 220 kV Kerang to Wemen line. These transmission lines, the existing terminal station at Kerang and the proposed VNI West terminal station at Tragowel provide an opportunity to coordinate project connections into the grid.

We considered many factors when refining the shape of the draft proposed REZ

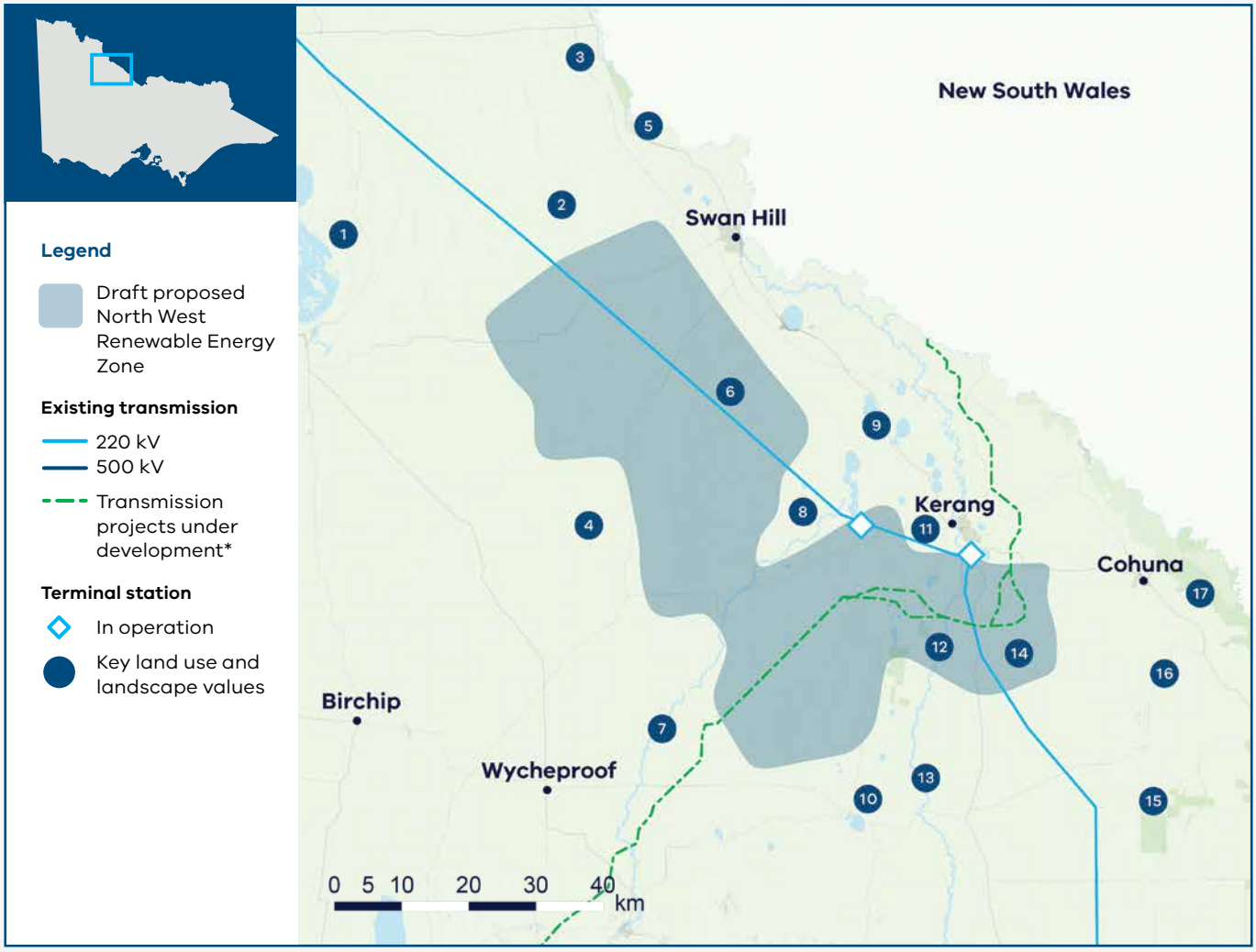
In addition to the overarching factors outlined in Table 6, we carefully considered regional and local factors and engagement feedback to help refine the REZ shape. These factors included but were not limited to:

- the environment and biodiversity
- cultural values
- transmission network capacity
- the region's solar and wind resources
- existing renewables projects close to the existing terminal stations at Kerang and Tragowel
- the compatibility of different farming practices with renewable energy infrastructure
- other land uses and natural resources
- regional development opportunities.

We are committed to having ongoing conversations with Wamba Wemba Aboriginal Corporation and affected First Peoples to incorporate further cultural heritage information into REZ development and subsequent VTPs, in alignment with the principle of self-determination.

Figure 18 shows a map of the draft proposed North West REZ, including some of the significant land use and landscape values that influenced its size and shape.

Figure 18: Draft proposed North West REZ



Key land use and landscape values

1 **Biodiversity/cultural/community:** Lake Tyrrell and surrounding sensitive landscape

2 **Mining:** Mining retention licence and mineral sands deposits

3 **Agriculture:** High agricultural productivity area with irrigated horticulture, dairy and cropping along the Murray River

4 **Biodiversity/cultural:** Lalbert Lake, Lalbert Creek and surrounding areas of sensitivity

5 **Biodiversity/cultural/community:** Murray River and surrounding sensitive landscapes

6 **Mining:** Multiple mine sites and mining retention licence

7 **Biodiversity/cultural:** Avoca River and surrounding areas of sensitivity

8 **Biodiversity:** Protected biodiversity area for native flora and fauna

9 **Biodiversity:** Kerang Lakes Ramsar-listed wetlands

10 **Biodiversity/cultural:** Wetlands and parks surrounding Boort

11 **Biodiversity:** Protected biodiversity area for native flora and fauna

12 **Flooding risk:** Floodplains across the Loddon River catchment area

13 **Biodiversity/cultural:** Loddon River and surrounding areas of sensitivity

14 **Agriculture:** High agricultural productivity area with irrigated horticulture, dairy and cropping within the Goulburn Murray Irrigation District

15 **Biodiversity/cultural/community:** Terrick Terrick National Park

16 **Biodiversity/cultural:** Wetlands and waterways with surrounding areas of sensitivity, including protected biodiversity areas

17 **Biodiversity/cultural/community:** Gunbower National Park and surrounding parks and wetlands

* This includes transmission projects defined as Committed and Anticipated or Actionable under the Australian Energy Market Operator's 2024 Integrated System Plan. This map displays the proposed alignment for Victoria – New South Wales Interconnector West (VNI West).

What we heard

Community feedback from this area focused on the importance of protecting agricultural land and other land uses, and concern over the local impacts associated with hosting infrastructure to supply power to urban areas. Community members raised concerns about potential impacts of widespread uncoordinated development and called for more transparency and consultation in planning processes. Community members also focused on the development of the VNI West project and its contribution to cumulative impacts for local communities. Feedback from the area near Birchip expressed strong opposition to hosting renewable energy infrastructure.

Feedback about biodiversity focused on protecting local wetlands and habitat for many species, including the wedge-tailed eagle.

Local governments voiced some support for the regional development opportunities associated with the energy transition but stressed the value of irrigated agricultural land.

What we did

In response to feedback about the importance of farmland, we considered agricultural land uses when shaping the draft proposed REZ, including areas of irrigated farmland along the Murray River and near Tragowel and Kerang terminal stations. Engagement with agriculture industry stakeholders identified some areas of irrigated farmland as less compatible with renewable energy infrastructure, and these were taken into account.

We also considered rivers, lakes, wetland systems, parks and reserves, particularly near the Murray River, aiming to protect sites such as Koorangie Wildlife Reserve and Korrak Korrak Nature Conservation Reserve. These areas include high cultural and biodiversity values and support regional and local tourism. Some wetlands and parks near Kerang fall within the draft proposed REZ, and will need to be carefully considered during REZ and project design.

Community feedback about the importance of consultation and calls for a more coordinated approach to development are informing our approach to new network access arrangements, and will continue to shape decisions throughout REZ declaration and design.

South of Swan Hill, a limited area of mineral sands deposits is also within the draft proposed REZ, with a number of mining projects currently under development. These will need to be considered by developers as part of project planning.

While there is strong developer interest and resource potential outside of the draft proposed REZ, this was considered against community feedback, land use and biodiversity concerns. The draft proposed REZ seeks to balance these factors and is designed to accommodate new renewable generation near existing transmission infrastructure and allow coordinated connections into the network at Tragowel through the 500 kV line. Several planned projects fall within the draft proposed REZ boundary.

Central North

The draft proposed Central North REZ is in a location with wind resources that can provide diversity to Victoria's energy mix, as well as some solar resources. The area includes several major rivers, waterways, regionally important wetlands and lakes, and farmland. It sits within the RAP boundaries of Yorta Yorta Nation Aboriginal Corporation, Dja Dja Wurrung Clans Aboriginal Corporation, and Taungurung Land and Waters Council.

The draft proposed REZ is located between Bendigo and Shepparton, surrounded by Rushworth, Rochester and Kyabram. It includes the town of Elmore, and will cover parts of the Campaspe, Greater Shepparton and the City of Great Bendigo local government areas. The existing 220 kV transmission line from Fosterville to Shepparton runs along its southern border, and provides potential for coordinated connections for future generation.

Agricultural production sustains the local economy and communities, and the draft proposed REZ includes some dairy and cropping farmland, and vineyards. A section of the Campaspe River travels through its western side, and the Mount Pleasant and Cornella creeks are other important waterways that transverse through the area.

We considered many factors when refining the shape of the draft proposed REZ

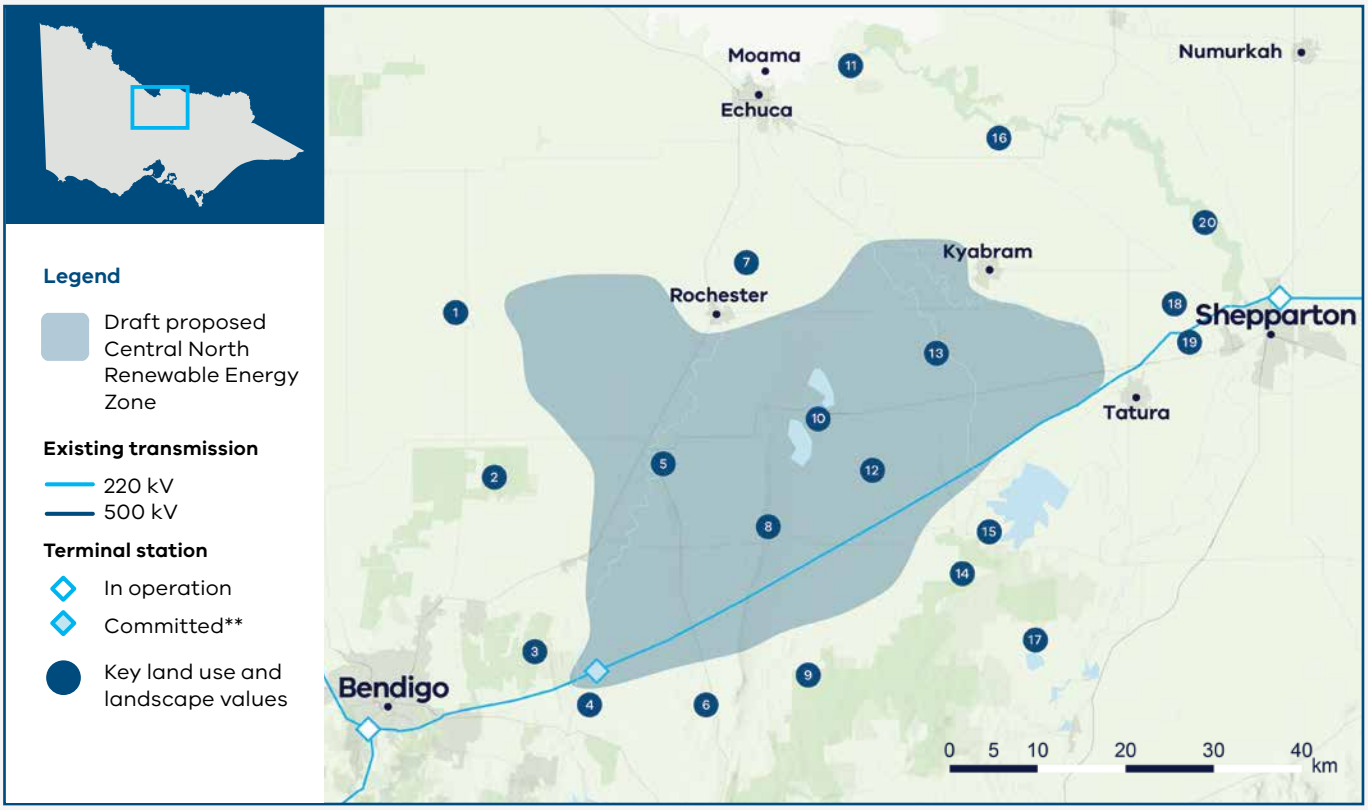
In addition to the overarching factors outlined in Table 6, we carefully considered regional and local factors and engagement feedback to help refine the REZ shape. These factors included but were not limited to:

- the importance of irrigated farmland and compatibility of farming practices with renewable energy infrastructure
- national and state parks and conservation reserves south west towards Bendigo and south east towards Heathcote/Rushworth
- areas of high cultural, ecological and community significance near the Murray River
- regional economic development opportunities
- the potential of local wind resources to allow for diversity within Victoria's generation mix.

We are committed to having ongoing conversations with Yorta Yorta Nation Aboriginal Corporation, Dja Dja Wurrung Clans Aboriginal Corporation, and Taungurung Land and Waters Council to incorporate further cultural heritage information into REZ development and subsequent VTPs, in alignment with the principle of self-determination.

Figure 19 shows a map of the draft proposed Central North REZ, including some of the significant land use and landscape values that influenced its size and shape.

Figure 19: Draft proposed Central North REZ



Key land use and landscape values

1 **Flooding risk:** Floodplain and land subject to inundation

2 **Biodiversity/cultural/community:** Greater Bendigo National Park and protected biodiversity areas

3 **Biodiversity:** Mount Sugarloaf Nature Conservation Reserve and surrounding parks and reserves, home to native flora and fauna

4 **Mining:** Active mine sites and Extractive Industry Interest Areas

5 **Biodiversity/cultural:** Campaspe River and surrounding areas of sensitivity

6 **Biodiversity:** Parks, reserves and state forests, home to native flora and fauna

7 **Flooding risk:** Floodplain and land subject to inundation

8 **Biodiversity/cultural/community:** Corop Wetlands Cultural Waterscape, connecting significant waterways, wetlands and landscapes including the Corop wetlands complex in the north, extending south east to Reedy Lake and the forested hills around Rushworth and Whroo, and including the entire Mount Camel Range to the west

9 **Biodiversity/cultural/community:** Heathcote Graytown National Park and surrounding parks, reserves and state forests, including protected biodiversity areas for native flora and fauna

10 **Biodiversity/cultural:** Corop wetlands complex including Lake Cooper, Greens Lake, Gaynor Swamp, Wallenjoe Swamp, Mansfield Swamp and surrounding parks and reserves

11 **Biodiversity/cultural:** Murray River and surrounding sensitive landscapes

12 **Biodiversity:** One Tree Swamp and Two Tree Swamp Nature Conservation Reserves, including biodiversity protected areas

13 **Agriculture:** High agricultural productivity area within the Goulburn Murray Irrigation District, particularly irrigated dairy and cropping

14 **Biodiversity/cultural/community:** Corop Wetlands Cultural Waterscape, see value 8 for full description of this waterscape.

15 **Biodiversity/cultural/community:** Waranga Basin and parks, reserves and state forests around Rushworth and Whroo

16 **Biodiversity/cultural:** Goulburn River and surrounding areas of sensitivity

17 **Biodiversity/cultural/community:** Reedy Lake Nagambie Wildlife Reserve

18 **Community:** Area of higher aggregated dwelling density around Shepparton

19 **Agriculture:** High agricultural productivity area within the Goulburn Murray Irrigation District, particularly irrigated dairy and cropping

20 **Biodiversity/cultural/community:** Lower Goulburn National Park and surrounding landscapes, including biodiversity protected areas

** This includes new terminal stations on the Victorian Declared Shared Network that are proposed to be operational in the coming years, as identified by AEMO Victorian Planning in its Terminal Stations in Victoria report dated 2 September 2024.

What we heard

Community feedback from this region focused heavily on minimising impacts on agriculture and land use, followed by protecting the natural environment and biodiversity. Concerns were also raised about natural hazard vulnerability, particularly flooding, and the impact new infrastructure might have during future flood events.

Local government feedback stressed the major concern in the region was protecting the irrigation district and water security. Engagement with agriculture sector stakeholders found that farmland across irrigation districts had less opportunity to co-locate wind and solar infrastructure due to the complexity and intensity of operations. However, it was suggested that potential projects in these areas be considered case by case. Feedback was also received about areas of high rural dwelling density and projected growth areas. There was support from councils for the regional economic benefits that increased investment in renewable energy infrastructure could bring.

What we did

The draft proposed REZ aims to protect productive farmland and key areas of biodiversity, cultural, environmental and community significance. We also considered the positive regional development opportunities for the region when designing the draft proposed REZ location.

The northern boundary has taken into account irrigated farmland in the Goulburn Murray Irrigation District. The district contains an extensive network of irrigation channels that supply water to farmers. Much of the irrigation district lies outside the draft proposed REZ, recognising irrigated agriculture is high-productivity and supports local communities. As a trade-off, some areas within the irrigation district have been included in the draft proposed REZ to allow more options for future project investigations. All proposed projects within REZs will still be subject to planning approvals and any proposed projects in the Goulburn Murray Irrigation District will be adequately assessed.

The area surrounding Shepparton with a relatively high rural dwelling density was taken into account when identifying the eastern boundary of the draft proposed REZ. The region's waterways and flat terrain contribute to higher flooding risk in some areas, particularly in the north of the draft proposed REZ. This will require further project-level assessments within the REZ.

Gippsland

The draft proposed Gippsland REZ is in an area of the Latrobe Valley with significant transmission network capacity and good wind resources. Its footprint includes agricultural land and forestry. It sits within the RAP boundaries of the Gunaikurnai Land and Waters Aboriginal Corporation. The existing transmission network capacity was built to connect coal-fired power in the valley. Recent times have seen growing interest in wind and solar projects in Latrobe and Wellington Shires.

The draft proposed Gippsland REZ for onshore renewable generation stretches from Morwell in the west towards Sale in the east. It will cover parts of the Wellington and Latrobe local government areas. The proposed location provides potential for coordinated connections into the 500 kV transmission network around Loy Yang. It is designed to use existing capacity in the transmission network to support new onshore generation.

The wider surrounding region includes farmland, high biodiversity values, areas of natural beauty and significance, and key tourism destinations. The region has one of the state's most valuable dairy-farming areas with dairy farms across the Latrobe Valley and the Macalister Irrigation District around Maffra. Horticulture is also an important land use.

Australia's first declared offshore wind area is located off the coast of Gippsland and VicGrid is coordinating development of the transmission that will bring offshore wind energy from the coast to the Latrobe Valley. Part of the draft proposed Gippsland REZ overlaps with the proposed offshore wind transmission infrastructure. The detailed design of the access scheme and Grid Impact Assessment frameworks are being finalised. However, it is currently anticipated that new onshore generation in the REZ will connect to existing connection hubs in the Latrobe Valley rather than connecting to the new offshore wind transmission line. For more information on REZ access and connection arrangements, see Section 9.

We considered many factors when refining the shape of the draft proposed REZ

In addition to the overarching factors outlined in Table 6, we carefully considered regional and local factors and engagement feedback to help refine the REZ shape. These factors included but were not limited to:

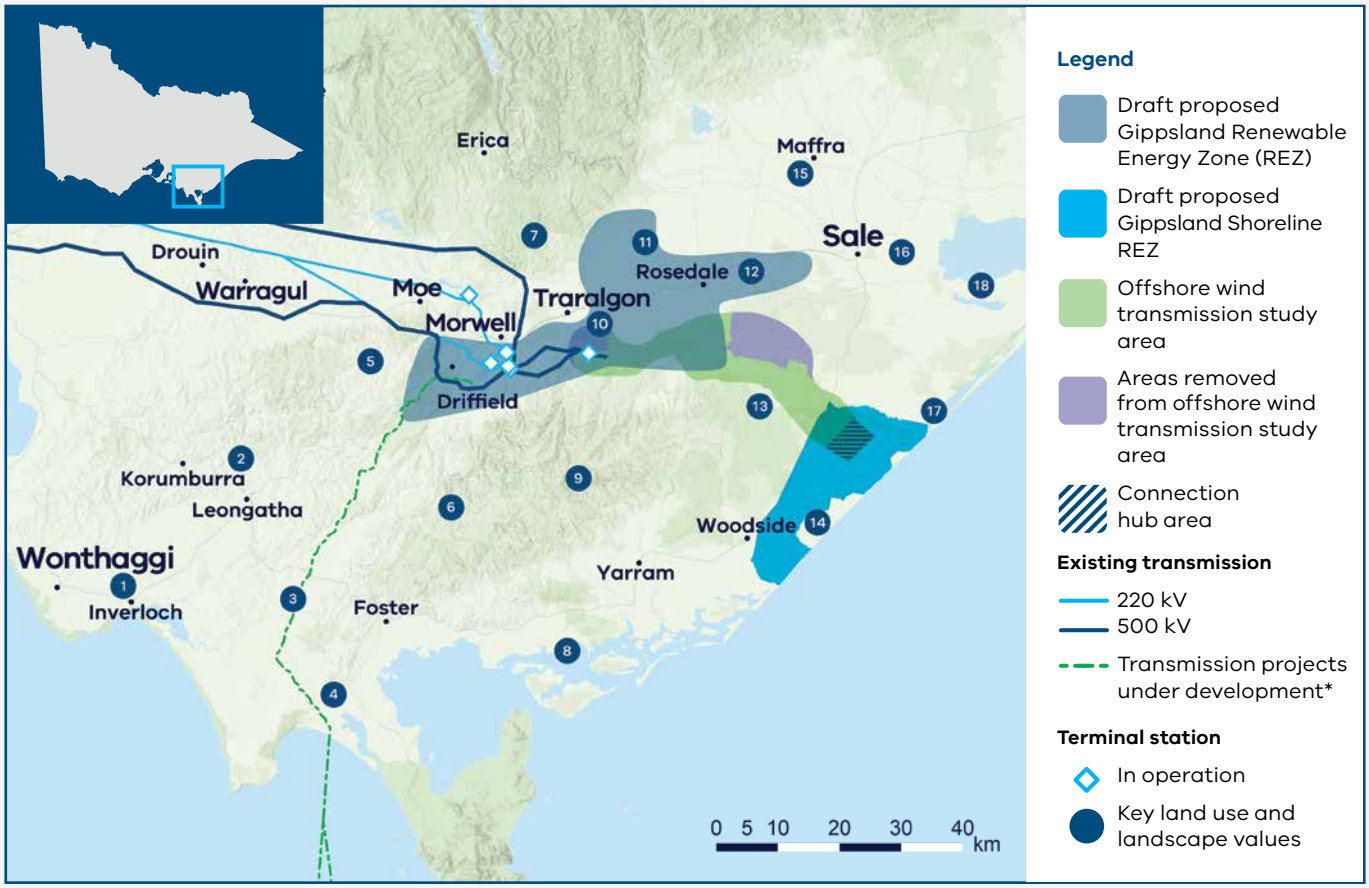
- biodiversity and the natural environment
- farmland, particularly local dairy production, and compatibility of farming practices with renewable energy infrastructure
- the Macalister Irrigation District
- national and state parks
- habitat for important species
- areas of high cultural, ecological and community significance nearer the coast
- wind and solar generation projects currently proposed in Gippsland
- offshore wind development
- transmission network capacity
- supporting the region's workforce as coal-fired power retires.

We are committed to having ongoing conversations with Gunaikurnai Land and Waters Aboriginal Corporation to incorporate further cultural heritage information into REZ development and subsequent VTPs, in alignment with the principle of self-determination.

A separate Gippsland Shoreline REZ is being proposed to facilitate connection of offshore wind generation to Victoria's transmission network. Onshore generation is not intended to be hosted in this area. More information on the draft proposed Gippsland Shoreline REZ is in Section 7.

Figure 20 shows a map of the draft proposed Gippsland REZ, including some of the significant land use and landscape values that influenced its size and shape.

Figure 20: Draft proposed Gippsland REZ



Key land use and landscape values

1 **Community:** Bass Coast Distinctive Area Landscape and wind farm prohibition area (Victorian Planning Provisions)

2 **Community:** Area of higher aggregated dwelling density in west and southwest Gippsland

3 **Agriculture:** Medium to high productivity agriculture across southwest Gippsland, particularly dairy farming

4 **Biodiversity/cultural/community:** Wilsons Promontory and surrounding significant and sensitive landscape

5 **Agriculture:** High agricultural productivity area and lower compatibility with renewables around Thorpdale, particularly horticulture farming

6 **Land use:** Restricted and non-restricted use plantation land across the Strzelecki ranges and broader region

7 **Biodiversity:** State parks and forests, home to native flora and fauna

8 **Biodiversity:** Corner Inlet Ramsar-listed wetlands

9 **Biodiversity/cultural/community:** Strzelecki Ranges including Tarra-Bulga National Park and surrounding parks and forests, home to native flora and fauna

10 **Mining:** Active mine site

11 **Agriculture:** Medium to high agricultural productivity area adjacent to the Macalister Irrigation District

12 **Biodiversity/cultural:** Latrobe River and surrounding areas of sensitivity

13 **Biodiversity/cultural:** Mullungdung State Forest and Stradbroke Flora and Fauna Reserve, home to native flora and fauna

14 **Biodiversity/cultural:** Coastal wetlands and protected biodiversity area for native flora and fauna

15 **Agriculture:** High agricultural productivity area within the Macalister Irrigation District, including dairy farming

16 **Land use:** Height restrictions associated with the Royal Australian Air Force base

17 **Biodiversity/cultural:** Gippsland Lakes Coastal Park and Ramsar-listed wetlands

18 **Biodiversity/cultural:** Lake Wellington and surrounding sensitive areas

* This includes transmission projects defined as Committed and Anticipated or Actionable under the Australian Energy Market Operator's 2024 Integrated System Plan. This map displays the proposed alignment for Marinus Link.

What we heard

Feedback focused on the importance of protecting biodiversity and the natural environment, followed by minimising impacts on agriculture and land use. Feedback reflected strong regional pride in the natural beauty of the area and the rich farming tradition. Concerns included protecting the habitat of the giant Gippsland earthworm, Wilsons Promontory, and important agricultural areas including dairy farms in South and West Gippsland, along the coast and in the Macalister Irrigation District south of the Great Dividing Range.

Community members and local governments asked us to consider South Gippsland's high dwelling density, which adds complexity to developing wind projects. Some feedback focused on personal experiences of stress related to the energy transition, reflecting local impacts of the impending retirement of coal-fired power stations, offshore wind development and significant existing and proposed local renewable projects. Other considerations included using existing transmission infrastructure in the Latrobe Valley to support new renewable generation. Local governments also expressed support for regional development opportunities that renewable energy infrastructure could bring, provided regional concerns were addressed.

There was also feedback from the forestry industry about potential co-location opportunities for wind farms in certain circumstances. In addition, considerations were raised about airspace used by the Royal Australian Air Force (RAAF) base in East Sale.

What we did

We considered important agricultural areas, in particular dairy farming areas in the south, west and the Macalister Irrigation District when shaping the draft proposed REZ. Through engagement with agriculture industry stakeholders, we identified dairy as a farming practice that is less compatible with wind and solar infrastructure. Some freehold plantation land is included in the draft proposed REZ, following feedback.

The size and location of the draft proposed Gippsland REZ takes into account South Gippsland's high dwelling density and the habitat of the giant earthworm. It has been shaped by significant landscapes including along the Bass Coast, Wilsons Promontory, the Strzelecki ranges and coastal reserves and wetlands.

The draft proposed REZ's proximity to the Royal Australian Air Force Base East Sale and other aviation activities means that wind projects will need to consider and propose mitigations to potential aviation impacts in the planning stage. VicGrid will continue to work with the Department of Defence and other stakeholders on development of the draft proposed REZ.

Gippsland has several areas with planning scheme restrictions designed to maintain access to brown coal reserves. A portion of these areas overlap with the draft proposed REZ and the restrictions will need to be worked through as part of declaring and eventually developing a REZ.

Areas further to the east were also considered due to the potential for regional economic development, but distance from required transmission capacity meant the draft proposed REZ needed to be located closer to existing transmission.

The draft proposed REZ balances complex land use issues across the region, while also providing coordination with planned transmission capacity and connection points to unlock Victoria's offshore wind potential.

6.3 Next steps for finalising proposed REZs

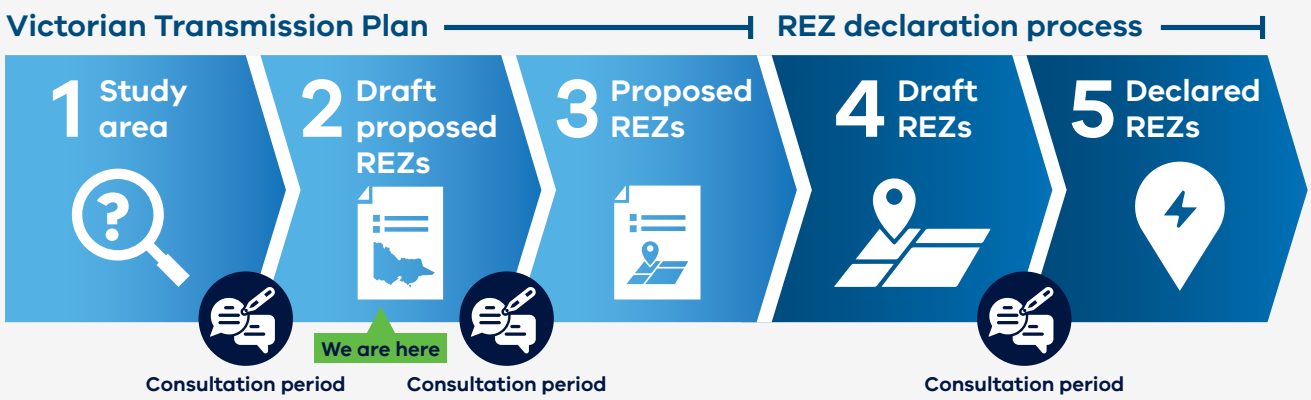
We are now inviting feedback on the draft proposed REZs as part of public consultation on the draft 2025 VTP, before release of the final VTP later this year. See Section 11 for more information on how to provide your feedback.

The next step after the release of the final 2025 VTP is to begin the formal REZ declaration process (see the box below). There will be opportunity for further engagement with communities and industry as part of this process.

Once REZs are declared, VicGrid will consult with industry on proposed network access arrangements and work with communities and First Peoples to ensure a continued voice in the development of renewable energy infrastructure. There will be dedicated landholder, Traditional Owner and community benefits arrangements in declared REZs. See Section 9 for more information on what to expect as REZs are developed.

The REZ declaration process

Once the 2025 VTP is finalised, the Minister for Energy and Resources can consider whether to proceed with formal declaration of a proposed REZ. The REZ declaration process requires that the Minister make a declaration in a formal order (Order). The Order will set out key information on the REZ to be declared, including a map of the REZ boundaries and the intended transmission hosting capacity within the REZ. As part of this process, a draft of the Order showing the proposed REZ will be placed on public notice for a minimum of 6 weeks, enabling the community to provide any comments and submissions. The Minister must consider any submissions when determining whether the REZ should be declared under an Order.



PART B

7. Planning for offshore wind connections

The 2025 Victorian Transmission Plan (VTP) process takes into account Victoria's targets for offshore wind generation and the planning that is already under way to develop offshore wind in Victoria.

The Australian Government has declared 2 offshore wind areas in Victoria, off the coast of Gippsland and in the Southern Ocean off the coast of Western Victoria. Planning is most advanced in Gippsland, and the next step is to set out suitable shoreline locations for offshore wind developers to connect their infrastructure to the grid.

As part of the draft 2025 VTP, we are seeking feedback on a draft proposed shoreline renewable energy zone (REZ) in the south of Gippsland. This draft proposed shoreline REZ for offshore wind is different to the 7 draft proposed REZs we have identified to host onshore wind and solar generation. It sets out a designated area for offshore wind developers to site their onshore connection infrastructure, rather than for hosting new onshore generation. The wind turbines themselves will be hosted in Commonwealth waters off the coast of Victoria.

7.1 Planning is well under way towards Victoria's offshore wind targets

The Victorian Government has set ambitious offshore wind generation targets of at least 2 GW of generation capacity by 2032, 4 GW by 2035 and 9 GW by 2040.

Work is well under way towards these targets. In July 2024 the Australian Government granted feasibility licences for 12 potential projects in the Gippsland offshore wind declared area, and in February 2025 a feasibility licence was awarded in the Southern Ocean declared area.

VicGrid is responsible for planning the shared transmission infrastructure needed to connect these future projects to the grid, and preparation for a new Gippsland shared transmission line is already under way to support the first 2 GW of offshore wind. This will avoid the 'spaghetti effect' of multiple private transmission lines crossing the landscape, reducing the infrastructure costs that are passed on in consumers' power bills and helping to minimise impacts on the environment.

The shared transmission infrastructure that VicGrid is planning will connect from the Latrobe Valley to a new connection hub near Giffard. Offshore wind generators are responsible for planning the connection of their offshore infrastructure to the connection hub that VicGrid is developing. For more details, see Section 7.2.

Additional transmission infrastructure will be required to accommodate offshore wind generation beyond the first 2 GW of offshore wind capacity in Gippsland, and the need for this has been identified as part of the draft 2025 VTP (see Section 8). Further work will be done to identify the appropriate route for this infrastructure to ensure it is in place to enable achievement of Victoria's offshore wind targets. The draft VTP also proposes upgrades to transmission lines in the Portland area to be carried out in the 2030s to accommodate offshore wind in the Southern Ocean.

Offshore wind transmission in Gippsland

We are now planning the first 2 GW of new transmission infrastructure needed to connect offshore wind in Gippsland. Our work to-date has included:

Strategic options assessment

In 2023, we carried out a strategic options assessment to identify and refine the longlist of feasible transmission project options for both Gippsland and the Southern Ocean. The assessment method was informed by consultation feedback and the principles of the Victorian Transmission Investment Framework (VTIF). It considered social, cultural, economic, environmental and technical factors to evaluate project options.

Gippsland transmission study area and refinement

In March 2024, VicGrid published the Offshore Wind Energy Transmission Gippsland Options Assessment Report, which identified the preferred study area and preferred transmission technology for connecting offshore wind energy generated off the coast of Gippsland into Victoria's electricity network.

The Gippsland transmission study area starts approximately 6 km from the coast near Giffard and travels north-west past Stradbroke West to Willung, across to Flynns Creek and then to the Loy Yang Power Station. The corridor is about 3 km wide at its narrowest point and up to 12 km at its widest point. The proposed transmission technology is a double circuit 500 kV overhead transmission line.

In December 2024, VicGrid completed preliminary desktop investigations to narrow the study area to areas suitable for further investigations. Areas deemed not suitable to host transmission were ruled out due to a range of factors including the presence of highly sensitive protected species, technical constructability or feasibility challenges.

VicGrid is now working closely with landholders to understand unique features and values of their properties to further refine the study area.

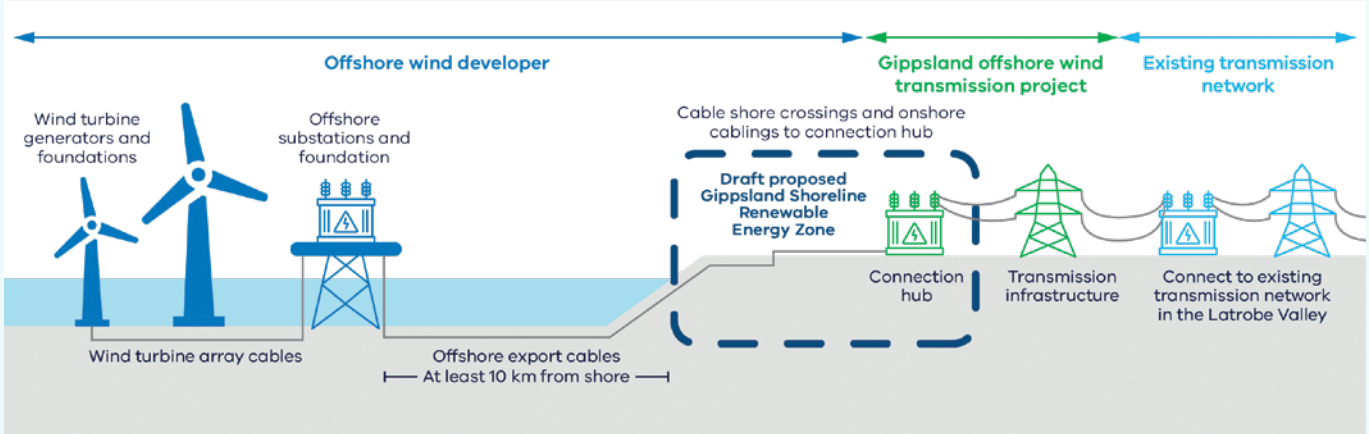
Environmental assessments

In September 2024, the Minister for Planning declared the Gippsland Offshore Wind Transmission project as public works requiring the preparation of an Environment Effects Statement (EES). This process is currently under way and will involve community consultation and an independent panel review to inform the Minister's assessment of the project's environmental effects. The Minister's assessment will then inform decision-making required under other legislation, including the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

Procurement

We are now seeking a delivery partner to work alongside VicGrid to design, build and operate the new transmission line. In December 2024, VicGrid released an invitation for Expressions of Interest (EOI) from leading transmission design and delivery providers with a track record of working with host communities. We expect to complete procurement and appoint a delivery partner by late 2025, in time to support the project's design and environmental assessments.

Figure 21: Offshore wind infrastructure in Gippsland



7.2 The draft proposed Gippsland Shoreline REZ is the next critical step

Offshore wind developers in Gippsland will be required to connect to VicGrid's Giffard connection hub via underground cables to access the shared transmission infrastructure.

While offshore wind developers are responsible for planning of their individual projects, VicGrid is committed to taking a coordination role in the area between the coast and the Giffard connection hub to minimise impacts on coastal communities and landholders. A proposed new shoreline REZ will set out a designated area that enables offshore wind developers to determine suitable routes to the transmission connection hub, while minimising impacts on nearby towns and landscapes.

Establishing the shoreline REZ is also a key step to provide certainty to offshore wind developers on their ability to connect to the transmission network. VicGrid will soon consult on a proposed access scheme for the Gippsland Shoreline REZ. This draft access scheme will set out the intended 2 GW hosting capacity for offshore wind in the Gippsland Shoreline REZ and the process for allocating access to this capacity, along with other requirements. Only offshore wind projects will be eligible to participate in the shoreline REZ.

For more information on REZ access schemes, see Section 9.

7.3 Where is the draft proposed Gippsland Shoreline REZ?

The draft proposed Gippsland Shoreline REZ is located in the region's south, near the towns of Woodside and Giffard, and between the coastline and the South Gippsland Highway.

The proposed location of the Shoreline REZ has been developed as part of our work to identify a transmission study area and in consultation with prospective offshore wind developers. It takes account of a range of factors, including:

- potential shore crossing locations where offshore wind project export cables will cross the shore
- providing sufficient space for offshore wind developers to plan suitable cable routes to the Giffard connection hub
- avoiding residential areas
- avoiding environmentally and culturally sensitive areas including waterways and waterbodies, areas of high biodiversity value and protected biodiversity value
- minimising major arterial road crossings such as the South Gippsland Highway.

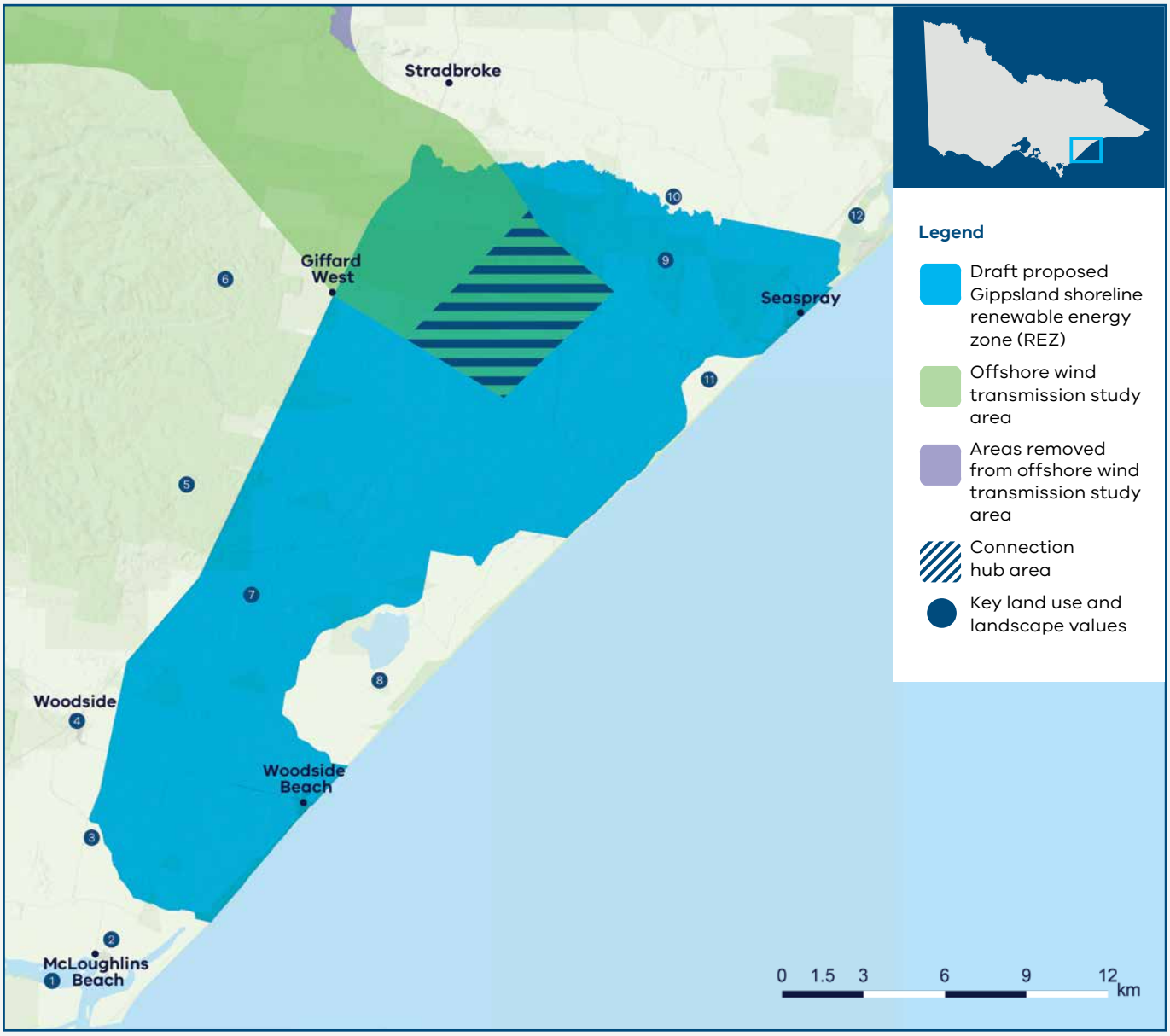
There will be designated areas within the draft proposed Gippsland Shoreline REZ where offshore wind export cables are allowed to cross the shore.

VicGrid is coordinating further work to identify suitable shore crossing locations for offshore wind projects which will facilitate greater protection of environmentally and culturally sensitive areas along the coast.

The draft proposed Gippsland Shoreline REZ sits within the boundaries of the Gunaikurnai Land and Waters Aboriginal Corporation and the Wellington Shire local government area.

The location of the draft proposed Gippsland Shoreline REZ is illustrated in the map on the next page.

Figure 22: Draft proposed Gippsland Shoreline REZ



Key land use and landscape values including REZ boundary considerations

1. **Biodiversity:** Corner Inlet Ramsar-listed wetlands
2. **Community:** McLoughlins Beach residential area
3. **Biodiversity/cultural:** Bruthen Creek
4. **Community:** Woodside town and residential area
5. **Biodiversity/cultural:** Mullungdung Flora and Fauna Reserve, home to native flora and fauna
6. **Biodiversity/cultural:** Mullungdung State Forest and Stradbroke Flora and Fauna Reserve, home to native flora and fauna
7. **Biodiversity:** Protected biodiversity area
8. **Biodiversity/cultural:** Coastal wetlands and protected biodiversity area
9. **Biodiversity:** Area containing high biodiversity values
10. **Biodiversity/cultural:** Merriman creek
11. **Biodiversity/cultural:** Lake Denison wetlands
12. **Biodiversity/cultural:** Gippsland Lakes Coastal Park and Ramsar-listed wetlands

PART B

8. The draft optimal development pathway for Victoria

We have identified the transmission network upgrades that will be needed to support Victoria's energy transition over the next 15 years. We've grouped these investments into work programs, and identified when each will be needed to support renewable energy zone (REZ) development and maintain energy security and reliability.

Together, the programs and their timings make up the draft optimal development pathway.

We developed 3 candidate development pathways, each designed to meet a different scenario of future energy needs. The one that was most robust to future uncertainty and provided greatest net benefit for Victorians was selected as the draft optimal development pathway. This decision took into account network reliability, keeping costs as low as possible for consumers, and minimising social and environmental impacts. For more information about the 3 scenarios we considered, see Section 2.

8.1 The draft optimal development pathway

The draft optimal development pathway sets out 7 programs of transmission investments to be delivered from 2025 to 2040. These programs are designed to support development of the 7 draft proposed REZs, taking into account the expected types and locations of new generation and storage projects over the next 15 years.

The proposed programs will increase capacity in important parts of Victoria's transmission network and maintain network security and reliability. They are designed to ensure a smooth transition as coal-fired power plants close and Victoria's electricity demands grow.

The draft optimal development pathway builds on projects that are already under development or in construction. This includes Western Renewables Link (WRL), Victoria to New South Wales Interconnector West (VNI West), Marinus Link Stage 1 and the transmission infrastructure required for the first 2 GW of offshore wind in Gippsland.

Some of the proposed programs are needed urgently to prepare for coal-fired power station retirements and avoid bottlenecks in delivering new generation and storage infrastructure, including new renewable projects supported by the Australian Government's Capacity Investment Scheme. Of the 7 programs, 2 are needed by 2030, 3 are needed by 2035 and 2 are needed by 2040.

The draft optimal development pathway supports the achievement of the Victorian Government's targets for renewable energy, offshore wind and storage. Two of the transmission programs have been designed to unlock offshore wind in the Southern Ocean and Gippsland declared areas.

Where possible, we prioritised upgrades along existing transmission lines. This minimises impacts on landholders, regional communities and the environment and limits cost impacts on consumer power bills. In this VTP we are proposing just 4 new transmission projects across 3 programs: a second radial line and tie in loop in Gippsland to facilitate offshore wind, a new line between Sydenham and Tarrone, a new line between Truganina and Deer Park, and an additional short line between Hazelwood and Yallourn. The draft optimal pathway includes upgrading about 430 km of existing lines and about 380 km of new lines.

Table 8 on the next page describes each of the transmission programs, their timing, and why they are needed. For a full description of the proposed projects in each of the 7 programs, see Appendix A.

The draft optimal pathway is designed to meet the energy needs that would occur in scenario 1. It is also robust to the other possible futures considered in scenarios 2 and 3, should future energy needs change. In this regard, the pathway is flexible to changes in future energy demand and transmission programs can be brought forward if the need arises, or deferred. If energy demand increases rapidly, as in scenario 2, we can add 3 additional programs to the optimal pathway to address the need for more generation in the draft proposed REZs. For more information on how robustness analysis can be used for different scenarios, see Appendix D.

Investments to support system strength

System strength is a characteristic of an electric power system that ensures stable voltage and operation during faults or disturbances, to keep generators online and protect the system from events such as lightning strikes.

System strength will be critical in the future as Victoria transitions to more renewable generation. Without coal-fired generation, system strength can be provided by synchronous condensers – large rotating machines – to regulate voltage and network stability.

High-level assessments undertaken by VicGrid indicate there may be need for additional investments into system strength statewide and in the Latrobe Valley. There are different regulatory mechanisms to support the delivery of system strength and further analysis will be undertaken to further understand the need and determine the most appropriate regulatory mechanism for their delivery. Additional details on potential investments to support system strength are included in Appendix A.

The 7 priority programs below describe what is needed over and above existing transmission projects that are already under development across Victoria.

Projects already under development

The following projects have been factored in as inputs to the 2025 VTP and are being progressed:

- Marinus Link Stage 1
- Victoria to New South Wales Interconnector West
- Western Renewables Link
- Gippsland offshore wind transmission stage 1

Table 8: The 7 new priority programs of transmission upgrades

Program	Why it is needed	Proposed year needed by
1 Western Victoria reinforcement program A collection of 4 network augmentations and upgrades of existing infrastructure.	To support connection of onshore wind and solar generation in the draft proposed Wimmera Southern Mallee, Grampians Wimmera, Central Highlands and South West renewable energy zones and reinforce the network supply to metropolitan Melbourne.	**2028**
2 Eastern Victoria reinforcement program A suite of network augmentations and upgrades of existing infrastructure, as well as an additional line between Hazelwood and Yallourn.	To meet increased demand in eastern metropolitan Melbourne, respond to shifting supply from the east of Victoria to the west of Victoria and ensure connection and security of supply from the Gippsland and Central North draft proposed renewable energy zones and the Gippsland offshore wind area.	**2028 – 2029**
3 North West strengthening program Replacement of sections of the existing single circuit transmission with a new high-capacity double circuit line.	To support additional generation in the Wimmera Southern Mallee, Grampians Wimmera and North West draft proposed renewable energy zones and facilitate its transfer to areas of high energy demand.	**2035**
4 South West expansion program A new double circuit 500 kV line in South West Victoria.	To meet significant demand for high-quality wind generation in Victoria's west, including additional generation in the South West and Central Highlands draft proposed renewable energy zones.	**2033**
5 Gippsland offshore wind transmission stage 2 program A new transmission loop to support offshore wind.	Building on the first Gippsland offshore wind transmission project, this new program is required to connect additional offshore wind generation in the Gippsland offshore wind area to meet Victoria's 2035 and 2040 offshore wind targets.	**2033 – 2038**
6 Latrobe Valley strengthening program New power flow controllers and dynamic load rating devices in the Latrobe Valley.	To allow for easier integration of wind and solar into the grid, manage significant power flows and address network congestion. It supports connection and transfer of generation from the Gippsland draft proposed renewable energy zone and Gippsland offshore wind area.	**2034 – 2035**
7 Offshore wind upgrade Uprating of existing lines from Heywood to Portland.	To connect offshore generation from the Southern Ocean offshore wind area to Portland.	**2038**

Why Victoria's transmission network needs to change

The demands on Victoria's transmission network are changing rapidly. We urgently need to modernise our grid to connect new sources of energy supply and keep up with changing patterns of energy consumption across the state. These changing demands are influenced by:

- new supply locations as the energy mix shifts from coal to renewables, including offshore wind
- increasing development of variable renewable energy such as wind and solar, which alters system security and strength requirements
- growth of consumer energy resources (CER) such as rooftop solar, batteries and electric vehicles (EVs), which is contributing to increasing two-way energy flows as well as lower levels of minimum demand
- increasing electricity consumption and peak electricity demand during the energy transition.

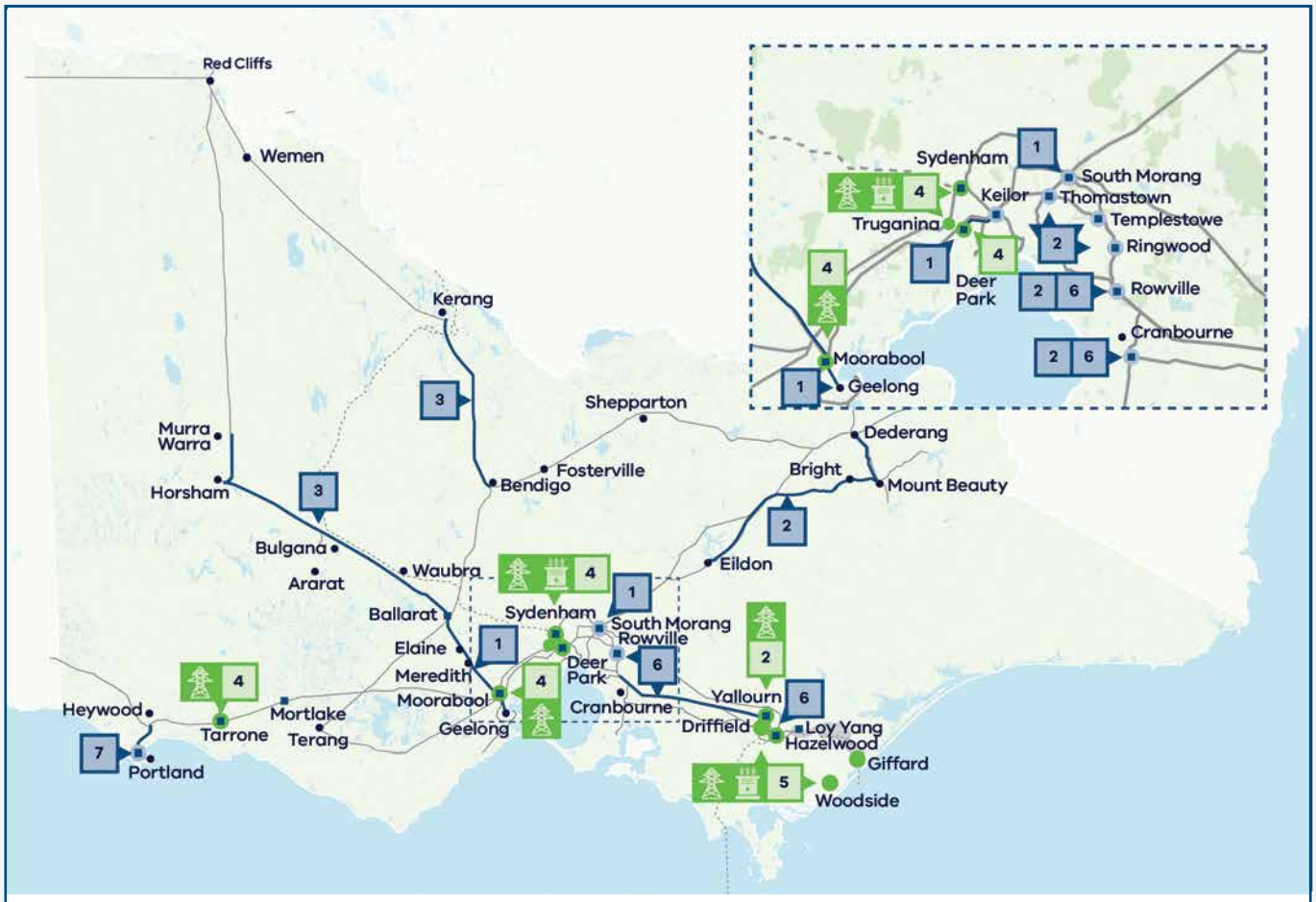
8.2 Where are the proposed transmission programs?

The proposed transmission programs are located across Victoria, linking draft proposed REZs and offshore wind areas to demand centres and the Greater Melbourne area.

Two of the programs are located primarily in Greater Melbourne and the remaining 5 are located primarily in Victoria's regions, with connecting infrastructure in Greater Melbourne. For a map of project locations, see Figure 23.

While most programs involve upgrading existing infrastructure, 3 of the programs need new infrastructure that is likely to require new transmission easements to be developed. For new developments, the VTP has identified a need for these projects but has not yet identified a preferred route. VicGrid will consult publicly to determine a study area for these projects before identifying preferred corridors.

Figure 23: The draft optimal development pathway program map



Legend

- New infrastructure
- New transmission connection point (specific location to be determined through consultation with communities, landholders and First Peoples)
- New transmission line and substation (specific location to be determined through consultation with communities, landholders and First Peoples)
- Upgrades to existing infrastructure
- Works occurring within an existing substation
- Existing substation
- Town location
- Upgrade to existing transmission network
- Existing transmission network
- Transmission projects under development*
- Study area for Gippsland offshore wind transmission project

Victorian Transmission Plan program** number

1 Western Victoria reinforcement program

2 Eastern Victoria reinforcement program

3 North West strengthening program

4 South West expansion program

5 Gippsland offshore wind transmission stage 2 program

6 Latrobe Valley strengthening program

7 Offshore wind upgrade

** Each program includes multiple transmission projects. See Appendix A for further details about the proposed works included in each program.

* This includes transmission projects defined as Committed and Anticipated or Actionable under the Australian Energy Market Operator's 2024 Integrated System Plan. This map displays proposed alignments for Marinus Link, Victoria to New South Wales Interconnector West (VNI West), Western Renewables Link and the Gippsland offshore wind transmission stage 1.

8.3 What other options did we consider?

Three candidate development pathways were developed to meet the energy system needs in each of the 3 scenarios. The candidate pathway developed for scenario 1 has been identified as the draft optimal development pathway.

This section outlines the candidate pathways designed for scenarios 2 and 3. Where multiple options were available, we evaluated these, to ensure the best project was included to address the identified needs. We used the transmission planning considerations outlined below to assess the alternatives and select the project that would be tested as part of the candidate pathway. For more details about projects and their alternatives, see Appendix A.

The 5 factors we used to assess potential transmission projects

There were 5 key considerations when prioritising potential transmission projects for inclusion in the candidate development pathways. See Appendix A for details.

Network performance (reliability, security, thermal capacity, curtailment)

Indicative delivery cost

Land use, community acceptance and Traditional Owner perspectives

Delivery timing and constructability

Long-term future network requirements

We also completed an initial assessment of non-network solutions in the development of the candidate development pathways (see the box on the next page). Non-network solutions may reduce, defer or replace the need for network investment, reducing system costs and the impact on consumers.

Non-network solutions

The Australian Energy Market Operator (AEMO) defines a non-network option as a "solution or service that provides an alternative to investment in transmission system apparatus, such as transmission lines or substations."

Battery storage is an important type of non-network solution that we have assessed in developing the candidate development pathways. The VTP energy market modelling optimises the location of generation across Victoria and the National Electricity Market (NEM) by considering the quality of renewable resources against the cost of transmission needed to support that generation. Battery storage is included in this optimisation. Battery storage is also employed in several system integrity protection systems which allow better use of important transmission assets.

Following release of the final 2025 VTP, more detailed assessment in the project design phase could highlight additional potential for non-network solutions to replace, defer or supplement network solutions currently in the candidate development pathways and thereby reduce costs for consumers. Projects may also be delivered through a technology-neutral procurement process where interested parties may propose alternative non-network solutions.

All the candidate development pathways represent an ambitious program of transmission investment and it is important to ensure that the proposed timeframes are achievable. We developed the proposed timings based on power systems modelling of network needs as well as a preliminary deliverability assessment. We may further refine the proposed programs and timings ahead of the final 2025 VTP, based on feedback received and the results of additional deliverability checks.

8.3.1 Candidate development pathway 2

Candidate development pathway 2 has been developed to meet the significantly higher future energy demand of scenario 2. This scenario considers a potential future where new energy-intensive industries are established in regional and central Victoria at scale, such as data centres, hydrogen production and green aluminium.

The industry development and scale of energy demand in scenario 2 exceeds the levels seen in scenarios 1 and 3, resulting in a need for nearly double the amount of onshore generation by 2040 compared to scenario 1. Candidate pathway 2 therefore also outlines the largest need for transmission. In particular, it includes 3 additional programs of investments:

- Program 8: Sydenham to Keilor link – a new circuit between Sydenham and Keilor to support the distribution of power from the draft proposed REZs to Melbourne.
- Program 9: Central North Victoria strengthening program – A program of works to facilitate the transfer of increased power from the Central North draft proposed REZ to areas of high energy demand.
- Program 10: Inner South West strengthening program – A program of works to add increased capacity and resilience to the inner south west area of Victoria and support the transfer of power from the South West, Grampians Wimmera and North West draft proposed REZs.

This candidate pathway also includes an extension of the South West expansion program from Tarrone to Heywood, and an additional project as part of the North West strengthening program between Kerang and Red Cliffs. For more details about the projects in candidate development pathway 2, see Appendix A.

8.3.2 Candidate development pathway 3

Candidate development pathway 3 has been developed to meet the future generation and energy demand needs in scenario 3. Scenario 3 considers a potential future where there may be delays of up to one year in delivering new energy infrastructure. There may also be reduced growth in coordinated consumer energy resources reflecting broad challenges across the NEM, and other NEM-Government policies and targets may be delayed as well. The scenario also considers a potential future in which Marinus Link Stage 2 is not built.

Candidate pathway 3 includes the same 7 programs as the draft optimal development pathway, and one additional program:

- Program 8: Sydenham to Keilor link – a new circuit between Sydenham and Keilor to support the distribution of power from the draft proposed REZs to Melbourne.

This candidate pathway also sees some programs deferred by one year to coincide with the infrastructure delays broadly considered in scenario 3.

For more details about the programs and projects in candidate development pathway 3, see Appendix A.

Table 9 summarises the proposed transmission programs for all 3 candidate development pathways, and the differences between each pathway and delivery date.

Table 9: Differences between the 3 candidate development pathways

Programs	Delivery date		
	Candidate development pathway 1 (the draft optimal pathway)	Candidate development pathway 2	Candidate development pathway 3
Differences in program timing across the 3 candidate development pathways Blue shading denotes deferred timing relative to candidate development pathway 1. Yellow shading denotes accelerated timing relative to candidate development pathway 1.			
1. Western Victoria reinforcement program	2028	2028	2028
2. Eastern Victoria reinforcement program	2028 – 2029	2028 – 2029	2028 – 2029
3. North West strengthening program	2035	2034	2035
4. South West expansion program	2033	2032 - 2038	2034
5. Gippsland offshore wind transmission stage 2 program	2033 – 2038	2033 – 2038	2034 – 2039
6. Latrobe Valley strengthening program	2034 – 2035	2034 – 2035	2034 – 2035
7. Offshore wind upgrade	2038	2038	2039
Additional programs for candidate development pathways 2 and 3			
8. New Sydenham to Keilor link	N/A	2035	2036
9. Central North strengthening program	N/A	2033 – 2035	N/A
10. Inner South West strengthening program	N/A	2035	N/A

8.4 Benefits of the optimal development pathway

The proposed investments set out in the draft optimal development pathway will provide a foundation for Victoria's transition to renewable energy.

By unlocking critical capacity constraints along parts of the transmission network, the work programs will support investment in new renewable generation to meet Victoria's needs as coal-fired power stations retire. The programs will also improve reliability and system strength as energy demand continues to grow.

The optimal development pathway is a key foundation for achieving the Victorian Government's legislated renewable energy targets, including for generation, storage, and offshore wind.

The economic costs of the draft optimal pathway have been estimated based on Class 5 estimates[10]. The total economic cost of the projects within the draft optimal development pathway is $4.3 billion or $2.5 billion in net present value terms[11]. This cost will enable delivery of the 7 programs of transmission investments from 2025 to 2040 and support future development of the draft proposed REZs described in Section 6. Project costs and delivery timelines were estimated in 2024. VicGrid recognises the dynamic market for transmission projects and will consult with industry to further refine the costs and timings included in Appendix A.

The draft optimal development pathway will deliver significant benefits to Victorians and consumers across the NEM, by making it possible to build new renewable generation capacity in the right places and at the right time to meet demand. The transmission upgrades will reduce the total amount of new generation that Victoria needs to build, compared with an alternative future where Victoria doesn't continue to invest in the transmission network beyond committed projects. This will minimise the costs that are ultimately passed on to consumers in power bills.

The transmission investments will also allow renewable generation to be built sooner, meaning Victoria will need to use coal-fired generation less intensively in the coming years before coal plants retire. This brings additional benefits to Victoria by avoiding fossil fuel emissions.

The economic and environmental benefits described above are separate to the new benefits arrangements that VicGrid is implementing for landholders, Traditional Owners, neighbours and communities near new transmission infrastructure. For more information about these benefits, see the **engage.vic.gov.au/vtif-rez-community-benefits**

8.5 Next steps for finalising the draft optimal pathway

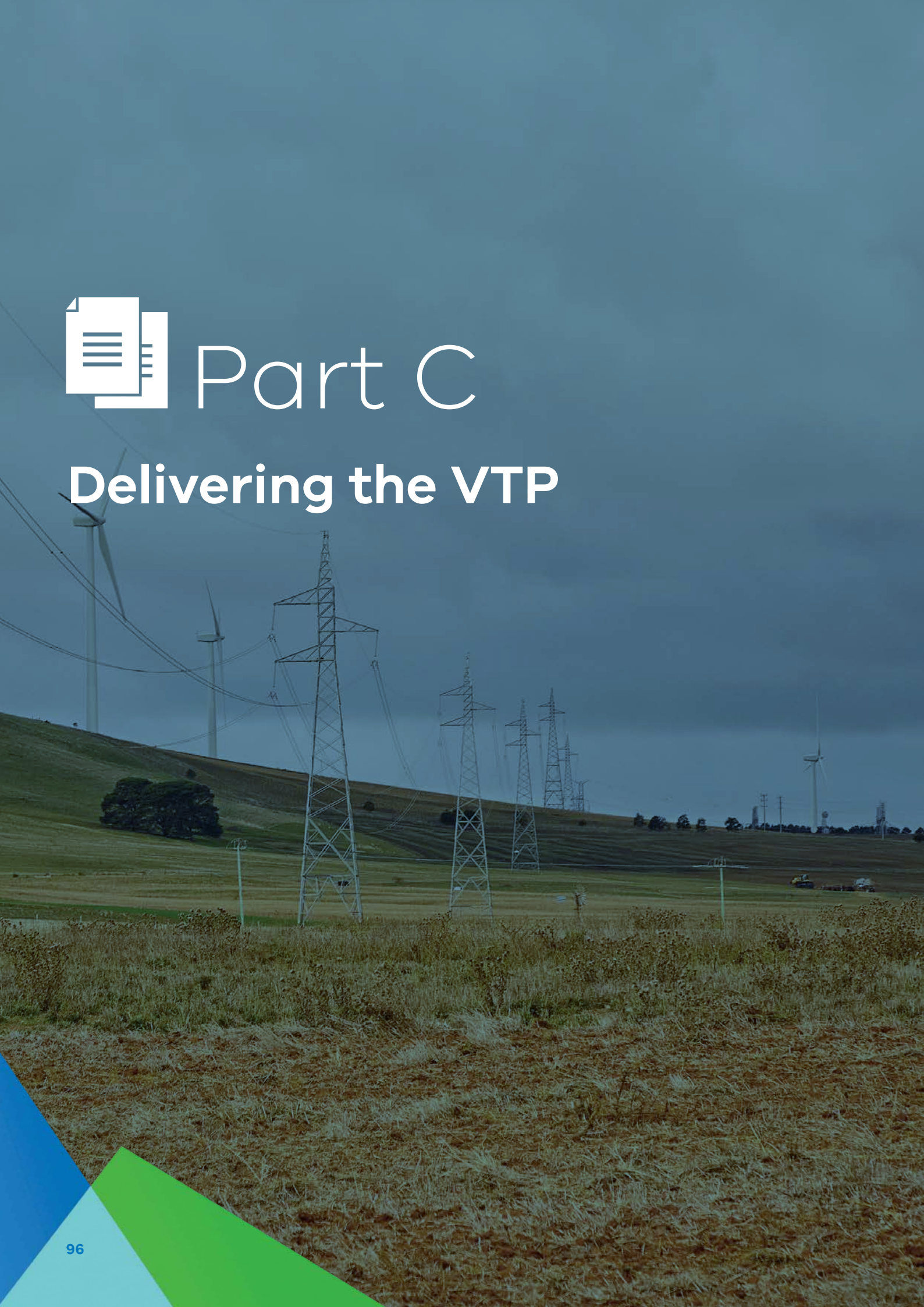
We are now inviting feedback on the draft optimal development pathway as part of public consultation on the draft 2025 VTP. For more information about engagement opportunities and how to provide feedback, see Section 11.

We will continue to refine the optimal development pathway over the coming months in response to additional power systems analysis, deliverability checks and consultation feedback. We will also undertake additional sensitivity analysis to ensure it is resilient to potential changes to key inputs and assumptions. For more information about results of sensitivity analyses and what they mean for the optimal development pathway, see Appendix B.

We intend to publish the final optimal development pathway as part of the final 2025 VTP, along with the results of economic and robustness analysis.

For more information about detailed planning and delivery of projects under the optimal development pathway following release of the final 2025 VTP, see Section 10.

[10] Class 5 cost estimate (+100%/-50%) as per the Association for the Advancement of Cost Engineering International Cost Estimate classification system. Economic costs are produced for the purpose of the cost-benefit analysis and are not equivalent to financial costs. For example, economic costs exclude financing costs (interest payments) and depreciation and are based on real rather than nominal values.
[11] All values are expressed in real terms in financial year 2023 dollars. The net present value cost is calculated assuming a 7 per cent discount rate (real). The transmission costs reflect capital expenditure of all candidate pathway 1 projects and do not include operating and maintenance expenditure.



Part C

Delivering the VTP

PART C

9. Developing renewable energy zones

The development of renewable energy zones (REZs) will provide certainty for investors and enable private investment in generation, storage and supply chains across Victoria's regions. This investment in regional infrastructure will bring job opportunities and other local economic benefits for host communities.

Once the 2025 VTP is finalised and REZs are formally declared, VicGrid will work together with communities and industry to develop these REZs over the coming years. This will involve engaging with communities located within REZs, prioritising jobs and other economic benefits for local communities, Traditional Owners and First Peoples, and working with investors and developers to strengthen coordination of generation and storage investments.

9.1 What to expect as REZs are developed

9.1.1 For communities and landholders

Communities in declared REZs will see increased investment in renewable generation and storage infrastructure over time. VicGrid is committed to ensuring that new development is coordinated to minimise impacts on landscapes and the environment, while delivering economic benefits to regional communities.

Like today, generation and storage project developers will be able to identify specific locations of interest within a REZ. Renewable development companies will need to negotiate with landholders for rights to develop projects on their land, and a landholder has a right to say no to having new renewable generation on their property. Landholders who do accept new renewable development will receive financial compensation that is negotiated with the developer.

All proposed projects will continue to be subject to the planning and environmental approval processes under the *Planning and Environment Act 1987* and *Environment Effects Act 1978*.

The establishment of REZs creates an opportunity for regional communities to harness the economic development opportunities associated with renewable energy projects. VicGrid is committed to working together with REZ communities to realise these opportunities and build long-term, community-wide benefits from the renewable energy transition.

As part of this new approach, VicGrid is introducing new benefits arrangements for communities that host REZs. New REZ Community Energy Funds will support projects that improve energy supply, reliability, efficiency and affordability for businesses, communities and households. They will also support initiatives that create economic development opportunities from the energy transition, for example projects that build renewable energy supply chains, create jobs in the energy sector, promote renewable energy research and innovation, or help attract renewable energy investment. For more information, see **engage.vic.gov.au/vtif-rez-community-benefits**

What to expect for Capacity Investment Scheme participants

The Australian Government's Capacity Investment Scheme (CIS) provides underwriting to encourage investment in renewable energy generation and storage to connect to the grid by 2030. The Australian Government is holding competitive tenders for CIS contracts every 6 months, with the first held in May 2024.

In preparing the draft VTP, we have planned for transmission infrastructure that will support the targeted amount of Victorian CIS investment to be delivered by 2030, including 5.0 GW / 11 TWh of new generation capacity. The draft optimal development pathway includes 2 programs of upgrades to be delivered by 2030. This is anticipated to unlock required network capacity for these important CIS generation projects.

Successful applicants to CIS tenders will need to apply for an access authorisation however it is anticipated that those who were successful in the May 2024 CIS tender will automatically be granted an authorisation. For subsequent CIS tenders, as with other projects in development, VicGrid will consult on its approach to transitional arrangements. These arrangements will set out how and when the new Victorian network access arrangements, including the Grid Impact Assessment, will come into effect, as well as how these arrangements will apply to projects that are currently in development.

We expect to consult with industry on proposed transitional arrangements before releasing the final VTP, and finalise arrangements by late 2025.

For more information, see **engage.vic.gov.au/grid-impact-assessment**

REZ Community Benefits

We are introducing new benefits for:

Landholders

Landholders who host new electricity transmission infrastructure will receive payments of $8,000 per kilometre of typical easement area per year for 25 years. These payments are over and above existing compensation arrangements.

Regional communities

REZ Community Energy Funds will fund projects that improve energy outcomes, or create benefits from the energy transition, for communities in regions hosting REZs and new transmission infrastructure.

Traditional Owners

The Victorian Government is working in partnership with First Peoples to design benefits for Traditional Owners of REZ areas and related transmission corridors.

Significantly impacted neighbours

Transmission companies will make benefits available to Victorians whose land is near and significantly impacted by new transmission infrastructure.

For more information, see **engage.vic.gov.au/vtif-rez-community-benefits**

9.1.2 For Traditional Owners

VicGrid is working in partnership with Traditional Owners to implement a model for dedicated benefits for Traditional Owners affected by REZs and transmission projects. This aims to go beyond inclusion, to give First Peoples control over how funds are spent to ensure they deliver economic empowerment and support self-determination.

These dedicated benefits are expected to be funded by mandatory contributions from transmission, generation and storage companies. They will be in addition to any discretionary payments by energy companies to Traditional Owners.

VicGrid will also continue to work with Traditional Owners to develop a process for incorporating cultural heritage into REZ planning.

Integrating a self-determined approach to cultural heritage will be an ongoing process that we will continue to build on collaboratively throughout the lifecycle of the 2025 VTP, subsequent VTPs and through the process for declaring REZs. The development of REZs will require an ongoing dialogue with Traditional Owners to ensure we minimise impacts to Country.

Our collaboration with Traditional Owners will continue beyond the first VTP to ensure we strengthen Traditional Owners' roles in shaping future transmission plans and REZ development.

Importantly, work on cultural heritage mapping under the VTP process does not substitute regulatory requirements. The *Aboriginal Heritage Act 2006*, the *Heritage Act 2017*, and other relevant State and Commonwealth legislation continue to apply to any future projects created in REZs.

9.1.3 For industry

REZs are designed to support a strong investment environment for renewable energy in Victoria, providing a clear signal to project developers on the locations most suitable for siting renewable generation projects. Projects developed within REZs will benefit from special network access arrangements that provide more certainty and reduce the risk of excessive curtailment – when a generator has to restrict the amount of energy they supply due to constraints on the transmission network. See the next section for further details.

We are also exploring other ways we can enable timely generation development and connection in REZs while ensuring a coordinated approach that avoids multiple developers building individual transmission connections that could create a 'spaghetti effect' across the REZ landscape.

We recognise there are developers that have generation and storage projects in various stages of the planning and development process. We plan to develop an integrated REZ access and connection approach that is cognisant of this and provides a clear process for all developers inside and outside the proposed REZs identified in the final 2025 VTP.

We will develop our approach in consultation with industry, and an important part of this process is hearing from developers with projects currently in development and developers interested in participating in REZs more broadly. For more information about how you can contact us about your project(s) in development, visit **engage.vic.gov.au/vicgrid**

Transmission connections within REZs

It is the responsibility of individual project developers to establish their own connections to the transmission network.

As more generation projects are developed, VicGrid will work with developers to ensure a coordinated approach to transmission connections within REZs that limits community and environmental impacts and keeps costs low. This could include investigating new shared transmission infrastructure to streamline connections in future. The need for additional shared transmission infrastructure to support generator and storage connections within REZs will depend on the REZ's proximity to the existing network and the locations that developers choose for their projects.

9.2 Increasing investor certainty with new access arrangements

During 2024, we consulted with industry on a proposed new Victorian Access Regime to govern new connections to the grid both within and outside of REZs. The Victorian Access Regime will set an important foundation for attracting investment in Victoria's REZs, by giving generators and investors confidence that they can supply their energy into the market without facing excessive curtailment.

The Victorian Access Regime is expected to be presented to the Victorian Parliament later in 2025 as part of proposed amendments to the *National Electricity (Victoria) Act 2005*. More detailed information can be found at **vicgrid.vic.gov.au**

The 2 key features of the proposed Victorian Access Regime are:

- REZ access schemes that are tailored to the requirements of each REZ, and
- Grid Impact Assessments for proposed new generation occurring outside of REZs. This will ensure that proposed connections to Victoria's grid would not cause excessive network curtailment for existing or planned generators in Victoria's REZs.

Both of these features are described further below.

9.2.1 REZ access schemes

Once a REZ is declared, VicGrid will publish a draft REZ access scheme for consultation with industry. The REZ access scheme will set out:

Access limits that cap the maximum capacity of different types of renewable generation that can be connected within the REZ. Access limits give investors visibility of the REZ's hosting capacity and assurance that a REZ's capacity will not be oversubscribed. Setting limits specific to different renewable technologies will help to ensure that the right overall mix of projects is developed to meet Victoria's needs, without distorting outcomes in favour of types of generation that can be developed more quickly (but which may be less suited to the generation needs within the REZ). Storage projects will not be subject to access limits since these can help to reduce grid congestion and the risk of curtailment.

Access fees to be paid by approved generation projects. Operators will pay access fees to connect to the transmission network in the REZ, which may be used to contribute to the REZ Community Energy Funds and dedicated benefits for Traditional Owners. Storage projects will pay a fee for administration of access.

Access conditions. For example, this could include requirements relating to a proponent's community engagement performance, dates when the project must be operational, or other technical performance requirements.

The access allocation process. The REZ access scheme will set out a description of the arrangements for the allocation of access authorisations to generators, up to the access limit.

9.2.2 Grid Impact Assessments

Generator and storage developers seeking to connect new plant outside of REZs will be subject to a Grid Impact Assessment. This assessment is designed to provide greater assurance to REZ generators that proposed renewable energy generation within REZs will not be excessively curtailed as capacity within the network is taken up by new generation.

We recently consulted with industry on the proposed approach to Grid Impact Assessment. Access applicants seeking to connect new generation outside a REZ, or generators wishing to expand the nameplate capacity of a facility connected outside a REZ, will need to demonstrate that their proposed generation project meets both the following criteria:

Criterion 1: The proposed connection is unlikely to result in excessive curtailment on existing and planned REZ generators; and

Criterion 2: The access applicant meets government expectations for community and Traditional Owner engagement and benefits.

See **engage.vic.gov.au/grid-impact-assessment** for more information.

The draft proposed Gippsland Shoreline REZ is different to onshore REZs

The draft proposed Gippsland Shoreline REZ is intended to host onshore connection infrastructure for offshore wind generators to reach the transmission network. Onshore generation projects located within the boundaries of the shoreline REZ will not be eligible to participate in the access scheme for priority access to the network. These projects will be subject to the same Grid Impact Assessment process that will apply elsewhere in Victoria for projects located outside of REZ boundaries.

Communities impacted by the Gippsland Shoreline REZ will receive new dedicated benefits, similar to our approach for onshore renewable energy zones. These benefits will be in addition to any discretionary benefits paid by offshore wind developers.

PART C

10. Delivering projects in the optimal development pathway

Once the 2025 Victorian Transmission Plan (VTP) is finalised, VicGrid will begin detailed planning for delivery of the optimal development pathway – the programs of priority transmission projects we have identified for the next 15 years.

There will be further opportunities for consultation as these transmission projects are planned and developed. VicGrid will also oversee the implementation of dedicated benefits arrangements for those impacted by new transmission projects.

Under proposed reforms, VicGrid will be responsible for coordinating the procurement of VTP transmission projects. We are currently making changes to improve the procurement process for transmission projects in Victoria. We will release further details later in 2025.

10.1 Consultation on proposed VTP transmission projects

All proposed transmission projects in the optimal development pathway will continue to be subject to relevant planning and environmental approvals in Victoria, with consultation building on the broad and early engagement undertaken during development of the VTP.

At each stage of the planning process, consultation with landholders, communities, industries and First Peoples will provide important feedback and help shape decisions. As planning progresses, VicGrid will carry out targeted engagement with directly impacted Traditional Owners, landholders, neighbours and communities.

10.2 Benefits arrangements

While most projects in the draft optimal development pathway consist of upgrades to existing transmission lines, some proposed projects will require new transmission easements. VicGrid is introducing new benefits arrangements for landholders, neighbours, communities and Traditional Owners in regions hosting renewable energy zones and impacted by new transmission developments. For more information, see **engage.vic.gov.au/vtif-rez-community-benefits**

These new benefits will be in addition to existing compensation arrangements under the *Land Acquisition and Compensation Act 1986*, *Traditional Owner Settlement Act 2010* and the *Native Title Act 1993* (Cth), as well as any discretionary payments made by transmission project developers.

10.3 VicGrid's role in planning and delivering transmission projects

VicGrid will be responsible for coordinating the planning, procurement and development of transmission infrastructure prioritised in the optimal development pathway. For details on the proposed projects included in the draft optimal development pathway, see Section 8 and Appendix A.

The next step will be to develop detailed project solutions for priority projects identified in the VTP. This will include further optioneering and consideration of alternative solutions. Projects will be subject to a business case which may identify a preferred solution or recommend a technology-neutral procurement process that is open to different types of solutions (for example, batteries that could provide an alternative to investing in additional transmission).

Once developed, project solutions will proceed to a procurement process subject to independent oversight. A separate economic assessment will not be required, given that projects identified in the optimal development pathway will have already been considered in the cost-benefit and robustness analysis completed in the VTP process.

As part of project planning, VicGrid will determine whether the project will follow a contestable or non-contestable procurement process. A competitive procurement for every transmission project identified in the VTP may not always be possible or appropriate. For example, we will consider where we cannot separate the project from existing assets, or where there is an urgent need, or limited time or capacity for the market to respond.

VicGrid will set out its proposed approach to procurement contestability later in 2025. Procurement models adopted will seek to best achieve project objectives while ensuring projects are delivered as efficiently as possible, represent value for money and provide an appropriate level of rigour and protection for consumers.

The specific delivery, operations and maintenance approach will vary project by project based on the project requirements and other determining factors. VicGrid will play an active role throughout delivery, operations, and maintenance phases to ensure projects meet their objectives on time and within budget, delivering value to consumers and stakeholders.

Part D

Engagement on the draft 2025 VTP

PART D

11. We invite your feedback on the draft 2025 VTP

Meaningful engagement is a critical part of developing and implementing the Victorian Transmission Plan (VTP). To minimise impacts and maximise collective benefits, we will listen to and consider feedback, balanced against the technical and financial requirements of planning future transmission infrastructure projects.

This section outlines how to provide feedback on the draft 2025 VTP as well as opportunities for further input throughout 2025 and beyond.

11.1 Consultation on this document

We are inviting feedback on the draft 2025 VTP (this document) through a submissions process, in-person consultation and other engagement activities.

Key areas we are seeking feedback on include:

- the draft proposed renewable energy zones (REZs). See Section 6.2
- the draft optimal development pathway, which sets out the proposed transmission investments needed to support REZ development and meet Victoria's energy needs over the next 15 years. See Section 8.1
- the draft proposed Gippsland Shoreline REZ, which sets out a designated area for offshore wind developers to site their onshore connection infrastructure. See Section 7.3

Feedback will be gathered online through Engage Victoria and in person through engagement at locations across Victoria.

The deadline to provide feedback is **Tuesday 24 June 2025**.

For more information about the ways you can make a submission, provide feedback and participate in other engagement activities, visit Engage Victoria, the Victorian Government's online consultation platform: **engage.vic.gov.au/vicgrid**

Feedback will be considered, along with further technical checks, as we finalise proposed REZs and the 2025 VTP. For more information, see Section 12.

We will publish the final 2025 VTP later this year. We will report back on what we heard and how community and industry engagement has informed the final plan.

11.2 Continued engagement with communities and industry

VicGrid will continue to engage with communities and industry as we implement the 2025 VTP. This will include opportunities to provide input and feedback about REZ declarations, detailed REZ design, implementation of REZ Community Energy Funds and network access schemes. VicGrid will also carry out targeted engagement with directly impacted Traditional Owners, landholders, neighbours and communities throughout the planning process for VTP transmission projects.

PART D

12. Further analysis in preparation for the final 2025 VTP

VicGrid will undertake further modelling and checks to prepare the final 2025 VTP, and combine these with feedback received during consultation on the draft.

Key areas of additional analysis include:

- further power systems modelling of network performance and reliability under each of the candidate development pathways
- a final update of our energy market modelling across all 3 scenarios
- economic analysis and robustness analysis of each of the candidate development pathways, to confirm the final optimal development pathway and our assessment of economic benefits
- additional sensitivity analysis
- a final reliability check of the optimal development pathway.

Glossary

This glossary has been prepared as a quick guide to help readers understand terms used in this document. Words and phrases defined in the *National Electricity (Victoria) Act 2005* and other Victorian legislation have the meaning given to them in legislation.

Term	Definition
Avoidance area	Avoidance areas are areas to avoid for renewable generation development where there are areas protected in legislation (e.g., defence sites, national parks), or areas with no acceptable trade-offs. They are shown as areas to avoid in the strategic land use assessment constraints analysis. These avoidance areas are outputs of a strategic assessment based on high-level publicly available data only, as a guide for decision makers. They are non-exhaustive and may change over time.
Augmentations	These are improvements or additions made to the existing electricity transmission network to increase its capacity, efficiency, or reliability. This can involve upgrading current infrastructure or building new components to handle increased demand or integrate new generation sources.
Committed	Generation and storage projects are considered committed if they have reached a sufficiently advanced stage of planning and development. Projects have been considered committed for the purposes of energy market modelling in the VTP if they meet any of the following criteria: – it was classified as Committed by AEMO as at May 2024, or – it is completed or in the construction phase as identified in AEMO Victorian Planning's generator list as at September 2024, or – it was successful in the CIS auction result released in December 2024.
Candidate development pathway	A set of possible transmission projects and proposed timings to upgrade the Declared Shared Network, needed to accommodate the development of new generation and storage capacity in REZs.
Curtailment	A situation where energy generators are required to limit their energy supply into the market due to capacity limitations on the grid and corresponding market signals.
Declared REZ	A declared REZ, in the context of the VTP, is a designated geographical area that has been declared by Order of the Minister for Energy and Resources, having been identified by VicGrid as having high potential for renewable energy generation.
Declared Shared Network	The Victorian interconnected high-voltage power lines and shared terminal stations that transport large amounts of electricity from where it is generated to where it is needed across the state. It allows multiple electricity providers to share the infrastructure for transporting electricity. Sometimes wind and solar developments need to build their own private lines to connect their project to the shared network.
Draft REZ	A geographical area proposed for REZ declaration by the Minister for Energy and Resources, that is published for consultation in a draft Order.
Draft proposed REZ	The draft areas proposed to be considered for REZ declaration that will be finalised following industry and community consultation. These are presented in the draft 2025 VTP (this document).

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Term	Definition
Dynamic line rating	These are advanced tools and strategies used to monitor and manage the electricity transmission network in real-time. They measure the conditions of the network, such as temperature, wind speed, and existing loading levels to determine how much electricity can safely be transported at any given moment, allowing for more efficient use of the network without having to undertake major augmentations.
Easement	This is a legal right allowing someone to use another person's land for a specified purpose. For transmission lines, easements typically include the land parcels where both overhead and underground lines are situated, along with an adjacent buffer zone to ensure safe operation. Common uses of easements also include routes for drainage, sewage, and roadways.
Firming	Firming infrastructure includes facilities that can supply electricity during times when the network experiences a shortfall of surplus generation. Battery storage, gas-fired generation and long duration energy storage schemes can provide the desired firming.
Generation resource plan	A spatial plan that identifies indicative locations for the new generation capacity needed to meet Victoria's energy needs under different future scenarios. The plan is developed based on a multicriteria analysis and, alongside the results of a strategic land use assessment, is used to inform potential REZ candidate areas. The generation resource plan includes possible amounts, types and timing of new generation build across different locations in Victoria.
Greenfield	Greenfield development refers to construction in land not previously developed for that use. In terms of transmission, it refers to erecting new transmission infrastructure on land that hasn't previously hosted transmission lines.
Grid Impact Assessment	An assessment carried out as part of the grid connection application process for proposed connections to the Declared Shared Network outside a REZ. It requires that new connections do not impose excessive curtailment on existing and planned REZ generators.
Integrated System Plan	An integrated 20-year plan for the efficient development of the National Electricity Market (NEM), prepared every 2 years by the Australian Energy Market Operator.
Landholder	An individual or organisation eligible to receive landholder benefits under the *National Electricity (Victoria) Act 2005*, for the siting of transmission infrastructure on land where they are the freehold landholder or, in relation to Crown Land, where they are a Traditional Owner, or long-term lease or licence holder who is materially impacted.
Least-regrets development pathway	A process of selecting transmission development pathways, having regard to the risks associated with underinvestment or overinvestment in light of the uncertainties reflected across a range of scenarios.
Loop tie	This is a type of connection in the electricity grid that links different parts of the network in a loop configuration. It creates multiple pathways for electricity to flow, which helps improve reliability and flexibility by providing alternative routes for power delivery if one part of the grid has an issue.

Glossary

Term	Definition
Multi-criteria analysis	A methodology for evaluating qualitative economic, social, cultural and environmental factors as part of a process for determining where, when and how Victoria's electricity transmission network should develop.
The optimal development pathway	The optimal mix of transmission projects needed to connect REZs with Victoria's Declared Shared Network over the next 15 years, taking into account economic cost-benefit and robustness analysis across different scenarios, as well as power system security and reliability. For the 2025 VTP, the optimal development pathway sets out proposed projects and sequencing over the next 15 years. Future VTPs will take a 25-year timeframe.
Proposed REZs	The areas proposed to be considered for REZ declaration. These will be presented in the final 2025 VTP and, over time, may be declared by the Minister for Energy as REZs.
Ramsar	Ramsar wetlands are rare or unique wetlands that are important for preserving biodiversity. They are designated to be of international importance under the Ramsar Convention.
Registered Aboriginal Party	A body registered by the Aboriginal Heritage Council which performs the functions set out in the *Aboriginal Heritage Act 2006*.
Renewable energy zone (REZ)	An area declared in a renewable energy zone Order where a REZ access scheme and special benefits arrangements will apply.
REZ access scheme	A scheme, under the proposed Victorian Access Regime, declared by the Minister for Energy and Resources which sets out arrangements governing network connections for new renewable generation and storage projects located in a REZ. These arrangements include access limits for each type of renewable generation, access fees, access conditions, and the process for allocating access.
REZ candidate areas	More refined areas within the study area that are assessed as being most suitable for renewable energy generation through energy market modelling and community and industry consultation.
REZ study area	A broad geographic area suitable for further investigation in planning for future renewable energy zones, based on the results of a strategic land use assessment and consultation feedback.
Robustness analysis	Robustness analysis is undertaken on all candidate development pathways to select the one that performs best (i.e., can adapt with minimal cost) across all scenarios. This approach, often called 'least worst regrets', is used to determine the optimal development pathway and seeks to minimise the risks of over- and under-investment.

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Term	Definition
Scenarios	Scenarios are a collection of assumptions that describe how the future may unfold. Scenarios-based planning is useful in highly uncertain environments, and can help assess future risks, opportunities, and development needs in the energy industry.
Shoreline Renewable Energy Zone	A Shoreline Renewable Energy Zone sets out a designated area for offshore wind developers to site their onshore connection infrastructure (for example, onshore cables), rather than for hosting new onshore generation.
Strategic land use assessment	An assessment that identifies suitable areas for siting infrastructure based on a range of social, cultural, technical, environmental, and economic factors.
Synchronous Condensers	These are machines connected to the electricity grid that help maintain the stability and reliability of the power system. They do not generate electricity but provide essential services to the transmission network by supporting voltage levels, increasing system strength and enhancing the grid's ability to respond to changes in operating conditions.
System Strength	This describes the ability of the power system to maintain and control the voltage waveform at a given location, both during steady state operation and following a disturbance. System strength is often approximated by the amount of electrical current available during a network fault (fault level), however the concept also encompasses a collection of broader electrical characteristics and power system interactions.
Traditional Owner	A member of a Traditional Owner group, having the meaning set out in the *Traditional Owner Settlement Act 2010*. Traditional Owners have rights that must be upheld as laid out under the *Charter of Human Rights and Responsibilities Act 2006*, the *Traditional Owner Settlement Act 2010*, *Aboriginal Heritage Act 2006* and *Native Title Act 1993 (Cth)*.
Uprating of existing lines	This refers to enhancing the capacity of existing transmission lines to carry more electricity. This can be achieved through various methods, such as using higher current rating conductors, increasing clearance for the conductors, upgrading transformers or improving the structure of the lines to support increased capacity, without necessarily building entirely new lines.
Victorian Access Regime	The proposed set of new rules, to be defined under the *National Electricity (Victoria) Act 2005*, for how new generation projects can connect to the Declared Shared Network, both within and outside of REZs. Under the Victorian Access Regime, the Minister will declare REZ access schemes, and all new generation projects outside of REZs will be subject to a Grid Impact Assessment to reduce the risk of curtailment for REZ generators.
Victorian transmission plan	A document setting out an optimal set of transmission projects that address the planning and development needs over the following periods related to new major electricity transmission infrastructure to facilitate connection of renewable energy zones to the declared shared network: (a) 15 years for the first Victorian transmission plan; (b) 25 years for each subsequent Victorian transmission plan.
Victorian Transmission Investment Framework	A set of reforms being implemented to transmission planning in Victoria, including: a new transmission planning objective; a new planning process through the Victorian Transmission Plan; the Victorian Access Regime; new community and Traditional Owner benefit arrangements; and new approaches to procuring transmission infrastructure.

Appendix information and links

Appendix A: Candidate development pathways
engage.vic.gov.au/download/document/40186

Appendix B: Energy market modelling
engage.vic.gov.au/download/document/40187

Appendix C: Power system modelling
engage.vic.gov.au/download/document/40188

Appendix D: Economic appraisal
engage.vic.gov.au/download/document/40189

VTP Guidelines and Appendix information and links

2024 Victorian Transmission Plan Guidelines
engage.vic.gov.au/download/document/36730

Appendix A: Strategic land use assessment
engage.vic.gov.au/download/document/36743

Appendix B: Victorian Transmission Plan methodology
engage.vic.gov.au/download/document/36744

Appendix C: Transmission planning standard
engage.vic.gov.au/download/document/36745

Appendix D: Inputs, assumptions and scenarios
engage.vic.gov.au/download/document/36746

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