Victorian Annual Planning Report

September 2026

VicGrid

Disclaimer

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.

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Abbreviations

Term	Definition
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AFL	Available Fault Level
APD	Alcoa Portland
BESS	battery energy storage system
CER	consumer energy resources
CP	connection point
DEECA	Department of Energy, Environment and Climate Action
DNSP	distribution network service provider
DSN	Declared Shared Network
DTSO	Declared Transmission System Operator
EES	Environmental Effects Statement
EIS	Environmental Impacts Statement
ESOO	Electricity Statement of Opportunities
GFL	grid-following
GFM	grid-forming
GPSRR	General Power System Risk Review
GW	gigawatt/s
HIC	Heywood Interconnector
HVDC	high voltage direct current
IBL	inverter based load/s
IBR	inverter based resource/s
ISP	Integrated System Plan
km	kilometre/s
kV	kilovolt/s
MSL	minimum system load
MVA	megavolt ampere/s
MVAr	megavolt ampere/s reactive
MW	megawatt/s
MWs	megawatt second/s
MWh	megawatt hour/s
NEM	National Electricity Market
NER	National Electricity Rules
NEVA	National Electricity (Victoria) Act 2005

Term	Definition
NSCAS	network support and control ancillary services
NSP	network service provider
NSW	New South Wales
NTP	National Transmission Planning
OWEV	Offshore Wind Energy Victoria
PACR	Project Assessment Conclusions Report
PADR	Project Assessment Draft Report
POE	probability of exceedance
PSCR	Project Specification Consultation Report
PV	photovoltaic
RAS	Remedial Action Scheme
RDP	Renewable Energy Zone Development Plan
REZ	renewable energy zone
RIT-T	regulatory investment test for transmission
SA	South Australia
SAIT	South Australia Interconnector Trip
SNI	South Australia–New South Wales Interconnector
SOCS	System Overload Control Scheme
SSN	system strength node
TCPR	Transmission Connection Point Report
TNSP	transmission network service provider
TS	Terminal Station
VAPR	Victorian Annual Planning Report
VFRB	Very Fast Runback
Vic	Victoria
VNI	Victoria–New South Wales Interconnector
VNPIR	Victorian Network Performance and Insights Report
VRE	variable renewable energy
VRET	Victorian Renewable Energy Target
VTIF	Victorian Transmission Investment Framework
VTP	Victorian Transmission Plan
WRL	Western Renewables Link
YWPS	Yallourn West Power Station

Terminal Stations

Term	Definition
ADTS	Axedale Terminal Station
ARTS	Ararat Terminal Station
ATS	Altona Terminal Station
BATS	Ballarat Terminal Station
BETS	Bendigo Terminal Station
BGTS	Bulgana Terminal Station
BLTS	Brooklyn Terminal Station
BTS	Brunswick Terminal Station
CBTS	Cranbourne Terminal Station
CPTS	Carwarp Terminal Station
CRTS	Cressy Terminal Station
CWTS	Crowlands Terminal Station
DDTS	Dederang Terminal Station
DLTS	Delburn Terminal Station
DPTS	Deer Park Terminal Station
ELTS	Elaine Terminal Station
EPS	Elaine Power Station
ERTS	East Rowville Terminal Station
GETS	Goorambat East Terminal Station
GNTS	Glenrowan Terminal Station
GPTS	Golden Plains Terminal Station
GTS	Geelong Terminal Station
GWTS	Gnarwarre Terminal Station
HGTS	Haunted Gully Terminal Station
HOTS	Horsham Terminal Station
HTS	Heatherton Terminal Station
HWPS	Hazelwood Power Station
HWTS	Hazelwood Terminal Station

Term	Definition
HYTS	Heywood Terminal Station
JJTS	Joel Joel Terminal Station
KGTS	Kerang Terminal Station
KMTS	Kiamal Terminal Station
KOTS	Koorangie Terminal Station
KTS	Keilor Terminal Station
LYPS	Loy Yang Power Station
MCTS	Mount Cottrell Terminal Station
MLTS	Moorabool Terminal Station
MOPS	Mortlake Power Station
MTS	Malvern Terminal Station
MWTS	Morwell Terminal Station
NPSD	Newport SD
PLTS	Pine Lodge Terminal Station
RCTS	Red Cliffs Terminal Station
ROTS	Rowville Terminal Stations
RTS	Richmond Terminal Station
SHTS	Shepperton Terminal Station
SMTS	South Morang Terminal Station
SVTS	Springvale Terminal Station
SYTS	Sydenham Terminal Station
TBTS	Tyabb Terminal Station
TGTS	Terang Terminal Station
TRTS	Tarrone Terminal Station
TTS	Thomastown Terminal Station
WMTS	West Melbourne Terminal Station
WOTS	Wodonga Terminals Station
YPS	Yallourn Power Station

Only terminal stations which are mentioned within this report are listed above, for a full list of terminal stations see https://www.vicgrid.com.au/industry/access-and-connections/declared-shared-network#heading-3

Executive Summary

The 2026 Victorian Annual Planning Report (VAPR) presents the outcome of VicGrid's annual planning review and the plan for Victoria's declared shared network (DSN) for the next 10 years. The VAPR complements VicGrid's Victorian Transmission Plan (VTP) by providing more frequent updates in the shorter 10-year planning horizon that address changes in the network between VTP publications. The VAPR also takes reform from the Victorian Transmission Investment Framework (VTIF), with these inputs informing the annual planning review.

The 2026 report reiterates the need to progress key transmission projects that deliver the necessary infrastructure to enable the energy transition while maximising benefits to consumers. Planned network investments, including those already in development or delivery, will unlock lower-cost generation, enhance competition, increase power system resilience, and improve the efficiency of resource sharing between Victoria and neighbouring regions in the National Electricity Market (NEM). While delivery of all projects is critical, key projects need to be delivered rapidly to ensure that Victoria continues to operate a reliable and secure system without a reduction in supply capability to the metro area such as the:

- Victorian System Strength Program
- Reconfiguration of the Latrobe Valley 220 kilovolts (kV) network into modified parallel operation
- Eastern and Western grid reinforcement programs

The rapid changes in Victoria's energy landscape are primarily driven by consumer choices, energy market participant choices, and state and federal government policies and regulations. These key drivers will shape Victoria's transmission needs over the next decade:

- The geographic location of supply continues to diversify. Historically, Victoria's electricity largely came from large brown coal generators in the Latrobe Valley, in the east of the state. Increasingly, supply is shifting towards renewable resources throughout Victoria and interconnectors with other states.
- Over the next ten years, with accelerated growth in areas with strong interest from large load projects (predominantly data centres). Energy consumption is also forecast to grow in all areas driven by homes and businesses switching from gas to electricity and with further electrification of transport through electric vehicles.
- Minimum demand from the grid continues to decline but has slowed compared to previous forecasts, primarily driven by an increasing level of anticipated large load connections in the region. Careful planning is still be needed to ensure secure operation of the power system at very low levels of demand on the transmission network.

Consistent with the previous report, the 2026 VAPR affirms that continued progress on transmission projects underway in Victoria will alleviate constraints in the DSN and deliver consumer benefits. These projects include:

- Western Renewables Link (WRL), Victoria to New South Wales Interconnector West (VNI West), and Renewable Energy Zone (REZ) Development Plan (RDP) Stage 1, which are all advancing to detailed design and delivery stages.
- Metropolitan Melbourne voltage management, Victorian System Strength Program, and reconfiguration of the Latrobe Valley, for which cost-benefit assessments or regulatory investment tests for transmission (RIT-T) have been completed since publication of the 2025 VAPR. These projects are now progressing through procurement processes, with expected delivery timing being closely monitored.
- A suite of projects identified in the 2025 VTP are now progressing through the procurement process and are anticipated to unlock capacity for generators to connect into Victoria and address network limitations identified in the 2025 VAPR, and
- The planned project for Red Cliffs–Wemen–Kerang 220 kV transmission line transfer capacity is still undergoing a cost-benefit assessment.

VicGrid has also identified several new limitations that could be triggered by the connection of large loads. Addressing these new limitations would unlock more capacity for the connection of these customers.

VicGrid's timely delivery of the projects above are important to manage power system security and provide Victorian consumers with the lowest cost, reliable energy.

1. Introduction

1. Introduction

This section outlines the purpose of the 2026 Victorian Annual Planning Report.

1.1 Purpose

This report provides information about Victoria's electricity transmission declared shared network (DSN) over the next 10 years to ensure the network remains reliable and secure.

Each year, VicGrid publishes the Victorian Annual Planning Report (VAPR) to meet its obligations under clause 5.12.2 of the National Electricity Rules (NER). It brings together information about electricity demand, generation and network capability to present the outcome of the annual planning review undertaken in accordance with clause 5.12.1 of the NER.

For this report, VicGrid has used information available as at 30 April 2026, with more recent information included where practicable.

1.2 How this report fits with Victorian transmission planning

Victoria has a coordinated approach to planning Victoria's DSN.

This report should be read with VicGrid's other planning documents, each with a distinct purpose:

- The VAPR provides a short-term, evidence-based review of how the transmission system is performing and how conditions are changing. It is published each year and focuses on recent system performance, emerging constraints and changes expected over the next 10 years. In 2026, the report was released earlier than in previous years to support closer alignment with the 2027 Victorian Transmission Plan (VTP).
- The VTP sets out the long-term strategy for renewable energy zones and major transmission development. The first plan, published in 2025, covered a 15-year timeframe. From 2027 onwards, VTPs will cover a 25-year horizon, with updates every four years. The plan sets out where new renewable energy is expected to be developed, the transmission upgrades required to support that development, and the approach to balancing system needs with community, land-use, and environmental considerations.
- The Victorian Network Performance and Insights Report (VNPIR) provides a view of how the transmission network operated over the previous year. It details actual system performance, including demand patterns, network conditions and emerging operational challenges. It provides important context for the forward-looking analysis in the VAPR.

Figure 1 Overview of VicGrid's coordinated network planning reports

Together, these documents support a continuous planning cycle. The VAPR provides up-to-date evidence between VTP updates, helping to test assumptions, identify emerging issues and inform long-term planning.

1.3 Inputs to the 2026 review

To assess the adequacy of the Victorian DSN over the 10-year planning horizon, this report considered:

- The most recent demand forecasts (2025 VicGrid connection point demand forecast and the Australian Energy Market Operator (AEMO) 2025 Electricity Statement of Opportunities (ESOO) regional demand forecasts) (see section 1.6)
- Generation plant and retirement information using the April 2026 update on the AEMO generation information web page[1]
- Register of Large Generators Victoria[2] and VicGrid internal connections project information
- Committed, anticipated and future Integrated System Plan (ISP) projects (from AEMO's transmission augmentation information page[3])
- Projects from the 2025 VTP (see section 1.6) and other network/non-network projects initiated by VicGrid[4]
- Committed distribution augmentations identified in the 2025 Transmission Connection Planning Report (TCPR) prepared by the Victorian distribution network service providers (DNSPs) (see section 1.6)
- Committed asset retirements and de-ratings as published in the 2026 Declared Transmission System Operator (DTSO) asset renewal plans
- Relevant policy initiatives and directions of the Commonwealth Government and the Victorian Government (see section 2.4)

Using this information, VicGrid updates its view of how the Victorian DSN may need to evolve to meet the needs of electricity users and the interconnected power system.

This view builds on national electricity system planning undertaken by the AEMO through the ISP, and on state strategic planning through the VTP.

1 See https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information

2 See https://www.vicgrid.com.au/industry/access-and-connections

3 See https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/transmission-augmentation-information

4 The 2025 VTP took inputs from the 2024 ISP and 2024 ESOO, whereas the 2025 VAPR took inputs from the 2024 ISP and 2025 ESOO, which may lead to some differences.

1.4 Structure of the 2026 VAPR

This report is structured into three main sections and is supported by the appendices and reference documents listed in section 1.6.

- **Section 2** – Drivers of the energy transition in Victoria outlines the broader context for this review, including the changing nature of supply and demand, the need for resilience in the power system, and policy and regulatory updates.
- **Section 3** – Transmission network assessment and development provides an update on transmission network development activities and investment tests that have progressed since the 2025 VAPR.
- **Section 4** – Future outlook of the Declared Shared Network provides a forecast of its limitations over the planning horizon and proposes potential solutions. This section also contains information about ongoing activities for power system security planning, control schemes required to manage DSN performance, and joint planning activities with other Network Service Providers (NSPs).
- Appendix A1 outlines the government policies and initiatives considered.
- **Appendix A2** summarises VicGrid's approach to the annual planning review.
- Appendix A3 summarises the forecast changes to the Victorian DSN considered in identifying future limitations.
- **Appendix A4** provides details of Victorian DSN limitations, as an outcome of this review.

1.5 VicGrid is seeking feedback on the value of information in this report

VicGrid welcomes stakeholder submissions on the usefulness of the 2026 VAPR, and on potential improvements or additional information sources that would be valuable in future reports. Submissions will be used to inform the 2027 VAPR.

Send your written submissions to enquiries@vicgrid.com.au

1.6 Supporting material

Table 1 lists the electronic resources that support the content in this report. Unless otherwise indicated, these resources are published on our website alongside the report.

Table 1 2026 Victorian Annual Planning Report supporting resources

Resource	Description
Victorian Network Performance and Insights Report	Provides an overview and key insights into the performance of Victoria's electricity transmission network from April 2025 to March 2026. The report reviews current network capabilities and challenges and provides context for the VAPR. https://www.vicgrid.com.au/transmission-planning/victorian-annual-planning-report
Historical DSN rating and loading workbook	Contains ratings and loading information for periods of maximum demand and high export conditions, as referenced in section 4 of the Victorian Network Performance and Insights Report. https://www.vicgrid.com.au/transmission-planning/victorian-annual-planning-report
AusNet Services' 2026 asset renewal plan	Sets out AusNet Services' transmission asset renewal program for the next 10 years, including planned asset renewals, retirements and de-ratings, changes since the previous year, and the options considered. https://www.vicgrid.com.au/transmission-planning/victorian-annual-planning-report
Asset-related datasets	Transmission connection point data for each terminal station with an actual or forecast emerging network limitation Transmission line segment data for each transmission line between terminal stations that are associated with a historical or emerging line capacity limitation Aggregated generation connection data for connection applications or new agreements completed in the past 12 months, where those connections may affect existing or emerging network limitations. https://www.vicgrid.com.au/transmission-planning/victorian-annual-planning-report
2025 Victorian connection point demand forecast	VicGrid's maximum and minimum demand forecasts for Victorian connection points. https://www.vicgrid.com.au/transmission-planning/victorian-annual-planning-report
AEMO's 2025 Transition Plan for System Security	Includes Victoria's regional planning information for non-synchronous contingency assessment services, system strength and inertia requirements for transmission network service providers. Appendix 2 provides the relevant Victorian regional plan. https://www.aemo.com.au/energy-systems/major-publications/transition-plan-for-system-security-tpss/2025-transition-plan-for-system-security.
AEMO's 2026 General Power System Risk Review	An integrated, periodic review of major power system frequency risks in the National Electricity Market associated with non-credible contingency events (previously published as the Power System Frequency Risk Review). https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/system-operations/general-power-system-risk-review.

Resource	Description
AEMO's 2025 Enhanced Locational Information Report	Provides a consolidated set of locational information to support decisions about where to locate generation, storage and network projects in the National Electricity Market. https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/enhanced-locational-information.
AEMO's 2025 Electricity Network Options Report	Sets out transmission and distribution network options in the National Electricity Market to inform development of the Integrated System Plan. https://www.aemo.com.au/consultations/current-and-closed-consultations/2025-electricity-network-options-report-consultation.
AEMO's 2025 Electricity Statement of Opportunities	Provides technical and market information for the National Electricity Market over a 10-year horizon to support planning and investment decision-making by governments, regulators and market participants. https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/nem-electricity-statement-of-opportunities-esoo.
AEMO's Draft 2026 Integrated System Plan	A roadmap for the transition of the National Electricity Market to meet consumer needs and government energy and emissions targets to 2050. It outlines the required mix of generation, storage and network investments. At the time modelling for this report was undertaken, the final 2026 ISP had not been published; however, the draft ISP was considered where relevant. https://www.aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2026-integrated-system-plan-isp.
Victorian DNSP 2025 Transmission Connection Planning Report	Prepared by Victorian DNSPs, this report identifies committed distribution network augmentations that may affect the Victorian transmission network. https://dapr.ausnetservices.com.au/ausnet_data/2025 TCPR for publication_18 Dec 2025.pdf

2. Drivers of the energy transition in Victoria

2. Drivers of the energy transition in Victoria

This section outlines information about the changing energy landscape in Victoria that is relevant for transmission planning. This includes a summary of key changes in energy consumption, supply patterns and government policies, alongside updated status of generation and storage projects since the publication of the 2025 VAPR. This chapter also includes insights from Victoria's latest demand and energy consumption forecasts.

Key insights

Victoria's energy transition is being driven by large-scale renewable energy generation and strong growth in distributed energy resources.

Victoria recorded its all-time lowest minimum operational demand of 1,287 megawatts (MW) on December 27, 2025. This occurred during the day due to high output from distributed solar generation and was 217 MW lower than the previous record set last financial year.

Government policies and incentives, increased investment in renewable energy, strong consumer uptake of distributed resources, and new technologies are reshaping how Victorians use the transmission network.

Since the 2025 VAPR, 400 MW of renewable generation and 1,000 MW / 3,000 megawatt hours (MWh) of battery energy storage systems (BESS) have been connected to the DSN. An additional 205 MW of wind generation and 3,245 MWh of BESS have reached committed status.[5] Investment in BESS remains strong, particularly in the Greater Melbourne and Geelong, South West and Eastern Victoria corridors.

As of July 2026, installed and committed large-scale generation and storage capacity connected to the Victorian DSN totalled 19.6 gigawatts (GW). This includes:

- 12.1 GW of renewable generation and storage, comprising 11.4 GW of wind, solar and battery storage, and 0.7 GW of hydro generation
- 7.5 GW of thermal generation, including 5.1 GW of coal and 2.4 GW of gas

Of the total generation capacity, 2.5 GW is expected to retire within the next 10 years[6]

Maximum operational demand is forecast to grow steadily for the next 3 years followed by accelerated growth for the subsequent 7 years. This accelerated growth is primarily driven by projected large load connections (predominantly data centres), increased electrification and increases in consumer battery uptake. Maximum operational demand is projected to reach 13 GW by 2034-35, around 1,559 MW higher than previously forecast.

Minimum operational demand is forecast to decline due to increasing distributed solar generation, reaching 0 GW by 2030-31 and –900 MW by the end of the planning period. This represents a slower decline than projected in the previous VAPR, primarily driven by an increasing level of anticipated large load connections in the region.

5 Committed status is defined in section 2.5

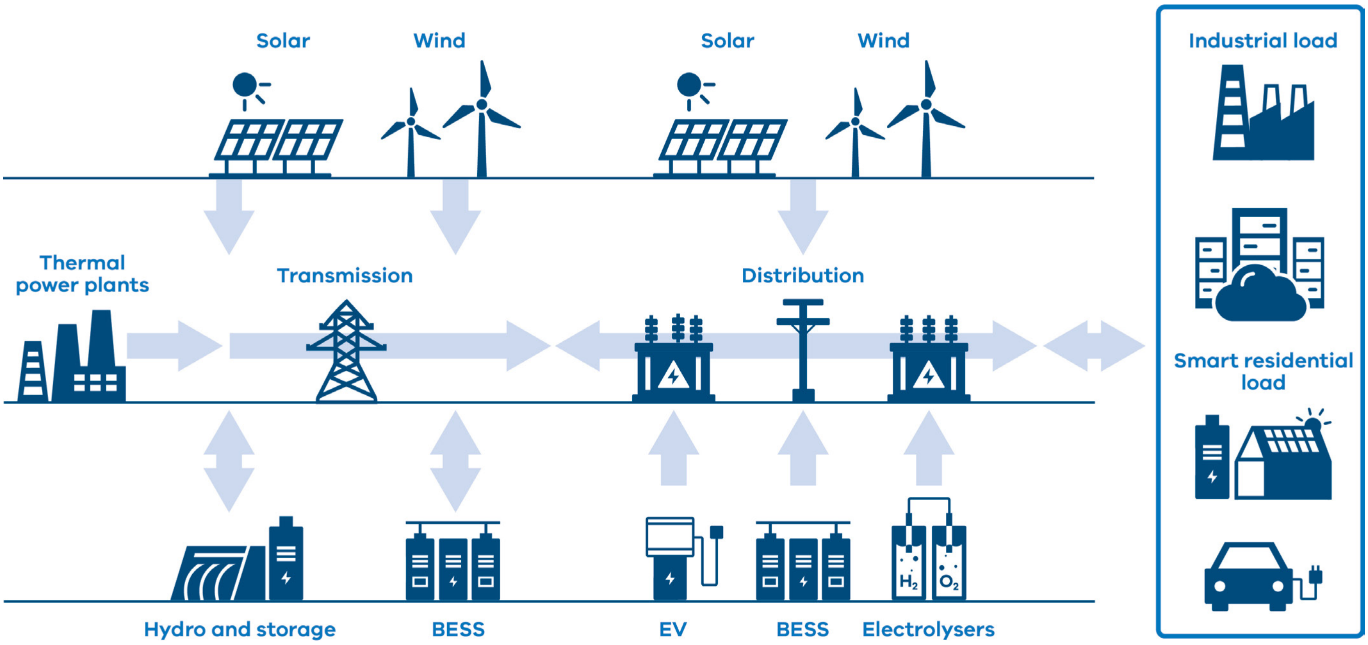
6 Retirements announced in the Vic DSN in the next 10 years include Loy Yang A Power Station and Waubra Wind Farm

2.1 Evolving energy consumption and supply

Energy use patterns are changing across households and businesses. Consumers are using electricity more efficiently and managing energy use throughout the day. The energy efficiency of cooking, heating, and cooling is rising due to consumer choices and behavioural shifts. Consumers are managing energy in new ways through consumer energy resources (CER), including electric vehicles, domestic and small-scale energy storage systems, and adjustments to the operating cycles of appliances such as heat pumps, air conditioners, and hot water heaters.

Figure 2 shows bi-directional flow paths in modern power systems. Generation supply is becoming more distributed and power increasingly flows in both directions between consumers and the network.

Figure 2 Bi-directional flow paths in modern day power systems



Key changes in the modern power system include:

- CER, including distributed solar, batteries and electric vehicles, are continuing to grow.
- Virtual power plants[7] are increasingly being used to combine CER into larger systems and provide system services.
- Operational challenges are increasing during periods of low or negative daytime demand due to high levels of distributed photovoltaic (PV) relative to underlying demand. Reverse power flows have occurred at several terminal stations in Victoria. These assets were primarily designed to supply customer load but are increasingly experiencing reverse flows due to growth in distributed generation, including rooftop solar, connected at the distribution level. In 2025-26, the total hours of reverse power flows[8] increased by 3% compared to 2024-25. More coordinated approaches with DNSPs will be required to manage these challenges.

7 See https://aemo.com.au/en/energy-systems/major-publications/integrated-system-plan-isp/2026-integrated-system-plan-isp

8 See section 2.3.1 of the 2026 VNPIR at https://www.vicgrid.com.au/transmission-planning/victorian-annual-planning-report

- Victoria recorded its all-time lowest minimum operational demand of 1,287 MW on 27 December 2025. This was 217 MW lower than the previous record set last financial year. Minimum demand now occurs during the daytime due to distributed PV generation. At the time of minimum demand on 27 December 2025, 3.97 GW of distributed PV generation was observed.
- There is growing expectation for large inverter-based block loads, such as data centres, to connect to the network.
- Victoria's transition away from fossil fuels and towards clean energy sources is well underway. Renewable generation and storage are being developed by consumers, investors and governments to deliver reliable, low-cost energy to households and businesses through a secure power system.
- Victoria's main load centres are in the Greater Melbourne and the Geelong area, which are key locations for electricity supply and transmission planning.
- Changes in the energy landscape require careful, proactive coordination to plan and operate the power system. The growing proportion of CER generating energy in the distribution network, the bi-directional power flow at terminal stations, and the occurrence of minimum system load (MSL)[9] conditions are creating additional operational challenges and the need for proactive planning measures.
- There is a growing need for additional system strength and other security services as the technology mix and geographic distribution of supply change.

2.2 Growth in renewable energy sources and the orderly exit of coal power plants

Victoria's power generation has historically relied on brown coal power plants in the Latrobe Valley with some gas generation units used to firm up demand during peaking times. Hazelwood Power Station retired in 2017, and the majority of the remaining aging coal fleet is planned to retire over the next decade.

EnergyAustralia announced in 2021 that Yallourn W Power Station (YWPS) will retire earlier than previously planned due to carbon-neutral targets, plant reliability and rising operational costs. When it closes in winter 2028, around 1,600 MW of generation capacity, about 20% of Victoria's electricity supply, will need to be replaced through a combination of supply across interconnectors from other regions, a mix of solar and onshore wind across Victoria, and offshore wind in Gippsland and the Southern Ocean.[10] YWPS also inherently provides system security services by contributing to system strength, inertia, frequency control, and reactive power supply / absorption in Victoria. Timely investment in modern solutions is required to replace these system security services to avoid security shortfalls in Victoria.

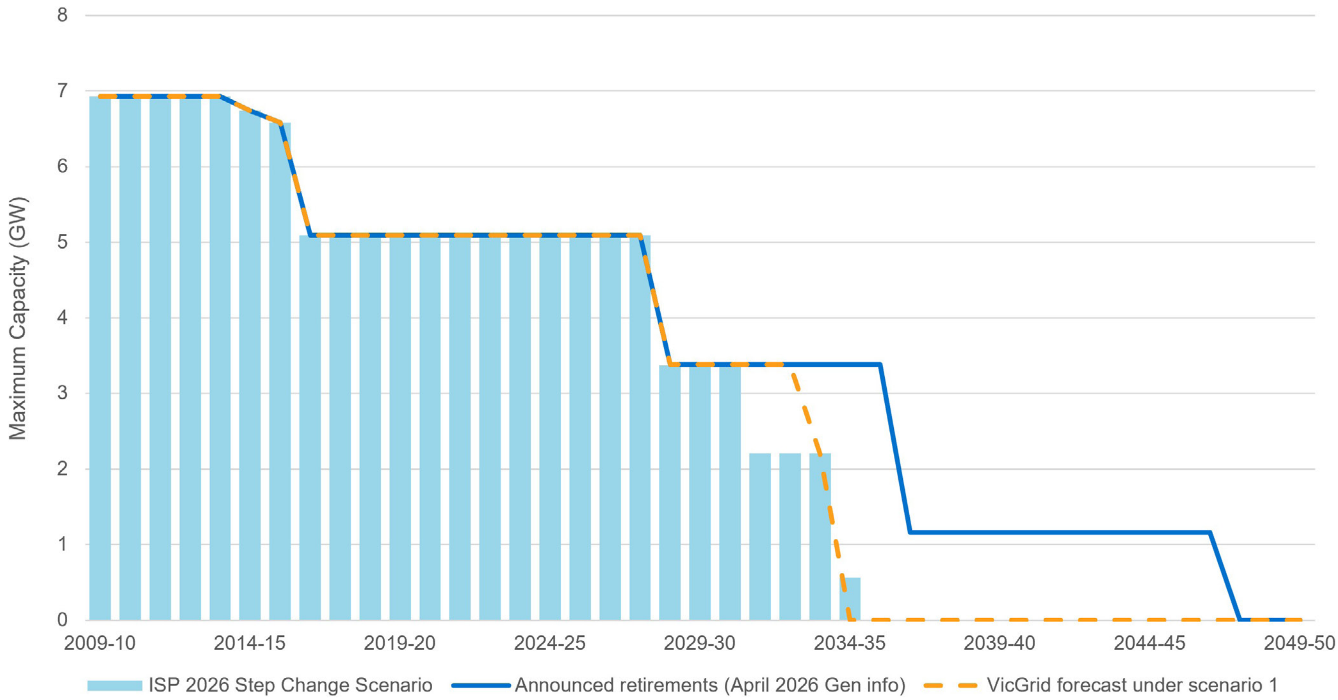
VicGrid completed the Victorian System Strength Requirements Regulatory Investment Test for Transmission (RIT-T) in August 2025 to identify a preferred solution mix (see Table 6) of system strength services and procurement is underway (see the Victorian System Strength Program section 3.1.2.5). These services are also likely to provide some inertia and reactive capability in addition to system strength, reducing the need for additional investment in these services. If delivery of the Victorian System Strength Program experiences delays, due to supply chain or other issues, it could expose Victoria to a shortfall of system strength and inertia. To manage this risk, VicGrid is continuing to investigate additional options and technologies beyond those specified in the RIT-T.

9 For more information on MSL see: https://www.aemo.com.au/-/media/files/initiatives/der/managing-minimum-system-load/supporting-secure-operation-with-high-levels-of-distributed-resources-q4-2024.pdf
And https://www.aemo.com.au/initiatives/major-programs/nem-distributed-energy-resources-der-program/managing-distributed-energy-resources-in-operations/managing-minimum-system-load

10 See https://www.vicgrid.com.au/transmission-planning/victorian-transmission-plan

Figure 3 shows coal generation capacity in Victoria and its projected decline over the next two decades. This reflects announced coal plant retirement plans and forecasts in the 2026 ISP step change scenario and the 2025 VTP scenario 1. Both indicate that 95% of Victoria's coal fleet is forecast to retire by 2033-34.

Figure 3 Actual and forecast Victorian coal power generation retirements, 2009-10 to 2049-50 (GW)

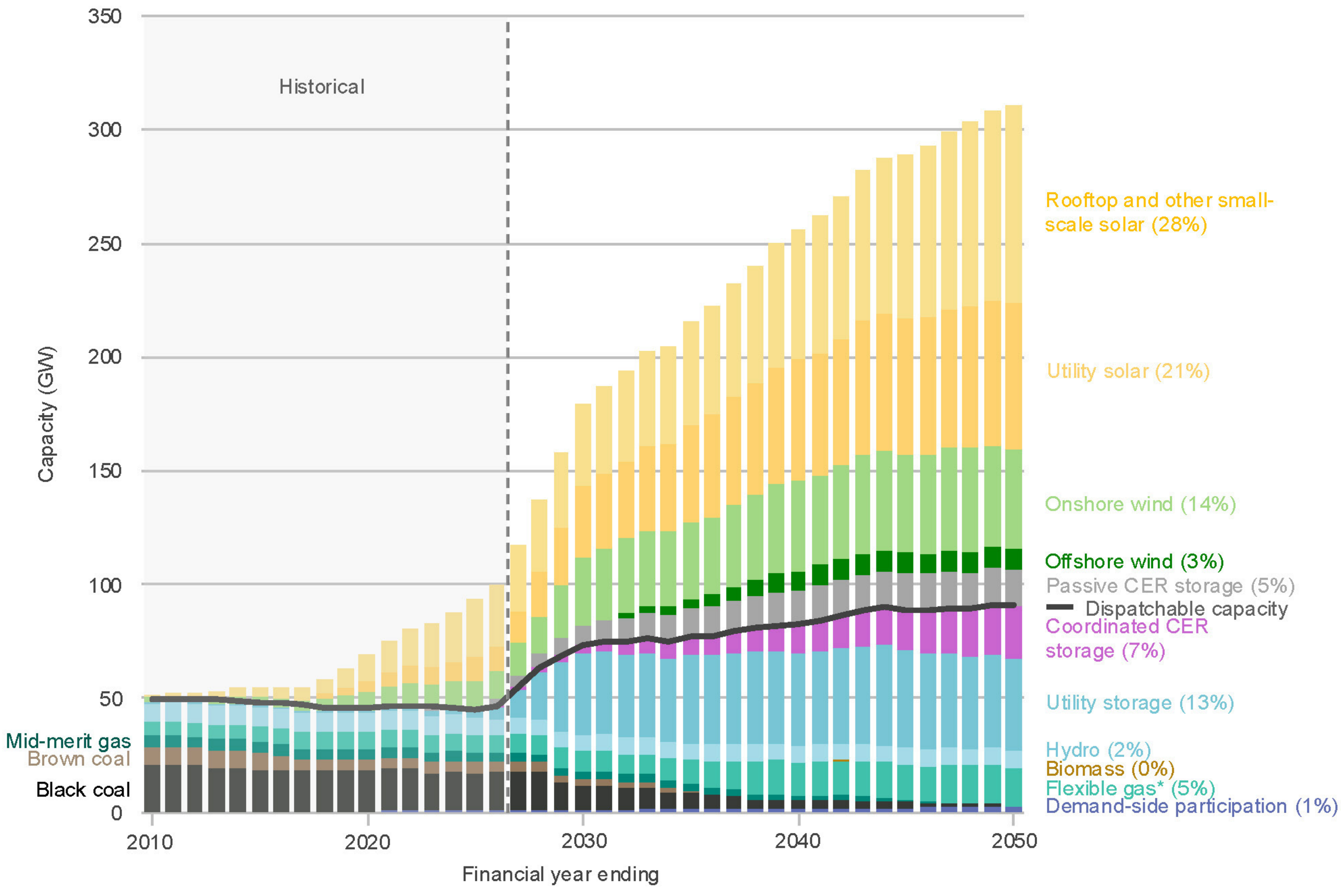


Note: Geninfo is AEMO's Generation Information webpage, at https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information. VicGrid forecast is at https://www.vicgrid.com.au/__data/assets/pdf_file/0032/761396/2025-victorian-transmission-plan.pdf.

The 2026 ISP identified that renewable energy connected via transmission and distribution, firmed with storage and supported by gas-fired generation is the lowest-cost way to supply electricity to homes and businesses as Australia transitions to a net-zero economy.

Figure 4 shows the expected generation capacity across the NEM to 2050 under the optimal development path in the 2026 ISP step change scenario. It highlights that as coal generation retires, supply adequacy will need to be balanced against growth in renewable generation, with about 6 GW of additional capacity required across the NEM each year.

Figure 4 Generation capacity in the NEM, 2026 ISP Step Change scenario, 2010 to 2050 (GW)



Note: Percentages are listed for 2050 financial year ending projections and are rounded. Projections for "Rooftop and other small-scale solar" and "CER storage" are forecast as outlined in the 2025 IASR and the 2026 Forecasting Assumptions Update. "Rooftop and other small-scale solar" includes forecast residential and commercial photovoltaic (PV) systems as well as larger distributed PV systems referred to as PV non-scheduled generation (PVNSG) systems. "Utility solar" also includes other mid-scale distribution-connected PV systems, optimised through the ISP assessment process. "CER storage" means consumer energy resources such as batteries and EVs. "Flexible gas" includes gas-powered generation and potential lower-carbon fuel alternatives (including hydrogen).

2.3 The role of the transmission network in a robust power system

A robust power system must maintain system security and reliability under extreme operating conditions. These conditions may include high or low demand, lack of system strength and/or inertia, and extreme climate events.

System strength and inertia are critical characteristics that enable the power system to recover from sudden disturbances and maintain stability. Reduced availability of conventional generation due to displacement or retirement can lead to shortfalls in these characteristics.

Maintaining the resilience of the DSN through these challenges is critical. The future power system will become more complex as renewable inverter-based resources (IBR) continue to grow on the supply side, alongside the increasing connection of large inverter-based loads (IBL), and the rapid uptake of renewable energy sources diversified across both transmission and distribution networks. Planning is therefore essential to ensure the power system continues to operate reliably to meet consumer needs.

The transmission network continues to play a critical role in maintaining a resilient power system. It acts as the backbone or primary corridor of the system, enabling the transfer of energy across Victoria and neighboring regions to support electricity supply.

The 2026 ISP's optimal development path, under the step change scenario, identifies approximately 6,000 kilometres (km) of transmission projects across the NEM by 2050. This includes major augmentation projects identified as committed, anticipated or actionable in Victoria to enable the optimal development path. The delivery of these projects is critical to maintaining a resilient power system.

In addition to network investment to meet the ISP's optimal development path, the 2025 Transition Plan for System Security (TPSS) highlights the growing need for investment in network security assets or services, including non-network services. These will be required to ensure that the evolving power system remains resilient and secure.

2.4 Government policies and initiatives to support the energy transition

The Victorian Government has made a number of commitments and introduced policies to support the energy transition and make it easier to connect new generation to the grid. These drive investment decisions and shape the development of the Victorian electricity network. Key initiatives include:

Victorian Transmission Investment Framework[11]

VicGrid published the Victorian Transmission Investment Framework (VTIF) final design paper in July 2023. It established a new transmission planning framework to meet Victoria's long-term energy needs. The VTIF is an integrated approach to planning and delivering electricity transmission infrastructure. It ensures that landholders, local communities and First Peoples are consulted and share in the benefits of transmission projects, supports value for money outcomes and provides greater certainty for investors seeking to connect to the DSN.

Victorian Transmission Plan[12]

Established under the VTIF framework, the VTP offers 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. The first VTP was published in August 2025 after a public consultation period and covers a planning horizon of 15 years. The next VTP will be published in July 2027, covering the full 25-year planning horizon.

11 See https://www.vicgrid.com.au/transmission-planning/planning-the-energy-grid

12 See https://www.vicgrid.com.au/transmission-planning/victorian-transmission-plan

Unlike the VAPR, it applies the Victorian Transmission Planning Objective[13] which is, in relation to Victoria:

- 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:
  - price, quality, safety, reliability and security of supply of electricity; and
  - the reliability, safety and security of the national electricity system; and
- the delivery of transmission services consistent with a least-regrets development pathway; and
- the achievement of targets set by Victorian legislation:
  - for reducing Victoria's greenhouse gas emissions; or
  - that are likely to contribute to reducing Victoria's greenhouse gas emissions.

A least-regrets development pathway refers to a process of selecting development pathways having regard to the risks associated with underinvestment or overinvestment in light of the uncertainties reflected across a range of scenarios. Projects identified in the Victorian Transmission Plan do not constitute RIT-T projects for the purposes of clause 5.10.2 of the NER.

Victorian Access Regime

The Victorian Government, through VicGrid, commenced consultation on the Victorian Access Regime (VAR) in September 2025. The regime proposes a new framework for managing how renewable generation and storage projects access Victoria's transmission network, including the introduction of renewable energy zone access limits, access authorities, and competitive allocation processes. VicGrid released consultation papers and draft guidelines in September 2025 and subsequently published an implementation update in June 2026.[14] The Victorian Access Regime is now targeted to commence in July 2027, subject to government approvals. Prior to this date, the current open access arrangements under the NER will continue to apply.

Victorian Renewable Energy Zones Development Plan

The Victorian Government released a directions paper[15] in 2021 for the Victorian Renewable Energy Zones Development Plan (RDP). The plan will deliver upgrades to the existing transmission network, enabling an additional 2.3 GW of renewable energy to enter the grid. Stage 1[16] of the plan is underway and is expected to be completed by early 2028. For further information on the progress of the RDP Stage 1 projects, see section 3.1.1.2 and 3.1.2.1.

13 National Electricity (Victoria) Act 2005 – section 56

14 See https://www.vicgrid.com.au/industry/victorian-access-regime

15 See https://www.vicgrid.com.au/__data/assets/pdf_file/0036/762993/victorian-renewable-energy-zones-development-plan-directions-paper.pdf

16 See https://www.vicgrid.com.au/transmission-projects/renewable-development-program-stage1

Offshore wind energy targets

In March 2022, the Victorian Government released the Offshore Wind policy directions paper,[17] which set generation capacity targets of at least 2 GW by 2032,[18] 4 GW by 2035 and 9 GW by 2040.[19] Offshore Wind Energy Victoria (OWEV), a division of the Department of Energy, Environment and Climate Action (DEECA), is coordinating the generation development and VicGrid is procuring the augmentation to the transmission network. See section 3.1.2.9 for more details about planned offshore wind development activities.

Appendix A1 lists all government policies and initiatives taken into consideration in this plan.

2.5 Supply changes – continuing investments in grid-scale renewable generation and storage

Enabling the energy transition requires timely investment and delivery of new DSN and connections projects. This will ensure the benefits of these projects unlock renewable potential and deliver benefits to consumers and communities.

Victoria's transition is driven by investment in large-scale renewable energy generation, primarily concentrated in the state's Central Northern, Western and South West corridors and in the Gippsland Offshore zone. Victoria is currently seeing high interest in BESS in the state's South East corridor where existing coal generation is planned for retirement. Victoria's offshore wind policy has drawn significant interest in the Gippsland offshore wind zone where the first offshore wind capacity auction[20] will open in August 2026.

Generation and storage projects are reported by the following project category definitions:

- Proposed – projects that proponents have proposed, that have not yet met commitment criteria
- Committed – projects where connection agreements have been executed
- Commissioned – projects where all hold point testing[21] has been completed and AEMO has approved the generator to output at full capacity

17 See https://www.vgls.vic.gov.au/client/en_AU/search/asset/1304450/0

18 During 2025 the OWEV capacity auction was delayed, however OWEV has advised this delay is not expected to impact the overall delivery timeline for the program.

19 See https://www.vicgrid.com.au/transmission-projects/gippsland-offshore-wind-transmission

20 See https://www.premier.vic.gov.au/victorias-first-offshore-wind-auction-go-live-august

21 When commissioning new or upgraded plant for the first time or making a change to control system settings or mode of operation hold points are generally required, whereby the generating system's overall output is constrained to a pre-defined megawatt level, which increases following successful completion of each level.

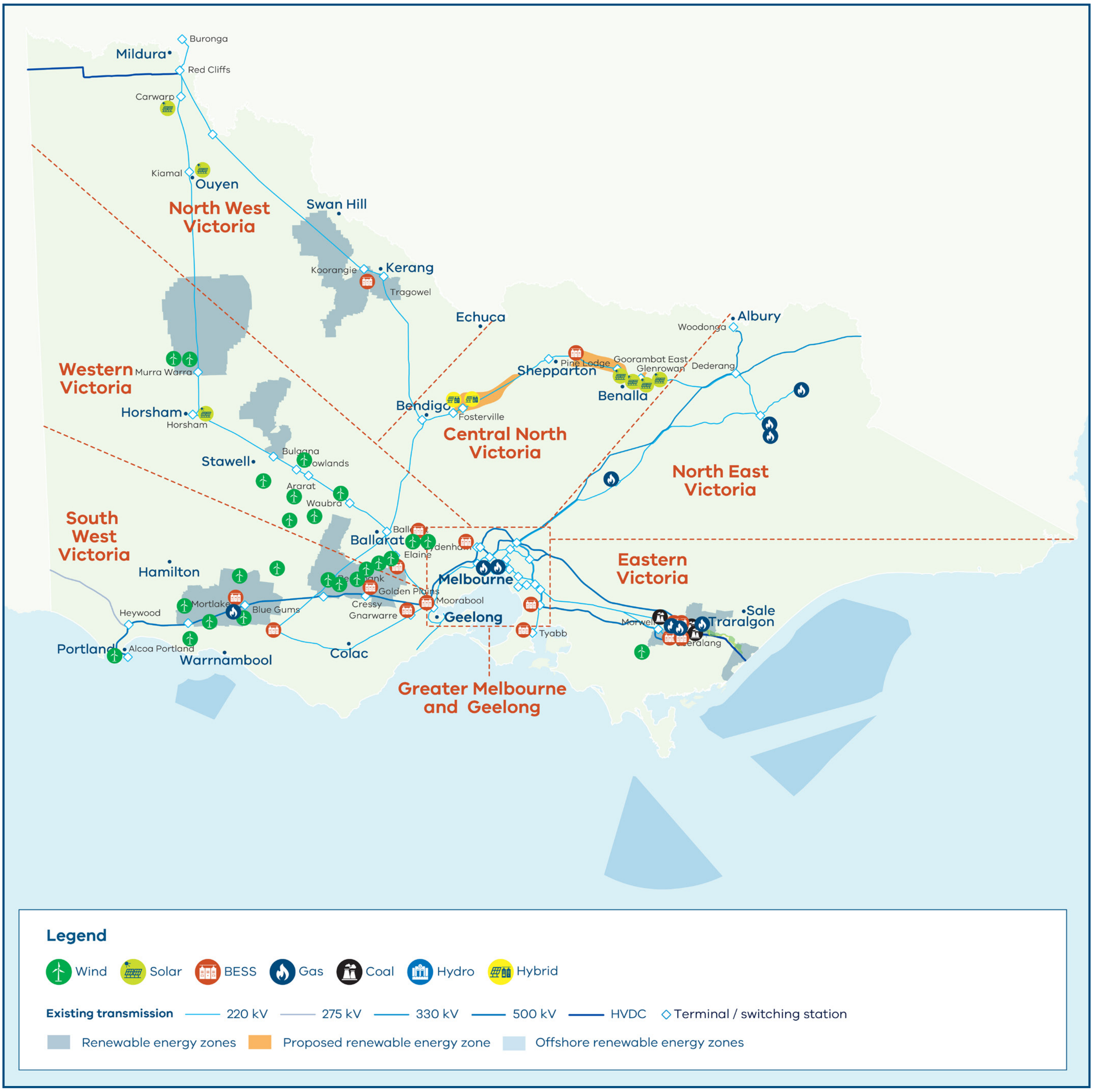
- Figure 5 shows the existing generation and storage connections and the high investment interest for renewable generation and storage projects in the pipeline in Victoria. For the purposes of this report, only Victorian DSN connections[22] exceeding 30 MW have been included:[23]
- The total commissioned capacity[24] plus committed generation and storage projects in Victoria is 18.8 GW which includes a renewable generation and storage capacity of 12.1 GW:
  - 11.4 GW of large-scale wind and solar generation, battery storage, and
  - 0.7 GW of hydro generation
- Current thermal generation capacity 7.5 GW:
  - 5.1 GW of coal generation remains after 1.9 GW retired between 2014 and 2017, and
  - 2.4 GW of gas generation

22 DNSP connections and CER are excluded from the scope of this report.

23 The 2026 VAPR includes both large-scale and distributed generation connections in its assessment criteria (NER 5.18A).

24 See the Register of large generator connections at https://www.vicgrid.com.au/industry/access-and-connections

Figure 5 Summary of committed and commissioned generation capacity in Victoria



There is a substantial pipeline of proposed projects with a total of 31 GW of renewable generation and 23.2 GW of battery storage. The proposed category includes all projects in the enquiry, pre-application, application or contracts stages, the majority of the projects in the proposed category are at the enquiry stage. Figure 6 shows the pipeline of projects in Victoria alongside the commissioned generation and storage.

Figure 6 Total generation capacity (GW) of proposed, committed and commissioned projects in Victoria

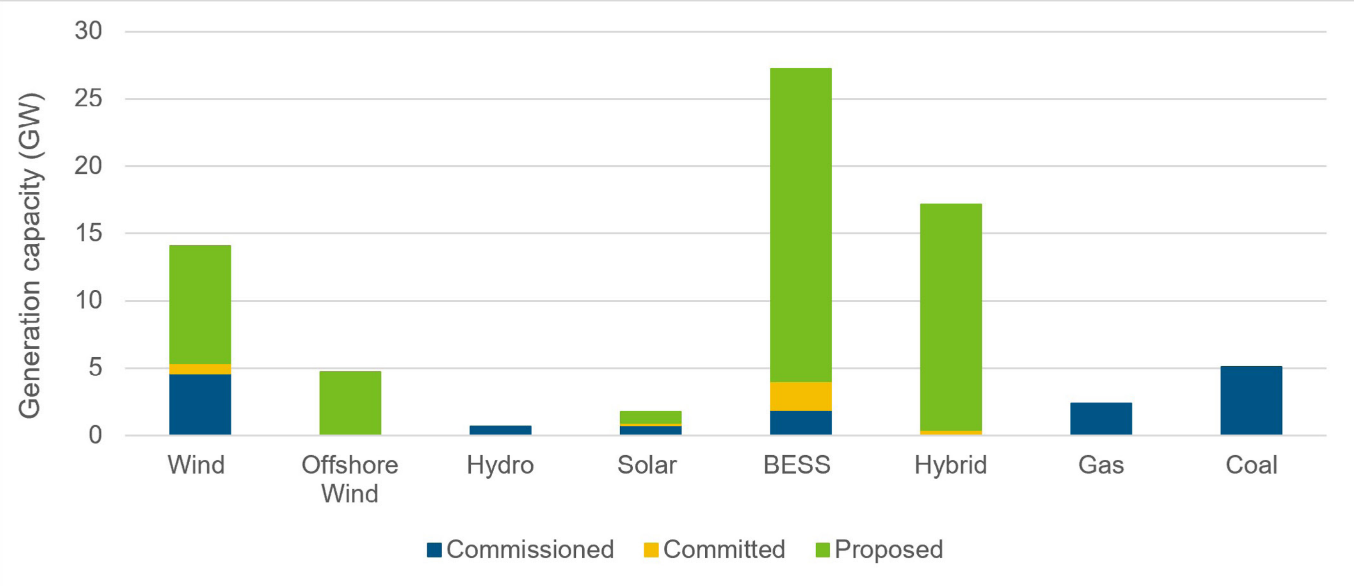


Table 2 shows the total generation capacity (GW) breakdown by project category. While wind, gas and coal are the dominant commissioned technology, BESS and Hybrid projects dominate the proposed project category

Table 2 Total generation capacity (GW) of proposed, committed and commissioned projects in Victoria

Technology / Category	Wind (GW)	Offshore Wind (GW)	Hydro (GW)	Solar (GW)	BESS (GW)	Hybrid (GW)	Gas (GW)	Coal (GW)	Category Total (GW)
Commissioned	5.2	0.0	0.7	0.8	2.8	0.0	2.4	5.1	**16.9**
Committed	1.0	0.0	0.0	0.2	1.1	0.4	0.0	0.0	**2.7**
Proposed	8.7	4.7	0.0	0.8	23.2	16.8	0.0	0.0	**54.2**
Technology Total (GW)	**14.9**	**4.7**	**0.7**	**1.7**	**27.1**	**17.2**	**2.4**	**5.1**	**73.8**

Table 3 lists newly committed large-scale renewable energy projects since the publication of the 2025 VAPR, adding 423.8 MW of capacity and 561 MW / 1,445 MWh of storage.

Table 3 Newly committed large-scale renewable projects since 2025 VAPR

Technology	Project	Connecting terminal station (TS)	Connection voltage (kV)	Maximum capacity (MW)	Storage capacity (MWh)
BESS	Bennetts Creek BESS	MWTS – Morwell	220	100	223
	Elaine BESS	ELTS – Elaine	220	311	622
	Golden Plains BESS	GPTS – Golden Plains	220	150	600
Solar	Horsham Solar Farm	HOTS – Horsham	220	118.8	-
	Winton North Solar Farm	GNTS – Glenrowan	220	100	-
Wind	Delburn Wind Farm	DLTS – Delburn	220	205	-

Table 4 lists large-scale renewable projects which have been commissioned in the DSN since the 2025 VAPR publication, adding 400 MW of capacity and 1,000 MW / 3,000 MWh of storage.

Table 4 Newly commissioned large-scale renewable projects since 2025 VAPR

Technology	Project	Connecting terminal station (TS)	Connection voltage (kV)	Maximum capacity (MW)	Storage capacity (MWh)
BESS	Latrobe Valley BESS	MWTS – Morwell	66	100	200
	Melbourne Renewable Energy Hub	SYTS – Sydenham	500	600	1,600
	Moorabool BESS A	ELTS – Elaine	220	305	1,200
Solar	Carwarp Solar Farm	CPTS – Carwarp	220	150	-
	Goorambat East Solar Farm	GETS – Goorambat East	220	250	-

The Moorabool BESS will be built at the existing Moorabool Wind Farm, once commissioned the wind farm and BESS will be reported together as a hybrid generator.

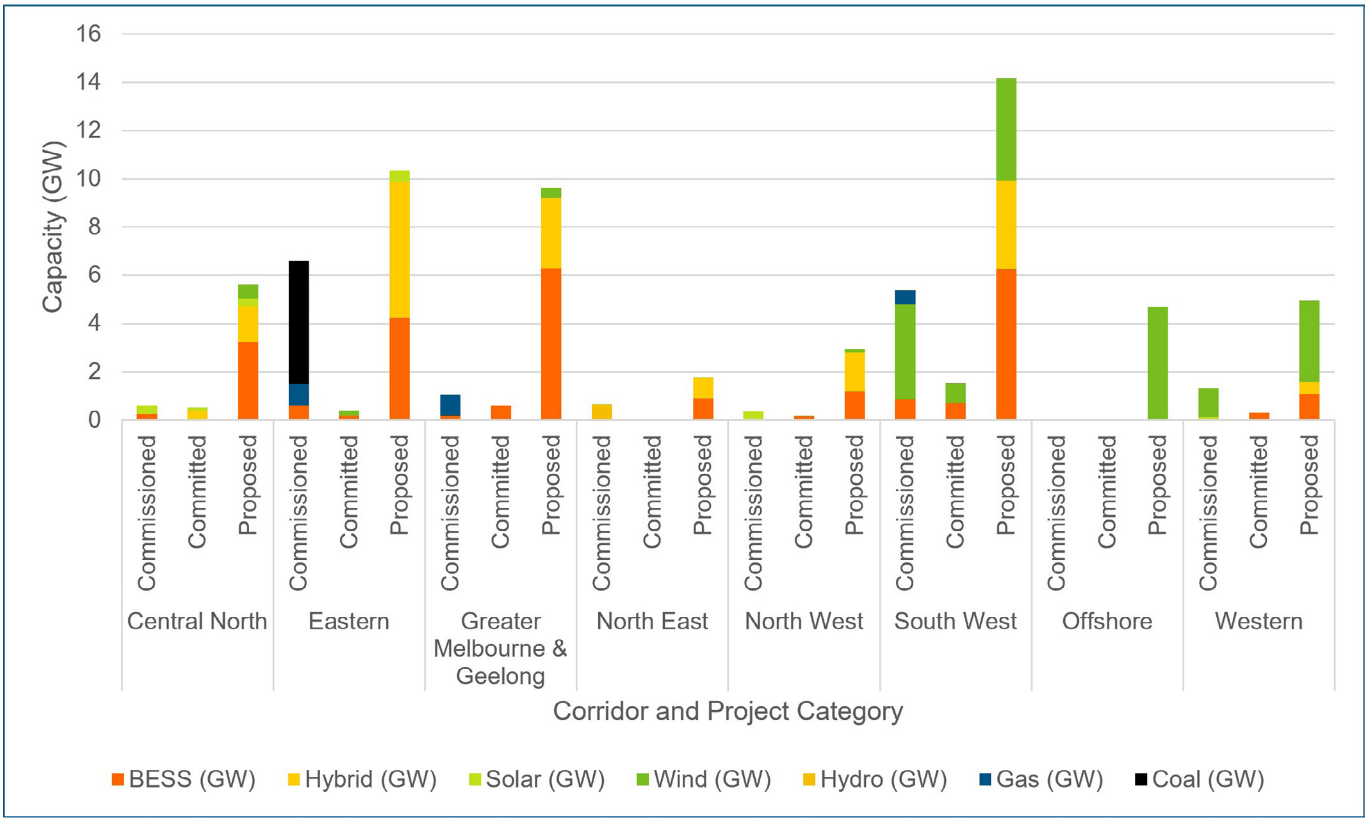
2.5.1 Growing investments in renewable energy highlight challenges in Victoria's traditional transmission network

As Victoria decarbonises its energy system, the geographic location of supply has diversified. Additional BESS, solar and wind generation is being proposed predominantly in the South West corridor, while large brown coal generators in the Latrobe Valley are approaching their planned closure dates (mid-2028 for YWPS and Loy Yang A in 2035). Offshore wind is also expected to develop in the Gippsland Offshore Renewable Energy Zone to take advantage of existing transmission infrastructure in the Eastern corridor.

Both east and west generation developments will be needed to meet the needs of Victorian consumers. While the network to the east is expected to largely accommodate generation developments replacing coal in the next decade, the network to the west does not yet have capacity to transfer large quantities of the power from the renewable energy sources expected to connect in that area.[25] Figure 7 shows the geographic shift and diversification of supply in Victoria.

25 See section 3.2.1 in the 2026 VNPIR at https://www.vicgrid.com.au/transmission-planning/victorian-annual-planning-report

Figure 7 Proposed, committed and commissioned projects by corridor in Victoria



2.6 Electricity demand trends and forecasts

The regional demand forecasts used for the 2026 annual planning review are derived from the 2025 Victorian connection point (CP) demand forecast.[26] The CP demand forecast is developed using inputs from the DNSPs, connection projects, government policy and macro-economic factors like such as population growth etc.

This new demand forecast method was applied[27] as this report was prepared before the 2026 ESOO publication. The 2026 ESOO has been reviewed and noted that the minimum demand forecast was marginally higher and maximum demand forecast was marginally lower than the 2025 Victorian CP Demand forecast due to the different forecasting methodologies used. VicGrid's comparative analysis concludes that there is no material impact on the annual planning review. This section will cover analysis and explanation of how the 2025 connection point forecasts compare to the 2024 forecasts. Operational demand forecasts are updated using the latest data on Victorian connection point demand forecasts.

For context, the VNPIR[28] has details about Victoria's operational demand in 2025-26:

- Victoria recorded its all-time highest maximum demand for Victoria was 10,736 MW, and occurred on Tuesday 27 January 2026, compared to the peak of 9,851 MW in 2024-25.
- Victoria recorded its all-time lowest minimum operational demand of 1,287 MW on Saturday 27 December 2025. This was 217 MW lower than the previous record set on New Year's Day 2025.

26 See the 2026 Connection Point Forecast Report at https://www.vicgrid.com.au/transmission-planning/victorian-annual-planning-report

27 Future VAPR reports may also apply this methodology

28 See the 2026 VNPIR at https://www.vicgrid.com.au/transmission-planning/victorian-annual-planning-report

As the gap between minimum and maximum demand continues to widen, the network may require further investment as:

- Continued growth in maximum demand may increase the need for network and generation capacity to reliably meet consumer demand
- Declining minimum demand may increase the need for system strength and power system security services during low-demand periods
- The network may need to be developed to accommodate a wider range of operating conditions, potentially requiring additional and different types of equipment

2.6.1 Operational demand forecasts

Operational demand is defined as the level of electricity drawn from the transmission network, measured in MW, averaged from the power system in half-hour intervals.

Maximum and minimum operational demand means the highest and lowest level of electricity sent out from the transmission system, measured, and averaged in half-hour intervals in either summer (November to March) or winter (June to August).

Maximum and minimum operational demand forecasts can be presented with a probability of exceedance (POE) of:

- 10% POE for maximum demand, based on more extreme conditions that are expected to be exceeded on average one year in 10 (also called one-in-10-year).
- 50% POE, meaning they are expected statistically to be met or exceeded one year in two, and are based on average weather conditions (also called one-in-two-year), or
- 90% POE for minimum demand, based on more extreme conditions that are expected to be exceeded on average nine years in 10 (also called nine-in-10-year). As this is a minimum it is expected that an extreme low minimum will be exceeded more often than a not as low minimum.

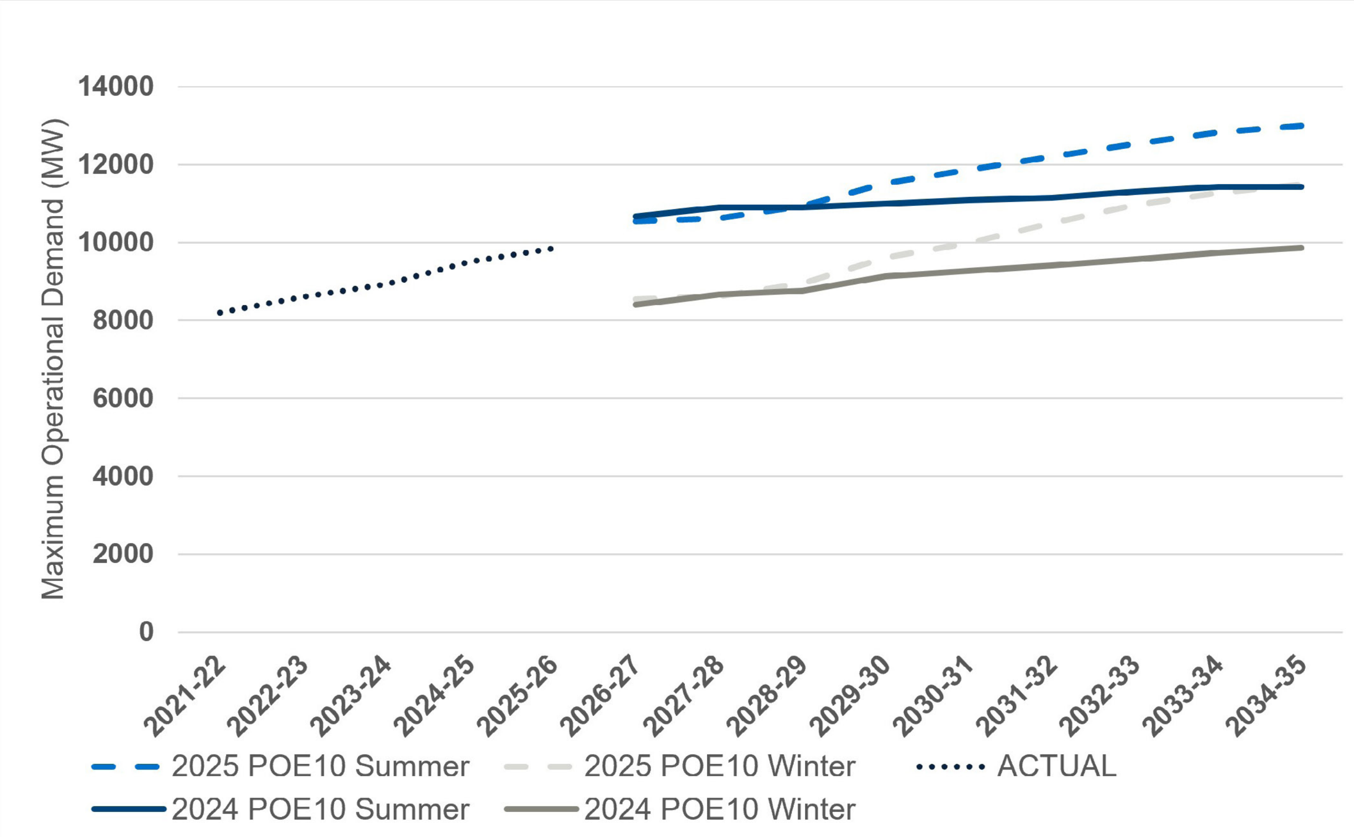
Maximum demand forecast is steadily increasing, at a higher rate than projected last year

The 2025 10% POE coincident maximum demand CP forecasts for Victoria are shown in Figure 8 and compared to equivalent CP forecasts in 2024. The primary influence on summer and winter maximum operational demand forecast trends is the data centre growth. Winter maximum operational demands are also forecast to rise due to increased electrification as consumers transition away from gas. Compared with the 2024 CP forecast, the 2025 maximum demand forecast includes higher demand driven by data centre capacity, particularly over the medium to long term in Victoria.

Key insights are:

- For the next decade, 10% POE demand forecasts are summer-peaking.
- For the first three years, 2025 maximum demand forecasts increase steadily in alignment with the 2024 forecast.
- During the next six years, demand growth accelerates, primarily driven by a substantial growth in projected data centre demand compared to the 2024 CP forecast.
- Winter maximum demand forecasts follow the same trends as the forecast in summer.
- Maximum demand is expected to reach 13 GW by 2034-35, around 1,559 MW higher than previously forecast.

Figure 8 Victorian coincident 10% POE maximum operational demand forecast in 2024 and 2025, 2021-22 to 2034-35 (MW)



Minimum demand forecast is declining, and is projected to be higher than forecast last year

Minimum operational demand is strongly correlated to PV capacity, with minimums often occurring during daytime hours.

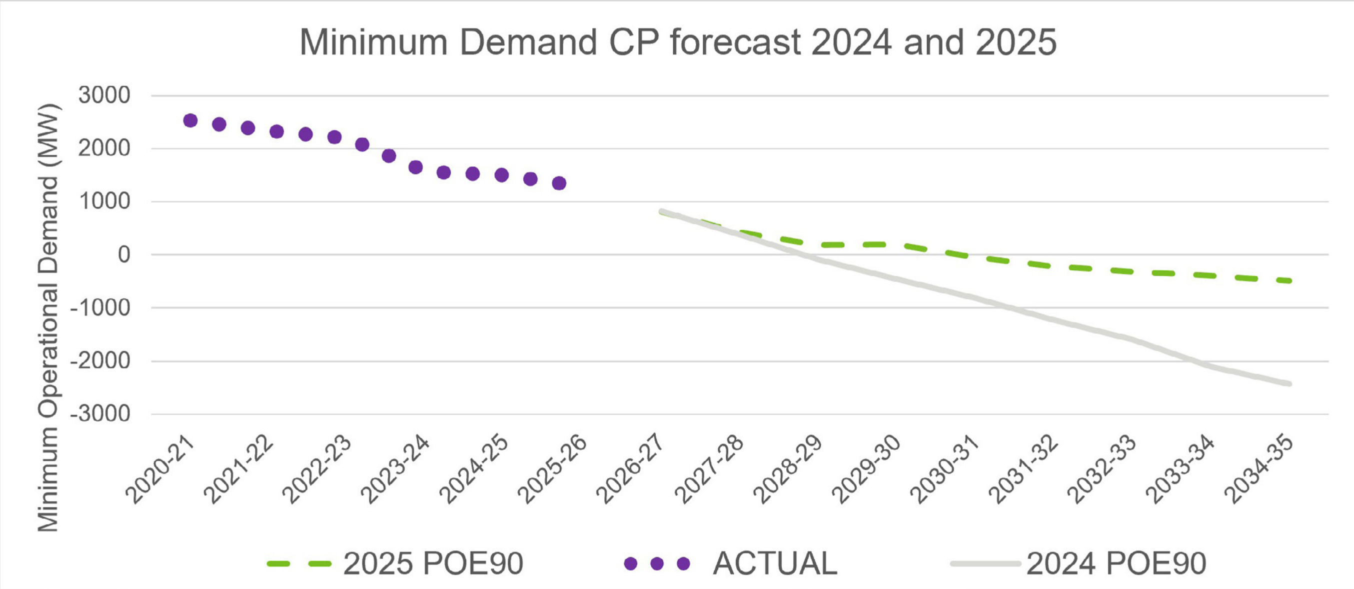
Figure 9 shows the 90% POE minimum demand forecasts in the 2025 connection point forecast,[29] which continue in a downward trend that is projected at a slower rate compared to 2024 primarily due to increases in data centre load, increased electrification and uptake of consumer batteries. Connecting a large amount of additional load to the network can be a benefit for the network during periods of minimum demand.

Key insights for Victoria are:

- Minimum operational demand is anticipated to fall below zero by 2030-2031.
- Between 2026-27 and 2034-35, minimum demand will drop an average of 144 MW at 90% POE, year on year.
- By 2034-35, minimum demand is anticipated to fall below -900 MW.

29 These minimum demand forecasts ignore the impact of scheduled loads such as BESS charging.

Figure 9 Actual and 90% POE forecast minimum demand for Victoria CP demand forecast in 2024 and 2025, 2021-22 to 2034-35 (MW)



2.6.2 Key drivers for change in the forecasts

The main drivers influencing the forecast increase in maximum and minimum demands are:

- Connection of large industrial loads, in particular data centres
- Continued electrification of existing loads
- General population growth in the outer metropolitan areas

Of these 3 key drivers the most significant is the forecast connection of large industrial loads. Large industrial loads are forecast to contribute 2-3 GW of demand (an increase of 1.6 GW more than in the previous forecast) to the Victorian regional demand.

3. Transmission network assessment and development

3. Transmission network assessment and development

This section outlines VicGrid's updated 10-year outlook of transmission projects to support reliable, secure, and affordable electricity for Victoria. It provides information about key network assessments and developments underway for the Victorian DSN and discusses changes since the 2025 VAPR.

Key insights

The 10-year outlook for transmission projects for Victoria is designed to deliver security and reliability objectives in the context of Victorian Government policy and regulatory settings. The projects presented in the plan have been identified as efficient investment solutions that consider the benefits from unlocking lower-cost generation supplies, maintain the reliability of electricity supply to Victorian consumers while ensuring power system resilience, and improve the efficiency of resource sharing between neighbouring regions. As such, timely delivery of these investments is critically important to meet Victoria's energy reliability and security requirements.

The majority of the network and non-network developments currently being progressed in Victoria such as RDP Stage 1 projects, Western Renewables Link (WRL), Victoria to New South Wales Interconnector West (VNI West) and projects identified as part of the VTP, serve to reduce congestion and improve DSN system security to harness renewable generation developments for consumers.

VicGrid's recent regulatory tests and active economic studies include the following:

- The Melbourne Metropolitan Voltage Management RIT-T to manage the voltages in metropolitan Melbourne during high and low demand conditions, which was concluded in December 2024.
- The Victorian System Strength Requirements RIT-T to maintain required system strength services across the DSN under the revised system strength rules, which was concluded in August 2025.
- Feasibility studies for the Red Cliffs–Wemen–Kerang transmission line to increase the transfer capacity. VicGrid has commenced studies for credible network and non-network options to inform future economic testing and project justification.

The 2026 ISP identified no actionable projects in Victoria requiring the commencement of a RIT-T. The ISP reaffirmed VNI West and Marinus Link stage 2 as actionable (RIT-T already completed) and confirmed Western Victoria Reinforcement project (identified in the VTP) and Gippsland Offshore Wind Transmission as actionable.

Together these projects target key thermal, stability, voltage control, system strength, and renewable energy zone (REZ) expansion limits across the state and improve interconnection with neighbouring states.

The 10-year transmission network assessment and development plan is updated annually after undertaking the annual planning review presented in section 4.

VicGrid is progressing transmission projects for the Victorian DSN to deliver reliable, secure and affordable energy to consumers while enabling the energy transition. These projects will facilitate the connection of new generation, increase network capacity to transfer power between new supply centres and demand, and manage emerging operational challenges. Combined, these projects help meet NER network performance requirements, maintain supply reliability, and put downward pressure on costs to consumers in the context of Victorian Government policy and regulatory settings.

Figure 10 and Figure 11 show the transmission projects recently completed and the projects currently in delivery that impact the Victorian transmission network. Figure 12 illustrates the anticipated delivery timeline of transmission projects in progress.

These projects include:

- **Completed projects** – projects that have completed the delivery stage since the publication of 2025 VAPR.
- **Projects in delivery** – projects that have been initiated by VicGrid as part of the VTP, by the government via ministerial orders under the National Electricity (Victoria) Act 2005 (NEVA) or projects that have completed regulatory tests or other planning approvals[30] and have progressed to detailed scoping and design stage.
- **Other planned projects** – all committed and anticipated projects according to the ISP commitment criteria in the ISP Methodology.[31]

VicGrid assesses limitations identified through the annual planning review and develops plans to address these constraints in a manner that efficiently meets reliability and system security objectives over the coming decade. This approach is not intended to remove all network limitations, particularly in areas where generation investments are made in weaker parts of the grid, which may result in generation curtailment, or where the cost of augmenting the network outweighs the benefits to consumers.

VicGrid identifies and monitors future limitations through its planning and connection functions as well as interfaces with AEMO and DTSO operational teams, which could trigger further investigations under specific system changes or generator investment patterns.

The VAPR uses detailed analysis to capture the nature, timing, impact, and triggers associated with potential limitations, which identify the need for network investment. The focus of this work is on identifying projects that are likely to deliver net positive economic benefits under the current regulatory framework, or where corrective action is required to keep the DSN reliable and secure.

Section 3.1 of the VAPR provides more detail about projects, including high-level scope and progress since the 2025 VAPR.

30 Planning approvals refers to electrical approvals; it does not include environmental/town planning or other approvals subject to Victorian Inquiry and Advisory Committee.

31 See https://www.aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2026-integrated-system-plan-isp/isp-methodology

Figure 10 Recently completed transmission projects impacting the Victorian transmission network.

1	RDP Stage 1	2	Heywood communication upgrade
	Heywood–Moorabool 500 kV line uprating, Murraylink Very Fast Runback (VFRB) control scheme modification for Murraylink import conditions, a 250 megavolt amperes (MVA) synchronous condenser with a reactive power capability of +250/-172 megavolt amperes reactive (MVAr) at Ararat Terminal Station (ARTS), Ararat, Waubra, Ballarat, Bulgana and Kiamal terminal station interplant upgrades.		Installation of an optical ground wire on the Heywood– South East line to support high-speed monitoring and improved power system stability management across the interconnector has been completed.

Figure 11 In progress transmission projects impacting the Victorian transmission network.

1	Victorian system strength program	2	VNI West
	To provide minimum and efficient levels of system strength in Victoria. The preferred option portfolio is to progressively install assets and contract services from synchronous machines and grid-forming battery energy storage systems. Competitive procurement processes are underway, and additional options are being explored however lead times may put delivery timeframes at risk.		A new 500 kV double-circuit line from Joel Joel to Tragowel, then connecting to EnergyConnect near Dinawan. The other key items of the project scope include constructing a new 500/220 kV terminal station at Tragowel and cut-in of the existing 220 kV Kerang–Bendigo line. The project will enable 3.4 GW of renewable energy to connect in Victoria and New South Wales (NSW) REZ, increase import and export capacity between Victoria and NSW and maintain security and reliability in the grid. First energisation is due in late 2030.

3 Reconfiguration of Latrobe Valley 220 kV Network

Initiate a project to assess the required minor augmentation works to reconfigure the 220 kV network in Latrobe Valley to operate after YWPS retirement.

4 Gippsland Offshore wind transmission project

Developing the shared transmission line to connect offshore wind energy to the grid. The line will use 500 kV double circuit overhead transmission technology, starting near Giffard and connecting to the Loy Yang Power Station switchyard.

5 Marinus Link

A new high voltage direct current (HVDC) interconnector between Victoria and Tasmania comprising of two 750 MW links delivered in two stages. This project will provide the mainland power system with improved access to Tasmania's dispatchable capacity. The first link will be delivered in 2030.

6 Metro Melbourne voltage management

New reactive power assets provide reactive support to maintain the voltages in metropolitan area within limits during minimum and maximum demand times. Installing three 100 MVAr shunt reactors on the 220 kV level, two at Altona Terminal Station and one at Brooklyn Terminal station in service by 2029, and three 100 MVAr shunt capacitors on the 220 kV level, one at Deer Park Terminal Station in service by 2031, and one each at Malvern and Tyabb terminal stations in service by 2033.

7 RDP Stage 1

Dederang–Glenrowan–Shepparton–Bendigo circuit thermal loading control scheme.

8 Western Renewables Link

New 500 kV double circuit transmission lines from Sydenham to a new 500/220 kV terminal station at Joel Joel. Also includes an interface to the existing 220 kV network at the Bulgana Terminal Station by a short new 220 kV double circuit transmission line. Expected delivery by late 2029.

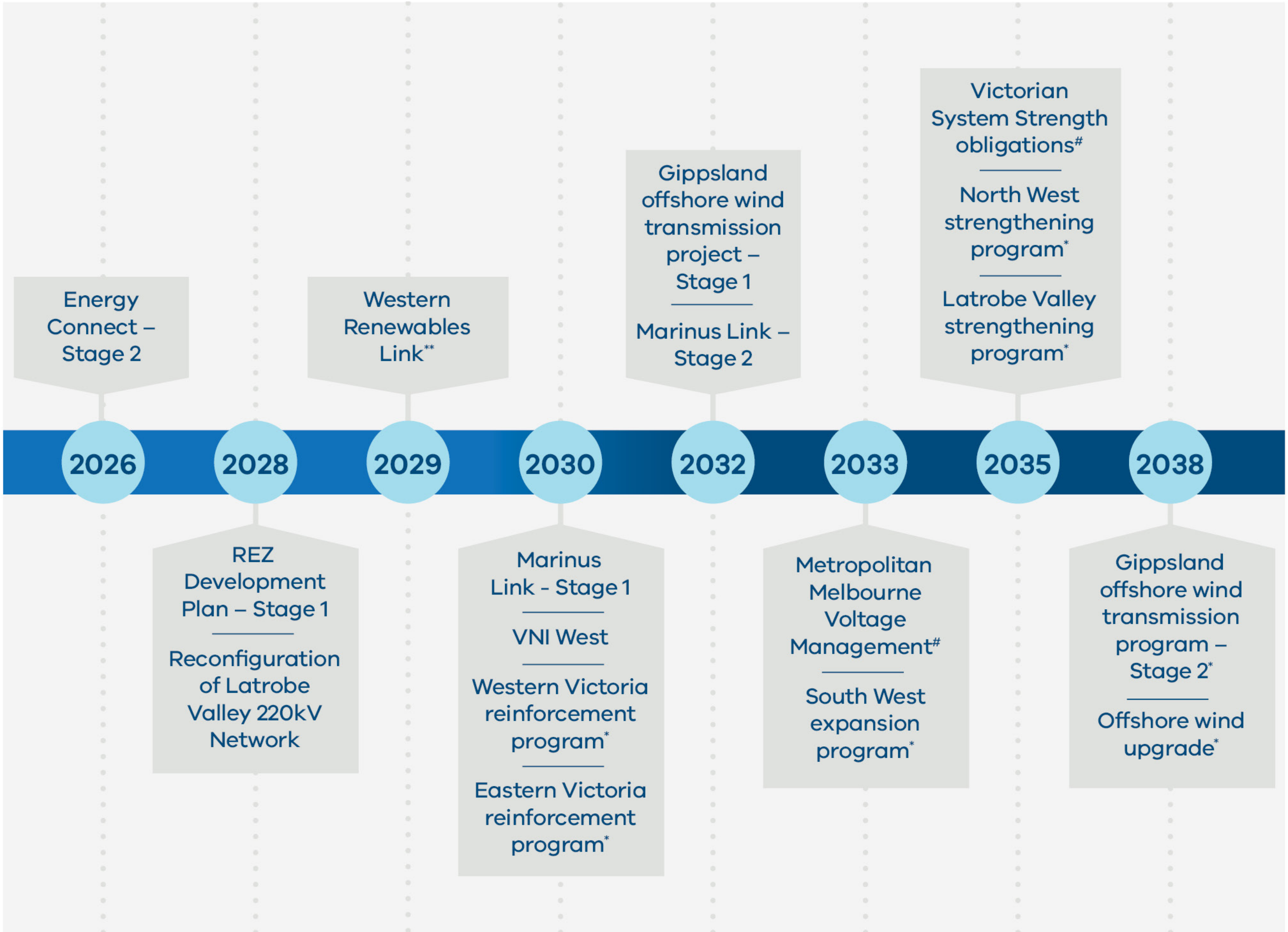
9 SAIT RAS Stage 2 project

Installation of signalling at terminal stations on the Heywood to Moorabool corridor to provide protection signalling to the South Australian Interconnector Trip (SAIT) Remedial Action Scheme (RAS) based on single contingency events. The project also includes installation of phasor measurement units at Heywood terminal station.

10 ENERGYCONNECT Stage 2

New 330 kV double circuit transmission line between Buronga and Wagga Wagga in New South Wales, including a new terminal station at Dinawan and upgrades to Wagga Wagga Terminal Station. Expected delivery by late 2026 (Electranet and TransGrid).

Figure 12 Anticipated delivery timeline of transmission projects impacting the Victorian transmission network.



Key

Projects in delivery phase

Footnotes

\# Refer to VAPR section 3.1.2 for project stage delivery dates.

* Refer to the VTP Appendix A for program stage delivery dates.

** WRL was originally anticipated to be completed in mid-2027 as shown in previous VAPR publications, however the first energisation is now anticipated late 2029.

3.1 Major transmission projects in Victoria

3.1.1 Completed projects since 2025 VAPR

The following projects have completed construction works and been delivered since the 2025 VAPR.

3.1.1.1 New terminal stations in the DSN

- The new Carwarp Terminal Station (CPTS), owned and operated by AusNet Services, between Kiamal Terminal Station (KMTS) and Red Cliff Terminal (RCTS) was energised in November 2025 for the initial connection of Carwarp Solar Farm. The Kiamal–Red Cliffs 220 kV line is now known as the Kiamal–Carwarp–Red Cliffs 220 kV line.
- The new Goorambat East Terminal Station (GETS), owned and operated by AusNet Services, between Shepperton (SHTS) and Dederang (DDTS) terminal stations was energised in October 2025 for the Goorambat East Solar Farm. The Shepperton–Dederang 220 kV line is now known as the Shepperton–Goorambat East–Dederang 220 kV line.
- The new Pine Lodge Terminal Station (PLTS), owned and operated by AusNet Services, between Shepperton (SHTS) and Glenrowan (GNTS) terminal stations was energised in October 2025 for the initial connection of Pine Lodge BESS. The Shepperton–Glenrowan No.3 220 kV line is now known as the Shepperton–Pine Lodge No.3 220 kV and Pine Lodge–Glenrowan No.3 lines.

3.1.1.2 REZ Development Plan (RDP) Stage 1 projects

Four additional RDP Stage 1 projects have been completed since the 2025 VAPR. A total of 10 projects are now complete, with the remaining project in progress detailed in section 3.1.2.1.

- Dynamic line rating scheme to uprate the Heywood–Moorabool 500 kV line, increasing utilisation of existing assets and unlocking additional thermal capacity in the South West Victorian 500 kV network.
- Modification to the VFRB scheme to include the new Murraylink Import Runback scheme for the loss of Bendigo–Kerang and Red Cliffs–Wemen–Kerang 220 kV lines.
- Ararat synchronous condenser – a 250 MVA synchronous condenser with a reactive power capability of +250/-172 MVAr at ARTS.
- Ararat, Waubra, Ballarat, Bulgana and Kiamal terminal station interplant upgrades to remove the station thermal rating constraints on 220 kV line by upgrading, uprating or augmenting the relevant primary plant and secondary equipment.

3.1.2 Major transmission projects underway in Victoria

The following sections outline transmission augmentation projects in delivery in Victoria including projects with neighbouring states.

3.1.2.1 REZ Development Plan (RDP) Stage 1 projects

In 2022, through the REZ Stage 1 Ministerial Orders, the Minister for Energy and Resources directed entry into contracts for nine network augmentations, two non-network services to strengthen the system, and the Mortlake Terminal Station turn-in project involving the turn-in of the Haunted Gully–Tarrone 500 kV transmission line at Mortlake. Since the 2025 VAPR, one minor augmentation project remains in progress[32] to be carried out in the North East and Central North Victoria corridors. These minor augmentations are designed to alleviate the existing thermal constraints to allow additional low-cost renewable generation in regional Victoria to connect to the NEM.

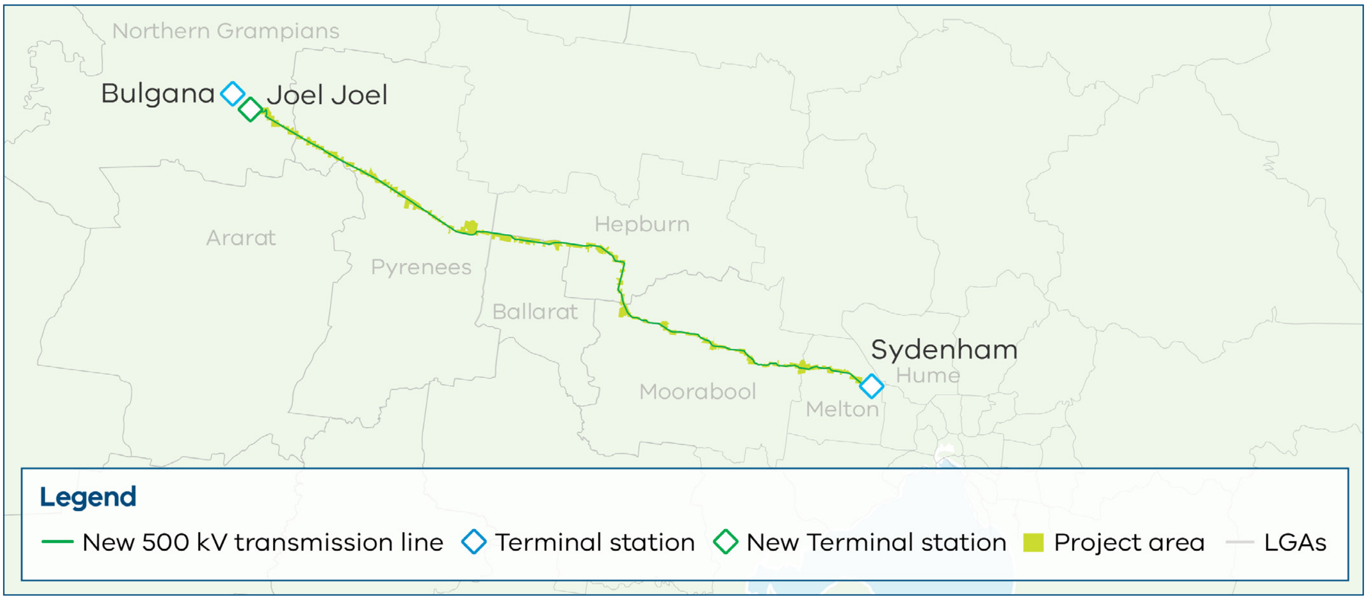
Dederang–Glenrowan–Shepparton–Bendigo circuit thermal loading control scheme

Development of an automatic generator runback scheme designed to manage thermal loading on Ballarat–Bendigo and future Axedale–Fosterville–Bendigo 220 kV network. This scheme aims to dynamically reduce generator output in response to line loading conditions, helping maintain network reliability and prevent thermal overloads. Project delivery has been delayed due to construction of Axedale Terminal Station. The project is planned for completion in Q2 2028.

3.1.2.2 Western Renewables Link (WRL)

In May 2023, the Victorian Minister for Energy and Resources issued order S 267, 27 May 2023 (May NEVA Order) in relation to WRL and VNI West. The effect of the May NEVA Order was to allow the WRL Project to proceed based on a new 500 kV double-circuit transmission line from Sydenham terminal station to the new Joel Joel terminal station (JJTS) near Bulgana (referred to as the Uprate). The order explains why such a course is justified and directed the project to proceed with the Uprate scope. Subject to project assessment and approvals, WRL is planned for 'first energisation' in late 2029.[33]

Figure 13 Project overview map of WRL



32 Murray River REZ and Western Victoria REZ minor augmentation project is complete with revised scope, pending formal approval.

33 WRL was originally anticipated to be in service mid-2027, as shown in previous VAPR publications, however the date has now changed to a first energisation of late 2029.

The uprate scope of WRL consists of:

- Extension of the 500 kV SYTS by two breaker-and-a-half switched bays, including an additional 500 kV switched bus connected reactor sized 100 MVAr, and two 70 MVAr line reactors
- Construction of a new 500/220 kV Joel Joel Terminal Station (JJTS)[34] including a 500 kV switchyard comprising four double switched bays (with provision for extension), two 1,000 MVA 500/220 kV transformers, two 70 MVAr line reactors, and provision for the future development of a 220 kV switchyard
- Construction of a new 500 kV double-circuit transmission line from SYTS to JJTS with approximate length of 190 km
- Redevelopment of the existing 220 kV BGTS, including the expansion of the existing single busbar 220 kV switchyard to a two-busbar breaker-and-a-half (and double switched) switching arrangement, changed bay terminations for the existing BGTS to Horsham Terminal Station (HOTS), BGTS to Crowlands Terminal Station (CWTS) 220 kV transmission lines and the Bulgana Wind Farm transformer connections
- Construction of a new 220 kV double-circuit transmission line from BGTS to JJTS, with an approximate length of 2.5 km
- Establishment of two physically independent route communication links between BGTS and JJTS, and between JJTS and SYTS
- Interface activities at various existing terminal stations including, but not limited to; protection and control system updates, new panel installation, direct current systems, and substation control and information system
- Minor augmentations at existing terminal stations (unless mentioned above) impacted by the above works
- Works at new and existing terminal stations in the northwest to implement special control schemes

The VNI West 500 kV transmission lines will connect into the new JJTS, although the network augmentation for the WRL project is independent of the completion of the VNI West project.

AusNet Services has been engaging with landholders along the transmission route to conduct early works such as geotechnical investigation and field surveys.

The Environmental Effect Statement (EES) for the project was out for public exhibition from 30 June 2025 to 22 August 2025. The Minister for Planning appointed an independent Inquiry and Advisory Committee to review the EES and all public submissions, which involved a public hearing between October 2025 and March 2026. The Inquiry and Advisory Committee provides a report and recommendations to the Minister of Planning, who subsequently makes a decision on the project. AusNet Services continues to engage with landholders and communities throughout the approval process.

The latest project information is available on AusNet Services' dedicated project website.[35]

34 Formally referred to as 'near Bulgana' or 'BXTS' located near the existing 220 kV Bulgana Terminal Station (BGTS)

35 See https://www.westernrenewableslink.com.au

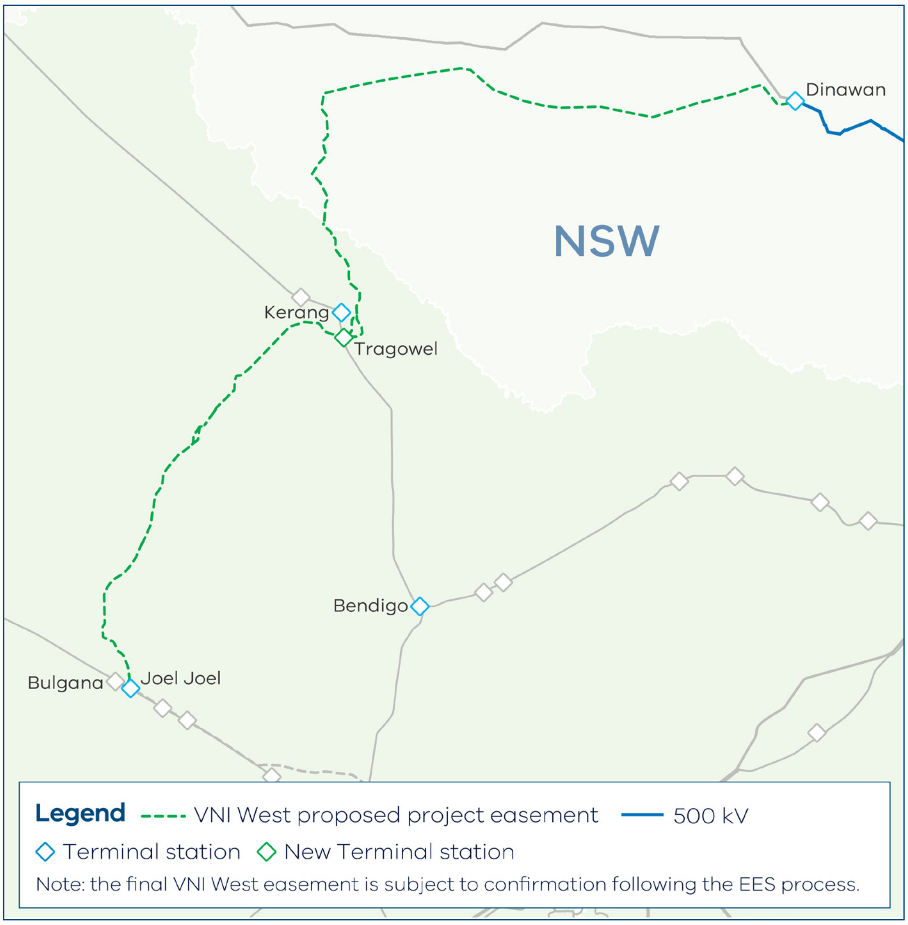
3.1.2.3 Victoria to New South Wales Interconnector West (VNI West)

VNI West is a proposed new high capacity 500 kV double-circuit overhead transmission line, which will deliver vital new transmission infrastructure to:

- Harness forecast of 3.4 GW of electricity from REZs in NSW and Victoria,[36] in particular the wind and solar-rich regions of the North West REZ and the Western REZ
- Add forecast 1.93 GW of electricity export capacity from Victoria to NSW, and 1.67 GW of electricity import capacity from NSW to Victoria[37]
- Maintain security and reliability in the electricity network as coal-fired power stations retire

The 2020 ISP identified the need for an additional Victoria to New South Wales interconnector as an actionable ISP project. The Project Assessment Conclusions Report (PACR)[38] which was published in May 2023, identified the preferred network option for VNI West, charting a broad corridor that connects it to WRL at the new Joel Joel terminal station (JJTS), and crosses the Murray River north of Kerang to connect it to EnergyConnect in New South Wales at the new Dinawan substation. The preferred network option in the PACR is known as Option 5A. VNI West remains an actional project in the 2026 ISP.

Figure 14 Project overview map of VNI West



36 Additional capacity figures taken from the VNI West PACR, which may not align with proposed new REZ from the VicGrid VTP.

37 See https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2025/2025-electricity-network-options-report/draft-2025-electricity-network-options-report.pdf?rev=48fb0dd2d3dd43e59d8fb92862bc27a4&sc_lang=en

38 See https://www.vicgrid.com.au/transmission-planning/regulatory-investment-tests-for-transmission/victoria-to-new-south-wales-interconnector-west#heading-1

The scope of VNI West in Victoria and NSW consists of:

Victoria

- A new 192 km 500 kV double-circuit overhead line from JJTS to Tragowel, including 50% series compensation[39] on the line at Tragowel and 90 MVAr line shunt reactors at each end of each line
- A new 500 kV double-circuit overhead line from Tragowel to the Victorian side of the Murray River, including 120 MVAr line shunt reactors at Tragowel end of each line
- Establishing new Tragowel Terminal Station with two 500/220 kV 1,000 MVA transformers
- Up to +/- 400 MVAr dynamic reactive compensation at the new Tragowel Terminal Station
- 220 kV connections from the new Tragowel Terminal Station to the existing 220 kV lines near Kerang
- Cutting in the Eildon to Thomastown 220 kV circuits at South Morang, in place of previously proposed modular power flow controllers, to prevent overloading on the Eildon–Thomastown 220 kV line

New South Wales

The NSW scope is planned to be delivered in two stages. NSW 'Stage 1' component of VNI West project: the entirety of this stage of the project in NSW is intended to move under the NSW EII Act and will henceforth be known as the South West Renewable Network Infrastructure Project. 'Stage 2', the NSW component of the new 500 kV double-circuit overhead line from Dinawan-Tragowel, remains under the NER and is still referred to as VNI West.

NSW Stage 1:

- Upgrade Dinawan–Wagga–Gugaa double-circuit line from 330 kV to 500 kV operation and bypass at Wagga (lines built at 500 kV as part of EnergyConnect and HumeLink)
- New Dinawan 500 kV switchyard with three 500/330 kV 1,500 MVA transformers[40]
- Expand the Dinawan 330 kV switchyard to cater for SW REZ connections
- 500 kV line shunt reactors at both ends of the Dinawan–Gugaa line
- Install two additional 500 kV busbar reactors at Dinawan for voltage support
- Cut-in existing 330 kV line TL51 into Gugga and forming a new double-circuit 330 kV line between Wagga Wagga and Gugga by rebuilding the existing single-circuit line (TL51) between these locations as a double-circuit
- Potentially a need for a special protection scheme for non-credible contingencies to fulfil NER S5.1.8 planning requirements

39 Series compensation capacitors on both of the 500 kV circuits between Tragowel and near Bulgana, to reduce impedance on the new 500 kV network and thereby improve network load sharing with, and manage network loading on, the existing 330 kV VNI and the existing 220 kV western Victoria network between Bendigo and Kerang.

40 A third transformer is required in addition to original scope to support the full capacity export from NSW South West REZ development.

NSW Stage 2:

- New double-circuit 500 kV transmission line from Dinawan to the Victorian border
- Installation of 330 kV reactors at Wagga Wagga to manage system voltages
- Reconnect the 500 kV busbar reactors installed at Dinawan under the Stage 1 scope as line shunt reactors for the Dinawan–Tragowel 500 kV double circuit lines

Victoria/NSW

- Special Protection Schemes for non-credible contingencies to fulfil NER S5.1.8 Planning requirements.

Environmental Approval Process – Victoria

Consultation with community, landholders and Traditional Owners has informed the refinement of the PACR Area of Interest into the draft corridor, as documented in the Draft Corridor Report.[41] Published in October 2023, the report proposed a narrowed draft corridor for Victoria that is roughly 2 km wide on average. The draft corridor was then further refined through desktop and field environmental assessments, and discussion with landholders and communities, to arrive at a preferred easement,[42] which was published in October 2024. The preferred easement is now undergoing planning and environmental assessments.

Subject to project assessment and approvals, VNI West is planned for energisation in late 2030 and planned to be fully operational (with inter-network testing complete, subject to market conditions) in late 2031.

Environmental Approval Process – NSW

The Environmental Impact Statement (EIS) for the NSW section of the VNI West project was placed on public exhibition in August 2025.[43] Following public exhibition of the EIS, Transgrid has continued to refine and develop the project in response to stakeholder feedback and ongoing design requirements. These changes will be documented in an Amendment Report. Transgrid is also currently preparing a Submissions Report which collates, categorises and responds to the submissions received on the EIS. The Submissions Report and Amendment Report will be lodged with the Department of Planning, Housing and Infrastructure in mid-2026, and will be made publicly available on the NSW Major Projects Planning Portal.[44]

41 See https://www.transmissionvictoria.com.au/download_file/view/209/494

42 See https://www.transmissionvictoria.com.au/download_file/view/93/494

43 See https://www.planningportal.nsw.gov.au/major-projects/projects/victoria-nsw-interconnector-west

44 See https://www.planningportal.nsw.gov.au/major-projects/projects/victoria-nsw-interconnector-west

3.1.2.4 Metropolitan Melbourne Voltage Management

Investment is required to maintain efficient and cost-effective voltages in the metropolitan Melbourne region that cater for high and low demand periods and respond to forecast changes in the DSN and the East Coast's broader power system.

The Metropolitan Melbourne Voltage Management RIT-T PACR was published in December 2024, marking the final report of this RIT-T. The PACR presents the preferred option, which is to progressively install, and contract services from reactive power assets, including:

- Three 100 MVAr shunt reactors on the 220 kV level, two at Altona Terminal Station (ATS) and one at Brooklyn Terminal Station (BLTS), to be in service by 2029
- One 100 MVAr shunt capacitor on the 220 kV level at Deer Park Terminal Station (DPTS), to be in service by 2031
- Two 100 MVAr shunt capacitors on the 220 kV level, one each at Malvern Terminal Station (MTS) and Tyabb Terminal Station (TBTS), to be in service by 2033

The proposed investments have a total estimated capital cost of $47.5 million (in 2024 Dollars) and are forecast to deliver a net present value economic benefit of approximately $255.1 million.

In March 2026, VicGrid entered into an Early Works Agreement with AusNet Services Transmission to:

- Undertake initial site investigations at all sites under Stage-1 ATS and BLTS
- Develop technical specifications for reactor procurement

VicGrid plans to execute a Project Agreement /Additional Network Services Agreement by August 2026 to enable the ATS and BLTS reactors to be in service by July 2028.

3.1.2.5 Victorian System Strength Program

Under NER S5.1.14(b), VicGrid, as the System Strength Service Provider for Victoria, is responsible for proactive provision of system strength services to maintain power system stability and to facilitate efficient IBR connections. These services must meet the requirements as forecast by AEMO in its annual Transition Plan for System Security[45] which replaces the previous annual System Strength and Inertia reports.

The Victorian System Strength Requirement RIT-T PACR,[46] published in August 2025, confirmed the preferred option portfolio to progressively install or contract services, including those from existing and future synchronous machines and grid-forming BESS, as shown in Table 6.

45 See https://www.aemo.com.au/energy-systems/major-publications/transition-plan-for-system-security-tpss

46 AEMO, Victorian System Strength Requirement RIT-T, at https://aemo.com.au/initiatives/major-programs/victorian-system-strength-requirement-regulatory-investment-test-for-transmission

Table 5 Victorian System Strength Requirement RIT-T – Option portfolio 3 – Summary of components

Financial year	Minimum fault levels	Efficient level
2025-26	Existing generators, including conversion of some units to be capable of operating in synchronous condenser mode 1 x Existing synchronous condenser at the Red Cliffs system strength node (SSN)	Covered by minimum fault level requirements
2026-27		
2027-28		900 MW grid-forming (GFM) BESS Moorabool SSN
2028-29	Same as 2028 + 2 x synchronous condensers Hazelwood SSN	Same as 2028 + 350 MW grid-following (GFL) to GFM BESS Hazelwood SSN
2029-30		
2030-31	Same as 2030 + 1 x synchronous condenser Hazelwood SSN	
2031-32		Same as 2031 + 500 MW GFL to GFM BESS Hazelwood SSN 350 MW GFL to GFM BESS Moorabool SSN 400 MW ISP forecast GFM BESS Hazelwood SSN
2032-33		Same as 2032 + 300 MW GFL to GFM BESS Moorabool SSN
2033-34	Same as 2033 + 1 x synchronous condenser Hazelwood SSN	
2034-35		Same as 2034 + 65 MW GFM BESS Red Cliffs SSN + 1 x 500 kV synchronous condenser Giffard (Gippsland) Offshore Wind Hub
2035-36	-	-

Notes:

- Option portfolio 3 (as well as all other option portfolios) also assumes two synchronous condensers at Buronga in each of 2026 and 2027 as part of EnergyConnect Stage 1 and Stage 2, respectively. These four synchronous condensers have not been shown in the table above since, while the portfolio options rely on them as an interstate contribution, VicGrid is not proposing to contract them and they form part of the assumed interstate contribution (which has been factored into the options portfolio development process).
- 'Same as' refers to the same components as that year but, where the use of existing synchronous generation is included in this, it does not imply the same operation of these units between years.

The proposed investments have a total estimated capital cost of $689.5 million (in 2024 dollars) and are forecast to deliver a net present value economic benefit of approximately $3.85 billion.

To meet the minimum three phase fault level at each system strength node in Victoria (that is, the minimum level of system strength as forecast by AEMO), VicGrid is procuring system strength under the following stages:

- **Stage 1:** contracting with existing synchronous generators or synchronous condensers to provide system strength services when required. VicGrid has executed a number of contracts with existing assets and negotiations continue for further contracts in order to meet the ongoing need.
- **Stage 2A:** contracting for new synchronous condenser services at or near the Hazelwood SSN. Following the receipt of expressions of interest in April 2026, the next phase of procurement commenced in July 2026. VicGrid plans to execute a development phase agreement with a preferred delivery partner in late 2026 and place orders for long lead equipment soon after to meet the minimum fault level requirements by 2028-29. The delivery lead times on synchronous condenser investments put 2028-29 delivery at a heightened risk. VicGrid is exploring supplementary options to manage this risk; including through additional Stage 1 contracts or Stage 2B conversions (see below).

- **Stage 2B:** contracting with existing generators for conversion of synchronous assets to be able to function as synchronous condensers (for example by addition of a clutch). VicGrid has commenced investigating the feasibility of conversion projects with existing asset owners.
- **Stage 3:** contracting with grid-forming BESS to meet the efficient level of system strength requirements. VicGrid intends to commence the Stage 3 procurement in late 2026.

If the Victorian System Strength Program is not delivered in a timely manner, it could expose Victoria to a shortfall of system strength. VicGrid is continuing to investigate alternative options and technologies beyond those specified in the RIT-T to manage the risk, including support for AEMO's Type 2 Trial of grid forming BESS' ability to provide protection quality fault current.

Further information on system security requirements is detailed in section 4.3.2 of this report.

3.1.2.6 Committed new terminal stations

New shared terminal stations are planned, designed and constructed with provisions for future connections for interested parties. The following new shared terminal stations are currently in construction or committed as part of new transmission connection to the DSN:

- Delburn Terminal Station (DLTS), owned and operated by AusNet Services, is committed to be established as part of the Delburn Wind Farm project. The planned energisation for this shared terminal station will be in mid-2028. The shared terminal station is a new cut-in along the Hazelwood PS–Rowville No.1 220 kV line.
- Gnarwarre Terminal Station (GWTS), owned and operated by Australian Energy Operations (formerly known as Transmission Operations Australia), is planned to be energised by November 2026. This shared station is being established to facilitate the Gnarwarre BESS project and will be cut into the existing Moorabool–Terang 220 kV line.
- Axedale Terminal Station (ADTS), owned and operated by AusNet Services, is planned to be energised by December 2026. This shared station is being established for the committed Axedale Solar Farm and Fosterville Solar Farm projects and will cut into the existing Bendigo–Fosterville–Shepparton 220 kV line.

3.1.2.7 Reconfiguration of Latrobe Valley 220 kV network

The Latrobe Valley reconfiguration project was identified in the 2023 VAPR to enhance the utilisation of the 220 kV network between Latrobe Valley and Melbourne, and reduce reliability risks after retirement of Yallourn West Power Station (YWPS). It involves rearrangement of existing infrastructure to minimise risks of overloading transformers and lines at times of high demand post the retirement of YWPS.

At times of high demand while YWPS is in service (Figure 15), the 220 kV and 500 kV networks share the supply to Rowville from the Latrobe Valley, which minimises risks on the 500/220 kV transformers and on the 220 kV lines connected to Rowville. When YWPS retires, the 220 kV lines from the Latrobe Valley to Rowville become unused. At times of maximum demand the 500/220 kV A1 transformer at Rowville is forecast to be overloaded under system normal operation if no actions are taken.

In the 2023 VAPR, options to reduce the risk on the Rowville A1 transformer after YWPS retires were assessed with a recommended change to a modified parallel mode (Figure 16) as the best option.

Figure 15 Latrobe Valley high demand radial mode

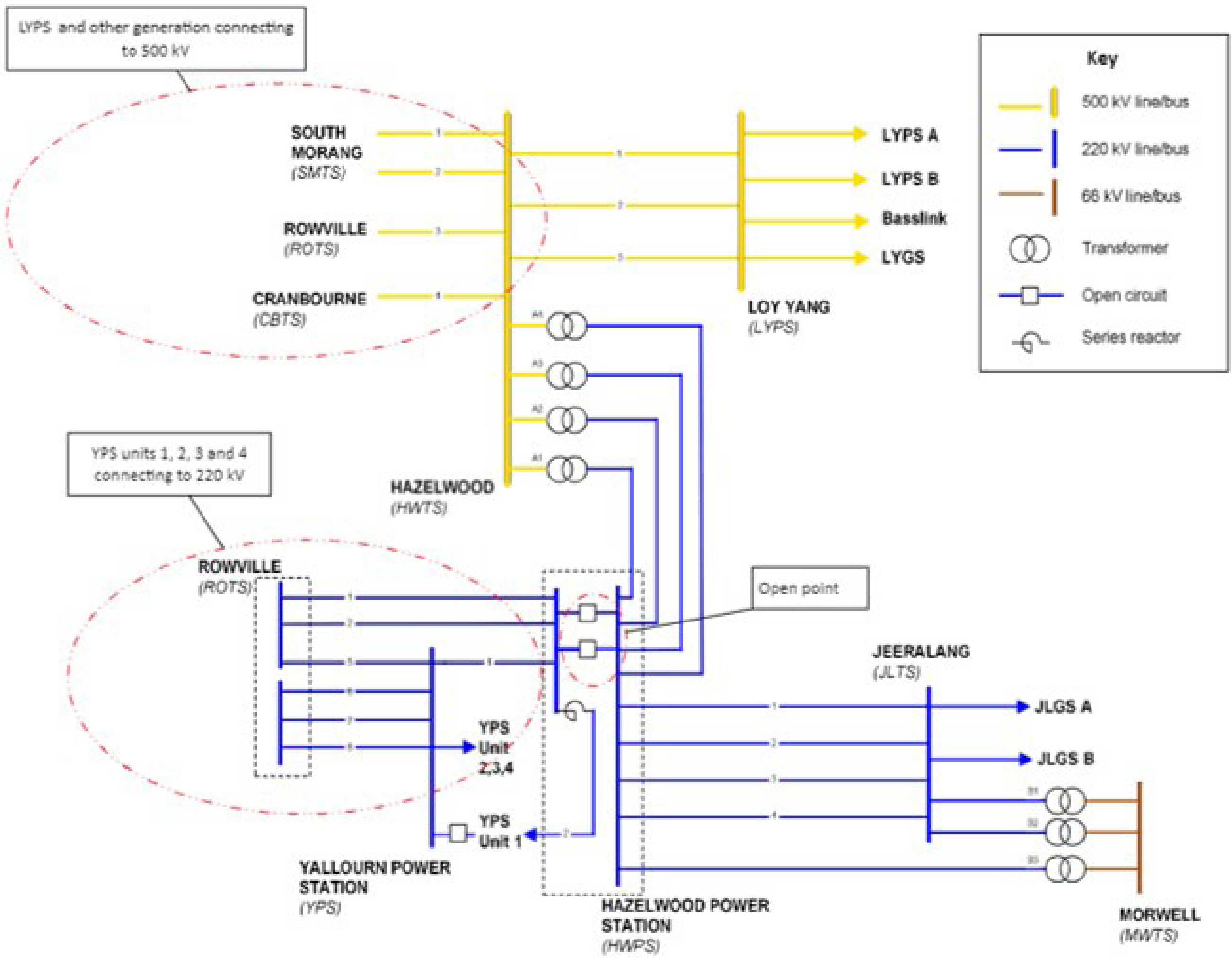
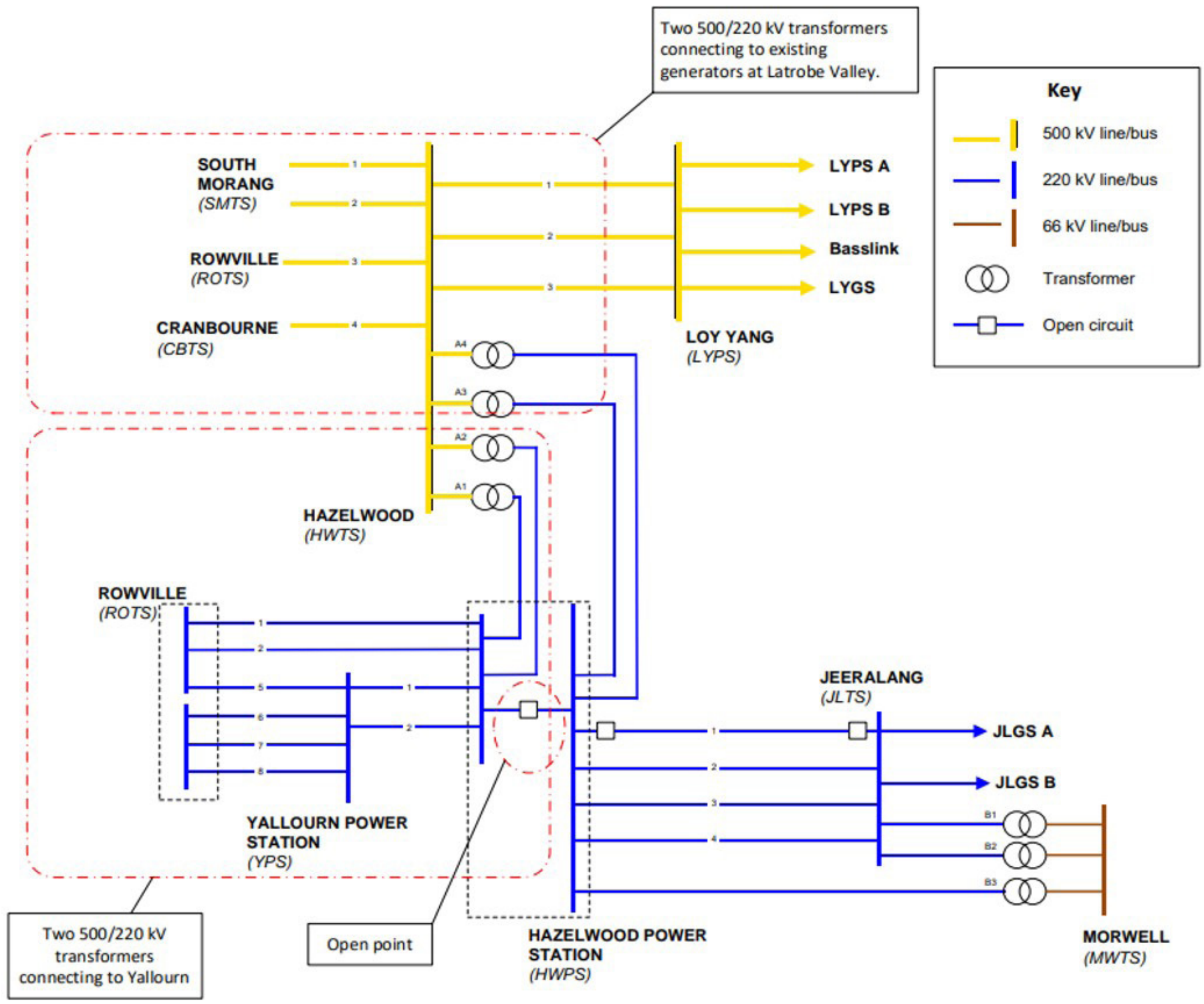


Figure 16 Latrobe Valley modified parallel mode



Since the 2023 VAPR, works have commenced with the relevant asset owners to ensure their completion to allow the transition to a modified parallel operating mode when YWPS retires. These works include:

- Minor works on the Hazelwood–Yallourn No.1 and No.2 220 kV lines to increase short-term line ratings
- Bypassing the series reactor at Hazelwood 220 kV bus 6
- Switching operations at Hazelwood, Jeeralang and Yallourn to achieve the bus groups shown in Figure 7
- Installing overload protection schemes on the Hazelwood–Yallourn 220 kV lines and on the Hazelwood 500/220 kV transformers to prevent overloads under contingencies (see section 4.4.5 for more details)

Since the 2024 VAPR, a cost-benefit assessment justifying the proposed reconfiguration works has been completed, and working with the relevant asset owners, a detailed scope of works for the project has also been completed. It is anticipated that contracts for the works will be in place by Q3 2026, with delivery planned before the closure of YWPS. Timely delivery of this project is critical to enabling supply to the metropolitan Melbourne area from the Latrobe Valley. Without this solution in place the transfer capability for supplies from the Latrobe Valley to Melbourne are significantly reduced (approximately 20% reduction).

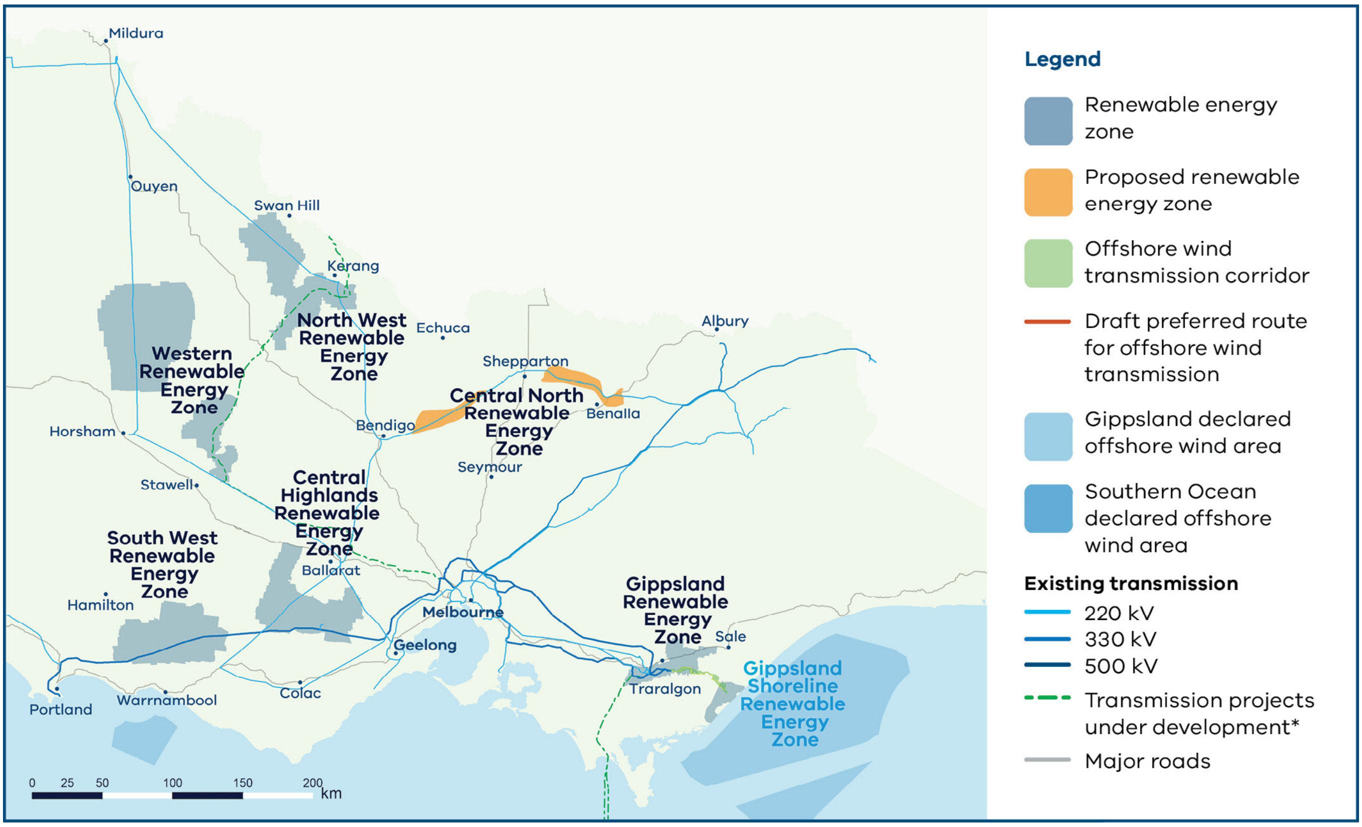
3.1.2.8 Victorian Transmission Plan priority programs

The VTP[47] is a coordinated approach to developing energy generation and transmission infrastructure on a least regrets basis. The 2025 VTP proposed six new onshore REZs, and a shoreline zone to connect offshore wind projects to Gippsland (Figure 17) with a plan to connect 21.8-35.2 GW of wind, solar and BESS resources by 2040.

In May 2026, the Minister for Energy and Resources declared five onshore REZ – South-West, Central Highlands, Gippsland, Western and North West – as well as the Gippsland shoreline REZ pursuant to Ministerial order under section 63 of the NEVA.[48] The VTP also identified seven new priority programs (Figure 18) required, over and above the existing transmission projects under development across Victoria.

The procurement for the priority programs has commenced and a report on their progress will be included in the 2027 VTP.

Figure 17 Victoria's renewable energy zones



Source: https://www.vicgrid.com.au/transmission-planning/renewable-energy-zones

47 See https://www.vicgrid.com.au/transmission-planning/victorian-transmission-plan

48 See https://www.energy.vic.gov.au/about-energy/legislation/victorias-renewable-energy-zone-declaration-orders

Figure 18 **Map of new priority programs in the 2025 VTP**

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 stage 1

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

Source: https://www.vicgrid.com.au/__data/assets/pdf_file/0032/761396/2025-victorian-transmission-plan.pdf

3.1.2.9 Gippsland Offshore wind transmission project – stage 1

VicGrid in coordination with Offshore Wind Energy Victoria, is developing the shared transmission line to connect offshore wind energy to the grid to enable the Victorian Government's offshore wind energy generation capacity targets.

VicGrid are leading the approach for new shared transmission infrastructure to connect the proposed offshore wind generation off the Gippsland coast and in the Southern Ocean region.

The Gippsland offshore wind transmission project – stage 1 is an extension to the transmission network from AusNet's Loy Yang Power Station switchyard to the proposed new terminal station in Giffard, to facilitate the connection of offshore wind projects in the Gippsland Offshore Wind Declared Area, as shown in Figure 20. The transmission line will use 500 kV double circuit overhead transmission technology. The project was included in the 2025 VTP and has been identified as actionable in the 2026 ISP.

VicGrid has undertaken extensive environmental and technical studies and engagement with landholders, Traditional Owners and local communities to identify the most suitable route for this new transmission line. VicGrid expects to announce the preferred route and reference design for the transmission line in late 2026 and is continuing to work closely with landholders and communities as the project progresses towards planning and environmental approvals.

VicGrid is in the final stages of a competitive tender process to select a development partner for the project, with the successful partner expected to be announced in late 2026.

To connect the offshore wind farms, cables will run under the sea floor to the shore at selected shoreline crossing locations and continue underground to the proposed terminal station in Giffard. These cable routes will be located within the Gippsland Shoreline REZ, a limited area between the coast and the South Gippsland Highway where offshore wind developers will need to locate their underground cable routes. This zone is different from other REZs, which are designed to host onshore wind, solar or battery projects. The shoreline zone is not designed to host onshore wind or, solar or battery projects. Instead, it is a defined planning area for offshore wind developers to run underground cables from the shoreline to the electricity grid (see Figure 11 for the proposed shoreline crossings). The zone does not restrict onshore wind, solar or battery projects from seeking to develop in the area. Once the Victorian Access Regime is in place, developers of any proposed projects will be required to apply for a grid impact authority and demonstrate that their projects are unlikely to disrupt generation supplied by offshore wind projects.

The Southern Ocean region is not part of this project. Offshore wind projects in this area will connect into the existing South-West transmission network. No shoreline crossings have been identified for this area; these are likely to be addressed by the offshore wind developer or developers. Offshore Wind Energy Victoria is considering a support package for developers to bring the extensive development and construction experience of offshore wind energy to Victoria to support the first offshore wind in the Gippsland Offshore Wind Declared Area REZ.[49]

49 See https://www.energy.vic.gov.au/renewable-energy/offshore-wind-energy/offshore-wind-energy-victoria

Figure 19 Study area and indicative connection hub for offshore wind generator connections

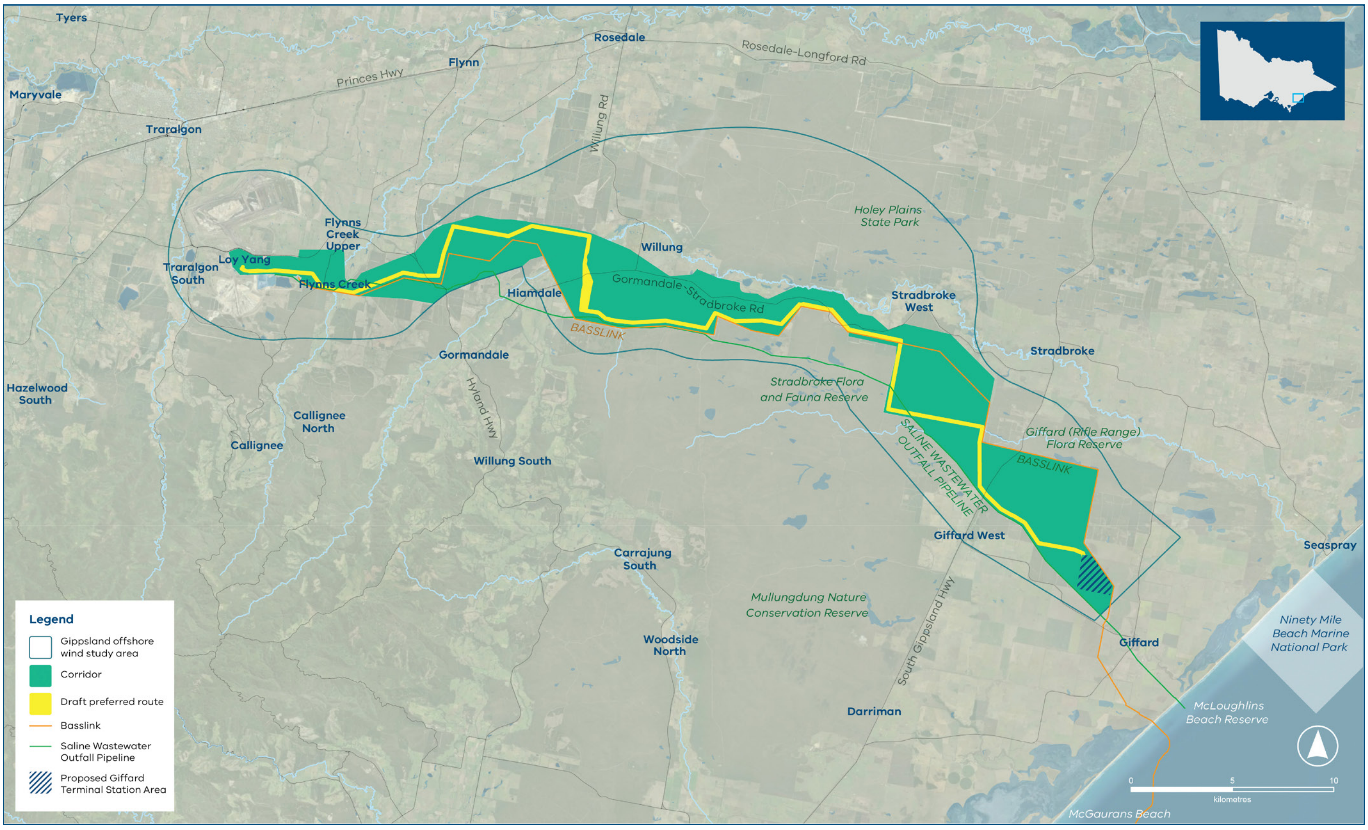
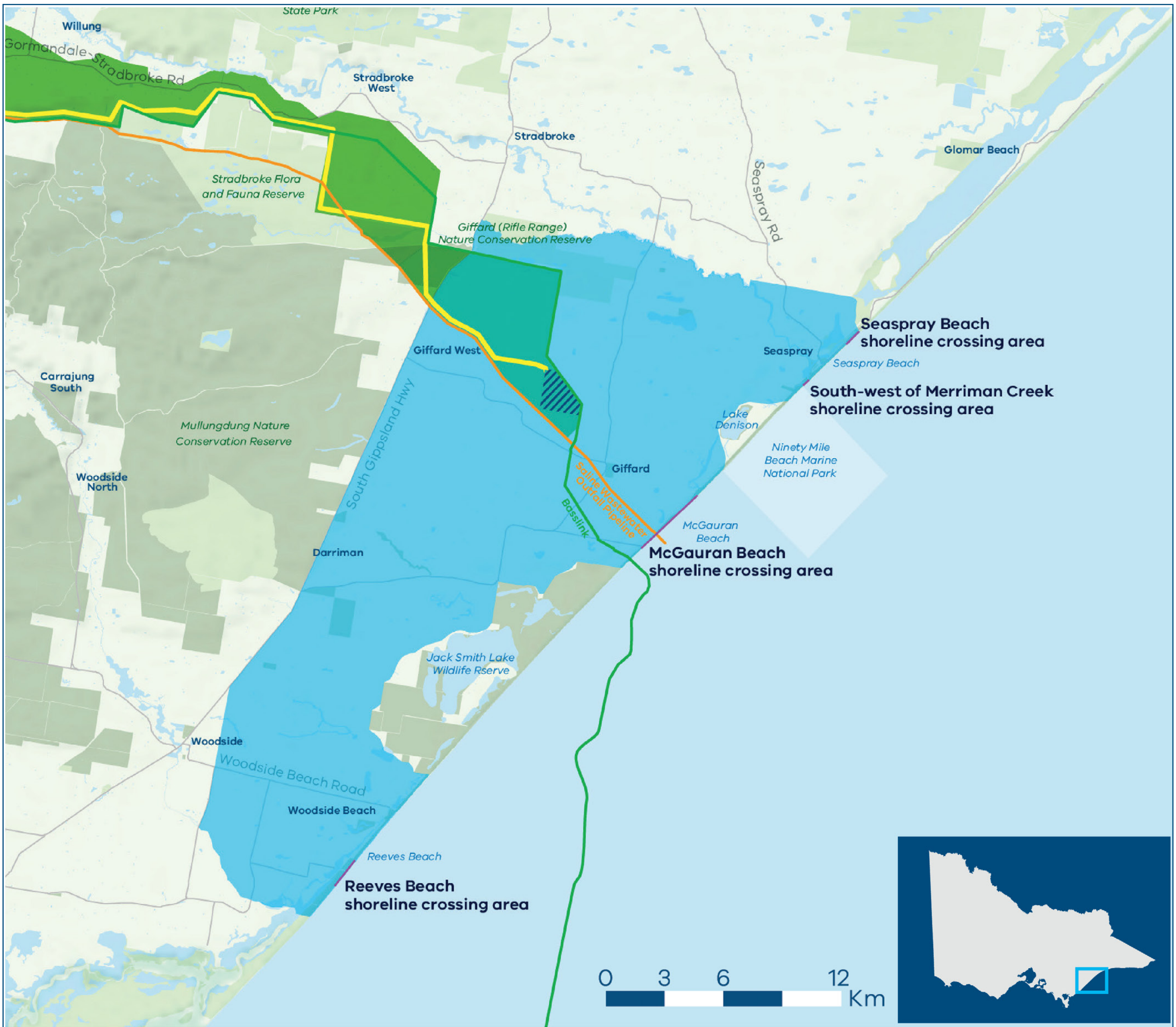


Figure 20 Proposed shoreline crossing area



Legend

- Proposed shoreline crossing area
- Offshore wind transmission corridor
- Proposed Giffard terminal station area
- Gippsland Shoreline Renewable Energy Zone
- Draft preferred route for offshore wind transmission
- Basslink
- Saline Wastewater Outfall Pipeline

3.1.2.10 EnergyConnect

EnergyConnect is a committed interconnector between South Australia (SA) and NSW, with connection to Victoria at Red Cliffs, with a transfer limit of 800 MW. The project is aimed at reducing the cost of providing secure and reliable electricity across the NEM, while facilitating a longer-term transition to low-emission energy sources in northern SA and southern NSW. The completion of EnergyConnect will provide increased transfer between Victoria and NSW via the upgraded Red Cliffs-Buronga 220 kV connection.

EnergyConnect will be commissioned in two stages:

- **Stage 1 (complete)** – a new 275 kV and 330 kV double-circuit interconnector has been built from Robertstown in mid north SA to Buronga in south-west NSW, via a new 275/330 kV substation at Bundey in SA. A new 220 kV double circuit line has been built between Buronga and Red Cliffs in Victoria, replacing the existing single circuit line, and increasing the line thermal capacity to 800 MVA per circuit. Commissioning of EnergyConnect Stage 1 and inter-network testing was completed in April 2025. The transfer capacity of the new South Australia–New South Wales interconnector (SNI[50]) following Stage 1 completion is 150 MW.
- **Stage 2** – a new 330 kV double circuit transmission line (540 km) will be built between Buronga and Wagga Wagga in NSW, a new substation will be constructed at Dinawan in NSW, and the existing substation at Wagga Wagga will be upgraded. The section between Dinawan and Wagga Wagga will be constructed to 500 kV but operated initially at 330 kV in anticipation of the VNI West double-circuit line connecting at Dinawan at 500 kV. Stage 2 is planned to be completed by ElectraNet and Transgrid in late 2026. The Stage 2 works include the following changes in the Victorian Network:
  - **South East Switching Station to Heywood Optical Ground Wire** – ElectraNet and AusNet have completed optical ground wire upgrades between Heywood and the South East Substation, a critical node within the Heywood interconnector (HIC) corridor linking Victoria and SA. The works included installing optical ground wire to enhance real-time data exchange and grid protection capabilities, supporting high-speed monitoring and improved power system stability management across the interconnector.
  - **HIC internetwork testing** – The HIC between Victoria and SA was upgraded in 2016 with an increased design transfer capacity of 650 MW in both directions, however due to stability limits identified following the SA black system event in 2016 the interconnector has been limited to 550 MW for SA export and 600 MW for SA import. Inter network testing is currently progressing, with the aim of assessing conditions for potential release of the full design capacity.

This project includes the SAIT RAS which was designed to cater for the separation of SA from HIC or 500 kV Victorian network under high power transfer conditions that could result in transient instability in SA. This scheme includes a Victorian component to detect any loss of both 500 kV lines between Heywood and Moorabool in Victoria, which will result in an effective separation of SA from South West Victoria, either due to a credible contingency during a prior outage or non-credible event. ElectraNet has commissioned Stage 1 of the scheme, including its Victorian component, and is progressing additional works for Stage 2 of the scheme with AusNet and VicGrid.

50 SNI refers to the South Australia – New South Wales Interconnector, developed as part of the EnergyConnect project.

These additional works under Stage 2 include:

- **SAIT RAS (Stage 2)** – AusNet is undertaking works at terminal stations along the Heywood to Moorabool corridor to provide protection signalling to the SAIT RAS scheme based on single contingency events. The project also includes installation of phasor measurement units at Heywood Terminal Station.
- **HIC RAS** – as a separate project, VicGrid is proposing to add this new scheme to trip load and generation connected to the South West Victoria corridor. This scheme will better manage transient stability post non-credible separation of SA from the 500 kV Victorian network. Refer to section 4.4.2 for more details.

3.1.2.11 Marinus Link

Marinus Link is an underground and undersea electricity transmission project currently under construction, comprising two 750 MW HVDC links to further connect Tasmania and Victoria.

This project will provide the mainland power system with improved access to Tasmania's dispatchable capacity (including deep storages) and high quality variable renewable energy (VRE) opportunities, helping reduce the scale of investment needed on the mainland. The characteristics of customer demand, generation, and storage resources vary significantly between Tasmania and the rest of the NEM, and improved access between Tasmania and the mainland will allow the NEM to capitalise on this diversity.

This project will be delivered in two stages, initially as a 750 MW project (Stage 1) due to start construction in the second half of 2026, with a second 750 MW link to follow at a later date (Stage 2). In August 2025, Marinus Link Stage 1 reached the final investment decision milestone with a planned project completion for Stage 1 in 2030. Marinus Link Stage 2 was identified as an actionable project in the 2026 ISP.

3.1.3 Reducing constraints with projects already underway

The on-time delivery of these major augmentation projects is critically important to unlock the network opportunities and enable consumer benefits via renewable energy sources.

During April 2025 to March 2026 there were 17 high impact constraints meeting the limits of over 20 binding hours and over $60,000 of binding market impact. Among the top 17 constraints in the reporting period, 10 are from the Western Victoria and North West Victoria corridors which is reasonably consistent with previous years (past 10 years). Throughout the reporting period 13.4% and 3.4% of curtailment in VRE generation was observed in North West Victoria and Western Victoria corridors respectively, which is a slight reduction compared to last year where 16.7% and 3.1% curtailment was observed.

Many of the constraints listed are expected to be relieved by the completion of major augmentation projects such as WRL and VNI West, which are expected to reduce the impact of nine high impact constraints.

The tables below summarise existing Victorian DSN constraints where there are projects underway that are expected to reduce the impact of those constraints. The constraints are ranked by their impact on generation dispatch during the reporting period. Where there are currently no planned projects to address network constraints, VicGrid will continue to monitor those constraints and raise suitable projects when options with positive net market benefits are identified. The full list of high impact constraints including those with no planned projects are in the VNPIR.[51]

51 See the 2026 VNPIR at https://www.vicgrid.com.au/transmission-planning/victorian-annual-planning-report

Table 7 contains the high impact constraints in the Western Victoria and North West Victoria corridors and the impact of planned projects on these constraints.

Table 8 contains the high impact constraints in the South West corridor and the impact of planned projects on these constraints.

Table 9 contains the remaining constrained areas of the DSN in North East Victoria and the Victoria–New South Wales Interconnector East (VNI East) and the impact of planned projects on these constraints.

Table 6 Impact of planned projects on existing limitations – Western Victoria and North West Victoria corridors

Rank	Equation(s)	Description of constraint	Upcoming projects	Planned completion date
1	North West Victoria voltage oscillations (prior outage)	This represents a set of the network constraint equations associated with voltage oscillation during a range of prior outage conditions. VicGrid is continuously reviewing these constraints as revised models are obtained and based on upcoming outage schedules.	Recently completed system strength improvement project to construct the Ararat Synchronous Condenser has been delivered as a part of the Victorian Government's RDP and is expected to reduce the impact of this constraint.	FY 2025-26
2	Kerang voltage collapse V^^V_NIL_KGTS V^^V_NIL_KGTS_2	To avoid voltage collapse at Kerang due to the loss of Horsham–Murra Warra–Kiamal 220 kV line considering Murraylink VFRB scheme enabled and disabled.	EnergyConnect and VNI West are expected to reduce the impact of these constraints.	FY 2031-32
4	Waubra to Ballarat thermal V>>NIL_WBBA_RCWEKG, V>>NIL_WBBA_KGBE, V>>NIL_WBBA_BESH, V>>NIL_WBBA_RCBSS, V>NIL_WBBA_KMRC, V>>BDBU_WBBA_RCWEKG, V>>BDBU_WBBA_BESH, V>>BDBU_WBBA_KGBE	To avoid overloading Waubra–Ballarat 220 kV line on trip of the Red Cliffs–Wemen–Kerang, Kiamal–Red Cliffs, Kerang–Bendigo or Red Cliffs–Buronga 220 kV lines. The V>>BDBU_WBBA_RCWEKG and V>>BDBU_WBBA_BESH is to avoid overloading Waubra-Ballarat 220 kV line during the outage of the Bundey–Buronga (6F) 330 kV lines.	Minor augmentations as part of the Victorian Government's RDP Stage 1 projects and the VTP project 3.1 to rebuild the existing transmission line between Murra Warra, Horsham and Ballarat into a high-capacity double circuit line are expected reduce the impact of these constraints.	FY 2035-36
5	Red Cliffs voltage collapse V^^SML_NIL_3 V^^SML_NSWRB_2	To avoid voltage collapse at Red Cliffs for the loss of Bendigo–Kerang 220 kV, Darlington Point–Balranald (X5) or Balranald–Buronga (X3) 220 kV lines when the NSW Murraylink runback scheme is unavailable.	EnergyConnect is expected to reduce the impact of these constraints. Completion of VNI west is expected to reduce the risk of loss of connection to Kerang 220kV with the line from Kerang to Tragowel being significantly shorter than the line to Bendigo.	FY 2026-27

Rank	Equation(s)	Description of constraint	Upcoming projects	Planned completion date
6	Elaine–Moorabool thermal V>>NIL_ELML_BAML2	To avoid overloading Elaine–Moorabool 220 kV line on trip of Ballarat–Moorabool No.2 220 kV line.	The WRL project and the VTP project 1.3 to rebuild the existing Ballarat to Moorabool 220kV lines to high-capacity double circuit are expected to reduce the impact of this constraint.	FY 2030-31
9	Red Cliffs voltage stability V^SML_HORC_3, V^SML_KGRC_4, V^^SML_ARWBBA_1, V^SML_BUDP_3, V^SML_BESH_2, V^SML_HOMR_3, V^SML_BEKG_4	These are the outage constraints to avoid voltage collapse at Red Cliffs. Outages are on the Horsham–Murra Warra–Red Cliffs, Kerang–Wemen–Red Cliffs and Ararat-Waubra 220 kV lines. V^SML_BUDP_3 is to avoid voltage collapse for loss of Bendigo-Kerang 220 kV line and V^SML_BESH_2 is to avoid voltage collapse for loss of Darlington Point–Buronga (X5) 220 kV line. This is also an outage constraint at the time of Buronga–Balranald (X3) or Balranald–Darlington Point (X5) outage.	EnergyConnect is expected to reduce the impact of these constraints. Completion of VNI West is expected to reduce the impact of some of the of the line outages in this constraint.	FY 2026-27
11	Wemen–Kerang voltage collapse V^^V_MLNK_KGTS	To avoid voltage collapse at Kerang due to the loss of Horsham–Murra Warra–Kiamal 220 kV line during an outage of Murraylink.	EnergyConnect and VNI West are expected to reduce the impact of these constraints.	FY 2031-32
17	Kerang voltage collapse V^^V_BDBU_KGTS V^^V_BDBU_KGTS_2	To avoid voltage collapse at Kerang due to the loss of Horsham–Murra Warra–Kiamal 220 kV line during an outage of the Bundey–Buronga line.	EnergyConnect and VNI West are expected to reduce the impact of these constraints.	FY 2031-32

Table 7 Impact of planned projects on existing limitations – South West Victoria corridor

Rank	Equation	Description	Upcoming projects	Planned completion date
7	Moorabool–Geelong thermal V>>NIL_MLGT_MLGT_R5, V>>NIL_MLGT_MLGT_R2	To avoid Moorabool–Geelong offline on trip of other Moorabool–Geelong line.	The VTP project 1.1 to increase the rating of the Moorabool–Geelong 220 kV circuits. This project is expected to reduce the impact of these constraints	FY 2028-29
13	Haunted Gully–Moorabool and Mortlake–Moorabool Voltage collapse V^^V_NIL_SWVIC	To manage flow towards Moorabool across Haunted Gully–Moorabool and Mortlake–Moorabool 500 kV lines due to the loss of Haunted Gully–Moorabool 500 kV line and both Alcoa Portland (APD) potlines.	Due to recently completed projects including the Mortlake cut in, VicGrid has reviewed this constraint #13 and have determined it can be deactivated. This constraint will no longer bind in future.	FY2025-26
15	System Strength V_SH_DD_MAC_FLT_965	To manage voltage oscillation. Limit Stockyard Hill, Dundonnell, Macarthur, Hawkesdale, and Ryan Corner wind farm total output to 965 MW if Heywood flow is above 500 MW (SA to VIC direction).	The VTP project 4.2 to Install a new 500 kV double circuit line from Tarrone–Mortlake–Moorabool and Tarrone 500 kV turn in is expected to reduce the impact of this constraint. VicGrid's ongoing procurement of system strength services is expected to reduce the impact of this constraint.	FY2033-34

Table 8 Impact of planned projects on existing limitations – Eastern Victoria and Victoria – New South Wales Interconnector East

Rank	Equation	Description	Upcoming projects	Planned completion date
8	VNI export voltage collapse during outages V^^N_xxx	Avoid voltage collapse around Murray for loss of all APD potlines during planned transmission equipment outages. These constraints are invoked during outages of any line in, or connecting to, the 330 kV corridor between Victorian and NSW capital city load centres. Outages of other significant lines including 500 kV Latrobe Valley lines in Victoria and 220 kV lines in south-west NSW also may require such constraints to be invoked.	Completion of VNI West is expected to reduce the impact of this constraint.	FY 2031-32
10	VNI voltage collapse V^^N_NIL_1	To avoid voltage collapse in central northern Victoria and southern NSW for loss of APD potlines following fault on one of the 500 kV lines in south-west Victoria.	VicGrid is investigating the possible causes of APD tripping due to failure to ride through 500 kV faults and is exploring options to avoid tripping. Completion of EnergyConnect Stage 2, WRL and VNI West is expected to reduce the impact of this constraint.	FY 2031-32
12	VNI export transient stability during outages V::N_xxx	Prevent transient instability for fault and trip of Hazelwood–South Morang line during planned transmission equipment outages.	VicGrid is investigating the possible causes of APD tripping due to failure to ride through 500 kV faults and is exploring options to avoid tripping. Completion of EnergyConnect Stage 2, WRL and VNI West is expected to reduce the impact of this constraint.	FY 2031-32
16	VNI thermal overloading V>>N_NIL_65_66, V>>N_NIL_65, V>>N_NIL_65_051	To prevent overloading of VNI, Murray–Upper Tumut or Murray–Lower Tumut lines both pre-contingent and post-contingent for loss of Murray–Lower Tumut or Murray–Upper Tumut line.	Completion of VNI West is expected to reduce the impact of this constraint.	FY 2031-32

3.1.4 Investment Test frameworks

Strategic planning of the power system is crucial to making informed decisions in the long-term interests of Australian energy consumers. Under the National Electricity Law, VicGrid is responsible for planning and directing augmentation for the Victorian electricity transmission DSN.

Investment decisions are assessed using two primary frameworks:

- VTP framework under the NEVA
- RIT-T under the NER

Both methodologies require:

- An economic assessment of credible options to address the identified network need, and
- A community and stakeholder consultation process to inform the development and evaluation of options.

VicGrid intends to leverage both frameworks on a case-by-case basis, as appropriate for each investment project.

3.1.4.1 Victorian Transmission Investment Framework

The VTIF, released in 2023, introduced a comprehensive set of reforms to support the state's energy transition. The framework outlined the need to develop a new approach to planning REZs and transmission infrastructure through the delivery of long-term strategic VTP. The VTP identifies network strengthening needs for a system transitioning to renewable energy through an early and meaningful engagement with landholders and local communities, partnerships with Traditional Owners and First Peoples, fairer community benefit arrangements and certainty for investors. 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 in the REZs through investment in Victoria's transmission system optimal development pathway.

Steps involved in a VTP

The VTP is developed as a five-step process designed to define an optimal investment pathway for the transmission, generation and storage infrastructure over the 25-year planning period, indicative timing and sequencing of projects.

- **Assess Victoria's future energy needs** – We assess the extent to which the declared REZ can meet Victoria's energy needs over the next 25 years across a range of potential future scenarios, and, if required, identify potential locations for new generation through a structured multi-criteria analysis which integrates economic, environmental, cultural, spatial and social considerations. The multi-criteria analysis supports the identification of areas by balancing system needs with community expectations and deliverability.
- **Scale of generation and storage needs** – Through energy market modelling we identify how much energy and storage capacity is needed to meet demand and government policy targets across each future scenario, and where it is likely to be located. We will identify the mix of technologies needed to best meet demand, how much of each is required and when it will be needed.
- **Transmission network needs** – Building on existing and planned transmission projects from the previous VTP, we identify combinations of potential transmission projects through power system modelling that can support the required generation and storage that is needed over time. Each combination of potential generation, storage and transmission projects is referred to as a development pathway.

- **Assess and compare development pathways** – We assess the different development pathways through energy market modelling and economic analysis to prepare a draft 'optimal pathway' aimed at delivering the greatest net benefits to Victoria while being the most robust to future uncertainties. As part of consultation on the draft VTP, we then consult with communities, industry, Traditional Owners and landholders on the draft optimal pathway for transmission projects. This includes potential locations for additional future renewable generation and storage and areas of interest for near-term transmission projects.
- **Confirm renewable energy zones and optimal development pathway** – Drawing on the feedback received on the draft VTP consultation, we undertake a strategic review of the draft optimal pathway for transmission projects over the next 25 years to determine the final optimal development pathway. We also confirm the potential areas of interest for transmission projects and the potential areas to be developed and declared as REZ through further investigation and consultation. Following publication of the final VTP, detailed design processes commence to refine the VTP optimal development pathway transmission projects, which involves further, more in-depth and targeted engagement with Traditional Owners, landholders, communities and industry.

VicGrid will publish an updated VTP in 2027, and at least every 4 years after that or more often if required to ensure the plan remains up to date with new technology developments, new policy targets and changes in energy demand.

3.1.4.2 Regulatory Investment Test framework

The RIT-T process is a regulatory mechanism under the NER that applies an economic cost-benefit test on proposed investments for the shared transmission network of the NEM. It is designed to identify the most economically efficient investment for all those that produce, consume or transport electricity in the NEM, including for changes in Australia's greenhouse gas emissions, whether or not the net benefit of changes in emissions is to those that produce, consume or transport electricity in the NEM.

As the RIT-T proponent, VicGrid follows one of two RIT-T processes outlined in the NER, depending on the nature of the investment. Where the investment is not an actionable ISP project the process of NER 5.16 applies, and for an ISP actionable project the RIT-T process of NER 5.16A applies, unless the project is going to progress through the VTP framework.

Stages involved in a RIT-T

The RIT-T process generally has three stages and requires transmission network planners considering significant investment for the transmission network to publish a report at each stage:

- **Project Specification Consultation Report (PSCR)** – the first report seeks feedback and advice on the identified need for investment as well as credible options that look at both network and non-network solutions to address the identified need. The consultation period for the PSCR is a minimum of 12 weeks from the publication date of the PSCR. Where a proposed investment is an Actionable ISP project, the PSCR stage is not required, as consultation is managed through the ISP publication.
- **Project Assessment Draft Report (PADR)** – the second report of the process considers feedback on the PSCR and identifies and seeks feedback on the proposed preferred option and assessment methodology. The PADR must be published within 12 months of the end of the consultation period for the corresponding PSCR, unless an extension is requested and granted by the Australian Energy Regulator (AER). The consultation period must not be less than six weeks from the publication date of the PADR.

- Project Assessment Conclusions Report (PACR) – the final report of the RIT-T considers feedback on the PADR and presents the transmission planner's recommended solution (preferred option) to deliver the highest net economic benefit and intended course of action. The PACR must be published as soon as practical after the end date of the consultation period for the corresponding PADR.

The end-to-end timing for undertaking a RIT-T can vary significantly depending on the complexity of potential credible options and the drivers of the identified need but typically takes between 12 and 18 months from publication of the PSCR to completion of the PACR.

Updates on current RIT-Ts are outlined in the section below.

3.1.5 Update on regulatory tests and feasibility studies for future developments

3.1.5.1 Eastern Victorian Grid Reinforcement and the Western Metro Melbourne RIT-Ts

The Western Metropolitan Melbourne Reinforcement RIT-T was initiated to address thermal limitations and supply reliability in western metropolitan Melbourne and Geelong. The PSCR was published March 2025.

The Eastern Victoria Grid Reinforcement RIT-T was initiated to resolve thermal limitations of 500/220 kV transformers used to supply the eastern metropolitan Melbourne area. The PSCR was published in November 2024.

Under the standard National Electricity Rules (NER) process, these projects would typically proceed to a PADR, however, the introduction of VTIF has facilitated a more coordinated, long-term approach through the VTP.

VicGrid advises that the Western Metropolitan Melbourne Reinforcement and Eastern Victoria Grid Reinforcement RIT-Ts will not proceed further as standalone regulatory assessments. Investment decisions for the projects originally identified under these RIT-Ts have now been integrated into the 2025 VTP priority programs.

In the western Melbourne network, the 2025 VTP identified investment decisions to resolve emerging thermal limitations in the 220 kV corridor from Geelong – Deer Park – Keilor include but are not limited to:

- Cut existing Geelong to Keilor circuits into Deer Park
- Uprate the Geelong – Moorabool 220 kV lines
- Replace the three Keilor 500/220 kV 750 MVA transformers with 1,000 MVA transformers

In the eastern Melbourne network, the 2025 VTP identified investment decisions to resolve emerging thermal limitations of 500/220 kV transformers including, but are not limited to:

- Install a second 500/220 kV transformer at Cranbourne

Delivery of these critical infrastructure upgrades will now occur through the VTP priority programs and VicGrid will continue to monitor Victorian network needs and progress future requirements through its ongoing strategic planning processes.

3.1.5.2 Red Cliffs–Wemen–Kerang Transfer Capacity

The 2024 VAPR reclassified the previously identified Red Cliffs–Wemen–Kerang 220 kV line thermal limitation from a monitored limitation to a priority limitation. Studies are continuing to determine the technical and economic credibility of potential options and the justification for future economic assessment or RIT-T process.

3.1.5.3 Actionable projects identified in the 2026 ISP

The 2026 ISP identified four actionable projects for Victoria:

- VNI West
- Marinus Link Stage 2
- Western Victoria Reinforcement
- Gippsland Offshore Wind Transmission

These ISP actionable projects have not triggered a RIT-T to commence as both VNI West and Marinus Link Stage 2 had already completed RIT-Ts, and both Western Victoria Reinforcement and Gippsland Offshore Wind Transmission projects had already been included in the VTP optimal development pathway..

4. Future outlook of the Declared Shared Network

4. Future outlook of the DSN

This section presents the outcome of the 2026 annual planning review undertaken to assess network capability and identify potential new limitations that may impact supply reliability or reduce system performance over the next 10 years.

This section also provides information on other planning activities, such as system security planning, review of existing and proposed control schemes for the DSN, and joint planning with DTSOs, NSPs and AEMO.

Key Insights

Projected network limitations

Key outcomes of the past three VAPRs consistently demonstrate emerging network limitations and urgency in the delivery of identified augmentation projects. The 2026 VAPR concludes that network priority limitations are largely consistent with those reported in the 2025 VAPR.

Due to increases in the demand forecast, the 2026 VAPR additionally identifies a new group of monitored limitations which would be triggered by large load demand in the western and northern metropolitan Melbourne areas. If the identified demand growth becomes committed, these limitations will need to be progressed rapidly to ensure timely remediation of the limits. These demand-driven limitations are currently treated as monitored due to the level of uncertainty around the forecast uptake of the underlying loads, and the uncertain nature of how these loads will behave at times of high demand.

System security planning activities

- System strength:
  - AEMO's 2025 Transition Plan for System Security forecast system strength shortfalls at Hazelwood, Moorabool, Thomastown and Red Cliffs if no actions were taken to remediate these needs.
  - VicGrid is currently progressing the delivery program of the System Strength Requirement RIT-T and is further working to establish contracts with synchronous generators and grid forming BESS (refer to section 3.1.2.5) which are intended to address the identified requirements. If delivery of the Victorian System Strength Program is delayed, due to supply chain or other issues, it could expose Victoria to a shortfall of system strength (see below). To manage this risk, VicGrid is continuing to investigate alternative options and technologies beyond those specified in the RIT-T.
- Inertia:
  - AEMO's 2025 Transition Plan for System Security projected the level of inertia in Victoria would fall below the inertia sub-network allocation of 11,800 megawatt seconds (MWs) from December 2027.
  - VicGrid intends to partially meet these obligations through the investments and service contracts associated with system strength solutions as an efficient and holistic outcome; however, VicGrid is also considering additional least-cost options available to meet any remaining inertia shortfall against requirements.

Thermal overloading risks and voltage control gaps near Deer Park:

Previously declared thermal overloading and voltage control gaps on the 220 kV network near Deer Park:

- VicGrid has commenced delivery of projects identified in the VTP which will deliver short and long term solutions to manage the risk of the thermal overload.
- VicGrid is continuing to deliver the Metropolitan Melbourne Voltage Management RIT-T, including installation of a new 220 kV 100 MVAr shunt capacitor at DPTS to address voltage control needs in the Deer Park area.

Thermal overloading risks following YWPS retirement:

To manage overloading risks for transformers between the 500 kV and 220 kV network supplying metropolitan Melbourne following YWPS retirement in 2028-29, VicGrid has developed an operational solution to manage the short term risks and has included projects in the VTP which will address the longer-term risks.

Joint planning

AusNet Services' 2026 asset replacement and refurbishment plans are largely consistent with those presented in the 2025 VAPR.

VicGrid continues timely and effective joint planning with AusNet Services to coordinate activities associated with DSN asset replacement, retirement, derating and augmentation, to achieve optimal planning outcomes.

VicGrid continues to work with other DTSOs and distribution businesses (DBs) to identify credible and cost effective solutions to the emerging challenges caused by increasing large load connections, increased fault levels across the DSN, and managing system security at times of low demand.

VicGrid is working with AEMO to support the optimal development of the transmission network through the energy transition.

4.1 Annual Planning Review methodology

The VAPR identifies forecast network limitations based on different network scenarios over the next 10 years. The limitations that are identified are categorised and considered for further action. The overall planning approach is described in Appendix A2 which includes:

- Scenarios to be considered for assessment
- Input and assumption considerations, such as forecasts to apply and which future projects to include in modelling[52]
- Thresholds for identifying limitations

The identified limitations are discussed in the following sections.

4.1.1 Categorisation of limitations

For each network element, screening studies are typically undertaken for a base case and a worst-case scenario, to capture a wide range of limitations. The worst-case scenario varies depending on the transmission network element being assessed. It is based on the base case with adjustments made to test the limits of each specific element. For example, in a particular location the worst-case scenario may be 100% VRE output, while in another the worst case may be 0% VRE.

52 The VAPR only considers projects that have reached a sufficient level of commitment, such as signing of contracts for new connections, completion of investment tests for network projects and inclusion in the optimal delivery pathway in the 2025 Victorian Transmission Plan.

VicGrid identifies credible options to address the identified limitations and estimates if they are likely to deliver positive net market benefits (where applicable). Based on these assessments, the limitations are categorised through the annual planning review process as shown in Figure 21 and described below:

- **Priority limitations** – VicGrid will commence detailed analysis on options to alleviate this limitation. Priority limitations have credible options that can be delivered within the next 10 years and are anticipated to deliver positive net market benefits.
- **Monitored limitations** – VicGrid will continue to monitor this limitation and either reassess it as part of the next annual planning review or commence detailed analysis if triggered by a new market development.

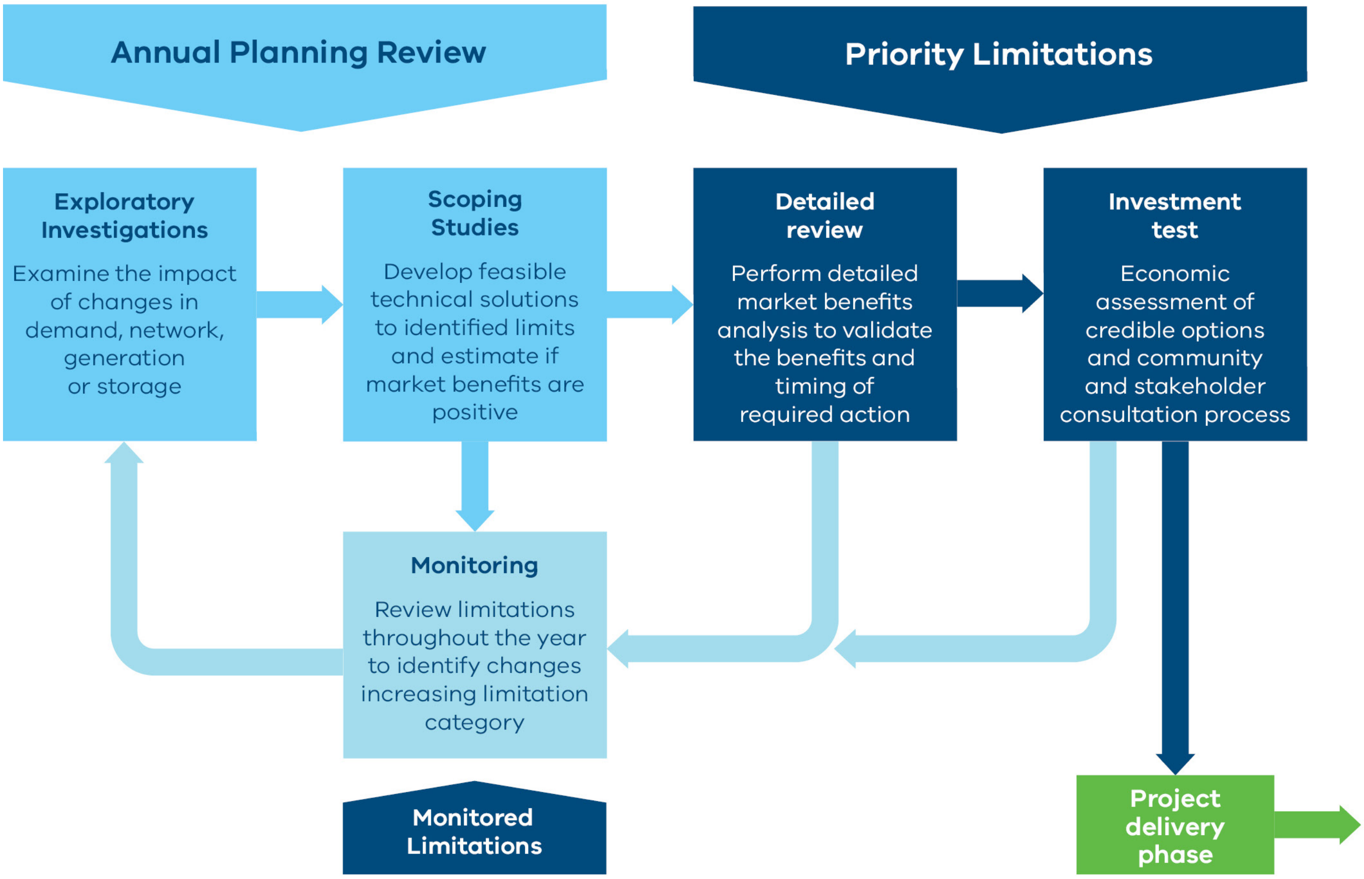
Projects identified as actionable in the ISP are categorised as priority limitations and VicGrid will commence detailed analysis, projects identified as future in the ISP will be treated as monitored limitations.

Where identified limitations are anticipated to be addressed by projects in the 2025 VTP's optimal development pathway or addressed by an already committed project (such as a completed RIT-T or connection project) these will be labelled as "VTP actioned" or "Committed project actioned" respectively.

Priority limitations which are VTP actioned or committed project actioned do not require scoping studies, detailed review or investment tests (see Figure 21) as these processes have been completed by the 2025 VTP or as part of the committed project itself.

The accompanying AER datasets for priority limitations which are marked as VTP actioned or committed project actioned will include the same level of detailed data as for the monitored limitations. This is because the results of the VAPR modelling already factor in the completion of those future projects to address the limitation.

Figure 21 Identification of network limitations – the planning cycle



VicGrid performs high-level economic assessments in determining priority limitations. This analysis and categorisation can provide signals for potential non-network development opportunities, such as localised generation or demand response. Priority limitations may also include limitations needing reliability corrective actions where credible solutions are not required to deliver positive net market benefits.

To address transmission limitations, challenges and opportunities, VicGrid undertakes joint planning with AEMO in its function as National Transmission Planner under the NER, (ISP and System Security Planning process), other Transmission Network Service Providers (TNSPs), and Victorian Distribution Network Service Providers (DNSPs). Victorian joint planning outcomes have been incorporated into the limitation summaries presented in this section.

Figure 22 shows the priority limitations under investigation in this annual planning review, assuming the network developments already progressing and discussed in section 3.1.2 proceed. A complete list of the limitations (both priority and monitored) is in Appendix A4. Appendix A2 has more information on VicGrid's approach to transmission network limitation reviews.

Note that the numbering of the limitations in this section does not reflect the ranking of most significant Victorian transmission constraints observed in 2024-25. They relate to future limitations that are forecast over the next decade that may justify network augmentation.

4.2 Projection of network limitations in the planning horizon

4.2.1 Priority limitations

VicGrid's 2026 annual planning review did not identify any new priority limitations in the DSN. VicGrid has commenced project delivery, feasibility studies and regulatory investment tests for the 9 priority limitations identified in 2025. Table 9 summarises progress made by VicGrid on these limitations, with further details in section 3.1.5 of this report. While many of the limitations in Table 9 are expected to be addressed through planned augmentations, some may emerge before these solutions are delivered. To maintain system security, interim operational measures such as network constraint equations, generation re-dispatch and load curtailment may be required where necessary. These measures may temporarily reduce network capability until the relevant mitigation measures are implemented. The review identified new monitored limitations which, if the forecast rapid growth in metropolitan demand occurs, may be triggered to advance to become priority limitations. This specific group of load triggered monitored limitations is discussed in section 4.2.2.

Table 9 Priority limitations

<table>
<tr><th>Map #</th><th>Limitation (estimated constraint date)</th><th>Description</th><th>Status/next steps</th></tr>
<tr><td>1</td><td>Thermal capacity limitation – overloading of the Moorabool–Geelong 220 kV lines for system normal and trip of the parallel line (existing)</td><td>This limitation is due to commitment of additional renewable generation and storage capacity in South West Victoria, coupled with higher demand growth in the metropolitan area and generation retirement in Latrobe Valley.</td><td>VTP actioned.

The impact of this limitation is expected to be reduced by the VTP project 1.1, will increasing the rating of the Moorabool–Geelong 220 kV circuits (No.1 and No.2).</td></tr>
<tr><td>2</td><td>Thermal capacity limitation – overloading of the Geelong–Deer Park line for trip of the Deer Park–Keilor line, or the Deer Park–Keilor 220 kV line for trip of the Geelong–Deer Park line (existing)</td><td rowspan="2">This limitation is due to commitment of additional renewable generation and storage capacity in South West Victoria, coupled with higher demand growth in the metropolitan area and generation retirement in Latrobe Valley.</td><td rowspan="2">VTP actioned.

The impact of these limitations is expected to be reduced through the VTP projects 1.4, 4.1 and 4.4, which switches the existing Geelong–Keilor 220kV lines into Deer Park, constructs the new 500/220kV Truganina terminal station (TNTS) including new 220kV circuits to Deer Park and rebuilds the existing Deer Park–Keilor 220kV lines to high capacity respectively.</td></tr>
<tr><td>3</td><td>Thermal capacity limitation – overloading Geelong–Keilor 220 kV lines for post credible contingencies (existing)</td></tr>
<tr><td>4</td><td>Thermal capacity limitations – transfer capacity from Latrobe Valley to Melbourne post YWPS retirement (July 2029)</td><td>This limitation is primarily due to changing flow sharing of the 500 kV and 220 kV networks from the Latrobe Valley to metropolitan Melbourne following retirement of YWPS.</td><td>Committed project actioned.

The works involving the transition from radial operation to modified parallel operation in the Latrobe Valley are expected to reduce the impact of this limitation (see section 3.1.2.7). Further thermal capacity can be unlocked through works considered in the VTP, specifically project 2.2, Install a second 500/220 kV transformer at Cranbourne and tie in the existing Hazelwood–Rowville 500 kV (No.3) circuit at Cranbourne.</td></tr>
</table>

Map #	Limitation (estimated constraint date)	Description	Status/next steps
5	**Thermal capacity limitation – Overloading of the Rowville A1 500/220 kV transformer during system normal (July 2029)**	These limitations are primarily due to higher demand growth in the Melbourne metropolitan area, which is further exacerbated by retirement of YWPS.	VTP actioned. The impact of these limitations is expected to be reduced through the VTP projects 2.2, 2.3 and 2.4 which install an additional 500/220kV transformer at Cranbourne, perform load mitigation works in the Thomastown–Templestowe–Ringwood–Rowville 220kV line and perform fault level mitigation works at stations to prevent fault level exceedances that the augmentations may cause.
6	**Thermal capacity limitation – overloading of Thomastown–Ringwood 220 kV line for loss of the Rowville A1 transformer (December 2026)**		
7	**Thermal capacity limitation – overloading of Eildon–Thomastown 220 kV line for system normal (July 2027)**	This limitation is caused by increased demand growth in the Melbourne metropolitan area, which is further exacerbated by changes in how power flows around the network following retirement of YWPS. These changes tend to increase VNI import into Victoria, and thus flow on the Eildon–Thomastown 220 kV line.	Committed project actioned. The impact of this limitation is expected to be reduced by the South Morang cut-in works being completed as part of VNI West.
8	**Thermal capacity limitation – overloading of the Red Cliffs–Wemen–Kerang corridor during periods of high demand (December 2026)**	This limitation is elevated primarily due to expected increase in power transfer from NSW into Victoria via the upgraded 220 kV network between Buronga and Red Cliffs interconnector at times of maximum demand following completion of the EnergyConnect project. The retirement of YWPS could also increase the need for more import from NSW in general.	VicGrid has commenced a RIT-T to identify credible options to address this limitation and will also consider the voltage stability limitations in the area. More detail about the project is in section 3.1.5.
9	**Thermal capacity limitation – overloading of Keilor 500/220 kV A2 and A4 transformer for system normal (July 2027)**	This limitation is primarily due to higher connection point demand growth in the Melbourne western metropolitan area, which is further exacerbated by retirement of YWPS.	VTP actioned. The impact of this limitation is expected to be reduced by the VTP, project No. 1.5 which replaces the 3 x 500/220kV A transformers at Keilor with larger 1,000 MVA units.

Figure 22 Priority limitations under investigation

4.2.2 Demand triggered limitations (monitored)

Demand in Victoria continues to grow, with the forecast demand expected to increase by 2.8 GW across the 10-year planning horizon. This growth in demand is driven by new large load connections, electrification and uptake of consumer battery resources. Since the previous VAPR there has been continued interest in large load connections in both the transmission and distribution networks in Victoria, predominantly for new data centres. There is currently more large load connection interest proposed than is likely to proceed and a range of approaches to the operating behaviour which is determined in future stages of project development. For example, at times when demand is constrained, large loads may modify their operation to:

- generate their own electricity supply through onsite generation or discharging BESS,
- reduce energy demand, or
- completely disconnect

Combined with the existing (monitored) limitations at connection points in the DSN and the location and sequence which new large loads connect, there are multiple points of uncertainty in the approach to modelling. VicGrid have applied the connection point forecast which assumes the forecast connections proceed and still take full forecast supply at maximum demand, VicGrid has identified demand triggered limitations reported in this section. The demand triggered limitations do not currently meet the criteria of 'Priority' limitations however as clarity of these large load projects emerge, these limitations may be recategorised. Investigation into technical solutions for these limitations will continue, however detailed cost benefit analysis will not proceed until the limitation categorisation level increases to 'Priority'.

It is also possible that some of the options considered to reduce the impact of the identified limitations may also be completed as part of the connection works for the large loads themselves and may be the most timely way to address the limitations.

VicGrid has identified the limitations and possible solutions in Table 10 based on the conservative (higher) demand forecast. These limitations are currently classified as monitored for ongoing assessment. While addressing these limitations will require investment in the network to enable the connection of more load, it will also provide benefit to the network and consumers at times of minimum demand.

Table 10 Monitored limitation due to large load growth

Map #	Limitation (estimated constraint date)	Trigger	Possible network solutions
1	**Thermal capacity limitation – overloading of the Keilor 500 kV A3 transformer for the loss of ROTS A1 transformer (July 2029) and in system normal (July 2032)**	Increased maximum demand in metropolitan Melbourne.	The thermal capacity overload can be resolved through VTP project 1.5, Undertake a 1000 MVA replacement of the A2, A3 and A4 500/220 kV transformers at Keilor. Moreover, the installation of a 4th 1000 MVA, 500/220 kV transformer at Keilor Terminal Station (KTS) also represents a potential solution.
2	**Thermal capacity limitation – overloading of the Keilor–South Morang 500 kV line for the loss of Keilor–Sydenham 500 kV line (July 2030) and in system normal (July 2032)**	Increased maximum demand in metropolitan Melbourne.	The impact of this limitation can be reduced by uprating the existing Keilor–South Morang line or by installing a second Keilor–South Morang parallel line.
3	**Thermal capacity limitation – overloading of Sydenham–Keilor 500 kV line for the loss of Keilor–South Morang 500 kV line (July 2030)**	Increased generation in west and south-west Victoria supplying KTS.	The impact of this limitation can be reduced by the installation of 2nd Keilor–Sydenham 500 kV circuit, with a rating of approximately 2,900 MVA at 35°C, to create a total of two 500 kV circuits from Keilor–Sydenham and uprating line rating of the existing Sydenham–Keilor 500 kV line.
4	**Thermal capacity limitation – overloading of Altona–Keilor 220 kV line for the loss of Brooklyn–Keilor 220 kV Line (July 2028) and in system normal (July 2031)**	Increased demand at ATS and BLTS 220 KV.	The impact of this limitation can be reduced by the installation of two 220 kV circuits between Keilor–Altona and Keilor–Brooklyn through a new 720 MVA double-circuit line on the spare easement, combined with reconfiguration of existing lines.

Map #	Limitation (estimated constraint date)	Trigger	Possible network solutions
5	**Thermal capacity limitation – overloading of Altona–Brooklyn 220 kV line for the loss of Altona–Keilor 220 KV line (July 2029)**	Increased demand at ATS and BLTS 220 KV.	The impact of this limitation can be reduced by uprating the existing Altona–Brooklyn line or installing a second Altona–Brooklyn parallel line.
6	**Thermal capacity limitation – overloading of Brooklyn–Keilor 220 kV line for the loss of Altona–Keilor 220 KV line (July 2028) and in system normal (July 2031)**	Increased demand at BLTS 220 KV.	The impact of this limitation can be reduced by the installation of two 220 kV circuits between Keilor–Altona and Keilor–Brooklyn through a new 720 MVA double-circuit line on the spare easement, combined with reconfiguration of existing lines.
7	**Thermal capacity limitation – overloading of Keilor–West Melbourne 220 kV line for the loss of parallel line (July 2029)**	Increased maximum demand in metropolitan Melbourne.	The impact of this limitation can be reduced by uprating the existing Keilor–West Melbourne 220 kV line or replace existing lines with double circuit or install a 3rd Keilor–West Melbourne line. Installing a wind monitoring dynamic line rating scheme can further reduce the overloading.
8	**Thermal capacity limitation – overloading of Eildon–South Morang 220 kV in system normal (July 2032) and for the loss of Dederang–Murray 330 KV line (July 2033)**	High demand and Increased NSW import and export.	To manage thermal capacity limitation on the Eildon–South Morang 220 kV line, the possible options may include: Installation of generation control runback scheme for Eildon. Uprate Eildon–South Morang 220 kV tie line as part of the VNI West project. Install wind monitoring scheme. Installation of power flow controller
9	**Thermal capacity limitation – overloading of the South Morang 330 kV H3 and H4 transformer in system normal (July 2032)**	Increased demand in Metropolitan Melbourne and increased import from NSW.	The impact of this limitation can be reduced by replacing the existing transformer with a higher rated unit in conjunction with AusNet Services asset replacement program.
10	**Thermal capacity limitation – overloading of the Richmond–Rowville 220 kV line for the loss of parallel line during high generation, and NSW export times (July 2032)**	Increased export to NSW and increased generation.	The impact of this limitation can be reduced by uprating the existing Richmond–Rowville 220 kV line or installing a wind monitoring dynamic line rating scheme.
11	**Thermal capacity limitation – overloading of the Brunswick–Richmond 220 kV line in system normal during (July 2034) and for the loss of Keilor 500 kV A3 transformer parallel line during high generation, and NSW export times (July 2033)**	Increased export to NSW and increased generation.	The impact of this limitation can be reduced by installing a second Brunswick–Richmond line or rebuilding Thomastown Terminal Station to a higher fault level capacity such that South Morang Terminal Station can operate with the existing three H transformers in parallel to redirect supply away from the Brunswick-Richmond 220 kV line.

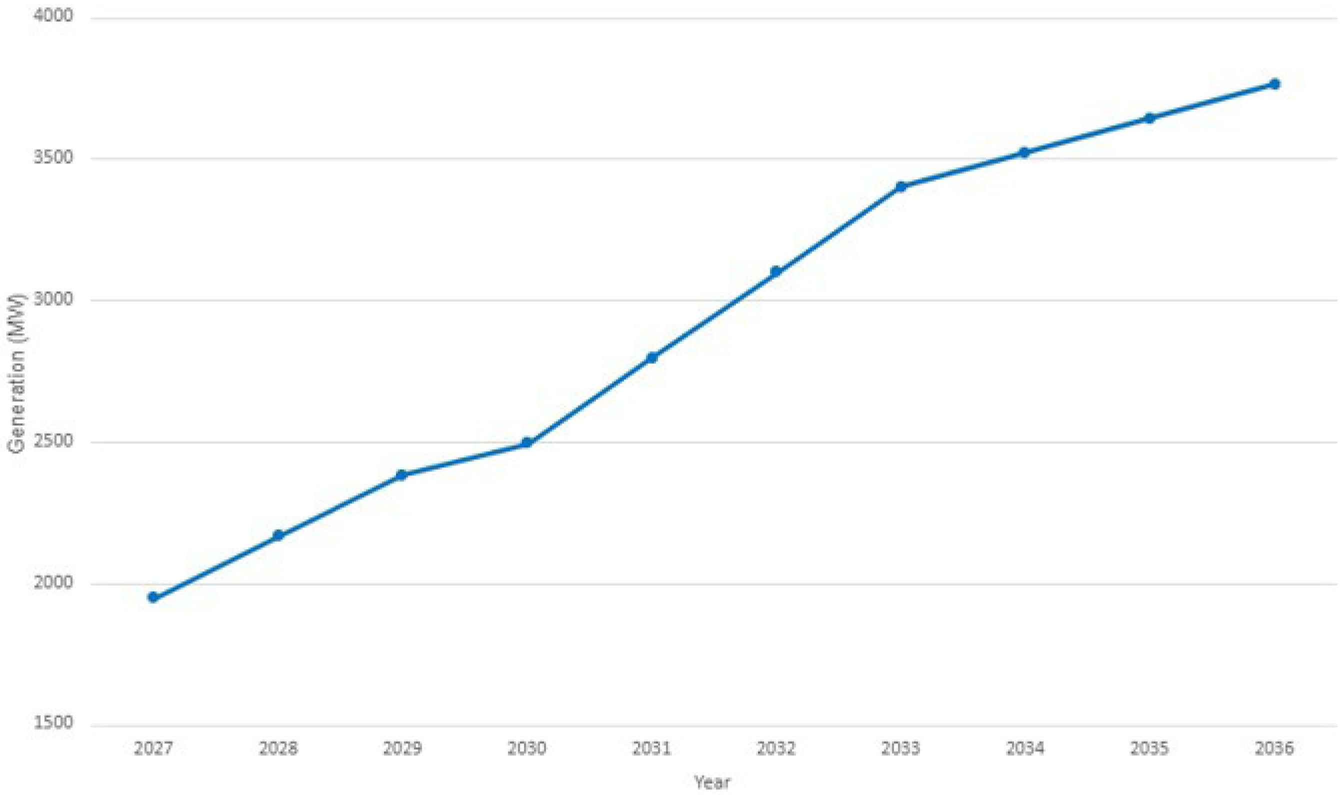
Map #	Limitation (estimated constraint date)	Trigger	Possible network solutions
12	**Inadequate reactive power support in metropolitan Melbourne at ATS 220 KV (July 2029)**	Increased demand at ATS and BLTS 220 KV	The impact of this limitation can be addressed through use of 220kV capacitor banks.There is currently a 200 MVAr capacitor banks located at ATS 220 kV that was intended to be taken out of service as part of the Melbourne Metropolitan Voltage Management project, it could possibly be returned to service.
13	**Inadequate reactive power support in metropolitan Melbourne at DPTS 220 KV (July 2027)**	Increased maximum demand in metropolitan Melbourne.	The impact of this limitation can be addressed through the installation of 100 MVAr capacitor bank at DPTS 220 kV as part of Metropolitan Melbourne Voltage Management – Stage 2
14	**Inadequate reactive power support at KTS 500kV (July 2029)**	Increased maximum demand in metropolitan Melbourne.	Installation of 2nd Keilor–Sydenham 500 kV circuit, with a rating of approximately 2,900 MVA at 35°C, to create a total of two Keilor–Sydenham 500 kV circuits
15	**Inadequate reactive power support at SYTS 500kV, BLTS and KTS 220kV (July 2029)**	Increased maximum demand in metropolitan Melbourne.	The impact of this limitation can be reduced by the installation of two 220 kV circuits between Keilor–Altona and Keilor–Brooklyn through a new 720 MVA double-circuit line on the spare easement, combined with reconfiguration of existing lines.
16	**Inadequate reactive power support at SMTS 500kV (July 2032)**	Increased maximum demand in metropolitan Melbourne.	Installation of 2nd Rowville–South Morang 500 kV circuit, to create a total of two South Morang–Rowville 500kV circuits.

Figure 23 Load growth – triggered monitored limitations

The impact of applying the conservative demand forecast also demonstrated that the normal generation considerations (applying the 2026 ISP firm capacity by fuel type) applied in previous VAPR was not always sufficient to supply the Victorian demand. The VAPR dispatches generation up to the firm capacity level which is the minimum generation capacity from renewable generators expected to be available at different times of day throughout the year. While exceeding the firm capacity value in the modelling does not specifically indicate that there will not be enough generation available to supply Victorian demand, it does indicate that the amount of solar and wind that is forecast to be firmly available at times of maximum demand is being exceeded.Actual wind and solar capacity factors may differ at the time of the actual maximum demand events.

The TCPR forecast was the most conservative of the forecasts that were applied in the screening studies which VicGrid completed. Applying the TCPR forecast showed that additional generation output is required as shown in Figure 24.

Figure 24 Additional generation required in Victoria



Under the most extreme demand cases it was also observed that additional reactive support was required in the metropolitan Melbourne area beyond the capacitor banks that will be taken out of service as part of the Melbourne Metropolitan Voltage Management Project. If the most extreme demand forecasts eventuate then further reactive support may be required.

4.2.3 Other limitations (monitored)

VicGrid continues to monitor transmission network limitations that may result in supply interruptions or constrain generation, which either have no identified needs/triggers, or there is insufficient market benefits expected to justify the cost of relieving the limitation. VicGrid will reassess these limitations as part of the next annual planning review or commence detailed analysis if triggered by a new market development.

The following sections provide detail on existing monitored limitations impacted by changes in network development and forecasts announced since the 2025 VAPR. These developments may include announced generator connections, transmission augmentations, load forecasts, changes in historical constraint behaviour, or regulatory changes.

While the monitored limitations reported in this VAPR are identified based on the committed Victorian generation planned closure years, VicGrid has also carried out a sensitivity analysis to assess the impacts on these limitations due to earlier than announced generator retirements and subsequent supply uptake elsewhere, as included in the 2026 ISP Step Change scenario. More information is in Appendix A4.

Figure 25 Monitored limitations

Map #	Limitation
1	**Maximum demand or additional connections** Overload of Malvern–Rowville 220kV line during contingency scenario
2	**Maximum demand** Overload of Templestowe–Thomastown 220kV line during contingency scenario
3	**Maximum demand or NSW export** Overload of South Morang–Thomastown 220kV line during contingency scenario
4	**Maximum demand or additional connections** Overload of Rowville–Springvale–Heatherton 220kV line during contingency scenario
5	**Change in predominant supply from eastern to western Victoria** Overload of Keilor–Thomastown 220kV line during contingency scenario
6	**High generation output** Overload of Ballarat–Berrybank–Terang–Gnarwarre–Moorabool 220kV line during System normal and contingency scenarios
7	**High generation output** Overload of Ballarat–Moorabool–Elaine 220kV line during contingency scenario
8	**Increased Power flow due to increased generation** Moorabool–Heywood–Portland 500 kV line voltage unbalance
9	**Increased NSW import and export** Overload of Mount Beauty–Eildon 220kV line during contingency scenario
10	**Maximum demand and NSW export** Overload of Dederang–South Morang 330kV line during System normal and contingency scenarios
11	**Increased NSW import and export** Overload of Dederang–Mount Beauty 220kV line during contingency scenario
12	**Maximum demand and NSW export** Overload of Dederang–Murray 330kV line during contingency scenario
13	**Increased generation in North West Victoria and predominant supply to western Victoria** Overload of Red Cliffs–Kiamal–Murra Warra–Horsham–Carwarp 220kV line during contingency scenario
14	**Increased demand and generation** Overload of Tragowell–Kerang 220kV line during system normal
15	**Increased demand and generation** Overload of Kerang–Bendigo 220kV line during contingency scenario
16	**High generation output** Overload of Ballarat–Waubra–Ararat– Crowlands–Bulgana–Horsham 220kV line during System normal and contingency scenarios
17	**Increased demand and generation** Overload of Bendigo–Fosterville– Axedale–Shepparton 220kV line during contingency scenario
18	**Increased demand and generation** Hazelwood–Loy Yang 500kV line and outage window
19	**High solar output during prior outage** Voltage oscillation in western and north-west Victoria under prior outage
20	**Significant increase in generation** Inadequate South West Melbourne 500kV thermal capacity
21	**Significant increase in generation** Moorabool 500/220 kV transformer thermal capacity limitation
22	**Increase demand and reactive power consumption** Inadequate Reactive power support in Regional Victoria
23	**Low local demand and high generator output** Voltage instability caused by insufficient reactive support
24	**Increased NSW import and export** Voltage instability caused by insufficient reactive support

4.2.3.1 Thermal limitations

The emergence of new thermal limitations and the benefits of addressing them depend heavily on the geography and intermittency of both supply and demand. Patterns of network flow and asset utilisation continue to change in Victoria, due to drivers on the supply side such as a significant amount of new VRE projects, decommitment of large synchronous generation, and strong uptake of distributed PV.

In 2025-26, 1,950 MW of new generation projects connected in Victoria, and new projects continue to be proposed in regional parts of the state, where high-quality solar and wind resources are abundant (see section 2.5). These parts of the network, however, were not originally designed to support such high generation density, and several investors have faced economic and technical challenges associated with connecting to these areas where sufficient thermal capacity is unavailable. Several projects have been and are being delivered to address these challenges (see section 3.1.1).

In 2025–26, updated connection point forecasts showed a greater proportion of Victorian demand in the Metropolitan Melbourne region compared to previous years. The main drivers for this increase in the connection point forecast were continued load growth with the expansion of Melbourne's west and with the number of small distribution connected data centres being established. The regional demand forecast also increased for Victoria, particularly in years 5 10 of the planning horizon, driven mainly by forecast data centre loads. Both changes to the forecasts have contributed to monitored limitations being identified in the western Metropolitan Melbourne area.

Despite these changes to the demand forecast there were no new thermal limitations identified outside of those already discussed in section 4.2.2.

4.2.3.2 Voltage stability limitations

No new voltage stability limits were identified in the annual planning review. Existing voltage stability limits in the North West Victoria corridor have continued to be ranked highly among the market impact of the Victorian network constraints since 2021 with the recent completion of the Koorangie BESS and upgrades to Murraylink VFRB projects it is expected that one of the stability limits will be able to be relaxed significantly. When EnergyConnect and VNI West are completed, it is expected that limitations will reduce further.

Voltage stability in the North West Victoria corridor was previously investigated under anticipated future solar connections. Analysis highlighted a risk that constraints to manage this limitation may have a greater impact if additional solar generation connects prior to commissioning of EnergyConnect, however this risk is significantly mitigated if the anticipated co-located generation and BESS projects are charging during high solar periods. Beyond EnergyConnect and based on the assumptions used in this 2026 VAPR, additional solar capacity is expected to be able to operate with reduced challenges of voltage stability during periods when market conditions allow the additional export capacity to be used. Despite the reduced impact and status of this limitation, VicGrid is considering this limitation alongside its Red Cliffs–Wemen–Kerang transfer capacity feasibility studies, as described in section 3.1.5 as the solutions to the transfer capacity limitation may also include benefits that further reduce the risk of voltage instability.

In the 2025 VAPR there were also voltage collapse limitations identified in the South West Victoria corridor. Throughout 2025–26 works have been completed, including the Mortlake cut-in, that have significantly reduced the risk of voltage collapse and led to the deactivation of the South West voltage collapse constraint.

4.2.4 Maximum contingency size investigations

As discussed in the 2025 VAPR, the maximum contingency size for generators in the Victorian transmission DSN was reviewed and updated with an intent for further review to be undertaken on the maximum contingency size for loads. With the earlier publication of the 2026 VAPR the review has not yet been completed. The results of the review will either be included in an addendum to the VAPR published as a separate document or will be included in the 2027 VAPR.

4.3 System security planning for the DSN

The revised system strength framework takes a proactive approach to delivering system strength across the NEM. It requires System Strength Service Providers to plan and procure a minimum three phase fault level and an efficient system strength level. The efficient system strength level supports forecast connections of inverter-based resources (IBR), including solar, wind and grid-following (GFL) batteries, and inverter-based loads (IBL) that choose to pay the system strength charge under the NER 5.3.4B, rather than self remediate their impact.

These requirements are set out in AEMO's annual Transition Plan for System Security (TPSS), which provides at least a 10 year forecast of minimum fault level requirements and the IBR and IBL connections for which system strength must be procured.

4.3.1 System security criteria

VicGrid is the system strength service provider in Victoria under clause 5.20C.3(a)(2) of the NER. In Victoria, AEMO is able to declare system strength nodes from time to time on the DSN in accordance with clause 5.20C.1(a) of the NER. Following the declaration of a system strength node, AEMO determines the system strength requirements for each node by 1 December each year in accordance with its system strength methodology and clause 5.20C(1)(c) of the NER. AEMO publishes system security requirements for the NEM annually.[53] Since 2025 these have been combined into a single TPSS.

VicGrid's responsibilities include:

- System strength – as the System Strength Service Provider for Victoria, VicGrid must meet the associated system strength requirements set out by AEMO in line with NER clauses 5.20C.3(f) and (g)
- Inertia – as the Inertia Service Provider for Victoria, VicGrid must meet the associated inertia requirements set out by AEMO in line with the NER 5.20B.4(h) and (i), effective from 2 December 2027
- Network support and control ancillary services (NSCAS) – responding to Victorian NSCAS gaps as declared by AEMO which need remediation

The rapid uptake and build-out of IBR has resulted in a changing landscape for electricity supply, storage and demand. A key part of this transition has been the retirement of synchronous generators, such as coal and gas fired units, that have historically and inherently provided system security services, including system strength and inertia. To preserve system security, active procurement of other sources of system strength and inertia is essential to enable the network to function securely under the high penetration of IBR, such as solar and wind generation and GFL batteries, IBL and inverter-based transmission links such as Murraylink and Basslink.

53 See https://www.aemo.com.au/energy-systems/major-publications/transition-plan-for-system-security-tpss

The security services that VicGrid makes available to meet its system strength and inertia requirements are subsequently enabled by AEMO according to the Security Enablement Procedure.[54] In March 2026, AEMO began a review of this procedure,[55] proposing to change, amongst other things, the way system strength services are enabled to achieve and maintain both the minimum fault level requirements, and the stable voltage waveform requirements. AEMO's proposal is that stable voltage waveform services will only be enabled if:

- The service does not have a minimum dispatch value to avoid any impact to the dispatch solution
- The service is procured by the TNSP in accordance with NER S5.1.14(b)(2) for the benefit of an IBR that has elected to pay the system strength charge in accordance with NER 5.3.4B(b1)
- The service is not directly powered by a fuel with a carbon dioxide intensity index that is greater than the NEM's maximum Carbon Dioxide Equivalent Intensity Index 16 value in the previous 12 months to avoid a material increase in emissions.
- The service can be enabled for a period that is no less than the minimum stable voltage waveform enablement duration to manage the level of manual activity in AEMO's control room that addresses power system efficiency
- The need for services to meet a stable voltage waveform gap considers any enablement instructions for minimum system strength services (and vice versa), to ensure AEMO only enables necessary services

4.3.2 System strength requirements

4.3.2.1 System strength service provision and obligations

System strength describes the ability of the power system to maintain and control a stable voltage waveform at a given location during steady-state operation and following a disturbance. System strength planning is essential to enable system security to be maintained as GFL IBR and IBL (which typically demand system strength) connect to the network and synchronous generators (which currently supply the majority of system strength) retire.

If system strength is not maintained, AEMO may need to issue directions to ensure enough synchronous or grid-forming (GFM) plant is online to maintain a secure power system and allow efficient dispatch of renewables. Such directions can result in high energy or compensation costs alongside market disruption.

If insufficient options are available to direct, AEMO may need to implement more extreme power system restrictions to ensure security can be maintained and assets protected. This could result in curtailment of plant and reduced reliability for consumers.

A system with insufficient strength may also limit the ability for new IBR or IBL projects to connect or to fully utilise the system once connected. This could further result in higher long-term costs and reduced reliability for consumers.

54 See https://www.aemo.com.au/-/media/files/electricity/nem/security_and_reliability/power_system_ops/procedures/so_op_3720-security-enablement-procedure.pdf

55 Security Enablement Procedures Consultation paper – Standard consultation for the National Electricity Market, AEMO, 6 March 2006 – https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2026/security-enablement-procedures-consultation/security-enablement-procedures---standard-consulation.pdf

4.3.2.2 2025 Transition Plan for System Security

Insights and recommendations

The 2025 TPSS was published in December 2025, by AEMO. The report provides a 10-year outlook of system strength requirements and a forecast of system strength shortfalls in the NEM.

VicGrid, as System Strength Service Provider for Victoria, identified a preferred option for meeting its system strength requirements through a RIT-T process that concluded in August 2025. This preferred option is detailed in the Victorian System Strength Program section 3.1.2.5.

Observed and forecast shortfalls and operational management of system strength

A system strength node is a physical location on the transmission network at which AEMO must determine system strength requirements and apply those requirements for power system security. Using typical dispatch patterns in the absence of system strength investment, the 2025 TPSS identified forecast shortfalls of:

- 384 MVA at Hazelwood from 2025-26 increasing to 1,999 MVA in 2029-30
- 558 MVA and 650 MVA at Moorabool and Thomastown, respectively, from 2028-29 onwards
- 5 MVA at Red Cliffs for 2026-27

Once the system strength services identified by the system strength RIT-T are procured, the report identifies a remaining shortfall of:

- 107 MVA at Hazelwood in 2025-26
- 348 MVA at Hazelwood in 2027-28

However, this assessment did not consider the contracts with synchronous generators that VicGrid has established as an initial outcome of the RIT-T (see section 3.1.2.5), which are expected to address these shortfalls. If delivery of the Victorian System Strength Program is delayed (due to supply chain or other issues), it could expose Victoria to a shortfall of system strength and inertia. To manage this risk, VicGrid is continuing to investigate alternative options and technologies beyond those specified in the RIT-T, as described in section 3.1.2.5.

Intermittent oscillations[56] were observed in 2024[57] and 2025[58] in south west Victoria and neighbouring parts of SA. The 2025 Transition Plan for System Security reports that the root cause of these oscillations is still under investigation by AEMO.[59]

56 Reported in AEMO's 2024 System Strength Security Report
57 Reported in AEMO's 2024 System Strength Security Report
58 Reported in the 2025 VAPR
59 2025 Transition Plan for System Security Appendix A2 page 106, AEMO, 2025

Whilst a review is being undertaken, temporary operating advice for the Moorabool–Sydenham outage system strength limit has been put in place by AEMO to replace the limit advice that was published soon after the observed oscillations event. Similarly, a temporary operating advice has been put in place by AEMO for the Hazelwood–Loy Yang outage system strength limit advice. VicGrid reviewed the existing minimum synchronous machine combinations and added combinations to the system normal limit advice[60] to provide additional operational flexibility. VicGrid plans to further update the system strength limit advice following procurement of services identified as forming part of the Victorian System Strength Requirement RIT-T preferred option.

4.3.2.3 Available fault level forecasts

The available fault level (AFL) is a metric used to quantify the level of system strength supply from synchronous and GFM sources available to support the connection and dispatch of GFL IBR, which demand system strength in the power system. Positive AFL indicates locations where system strength is, or will be made, available to support additional IBR, while zero or negative AFL indicates locations where system strength to support additional IBR is unavailable and additional investment is currently not planned at the location in the given year.

Forecast AFL is intended to provide locational signals for IBR connections on connection points where system strength is available or will be proactively procured to facilitate the connection of IBR.

VicGrid has prepared this AFL forecast in line with the System Strength Impact Assessment Guidelines[61] using the following inputs and assumptions:

- System strength supply – system strength is supplied from both existing/committed services and new additional services that form the Victorian System Strength Requirement RIT-T PACR preferred option.
- System strength demand – all existing and committed IBR generators and storage as per the Victorian System Strength Requirement RIT-T. Existing direct current interconnectors Murraylink and Basslink have also been considered.

Table 11 presents the forecast AFL (post-contingent) at system strength nodes and key Victorian buses for the next 10 years.

60 2025 Transition Plan for System Security Appendix A2 page 106, AEMO, 2025

61 See https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2024/ssiag/system-strength-impact-assessment-guidelines-v22.pdf

Table 11 **Forecast of post-contingent available fault level at significant Victorian nodes in 2026-27 to 2035-36 (MVA)**

System Strength node/ bus	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36
Bulgana 220 kV	134	1,709	1,833	2,177	2,207	3,062	3,292	3,114	3,702	3,702
Dederang 220 kV	1,836	2,300	2,165	1,919	1,989	2,386	2,397	1,983	2,468	2,468
Hazelwood 500 kV	0	1,210	2,787	2,358	2,973	6,460	6,990	7,264	8,958	8,958
Tragowel 500 kV	-	-	-	3,100	3,184	4,222	4,402	3,846	4,894	4,894
Moorabool 220 kV	0	1,202	1,456	1,536	1,556	4,184	5,823	5,637	6,409	6,409
Mortlake 500 kV	51	1,070	1,260	1,298	1,311	2,507	2,954	2,823	3,273	3,273
Red Cliffs 220 kV	510	704	670	770	786	887	895	818	945	945
Thomastown 220 kV	1,051	2,434	2,813	2,692	2,837	3,948	4,081	3,989	4,328	4,328
Giffard (Gippsland) 500 kV	-	-	-	-	3,285	4,870	5,014	5,140	5,628	5,628
Woodside (Gippsland) 500 kV	-	-	-	-	-	-	5,124	5,248	6,530	6,530

System strength locational factors

VicGrid as System Strength Service Provider for Victoria must publish the system strength locational factor and corresponding system strength node for each of its system strength connection points. The system strength locational factors are used as a price signal that guide new inverter-based resources towards stronger network locations based on their impact on system strength, with higher locational factors indicating higher system strength. VicGrid currently has four system strength connection points where one or more connection proponents have elected to pay the system strength charge. The system strength locational factor is one of the variables which must be used along with the system strength unit price to calculate the system strength charge.

Table 12 presents the system strength locational factor and corresponding system strength node for VicGrid's system strength connection points.

Table 12 **System strength locational factors**

System strength connection point	System strength locational factor	Corresponding system strength node
Cressy Terminal Station 220 kV	1.02	Moorabool 220 kV
Axedale Terminal Station 220 kV (proposed operational December 2026)	1.06	Dederang 220 kV
Morwell Terminal Station 66kV Bus 1	1.067	Hazelwood 500kV
Kiamal Terminal Station 220kV	1.047	Red Cliffs 220kV

4.3.3 Inertia requirements

Inertia describes an immediate and inherent electrical response from connected devices that acts to oppose changes in frequency. Ensuring that sufficient levels of inertia are available allows the power system to resist large changes in frequency that can arise following a contingency event. Historically, inertia has been provided by large synchronous machines.

4.3.3.1 Inertia provision and obligations

In providing the inertia requirements for Victoria, AEMO specifies three inertia levels:

- **Satisfactory inertia level:** the minimum level of inertia required to operate an inertia sub-network in a satisfactory operating state when the inertia sub-network is islanded.
- **Secure inertia level:** the minimum level of inertia required to operate an inertia sub-network in a secure operating state when the inertia sub-network is islanded.
- **Inertia sub-network allocation:** the portion of the system-wide inertia level, being the mainland inertia required to operate the mainland regions of the NEM securely, that is allocated to Victoria.

Given its strong interconnection with neighbouring regions, AEMO considers Victoria unlikely to island from the remainder of the power system. As such, there are no obligations on VicGrid in relation to the satisfactory and secure inertia levels. However, VicGrid must provide services to meet the inertia sub-network requirement in full. A summary of the inertia requirements for Victoria is shown in Table 13.

Table 13 Victoria inertia requirements

Quantity	Value	Action required
Satisfactory inertia level	N/A	None
Secure inertia level	N/A	None
Inertia sub-network allocation	11,800 MWs	Procure synchronous condensers (see section 3.1.2), and inertia services from existing synchronous machines and GFM BESS.
Likelihood of islanding	Unlikely	N/A

Note: AEMO's 2025 Transition Plan for System Security introduced a new "Minimum regional interconnected inertia level" for Victoria with a value of 8,000 MW.s, which is the minimum level of inertia, as calculated by AEMO, that is required to be maintained in Victoria to maintain the Frequency Operating Standards following a credible contingency. There are no obligations on VicGrid in relation to this limit.

4.3.3.2 2025 Transition Plan for System Security

AEMO's 2025 Transition Plan for System Security showed the projected level of inertia in Victoria is expected to fall below the inertia subnetwork allocation by:

- 3,235 MWs in 2027-28[62]
- 6,709 MWs in 2028-29
- 7,104 MWs in 2029-30

If the solutions identified in the Victorian System Strength Requirement RIT-T are considered, then the shortfall is projected to be:

- 3,235 MWs in 2027-28[63]
- 2,709 MWs in 2028-29
- 3,104 MWs in 2029-30

This analysis by AEMO did not consider contracts with synchronous generators that VicGrid was negotiating at the time of the analysis. VicGrid is continuing to investigate the size, timing, and potentially economic options to address any remaining shortfalls against inertia requirements. This may include the use of additional synchronous contracts, or synthetic inertia services from grid forming technology.

4.3.4 Network support and control ancillary services requirements and related activities

While VicGrid is responsible for planning the network, AEMO conducts its own checks to ensure power system security and reliability standards are met or where there may be an opportunity to increase the power transfer capability of the transmission network. Where AEMO identifies a deficiency or an opportunity it declares a Network support and control ancillary services gap (NSCAS gap), which VicGrid is required to fulfil.

4.3.4.1 2025 Transition Plan for System Security

AEMO's 2025 Transition Plan for System Security highlighted the following key outcomes.

- No system strength services gaps declared, however some forecast shortfalls identified based on the size and timing of VicGrid's system strength investments, see section 4.3.2.
- The projected level of inertia is forecast to fall below the inertia sub-network allocation of 11,800 MWs for Victoria across the study period. However, AEMO has not declared an inertia NSCAS gap for these shortfalls.[64] VicGrid is investigating the least-cost options available to meet its inertia requirements from 2 December 2027. Procurement of system strength services, in line with the Victorian System Strength Requirement RIT-T, will also consider the level of inertia these services can provide to ensure a holistic and efficient procurement of system security services in aggregate.

62 Note: the projected level of inertia for 2025-26 and 2026-2027 are also forecast to below the inertia sub-network allocation however VicGrid's binding requirements only start from 2 December 2027 (2027-28).

63 Note: the projected level of inertia for 2025-26 and 2026-2027 are also forecast to below the inertia sub-network allocation however VicGrid's binding requirements only start from 2 December 2027 (2027-28).

64 While AEMO may forecast an inertia shortfall, it may decide to not declare a gap either if they believe the Inertia Network Service Provider has sufficient plans in place to address it or the NER requirements to declare a gap are not met,

- AEMO has not identified any new thermal capacity limitation or voltage control gaps in Victoria.
- Previously identified thermal overload and voltage control risks in supplying load at Deer Park Terminal Station have been noted, they are being managed by VicGrid and upgrades will now be delivered through the coordinated VTP program.
- Overloading risks for transformers between the 500 kV and 220 kV network supplying metropolitan Melbourne following YWPS retirement in 2028-29. VicGrid will deliver an operational solution with the relevant asset owners through the Reconfiguration of Latrobe Valley 220 kV network project (section 3.1.2.7), and further upgrades will now be delivered through the coordinated VTP program.
- Thermal overloads present following a credible contingency, related to demand, in 2030-31 on the:
  - Keilor–Thomastown 220 kV lines: VicGrid is reviewing these overloads as a part of its ongoing strategic planning.
  - Moorabool–Terang 220 kV line: VicGrid is reviewing these overloads as a part of its ongoing strategic planning.
  - Ringwood–Thomastown and Thomastown–Templestowe 220 kV lines: The load management works proposed on these lines under Project 2.3 of the 2025 VTP will address these overloads.
- Thermal overloads are present following a credible contingency in Western Victoria, related to export of renewable generation out of the area, on the Red Cliffs–Wemen–Koorangie, Koorangie–Kerang and Ballarat– Bendigo 220 kV lines. VicGrid is conducting feasibility studies as described in section 3.1.5.
- Challenge to maintain sufficient supply to Victorian peak demand in 2030-31 under a scenario with Basslink out of service. VicGrid will review these findings over the next year and identify the next steps.

4.3.5 Transition Plan for System Security transition points

AEMO's 2025 Transition Plan for System Security has identified four transition points[65] – events and milestones that require material changes in the operational approach to managing power system security. These require detailed analysis, risk assessment, and cross-functional coordination to plan and manage.[66] The four transition points identified are related to minimum system load (MSL) in Victoria, the exit of YWPS, and the potential withdrawal of a 2nd and 3rd coal station in Victoria.

The plan has assessed each of these transition points and finds that:[67]

Victorian MSL – moderate readiness

The plan finds that in the near term (next two years) managing an onerous MSL3[68] condition would require full application of almost all operational demand increase mechanisms available to DNSPs. Under some extreme onerous conditions, shedding of some reverse flowing feeders may also be required to maintain power system security.

65 2025 Transition Plan for System Security page 88, AEMO, 2025

66 2025 Transition Plan for System Security page 35, AEMO, 2025

67 2025 Transition Plan for System Security Appendix A3, AEMO, 2025

68 MSL1 – Regional demand is two credible load contingencies away from MSL3. MSL2 – Regional demand is one credible load contingency away from MSL3. MSL3 – Immediate need to increase demand for system security.

VicGrid recently updated the system normal limit advice[69] to include a greater number of system strength combinations with a lower number of large coal units which may assist in managing the onerous MSL3 conditions. The plan also finds that under typical system conditions, with all transition point actions proceeding as planned, forecast MSL3 emerge in 2026-27 for up to five days, increasing to between 27 and 42 days from 2029-30. These are all projected to be resolvable via control room actions.

If there are delays in transition point actions, DNSPs may need to take action for up to seven days in 2028-29, including distributed energy resources (DER) management and emergency voltage management. This is projected to increase to up to 53 days a year by 2030-31. VicGrid's approach to delivering the system strength assets and transmission upgrades to reduce the likelihood of MSL3 is discussed in section 3.1.2.

YWPS exit – moderate readiness

Timely delivery of the solutions identified in the Victorian System Strength Requirement RIT-T, in parallel with the YWPS closure will be critical. These solutions include contracts with existing synchronous machines, retrofitting plant with synchronous condenser capability and new synchronous condensers. If these are not delivered, maintaining system strength and inertia will be operationally coupled to the status of Loy Yang power station units. If these units are on forced or planned outages, there may not be sufficient units to direct and network disconnection may be required because the power system will likely rely on gas generators, whose gas supply may be limited. VicGrid's approach to delivering the system strength assets and transmission upgrades is discussed in section 3.1.2.

Vic 2nd coal station potentially offline – moderate readiness

If investments in system strength assets and transmission are not delivered on time and in full, operation after decommitment of a further two units in 2030-32 would necessitate directions to fuel constrained gas and hydro units will be required. VicGrid's approach to delivering the system strength assets and transmission upgrades is discussed in section 3.1.2.

Vic 3rd coal station potentially offline – moderate readiness

To maintain sufficient minimum fault levels after decommitment of all coal units in 2033-34, AEMO studies find that four new synchronous condensers, WRL and VNI West would all need to be completed, and that additional contracting would also be required. Contracting could be avoided if VicGrid's planned synchronous condenser at Giffard was brought forward. This differs from the findings of the System Strength RIT-T discussed section 3.1.2.5, and VicGrid will work with AEMO to resolve these modelling differences.

69 Victoria Transfer Limit Advice – System Normal, VicGrid, March 2026 – https://www.vicgrid.com.au/__data/assets/pdf_file/0027/766152/victorian-transfer-limit-advice-system-normal.pdf

4.4 Control schemes in the DSN

This section provides information about the activities undertaken in compliance with NER 5.12.2, which states that TNSPs' annual planning reports must address:

- For proposed new or modified emergency frequency control schemes, describe the manner in which the project relates to the most recent General Power System Risk Review (GPSRR), including any identified risks or recommendations relevant to system stability and frequency control
- The emergency controls implemented under NER 5.1.8, including the NSP's assessment of the need for new or altered emergency controls under that clause
- The analysis of the operation of, and any known or potential interactions between:
  - Any emergency frequency control schemes or emergency controls in place under NER 5.1.8, on its network
  - Protection systems or control systems of plant connected to its network (including consideration of whether the settings of those systems are fit for purpose for the future operation of its network)

This analysis includes a description of proposed actions to revise these schemes, controls or systems, or to address any adverse interactions.

4.4.1 Need for new control schemes and ongoing review of existing control schemes

In accordance with NER 5.12.2 and 5.1.8, changes in network configuration and operating conditions are monitored on an ongoing basis. This includes connection point demand, new generation connections and retirements of existing generation. Where required, the existing Victorian control schemes are reviewed and updated when needed to keep them effective and appropriate given the network changes. New control schemes may also be proposed to address any network needs created by the network changes.

The following sections outline the review and development activities related to the control schemes, segregated into the main transmission corridors.

4.4.2 South West Victoria corridor

VicGrid is proposing new control schemes and modification of the existing Emergency Alcoa Potline Trip control scheme to cater for the new South Australia to New South Wales Interconnector (SNI) to be built under EnergyConnect Stage 2. Modifications to existing monitoring facilities are also in progress to provide inputs to the Electranet South Australia Interconnector trip (SAIT) remedial action scheme (RAS) for EnergyConnect Stage 2. A new control scheme Heywood Interconnector (HIC) RAS has been proposed. This scheme aims, in conjunction with the SAIT RAS in SA, to address transient instability issues associated with the new SNI. It would trip Victorian generation or load which could be connected to SA following non-credible contingency events in the South West Victorian 500 kV corridor between Heywood and[70] HIC RAS is expected to be completed in mid-2027. As part of this study, a NEM-wide frequency instability risk was identified and referred to AEMO Operations for consideration in the 2026 GPSRR. This risk was assessed to be the result of a large amount of generation tripping in SA and Victoria by multiple control schemes following a non-credible contingency in the 500 kV corridor between Heywood and Moorabool post EnergyConnect Stage 2.

70 The 2023 GPSRR identified that there was a potential for Moorabool contingency events to result in separation of the mainland NEM into four islanded areas – Queensland, South Australia, the network between Heywood and Moorabool, and the rest of New South Wales and Victoria.

Studies have identified the need for a new control scheme to manage periods with high South Western generation and high HIC import into Victoria. With significant renewable generation connected to this corridor and expected increase in HIC transfer capacity (subject to internetwork testing), the simultaneous loss of both Moorabool–Sydenham 500 kV lines could result in voltage instability and severe thermal overloads in the metropolitan Melbourne region. Power system studies have been completed, and the functional requirements for the new scheme have been defined, and mitigation options, including generation trip, load shedding or both, to address both voltage instability and thermal overloading risks have been evaluated. In addition, the impacts of the SW Vic BESS and the Melbourne Renewable Energy Hub on the proposed scheme have been assessed.

A review of the existing Emergency Alcoa Potline Trip control scheme has been completed, with modifications proposed to accommodate network changes post EnergyConnect Stage 2. Proposed modifications from the review include the removal of frequency monitoring and tripping Alcoa Portland (APD) load directly, preserving auxiliary supplies to the site, rather than existing tripping actions which occur at Heywood Terminal Station.

The Electranet owned SAIT RAS addresses transient instability risks arising from separation of SA due to a HIC trip. Monitoring facilities of Victorian network conditions are currently being upgraded by Ausnet and Electranet to provide inputs to SAIT RAS. Refer to section 3.1.2.10 for further information.

4.4.3 North West Victoria corridor

VicGrid is progressing investigations into the need for new control schemes and modification of existing control schemes to accommodate network changes post WRL and VNI West projects. See section 3.1.2 for more information about WRL and VNI West.

VicGrid, through joint planning with Transgrid, has assessed potential stability and line thermal capacity limitations arising from non-credible loss of the proposed double-circuit 500 kV lines from Sydenham to Bulgana to be developed under the WRL project and from Dinawan–Tragowel–Bulgana under the VNI West project.

The assessment identified a need for a new control scheme to manage system stability for 500 kV line non-credible contingencies during high VNI export conditions, involving automatic load shedding in NSW and generation tripping in Victoria.

Thermal overloads post 500 kV line non-credible contingencies have also been identified. VicGrid is carrying out further assessment to determine whether there is a need for a new control scheme to address the thermal overloads, considering the impact of the overloads on assets and international common practices.

VicGrid is progressing the development of a new anti-islanding North-West 220 kV Special Control Scheme as part of the WRL project. This anti-islanding control scheme, with its master controller at Bendigo terminal station, will detect line openings across the North-West Victoria loop and send the respective trip signals to safely disconnect the existing Ararat, Waubra and Crowlands wind farms when they become electrically isolated from the network. The control scheme is currently going through concept design phase.

4.4.4 Northern Victoria corridor

VicGrid has started a review of the existing Dederang bus split line control scheme installed at Dederang Terminal Station (DDTS) to increase Victoria–NSW power transfer capability. The relevant operating conditions have changed since this scheme was originally designed, thus a review is considered necessary to assess its adequacy today and in the near future, as well as any need for upgrades to improve performance and avoid adverse impact.

A post event review of the Victorian Big Battery system integrity protection scheme operation during the bushfire events in January 2026 found that the scheme operated in accordance with its design. An additional post review of the scheme design was also undertaken, with no further modifications identified.

4.4.5 Eastern Victoria corridor

VicGrid is progressing a project to reconfigure the Latrobe Valley 220 kV network in preparation for the pending retirement of YWPS (see section 3.1.2.7). The project includes works for installing special protection schemes to prevent line overloads on the Hazelwood–Yallourn lines post contingencies of a parallel line or a Hazelwood 500/220 kV transformer:[71]

- Hazelwood–Yallourn 220 kV Line Overload Scheme – under certain operating conditions, the loss of either the Hazelwood–Yallourn No.1 or No.2 220 kV line may overload the remaining parallel line in-service. This risk is mitigated by a system overload control scheme (SOCS) that trips the Rowville–Yallourn No.5 and No.7 lines.
- HWTS A1/A2 Transformer Overload Scheme – loss of either the Hazelwood 500/220 kV A1 or A2 transformer may cause overload on the remaining in parallel transformer. Overload relief is achieved by tripping Hazelwood–Yallourn No.1 and Rowville–Yallourn No.5 and No.7 220 kV lines.

4.4.6 Review of other schemes in the wider Victorian DSN

A review of the existing SOCS load shedding scheme to manage thermal capacity issues in the Geelong–Deer Park–Keilor 220kV corridor is currently in progress. The need for this review is driven by committed network changes at the existing Deer Park Terminal Station (DPTS) and the anticipated Mount Cottrell Terminal Station (MCTS) to be connected between Geelong and Deer Park. Preliminary findings of the review indicate a redesign of the SOCS load shedding scheme may be required to accommodate the network changes as well as the new loads to be connected to DPTS and MCTS.

71 VicGrid is still evaluating the benefits of a control scheme to address this contingency.

4.5 General Power System Risk Review – planned activities

The General Power System Risk Review (GPSRR) is an integrated, annual review of major power system risks in the NEM. AEMO, in accordance with NER 5.20A.3, undertakes this review in consultation with TNSPs. The 2025 GPSRR was published in July 2025,[72] and outlines two recommendations for VicGrid to investigate further:

Recommendation 1

Recommendation for all TNSPs: rooftop solar, a key component of CER, is rapidly expanding across the NEM, with installed capacity projected to grow from 20 GW in 2025 to 72 GW by 2050. While this growth supports decarbonisation, it also reduces midday operational demand and increases the risk of MSL conditions. These conditions can compromise grid stability by displacing traditional synchronous generation.

The increased CER has been challenging in planning and operating the Victorian DSN for several years. VicGrid will continue to incorporate this risk in its Victorian planning tasks and activities, including:

- Providing information related to CER impacts in the VAPR
- Investing in augmentations for managing emerging DSN performance issues created by increased CER, such as lack of system strength, low fault level and high voltage limit violations
- Developing and reviewing limit advice related to system strength
- Supporting the development and refinement of operational procedures for managing MSL conditions.
- Reviewing and modifying control schemes to mitigate the impact of increased CER
- Engaging in joint planning with other TNSPs, DNSPs, and DTSOs, as needed, on challenges created by increased CER, such as reversed flow and high voltage in the distribution network
- Monitoring the uptake of home batteries and their impact on the network

Recommendation 5

Recommendation for all NSPs and AEMO: BESS are rapidly expanding across the NEM, with over 30 GW planned by 2050. While their fast, dispatchable capacity offers major benefits, concentrated BESS deployments, particularly in regions like SA, can pose risks to interconnector stability during frequency events. The GPSRR highlights the need for continuous monitoring of BESS distribution across the NEM, including Victoria and its sub-regions, to mitigate potential stability or thermal issues on interconnectors or other key transmission corridors.

To mitigate potential stability and thermal issues across interconnectors and key transmission corridors, the GPSRR recommends ongoing monitoring of BESS distribution across the NEM, including Victoria and its sub-regions. This includes:

- Continuing to monitor the location, control settings, and commissioning timelines of expected BESS and other fast-acting IBR connections within each network or region
- Regularly sharing updates on changes in IBR concentration across regions and sub-regions that may impact power system stability

72 See https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem- consultations/2024/2025-general-power-system-risk-review/2025-gpsrr.pdf?

- In response, VicGrid established a process in collaboration with AEMO to deliver regular updates throughout the year on BESS and other fast-acting IBR connections across Victoria. The effectiveness of this process will continue to be assessed, with any necessary adjustments identified prior to closing out this recommendation.

VicGrid will continue joint planning activities with other Vic DTSOs, TNSPs in other regions and Victorian DNSPs, where information including IBR connections across regions and sub-regions that may affect power system stability is shared. Refer to section 4.6 for more information on joint planning.

2026 Draft GPSRR Recommendation

The 2026 Draft GPSRR[73] was published in May 2026 and includes the following recommendation:

- AEMO supports the implementation of load access standards for inverter-based loads to reduce risks related to increasing large load connections. AEMO will continue to work with industry and relevant stakeholders to progress related work addressing emerging risks and supporting continued growth in inverter-based loads.

Aligned to this recommendation, VicGrid has developed a data centre connection guideline for proponents which will be applied through the connection process with the aim of reducing the network impact of increasing large load connections.

4.6 Joint planning activities to maintain the DSN

VicGrid, as the Jurisdictional Planning Body for the Victorian DSN, conducts joint planning to achieve the most efficient whole of system outcome for consumers. Other NSPs, including neighbouring TNSPs and DNSPs, are engaged when identifying network needs to plan the network and facilitate new connections. Previous sections have focused on the need for network augmentation but appropriate maintenance of Victoria's existing network remains critical. VicGrid have worked closely with DTSOs to assess the need for the replacement, refurbishment, derating, or retirement, of existing DSN assets that are approaching end-of-life. AusNet Services (Transmission) is currently the only DTSO with DSN asset replacement and refurbishment plans over this forecast period.[74]

Victorian transmission DSN and connection asset replacements are reported here, but VicGrid have only assessed DSN planning needs.

4.6.1 Joint planning in relation to replacement, retirement or de-ratings of DSN assets

AusNet Services' 2026 asset replacement and refurbishment plans are largely consistent with those presented in the 2025 VAPR, with some changes to scope, cost estimates and completion dates. Several projects identified in 2025 have been split into separate projects in 2026.

73 See the 2026 GPSRR at https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/system-operations/general-power-system-risk-review

74 Transmission Operations Australia provided advice that it has no planned replacements or refurbishments within the planning horizon. Lumea advised of planned replacement and refurbishment of secondary and connection assets only.

Since the 2025 VAPR:

- Three major asset replacement projects have been delivered:
  - Brooklyn Terminal Station (BLTS) 66 kV Circuit Breaker Replacement
  - Murray Switching Station (MSS) to Dederang Terminal Station (DDTS) No.1 and No.2 lines tower upgrades
  - Transmission Line Insulator Replacement
- Three asset replacement projects have been identified, or have now returned within the assessment horizon:
  - Geelong Terminal Station (GTS) 220/66kV B4 Transformer Replacement and Switchgear Replacement
  - Kerang Terminal Station (KGTS) Transformer and Switchgear Replacement
  - Terang Terminal Station (TGTS) 220/66kV B2 Transformer Replacement

4.6.2 Asset replacement, retirement and de-ratings in the DSN

4.6.2.1 Roles and responsibilities

In Victoria, DTSOs build, own, and operate transmission network infrastructure. Each DTSO is responsible for assessing the condition of its Victorian DSN assets, and for making replacement, retirement, or de-rating decisions for those assets. As the Jurisdictional Planning Body for Victoria, VicGrid's primary involvement is in providing planning advice to the relevant DTSO (particularly on the continued need for individual DSN assets).

Many transmission assets in the DSN were built several decades ago and are approaching end of service life. Asset condition, shifts in technology, and changing demand forecasts drive an increasing need to coordinate DSN asset renewal and augmentation activities in Victoria, and to assess both the system need and economic justification for the replacement of existing assets.

4.6.2.2 Rule requirements for DSN asset retirements/de-ratings

VicGrid are required to include detailed information relating to all network asset retirements and de-ratings that would result in a network constraint over the planning period. AusNet Services' current asset renewal plan is available alongside the VAPR on VicGrid's website.[75] Details of current replacement RIT-Ts are also available at AusNet Services' website.[76]

Where there is an identified need to retain an asset, VicGrid and AusNet Services conduct joint planning to identify the most efficient and economic option to address the identified need. The following sections provide more information about the joint planning process for asset retirement, replacement, refurbishment, and deratings.

75 See the 2026 AusNet Services Asset Renewal Plan at https://www.vicgrid.com.au/transmission-planning/victorian-annual-planning-report

76 See https://www.ausnetservices.com.au/projects-and-innovation/regulatory-investment-test

This VAPR, and previous VAPRs, have focused on replacement, retirement and de-ratings of assets owned by AusNet Services only. VicGrid acknowledges that other DTSOs also own Victorian DSN assets, however the age and condition of those assets have meant a limited need to provide information in the VAPR. VicGrid intends to work with all DTSOs to ensure that replacement, retirements and de-ratings of all Victorian DSN assets are adequately covered in future.

4.6.2.3 Methodology

VicGrid and AusNet Services agreed on the approach for joint planning adopted in this VAPR:

- VicGrid and AusNet Services jointly selected a set of assets which are included in AusNet Services' Asset Renewal Plan that are likely to create a DSN constraint and potentially justify RIT-Ts for replacement.
- The selected assets were grouped with their associated network components whenever possible, and a need assessment was conducted by assessing the overall network impacts of retiring the asset.
- Circuit breakers, other switchgear, and secondary systems were grouped with their respective network components, such as transmission circuits, transformers, generators, or reactive plants whenever possible.
- Committed projects, projects for which RIT-Ts have been completed, and projects solely associated with transmission assets that do not form part of the DSN, were excluded from the network need assessment.
- VicGrid did not assess the need to replace line insulators or conductors in the usual case where this amounts to less than 5% of the line replacement cost, as this cost, and system impact of line retirement, do not comprise a meaningful cost benefit assessment.
- Most of the secondary equipment (such as communication systems and control batteries), structural assets (for example towers), and ground wires in the Asset Renewal Plan were excluded from the network need assessment for individual projects. These assets are considered essential to the associated DSN primary network components, therefore they will be needed while the associated primary network components are still in service. As there is no committed retirement of Victorian transmission lines or Victorian interconnectors at present, VicGrid and AusNet Services agreed that all the secondary and structural assets which are associated with the Victorian transmission lines and interconnectors are still required, without carrying out need assessment on individual projects.
- VicGrid undertook a desktop analysis to assess whether the retirement of the selected asset would result in a network impact (that is, a network need for its replacement). In the case of an asset retirement that causes the disconnection of a generator, the resulting reduction in supply availability was also considered.
- If the proposed retirements would cause line, transformer, or Static Var Compensator outages, the impact of a credible contingency under worst-case operational conditions (normally either maximum or minimum demand conditions) was examined with a prior outage of the respective network elements.

4.6.2.4 Needs assessment results

Table 14 presents the summarised findings from the assets needs assessment, showing the anticipated impact to the network if the replacement/refurbishment project were not to proceed.

Table 14 Network needs assessment results

Project name	Location	Total cost (nominal $M)	Target completion (December)	Major DSN assets component(s) affected	Network impact if project does not occur
Rectification of Low Transmission Line Conductor Spans: Stage 1: Ground Clearance < 6m at Maximum Operating Temperature	Ballarat–Bendigo, Hazelwood–Rowville No.1 and Cranbourne–East Rowville 220 kV lines	40	2027	20 spans across Ballarat–Bendigo 200 kV line Seven spans across Hazelwood–Rowville double-circuit 220 kV lines One span across Cranbourne–East Rowville double-circuit 220 kV lines.	Assessing impact of retiring the affected lines is not applicable. Constraints may apply to the operation (de-rating) of these lines during high ambient temperatures, should the ground clearances not be remediated.
Heywood–Alcoa Portland 500 kV Line Replacement – Phase 2	Heywood–Alcoa Portland line	205	2029	Heywood–Alcoa Portland lines No.1 and No.2 Selected towers, conductors, and ground wire	Loss of connection to Alcoa Portland and embedded wind farms, reducing supply reliability.
TTS Circuit Breaker Replacement	Thomastown Terminal Station	36	2029	Thomastown 220 kV No.1 circuit breaker 66 kV 4B capacitor bank circuit breakers	May reduce maximum supportable demand caused by reduced reactive power margin.
Moorabool Terminal Station Shunt Reactor Replacement	Moorabool Terminal Station	24	2030	No.1 220 kV shunt reactor	Reduced ability to manage over-voltage during periods of low demand[A].
ROTS Gas Insulated Line Replacement	Rowville Terminal Station	81	2031	Rowville–South Morang 500 kV line Rowville–Thomastown 220 kV line	Reduced reliability and interconnector capabilities.
KTS 500/220 kV Transformer Replacement	Keilor Terminal Station	305	2032	A2, A3 and A4 750 MVA 500/220 kV transformers No.1 220 kV capacitor bank circuit breakers B4 150 MVA 220/66 kV transformer	Reduced reliability and capability to meet peak demand under certain operating conditions[B].

Project name	Location	Total cost (nominal $M)	Target completion (December)	Major DSN assets component(s) affected	Network impact if project does not occur
South Morang Terminal Station (SMTS) 500 kV GIS and F2 500/330 kV Transformer Replacement	South Morang Terminal Station	335	2032	South Morang–Hazelwood 500 kV lines No.1 and No.2 South Morang–Sydenham 500 kV lines No.1 and No.2 South Morang–Rowville 500 kV No.3 line South Morang–Keilor 500 kV line F2 1000 MVA 500/330 kV transformer	Reduced reliability, interconnector capabilities and ability to meet demand.
Newport Power Station 220 kV GIS Replacement	Newport Power Station switchyard	172	2032	Newport–Brooklyn 220 kV line Newport–Fishermans Bend 220 kV line	Loss of connection to Newport generation (noting Newport planned closure year is 2039).
Loy Yang Power Station and Hazelwood Terminal Station 500 kV Circuit Breaker Replacement – Stage 2	LYPS Switchyard and Hazelwood Terminal Station	77	2032	Loy Yang–Hazelwood 500 kV No.1 line double breaker switch bay Loy Yang–Hazelwood 500 kV No.2 line Loy Yang–Hazelwood 500 kV No.3 line Hazelwood–Loy Yang 500 kV No.2 line Hazelwood–Loy Yang 500 kV No.3 line Hazelwood–Rowville 500 kV No.3 line breaker-and-half switch bay (Hazelwood end) Hazelwood–Cranbourne 500 kV No.4 line breaker-and-half switch bay (Hazelwood end)	Additional generation constraints and reduced reliability (including for planned off shore generation after LYPS retirement.).

Project name	Location	Total cost (nominal $M)	Target completion (December)	Major DSN assets component(s) affected	Network impact if project does not occur
DDTS H3 330/220kV Transformer and Circuit Breaker Replacement	Dederang Terminal Station	56	2032	H3 340 MVA 330/220 kV transformer and two 330 kV circuit breakers	Reduced reliability and capability to supply Wodonga (330 kV), Mt Beauty and Glenrowan (220 kV) and reduced Victoria to NSW export capability.
MWTS 66kV Circuit Breaker Replacement	Morwell Terminal Station	36	2032	Morwell–Loy Yang 66 kV No.3 and No.4 lines	Loss of supply for Loy Yang raw coal bunker emergency fire services, potentially resulting in no Loy Yang generation (A or B) for up to six months.
Rectification of Low Transmission Line Conductor Spans – Stage 2	Spans along various 220 kV and 330 kV circuits	80	2032	220 kV circuits: Ballarat–Bendigo, Eildon–Thomastown, Shepparton–Bendigo, Dederang–Shepparton, Yallourn–Rowville No.5 through No.8 lines 330 kV circuits: Dederang–South Morange No.1, Murray Switching Station–Dederang No.1 and No.2 lines	Assessing impact of retiring the affected lines is not applicable. Constraints may apply to the operation (de-rating) of these lines during periods of high ambient temperatures, should the ground clearances not be remediated.
GTS 220/66kV B4 Transformer Replacement and Switchgear Replacement	Geelong Terminal Station	60	2035	Keilor–Geelong No.3 Line, No.1 Bus 220kV circuit breaker Moorabool–Geelong No.2 Line, No.1 Bus 220kV circuit breaker Geelong–Point Henry No.2 Line, No.2 Bus 220kV circuit breaker (removal)	Reduced reliability to supply Geelong, Deer Park to Keilor 220kV corridor loads if circuit breakers are not replaced[C].

A. AusNet Services and AEMO will work together to determine the preferred option to maintain reactive support when these MLTS reactors retire.
B. AusNet Services and AEMO will continuously work together to determine the preferred option in replacing the existing Keilor transformers.
C. Replacement of these assets may be incorporated into augmentation options for upgrading GTS–MLTS and the Western Metro network.

Asset retirements

DSN assets planned for retirement, and not forming part of AusNet's Asset Renewal Plan, are detailed in Table 15, including commentary from VicGrid justifying the retirement of the equipment.[77]

Location	Asset to be retired	Planned retirement date	Retirement justification
Horsham Terminal Station	+50/-25 MVAr 220 kV Static VAr Compensator	Mid-2026	Reduced ability to maintain voltages within limits in North West Victoria. Dynamic voltage and reactive power requirements will be addressed by the Ararat synchronous condenser installed under RDP Stage 1 (section 3.1.2).
Tyabb Terminal Station	50 MVAr 66 kV capacitor bank	FY 2027-28	Reduction in maximum supportable demand in Cranbourne and Tyabb. Some alleviation from 2030 due to changes in network configuration in Latrobe Valley post YWPS retirement and introduction of VNI West. However, further investment required to address the reactive shortfall in later years. The impact of this asset retirement was assessed, and investment options identified, in the Melbourne Metropolitan Voltage Management RIT-T (section 3.1.2).
Rowville Terminal Station	200 MVAr 220 kV capacitor bank No.1	FY 2027-28	Reduction in maximum supportable demand in Malvern, Heatherton and Springvale. Some alleviation in 2030 due to VNI West, however investment required to address the reactive shortfall in later years. The impact of this asset retirement was assessed, and investment options identified, in the Melbourne Metropolitan Voltage Management RIT-T (section 3.1.2).
Templestowe Terminal Station	50 MVAr 66 kV capacitor bank	FY 2027-28	Contributes to reduction in maximum supportable demand in Templestowe, and Ringwood. Some alleviation in 2030 due to VNI West, however investment required to address the reactive shortfall in later years. The impact of this asset retirement was assessed, and investment options identified, in the Melbourne Metropolitan Voltage Management RIT-T (section 3.1.2).
Moorabool Terminal Station	150 MVAr 220 kV capacitor bank No.2	FY 2027-28	Contributes to reduction in maximum supportable demand in metropolitan Melbourne. The impact of this asset retirement was assessed, and investment options identified, in the Melbourne Metropolitan Voltage Management RIT-T (section 3.1.2).
Dederang Terminal Station	100 MVAr 220 kV capacitor bank	FY 2027-28	Minor contribution to voltage collapse in southern NSW following loss of large Victorian generation or Basslink, during periods of import from NSW.

77 The 2025 VAPR captured the 330 kV capacitor banks at Dederang Terminal Station (DDTS) and Wodonga Terminal Station (WOTS) as assets to be retired. The ongoing need for reactive support at those locations after expiration of support contracts in December 2027 is to be assessed.

4.6.3 Asset replacement RIT-Ts

AusNet Services completed RIT-Ts for the following asset renewal projects since publication of the 2025 VAPR:

- Transmission Insulator Replacement 500 kV and 220 kV[78]
- Tower replacement on the Heywood to Alcoa Portland 500kV line[79]
- Tranche1 Rectification Low Spans – Priority sites[80]

AusNet Services is progressing several DSN asset renewal project RIT-Ts on primary and secondary assets as detailed below.

4.6.3.1 Maintaining reliable transmission network services at South Morang Terminal Station

AusNet Services commenced this RIT-T to identify the preferred option of replacing 500 kV gas insulated switchgear and the F2 500/330 kV transformer. This RIT-T is needed to:

- Maintain the required reliability of transmission services at South Morang Terminal Station (SMTS), through actively managing the risks and consequences of:
  - 500 kV switchgear failure
  - 500/330 kV transformation failure, and
- Ensure it complies with its regulatory obligations, including those in the Electricity Safety Act 1998

AusNet Services published the PADR in September 2025[81] and intends to publish the PACR by the end of 2026

4.6.3.2 Maintaining reliable transmission network services at Keilor Terminal Station

AusNet Services commenced this RIT-T to identify the preferred option of replacing three 750 MVA 500/220 kV transformers. This RIT-T is needed to:

- Maintain the required reliability of transmission services at Keilor Terminal Stations (KTS), through actively managing the risks and consequences of transformation failure
- Ensure it complies with its regulatory obligations, including those in the Electricity Safety Act 1998

AusNet Services published the PADR in May 2025[82] and intends to publish the PACR mid-2026.

AusNet Services and VicGrid will continue to work jointly to determine the preferred replacement option for the existing KTS transformers, optimising the solution for any augmentation needed to support increasing demand in the western metropolitan area.

78 See https://www.ausnetservices.com.au/-/media/project/ausnet/corporate-website/files/about/regulatory-investment-test/2025/transmission-insulator-replacement_pacr.pdf

79 See https://www.ausnetservices.com.au/-/media/project/ausnet/corporate-website/files/about/regulatory-investment-test/2025/transmission-insulator-replacement_pacr.pdf

80 See https://www.ausnetservices.com.au/-/media/project/ausnet/corporate-website/files/about/regulatory-investment-test/2026/ausnet-services---rit-t-pacr---tranche1-rectification-low-spans-priority-sites-for-publication.pdf

81 See https://www.ausnetservices.com.au/-/media/project/ausnet/corporate-website/files/about/regulatory-investment-test/2025/smts-f2-transformer-and-gis-replacement---padr.pdf

82 See https://www.ausnetservices.com.au/-/media/project/ausnet/corporate-website/files/about/regulatory-investment-test/2025/kts-a-transformer-replacement-padr_final.pdf

4.6.3.3 Maintaining Reliable Transmission Service at Thomastown Terminal Station

AusNet Services commenced this RIT-T to identify the preferred option of replacing 220 kV and 66 kV switchgear at Thomastown Terminal Station (TTS). This RIT-T is needed to maintain the required reliability of transmission services at TTS, through actively managing the risks and consequences of 220/66 kV switchgear failure.

AusNet published the PSCR in January 2026[83] and intends to publish the PACR by mid-2026.

More details are provided in AusNet Services' Asset Renewal Plan, which is available with the VAPR on VicGrid's website. Details of current RIT-Ts are available at AusNet Services' website.[84]

4.6.4 Joint planning activities with other TNSPs

VicGrid is required to engage in joint planning with neighbouring TNSPs when both of the following apply:

- A credible option to alleviate a transmission network constraint involves augmentation of another TNSP's network
- The constraint is not already being addressed through other mechanisms under the NER

VicGrid has been actively collaborating with adjacent TNSPs on augmentation initiatives related to both upgrades of existing interconnectors and the development of new ones, including:

- Inter-network testing
- Joint RIT-T processes
- Designing control schemes that may influence power system performance across multiple jurisdictions or respond to recommendations from the GPSRR

4.6.4.1 Inter-network tests associated with the EnergyConnect project

Inter-network testing for Stage 1 of EnergyConnect was completed in April 2025. Further inter-network testing is being undertaken in collaboration with AEMO and ElectraNet to release the full design capacity of HIC, that is, 650 MW for both import and export.

4.6.4.2 Other joint planning activities with TNSPs underway

VicGrid has been conducting joint planning with TNSPs over the past 12 months on the following key initiatives:

- Joint planning with Transgrid on the delivery of VNI West
- Control scheme coordination for EnergyConnect in partnership with ElectraNet
- Joint planning of Marinus Link Pty Ltd with TasNetworks

See section 3.1.2 for more details about EnergyConnect and VNI West, and section 4.4 for more information about Victorian control schemes.

83 See https://www.ausnetservices.com.au/-/media/project/ausnet/corporate-website/files/about/regulatory-investment-test/2026/ausnet----tts-circuit-breaker-replacement_-rit-t_pscr.pdf

84 See https://www.ausnetservices.com.au/projects-and-innovation/regulatory-investment-test

4.6.5 Joint planning activities with DNSPs

Each TNSP is required to undertake joint planning with the DNSP of the distribution networks connected to its transmission assets. In line with this obligation, VicGrid participates in regular joint planning discussions with each Victorian DNSP and collaborates closely to support effective planning outcomes. This process helps identify the most efficient solutions to address the following network issues.

During 2026, the main focus area of joint planning between VicGrid and the DNSPs has been load connections to the transmission and distribution networks. This has predominantly been driven by data centre connection interest in the distribution network and by continued growth in the demand of existing customers which were already identified in the 2025 TCPR.

Data centre connection interest in the distribution network relates to proposed projects that are smaller in scale than those connecting to the transmission network. However, in aggregate, these connections are large enough to trigger further investment in the transmission network.

To date, proposed data centre locations in the distribution network have generally aligned with those in the transmission network. As a result, both distribution and transmission connections are likely to trigger similar transmission augmentation projects.

Some of the new emerging trends and challenges to the transmission network being observed with the distribution connected data centres include:

- Distribution load run back schemes
- 132 kV connections

4.6.5.1 Distribution load run back schemes

Some of the data centre loads are connecting into locations on the network where there are forecast limitations in either the distribution or transmission network, or both. In these cases, the connected party agrees to curtail load when network conditions change operationally and full load cannot be supported. To facilitate this load reduction special protection schemes are being set up to run back load to a level that prevents the forecast limitations from being reached. These schemes would remain in place until network augmentations or other changes are completed to remove the limitation.

The use of distribution load run back schemes is creating a new challenge for coordination of the runback schemes, particularly at stations where there may be more than one DNSP connected, and/or where aggregate demand reduction over multiple terminal stations is needed. VicGrid is continuing to work with the DNSPs to understand the size and triggers of the run back schemes to ensure that these customers are not unnecessarily curtailed and to prevent unexpected sharp changes in overall network demands. Significant rapid changes in network demand can have unfavourable impacts on network frequency and voltage, so must be avoided.

4.6.5.2 132 kV connections

With the size of loads proposed to be connected, there has been a rise in applications for establishing transformation to 132 kV for both transmission and distribution supplies. Traditionally, 132 kV has not been used to supply load in Victoria, which is leading to challenges in fitting the additional voltage switchyard into stations where it was not planned. The use of 132 kV needs to be reviewed at sites, as it may limit the site's overall capacity.In new stations, this is less of an issue as there is an opportunity to define how the site should be developed.

Outside of the terminal stations, the 132 kV lines face similar challenges to traditional transmission lines in finding appropriate routes. However, unlike other typical transmission voltages (500, 300, 275, and 220 kV in Victoria), it is possible to use smaller structures, including poles, for 132 kV lines, which take up less room and may be less visually imposing..

4.6.5.3 High voltage control at connection points

Control of high voltages in both transmission and distribution networks has been challenging during low/minimum demand periods, particularly with increased distributed PV generation relative to underlying demand. In December 2025, Victoria recorded a new minimum operational demand of 1,287 MW.

Additionally, reactive power injection from the distribution networks to the DSN has contributed to high DSN voltages that need to be carefully managed to stay within operational and design limits. Out of 32 terminal stations assessed for the reporting period, distribution networks were found to be injecting reactive power into 28 terminal stations for more than 10% of the year.[85]

There has been no need for abnormal operational intervention to manage high voltages,[86] due to the new reactors installed at KTS and Moorabool Terminal Station (MLTS) in 2022 and the overvoltage protection scheme at KTS upgraded in Oct 2024.

VicGrid is progressing the implementation of the preferred option identified in the Metropolitan Melbourne voltage management RIT-T[87] completed in Dec 2024. The preferred option includes additional reactive power support to address high voltage issues on the DSN during low system load periods. Refer to section 3.1.2.4 for more information about the progress of this project.

4.6.6 Transmission connection planning

VicGrid reviews DNSP plans for existing and new connection points and incorporates the impact of any distribution network modifications in its transmission planning work. VicGrid and DNSPs work together to address connection asset limitations, ensuring a co-optimised and efficient solution for both the distribution network and the DSN.

85 See Section 2.3.2 of the 2026 VNPIR at https://www.vicgrid.com.au/transmission-planning/victorian-annual-planning-report

86 SHTS 66kV and Morwell 66kV had a small number of high voltage events that occurred.

87 See the PACR at https://www.vicgrid.com.au/__data/assets/pdf_file/0023/772322/metropolitan-melbourne-voltage-management-pacr.pdf

Table 16 includes information on constraints and augmentations identified in the 2025 Transmission Connection Planning Report[88] prepared by the Victorian DNSPs that have been considered in this annual planning review.

Table 16 DNSP preferred connection modifications

Location/ terminal station	Preferred connection modification	DNSP augmentation driver	Possible transmission network impacts
Altona–Brooklyn 66 kV	Install additional transformation capacity and reconfigure 66 kV exits at ATS or BLTS by 2028[A].	Increased demand in the western metropolitan Melbourne area requiring this transformer.	Altona–Brooklyn area is forecast to be heavily constrained, transmission augmentations forecast to be required to facilitate more supply
Altona West (No.3 and No.4 buses) 66 kV	Install a fifth transformer and reconfigure 66 kV exits at ATS around 2029[B].	Increased demand in the western metropolitan Melbourne area requiring this transformer.	
Cranbourne 66 kV	Install a fourth transformer by summer 2026-27, as determined by RIT-T[C].	Increased demand in the outer eastern metropolitan Melbourne area requiring this transformer.	Not anticipated to significantly impact transmission network
Deer Park 66 kV	Install a third 225 MVA 220/66 kV transformer around 2027, as determined by RIT-T[D].	Increased demand in the western metropolitan Melbourne area requiring this transformer.	Deer Park is connected to lines that are already part of a priority limitation. Works to address this limitation are required to be completed in parallel with the installation of the transformer.
Glenrowan 66 kV	Install additional 220/66 kV transformation.	Additional embedded generation may justify additional 220/66 kV transformation capacity.	Not anticipated to significantly impact transmission network
Keilor 66 kV	Upgrade all three 220/66 kV transformers at KTS (B1,2,5) to 225 MVA, install a third (B6) 150 MVA transformer forming KTS (B3,4,6) and transfer 66 kV exits at KTS (B1,2,5) to KTS (B3,4,6) by 2029[E].	Increased demand in the western metropolitan Melbourne area requiring this transformer.	Keilor terminal station is a location where upstream 500/220kV priority limitations have been identified. Installation of further transformer capacity will need to be coordinated with upstream works to ensure limits are not exceeded.
Kerang 66 kV	Install additional 220/66 kV transformation.	Additional embedded generation may justify additional 220/66 kV transformation capacity.	There is an existing Priority Limitation on the Red Cliffs to Wemen–Kerang 220kV line which may impact the operation of additional generation
Mount Cottrell 132 kV	Proposed new terminal station consisting of two 350 MVA 220/132 kV transformers, commissioned in 2027.	Increased demand in the western metropolitan Melbourne area requiring this transformer.	Mount Cottrell will be connected to lines that are already part of a priority limitation. Works to address this limitation are required to be completed prior to the construction of Mount Cottrell.

88 At https://dapr.ausnetservices.com.au/ausnet_data/2025%20TCPR%20for%20publication_18%20Dec%202025.pdf

Location/ terminal station	Preferred connection modification	DNSP augmentation driver	Possible transmission network impacts
Morwell 66 kV	Install a fourth 220/66 kV transformer by 2031.	Increased demand in the Gippsland area requiring this transformer	Morwell currently has existing transformers connected each to a single line, redevelopment of this site may be required to establish a 220kV bus or an additional 220kV line to Morwell may be required to facilitate an additional transformer.
Red Cliffs 66 kV	Install additional 220/66 kV transformation.	Additional embedded generation may justify additional 220/66 kV transformation capacity.	There is an existing Priority Limitation on the Red Cliffs–Wemen–Kerang 220kV line which may impact the operation of additional generation
South Morang 66 kV	Install a third South Morang 225 MVA 220/66 kV transformer by 2029[F].	Increased demand in the northern metropolitan Melbourne area requiring this transformer	South Morang is closely tied to Thomastown where fault levels are approaching the limits. Installation of additional transformation at South Morang will need to consider impacts at Thomastown.
Thomastown 66 kV	Install two new 150 MVA 220/66 kV transformers by 2032 or later.	Increased demand in the northern metropolitan Melbourne area requiring this transformer	Thomastown terminal station has fault levels that are approaching the limits at the 220kV buses. Further installation of transformers may require upgrades to the existing buses to prevent fault level limit exceedances.
Wemen 66 kV	Install additional 220/66 kV transformation.	Additional embedded generation may justify additional 220/66 kV transformation capacity.	There is an existing Priority Limitation on the Red Cliffs–Wemen–Kerang 220kV line which may impact the operation of additional generation

A. See the PSCR at https://www.aemo.com.au/consultations/current-and-closed-consultations/pscr-maintaining-supply-reliability-in-altona-brooklyn-terminal-station-supply-area
B. See the PACR at https://www.aemo.com.au/consultations/current-and-closed-consultations/pacr-altona-terminal-station
C. See the PACR at https://www.aemo.com.au/consultations/current-and-closed-consultations/cranbourne-rit-t-project-assessment-conclusions-report
D. See the PACR at https://www.aemo.com.au/consultations/current-and-closed-consultations/pacr-ts-dpts
E. See the PADR at https://www.aemo.com.au/consultations/current-and-closed-consultations/padr-keilor-terminal-station-capacity-constraint
F. See the PADR at https://www.aemo.com.au/consultations/current-and-closed-consultations/padr-maintaining-supply-reliability-in-the-south-morang-supply-area

4.6.7 Joint planning activities with AEMO

Over the past 12 months, VicGrid and AEMO have undertaken a series of joint planning sessions primarily focused on two areas:

- energy transition planning
- the development of each organisation's long-term planning frameworks, namely the VTP and the ISP

A key objective of the long-term planning collaboration has been to maximise alignment of inputs and assumptions across both organisations' planning processes. This alignment supports greater consistency in modelling outcomes and strengthens confidence in the resulting plans. Areas of alignment have included, among others, the location and development of REZs in Victoria, as well as the status and timing of planned network augmentation projects.

Joint planning activities relating to the energy transition have largely focused on preparing for coal-fired generation retirements in Victoria, in particular the scheduled closure of YWPS in mid-2028. This work has prioritised system security considerations, including system strength, inertia, and overall system stability. In parallel, there has been a strong emphasis on the timely delivery of network augmentation projects required to maintain reliable system operation following the retirement.

4.7 Next steps after the 2026 VAPR

The 2026 VAPR outcomes, including identified network limitations, are largely consistent with those reported in 2025 VAPR, with the exception of the additional new group of monitored limits triggered by increasing large load demand.

If the demands continue to grow in line with the current demand forecast, significant augmentation into the metropolitan network will be required to manage the risks that have been identified. While there is still a large amount of uncertainty around the demands and projects required to address them further planning needs to be undertaken, particularly in consultation with the DNSPs to ensure risks to consumers are minimised.

The key next steps are:

1. Delivery of the major augmentation projects that are already underway to ensure the network continues to be operated safely and securely while meeting the needs of consumers.
2. Work with the DNSPs to refine the demand forecasts to reduce the level of uncertainty for Victorian planning in the future.
3. Work with DNSP's and other industry stakeholders to further address capacity limitations in the metropolitan area and determine a roadmap for providing sufficient capacity to address risks.
4. Continue to provide planning advice to load connection applicants including funded augmentation options to minimise the likelihood of load curtailment and supply interruption.
5. Progress the Red Cliff–Wemen–Kerang 220 kV line thermal limitation RIT-T to justify the investment and develop it into an augmentation project.

VicGrid welcomes stakeholder submissions on the usefulness of the 2026 VAPR, and on potential improvements or additional information sources that would be valuable in future reports. Submissions will be used to inform the 2027 VAPR.

Send your written submissions to enquiries@vicgrid.com.au

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