2026 Victorian Transmission Plan guidelines

May 2026

Appendix B

Inputs, Assumptions and Scenarios

Purpose

This is Appendix B to the 2026 Victorian Transmission Plan Guidelines.

Contents

Acronyms

Term	Definition
AEMO	Australian Energy Market Operator Limited
DSP	Distributed solar photovoltaic
GW	Gigawatt (one million kilowatts)
GWh	Gigawatt hour (one million kilowatt hours)
IASR	Inputs, Assumptions and Scenarios Report
ISP	Integrated System Plan
MW	Megawatt (one thousand kilowatts)
NEM	National Electricity Market
ODP	Optimal development pathway
RETA	Renewable Energy Transformation Agreement
TWh	Terawatt hour (one billion kilowatt hours)
VAPR	Victorian Annual Planning Report
VPP	Virtual Power Plant
VRET	Victorian Renewable Energy Targets
VTP	Victorian Transmission Plan
WACC	Weighted average cost of capital

Appendix B: Inputs, assumptions and scenarios – content summary

This appendix details the inputs, assumptions and scenarios that we will use to develop and inform the 2027 Victorian Transmission Plan (VTP). It includes inputs and assumptions that will be used for the energy market analysis, power systems analysis and economic cost-benefit analysis.

Among other factors, this appendix outlines:

- The policies that VicGrid will consider and their treatment
- Energy demand forecasts, including data centre and hydrogen demand forecasts
- Generator and storage technical assumptions
- Fuel cost forecasts
- Network modelling
- Power system security
- Financial and economic parameters

In general, where inputs and assumptions are consistent with those made by AEMO, this appendix identifies and refers to the appropriate data source rather than report the data here. This approach seeks to minimise the potential for confusion or conflicts across sources. Additional details are provided where the 2026 Guidelines adopted an input or assumption that differs from AEMO or where the inclusion of specific data can support reader understanding.

B.1 Scenarios

The *National Electricity (Victoria) Act 2005* (the Act) requires the Victorian Transmission Plan (VTP) scenarios to be high-impact, plausible and establish the electricity system's 25-year investment needs consistent with Victorian energy policy objectives and market outlook.

The Act also includes the Victorian transmission planning objective, which aims to promote efficient investment (refer to Section 1.1 of the 2026 Guidelines). To achieve this, the VTP should develop transmission having regard to the risks associated with under-investment and over-investment. VicGrid is required to manage these risks through analysis across a range of scenarios to develop a VTP that is robust to future uncertainties.

For the 2027 VTP, VicGrid intends to use three scenarios to outline electricity system investment needs for the coming 25 years. The scenarios build on those used by the Australian Energy Market Operator (AEMO) to develop the draft 2026 Integrated System Plan (ISP), adapted to meet Victoria's needs. For example, data centres are an emerging large load that requires careful planning to support its integration into the electricity system. In each scenario, VicGrid will include updated data centre demand forecasts that consider AEMO's forecasts, VicGrid data and analysis and other sources including locational factors.

Where practical, VicGrid will seek to incorporate revised inputs as outlined by AEMO over time. This approach supports consistency of assumptions with national planning bodies, avoiding duplication and acknowledging the thorough analysis and stakeholder management processes that inform AEMO's national planning. Transmission planning entities across the National Electricity Market (NEM) adopt a similar approach. The scenarios are also informed by additional data and analysis by VicGrid to reflect Victorian policy and energy market outlook.

Box 1: How have the scenarios changed since the 2024 Guidelines?

The scenarios, inputs and assumptions have been broadly updated since the 2024 Guidelines. Underlying scenario inputs and assumptions have been updated to reflect changes in AEMO's latest information and Victoria's energy market and policy outlook including growth in data centre demand, gas supply constraints and transmission project timing. In Scenario 3, we have also allowed for the potential for longer infrastructure delays across the NEM to test its impact on Victoria's energy transition.

The VTP scenarios do not represent VicGrid's view on how the energy transition will occur, nor are they an endorsement of one scenario over another. There are many, plausible and different possible futures, characterised by uncertainty. Instead, scenarios are an important tool to facilitate planning and manage future risks and uncertainty. To support the analysis of robustness (least regrets), the scenarios have been designed to support a broad range of plausible future states and uncertainties. VicGrid will assign a relative weighting for each scenario prior to releasing the draft VTP based on a contemporary analysis of stakeholder feedback and the most recent market insights and development.

In developing the VTP, VicGrid will use sensitivity analysis to test the robustness of modelled outcomes results generated throughout the VTP methodology. Sensitivity analysis is often used to complement a scenario-based planning approach. Potential sensitivity testing is outlined in Section 3.3 of the draft 2026 Guidelines.

The three scenarios are summarised in Table B-1.

Table B-1: VTP scenarios

Scenario	Description
Scenario 1 **If Victoria experiences a step-change in energy transition**	This scenario is considered the most likely scenario and explores what may occur if Victoria's energy transition goes according to plan and Victoria's renewable energy targets, storage targets and offshore wind targets are met. It considers a potential future where the Victorian energy sector continues to evolve in line with AEMO's national step change trends, adapted with VicGrid data and analysis to reflect the Victorian context, including updated data centre demand forecasts. AEMO defines this scenario as reflecting a pace of transition that supports Australia's contribution to limit global temperature rise to less than 2°C, with consumer energy resources playing an important role in the transition.
Scenario 2 **If Victoria's energy transition accelerates**	This scenario explores what may occur if Victoria's energy transition accelerates, with high levels of electricity demand. Demand in this scenario builds on AEMO's national accelerated transition forecasts, adapted for VicGrid data and analysis to consider a potential future with higher growth in data centre demand and new energy-intensive green industries. The scenario models a rapid decarbonisation pathway, high levels of consumer energy resources, including electric vehicles and supportive social conditions.
Scenario 3 **If Victoria and the NEM faces delays in energy infrastructure**	This scenario explores what may occur if the NEM and Victoria's energy transition does not go to plan. It considers a potential future where new energy infrastructure across the NEM is delayed and there is reduced social acceptance, leading to delays of up to two years in the achievement of some government targets. Electricity demand in this scenario is similar to Scenario 1, however it also considers data centre demand that is concentrated geographically and consumer energy resources that are not integrated or coordinated.

The scenarios consider a range of factors that could impact the energy sector, including electricity demand, interconnection with other jurisdictions and government renewable energy policies. The treatment of these parameters is summarised in Table B-2.

Table B-2: Summary of selected parameters for each scenario

Parameters	Scenario 1 If Victoria experiences a step-change in energy transition	Scenario 2 If Victoria's energy transition accelerates	Scenario 3 If Victoria and the NEM faces delays in energy infrastructure
Demand and demand-side parameters			
Demand	Based on AEMO's Step Change, and VicGrid analysis[1]	AEMO's Accelerated Transition, and VicGrid analysis[1]	Based on AEMO's Step Change, and VicGrid analysis[1]

Parameters	Scenario 1 If Victoria experiences a step-change in energy transition	Scenario 2 If Victoria's energy transition accelerates	Scenario 3 If Victoria and the NEM faces delays in energy infrastructure
Data centre load and location	Load: moderate Location: distributed	Load: high Location: distributed	Load: moderate Location: concentrated
Consumer energy resources uptake and coordination (batteries, solar panels and electric vehicles)	Uptake: high Coordination: moderate	Uptake: very high Coordination: high	Uptake: high Coordination: low
Energy efficiency	Moderate	High	Moderate
Other key factors			
Victorian Renewable Energy Targets (VRET) (2030 and 2035)	Achieved	Achieved	Achieved but with delays of up to two years for interim 2030 target[2]
Storage targets (2030 and 2035)	Achieved	Achieved	Achieved
Offshore wind targets (2032, 2035 and 2040)	Achieved	Achieved	Achieved but with delays of up to two years
Gas supply and infrastructure constraints	As per AEMO, supplemented with VicGrid analysis	As per AEMO, supplemented with VicGrid analysis	Increased challenges in gas-powered generation supply and augmentation
Timing of key transmission projects	As per announcements / AEMO's ISP	As per announcements / AEMO's ISP	Projects are delayed by up to two years
Victorian coal retirement	In line with Structured Transition Agreements and by 2035 at latest	In line with Structured Transition Agreements and by 2035 at latest	In line with Structured Transition Agreements and by 2035 at latest
Non-VIC coal retirement	As per AEMO's ISP	As per AEMO's ISP	As per AEMO's ISP with delays of up to two years
Non-Victorian government policies	Aligned with announcements	Aligned with announcements	Snowy Hydro and NSW targets delayed two years and Capacity Investment Scheme NEM-wide delayed by two years

[1] *VicGrid analysis primarily refers to the development of Victorian-specific data centre demand forecasts, based on AEMO forecasts, VicGrid data and analysis and other sources.*

[2] *Scenario 3 will consider a potential delay of up to two years in the achievement of the interim 2030 VRET because of infrastructure delay.*

Source: VicGrid and AEMO IASR 2025 and draft 2026 ISP

B.2 Policy settings

B.2.1 Victorian Government policies

Government policies are an important factor driving the energy transition and transmission needs. Policies that have been considered across the scenarios are outlined in Table B-3.

Table B-3: Victorian Government policy settings considered across scenarios.

Policy type	Details
Renewable energy targets	The Victorian Renewable Energy Targets (VRET) are legislated in the *Renewable Energy (Jobs and Investment) Act 2017* (Vic) and includes: • 65% of Victorian electricity generation to be renewable by 2030 • 95% of Victorian electricity generation to be renewable by 2035
Storage targets	Victoria's energy storage targets are legislated in the *Renewable Energy (Jobs and Investment) Act 2017* (Vic) and are, at a minimum: • 2.6 GW by 2030 • 6.3 GW by 2035
Offshore wind energy targets	Victoria's offshore wind energy targets are legislated in the *Renewable Energy (Jobs and Investment) Act 2017* (Vic) and are, at a minimum: • 2 GW by 2032 • 4 GW by 2035 • 9 GW by 2040
Renewable Energy Transformation Agreement (RETA) (Capacity Investment Scheme)	Victoria's RETA includes Capacity Investment Scheme investments supporting 5.0 GW / 11 TWh of generation capacity and 1.7 GW / 6.8 GWh of dispatchable capacity by 2030
Consumer energy resources-related policies	Victorian solar panel rebate, solar battery rebate, Federal Cheaper Home Batteries scheme
Electric vehicles	Zero Emissions Vehicles Roadmap
Energy efficiency policy	Victorian Energy Upgrades program, National Construction Code 2022 updates, including 7-star minimum building efficiency requirements
Employment	Victorian Energy Jobs Plan (under development)

Policy type	Details
Other Victorian Government policies	Gas Substitution Roadmap, Gas Security Statement, Renewable Hydrogen Industry Development Policy, AI Mission Statement, Sustainable Data Centre Action Plan

The VicGrid scenarios consider alternative futures in which Victorian Government policies are achieved, and Scenario 3 considers the impact of infrastructure delays on the achievement of some government targets to ensure the VTP is robust to challenges in the energy transition. Scenario 3 also aims to acknowledge industry concerns of needing to model less optimistic outcomes for Australia's energy transition.

B.2.2 Emissions

The *Renewable Energy (Jobs and Investment) Act 2017* (Vic) prescribes targets for the shares of Victorian energy generation that must be from renewable sources. For the purposes of the energy market modelling, these targets are assumed to deliver on the energy sector's contribution to Victoria's emissions reduction targets outlined in *Victoria's Climate Change Act 2017* (Vic), including 28-33% below 2005 levels by 2025; 75-80% by 2035; and net zero by 2045.

B.2.3 Other National Electricity Market-jurisdiction policies

Other jurisdictions have developed policies to support the energy transition across the NEM, which could have an impact on renewable energy zone (REZ) and transmission outcomes in Victoria. Table B-4 outlines selected policies from interstate that have been considered across scenarios.

Table B-4: Selected NEM-jurisdiction policy settings

Policy type	Details
Renewable energy targets	• NSW Roadmap is implemented in full (12 GW variable renewable energy by 2030)
Storage targets	• NSW power capacity target for two GW long duration storage by 2030 • NSW energy storage target of 28 GWh by 2034
New pumped hydro storage	• New pumped hydro storage initiatives include Snowy 2.0 from 1 December 2028
Gas infrastructure	• Queensland's Energy Roadmap, including 400MW of gas-fired capacity in Central Queensland
Coal-fired generation	• Queensland's Energy Roadmap which resets coal-fired generation operating to its technical life with possible extensions

Scenarios 1 and 2 consider potential futures in which policies of other states are achieved. To ensure that the VTP is robust in the face of challenges in other jurisdictions, Scenario 3 considers a potential future in which there may be delays of up to two years in the achievement of interstate commitments. This will allow us to consider how we can plan to meet the energy needs of Victoria under challenging circumstances, including if the transition does not go to plan in other jurisdictions.

B.3 Consumption and demand forecasts

The VTP Scenarios build on AEMO's total operational demand forecasts for Victoria under the step-change and accelerated transition scenarios. VicGrid will supplement the AEMO operational demand forecasts with additional forecast demand arising from data centres. VicGrid will do this by developing its own up-to-date forecasts of data centre demand based on connection enquiry data, AEMO's national forecasting approach and analysis of other sources.

The scenarios consider different levels of forecast electricity consumption, reflecting changes in residential, commercial and industrial consumption, uptake in electric vehicles, consumer energy resources and rates of electrification, which impact overall demand. These factors are outlined in Table B-5.

Table B-5: Scenario demand profiles – selected parameters

Parameters	Scenario 1 If Victoria experiences a step-change in energy transition	Scenario 2 If Victoria's energy transition accelerates	Scenario 3 If Victoria and the NEM faces delays in energy infrastructure
Demand	Based on AEMO's Step Change, and VicGrid analysis[1]	AEMO's Accelerated Transition, and VicGrid analysis[1]	Based on AEMO's Step Change, and VicGrid analysis[1]
Data centre load and location[1]	Load: moderate Location: distributed	Load: high Location: distributed	Load: moderate Location: concentrated
Consumer energy resources uptake and coordination (batteries, solar panels and EVs)	Uptake: high Coordination: moderate	Uptake: very high Coordination: high	Uptake: high Coordination: low
Hydrogen use	Medium-low production for domestic use	Higher production for domestic use	Medium-low production for domestic use
Energy efficiency	Moderate	High	Moderate

[1] VicGrid will develop data centre demand forecasts based on AEMO forecasts, connections enquiry data and other sources.

Source: VicGrid and AEMO IASR 2025 and draft 2026 ISP

The uptake in consumer energy resources is an important factor that can impact operational demand and the need for more generation and transmission investment. The Victorian Government has a range of policies designed to support the uptake in consumer energy resources as outlined in Section B.2. AEMO considers the impact of these policies when it forecasts consumer energy resources uptake, including the uptake in distributed rooftop solar panels, battery storage and coordinated VPPs, and their impact on overall demand and consumption.

By way of example, AEMO's step-change scenario assumes rooftop solar panels and distributed storage will experience strong growth in the long term in Victoria and the rest of the NEM. Victorian rooftop solar panel generation is expected to grow from 6.6 TWh in FY2026 to 30.3 TWh in FY2050. Victorian distributed battery energy storage system (BESS) uptake is expected to reach 10.2 GW by FY2050, with 64% of them being coordinated in VPPs. By aligning with and updating AEMO's scenario inputs, such growth is incorporated into

our planning. Scenario 3 considers a potential future in which low social acceptance leads to low coordination of consumer energy resources.

B.3.1 Data centre demand

Data centre demand will be based on AEMO's demand forecasts and VicGrid data and analysis, including connection enquiries and other sources to ensure the most contemporary forecasts can be used to inform the 2027 VTP. Scenarios 1 and 2 consider potential futures in which data centre demand is distributed around centres of economic activity, whereas Scenario 3 considers a potential future in which data centre demand growth is concentrated centrally.

B.3.2 Hydrogen infrastructure demand

Hydrogen demand will be sourced from AEMO scenarios and is assumed to stem from electrolysers located at key sites in Victoria. Locations for hydrogen-related infrastructure may be located in regions identified in the Victorian Renewable Hydrogen Industry Development Plan, including for example, Barwon South West (Portland and Geelong), Hume (e.g. Hydrogen Park Murray Valley in Wodonga), Gippsland and Loddon Mallee.

B.4 Generator and storage plants

B.4.1 Existing and committed generators and storage plants

Existing and committed generators and storage plants and their key technical parameters such as generator capacities and operating costs, will be sourced from AEMO's latest generation information data.[1] This information will be used throughout as baseline inputs into the energy market modelling to identify opportunities for new generation and storage entrants to meet future demand and renewable targets at least cost.

AEMO's Generation Information includes generation projects at various stages of their development lifecycle. Generation projects identified as existing or committed by AEMO will be included as an input in energy market modelling. Additional projects, sufficiently advanced in their development or have an increased degree of certainty of being developed, will be included as an input into the 2027 VTP where possible.

B.4.2 Coal-fired power station retirements

Across the National Energy Market, coal-fired power stations are becoming unreliable and retiring as the energy system continues to transition. The closure of existing coal-fired generation will be an important factor in Victoria's transition.

Across the NEM, coal-fired power station retirement dates will be based on AEMO's ISP. In Victoria, coal retirement will be based on Structured Transition Agreements and by 2035 at the latest. This includes, for example, the planned closure of the Yallourn coal power station from financial year 2028.

B.4.3 New entrant generator assumptions

New entrant capital costs will be sourced from the Gencost report by the CSIRO. In general, renewable energy and battery storage costs are expected to continue to decrease over the next 10 to 15 years, albeit at variable rates.

In some cases, VicGrid may supplement Gencost data with additional cost information reflecting the Victorian market outlook and additional costs of development, for example additional costs of gas infrastructure augmentation required to support any increase in gas-powered generation capacity. Scenario 3 will also consider the impact of reduced social acceptance on development timelines for new generation.

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

B.5 Fuel costs

Prices are assumed to vary by scenario and have been sourced from ISP-related forecasts, supplemented with VicGrid data and analysis. Applying the most up to date analysis and information will ensure that the impact of the most recent geopolitical events on fuel prices is captured where relevant. VicGrid will also consider the risks of peak day gas shortfalls in southern areas identified in AEMO's recent Gas Statement of Opportunities. Scenario 3 also considers a potential future in which there are increased challenges in gas-powered generation supply and augmentation.

Brown coal fuel prices are expected to remain stable at below $1/GJ due to their low production cost and lack of international market access.

B.6 Network modelling

The aims of the VTP methodology are to identify the optimal transmission and generation required to service Victoria's needs. An important baseline assumption is the transmission projects that can be assumed as an input for the VTP, upon which other projects can be identified and assessed.

B.6.1 Transmission projects

Transmission projects confirmed in the 2025 VTP optimal development pathway will be treated as baseline inputs unless there is a material change in circumstances. The VTP will also consider projects identified by AEMO as committed, anticipated or actionable as baseline projects, as well as other projects which VicGrid will consider on a case-by-case basis. These are outlined in Table B-6.

Table B-6: Transmission projects included as a baseline input for the VTP

Classification	Definition	Details
Committed and anticipated	Committed projects are those that meet all five planning criteria under the Australian Energy Regulator's (AER) Regulatory Investment Test for Transmission (RIT-T) guideline.[2] Anticipated projects are those that meet three of the planning criteria.	These categories represent the transmission projects that are already well progressed and are included as baseline inputs for the VTP. In Victoria, the Western Renewables Link project is expected by 2029. Marinus Link Stage 1 is expected by 2030. In Scenario 3, Western Renewables Link and Marinus Link Stage 1 are delayed by two years.
Actionable projects	Actionable projects are those that AEMO has included in an ISP optimal development pathway and which it has identified should be progressed through a RIT-T.	Actionable projects are included as baseline inputs for the VTP, with timing as identified by AEMO or more recent project announcements. Victoria to New South Wales Interconnector West (VNI-West) is assumed to be constructed by late 2030. In Scenario 3, VNI-West is delayed by two years.

[2] AER 2020, *RIT-T*.

Classification	Definition	Details
Initial offshore wind transmission projects	VicGrid is currently planning for shared transmission to connect two GW of offshore wind energy to Victoria's network.	VicGrid is consulting on offshore wind transmission infrastructure to be located in Gippsland to support achievement of the initial offshore wind legislated target of 2 GW by 2032. The 2025 VTP also identified a Gippsland offshore wind transmission Stage 2 program.
2025 VTP projects	The 2025 VTP identified seven transmission programs of investment as part of the ODP critical to support increased generation in REZs.	VicGrid is currently delivering the 2025 VTP transmission programs on the ODP. Transmission projects confirmed in the 2025 VTP ODP will be treated as baseline inputs unless there is a material change in circumstances.
Other transmission projects in planning	Victoria's energy transition continues to progress while the VTP is being developed and there are a range of projects (including grid augmentations) under consideration by VicGrid and other proponents that may be progressed through other processes, including Orders under section 16Y of the *National Electricity (Victoria) Act 2005* (the Act).	Projects progressed via an Order under section 16Y of the Act, or other processes, will be considered as baseline inputs.

Note: VicGrid will consider gas infrastructure projects currently in development for inclusion in the baseline.

B.6.2 Network-related technical inputs

Technical parameters for the transmission network modelling, including existing network capacities, reliability obligations, marginal loss factors, network losses (both intra-regional losses and inter-regional losses), and unplanned transmission line outage rates will be sourced from AEMO where applicable.

B.7 Power system security

Power system analysis will be undertaken utilising the models developed through the annual planning modelling framework by VicGrid within the power system simulation software (PSSE) environment.

Network performance will be assessed for the optimised generation and transmission build against the network planning, operation and performance criteria specified in the National Electricity Rules. Key inputs including thermal transmission limits, fault levels and temperature constraints will be sourced from the annual planning power system modelling framework where appropriate.

B.8 Financial and economic parameters

The VTP modelling will adopt key financial and economics parameters aligned with those used by AEMO, including technology-specific weighted average cost of capital (WACC). In addition, the cost-benefit analysis

will use a 7% pre-tax real discount rate, with sensitivity testing undertaken at 3% and 10%. The value of customer reliability will be based on the Australian Energy Regulator's most recent value.

B.9 Sensitivity analysis

Variations of the below outlined sensitivities may be considered as part of the VTP modelling:

- Potential changes in both the scale and location of data centre demand
- Potential for rapid changes in electrification, for example electric vehicle uptake, and/or impact of lower take-up and coordination of consumer energy resources
- Potential timing delays in transmission and interconnection, as well as delays in the commissioning of Snowy Hydro 2.0
- Potential changes in the location of regional energy demand and the impact of regional industry development
- Potential changes in timing of coal-fired power station retirements, including early or delayed closure
- Potential timing delays in the achievement of offshore wind targets
- Potential changes in financial parameters, including costs and discount rates

The final selection of sensitivity analysis will reflect key uncertainties identified throughout the analysis.