



ENERGY INFRASTRUCTURE IN YOUR COMMUNITY

THIS BROCHURE EXPLAINS:

- How electricity transmission developments are managed in Victoria.
- Who is involved in electricity transmission developments in Victoria.
- How communities can stay informed and contribute to the development process.



ELECTRICITY TRANSMISSION PROJECTS IN VICTORIA

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VICTORIA'S ELECTRICITY SUPPLY

Reliable electricity supplies in Victoria are the result of the combined activities of the Australian Energy Market Operator (AEMO), declared transmission system operators, distribution businesses, electricity generators and retailers.

AEMO works with these organisations to bring a secure and reliable electricity supply and a consistent approach to developing and managing the electricity transmission network in Victoria.

We also work together to keep communities informed about ongoing infrastructure developments required to deliver the electricity that communities need.

NETWORK INFRASTRUCTURE

To reach Victorian homes and businesses, electricity is first produced by electricity generators. It then travels along high voltage transmission lines and towers to terminal stations. Here, the voltage is lowered and distribution lines, cables, substations and transformers deliver electricity to its final destination. Retailers purchase electricity from generators and sell that electricity to households and businesses.

This is illustrated in the diagram below.

There are two main categories of network infrastructure:

- Electricity transmission network infrastructure, which is made up of transmission power lines, high voltage towers and terminal stations.
- Electricity distribution network infrastructure, which comprises distribution lines, cables, substations and transformers.

TRANSMISSION LINES
carry electricity long distances

DISTRIBUTION LINES
carry low voltage
electricity to consumers

Homes, offices and
factories use electricity
for lighting and heating
and to power appliances

POWER PLANT
generates electricity

TERMINAL STATION
converts low voltage
electricity to high voltage
for efficient transport

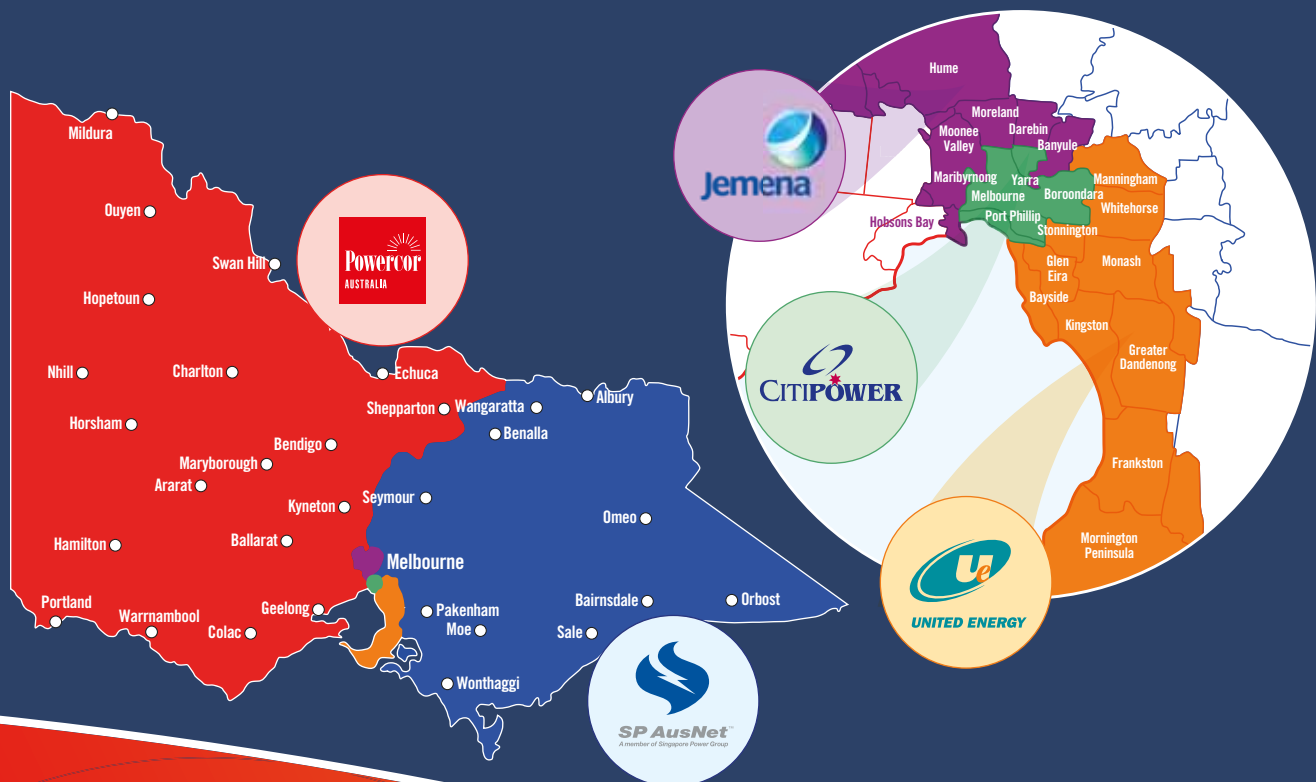
ZONED SUBSTATION
converts high voltage electricity
to low voltage for distribution



WHO'S INVOLVED?

ORGANISATION	OVERVIEW OF ROLE
The Australian Energy Market Operator (AEMO)	Provides the shared transmission service, and plans and procures electricity transmission network infrastructure in Victoria. Appoints companies to deliver transmission services.
Declared transmission system operators	Build, own and operate electricity transmission network infrastructure in Victoria. The declared transmission system operator who owns and operates most of the transmission network in Victoria is SP AusNet.
Distribution Businesses	Own and operate electricity distribution network infrastructure. Currently, there are five Distribution businesses in Victoria: Powercor, SP AusNet, Jemena, CitiPower and United Energy (see map below).
Electricity generators	Plan, build, own and operate electricity generation facilities and new power lines required to connect them to the electricity network.
State government	Advise industry on proposed developments. Develop and administer planning processes under the Victorian planning laws.
Local councils	Advise industry on proposed developments. Manage some of the processes under the Victorian planning laws.
Retailers	Purchase electricity from electricity generators and sell the electricity to households and businesses.

DISTRIBUTION BUSINESSES NETWORK LOCATIONS MAP





WHAT'S INVOLVED IN UPGRADING THE NETWORK?

Constant development of the electricity network is needed to accommodate population growth, new industries and new electricity generation facilities.

Changing regulatory and technological developments also bring about changes to the electricity network. For example, the Federal Government's Renewable Energy Target means the network will need to connect more wind-powered electricity generation facilities, such as wind farms.

This section outlines the main ways the electricity network can be developed, and provides a guide to which organisations lead which projects.

Upgrades or expansions to the transmission and or distribution networks

Upgrades to the network are sometimes needed when the existing infrastructure does not have enough capacity to supply all customers. These upgrades allow more power to flow through the network to where it is needed.

Upgrades or expansions to the transmission network required to increase its capacity are planned, managed and led by AEMO. This involves assessing demand and supply, and planning any required changes to make sure the transmission network can deliver electricity to where it is needed.

Distribution businesses identify upgrades or expansions that are needed within their distribution networks to supply their customers. Sometimes, these upgrades or expansions involve AEMO because they also require additional transmission network infrastructure. For these projects, the lead party would either be AEMO or the distribution business. This is jointly decided at the time.

Upgrades or expansions to a distribution network that do not require changes to the transmission network are led by the distribution business who owns and operates that network. This brochure does not cover those developments; for information on these projects, contact the relevant distribution business or local council.

New connections to the transmission network

Transmission connections, usually to connect new electricity generation facilities to the transmission network, are planned and managed by generators and AEMO. The generator will be nominated as the project lead. For these projects:

- The generators are responsible for planning, building and operating electricity generation facilities (e.g. wind farms) and the associated new power lines required to connect them into the electricity transmission network. AEMO will provide a supporting role in this process.
- AEMO's role is to facilitate the connection to the electricity transmission network. The generator will support AEMO in this process.

New connections to a distribution network

Distribution connections usually connect new electricity generation facilities into a distribution network. These projects are planned and managed by relevant distribution businesses and generators. This brochure does not cover the process for these distribution connections; for information on these projects, contact the relevant distribution business, your local council, or the generator.

THERE ARE THREE MAIN WAYS THE ELECTRICITY NETWORK IS DEVELOPED:

1. Upgrades or expansions of the transmission network, distribution networks, or both.
2. New connections to the transmission network (transmission connections).
3. New connections to a distribution network (distribution connections).



AEMO'S TRANSMISSION NETWORK DEVELOPMENT PROCESSES

Every upgrade or expansion to the electricity transmission network is unique, but they all follow the same steps to ensure key issues are addressed during planning. The table below only applies to developments led by AEMO and does not cover developments led by generators.

OVERVIEW	ACTION TAKEN
<p>Step 1: Strategic planning</p> <p>A requirement for an upgrade or expansion is identified and an initial assessment of its location in the transmission network and the delivery timeframe is completed. Details of these assessments are made public via AEMO's planning publications.</p>	<ul style="list-style-type: none"> Local and state governments are advised of the developments under consideration. The Victorian Department of Planning and Community Development may identify concerns about a project or its proposed location. Councils in affected areas are consulted about planning zones, possible locations for a development and community issues that might impact on the project.
<p>Step 2: Detailed assessment</p> <p>The upgrade or expansion, or connection, is investigated in more detail.</p>	<ul style="list-style-type: none"> Technical studies are used to understand the need for the upgrade or expansion more fully and to explore all options to address the issue. Some options may be able to address the issue without the need for new infrastructure. An assessment of the risks, issues and costs for each option is completed, including environmental and social impacts. Zoning, planning requirements and community expectations are addressed in more detail through consultation with the local council. If insurmountable issues are identified at this stage, the project may not progress any further.
<p>Step 3: Procurement of land and easements</p> <p>Any land required for the project must be acquired well in advance of construction.</p>	<ul style="list-style-type: none"> Typically, land or easements are secured approximately: <ul style="list-style-type: none"> – 5–20 years ahead of an upgrade or expansion to the transmission network. – 2–10 years ahead of a transmission or distribution connection. AEMO is responsible for creating a connection point into the electricity network (which may include easements and land required to create the connection point) for transmission network developments. Distribution businesses and generators are responsible for acquiring easements and land to connect their infrastructure to the transmission network.
<p>Step 4: Investment test</p> <p>Not all transmission augmentations will require a test, but if required, it will be undertaken to assess the benefits of the infrastructure development to industry and community. The benefits are then compared to the anticipated costs to determine whether the development is justified.</p> <p>This is commonly referred to as the Regulatory Investment Test for Transmission.</p>	<ul style="list-style-type: none"> AEMO releases several documents about the project for industry consultation. This is a public process. When the consultation is completed and a preferred infrastructure development option has been identified, the project proceeds to Step 5.
<p>Step 5: Development approvals</p> <p>Any development approvals required under planning laws are applied for.</p>	<ul style="list-style-type: none"> The Victorian planning process dictates which planning permits are required and allows for community input into the application process. More detailed information is made available to the community about the roles and responsibilities of the different parties involved in a project, why the project is needed, and how the community can access information and be involved. This may include community information activities such as information brochures, fact sheets, websites, community meetings and working with the community to minimise community impacts and optimise benefits.
<p>Step 6: Construction and ongoing operation</p> <p>Sometimes, AEMO issues an <i>Invitation to Tender</i> for a declared transmission system operator to build and operate any transmission network upgrades or expansions in accordance with all required permits.</p>	<ul style="list-style-type: none"> When a tender is awarded, options to acquire land or easements and any development approvals obtained for the site are transferred to the successful declared transmission system operator. AEMO maintains communication with the key stakeholders, including community, the local council, generators and declared transmission system operators as required.



AEMO'S PLANNING REPORTS

Every year, AEMO assesses the electricity transmission network and identifies new projects and required infrastructure developments for the next 10–20 years. Existing network capacity, energy consumption forecasts, planned housing developments, economic predictions and any other data providing insights into future electricity needs is assessed.

The results of this assessment and the anticipated new projects are published on our website and communicated to industry. The report specific to Victoria is the Victorian Annual Planning Report.

AEMO'S DEVELOPMENT CONSIDERATIONS

Investment decisions for electricity transmission infrastructure must take into account:

- Maintaining a reliable power supply.
- Minimising the cost of the electricity transmission network for Victorian customers.
- Minimising the effects of transmission infrastructure on the environment and communities.

Most of the costs for upgrading the transmission network are shared between all Victorian electricity customers. There are specific rules for investment that are designed to minimise these costs. The investment test referred to on Page 5 is an important part of these rules.

These rules guide AEMO's decision-making in delivering new transmission infrastructure, including choosing between underground versus overhead transmission lines, and indoor versus outdoor power equipment.



HOW TO BE INVOLVED

AEMO enables this in the following ways:

- Early planning and working cooperatively to address both community needs and the requirements of the Victorian transmission network.
- Facilitating effective communication, guiding the exploration of ideas and options, and addressing diverse concerns from all stakeholders.
- Being open and transparent, providing accurate information and allowing time for feedback.

If you have any questions or wish to arrange a meeting about a project in your area, please contact the relevant organisation:

DEVELOPMENT TYPE	PROJECT	CONTACT ORGANISATION
Electricity transmission network developments	<ul style="list-style-type: none"> • To upgrade or expand the transmission network in order to facilitate new connections. <p>This may include high-voltage connections to the electricity transmission towers, transmission lines, terminal stations and all works associated with creating a connection point to the network.</p>	AEMO, local council
Electricity generator network developments	<ul style="list-style-type: none"> • To connect new electricity generation facilities to the transmission or distribution network. <p>This includes wind farm or power station development sites, associated land procurement and infrastructure required to connect the facility into the electricity network i.e. power lines and line easements.</p>	Generator, local council
Electricity distribution network developments	<ul style="list-style-type: none"> • To connect new electricity generation facilities to a distribution network. • Any upgrades or expansions that do not require changes to the transmission network. <p>This may include electricity poles, distribution lines and associated easements and land procurement.</p>	Distribution Business, local council, generator

Your local council can direct you to the correct industry contact.

HAVE YOUR SAY

AEMO values and encourages community involvement. On projects that we are responsible for, we will undertake one-on-one discussions with landowners, consultation with local councils, and a range of wider community information activities. We seek feedback and facilitate opportunities for public consultation during project development.





WHO IS AEMO?

AEMO HAS FOUR MAIN ROLES IN THE AUSTRALIAN ENERGY INDUSTRY:

- **Market Operations:** We operate and develop wholesale and retail gas and electricity markets.
- **System Operations:** We oversee the safe operation of the electricity grid and the Victorian gas transmission system.
- **National Planning Role:** We deliver key reports to guide long-term investment in gas and electricity transmission network infrastructure and energy/fuel resource management.
- **Transmission Network Services Provider:** In Victoria, we plan and oversee the implementation of new capacity or connections to the high voltage electricity transmission system.



CONTACT AEMO

Postal Address:

GPO Box 2008
Melbourne VIC 3001

T: 1300 236 600

E: supporthub@aemo.com.au