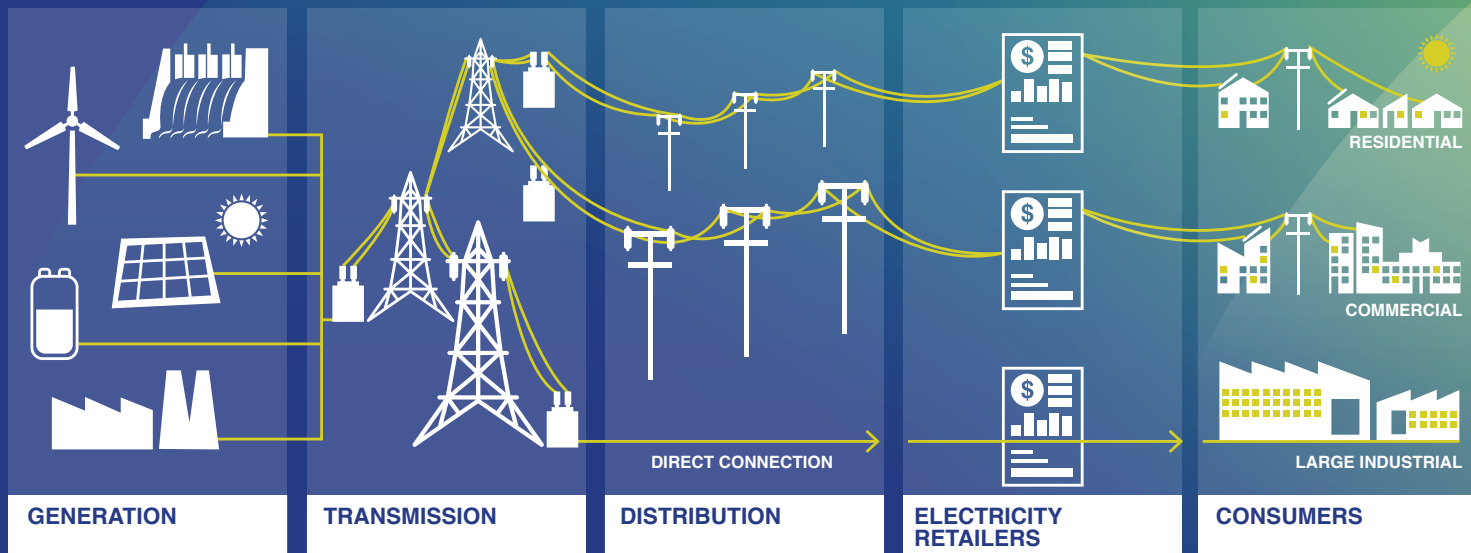


WHAT IS TRANSMISSION?

Why is it important?

How electricity gets to customers

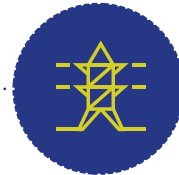


How does electricity get to you and what role does transmission play?

There are a few steps to move electricity safely and reliably from generators to customers:



Electricity is generated from traditional and renewable energy sources like wind, solar, gas, coal, hydro or battery.



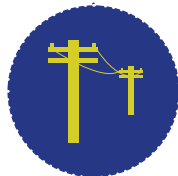
Electricity enters the transmission network through substations, where it is converted to higher voltages, for efficient, long distance transport.



The voltage is then lowered at substations so that it can enter the distribution network.



Transmission lines then carry the power to where it is needed in regional or metropolitan areas.



The distribution network - the poles and wires in your street - transports low voltage electricity to homes and businesses.



Electricity retailers are the main contact for customers. They co-ordinate connections and manage billing and payments.

The traditional flow of electricity is changing.



- » Many homes and businesses now use less power from the grid with electricity generated by their rooftop solar panels. They can also contribute surplus power back to the network for others to use.
- » Power stored in household batteries and large-scale batteries are used to back up the wider power system.
- » Transmission networks have recognised the increase in solar and batteries and are working to ensure the grid can support this two-way flow of electricity.

- » The energy industry supports a transition to renewable energy and continues to provide safe and reliable ways to power people's lives and Australia's economy.

For a video about this electricity journey go to:
www.energynetworks.com.au/about/how-does-electricity-get-to-you

How transmission moves electricity around Australia

The electricity network in Australia's eastern and southern states is called the National Electricity Market (NEM).

In Western Australia the Wholesale Electricity Market (WEM) connects the south eastern part of the state.

The Northern Territory and other remote areas source power from local generators using solar, diesel and gas for generation.

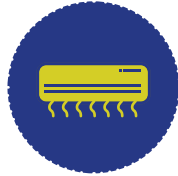
Electricity is transported between states and territories by transmission lines and an undersea cable to Tasmania. These lines and cables are known as interconnectors.



The transmission network:

- » transports electricity over long distances from traditional and renewable generators to where it is needed to power homes, businesses and communities across metropolitan, regional and remote areas and between states,
- » facilitates competition between generators across the National Electricity Market, ensuring that customers can access the lowest cost electricity generation, and
- » provides security and back up of power supply by linking to a diverse range of energy sources.

Transmission connects new energy generators to the grid, and interconnectors help states and territories keep prices down and power supplies secure for consumers. For example:



If there is a heatwave in one state with high demand for power to run air conditioners, more electricity can be transmitted from neighbouring states.



When renewable generators in one state aren't producing enough power because of weather conditions, interconnectors allow excess power in another state to be provided to supply electricity.



These additional power supply options help keep wholesale prices lower which keeps bills down for customers.





There's no transition to renewables without transmission.

Why is new transmission needed?

The electricity network is undergoing significant changes to support Australia's transition to a low emissions future. These changes will help expand renewable energy and storage resources.

Renewable energy generation depends on the weather (for the sun to shine and the wind to blow). Around the world, the response to more variable renewable generation is to build a more connected electricity grid.

As part of this transition, the Australian Energy Market Operator (AEMO) designed a blueprint to manage the evolution of Australia's power system. Renewable energy zones are being developed in areas with good wind, solar and storage opportunities. In Australia there's huge investment occurring in renewable energy generation in these zones. Often they are in locations far from traditional coal and gas plants.

In some cases, transmission lines need to be upgraded or built from scratch to connect these new renewable energy projects with the national electricity market and to customers.

This upgraded transmission infrastructure is essential to:

- » transport electricity from new renewable generators to customers
- » help to decarbonise our economy and tackle climate change.
- » build a stronger grid to keep our power supplies secure and keep prices lower for consumers.

How does transmission impact the economy?

Transmission projects have the power to unlock jobs and economic opportunity - particularly in regional communities.

More transmission and interconnection between states is essential to support renewable power generation, keep electricity reliable and link markets to keep customer costs down.

Transmission is the backbone of the economy. It powers hospitals, schools, manufacturing, export and import industries, airports and sea ports.

This important infrastructure helps Australia support jobs and grow our economy.



Frequently Asked Questions



Do transmission lines pose a bushfire risk?

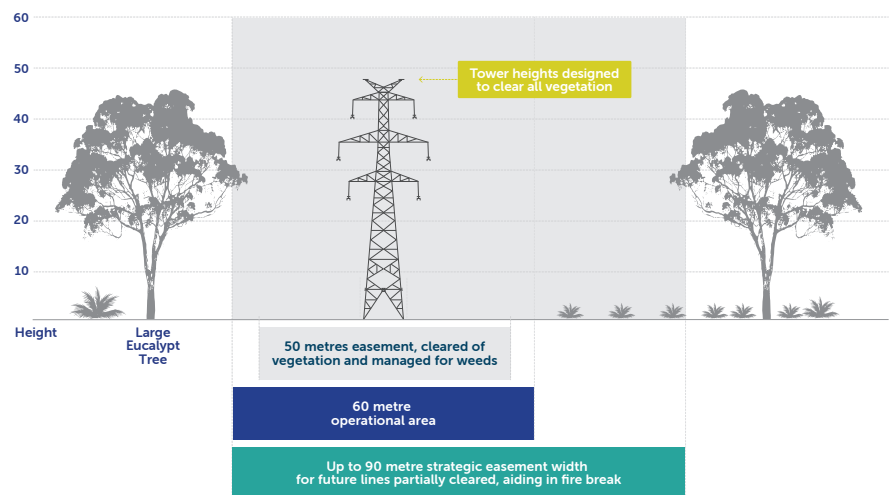
Bushfires caused by transmission lines are rare and it is more likely that fires would be caused by other things such as dry/windy weather, lightning or arson.

To help protect transmission lines from bushfires, the electricity industry regularly clears vegetation under the lines to help create firebreaks. The width of these clearance corridors varies with the height and operating voltage of the transmission lines and towers.

Vegetation needs to be cleared from around powerlines to help avoid power outages through damage to the lines, fires, or risks to people's safety. It is a legal requirement that electricity network operators and occupiers or owners of private property maintain safe clearance distances between the powerlines and vegetation or assets.

There are some detailed factsheets on [bushfire management](#) and [transmission line safety](#) from Powerlink.

Vegetation is strictly managed around transmission lines to mitigate bushfire risk



Courtesy of TasNetworks



What's the environmental impact to flora and fauna?

Before anything is built a thorough environmental assessment is carried out by the transmission business to assess the impact of any proposed project to the local environment in the path of the powerline. Local council, state and federal government requirements and various environmental protection agencies must also be satisfied before work can proceed.



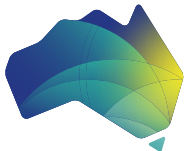
Do transmission lines emit electromagnetic fields / frequency?

There are many sources of EMF in everyday life. These range from natural sources such as the earth's magnetic field, to manufactured sources such as WiFi, radiowaves and household appliances. In fact, all electrical equipment emits some amount of EMF. Electrical systems used for the transmission and distribution of electricity in Australia operate at 50hertz and typically emit extremely low frequency. This includes household wiring, electrical transformers, substations, electrical distribution and transmission lines. There is more information on our website about the types of EMF, how EMF is measured, safe levels, international exposure guidelines, risks and the Australian Electricity Industry approach.



Can you put transmission lines underground?

Under Australian regulations, transmission projects must be built at the most efficient cost to customers. Burying transmission lines is far more expensive than putting them overhead - and those additional costs would be borne by customers. Running lines underground can also cause significantly more disruption to the local ecosystem and cultural heritage sites. Ongoing maintenance is also more difficult when transmission lines are underground.



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