



An artist's impression of one of the options for the fence line for the planned Ballarat East Zone Substation now subject to community consultation.

Frequently Asked Questions

What is an electricity zone substation?

A zone substation plays an important role in the electricity distribution network. Power comes into zone substations from the sub-transmission network at a high voltage of 66,000 volts or 66kV. The sub-transmission network moves large volumes of electricity to where it is needed. The role of the zone substation is to convert that power to a lower voltage, typically 22kV or 11kV so it can be distributed on smaller, lighter power poles and powerlines.

The powerlines coming out of a zone substation are called 'feeder' lines because they take power into neighbourhoods where the voltage then steps down again to 400 or 230 volts for direct supply to customer properties.

Powercor operates 61 zone substations located across our network. They are typically located as close as possible to the populations they service. In regional areas however, feeder lines can span more than 150 kilometres as they link towns with smaller, less populated communities.

Why does Ballarat need a new zone substation?

The capacity of a zone substation is limited by the amount of power that can be physically transported into the facility and the number of transformers it has to convert the power into a lower voltage. As demand for power increases, we need more capacity to take power at high voltage and convert it for customer use.

Ballarat's two existing zone substations are nearing their maximum capacity. A third is critical to meet increasing demand and ensure we can continue to effectively operate our bushfire safety devices that help protect the wider community. The third zone substation earmarked for Ballarat East will improve the city's energy network, ensuring all Ballarat homes and businesses can access reliable power as the region's population grows.

The Ballarat East zone substation will also provide additional support for the network during power outages and extreme weather. It will feature new technology designed to protect the broader community by reducing the risk of powerline-related bushfires.

How will the substation help protect the community against bushfires?

Powercor has introduced Rapid Earth Fault Current Limiter (REFCL) technology at 22 zone substations in some of the state's most high-risk bushfire areas, including the two existing zone substations in Ballarat.

This technology reduces the risk of powerline-related bushfires by instantly cutting power if a line is hit by vegetation or falls to the ground. The Ballarat East zone substation will feature this technology as the feeder lines from this facility service smaller communities outside the city.

Why is the electricity demand increasing?

Powercor data shows that, as of December 2022, approximately 1,500 commercial premises and 10,000 new residential premises have been connected to the electricity network within the Ballarat local government area since 2016.

Electricity demands are continuing to increase as Ballarat's population grows by a predicted 2 per cent annually. Compounding this demand is the requirement that all new homes built from January 2024 will have all-electric connections, creating a greater reliance on the power network.

Installation of electric vehicle charging stations for private and public transport, advances in technology and a general increase in usage by the broader community are all increasing demand on the network.

What will the substation look like?

Unlike the existing Ballarat zone substations built in the 1950s and 1970s, the new Ballarat East zone substation will have an architecturally designed exterior featuring a package of measures to house the electrical infrastructure.

This package of measures aims to directly address the concerns raised by the surrounding community in preliminary consultation and a petition to Ballarat City Council about the visual amenity of the infrastructure.

Residents can help shape the project through a community co-design process. Input will be sought on plans for:

- colour, pattern and height of external fencing
- lighting
- landscaping alternatives
- a package of community benefits including alternatives for improvements to adjoining spaces like the existing community pathway.

While we are offering an illustration of what the facility may look like to help guide discussions, this remains subject to the outcomes of consultation with the community.

Why has the Ballarat East location been chosen?

Potential locations for the required zone substation were evaluated based on:

- where would create the greatest benefit to power reliability for customers
- which sites are more readily able to be developed including considerations such as cultural heritage and environmental matters, and proximity to Powercor assets
- ability to develop the facility at a low cost for all Powercor customers.

Zone substations are typically located as close as possible to the populations they service so sites across Ballarat were considered. Following preliminary feedback from the community during engagement earlier this year, our studies into the York Street site also included independent specialist technical analysis of noise, flooding and electromagnetic fields associated with the development.

These studies all found the zone substation could be designed and developed for the York Street site safely for surrounding neighbours.

Other contributing factors to the York Street site selection were:

- the site has been owned by Powercor and has been zoned for 'the construction of services and utilities' for over 50 years
- a 66kV powerline is already constructed along one of the site's boundaries eliminating the need and cost for new sub-transmission lines and infrastructure
- the site is centrally located to service the growing electricity demand.

Has the community been consulted?

As we investigated options for the substation site in the Ballarat area, preliminary discussions were conducted with residents of Ballarat East and the Ballarat City Council.

In March 2023, Powercor representatives visited properties neighbouring the York Street site to conduct in-person surveys. Follow-up phone calls were made, and information was distributed to allow residents to have their say. We are aware that residents subsequently lodged a petition with Ballarat City Council regarding their concerns. What we've heard through this engagement are concerns about visual amenity, noise, flooding, health and safety and impacts to property values.

This feedback has been thoroughly considered and used to inform various studies conducted as part of the site selection process.

We understand the importance of keeping the community informed and are committed to continued engagement with residents openly and transparently.

Construction is not expected to commence until late 2024. In the meantime, we've invited local residents to work with us in the planning by:

- co-designing the external features of the facility (fencing, paint colours, lighting and plantings) that will make a difference to how it sits within the streetscape of the community
- providing input into the development of the community legacy fund aspect of the of community benefits package.

You can contribute at engage.powercor.com.au/ballarateastzss.

What is Powercor giving back to the community?

We are proposing a \$200,000 Community Benefit Fund be established to support the community's objectives in the Ballarat East neighbourhood.

We invite residents of Ballarat East to participate in designing this package of benefits and its priorities at engage.powercor.com.au/ballarateastzss.

They can either meet personally with a Powercor representative, visit a drop-in session, or reply online.

Initiatives could include greening projects, public artwork, security lighting and new multi-purpose park equipment.

Will residents receive any compensation?

We have announced a \$2 million Community Benefits Package. This package will provide benefits for individuals and the broader community. Options include a payment for direct neighbours of the site, a rooftop solar fund to support local people to install solar and reduce electricity bills, and investments in parks and recreational areas within the community. We will be talking directly to eligible property owners about these options.

Will the substation be safe for the community?

Yes. Electricity distribution is highly regulated, and we comply with various licenses, codes and rules. This assures quality service is delivered safely and in line with regulatory and customer expectations.

Powercor has zone substations in the heart of residential communities in regions like Geelong, Warrnambool, Werribee, Sunshine, Melton, Laverton, Waurin Ponds and Torquay.

What about electromagnetic fields?

Electromagnetic fields (EMF) are everywhere in our environment due to natural and manmade sources. The most common natural sources include the sun and thunderstorms.

Electric fields are created by differences in voltage: the higher the voltage, the stronger the resultant field. EMFs are emitted in extremely low frequencies from electricity powerlines, substations, transformers, electrical appliances, and wiring in our workplaces and homes.

Every Powercor zone substation meets all EMF safety and environmental guidelines. We choose to construct our network to reduce the potential for community members to be exposed to the low levels of EMF they create. Using a Safety in Design process, we build engineering control measures into the design process to identify and avoid the potential for EMF to be emitted.

For example:

- EMF reduces in intensity with distance. The further you are from the source, the lower the intensity of the field. So we ensure sites for zone substations are big enough to provide a buffer area between the electrical infrastructure that emits EMF, fencing and neighbours.
- Using sheet metal screens specifically designed to form a shield against EMF around transformers.

Based on feedback from the community in preliminary consultation, an Independent technical assessment was undertaken for the design of the Ballarat East zone substation.

Will the substation create noise pollution?

When upgrading or installing new assets in residential areas, the impact on nearby properties is assessed, and steps are taken to minimise noise levels in compliance with EPA requirements.

Based on feedback from the community in preliminary consultation, an independent technical assessment was undertaken for the Ballarat East site.

As a result, initial designs for the Ballarat East zone substation include installing a purpose-built enclosure around the substation's transformer to minimise noise.

Will the zone substation make flooding worse in the area?

No. Our new substation will not increase flood risks within this neighbourhood and will include design features in the layout to minimise this.

Based on feedback from the community in preliminary consultation, an independent technical assessment was undertaken for the Ballarat East site. This water modelling study assessed what currently occurs at the site, what impact a new zone substation may have on the site and what flood mitigation activities need to occur. This is helping inform how we design the site.

Why didn't you build the zone substation in Ballarat's west?

While there is a perception that growth is located mainly in Ballarat West, energy demand and new connections to our network are occurring across all areas of the city. As a result, a zone substation is needed to support the broader Ballarat region.

Over time, Ballarat will likely need a fourth zone substation, which may be built in the city's west.

Why couldn't you expand the existing Ballarat North or South zone substations?

The existing Ballarat North and South zone substations were thoroughly considered as options to meet energy demands. However, both sites have significant limitations.

The Norman Street site in Ballarat North lacks the necessary space for expansion.

The Sutton Street site in Ballarat South also lacks space and would be too expensive and complex to use.

Will there be any power disruptions during construction?

To ensure our teams can safely connect the substation to the existing network, it is likely power outages will need to occur. We will advise customers well ahead of any planned power outage so they can take steps to prepare.