Transmission and bushfire

Community factsheet

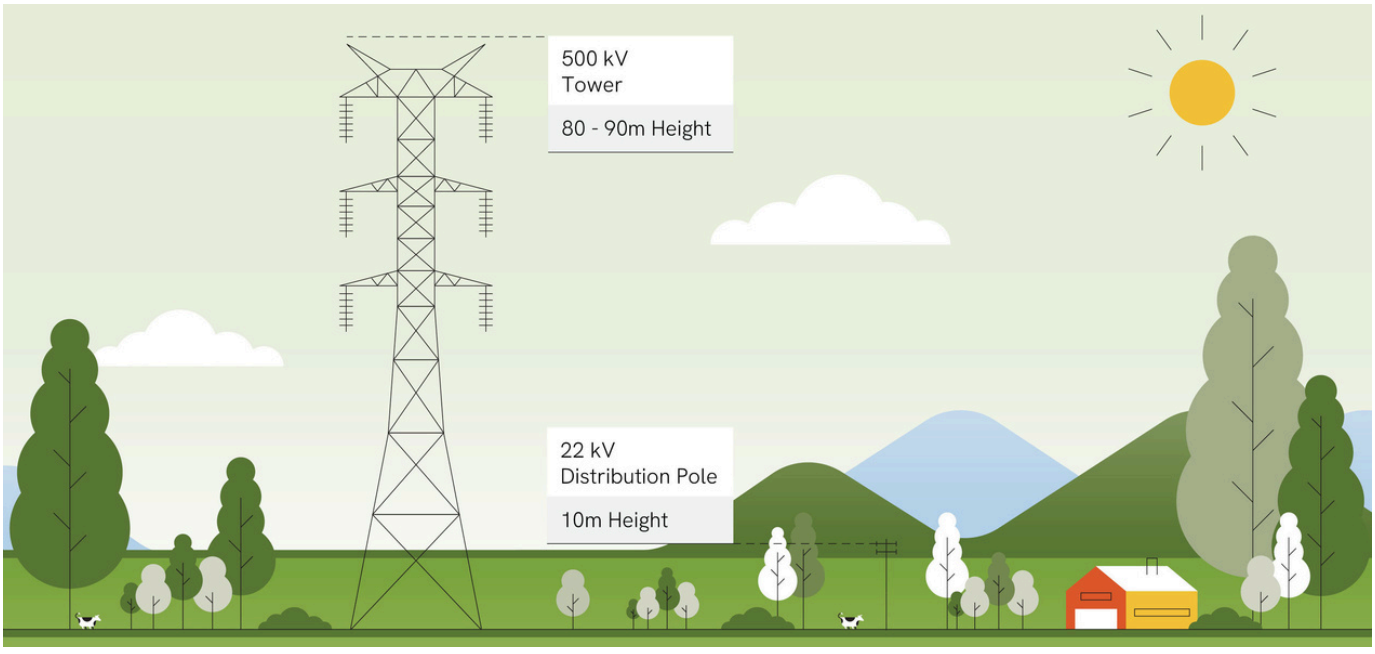
Bushfire risk, safety, prevention and bushfire response are very important concerns for regional and rural communities. This factsheet provides information about overhead transmission lines and bushfire management and responses.

Transmission lines carry high voltage electricity across long distances from energy generators to substations which connect to the electricity distribution system. When managed and maintained properly, transmission lines present a very low risk of starting a fire or preventing firefighting responses.

While most transmission lines in Australia are above ground, some are underground. Underground transmission lines generally pose very low risk of bushfire as they are buried and not exposed to vegetation or weather conditions that could lead to fires.

Distribution lines are the smaller, lower voltage power lines that deliver electricity from the substations to homes and businesses. The risk of bushfire caused by distribution lines is also low, but possible. Historically, far fewer bushfires have been attributed to transmission lines than distribution lines.[1]

Figure 1: Height difference between transmission and distribution infrastructure



1 UQ and Curtin University, *Comparing High Voltage Overhead and Underground Transmission Infrastructure*

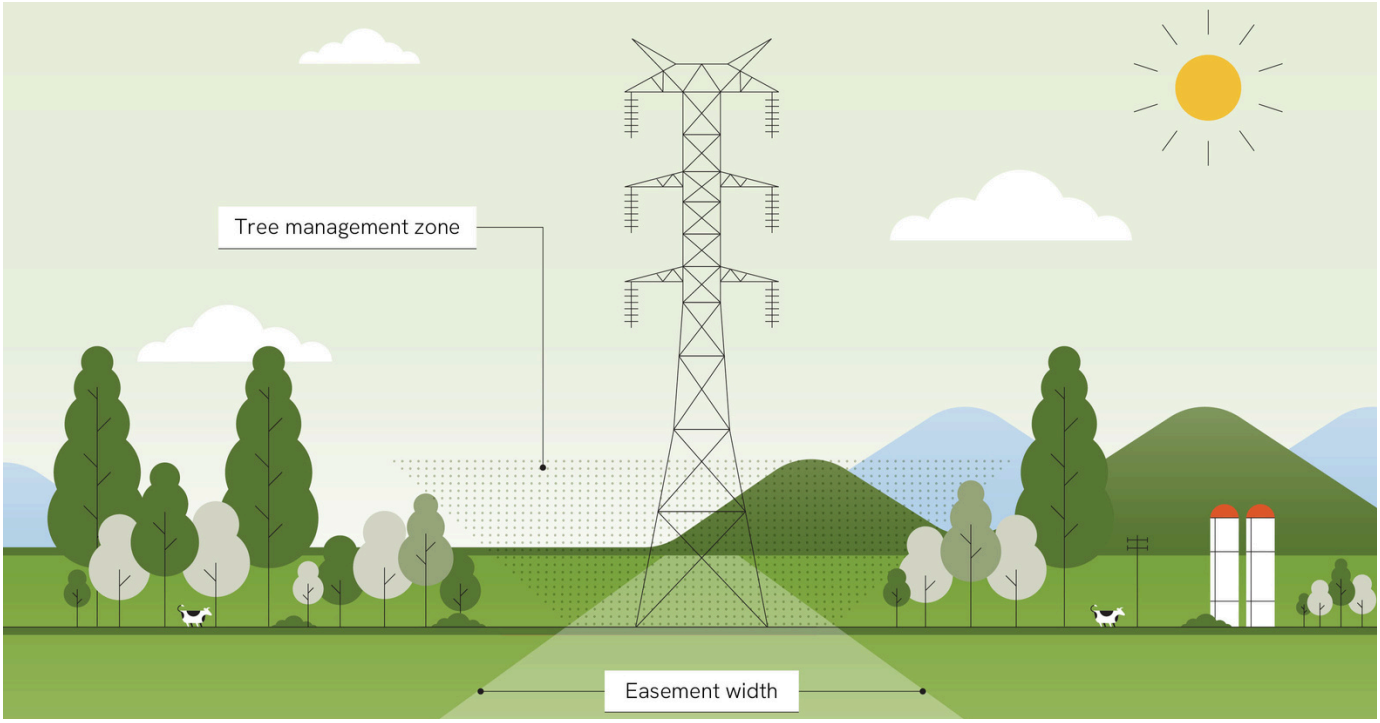
Transmission planning and bushfire management

In Australia, transmission businesses are required by law to manage and minimise the risk of their transmission infrastructure causing fires.

Overhead transmission lines are designed to comply with the minimum electrical safety distances specified in the *AS/NZS 7000:2016 Overhead Line Design* standard. Transmission businesses must also produce plans for how they will mitigate bushfire risks for each transmission asset through construction and operations. This may include vegetation management activities ahead of a bushfire season.

A key risk mitigation is for the transmission businesses to consider bushfire risks when choosing a route. If transmission assets are located in a high-risk environment, additional measures are required to be taken to reduce bushfire risk. This includes more frequent inspections to identify potential issues, higher standards for maintenance or replacement of equipment to reduce faults, and regular management of surrounding vegetation growth and groundcover.

Figure 2: Vegetation management near overhead transmission lines



Aerial and on-the-ground responses to bushfire

If bushfires occur near transmission lines, there is an increased risk for the fire response teams. There are two main risks for fire response teams:

- **Electrical arcs:** Which occur when electricity 'jumps' across air gaps. Fires with lots of smoke and high flames – even if the flames are not directly touching the transmission lines – can create electricity arcs which can cause electrocution and be extremely dangerous for firefighters.
- **Step potential:** Which occurs when the ground becomes electrically charged during a fire. If the ground becomes electrically charged, firefighters can be at risk of electric shock.

While there are risks from fighting fires near transmission lines, transmission businesses and emergency management agencies have management policies and practices in place to respond safely. When needed, transmission lines can be shut down remotely within milliseconds, to prevent electrical fire and support bushfire fighting efforts.

Firefighters also receive training on control measures for fighting fires near transmission lines, as outlined in the *National guidelines on electrical safety for emergency service personnel*.[2]

Aerial firefighting and transmission

In Australia, rules around aerial firefighting and aircraft are managed by the Civil Aviation Safety Authority. Aerial spraying and water bombing does take place near transmission lines, with pilots responsible for assessing local conditions and working with the relevant fire authority.

Transmission lines are also shown on aeronautical maps, so pilots are aware of the location of transmission infrastructure. Transmission businesses and fire services work together to provide guidance on safe flying distances and assist with emergency services decision-making for fire responses near transmission lines.

2 ENA Doc 008-2006, *National Guidelines on Electrical Safety for Emergency Service Personnel*

Firefighting near transmission lines on your property

If you become aware of a fire, call emergency services, stay safe, and follow your bushfire survival plan (if you have one). If you choose to fight a fire near transmission lines:

- **Keep a safe distance of at least 25 m from the transmission lines.** A safe distance will help to avoid electricity arcs. Fire and smoke near transmission lines can also act as a conductor and increase the risk of arcing.
- **Do not spray water directly on or near wires or transmission infrastructure** from the ground or air, as there is a risk of electrocution.
- When spot clearing low or isolated fires underneath or near overhead transmission lines, **do not:**
  - point the hose stream directly at the conductors
  - point the hose stream into a smoke plume that is less than 25 m from the transmission line
  - point the hose stream higher than a person's head height.

Scan this QR code or visit www.understanding-australian-transmission-projects.com to find more factsheets and resources about Australian energy transmission projects.

Made in collaboration with: Community Power Agency; Energy & Water Ombudsman NSW (Free, fair and independent); Farm Renewables Consulting; farmers for climate action; GCCN (Gippsland Climate Change Network); Justice and Equity Centre; RE-ALLIANCE

Made in consultation with: Australian Government, Australian Energy Infrastructure Commissioner

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