Transmission and distribution lines - there is a difference

INFORMATION SHEET

Western Power is responsible for the safe, efficient and reliable distribution of electricity in the South-West Interconnected System (SWIS).

Western Power is responsible for transmitting electricity from power generators and physically connecting electricity to properties (homes, offices and factories) and for maintaining and upgrading the network.

Transmission Lines

Transmission lines are used to transmit high-voltage power from various generators (such as power stations and wind farms) to over 140 major substations. Transmission lines enable large amounts of power to be transported efficiently over longer distances. This means the amount of power lost during transportation is minimised.

Western Power transmission lines transmit the following voltages:

- 330,000 Volts or 330 kV
- 220,000 Volts or 220 kV
- 132,000 Volts or 132 kV
- 66,000 Volts or 66 kV

Distribution Lines

The distribution side of the network takes lower-voltage power from substations and 'distributes' it to homes and businesses. Power is distributed through a series of interconnected lines that start at a substation and terminate at one nearby. These are called 'feeders' and each feeder provides power to an average of 1200 properties.

Distribution lines carry lower voltages than transmission lines as they do not have to extend over long distances, but instead distribute power through local communities. Western Power's distribution network uses the following voltage levels:

- 33,000 Volts or 33 kV
- 22,000 Volts or 22 kV
- 1,000 Volts or 11 kV
- 6,600 Volts or 6.6 kV
- 415 Volts

Can I receive electricity from a transmission line?

Homes and businesses cannot receive electricity from a transmission line because the voltage is too high. Before electricitry is suitable for consumption at homes and businesses, a substation and a transformer must convert it to a suitable voltage.

How is electricity transported?

Electricity travels along a conductor (powerline) at close to the speed of light (300 million metres per second or 1.1 billion kilometres per hour).

When an appliance (e.g. TV, computer, toaster, kettle) is switched on, power is instantly transmitted from a power station through a network to that appliance via a meter box. Although this occurs instantaneously, a sequence of events takes place to ensure the delivery of the electricity.

Western Power is responsible for transmitting electricity via poles and wires from the generators to homes, offices and factories in the SWIS.

SWIS statistics

- More than 140 substations convert very high voltage electricity to lower voltages suitable for the distribution network.
- More than 721,000 poles which if laid end to end, would stretch from Perth to Sydney and back.
- More than 58,000 transformers transform power into a suitable voltage for consumption at your home or a business.
- More than 1300 reclosers restore power automatically when a fault occurs e.g. tree branches or bark brushing across the wires. Reclosers significantly reduce the length of power interruptions.
- More than 700 feeders meander through local suburbs and towns make sure that power is available to properties. A number of suburbs can be 'fed' by one feeder, and a number of feeders can 'feed' power into one suburb or town. An average of 1,200 properties are connected to a feeder.

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