How Power Poles Work

Electric power distribution poles may or may not have all of the equipment shown below. It depends on what service they provide and where they are located.

Primary Wires run on top. Each usually carries thousands of volts of electricity from a substation.

A **Crossarm** holds power lines, allowing required clearances between lines.

Transformers convert higher voltage electricity from primary wires to lower voltage for use by customers.

A **Secondary Service Drop** carries 120/240-volts of electricity to the end user. It has two "hot" wires from the transformer and a bare neutral conductor.

Telephone and Cable TV Lines are typically the lowest wires on a pole.

A head-high **Birthmark** shows the size of the pole, as well as where and when it was made.

A 40-foot **Power Pole** is installed six feet into the ground.

Insulators are made of porcelain or a composite and prevent energized wires from contacting each other or the pole.

Lightning Arrestors protect the transformer from lightning strikes.

Transformer Fuse protects the transformer and will sometimes make a noise when something shorts it out.

A **Neutral Conductor** provides a return path for electric current to the source and is connected to ground.

A **Guy Wire** helps stabilize a pole. They also are connected to the pole's ground wire.

A **Pole Ground Wire** runs the length of the pole and connects to the neutral conductor. It also directs electricity from lightning safely into the earth.

Vegetation around poles is trimmed to avoid interference with the electric system.

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