

**E**lectricity has become an indispensable fact of life in today's world. With it we control our comfort and many of the functions of daily life in our homes.

**Y**et electricity also brings with it the potential for great danger. Inadequate wiring and improper installations can create serious, even lethal conditions. It is critically important for you, as a homeowner, to know enough about your electrical system to operate it safely.

## UNDERSTANDING ELECTRICITY

**E**lectricity results from the flow of electrons. The force, or pressure, that is needed to push electricity through wires is called **voltage**. The volume of electricity, or current, is called **amperage**. Just as the volume of water flowing through a pipe depends on its pressure and the pipe's diameter, so the amount of electricity flowing through a wire depends on both the number of **volts** (pressure) and the number of **amperes** (volume) that can pass through it.

**A** home's electrical system most often originates at the **main service panel**. It is then divided into branches, called **circuits**, and connected by wires to wall outlets, appliances, and switches throughout the house.

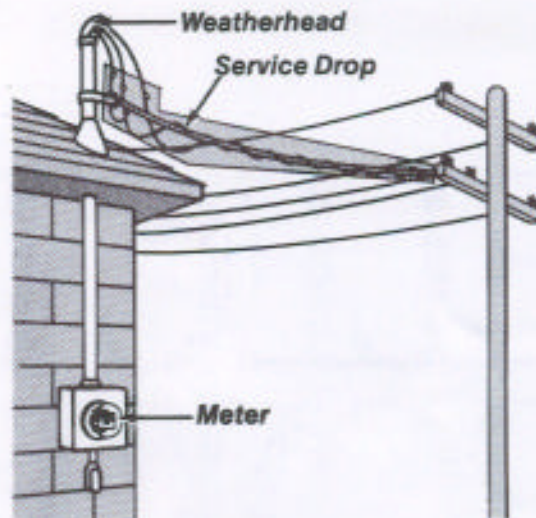
**T**he metals copper and aluminum carry electricity efficiently, and are called **conductors**. Materials that are not good conductors such as glass, rubber, plastic, ceramic, wood, and paper, are called **insulators**.

## ELECTRICAL SERVICE

**I**n order for an electrical system to be safe, it must be properly installed according to the requirements of the National Electrical Code® and any local regulations. Licensed electricians follow the Code when they install, repair, or improve electrical circuits inside a house.

**A**s new materials and devices appear, however, the Code is periodically revised. Wiring which was in compliance with the Code when a home was built may no longer be up to modern standards. Your licensed electrician can tell you if upgrading your electrical system would be beneficial.

**I**n older neighborhoods or rural areas, the utility company provides power to homes through overhead conductors called the **service drop**. In urban areas and newer neighborhoods the power comes to the



house underground, and is called a **service lateral**.

**I**n almost all areas the homeowner is responsible, through his or her electrical contractor, to maintain the wiring throughout the house up to the connections at the end of the service drop or service lateral.

### Size of the Service:

**T**he service voltage can usually be determined by counting the number of wires connected to the **service entrance**, the cable that carries the current from the service drop to the electrical equipment. Two wires mean 120 volt service, while three wires indicate the availability of both 120 volt and 240 volt service.\* Voltage on a service lateral usually can be assumed to be 240 volts. While lights and most small appliances operate on 120 volts, heavy duty electrical appliances such as ranges, heat pumps, and clothes dryers require 240 volts.

**T**he available amperage is determined by the size and the type of service entrance cable, and is something your electrician or ASHI inspector can identify for you.

**W**ith the heavy electrical demand of today's lifestyles, any service which provides less than 100 amps at 120/240 volts may be considered inadequate for the average family. A home equipped with an electric water heater, range, clothes dryer, and central air conditioning may require 150 amps. If, in addition, the house is heated by electricity, it should have, at a minimum, a 200 amp service, unless the dwelling is a small apartment or cottage.

**I**f an electrical service has not been upgraded within the last 20-30 years, the chances are that the amount of power being supplied is inadequate. An inadequate service may have:

\*This may also be referred to as 110/220 volts, 115/230 volts, or 108/216 volts in different parts of the country.