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PLANNING YOUR ELECTRICAL UPDATE

Picture Model T's sputtering around on mud roadways, a paved surface only on main streets, no sidewalks and few streetlights. Imagine the ice man bringing ice to the back porch every other day for the ice box, the Roaring Twenties going full tilt. Against all this activity, most of the homes in older communities like Cleveland Heights were built. One convenience the buyers of these new homes wanted was electricity. They were tired of kerosene light at night, and they wanted to listen to the radio. But, there wasn't much else "electric" around – so, 120 volt/30 amp service was very common. There was no need for a higher capacity electrical system in these homes.

Look at us today – microwaves, VCR's, TV's, stereos, computers, laundry appliances...the list goes on and on. All these electricity-using conveniences of our modern times are being plugged into circuits designed for a few light bulbs and a radio. The problem comes when the current draw exceeds the fuse rating, causing the fuse to blow. Installing a larger fuse is *not* a solution – it can allow the wires to heat up and burn their insulation before the fuse blows and stops the current through the circuit. Overloaded wiring can cause a home electrical fire.

Many older houses have had their original wiring updated in a piecemeal fashion. In the 1950's, for example, homeowners generally had their incoming service increased to 240 volt/50 or 60 amp, to accommodate new appliances. It was not uncommon to have added two new circuits to the kitchen at the same time, in order to use a new toaster, mixer, and electric skillet. That 1950's homeowner, however, probably didn't predict the need for a dishwasher or a microwave – so extra capacity wasn't included. In other parts of the house, it's likely that the wiring today is still the original 1920-era layout, with one circuit serving several rooms. As a result many older homes are inadequately wired for today's lifestyles.

To get a handle on your own situation and what should be done, you first need to determine how you are using electricity in your home at present. Make an "electrical map" of your house, showing all the outlets, lights, and "hidden" electrical consumers (such as dishwashers, garbage disposals, or exhaust fans.) Then, determine on which circuits they are grouped (you can label the fuse box at the same time). After this, add up the wattage requirements of the things on each circuit, and compare that total to its capacity. The maximum wattage permitted for 12 gauge wire is 2400 watts, with a 20 amp fuse or circuit breaker; for 14 gauge wire, 1800 watts, with a 15 amp fuse or circuit breaker. (Unless you can determine the wire size, it's safest to assume any old circuits to be 14 gauge, to prevent using too high a fuse.) By completing this process, you can see which circuit(s) may be overloaded. *(See separate handout on "Creating an Electrical Map of Your House" for how-to information.)*

Armed with this information, plan for improvements. Planning is important – you'll want to have a master plan, even if you carry it out in stages. You can start by calling the utility company to find out the present service to the house, or consult a licensed electrician. Your plan doesn't have to include complete replacement of all old wiring, simply because it is old; replace it only if the insulation is in bad shape.

Correcting overloaded circuits may involve updating your service panel (fuse box.) Fuses, in and of themselves, are not less safe than circuit breakers; but if you need to divide up overloaded circuits, your old fuse box may not have the additional capacity needed. If your fuse box can only handle 4, 6, or 8 circuits (or if your original fuse box has been augmented with several subpanels),

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you will probably want to replace it with a new circuit breaker panel – with plenty of room for future expansion.

Depending upon the additional appliance load, you may find that the electrical service supplied to the house may need to be increased, as well. (240 volt/100 amp is now considered to be the residential service minimum.) This will have to be coordinated with the utility company – they are responsible for the lines to your mast, but you are responsible for the wiring to the mast meter socket and your service panel.

Include in your plan some of the new requirements for grounding and safety devices (such as **Ground Fault Circuit Interrupters**) now required by **NEC** (National Electrical Code). The rules for what devices are needed and where they should be installed have changed in recent years.

Finally, in whatever plan you devise, try to anticipate future needs, allowing for expansion – because, before you know it, we'll probably have electric cars with rechargeable batteries or those "Star Trek" boxes on our counters that generate food.

Who Owns the Electrical Service Equipment?

You are responsible for maintaining some parts of the system that provide electrical service to your home, and the electric company is responsible for other parts. There will be fees charges by the service provider for work done on equipment that belongs to you.

The <u>electric service company</u> is responsible for:

Meter – the device that records electrical service usage.

Loop or Service Drop – the wires from the utility pole to your house. (If the service is buried, you are responsible for the cable from the pedestal box to the house.)

The <u>homeowner</u> is responsible for:

Mast or Conduit – the pipe clamped to the side of the house.

Meter Socket – the box into which the meter is plugged.

Exterior Wiring—the wires that run from the loop to the meter, and then into the service panel inside the house.

Main Breaker or Fuse Panel (and any subpanels) – the box(es) where the main electrical service is divided among the individual circuits.

All Internal Wiring (and branches to out-buildings) – the wires that carry electricity to the appliances, fixtures, and outlets within your home.