

Upgrading Kitchen Wiring

by Sean Kenny

Remodeling jobs are almost always full of surprises, and kitchen remodels are no exception. As an electrical contractor, I'm often brought into a kitchen remodeling project to add a few more counter outlets and relocate a lighting fixture or two. Many times, the remodeling contractor has established a budget for the electrical work without carefully evaluating the existing wiring. If I arrive at the scene and discover any serious wiring problems, I become the bearer of bad news and increased costs. It's not a pretty picture: The contractor is losing money, I'm being asked to keep costs down, and the electrical work hasn't even started yet.

To help avoid this scenario, I've highlighted the areas that contractors should carefully review before estimating electrical costs. By learning how to recognize potential problem areas, contractors can prepare their customers for possible upgrade costs.

Code Requirements

It's not necessary for contractors to have a thorough understanding of the *National Electrical Code (NEC)*, but it is important to recognize the basic circuitry required for code-compliant kitchens.

Appliance circuits. The current *NEC* requires two 20-amp small appliance branch circuits to feed the counter outlets. Kitchen lighting cannot be tied to either of these circuits.

Outlets along counter. Wall outlets along the counter should be spaced no farther than 4 feet apart, and an outlet should be located within 2 feet of the

Kitchen Wiring Checklist

- Approximate Age of Kitchen _____ years
- Walls Will Be: (check one)
☐ Stripped ☐ Recovered ☐ Patched
- Ceilings Will Be: (check one)
☐ Stripped ☐ Recovered ☐ Patched
- Area Below Kitchen Finished ☐ Yes ☐ No
- Area Above Kitchen Finished ☐ Yes ☐ No
- No. of Existing Kitchen Circuits (if known) _____
- Amperage of Existing Kitchen Circuits (if known) _____
- No. of Existing 110V Receptacles _____
- Type of Existing 110V Receptacles ☐ Grounded ☐ Ungrounded
- Appliances that will be installed during the remodeling project:
- | | |
|--------------------------------------|--|
| ☐ Elec. Range | ☐ Elec. Cooktop |
| ☐ Dishwasher | ☐ Garbage Disp. |
| ☐ Elec. Oven | ☐ Toe-Kick Heater |
| ☐ Microwave | |
- Existing Counter Receptacles ☐ Yes ☐ No

Service Panel Checklist

- Distance from Kitchen _____ feet
- Type of Panel ☐ Fuses ☐ Circuit Breakers
- Panel Amperage ☐ 60 Amp ☐ 100 Amp ☐ 150 Amp ☐ 200 Amp
- Type of Service ☐ Overhead ☐ Underground
- Number of 110V Breakers _____
- Number of 220V Breakers _____
- Number of Empty Breaker Slots _____

Figure 1. These checklists can help you evaluate the electrical work that will be required. The author often quotes costs over the phone based on the information in the checklists.

Chart A: Upgrade Cost by Job Intensity

2 New 20-Amp Circuits with 6 GFCI Receptacles
5 Recessed Lights with 1 Single-Pole Switch

	6 Receptacles	5 Recessed Lights	Total
Walls & Ceilings Stripped to Bare Studs & Joists	\$250-\$300	\$300-\$500	\$550-\$800
Cabinets Removed, Walls & Ceilings to be Recovered	\$400-\$500	\$500-\$800	\$900-\$1,300
Cabinets Removed, Wall Finish Intact	\$575-\$700	\$750-\$1,100	\$1,325-\$1,800

Chart B: Service Panel Upgrade Costs

Basic 100-Amp Overhead Service Copper Wire		\$650
Basic 200-Amp Overhead Service Aluminum Wire		\$1,050
Basic 2-Meter, 100-Amp Overhead Service Al. Wire		\$1,300
Mast Over 12' Long	Add	\$6.50/ft.
Mast Over 25' Long	Add	\$15.00/ft.
Uneven Ground	Add	\$15.00/ft.
Angles in Mast	Add	\$20.00 ea.
Panel Distance from Entrance, over 5'	Add	\$15.00/ft.
Disconnect Needed	Add	\$125.00 ea.
Distance to Ground Over 30'	Add	\$2.30/ft.

Figure 2. Electrical costs will vary according to the scope of the remodeling project. Chart A illustrates how prices are affected by the “intensity level” of a remodeling project. Chart B lists the base costs for service panel upgrades, and includes a list of site-specific additional costs.

end of any counter. You should be able to set a coffeepot with a 2-foot cord anywhere along the back of the counter and reach an outlet.

Ground-fault protection. All receptacles along the counter must be GFCI (ground fault circuit interrupter) protected, and if any existing 220-volt, three-wire cooking appliances (an electric range, for example) are moved, they will need to be upgraded to a four-wire feed. This four-wire upgrade also applies to electric dryers.

Required upgrade. Any unsafe wiring that is uncovered during the course of

remodeling must be replaced.

Most localities do not require all existing wiring to be upgraded to current code standards, providing the wiring complied with the code at the time of installation. However, if the existing wiring is altered, or a change of use has occurred, then it must comply with the current code. If you have any doubt about existing conditions, or what constitutes a change of use, check with your electrical inspector before you start wiring.

As always, resist the temptation to argue with a code official over a code

interpretation. It may result in what I call an “I-say-so” violation. There may be no direct code reference regarding the item in question, but the inspector will still insist that it be changed.

Evaluating Existing Conditions

During the first visit to a prospective kitchen remodel, contractors should get a sense of the age of existing kitchen wiring. Up until the late 1970s, kitchens were often wired using a single 15-amp circuit. This was seldom a problem, since these kitchens weren’t equipped with today’s arsenal of high-powered appliances. Kitchens over 20 years old will most likely need additional circuitry run from the service panel. Keep in mind that the presence of newer cabinets and countertops (or new appliances) doesn’t necessarily mean that the wiring has been upgraded.

Panel inspection. A lot can be learned by taking a quick look at the service panel. By taking a few notes, you can often relay information to your electrician that will help establish the scope of the work that will be required.

Make a note of whether the panel has fuses or circuit breakers, and jot down the amperage rating. The amperage rating can usually be found on the main breaker of the panel; most panels are rated at 60, 100, 150, or 200 amps.

If circuit breakers are used, take note of how many empty slots are available for additional circuits, and record the number of 220 breakers. If a large number of 220 circuits are present, the service panel may need to be upgraded to provide additional capacity for new circuitry to the kitchen.

Wiring. The type of wiring is also important. Older cloth-covered romex wire may be in good condition while improperly grounded wiring or deteriorating knob-and-tube may have to be replaced.

Your goal during the first visit should be to gather preliminary information for your electrician, and prepare your customer for possible upgrade costs. The checklists in Figure

1 (page 51) list the items that should be examined during the first visit.

Estimating Costs

There are generally three levels of electrical work that can be encountered during a kitchen remodel: relocating existing device boxes (outlets, switches, and light fixtures), installing additional circuitry, and upgrading an existing service panel. The charts in Figure 2 (page 52) give cost ranges for a number of remodeling scenarios.

Upgrading a service panel is typically a straightforward affair. Most panels are located in a basement or utility area and are easily accessible. I give contractors a flat-rate cost sheet that lists the base price for service panel upgrades and includes add-on pricing for unusual conditions.

Pricing the relocation of device boxes is trickier, and depends on the extent of the remodeling that will take place. If the entire kitchen area will be gutted, accessing and moving existing boxes is a simple matter. If existing wall and ceiling finishes are to remain in place, costs climb significantly. If new cabinets will be installed, I try to cut my access holes in areas that will be covered by the cabinets. The holes should still be patched, but the quality of the patch is not an issue.

Additional circuits require feed wires to be run from the service panel to the kitchen area. Kitchens located over finished basements or slabs can turn this task into a real chore. If there is an unfinished attic space above the kitchen, I try to reach the attic area by routing the feed wires through a plumbing chase or closet, then drop the wires down into the kitchen walls. Kitchens with finished areas above and below can be difficult (and expensive) to feed.

In many cases, you’ll still want to have your electrician prepare an accurate estimate of upgrade costs. The key for contractors is to recognize potential problem areas, and budget accordingly. 

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