

## Wiring Your Home for Efficiency

<http://www.backwoodssolar.com/learning-center/off-grid-solar-articles/wiring-your-home-for-efficiency>

**AC Breaker Box:** An inverter produces 120 volt AC. Normally no 240 volt AC will be used in the house, only 120 volt AC. So you just feed the same 120 volt hot wire to both legs of the AC breaker box. Since most inverters are limited to 20 to 60 amps maximum output, you don't need a 200 amp main breaker. Eliminate the expensive main breakers by "back feeding" the entire box through two of the load breakers, one for each "leg" of the breaker box. This passes electrical code. 120v only systems CANNOT utilize the multi-branch circuit wiring technique.

**Generator AC Wiring:** Power from the generator should go into the power equipment area on a separate wire, (never fed back through the same wire that carries inverter power out to the generator location). Mark this wire generator direct. This will supply generator power to battery chargers and/or the AC input connection of the standby inverter - battery charger. Do NOT connect the generator output directly to the house circuit breaker box because inverter power is connected there. The generator direct wire goes only to the AC IN terminals of the standby inverter, and to any special generator direct outlets put in the power room for other battery chargers. Standby option on the inverter will automatically switch generator power through to house circuits when the generator runs. When the generator is shut down, household circuits automatically switch back to inverter power.

You may also want to run a generator direct wire to its own outlet in the garage, shop, or elsewhere, to plug in automobile battery chargers and block heaters, welder, air compressor, or any item you do not want to run except when the generator is on. Also run a generator direct line for any 240 volt power you might use directly from the generator, like a very deep well pump. No need for separate generator and inverter wiring elsewhere in your home, because generator power automatically comes through the regular wiring when the generator runs.

**Telephone & Metering Wires** in your home should be kept far from AC wires because non-sine wave inverter models may add a buzz on your phone and interfere with metering if their wires run close to each other for any length. Try shielded, twisted pair telephone cables with the shield connected to ground to minimize this common noise problem.

**Smoke Detectors** should be battery powered only. They are available with 9-year lithium batteries. Hard wired smoke detectors are constant loads.