Home Generator Selection Help

Most of the time when I am called by a customer to come out and give them an estimate to safely connect their newly purchased generator to their home, I find that not enough attention was given to detail when the generator selection was made.

Many times, the customer will have gone to a big box store and bought a portable generator that is not suited to their needs. Often, the only criteria that was used for the selection was the kilowatt rating of the generator. Sometimes the customer will have a generator that is probably adequate for the things that they consider important to keep running in an outage, but the generator is not configured in a way that makes all of the power that the generator can produce usable for them. This is because most manufacturers of portable generators configure the outlets on the generator for specific purposes. Example: If you buy a portable gasoline generator that is rated at 8500 watts (or 8.5KW) the generator may come with two or more 120 volt outlets and a 20 amp 120/240 volt twist-lock receptacle. In this case, the user can only provide a maximum of roughly 4.5KW (or 4500 watts) of the rated capacity of the generator because of the way the outlets are configured. Considering the cost associated with providing a transfer switch, generator inlet, and cord for safe connection to the house, it is best to get a generator that allows you to use the maximum capacity of the generator whenever possible. An 8500 watt generator could provide as much as 30 amps at 120/240 volts if the outlets on the generator include a 30 amp 120/240 volt twist lock receptacle.

Another common mistake that homeowner’s make when purchasing a portable generator also pertains to sizing the new generator with the intention of running the central air conditioning in the home. There are a number of things to consider when sizing a portable generator that you intend to use for keeping the residence cool. First of all, do not use the running load of the air conditioner condenser to size the generator. Most portable generators are not large enough to run a central A/C system because they do not have the capacity needed to actually start the air conditioner condenser. The running load and starting load on an air conditioner condenser are two very different requirements. Most air conditioner condensers require about 5 times the running load to start the hermetic motor (compressor). If you examine a common name plate on an air conditioner condenser you will see two terms that are helpful in determining what size generator you will need. One term is RLA (running load ampacity). This tells you what the required current is to run the condenser. Another very important term is LRA (locked rotor ampacity.) This is the current required to actually start the compressor motor. Again, this is usually 5X the running load. For example; the running load on a 2 ½ ton condenser may be around 12 amps or 2880 watts, but the actual starting load will most likely be around 60 to 70 amps or (14,400 watts to 16,800 watts). That doesn't mean that you need a 16KW generator to run
your condenser, but the generator must have a surge capacity that is at least slightly above the starting load. So, as you can see, many times the size if the generator is determined by the start up load required for the condenser even if the other loads that are deemed necessary to operate are insignificant. And remember, to run the air conditioner, you must also have the capacity to operate the HVAC unit inside the residence, which comes on simultaneously with the condenser. Often it is more beneficial to have a home standby generator for larger loads like the air conditioner if you want to be comfortable.

There are some other things to consider when purchasing a generator, whether it be a portable or standby generator. Fuel consumption is a major consideration. Hauling gasoline and even procuring gasoline during an extended power outage is a huge hassle. Gasoline storage is a serious consideration due to the volatility of the gasoline and the somewhat limited life of stored gasoline. Gasoline must be stored safely and it must be chemically treated if it is to be used after extended storage. No one likes to store gasoline or haul it for that matter, and refueling a portable generator that has been running for an extended time is very dangerous. Gasoline generators have their uses but an extended power outage is not one of them for obvious reasons.

Natural gas is far better because it is much safer and it is basically an inexhaustible supply of fuel for an extended outage. LP gas is also good but your are limited by the size of the storage tank, and storage tanks have their own set of problems and issues, especially with the large tanks which have to be a specified distance from an occupied structure. You can check with your local LP gas provider for specific details on tank sizes and where they can be placed. Most of the LP gas providers no longer lease tanks for generators and prefer that the user purchases the tank.

Another common issue with buying a generator from a big box store is that the generators are usually packaged with what is advertised to be “all you need is in the box.” It is sometimes not all you need depending on the location of the generator relative to your electrical panels and service equipment, and it may not be what you need. Many of the packaged generators come with indoor transfer switches and most of the homes in our area are wired with exterior power equipment which makes the indoor equipment useless and purchasing an outdoor transfer switch would become necessary.

 Needless to say, not everyone can afford or wants a standby generator for their home. But regardless of what you want, you need to make an intelligent decision on such an expensive piece of equipment. That is where Gulf Coast Electric can assist you. We provide free consultation and free estimates no mater which type of generator you decide to get for your home. Sizing a generator is a job for professionals. There is a lot to consider in making a purchase of this type and we are happy to help you in making your choice. In addition, Kohler Power Company has an excellent sizing calculator on their web site. You can see it at
Another issue that must be discussed with either portable or standby generators is safety. Every year during our hurricane season we hear horror stories about homeowner's who have improperly connected their generator to the power system of their home. Usually the person responsible has been told that they can simply plug into the generator output and connect to a dryer receptacle in the residence or something of that sort. What occurs in these situations is very dangerous for those who are servicing the power grid in an effort to restore the electricity to the homes. When power is introduced to the power grid by a customer owned generator it actually goes out over the grid at the voltage that the generator produces and eventually goes through the transformer that supplies the customer and is changed from low voltage (240 volts) to the transmission voltage which is 7200 volts or more. This endangers everyone who may be working on the power grid and even your neighbors who could also be getting feed back from the customer owned generator. It is important to know that transmission voltage can carry a very long distance. A transfer switch of some type must be used in every instance when a generator is connected to your home. A transfer switch is the device that is used to take your generated power off the electrical grid and safely isolate the power you produce to your home. Please consult a licensed electrical contractor if you are considering wiring a generator to your home.