

Interconnection with the Electric Utility

Overview

When installing a natural gas generator, the local electric utility will usually require an interconnection agreement before allowing a generator to be connected with the electrical service. Often, the interconnection agreement prohibits a single electric generator to be interconnected with multiple electric meters. However, multiple generators may be interconnected with a single electric meter. There are several options to consider for interconnection with the local electric utility. These options range from low-cost options, to high cost options that could add up to 30% to the total project cost. The options are as follows from least expensive to most expensive:

Island Mode - Lowest Cost

Island mode involves taking a piece of equipment, line of equipment, or the entire facility's electrical load off the electrical grid and serving it directly from an engine-generator with no interconnection or ability to take power from the electric utility. The advantage of this is that it requires very little first cost and no interconnection equipment or switchgear. One disadvantage is that there is no backup power from the utility when the engine-generator is down for maintenance. Additionally, an improperly sized engine-generator may be unable to handle demand spikes caused by certain types of equipment such as motors that can draw 3 times their rated electrical demand during startup. Some types of equipment can be retrofitted with electronic controls or "soft start" capability to reduce or eliminate demand spikes.

Double Throw Switch - Low Cost

Installation of a double throw switch allows the facility to use electricity from either the generator or the electric utility, but not both simultaneously. Switching from the electric utility to the generator and back usually causes a temporary interruption of electricity service. In some cases, a "seamless" switchover system can be installed at additional cost. Seamless switchovers allow the electric generator to run in parallel with the electric utility for a fraction of a second to avoid the usual interruption of switching over via a simple transfer switch.

Induction Generator - Moderate Cost

Induction generators can be interconnected with the electric utility to provide electrical service from both the generator and the electric utility simultaneously. Any electricity usage above and beyond what the generator can supply is automatically taken from the electric utility. The generator can be started up and shut down with no interruption to electricity service as long as the electric utility is providing power. However, since induction generators use the electric grid for excitation of their magnetic fields, ***induction generators cannot run when the electricity grid is down***. Therefore, they provide **no backup capability** during a power outage.

Synchronous Generator (interconnected with grid) - Highest Cost

Synchronous generators operate like induction generators except they have the added advantage of being able to run independent of the electric grid. The ability to run in parallel or independently of the electric grid requires installation of interconnection equipment, switchgear, and controls to be able to synchronize with the electric utility's service. If the generator is properly sized, synchronous generators can provide "no interruption" protection against power outages. They provide both parallel operation and backup generation capability.