Planning for a Blackout

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Living with electricity interruptions

Electricity interruptions are expected to last one to two hours. Packinghouse and cooling system operators need to decide how to deal with the loss of power. If outages are sort and infrequent, managers may decide to just give everyone an extended break and finish packing and cooling when power returns. A few days with an extra hour or so of cooling delay will not be a problem for many fruits and vegetable shippers.

If blackouts are more frequent, lost labor productivity will make this option expensive. Some operators are planning to start their packinghouse early so they can finish packing by noon to 2 PM. Packing will begin with product that was harvested and cooled the day before. Other operations are planning to pack after the potential blackout period and finish after midnight. This will allow all of the current day's harvest to be packed, cooled, and ready for shipment early the next morning.

These two approaches will work if the produce handled by the facility can withstand cooling delays. Already cooled or partially cooled product will not warm appreciably in a typically well-insulated cold room. If cooling delays and packing interruptions are not tolerable, then standby generators are needed to continue operation during a blackout.

Standby generators

A generator is installed near the service entrance (near the meter). When the outage occurs the customer's load is disconnected from the utility, the generator is started and brought up to speed and then the generator is connected to the load. This procedure can be done automatically or manually.

Automatic start generators are usually sized to provide the wattage needed to simultaneously start all motors and lights. Motors draw approximately four times more wattage during start up compared with their running power demand. This means that automatic start generators are several times larger than the actual running electrical load. Manual start systems are adaptable to sequential reactivation of circuits and can be sized smaller than automatic start systems. More sophisticated automatic transfer switches can be wired to sequentially start individual circuits.

The standby system is sized by taking an inventory of all electrical equipment in the operation. List the number and size of all motors, number and wattage of lights, and any other equipment. Also indicate the priority of the equipment. With special controls and some rewiring it may be possible to reactivate equipment in stages to reduce generator size. With this information a standby equipment supplier can recommend a correctly sized unit for your operation. Generator choice and installation design will also depend on equipment availability, over limit capacity of particular models, choice of transfer equipment and details of your specific operation.

The cost of new engine-driven generators varies with generator size. A 100 kW unit costs about $150 to $200 per kW. Smaller units cost more, a 30 kW unit may be priced at $400 per kW. Installation and transfer switches are additional costs. A qualified electrician following local codes and utility regulations for interconnection should always install this equipment. This is not a do-it-yourself installation.

Transfer switch. During an interruption the transfer switch isolates your equipment from the utility. This prevents feeding power to the utility and accidentally injuring a utility worker. It also prevents utility power reenergizng your circuits while the generator is operating, resulting in damage to your equipment.

Air Pollution Permit. Air pollution control districts require an operating permit for standby generators. They are usually allowed 200 hours of operation per year and can only be operated for testing and powering your own facility in an electrical interruption.

Fuel supply. The fuel tank should be large enough to supply the generator between fuel deliveries assuming maximum hours of operation per day. Some fuel suppliers have indicated that outages may affect their delivery schedule because of their inability to pump fuel from their tanks during the outage. Talk with your supplier about scheduling this summer.

Diesel engines consume about 0.4 pounds of fuel per hour per output horsepower. A 100 kW generator requires a 200 horsepower engine. If the engine operates at 50% out put, it will consume 40 pounds (about 5.6 gallons) per hour.

Maintenance and testing. The generator should be run at least once per week under at least half load to test for readiness. Follow manufacturer's recommendations for preventive maintenance.

Uninterruptible Power Supply

Computers and microprocessor-based equipment controllers need constant power to prevent damage to them and loss of programs and data. Battery systems are usually used to provide constant power and steady voltage to microelectronic devices. These will allow computers to operate long enough to shut them down properly and prevent the loss of files and programs.