

## Technical Note:

### Alternative Milking Arrangements during Extended Electricity Blackouts

Milk and dairy products are essential basic foodstuffs. Steps must be taken to ensure that emergency response agencies realise that maintenance of supply of milk from farms and through the supply chain is essential to maintaining food supplies to the community.

The dairy industry Response Team should ensure that dairy farms, processors and distributors are a high priority for reconnection with the electricity supplier because milk is a perishable, staple food. The Response Team can play an important role of identifying dairy farm clients to the electricity company.

Despite reconnection being a high priority, reconnection may take several days and possibly weeks in some cases due the extent of distribution infrastructure that may need to be restored. Alternative methods of operating the milking machines, vat cooling and often water pumps are critical in this situation.

In planning alternative electricity generation arrangements, considerations must be given to

- Total power requirement
  - How is this calculated
  - What included – milking machines, milk vat cooling, water pumps, house, other?
  - Is the demand concurrent, or at different times
  - What is the maximum
  
- What options are available
  - There are a number of options for emergency milking if there is a prolonged outage of electricity supply from the grid
  - Emergency generators
  - Tractor PTO-driven generators
  - Tractor PTO direct drive of the milking plant
  - Vacuum from the air intake of a diesel tractor for the milking machines
  - Milk at an operational neighbouring farm.

### Emergency Generators

Few farms at present have emergency generators to operate the milking machines, for cooling the vats and water pumps. Farmers should consider purchasing a generator for blackouts, especially in areas where power supply is unreliable. Generators may be obtained from hire companies and possibly from government sources.

The size of generator required will vary depending on the size of the milking plant, cooling vat and water pump sizes. Consideration should be given to include a supply to the house in calculating the

size of generator required. Generators of 35KVA capacity should be sufficient for most average size farms.

Many generators of this size provide 3-phase power output. Most milking sheds are supplied with single phase power so 3-phase generators must be modified for use on single phase. Industrial electricians are required to design and connect the conversion. A shortage of electricians with appropriate industrial experience may be a problem.

### **Tractor PTO-driven generators**

Tractor PTO-driven generators may be used to operate the milking machines. The power output of these generators may not be sufficient to run all of the machinery and pumps required for an extended power outage.

### **Tractor PTO direct drive of the milking plant**

A tractor PTO-drive could be used to drive the milking plant. A permanent shaft ready for change-over could be installed.

### **Vacuum from the air intake of a diesel tractor**

The air intake of a diesel tractor may be used to provide the vacuum for milking machines, but this is complex and risky (to the tractor) if not done properly.

### **Milk at an operational neighbouring farm**

In some situations, such as wild fires, neighbouring farms may still be operational. It may be possible to walk the herd to the neighbour's shed for milking. Also, a neighbour may have a generator enabling operations to continue when blackouts occur and may be willing to allow another neighbour to use his shed.

Another option could be for neighbours to purchase a generator together and have it installed in one of their sheds so the contributors could share use of the operational shed in an emergency.

### **WARNINGS!!**

Connection of any alternative power supply to the fixed wiring of a milking shed, house or other circuits must be performed by a licensed electrical contractor.

### **Disclaimer**

Dairy Australia does not warrant the advice given in this Technical Note. The information is provided as an aid for people considering how to prepare for or respond to a prolonged blackout of mains electricity. People considering any of these options must obtain advice from a licensed electrical contractor or the electricity authority before attempting to implement any alternative power supply.

## **TIPS ON USE OF GENERATORS**

*(Information provided by Ergon, the electricity supplier for North Queensland)*

### **Safety**

A portable generator can help restore life to normal during emergencies, but its safe use requires care and planning. The following tips - and a thorough reading of the generator's instructions - can help avoid dangerous situations.

1. Petrol or diesel powered generators produce deadly carbon monoxide fumes
  - Always run portable generators outside the house.
  - Never run generators inside, or in a garage.
  - Keep generators well away from open windows - including neighbours - so deadly exhaust does not enter the home.
2. Never connect a generator directly to your home's wiring unless a changeover switch has been properly installed by a licensed electrical contractor.
  - Incorrect installation of a generator can cause power to "back feed" into the powerlines with the potential to severely injure or even kill a neighbour or Ergon Energy employees trying to restore power.
  - If no changeover switch, plug appliances directly into the generator's outlet.
  - Use a heavy-duty extension cord rated for outdoor use to keep the generator safely outdoors.
3. Follow the manufacturer's recommendations for grounding the generator.

### **What will a small generator run?**

1. A small generator of about 3,000 watts can run a few lights, fans and a refrigerator all at one time. If used to start and run only one item at a time, it can run a ½ horsepower pump, or a small window air conditioner of about 5,000 BTUs.
  - Each generator has a rated wattage, which provides a limit on the appliances it will safely power.
  - Follow the manufacturer's recommendations for proper use and load. Overloading the generator can result in damage to appliances it is powering.
2. You don't need to run everything at same time; rotating larger items allows the use of a smaller generator which costs less to buy and is easier to move.
3. Get the most from your generator
  - Save fuel by using appliances only as needed. If no appliances are running, shut the generator off.
  - If you are just running a few lights, using other sources may cost less than running the generator.