



# Preparing Your Livestock Operation for a Power Outage

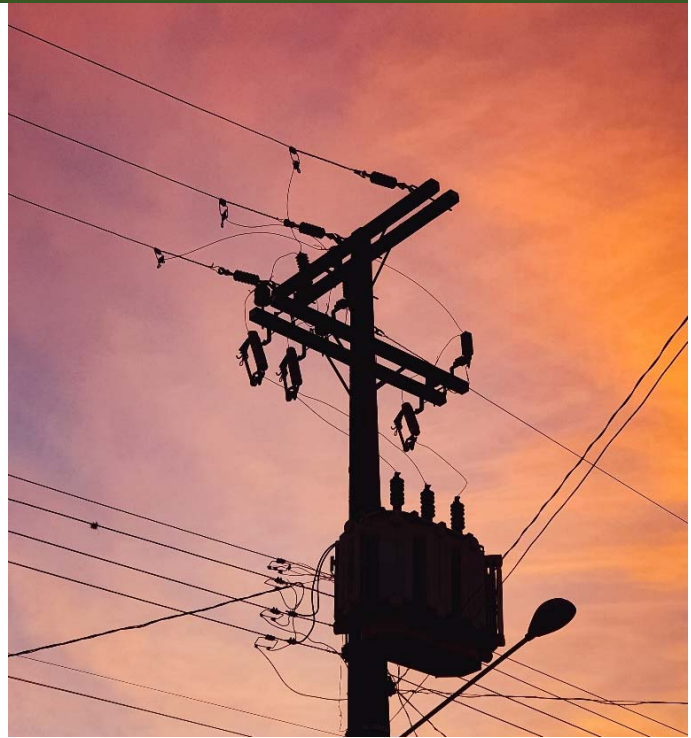
## Emergency Preparedness and Planning to Protect Animal Health

To ensure the health of your animals and prevent the loss of livestock or income during a power outage, there are several things you can do to prepare now to protect your animals and equipment. Examples of equipment used in livestock operations that can put your operation at risk include mechanical ventilation, bulk milk-handling equipment, automated feeding systems, heating, refrigeration, and cooling systems.

### Before a Power Outage

Planning for a power outage provides you with immediate access to resources. Having the following checkpoints in place will ensure your farm's operations continue without risking production loss or disease.

- **Have a dependable and adequate backup power source.**
  - This is especially important if you have vital electrical equipment on your farm.
    - Certain equipment is critical for dairy operations that require electricity in order to milk animals and refrigerate milk.
    - Some animal medicine also requires minimum temperature controls to prevent spoilage. Some vaccines can become toxic once frozen (cold weather) or thawed (warm weather).
    - Ventilation systems are essential in regulating gases and temperatures. If levels rise too high they can be life threatening.
  - Work with an electrician to determine how much power your farm requires to run essential operations. Refer to the section on page 2 about determining how much power your farm requires.
  - If and when possible, buy equipment that has a battery-powered backup system.
  - If you plan to use a generator for backup power, develop a service and maintenance plan to ensure it will work when you need it to. See the section on page 2 about ensuring a generator will work on your farm.
- **Protect your electrical equipment.**
  - Install surge protectors and/or battery back-up systems for sensitive electronic equipment, such as computers.
  - Prepare a list of equipment that you will need to turn off during an outage.
  - Ensure you have flashlights with batteries, along with spare batteries ready to use in key locations.
- **Food and water are critical to maintain animal health and welfare. Identify backup water and feed resources for your livestock.**
  - Know where you can get emergency supplies of forage and grain.
  - If you have mechanical feeders, they will be inoperable during a power failure. Identify alternative methods for how to feed your animals if equipment does not work.
  - Identify emergency resources for water.
    - Have containers and a way to transport water to animals, or a way for animals to get to an alternative water source.
  - Have a list (on paper and in your phone) of suppliers, truckers, and people that can help with your animals, especially if normal working conditions are disrupted.



- **Document and implement an emergency preparedness plan.**
  - Write down your plan and keep a paper copy and electronic copy.
  - Have a list (on paper and in your phone) of emergency contact numbers, such as your power company, veterinarian, electrician, and local law enforcement.
  - Include how you will maintain operations on your farm should the power go out, such as:
    - Feeding procedures
    - Heating sources, such as a portable propane heater
    - Cooling sources, such as fans
  - Inform and train employees what to do for a power outage.
  - Practice your emergency plan with employees to ensure the plan works and modify as needed.





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### During a Power Outage

Check your farm for the following during a power outage:

- **Backup power.**
  - Use your backup power sources for emergency power.
  - Only use generators in well-ventilated areas. Generators have been reported as a cause of fatal carbon monoxide poisoning, which can cause loss of consciousness and death. The most common symptoms are headache, dizziness, weakness, nausea, vomiting, chest pain, and confusion.
  - Use battery-operated light sources (flashlights or glow sticks). Do not use candles due to the risk of fire.
- **Equipment safety.**
  - Unplug or turn off electrical equipment previously identified in order to prevent damage from electrical surges or spikes when power is restored.
- **Animal health and welfare.**
  - Ventilation:
    - Do what you can to increase air movement. If you need to conserve heat, ensure animals still have enough fresh air for oxygen and to prevent the build-up of ammonia and other toxic gases.
    - Open vents to allow for natural air flow. Clear any debris from all vents.
    - In poultry facilities, use knock-out panels for emergency ventilation.
    - In dairy facilities, open doors or move animals outside.
    - Use backup heating and cooling methods previously identified.
  - Food: Follow your emergency plan for feeding procedures.
  - Water:
    - Provide all animals with plenty of water.
    - Your water pump may be driven with a small gasoline-powered engine; otherwise, you will need to haul water.
    - If you have an outside source for water, provide access for your animals.
    - Regardless of the source of water, be sure it remains clean and safe for animal consumption.

### After a Power Outage

Once your primary power supply returns, keep your backup power in place for a reasonable time frame to cover unexpected power losses that may occur as utilities work to completely restore power to your area. Depending on the cause and scope of the power outage, you may have interruptions in service until all areas impacted are back online.



### Ensuring Your Generator Will Power Your Farm

#### Determine How Much Power Your Farm Requires

A working relationship with an electrician can help your farm succeed economically during a power outage. An electrician can provide you with the technical information about how much power your farm requires. They can provide answers for the following questions to ensure your backup power source is adequate and reliable:

- What phase is your electrical service? Single or three phase?
- What voltage is your service? 208v, 240v or 480v?
- Is your power requirement for a Wye or Delta generator?
- How many amps do you need to power key systems? Determine your peak amperage draw over the past 12-24 months.
- What size generator is required?
- Does the building have a power transfer switch? If not, you will need to consider other options, such as a hardwire or spider box?
- How do you plan to connect the generator? Such as a spider box, hardwire into panel, docking station, transfer switch, kirk key solution, etc.
- Where should you put a generator? Especially if you do not own the building.
- How much cable do you need?

Be sure you include critical equipment, such as sewer ejector pumps; heating, ventilation, and air conditioning (HVAC) condensate drain pumps; server room HVAC; and pumps that provide protection from flooding.





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### Preparing Your Generator for Use

- Know your generator's fuel consumption rate and set up regular fuel deliveries ahead of time to ensure you never run out.
- Maintain a list of backup fuel providers. Include fuel providers outside of your immediate area in case demand for fuel in your area delays service.
- Ensure you have proper security measures in place to protect your generator (fuel and cabling) and any other outside equipment.
- Establish a resource for service and backup generators if yours becomes inoperable.

### Adequate Backup Power for Dairy Operations

It is recommended that you have at least two generators to provide enough power for separate dairy operation functions. For example, use one generator exclusively for the milk parlor - vacuum, basic lights, and computer controls. Use a second generator for feeding and water - well pump, water pump, augers, and mixers. If needed, use a third generator for alley scraping and manure removal equipment.

- Develop a service and maintenance plan to ensure each generator is operational.
- Run each generator under a load for a couple of hours at least every two months.
- If using a power take-off (PTO) type generator, make sure the tractor you use has no fuel or oil leaks in order to prevent fire hazards.

### Other Considerations

While having a generator ensures you have a backup power supply, you should still plan for occasional power loss due to factors out of your control, such as a fuel shortage, overloading capacity, and maintenance.

### Resources

Power outages can affect each livestock operation differently. You should report any power outage to your utility company.

If you have questions about animal health, contact your veterinarian.

For more information about planning for emergencies, visit <https://www.ready.gov/>.

### References

The following sources were used to help create this document:

- The Center for Food Security and Public Health, Iowa State University College of Veterinary Medicine
- Federal Emergency Management Agency

