

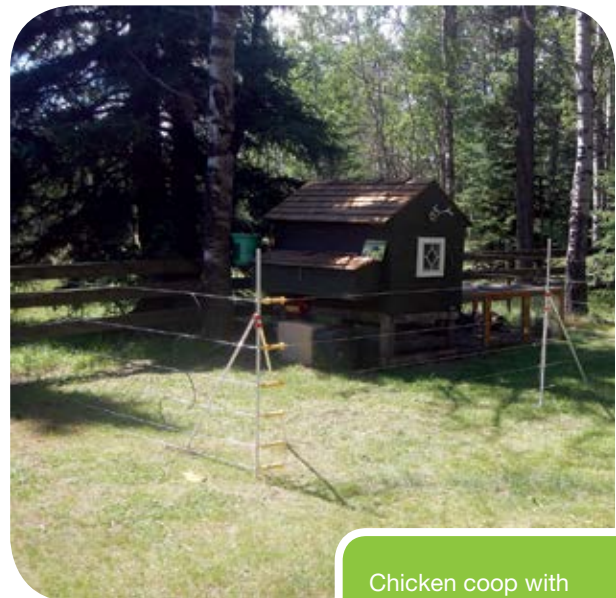
BEARSMART

# Electric Fences and Bears



**our challenge** People living and working in bear country will, at times, experience bears. Often bears will visit because of available foods, natural or otherwise, that exists. Depending on the circumstances, this can result in a loss of livestock, livestock feed or property damage and concerns related to public or personal safety. It can also result in bears becoming food conditioned and being relocated or euthanized.

Securing available attractants as much as possible is an effective way of preventing bears from visiting in the first place. This can include placing garbage and pet or livestock feed inside buildings or in a bear resistant container or removing fruit from trees or bushes before bears can get to it. A properly constructed and maintained electric fence can be an effective way of protecting livestock and bee yards from bears. These preventative measures will reduce incidents of loss, property damage and alleviate public safety concerns. It will also reduce the need to remove or kill bears.



Chicken coop with electric fence

# BEARSMART Electric Fences and Bears

## How electric fence works

The electric fence design will encompass whatever you are trying to protect. It will usually consist of an energizer, a ground rod and five to six strands of wires, the first wire being about eight inches from the ground interspaced to about four to five feet above the ground (Diagram 1).

When an animal approaches the fence and makes contact with the wire(s), electricity passes through the animal to the ground > ground rod > energizer > wires > animal (Diagram 2).

At that point, the animal gets a shock and will usually run away – never to come back again (in a perfect world). The shock does not affect the animal long-term but it does learn that electric fence is something to avoid in the future.

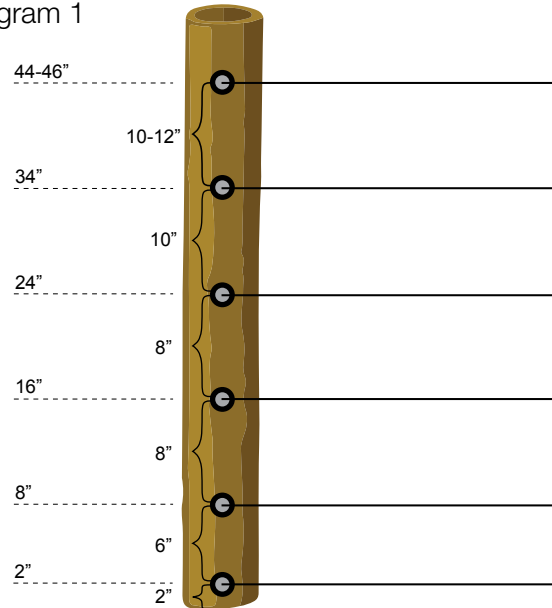
## Some key features of electric fence

### Ground rod

Proper grounding will determine how effective the electric fence system will be. It can be a six foot long steel rod pounded into the ground or a plate dug three to four inches into the ground (Diagram 3). If the ground is too dry or the ground rod inadequate, the electricity may not find its way back to the energizer resulting in little or no shock to the animal.

Note: Either a ground rod, a ground plate or a combination of both may be used.

Diagram 1

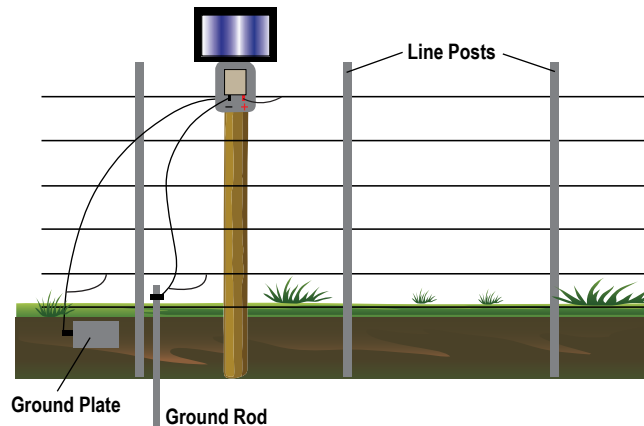


Wire spacing and height outlined here is critical in preventing low spots in the fence or large gaps between electric wires.

Diagram 2



Diagram 3



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## Energizer

Energizers (chargers) provide power to the electric fence system. It delivers an intermittent 'pulse' of electricity to the wires at approximately one second intervals. They come in a variety of makes and models but should provide approximately 5,000+ volts of energy and have a joule rating of at least 0.7. Energizers can be plugged in (AC), used with a battery (DC) or solar powered. Plug in energizers tend to provide the best output and least amount of maintenance, though DC and solar powered units also work well.

## Wires

There are a variety of wires that can be used ranging from high tensile galvanized steel wires for permanent fences to more supple braided polywire for temporary fence. Regardless of the wire you choose, it must be fairly tight and able to get under the hair of an animal and reach the skin in order to provide the best shock. For this reason, electric 'tape' is not recommended for electric fence designed to keep bears away. The tape will often slide over the hair of the bear and not reach the skin, making the shock inadequate as a deterrent.

## Posts

Choosing the type of post will be determined by the type of electric fence you are considering. If the fence is going to be in place long-term, standard treated wooden posts are likely the best option. For short-term fences, fiberglass poles are a safe choice and do not require insulators. Non fiberglass posts require insulators to attach the wire to the posts. Insulators prevent the wires from touching the posts and / or ground thereby preventing the system from 'shorting' out.



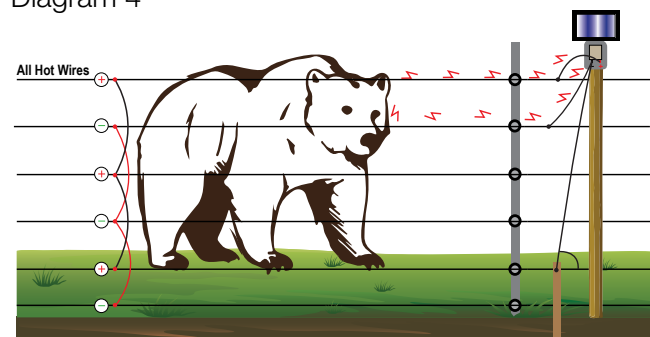
Solar powered energizer

## Fence Systems

### Single strand alternating positive / negative

In dry ground, the recommended practice is to alternate wires positive and negative from the ground up. This means that the wire closest to the ground is negative, the one above that positive; continuing to alternate from negative to positive as you move up the wires (Diagram 4). With an alternating system, the greatest shock will occur when the animal touches both the positive and negative wires; though it will still get a shock should it touch the positive wire only.

Diagram 4





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## Single strand all positive

If the ground is relatively moist it may be preferable to use all "hot" wires. This means that all of the wires are connected to each other and the positive post on the energizer. The ground terminal on the energizer goes to the ground rod and the bottom wire. (Diagram 5)

## Net Fence

Electric net, or mesh, fencing is portable and designed to be used as a temporary fence. It typically comes in 64 or 150 foot lengths and can be erected very quickly. It includes easy to use step in posts and can be used for backpacking and hunting purposes as well as short term livestock protection. Net fence can be set up as either alternating or all positive systems.

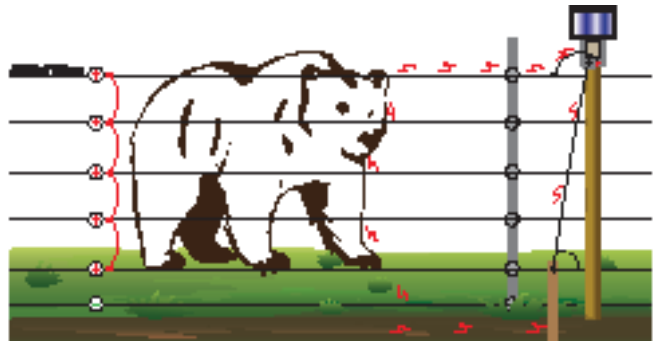
## Maintenance

A well functioning electric fence does require some maintenance. It is important that no vegetation touches the wires. This can 'short' the fence resulting in diminished energy output. For this reason, grass and other vegetation needs to be cut back a few inches around the fence perimeter.

Ground rods or plates need to be located in relatively moist ground. If an All Positive system is in place and the ground appears to be drying out, water can be applied manually to area around ground rod to keep the moisture content adequate. The system could also be changed to an alternating system to accommodate the dry ground.

Wildlife or trees can sometimes knock wires down; the fence should be checked periodically for damage. Voltmeters should be used to check the energy output of the fence from time to time to ensure there is adequate voltage (5,000+ volts) in the system.

Diagram 5



Net fence



Maintenance

## Further information

Albert Bear Smart ([www.aep.alberta.ca](http://www.aep.alberta.ca))  
Margo Supplies ([www.margosupplies.com](http://www.margosupplies.com))  
Gallagher Fence ([www.am.gallagher.com/ca-en](http://www.am.gallagher.com/ca-en))  
Living With Wildlife ([www.lwwf.org/](http://www.lwwf.org/))

