

Solar Energizers

What has changed and why?

Before 2010

Solar energizers were both too expensive and too weak (in pulse output) to stop any animal other than adult dairy cows and very tame horses.

So we urged folks to buy plug-in units.

2010

Our family of customers continued to seek solar units—which are without question easier to install.

But complete units that were strong enough were still too expensive. Noting that the cost of both solar panels and batteries was lower, we bought panels, batteries, energizers and metal cases and assembled them at Premier. They worked well and continue to do so.

2015

We were offered pre-assembled “cheese-wedge shaped” solar units in blue plastic cases by an English firm we’ve known for some time. The prices were fair.

We offered them to our customers for two years. We discovered, however, that the units had assembly issues. So we took each one apart to ensure it worked reliably. The switches were prone to fail. And the plastic case was prone to damage from impacts.

Present day

We asked the German firm from whom we’ve obtained energizers for over 20 years to make us much better solar units. They delivered with the Solar IntelliShock series.

What makes them better?

- 1. Unique energy-saving feature automatically reduces battery drain by as much as 70%** when the fence is not in contact with green weeds.
When daylight hours shorten (in autumn), this feature keeps the battery charged because grass growth is less in the fall. As a result, a smaller solar panel and battery on units with this feature do as well as units with much larger panels.
- 2. For even more efficiency the solar panel angle can be adjusted** to match the angle of the sun through the seasons.
- 3. Stronger plastic (polycarbonate) case.** Resistant to impacts and daily abuse.
- 4. Can be placed on the ground on its own metal support**—which doubles as an earth stake if the soil is moist.
- 5. Very simple to install and use.** Just install the earth/ground stake, place the unit, connect it up and turn on.
- 6. Lower cost per joule output** than competing units of similar output.
- 7. Can be operated without a battery and plugged into a 110V power source.**
- 8. On/off switch incorporates a flashing LED light that can be seen from a long distance at night.**

(below) Solar energizers and portable fences enable the user to set up a fence almost anywhere. Graze far-off paddocks with no existing fences or power sources.



Solar Energizer Systems

Why your location is important when choosing solar energizers

Q. Location, season and angle of the panel appear to be critical factors in solar energizer success. Why?

A. The maps (below) depict the differing hours of solar insolation for a region in winter and summer. Solar insolation is the hours of sun available per average day that have sufficient intensity to enable a solar panel to charge a battery. Three important things to note:

1. Summer insolation hours (below) for all areas are much higher than winter hours. For southeast Iowa it's 5.5 hours in summer and less than 3 hours in winter.
2. The hours available are very different depending on where you live. In summer Michigan has 5 hours vs 7.5 hours in Arizona!
3. Ideally the solar panel should be angled to meet the sun. That means nearly flat in summer and nearly vertical in winter—and always facing south.

Q. So why is the identical energizer sold in Michigan and Arizona?

A. It suits suppliers to keep things simple. Yes, the panel and battery are probably too small for Michigan (except in mid-summer) and too large for Arizona (except mid-winter). That's why many farmstore solar energizers often fail.

And it's the extra sunlight in the Southwest that may damage the battery in summer by overcharging it. (Premier's solar units are fitted with a regulator to prevent this.)

Q. What powers a solar energizer at night and on cloudy/rainy/snowy days?

A. DC battery. All solar units have one inside the case. The battery must be large enough to supply the energizer for several sunless days in a row. (We size ours for not less than 4 sunless days.)

Q. 21 sunless days from a 5 ampere-hr battery and a 5 watt panel?

A. That's what a Premier competitor claims for their 0.5 joule energizer.

For the same size unit, Premier offers a 12 amp-hr battery, 10 watt panel and suggests only 4 days. Explanation?

A normal 0.5 joule energizer consumes 50 milliamperes hr. So 21 sunless days extracts 25 amperes from a battery.

The misleading unit with 1/5 the battery and half the panel size reduces pulse energy as the battery voltage declines. In a day without sun the pulse is only 0.25 joules, then 0.10, then 0.05, etc. Not a pulse that will stop animals.

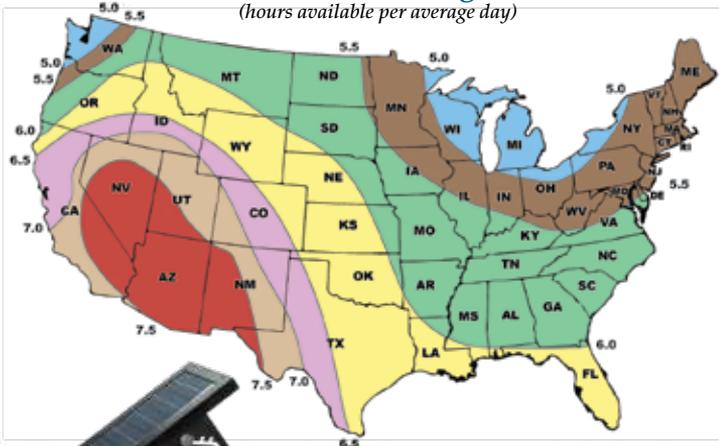
Summer vs Winter Sunlight

The maps below indicate the hours of summer and winter sunlight available per average day that have sufficient intensity to enable a 12v solar panel to recharge a 12v battery (defined as the hours of solar insolation).

Why is this important?

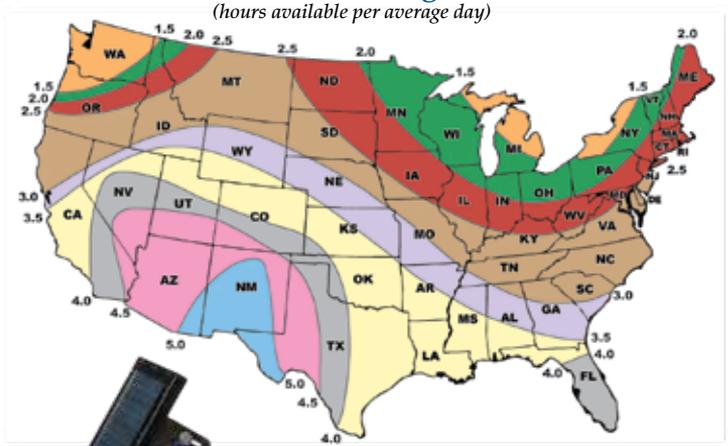
- Because a solar energizer with the right panel and battery size for New England may overcharge a battery in Arizona, **unless it's equipped with a voltage regulator**. Premier's solar energizers come installed with such a regulator.
- Solar panels that are right for Arizona are too small for Vermont—thus reducing battery life by undercharging.
- A solar panel sized for summer usage may be too small for winter. **Putting it simply, the same solar unit cannot fit all situations. That's why solar farmstore energizers disappoint users so often.**

Summer Sunlight
(hours available per average day)



A solar unit should be slightly tilted toward the south to catch available sunlight.

Winter Sunlight
(hours available per average day)



A solar unit should be close to vertical—to keep it perpendicular to the sun's rays at 12 noon.