Solar Energizer FAQs

Q. How do solar energizers compare to other fence energizers?

A.
- Their output is identical—a brief high voltage pulse of energy.
- Their input source is a DC battery.
- When the sun shines, the solar panel recharges the battery—which eliminates the hassle of carrying the battery to/from a recharger.
- They're larger in physical size than 110 volt energizers—because of the solar panel, battery and case.
- They are more expensive per unit of output—again because of the battery, solar panel and larger case.

Q. How do solar energizers differ from one another?

A.
- Input needs (in milliamperes per hr).
- Pulse energy output (joules).
- Pulse rate per minute.
- Size of battery (in amp hrs) per milliampere of draw.
- Size of solar panel (in watts and volts) per milliampere of draw.
- Number of days the battery will last on its own without sunlight.
- Cost/joule of output and durability.

Q. What are the negatives of solar?

A.
- Expensive per joule of output.
- Usually have less frequent pulses—which reduces its ability to stop animals and their predators.
- More maintenance including:
  1. Keeping the panel free of dust, snow and ice.
  2. Keeping the panel fully exposed to the sun—unshaded by trees, grass, fence posts or buildings.
  3. During winter the capability of the battery is lower—just when the available sunlight to recharge batteries is also low.

Q. Are solar energizers less expensive?

A. No. Plug-in units cost less because they don't need a battery or a solar panel.

Q. Are they less costly to operate?

A. No. The cheapest energizer to operate plugs into 110-volt AC current.

Surprised? A Kube 4000 provides 10 times more pulse energy than most farmstore solar units. Yet it uses less than 70 watts/day. That's only $2.50 per year!

By comparison the battery in a typical farmstore solar fence energizer (1/10 the energy output of a Kube 4000) costs $24 and may need replacing every 2 years—an annual operating cost of $12.

Q. So how do Premier solar energizers differ from farmstore energizers?

A. 1. Premier's solar energizers have much higher pulse output—from 0.25 to 2.0 joules.

However, most farmstore solar units vary from .04 to .17 joules—enough to stop a mature horse or dairy cow but not nearly enough power for sheep, goats, poultry and wildlife or fences that experience weed contact.

2. We also offer "extreme" versions of PRS units for areas with less sunlight and/or colder temperatures—and we tell you where those areas are.
3. We use larger solar panels and larger batteries per unit of output.
4. Our units cost less per joule of output.
5. Our cases can be placed on the soil (summer) or hung from a post (winter). PRS 200X is too heavy to hang.

Solar Energizer best practices…

- When not in use, turn off the unit and face the panel toward the sun to recharge its batteries. If in use, leave the energizer turned on.
- If an energizer tests less than 2000v across the energizer terminals *(while disconnected from the fence/ground)*, test the battery with a battery meter to make sure it is fully charged.

  Fence voltage testers can't be used to test batteries (regrettably).
- Check batteries to make sure there is no corrosion on the terminals.
- Reduce risk of rodents chewing on wiring harnesses by keeping the connecting harness off the ground.
- Do not allow animals access to the energizer.

Common user mistakes with solar fence energizers *(please read!)*

1. Not facing it toward the sun. This reduces the sun exposure needed to charge the battery. Best practice is to face the unit's panel due south.

2. Not elevating it above the grass or snow *(above)*. A solar panel covered with snow will not work.

4. Allowing dust to cover the panel. A light film is not a problem—but if the unit is in a dusty location it will accumulate a layer of dust thick enough to reduce the abilities of the solar cells. A flat battery will result.

Rain, of course, washes it off.

5. Not turning off the energizer when it's not in use. A common mistake because the insulated clips connecting it to the fence and ground rod allow users to remove them without turning off the energizer.

6. Allowing the battery to gradually discharge when not in use. When storing, disconnect battery (fully charged) from the energizer. Store both in a heated area. Ensure battery charge stays above 40%.

3. Allowing posts, grass *(above)* or trees to shade it for a portion of the day. If a solar panel is not ***fully exposed to the sunlight, it won't develop enough voltage to recharge the battery.***

It's easy to forget that grass can rapidly grow enough to shade a unit sitting on the ground.

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. The summer insolation hours *(below)* for all areas are much higher than winter hours. For southeast Iowa it's 6 hours in the summer and less than 3 hours in the 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 the summer and nearly vertical in the 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 the summer by overcharging it. (Premier's PRS units are fitted with a regulator to prevent this).

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

A. 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 energizer.

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

Few things are as misleading. 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.

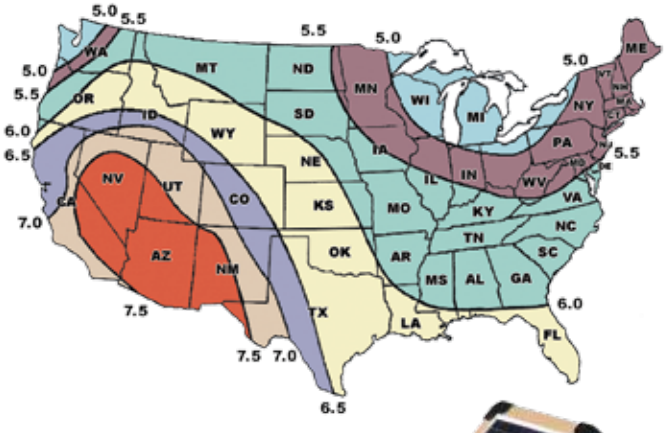
Summer vs Winter sunlight…

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?

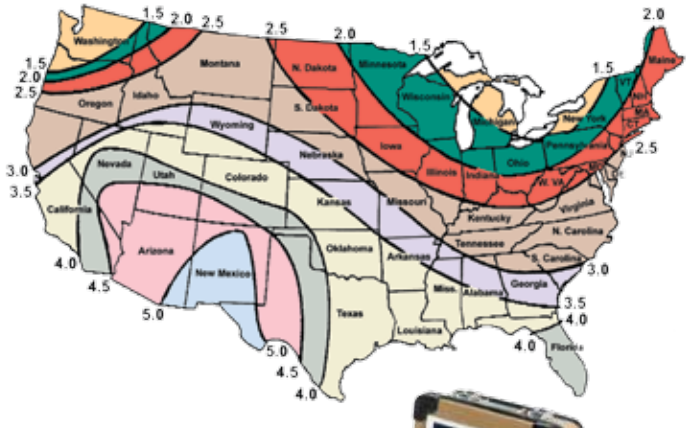
- Because a solar energizer with the right panel and battery size for New England may overcharge a battery in Arizona, unless it's equipped with a voltage regulator. We install such a regulator with each of our PRS energizers.
- Solar panels that are right for Arizona are too small for Vermont—thus reducing 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 PRS should be slightly tilted toward the south to catch available sunlight. We prop one edge on top of the ground rod.

Winter sunlight— *(hours available per average day)*



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