



BACKWOODS SOLAR WINTER 2008 NEWSLETTER



(Photo courtesy of David Palmer, Alaska)

IN THIS ISSUE:

- YOUR PERSONAL POWER STATION: A CAUTIONARY TALE
- SCOTT and TRACEY'S HYDRO EXPERIENCE with FRAZEL ICE
 - 2008 CATALOG COVER PHOTO CONTEST
- The JORDAN RIVER FARM'S OFF GRID CONVERSION STORY
 - E LIGHT 3 and 6 LED FIXTURE RECALL
- YOUR STORY for our NEWSLETTER WANTED
- RENEWABLE ENERGY HELPERS NATIONWIDE NEEDED
 - KYOCERA SOLAR MODULE AVAILABILITY

YOUR PERSONAL POWER STATION: A CAUTIONARY TALE

Backwoods Solar sells off-grid power systems on a daily basis. When you choose to produce your own electricity with our renewable energy products, you have just become the manager of your own personal power station. Our systems are straight forward; easy to install; and relatively easy to master with the proper effort. But these systems do require attention. You cannot simply install your system and assume all is well. Without proper programming and diligent maintenance, problems can develop.



We specialize in programming and maintenance details. As you know, each Backwoods Solar employee owns and operates an off-grid home with the products you've purchased. We know how these systems work; how to program them; and how to maintain them. And we happily insure you

too gain this understanding through the information we provide with each system as well as after sale support by telephone and email.

Every day we spend as much time as you need to answer your questions; trouble shoot your system; and in general hold your hand as needed so that you successfully manage your personal power station. Without our guidance, you can succeed but experience tells us that our participation is helpful and reassuring. Congratulations! You've joined a select group of self-reliant people that have accepted the rewarding responsibility of overseeing their energy needs.

AND NOW THE CAUTIONARY TALE: in addition to selling off-grid systems on a daily basis, we also design these systems for free for anyone that asks. Inevitably someone points out that they have submitted our list of products to another online retailer and received lower prices. Backwoods Solar knows lower prices exist and we try to compete on price but often we cannot. **BUT it is critical to understand that managing your own personal**

power station involves more than just the lowest price. Every day we get calls from folks that bought their system from the lowball retailer and now that retailer cannot or simply won't help them.

Our commitment to your success cannot be measured in dollars. Your initial purchase price is only a start. You need to buy your personal power station from a company that supports the sale and from employees that have personal experience with your products. **You want Backwoods Solar!**

(Outback Power System photo courtesy of Ray Fallon)

SCOTT and TRACEY'S EXPERIENCE with FRAZEL ICE: NOT HYDRO FRIENDLY

(photo shows Scott and Tracey's hydro intake pond)

In early December 2007, we had an incredible weather event in north Idaho. Temperatures were in the low 20s; the creek that feeds our hydro turbine was flowing swiftly; our hydro intake pond was free of ice; and the intake filter for the turbine was clean.



Then it began to snow. It started on a Friday morning and didn't stop until Monday morning at 7 am. Over two feet of fluffy white powder accumulated before the temperatures began to rise. At 7 am on that Monday morning, the snow turned to rain and it poured for the next 21 hours. The temperatures jumped from 20 to 40 degrees and by the end of this event, we had 4.5" of measurable precipitation.

Our winter wonderland almost disappeared but what can you do. More of the same...which includes checking the hydro turbine's ammeter every morning to insure all is well before we go for our pre-work run. The rain stopped at 4 am Tuesday morning and by 6 am we headed out for that

morning's run. A quick stop in the power shed changed those plans. The hydro's ammeter read zero.

Fortunately the two feet of snow had diminished to only 6" of thick white slush so we could run the $\frac{1}{4}$ mile up the creek to our hydro intake. We assumed that the enormous amount of rain had flushed debris down the creek and clogged our intake filter. However when we arrived at the intake pond, the filter appeared clean. But it wasn't. Even though the pond had been and still was free of ice and the filter looked clean, closer inspection revealed that our filter's intake holes were plugged with ice. How could that be?

Well, I am told that when the air temperature rapidly changes from below freezing to above freezing, as had happened, that moving water can form ice particles within the water known as "frazil" ice. This ice gets sucked into an hydro's filter and can plug it. And it had. We scraped the thin film of ice off of the filter; water rushed into our penstock; it burped and belched to remove air through the intake filter and vent stack; the turbine began producing; and Tracey and I went for our morning run.

So if you have a hydro system and one winter's day it has stopped producing and your filter is "clean", remember frazil ice.

2008 CATALOG COVER PHOTO CONTEST



Another year and another catalog will go to print. Backwoods Solar will publish its 2008 catalog by April of this year and so we invite you to submit a photo or photos for its cover. The layout is "portrait" style which means it has a vertical orientation rather than horizontal. Please keep this layout in mind when choosing a photo to submit. The folks that submit the winning entry will receive a one time 10% discount on any single order placed after the photo is selected and the end of 2008. You may

submit a photo within the body of an email sent to info@backwoodssolar.com or via a disk that you mail to us. In general, attachments to an email will not be opened unless we know you.

Once the photo is selected, we will ask the winner to provide a written text which describes their alternatively powered home. We will edit this text to the inside front cover of the catalog which mails to tens of thousands of households nationwide and even internationally. Many thanks to everyone that chooses to participate. We had a great response for the 2007 catalog photo and hope for an even better one this time.

THE JORDAN RIVER FARM'S OFF GRID CONVERSION STORY by Cory Koral



When I first came to Jordan River Farm as a worker in 1979, the power company was just putting up a huge 500,000 volt power line right across the property. The 100 foot towers were a huge scar on an otherwise very rural and pristine landscape, not far from the Skyline Drive. A battle had

been fought to stop the line earlier in that decade but was ultimately lost, and my future wife had to settle with the power company and allow the desecration of her organic farm.

For the next 22 years we worked very hard with our beef and dairy cattle, market garden, pick-your-own strawberry operation, 400 laying hen operation and school tours and classes for children, becoming one of the first six farms in the state to be officially certified organic in 1988. All those years, I wanted to find a way to become independent of the power company, because I knew that it was our dependence on the grid that created this blight on our property.

My wife passed away in 2001 and I couldn't keep the farm going, so

I sold the farm animals and am using the farm as an event center (Jordan River Farm.com). I now had the time to devote to alternative energy and completed an off-grid house. It's a 1000 square foot single story cottage built on a rise with plenty of windows on the south side for solar heating (see p23 of the catalog). I'm using 8 Shell Solar SW175 panels on the roof into an MX-60 charger hooked to 6 Surrette 8 volt industrial batteries and a Xantrex SW+ 4024 inverter.

Being handy with tools and having the Backwoods people standing by to answer any questions, I was able to do 90% of the installation myself for a total of about \$20,000 in materials, equipment and some hired labor (to put the panels on the roof, for example). The system has been running for about a year and I have been living here full time since April. I'm completely off-grid and my next goal is to be completely energy independent. For that I need to find a way of heating the house and cooking without propane. I have an Amish made wood fired water heater which I expect to install later this winter.

The only energy I'll need to buy then will be the gasoline for the chainsaw - still looking for a way around that. I sized my system so that I would have a minimum of maintenance and not have to count every watt. I was hoping to get by entirely without a generator, but the old farm generator still comes in handy when I want to equalize the batteries. Although I was fretting over the system like a mother hen the first few months, I now have the experience to be able to take a quick glance at my readings and know how things are going. So far, I've only dropped to 50% on the batteries one time in the last year.

What would I do differently? (1) I would run my radiant floor heating tubes through a floor joist system, NOT A CONCRETE SLAB, as I had been advised by others. In this climate, it takes too long for the slab to heat up and cool down and this has been a MAJOR energy waster. (2) I would put the PV panels on a pole in the backyard, not on the roof. The panels need to be where I can scrape ice and snow off of, and troubleshoot, if necessary. (3) I wouldn't deviate from the recommended pipe size for the Shurflo 24v dc pump. Instead of the 1/2 inch tube I went with the standard 1 inch black plastic pipe. It took a year and half to burn out the motor.

There's one more thing I would like to pass along. On February 22nd of this year, I was at the house site alone, climbing a ladder to check the wiring coming from the roof panels when the ladder slipped and I fell, breaking my upper leg near the hip and cracking 5 ribs. There was no phone installed yet, and I was unable to stand up. I could only move a few inches at a time using the ladder as a sled. It took me 8 hours to crawl through the house and out to the parking lot in a below freezing wind chill before I was finally able to get to the car where the cell was. Luckily, the door wasn't locked, but I couldn't reach the cell phone up on the instrument panel. I finally managed to knock it down with a window scraper. My body temperature had dropped to 95 degrees and I was barely conscious when the rescue squad reached me a half hour later. I have a lot to be thankful for; the farm is on a remote gravel road and we rarely get cell phone coverage here. So my advice is, **DON'T WORK ALONE, DON'T WORK WITHOUT A PHONE!**

Incidentally, earlier this year, the power company made a proposal to replace the existing power towers with ones twice as tall so they can string 1.2 million volt lines, more than double the existing power, across the land. Unlike 30 years ago, however, there are more environmentally conscious people around, including actor Robert Duvall, who lives not far from here and has hosted his own rallies against the line at his farm. He and hundreds of us have testified before the SCC (State Corporation Commission), the department responsible for approving the line. The outcry against the line has been unprecedented. We hosted a Powerline Awareness Festival (powerlineawareness.com) in October here on the farm donating the proceeds to the Powerline Landowner's Alliance (thepla.org) one of the local opposition organizations. As you can see, there is enough wasted energy emanating from the existing line to light up fluorescent bulbs by themselves! Several politicians showed up to donate power company campaign funds to our cause and the issue has now reached the national level with some Congressmen calling for hearings. I was shuttling people up to my off-grid house to demonstrate how these lines are not needed, and passing out the Backwoods catalog.

Since I completed the cottage, I've become the local "expert" and have held meetings and workshops to acquaint people with their alternative energy options. I'm not in the business of being an energy consultant and am hoping to train enough people so that I can concentrate more on the various emerging technologies. I made a challenge that we build 200 off-grid houses in Rappahannock County by 2009, 500 by 2010. There would certainly be no justification for the lines if we did that. I visit people's house sites and show them the basics of alternative energy, always with the Backwoods Solar catalog tutorial in hand.

Thanks to the enormous outpouring of opposition to the power line we stand a good chance of defeating it in favor of more sane energy solutions, if we can keep up the pressure (pecva.org); and thanks to Sprint wireless, the timely response of the Flint Hill and Chester Gap, Virginia volunteer fire departments, and a lot of luck, I'm still here to tell my tale and carry on my work.

E LIGHT PRODUCT SAFETY RECALL ANNOUNCEMENT

From the manufacturer:

Dear E Light owner,

ALL MODELS OF THE E LIGHT LED LIGHTING FIXTURE ARE BEING RECALLED BY THE MANUFACTURER.



A possible electrical component failure may cause risk of fire. Remove

E Light(s) from service immediately and disconnect from source of electrical power. Return E Light to manufacturer for a full refund. For instructions call the toll free 1-866-522-1368 or visit the website at www.E-Light-Recall.com

The manufacturer will send a product return kit.

YOUR STORY for our NEWSLETTER WANTED

Backwoods Solar would like to share your "off-grid" story in our newsletter and we would offer a \$150.00 credit on your Backwoods Solar account in exchange for a story that gets published. We would look for a discussion of your renewable energy system and its integration into your way of life. It can be more or less technical and should include photos. Email submissions are preferred but we will happily entertain all forms of entry. If you have any questions, feel free to email us info@backwoodssolar.com or give us a call 208-263-4290 or mail us: 1589 Rapid Lightning Creek Rd; Sandpoint, ID 83864.

.....

RENEWABLE ENERGY "HELPERS" NATIONWIDE NEEDED



Historically, Backwoods Solar has maintained a list of Solar Helpers. This list represents installation services offered by licensed electricians, certified solar experts, etc.

However we have found that the vast majority of our customers want to install their own systems and would actually like to visit or speak with or write a "neighbor" that has a renewable energy system in place, prior to their installation.

To facilitate this interaction, Backwoods Solar would like to compile a list of people nationwide that have renewable energy systems if they're willing to let interested individuals contact them. We would maintain a list of Renewable Energy Helpers on our website and only release the information approved by the Renewable Energy Helper. This information may include a physical address, a phone/fax number, an email address or any combination of these details. We respect the privacy of anyone willing to share their renewable energy system with others and we want it to happen on their terms.

You may find that your county inspector requires a licensed electrician to sign off on your installation and you may want that electrician's assistance in general. We know that the experience gained by "doing-it-yourself" is invaluable. You will remove the mystery of running your own power station and you will develop an intimate understanding of each component. This familiarity simply doesn't happen if you do not participate in the installation process.

So if you share our opinion and would be willing to open your home to those folks that are new to this renewable energy arena, please let us know.

The photo shows Terry Graybeal (Backwoods Solar employee) and his wife Martha at their hydro intake.

KYOCERA SOLAR MODULE AVAILABILITY



Kyocera Solar has just announced the pending discontinuation of the KC130TM module that we have sold for the last year. In its place, they will introduce the KD135 GT module in February. This 135 watt module utilizes the same d.Blue solar cell technology that the KC130TM used. They also have MC4 locking cables exiting a sealed junction box. We offer a 30' MC4 cable with one female and one male plug per cable. These cables are designed to be cut in half to give you two 15' pieces, one with a female plug and one with a male plug. \$30.00 per 30' cable.

Model	Amps	Volts	Size	Price
KD135 GX 135 watts	7.63	17.7	59.1" x 26.3" 28.6 lbs	\$695.00

FREE SHIPPING to a lower 48 address: a \$50.00 per module value!

