



## WINTER 2009 - 2010 NEWSLETTER



(Photo courtesy of Jim Akers, Sagle, ID)

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## NEW FEDERAL TAX CREDITS for RESIDENTIAL and COMMERCIAL SOLAR INSTALLATIONS: SAVE 30%

Today is the best time in history to purchase a commercial or residential solar electric system. The Federal Tax Credit for residential solar systems was extended and expanded, effective January 1, 2009. Previously, there was a \$2000 cap on the tax credit but that cap has been lifted and **the tax credit is now 30% of your system cost**. Combined with State rebates the savings can be even greater.

- The system must be placed into service after December 21, 2008
- The system does NOT have to be the taxpayer's primary residence
- The bill allows taxpayers to use the credit to offset AMT liability
- Unused credits can be carried forward (see your tax advisor for details)

Examples of how this works:

If your PV system costs \$9,000

& your tax liability for the year is \$6,000

You would reduce your tax liability by \$2,700 and only pay \$3,300.

If you PV System costs \$6,000

& your tax liability for the year is \$1,000

You would eliminate your tax liability for the year,

and have the option to carry the remaining \$800 credit over to the following year.

Wind systems federal tax credit is 30% of installed cost. For more information on state rebates and incentive programs visit: [www.dsireusa.org](http://www.dsireusa.org)

### SOLAR MODULES on SALE

#### SolarWorld 175W- New Lower Pricing



SolarWorld modules are designed for use in high-voltage grid-tie applications as well as in large industrial and off-grid applications for 12-volt, 24-volt or 48-volt battery charging. These modules use 72 five-inch semi-square single crystalline cells in series behind tempered glass. They feature clear-anodized aluminum frames and a sealed junction box with bypass diodes and Multi-Contact locking connector output cables.

You will need our 30' MC4 cable with a male and female end. You cut this cable in half in order to plug it into the pre-installed MC4 cables and run from there to a combiner box. Tested at 50 PSI wind load; 1" hailstones impact at 52mph.

TWENTY FIVE YEAR WARRANTY on power output.

- Watts 175
- Amps 4.9
- Volts 35.7
- Size Inches 63.4 x 31.9
- Weight 33 Lbs
- **PRICE \$625.00 (was \$890)**
- **Ships by truck freight only, please call for freight quote**

## REC Group 220W Module

The REC AE-US Series is a high-quality series of solar modules designed to meet exceptional standards for system and module performance.

REC manufactures its own silicon, wafers, cells and modules and does extensive quality control throughout the complete production process. REC can be depended upon to provide a secure, steady supply of modules that are manufactured to the highest standards of quality from beginning to end. You will need our 30' MC4 cable with a male and female end. You cut this cable in half in order to plug it into the pre-installed MC4 cables and run from there to a combiner box.

The REC AE-US Series utilizes:

- 60 high efficiency, multicrystalline 6.14 inch (156mm) square cells.
- Specially treated tempered glass that provides outstanding performance in low-light conditions.
- Glass is rated to withstand 3/4 inch hailstones at 120 miles per hour. The modules are designed to withstand heavy snow and wind conditions.
- The easy-access rear junction box has built-in bypass diodes to minimize the effects of shading.
- The laminate's Tedlar backing and anodized aluminum frame ensures many years of peak performance.



## Environmentally friendly Products & Processes

The REC AE-US Series generates reliable and environmentally friendly electricity. The cell and module production processes are designed to maximize recycling and reduce environmental impact. REC polysilicon is manufactured in the US (Moses Lake, WA and Butte, MT). REC wafers, cells and modules are manufactured in Scandinavia.

## MINIMUM REQUIREMENTS FOR BATTERY CHARGING

- MPPT Charge Controller
- 1 Module for 12v systems
- 2 modules for 24v systems
- 3 modules for 48v systems

## WARRANTY

90% rated power output after 10 years, 80% of rated power output after 25 years. 63-month limited warranty on materials and workmanship.

- Watts 220
- Amps 7.7
- Volts 28.7
- Open circuit voltage 36.6
- Size Inches 65.55 x 39.02
- Weight 48.5 lbs
- **PRICE \$658.00**
- **Ships by truck freight only, please call for freight quote**

## NEW GRID-TIE KITS

Backwoods Solar is proud to announce two lines of fully expandable do-it-yourself grid-tie kits. These kits allow you to start small and then add to your system as time and budget allow. Because they use Enphase Micro-Inverter technology, complex string-sizing, high-voltage connections and wiring, as well as shading concerns become a thing of the past, allowing the homeowner to easily install their own system and add to it later with plug-and-play connections.



Kits feature either SolarWorld or REC Solar modules, with options for Pole or Roof Mount systems. The Enphase Envoy Monitoring Unit is an option that can be added to all kits that we feature. The Envoy gives real time information about your systems performance, direct to your computer via a web interface. It acts as the display and control mechanism for all inverters within your system, and only one is required regardless of the amount of kits or inverters you have. Without the Envoy you will not be able to see if your system is actually generating power, and it is the only solution to resetting your system after a ground fault failure. Although the system will operate without the Envoy, Backwoods Solar feels strongly that it is a necessary component to the system, not just a recommended addition.

### All Kits include:

- Solar Modules
- Grounding Lugs
- Enphase Micro-Inverters M190, MC4
- Enphase Install Kit
- Unirac or General Specialties for Pole Mount
- General Specialties Mounting S-Rails Kit for Roof Mount
- Line Diagram

### We recommend adding:

- Enphase Envoy Communications Gateway- with free 90-day subscription to Enlighten

### Not Included:

- Pipe for pole mount
- Roof sealant and flashing for roof mount
- AC breakers for service panel
- Wiring and conduit to service panel



## 2010 CATALOG COVER PHOTO CONTEST



Another year and another catalog will go to print. Backwoods Solar will publish its next catalog by February of 2010 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 (sale items not included) placed after the photo is selected and the end of 2010. You may submit a photo within the body of an email sent to [scross@backwoodssolar.com](mailto:scross@backwoodssolar.com) or via a disk that you mail to us.

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 for use on 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 2009 catalog photo and hope for an even better one this time.

(Photo courtesy of Lewis Cooper, Ashley National Forest in NE Utah)

## YOUR STORY for our NEWSLETTER WANTED

Backwoods Solar would like to share your story about your renewable energy system in our newsletter and 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 [scross@backwoodssolar.com](mailto:scross@backwoodssolar.com) or give us a call 208-263-4290 or mail us: 1589 Rapid Lightning Rd; Sandpoint, ID 83864.

## RENEWABLE ENERGY “HELPERS” NATIONWIDE NEEDED

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 has compiled a list of people nationwide that have renewable energy systems that are willing to let interested individuals contact them. We maintain this 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.

## GET READY FOR WINTER

### CAFRAMO ECOFAN AIRPLUS

The Caframo Ecofan™802 Airplus is a heat powered fan designed to circulate the warm air created by a wood stove. This fan does not use any batteries or wall cords. These fans have a thermoelectric module which acts as a small generator to power the fan's motor. When this generator module experiences a heat differential between its top and bottom surfaces, it pumps out electricity. The bottom surface of the module is heated by the base of the fan, while the top of the module is kept cooler by the fan's top cooling fins.

The Ecofan Airplus is designed to be used on freestanding woodstoves with normal surface temperatures of 400-650 degrees F for optimum performance. Temperatures above 650 degrees F (340 degrees C) will damage the Ecofan. We highly recommend that the Ecofan be used in conjunction with a wood stove thermometer to avoid overheating the Ecofan. One year warranty. Made in Canada.

Sequoia and her family have been using the Ecofan Plus for the last year with her small wood stove, and love it (not to mention the fun and excitement when it starts spinning). It has increased heat circulation further into the house. The airflow it creates is very visible if you also utilize a kettle for steam as they do.



- **Ecofan™ 802 Airplus: \$126.00 (\$12.00 shipping)**

### AQUASTAR/PRO TANKLESS WATER HEATERS *manufactured by Bosch*

***\$50 Pre-Paid Credit Card Rebate on 425HN when you order before December 15, 2009***



The BOSCH/AQUASTAR 425/1600 models are a good home size for 1 user at a time. The heater is activated by a flow speed of 1/2 gallon per minute. Maximum flow rate is 4 gpm at 45 degree increase, to 2 gpm at 90 degree increase in water temperature. Ask us to send factory literature.

The 425PN and 1600PS models have a standing pilot. The 1600PS (for use with pre-heated water) has an exit thermostat. Its temperature is controlled to constant output despite varying incoming temperature. Useful if you have pre-heated water from a wood stove or solar water heater. The 425HN unit uses a water pressure generated spark ignition, no pilot light.

2 year warranty with 12-15 year warranty on heat exchanger.

Per the manufacturer, all models have a minimum 30 psi requirement. All units ship for propane use. If a Natural Gas model is needed please request. Due to size, 30 day return privilege does not apply to this item.

- **A-GWH425PN for propane: \$665**
- **A-GWH1600PS for propane and pre-heated water: \$785**
- **A-GWH425HN: Water pressure generates spark, no pilot light, for propane: \$715 (get \$50 Pre-Paid Visa card rebate)**
- ALL WATER HEATERS SHIP FOR \$26 IN 48 STATES

## TROJAN INTRODUCES A NEW LINE of FLOODED LEAD ACID BATTERIES

Prices are climbing again, Backwoods will retain our pricing for as long as possible...



### **TROJAN L-16 RE and L-16 2 volt BATTERIES NEW CAPACITY RATINGS-- NOW 370 AMP-HOURS for the RE and 1110 AMP-HOURS for the 2 volt.**

Trojan L-16RE is a 370 amp hour industrial size 6 volt battery weighing 118 pounds. The L16, 2 volt is a 1,110 amp hour industrial size 2 volt battery weighing 118 pounds as well. Lifting handles are included.

They are 30% taller than auto or golf cart batteries, 12" x 7" x 18 inches tall, so they take less floor space for a given battery capacity. Typical life is 8 - 11 years. L16 RE and 2 volt are housed in a red ribbed case with two handles, Trojan's best: Not the industry "standard" L-16 model which has less capacity and less longevity. Trojan has an unparalleled reputation for reliability in home power systems. The L16 RE battery is 6 volts, made of three 2-volt cells wired in series in one unit. Six-volt batteries are series connected in pairs for 12 volts, or in strings of four batteries for 24 volts or 8 to make 48 volts. Then several series strings may be

parallel connected to add more ampere-hour capacity. Interconnect diagrams are supplied. Each 12 or 24 volt series string of L16 RE is rated 370 Ampere Hours, so two strings are 740 Ampere-Hours, 3 are 1,110 A. H.... etc.

The L16 2 volt battery is 2 volts, made of three 2-volt cells wired in parallel in one unit. 2 volt batteries are series connected in groups of six for 12 volts, or in groups of twelve batteries for 24 volts or twenty four to make 48 volts. Then several series strings may be parallel connected to add more ampere-hour capacity. Interconnect diagrams are supplied. Each 12 or 24 volt series string of L16 2 volt is rated 1,110 Ampere Hours, so two strings are 2,220 Ampere-Hours, 3 are 3,330 A. H.... etc.

Trojan offers a free replacement warranty for the first two years of service and an additional five year, pro-rated warranty on the L16RE and L16 2 volt batteries for renewable energy systems (assuming Trojan defined, proper care)!!

FREE ACCESSORIES included with batteries: the Battery Book, and our #1 glass hydrometer. Distant customers call for pick-up locations near you, usually at no shipping cost.

- **B- L16RE: Trojan L-16RE 6 VOLT; 370 ah batteries & accessories EACH: \$335**
- **B- L16 2 VOLT: Trojan L-16 2 VOLT; 1110 ah batteries & accessories EACH: \$335**

### **TROJAN T-105 & T-105RE BATTERIES 225 AMP-HOUR RATING**

Electric Vehicle or Golf Cart Batteries are easier to lift at 65 pounds each, size 10" x 7" x 11". These are a popular and economical battery for home power systems. This mass produced consumer battery has the best price per amp-hour of any quality battery.

Each battery is 6 volts, made of three 2-volt cells in one unit. Six-volt batteries are series connected in pairs for 12 volts, or in strings of four batteries for 24 volts, or 8 to make 48 volts. Then several of these series strings may be parallel connected to add more ampere-hour capacity. Each series string is rated 225 ampere hours, so two strings are 450 Ampere-Hours, 3 are 675 A.H., 4 are 900 A.H., 5 are 1125 A.H., etc. Interconnect diagrams are supplied. Life expectancy is 5+ years. T-105 has a one year warranty, the T-105RE has a five year warranty.



FREE ACCESSORIES included with Trojan batteries are the Battery Book, and our #1 glass hydrometer. Distant customers call for pick-up locations near you, usually at no shipping cost.

- **B-T105: Trojan T-105 Batteries & accessories NEW Lower Price EACH: \$135**
- **B-T105RE: Trojan T-105RE Batteries & accessories EACH: \$150**

## “SAW THE LIGHT”

### Story Submitted by Customer: Michael Grimmer

I had purchased a couple of houses located on the outskirts of Adona, Arkansas - a small town of about 240 residents in an area about an hour or so northwest of Little Rock. The houses were “fixer-uppers” - I was using my spare time and carpentry skills to remodel the houses in hopes of reselling them for a nifty profit. I was living in one of the houses and providing power for the house through the use of a bank of batteries I stored in the trunk of my car and kept charged with an oversized alternator. When I arrived home at the end of the work day I literally “plugged-in” my house. I had lived “off-grid” for six years - lights, color television, computer, propane refrigerator, etc.



The fact that I seemed to have electric power but had no account did not escape the local electric company. They swore up and down that I was misappropriating their electricity and had even gone as far as spreading their misfounded beliefs to the Adona townfolk. So sure was the electric company in their assumptions of my misappropriations that they even chalked up others found to be illegally tapping into their electricity as being hooked up by the master - me.

From time to time the electric company would send out a representative to check my meter-reading. Oftentimes it was a newly hired meter reader, other times someone higher up on the chain. One common thread amongst all of them that came to investigate was that they all left my property scratching their heads and feeling more perplexed than before they'd arrived. And so it was that I gained a bit of a dual reputation with the good folks of Adona, Arkansas. To those who found humor in my confounding the electric company I was a novelty, even a hero of sorts. To others, I was thought of as being no better than a common thief. I never gave the matter much concern, one way or the other, and went about my business.

Things continued on in this manner until one hot summer night in 1998 when the whole situation “came to light” so to speak.

The evening began no different than most. I was using my inverter, running a jigsaw while remodeling the kitchen. This particular night all of the lights in the house were on, I had the radio “jammin” loudly to entertain me as I worked. The events which followed quickly turned the night into a memorable occasion. It was at this time that my girlfriend stepped outside for a bit of fresh air - she quickly returned, stating, “Michael, it’s awful dark outside.”

Curious as to what was going on, I stopped working and headed outside. Sure enough, all the town’s power was out; not a single light in sight. I smiled inwardly to myself. I told my girlfriend I knew this night was coming sooner or later. We continued standing outside, leaning against the car and staring out across the blackness that had swallowed Adona. I was enjoying the moment, Adona was a sea of darkness while my house behind me had become an island of light, the radio’s music breaking the silence of the evening air.

Suddenly, lightning lit up the sky, and Adona with it. We then noticed all the townfolk in the area surrounding my house were standing outside their homes, staring in our direction. I later learned that lightning had knocked out the town’s power, along with a two county area, and the power has been out for over 30 minutes before my girlfriend and I became aware of it. Apparently, everyone could see our lights, hear the power saw and radio, but no one heard a generator and they were at a total loss to make any sense of the situation. Needless to say, I was amused by the incident. Best of all, the electric company never bothered me again. Let’s just say they “Saw the Light”.

Written by: Karl H Bauman