OASIS MONTANA INC., 436 Red Fox Lane, Stevensville, MT, USA, 59870 Main Web Page: www.oasismontana.com
E-Mail: info@oasismontana.com
406-777-4321 or 4309, or fax 406-777-0830. Hours 8:30 to 4:00 MST, Mon.-Fri. Toll-free *Order* Lines 877-627-4768 or 877-627-4778 (877-OASISMT or 877-OASISPV) *Spring Flier—2010*

Renewable Energy Design and Supply

Oasis MONTANA

04-2010

GREETINGS FROM OUR SOLAR POWERED OFFICE: It's that time of year when gardeners are planting their seeds to prepare for spring planting. After perusing our favorite seed catalogs, we will try some new vegetables as well as those tried-and-true. And at this writing (in late March) we are still enjoying food from the last harvest: squash, cabbage, 'taters, onions, carrots, salsify, and a variety of dried beans and fruit. And did we mention fruit wine—delicious ambrosia from our apple, plum and cherry trees? Mmm...

For those of you who aren't "on line", or are beginning your project, we have an extremely **informative Product Catalog on disc for $10** ($18 out of country)—essential for your energy library! Products, system sizing, pricing, components, importance of energy efficient appliances, battery care, and wind turbines are just some of the topics covered. If you ***are*** on-line, you can see example systems (costs, components and power output) at **www.oasismontana.com/systems.html**

To assist your information input, we've tried to develop as much on-line information as we can. For solar water pumping, see **www.PVsolarpumps.com**; for utility-tied photovoltaic systems, visit **www.grid-tie.com**; for efficient AC appliances, DC 'fridges, coolers and freezers see **www.eco-fridge.com**; for natural and LP gas appliances, see **www.LPappliances.com**. Our main index page is **www.oasismontana.com** and we now offer composting toilets at **www.eco-potty.com**. Visit our web pages and stay a while!

Biggest Grid-tied Solar Electric System in Montana: Oasis Montana's 50 KW Photovoltaic Array

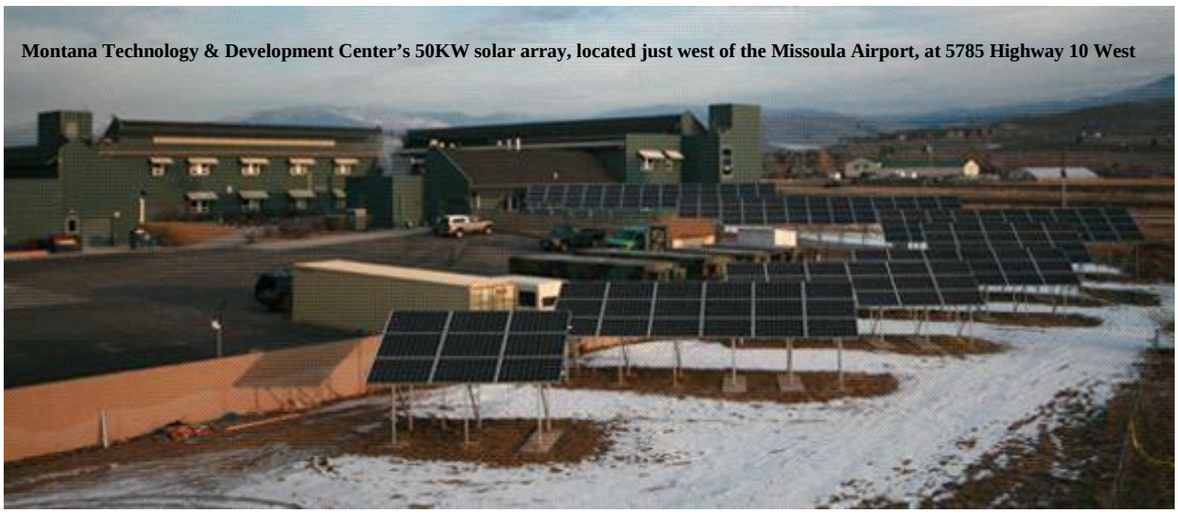
Oasis Montana Inc. is pleased to announce the completion and commissioning of its latest project, a 50 kilowatt photovoltaic (PV) grid-tied power system, located near the Smokejumper Center, at the Missoula Technology & Development Center (MTDC). Oasis Montana, in conjunction with its installer Mark Dickson of Simple Power LLC, broke ground on this project in October; the system at present consists of two hundred and thirty-three, 220 watt American-made Schott solar modules. The two 15KW and one 13KW inverters were acquired from Solectria, a Massachusetts manufacturer. There is also a smaller system (ten 220W modules) installed on a pole mount at the entrance to the Smokejumper Visitor Center, which will be activated pending the installation of underground (and under asphalt) conduit later in April. This smaller system will have its own separate Solectria inverter.

Chris Daum, owner of Oasis Montana, says, "This system is, at present, the largest, grid-tied solar electric system in Montana."

This system has no batteries; in full sun it should put out approximately ~50 KW (or 50,000 watts) of DC power, which is converted into grid-palatable AC power, thus making the MTDC's electric meter spin slower. The first trial run, when the system was powered up February 26th, showed 38KW output on a partly sunny day!

A grant for part of this project will be forthcoming from Northwestern Energy, our local utility provider. Oasis Montana would like to thank Mark Dickson, Brad Stevens, Jeff & Campbell Massey, Jim Chase, Joe Bartuska, Adam Ondra, Jonah Malo, Gabriel Zeak, Apex Engineering, DC Power Systems, the Waterman, Maxus Consulting, New Era Plumbing & Heating, and Eyers Electrical Contracting.

"We hoped to have this completed by mid-December at latest….but to make a long story short, there were several 'administrative delays'. The crew had to excavate through frozen soil in early winter, and then slog through gumbo mud when the ground had thawed in February. But it was a tremendous professional effort by all parties, and the project came together in a timely fashion."



Montana Technology & Development Center's 50KW solar array, located just west of the Missoula Airport, at 5785 Highway 10 West

If you are a Montanan, and are interested in supporting renewable energy in your state, a number of us pro-renewable people started the Montana Renewable Energy Association, established as a non-profit corporation in the year 2000. Our goals include expanding the use of renewable technologies, and educating residents of Montana about the benefits and uses of renewable energy. You can find out more about this organization at **http://www.montanagreenpower.org**.

If you are elsewhere in the U.S., and want more information about supporting renewables, you can check out these organizations: American Solar Energy Society (www.ases.org), Solar Energy International (www.solarenergy.org), Solar Energy Industries Association (www.seia.org), Midwest Renewable Energy Association (www.the-mrea.org/) and the American Wind Energy Association (www.awea.org). Any one of these organizations will appreciate your support, and you will be kept up-to-date on the latest industry trends and technologies (as well as find a state solar association to join!).

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To design a power system for you, we need your power requirements (electrical load information). See our web page for system sizing information and examples of power systems, which are based on the part of the country you're in and how much sunlight you receive. We have design information on our web site, so please feel free to utilize this. *Or, we also offer a product and design information CD for just $10.00 ($18 international)—filled with information for your energy library! We also have a paper catalog, which costs $15 for U.S. residents.*

SOLAR MODULE PRICING—call for availability, freight costs, and quantities (# of modules) on pallets for the best deal. You can't get less than a pallet quantity to get the pallet 'deal'. For larger modules, pallet quantity generally runs between 20 and 40 modules.

	Single module	Per Pallet
SHARP ND-224UC1, 224W	$712	$685 ea.
Sharp NT-175UI, 175W	$583	$560
Sharp ND-130UJF, 130W	$527	$507
Sharp NE-80EJEA, 80W	$369	$339
SANYO HIT195, 195W	$1085	$954
Sanyo HIT190, 190W	$1042	$939
Sanyo HIT Double 195W	$1289	$1198
Sanyo HIT 205, 205W	$1139	$1002
MITSUBISHI UE125MF5N,125W	$758	$699
Mitsubishi UD-175MF5, 175W	$770	$740
SUNTECH STP-175/24, 175W	$549	$525
CANADIAN SOLAR 230W	$799	$749
Canadian Solar 200W	$699	$655
EVERGREEN 210W	$702	$675
Evergreen 200W	$668	$643
SOLARWORLD 230W	$795	$775
KYOCERA KD215GX-LPU	$690	$661
Kyocera KD210GX, 210W	$665	$637
Kyocera KD205GX, 205W	$640	$613
Kyocera KD185GX, 185W	$585	$560
Kyocera KD135SX, 135W	$491	$464
(Some Kyocera modules may have a 6 week lead time)		
Kyocera KC85T, 85W	$460	$414
Kyocera KC65T, 65W	$365	$339
Kyocera KC40T, 40W	$245	$225
Kyocera KS20, 20W	$198	$174
Kyocera KS10, 10W	$119	$105
Kyocera KS5, 5W	$77	$ 64
SOLTECH SOL-1012, 10W	$109	- -
GE-PVp200M, 200W	$675	$653
SCHOTT 220W	$712	$689
YINGLI YL85, 85W	$499	$465

We offer a variety of mounts to suit your project, including A-frame roof or ground mounts, top and side of pole mounts, flush mounts, tilt mounts, RV racks, as well as Zomeworks or Wattsun Trackers. Call for your cost, availability and freight. At this writing, some racks may have a 6 week lead time.

NOTE: the small print — prices subject to change without notice (sometimes for the better!)

CHARGE CONTROLLERS—call for information! We offer most models, including those made by Morningstar, Blue Sky Energy, Apollo Solar, Xantrex, Outback Power, SCI and Stecca.

GAS APPLIANCES: Propane refrigerators, freezers, ranges, cooktops - **www.LPappliances.com** for information.

Servel propane refrigerator, 8 cu.ft. capacity	$1275
Crystal Cold 12 cu.ft. capacity propane 'fridge	$1749
Crystal Cold 15 cu.ft. capacity	$1999
Crystal Cold 18 cu.ft. capacity	$2199
Stainless 18 cu.ft. capacity (w/ black textured sides)	$2299
Crystal Cold 19 cu.ft. (white, black or bisque)	$2299
Stainless 19 cu.ft. (w/ black sides)	$2350
NEW 21 cu.ft. capacity Crystal Cold 'Fridge (Now available in white, black or bisque)	$2399
NEW 21 cu.ft. capacity stainless gas 'fridge	$2450
Blizzard 10 cu.ft. capacity LP chest freezer	$2175
Blizzard 15 cu.ft. capacity upright freezer	$2099
Blizzard 18 cu.ft. capacity upright freezer	$2375
Blizzard 22 cu.ft. capacity upright freezer	$2875

The Servel propane refrigerator can be converted to use natural gas for $200 (includes re-crating). The Crystal Cold refrigerators and Blizzard 10 to 18 cu.ft. freezers can be converted to natural gas for $50; the Blizzard 22 cu.ft. freezer can be converted to natural gas for $100 (more costly as this model has *two* gas absorption units on it).

Peerless Premier gas ranges are available in 20", 24", 30" and 36" widths, with model colors ranging from white, bisque, black and stainless. Even the electronic ignition models will work without power (you can light the burners and oven with a match) -- there's no glow bar in the ovens on these mechanically simple, American-made stoves. All ranges are set up for natural gas but LP conversion kits are included for every model at no extra cost (and you don't have to be Mr. Wizard to figure it out). **No power is no problem** with these gas 'fridges, freezers and stoves!

We also offer propane & natural gas **cooktops**, Italian-made by *Verona*; these professional cooking appliances are available in a wide variety of finishes (stainless, black, bisque and black glass), with two, four and five burner models. **www.LPappliances.com** for pictures and specifications.

Outback Power Components Pricing

Sealed inverters: FX2012T, 2524T, 3048T $2199
Vented inverters: VFX2812, 3524, 3648 $2379
Grid-tie, mobile, marine and export versions available on most of these sine wave inverters.
MATE system display & controller $275
PSX240 Transformer $490
Communications Manager HUB-4, $185; HUB-10 $360
FLEXmax60 MPPT 60A Charge Controller $658
FLEXmax80 MPPT 80A Controller $699
There are *more* Outback Power products than we can list list….call or e-mail for more information or visit their web page at **www.outbackpower.com** You can download their product catalog at **http://www.outbackpower.com/catalog.htm**.

Quotable quotes: In the spring, I have counted 136 different kinds of weather inside of twenty-four hours. - Mark Twain

In spring, at the end of the day, you should smell like dirt.—Margaret Atwood

An optimist is the human personification of spring. - Susan J. Bissonnette

No winter lasts forever; no spring skips its turn. - Hal Borland

Life is like a hot bath. It feels good while you're in it, but the longer you stay in, the more wrinkled you get. - Robert Oustin

A little madness in the spring is wholesome even for the king. - Emily Dickinson

WHO WE ARE and ORDERING INFORMATION: Chris Daum, owner and manager of Oasis Montana, has been in the renewable energy field for 21 years, and Mark Dickson, our technical sales fellow, has been in the field of hydrology and RE systems for 9 years. Our new sales tech, Brad Stevens, lives off-grid in his self-built straw bale home. Our staff offers experience, personalized service, tech support, quality components and good pricing . We are happy to work with your installer, electrician, or contractor, and locally we can install your power system. We provide detailed wiring diagrams with the systems we sell. **TO PLACE AN ORDER**: E-mail or call us for your freight; if you have any questions about your system or product, please contact us. E-mail is easiest and fastest (but we know that you aren't all on line). We accept **Visa/Mastercard** (personal and business checks are fine). For our international customers, we accept bank transfers—e-mail or call us for our banking information. Our summer hours are 8:30 am to 4:30 pm Mountain Daylight Savings Time, Mon. – Fri. If we're on another line when you call, please leave us a message, and we'll get back to you as soon as we can, but you may have to leave a message if we're with a customer or on one of the other lines. **406-777-4321 or 4309** or e-mail us **at info@oasismontana.com** — for tech support on renewable energy systems, e-mail **mark@oasismontana.com** or **brad@oasismontana.com.** We'd be very happy to help you with your power project — send an e-mail or give us a call!

“V” for Victory Gardens and supporting locally grown foods.

‘Victory gardens’ were vegetable plots planted in private residence yards and in public parks in the U.S., England, Canada and other countries during WWI and WWII to reduce the pressure on the national food supply (brought on by the war effort), and to also empower contributors by their work and the produce grown. Since most employable men were in the armed forces, agricultural production fell dramatically, hence the need for consumers to pick up the slack.

Nowadays, food gardening is enjoying a resurgence by those feeling the financial pinch at the grocery store, as well as those concerned about health scares ranging from e-coli outbreaks to importing toxic food products (or those folks simply wanted higher-quality fresh and locally grown food). People are realizing the frivolity (and outright *waste*) of gasoline, water and time for labor-intensive lawns and are sacrificing the monoculture of grass for tasty produce.

If you’re not growing your own (and want access to fresh, local produce), check your neighborhood for a local farmer’s market (or start one!). The amount of fossil fuel that goes into the food on your plate can be depressing, but buying local and what is in season is smart, and many forms of fresh produce can be canned, frozen or dried for off-season meals. During WWII, it was considered patriotic to engage in principles of self-sufficiency and autonomy, and now, it is just common sense to utilize a good sunny spot for a vegetable garden. Even if you only have a sun-lit patio, you can grow peppers, a tomato plant or two and salad greens... and a south-facing window works fine for basic herbs such as basil, parsley and rosemary.

Indeed, now more than ever is a good occasion to use common sense and grow some of your own food, conserve raw materials, help your neighbors and community, and enhance self-reliance. It is always a good time to plant your own ‘Victory Garden” - and achieve success over rising food expenses and embedded delivery costs while enjoying the freshest food that money CAN’T buy!

This year Oasis is offering salsify seeds for anyone who will send me a self-addressed, stamped envelope. Salsify (also called ‘oyster root’) is an easy-to-grow, carroty sort of root crop that will add a rich, meaty taste to soups, stews and roasts. And if you don’t want to dig them at the end of the season, just leave them in the ground and dig as needed.

I confess... I have a thing for chickens. I just LOVE homegrown eggs—there’s just no comparison to those pale-yolked store bought products! In fact, some of my friends call me the Chicken Whisperer….

How to keep chickens happy in Montana winters: cayenne porridge!

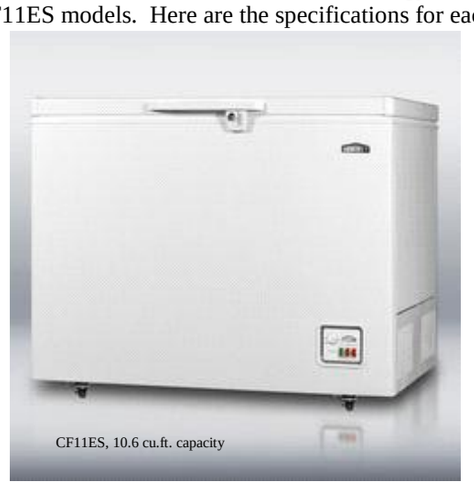
New Energy Star Rated AC Freezers from Summit Appliance:

these new chest freezers are Energy Star rated for best efficiency and lower utility bills. We offer the CF07ES and the CF11ES models. Here are the specifications for each.

CF07ES - 6.4 c.f. capacity **$345** + freight
H x W x D: 34” x 38” x 24”
Energy Usage/Year 214 Kwh

CF11ES - 10.6 c.f. capacity **$489** + freight
H x W x D: 33.5” x 44.24” x 28.4”
Energy Usage/Year 277 Kwh (both models are manual defrost)

These are UL rated, 115VAC/60Hz; Canadian Electrical Safety ULC rating. These chest models are manual defrost, with doors that lift up; condenser location is on the side of each unit and you can adjust the thermostat with a dial. CFC-free refrigerant is R134a, and both of these come with a keyed lock on the lid. Both offer a wire basket for storage, heavy-duty rollers for ease of moving, and are easy to defrost with a front located drain. These efficient freezers offer a one year parts & labor warranty (in the U.S.) and have a five year warranty on the compressor. These ship out of NY state and are not stocked locally.


CF11ES, 10.6 cu.ft. capacity

GREAT GIFT IDEA!

Kill A Watt Meter: The Electricity Detector and Monitor can educate you about your monthly electric bill and help you save a lot of money. You can now be a ‘detective’ and ascertain what appliances are actually worth keeping plugged in. Simply plug in the Kill A Watt meter, connect your appliances to it and Kill a Watt will assess how efficient it really is, showing you the instantaneous power used, and also cumulative energy or kilowatt-hours used.

Kill a Watt, with large LCD display, will count consumption by the kilowatt-hour, same as your local utility. With the help of Kill a Watt you can figure out your electrical expenses by the day, week, month or year on a given device. Kill a Watt can check the quality of your power by monitoring Voltage, Line Frequency, and Power Factor. **Still just $29**.

Now you'll know if it is time to install a power strip on your entertainment center instead of feeding those ghosts loads while you are sleeping or away from home. Or, is that laptop *really* cheaper to power than a desktop PC?

Operating Voltage: 115VAC Max Voltage: 125VAC
Max Current: 15A Max Power: 1875W
Dimensions: 5 1/8” x 1 5/8” x 2 3/8”

EXAMPLE POWER SYSTEMS—for on-grid, remote power and water pumping.

Oasis Montana Example <u>Batteryless Grid-tie Systems</u> -- no batteries = no hassle!

Fronius 2.3 KW residential solar electric grid interactive system

11 Kyocera KD-205W solar modules
1 twelve module top-of-pole mount structure (8" ID SCH80 steel pipe required)
1 50' double ended Multi Contact (MC) cable assembly
1 Fronius IG 2000 240 VAC solar grid-tie inverter
1 Fronius personal display
1 Fronius wireless card (required for personal display usage)

Equipment total = $11,815*

On average this system will produce ~8 kWh per day with 5 hours of full sun.

* * *

14.8 kW commercial solar electric SMA Sunny Boy inverter system

72 KD-205W solar modules
1 UniRac SunFrame flush mounting roof system
6 - 50' double ended Multi Contact (MC) cable assemblies
2 SMA SB6000US 208 VAC 3-phase solar grid-tie inverters
1 Sunny Beam Monitor , and 2 Sunny Beam Antennas

While we endeavor to keep our pricing up-to-date, all prices are subject to change without notice (sometimes for the better). Call for current pricing!

Equipment total + $59,993*

On average this system will produce ~48KWh per day with five hours of full sun.

<u>Off Grid</u> or Remote Example System might include the following components:

2 – 135W Solar Modules
1 – Morningstar TS40 Controller with DVM
4 – Surrette S530 6V 400 amp-hour batteries
1 - set of balance of system components (including DC disconnect, breakers, surge protector, battery temp sensor, fuse & block, and battery switch)
1 – 2X A-Frame Roof/Ground Mount
1 – Xantrex TR1512 Inverter
1 – set battery cables

Small Size System Equipment Total: $5094* …or for a larger system…..

* * *

8 - 170W Solar Modules
1 - Outback Power VFX3524 sine wave inverter
1 - Midnight E Panel (pre-wired)
1 - MATE System Monitor & Controller
12 - Surrette S530 6V 400 amp hour batteries
1 - BOS Components (including combiner box, MC cables, temp sensor, mounting plate)
1 - 8x Top of Pole Mounting Rack
1 - FM60 MPPT Charge Controller
1 - Outback X-240 Transformer
1 - HUB4 Communications Manager
1 - Set of Inverter & Battery Cables

Mid-Size System Equipment total: $18593*

*These prices do not include freight, applicable state sales tax, installation or miscellaneous "widgets" (wire, conduit, electrical tape, caulk, nuts, bolts, anchors, elbow grease, ground rods, etc.) needed to install these systems.

WATER PUMPING SYSTEMS: Lorentz PS150 submersible centrifugal (shallow well, high volume pumping system)

1 24V 175 watt solar module
1 single module top-of-pole mount structure (2" ID SCH40 steel pipe required)
1 15' array-to-controller wiring kit
1 Lorentz PS150 pump controller
1 Lorentz CSJ5-8 submersible centrifugal pump
1 Lorentz low water sensor
1 float switch

Equipment total = $2,226 On average this system will produce ~2,100 gpd (gallons per day) when pushing against 50' of head with 5 hours of full sun.

Lorentz PS1200 submersible helical rotor (deep well, low volume pumping system)

4 24V 180 watt solar modules
1 four module top-of-pole mount structure (4" ID SCH40 steel pipe required)
1 15' array-to-controller wiring kit
1 Lorentz PV disconnect & junction box
1 Lorentz PS1200 pump controller
1 Lorentz HR-03H-2 submersible helical rotor pump
1 Lorentz low water sensor
1 float switch

We are happy to announce that the Dankoff pump line is back in production under its original name. If you are in need of any of their specialty pumps, the SunCentric, Slowpump, Solarforce or Solaram pumps (or parts), do not hesitate to contact us!

Equipment total = $5374 On average this system will produce ~600 gpd when pushing against 760' of head with 5 hours of full sun per day.

Note: the PS600 & PS1200 systems can also be powered by a 120/240 VAC generator or utility power during cloudy periods by using the Lorentz AC power pack @ $505. And here's the chart that shows the cost versus performance of four more Lorentz pumping systems; let us know if any of them will meet your needs. All systems come with detailed wiring diagrams.

Lorentz system description	Head (feet)	Volume (gpd)	Price
PS150 Boost-125 surface mounted rotary vane	100	600	$1,744
PS600 BADU Top12 surface mounted centrifugal	33	4,200	$5,665
PS200 submersible helical rotor	130	1,100	$3,411
PS600 submersible helical rotor	400	640	$5,026

Head values listed include static and drawdown levels along with friction loss. If you have questions about wire or pipe sizes, give us a call. Volume values shown assume a minimum of 5 full sun hours per day and are averages (i.e. your situation may vary somewhat). Prices shown do not include freight, installation, concrete, ground rods, sub-wire or miscellaneous electrical widgets that complete such a system. Visit www.pvsolarpumps.com/water_pumping_questionnaire.html and answer the questions so we can quote a system <u>specific to your project needs</u>.

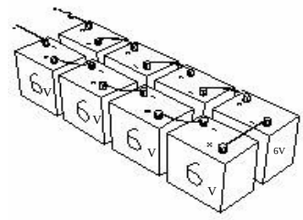
Example systems continued…..”Generator-Inverter Back-up Systems” With the advent of storm-driven power outages (oh, what a harsh winter it was last season for much of the country!), or just poor utility infrastructure, many folks who cannot afford solar at this time find integrating a fuel generator with an inverter and battery bank to be a very reliable and cost-effective way to provide power to important loads during a power failure; you may need a furnace blower in operation, or perhaps some medical equipment ...one of our customers needed his water circulated for his large tropical fish tanks! When a generator is teamed with an inverter and batteries, system efficiencies increase and fuel consumption is lowered. These systems can be designed to be turn-key enough that, when your batteries reach a low voltage set-point, the inverter senses this and turns on the generator to run specific AC loads—while it’s also charging your batteries. We refer to these systems as generator-inverter or gen-verter systems.

When the batteries are fully charged, the inverter turn the generator off and loads continue to be powered off the batteries via the inverter. When the voltage falls, the cycles begins again. This keeps the generator from running 24/7, or from running inefficiently just to power small loads.

The factors determining the size of the generator, inverter and battery bank are influenced by your load requirements. Your inverter must be sized to handle all the loads that will be running at one time, including their starting surge, and your generator should generally be about twice the size of your inverter power rating. This is not to make more money for your generator salesperson, but since you will likely be powering AC loads at the same time, you will need to have more capacity so you are be able to run your loads while charging your batteries. So if you have an inverter in the ~3500 watt range, your generator should probably be in the 6KW to 8KW range to provide ample power.

The capacity of your battery bank will depend on the size of your electrical requirements, how little or now much you desire to run your generator, and how deeply you plan to discharge your batteries each day. In general, we suggest you never take your batteries to less that a 50% depth of discharge (basically you should shallow-cycle your deep-cycle batteries for greatest longevity). Take a look at this example gen-verter system:

1 - Outback Power VFX3648 inverter (48VDC input, 3600W continuous rated 115VAC output)
8 - Surrette S530, 6V 400Amp-Hour Flooded Lead Acid Batteries
1 - Outback Power MATE System Monitor and Controller
1 - Remote Temperature Sensor
1 - Trimetric Meter Battery Monitor with 48V Adapter and mounting box
1 - Midnight Solar E-Panel (safety disconnect and breaker)
1 - Generator Auto-Gen-Start Relay
1 - set of inverter and battery cables, 4/0 gauge
Total cost thus far: **$6474** (costs not including installation, freight, miscellaneous electrical widgets, etc.).



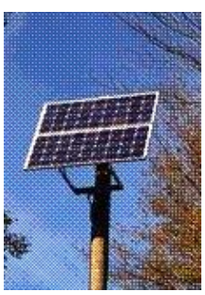
Now *<u>this</u> is a pretty substantial back-up system!* You may not need this degree of back-up power! The fully charged batteries will provide 3000+ watt-hours a day for three days, to 50% depth of battery discharge (enough for an efficient refrigerator, lights, laptop, etc.). The addition of a 240VAC transformer would add about $500 in cost and give you the ability to run up to a 1 HP water pump for a few minutes daily, enough for basic water needs. And, it’s simple to add solar modules to this existing system to reduce or negate your generator’s run time (which is what many of our off-grid customers do, when they cannot make the entire financial ‘bite’ of a PV system at one time—you can add to them incrementally). Oh yes, if you do add as little as a pair of 24V solar (PV) modules to this system, you’ll get that 30% federal tax credit for solar power…for the entire system.

While we do not sell fuel generators, we sell enough inverter/chargers that we have basic suggestions if you plan to purchase one as part of a gen-verter system. A low speed generator (1800 versus 3600 rpm) will generally last longer; a remote 2-wire start capability is a big plus if you want your inverter system to automatically start your generator if battery voltage is low or if a large AC load kicks in. Fuel choices depend on what’s readily available; diesel models typically last longer than gasoline, NG or LP units, but they are **much** dirtier and the fuel gunks up if stored for too long. A lot of our customers go with LP, since they may already be using propane for other heating loads, plus it’s cleaner and all around less toxic. Feedback from our customers indicated that Onan, Kabota, and Honda models tend to be quite reliable. Like all mechanical beasts, generators require periodic maintenance so it makes sense to purchase one from a reliable local dealer who can offer that kind of service. For a basic diagram of a generator-inverter system, see **http://www.oasismontana.com/gen-verter.html**.

EXAMPLE ENPHASE SYSTEM: AC Solar modules? Yes, these little inverters mount right on the back on one of the bigger solar panels (in the ~200 watt range), and can be readily parallel-wired to increase the size of your system. So, there’s no string sizing calculations, or trying to figure the voltage needed for a larger grid-tie inverter. You can simply add more modules with their own built-in inverter, as money and space allows! How simple is that?

8 - 220 watt solar modules
8 - M190 Enphase Micro Inverters
1 - Enphase Envoy System Monitoring Service (5 year)
Solar Mount Rack System
Enphase Envoy Monitoring Unit
30 Amp AC Disconnect
Total above components: **$8858** (before freight, installation, miscellaneous electrical widgets, wire runs, etc.)

With the Enphase micro-inverters, you can start with just one solar module and add as your finances will allow. Call if you need more information on these individual units, all configured for 115VAC output! Or visit **http://www.enphaseenergy.com/**



30% FEDERAL TAX CREDIT —and reduced solar module pricing make this the ideal time to get your PV system up and running! Solar modules have come down as much as 35% in the past year, so check our pricing page for what modules best suit your power project (or give us a call). Since the paperwork involving these incentives can be a little confusing, peruse these online sources for more information.

http://www.dsireusa.org for a state-by-state database of all incentives available to U.S. consumers.

http://www.energy.gov/media/HR_1424.pdf This link summarizes the energy tax incentives of the Emergency Economic Stabilization Act of 2008.

http://www.energystar.gov/index.cfm?c=tax_credits.tx_index This lists federal tax credits for energy efficiency.

http://www.awea.org/legislative/american_recovery_reinvestment_act.html This site summarizes grant programs and wind energy productions tax credits, as well as tax credits for advanced energy manufacturers.

And here’s **http://www.irs.gov/pub/irs-pdf/f5695.pdf** , the form for the personal residential tax credit.

Renewable Energy and Alternative News Bites: Natural Gas 'Clean & Green'? While natural gas may be a bridge or transition fuel to a happier future, toxic frack fluid spills indicate that all is not rosy in the world of natural gas extraction; read the story at **http://www.commondreams.org/headline/2010/01/04-8**

Nation's largest dairy farm is turning its cow poop into biodigested gas. Three Portland entities, Bonneville Environmental Foundation, NW Natural and The Climate Trust – a nonprofit that puts together carbon offset projects – are teaming up to tackle the manure problem at Threemile Canyon Farms in Boardman, Oregon - the largest dairy farm in the country. Its 41,000 cows produce more than a million pounds of milk each day...and a whopping 120 pounds of manure per cow per day. Since late November, some of that manure is serving as fuel for a biodigester designed by J-U-B Engineers Inc. of Boise, Idaho. If the project is successful, up to 15 biodigesters could be deployed at the farm. **http://www.portlandtribune.com/sustainable/story.php?story_id=126565121898529500** for the lowdown.

New Assessment Shows That U.S. Wind Resources Are Larger Than Previously Estimated: **http://www.windpoweringamerica.gov/filter_detail.asp?itemid=2542** A new assessment from the National Renewable Energy Laboratory finds that onshore U.S. wind resources could generate nearly 37,000,000 gigawatt-hours annually, more than nine times current total U.S. electricity consumption. The U.S. is barely tapping this vast resource: current wind installed capacity is 35 GW in the U.S.

Looking for energy rebates and efficiency tax credits in your area? Here's a nice website that offers information for various incentives and loans based on your location in the U.S.: **http://www.energysavvy.com/rebates/**

Contamination from Coal Ash Waste Is Worse Than EPA Says. Coal ash waste contamination nationwide is far worse than indicated by a new Environmental Protection Agency tally, with dozens more ash-waste ponds and landfills also leaching toxins into streams and drinking water, according to a new study by the groups Environmental Integrity Project and Earthjustice. At least 31 "new damage cases" not listed by the EPA in its end-of-the-year tally of 70 coal-ash pollution sites are identified and their pollution profiled in the report. **http://news.yahoo.com/s/csm/20100225/ts_csm/282784.**

Kyocera Solar is to start manufacturing solar modules in the U.S. to serve this country's growing demand for clean energy. The new manufacturing plant will start up in San Diego at Kyocera's Balboa Avenue facility during the first half of 2010, with an initial production target of 30 megawatts per year. The company is expecting to double its production of solar cells in the two fiscal years from 2009 to 2011. **http://www.solarbuzz.com/News/NewsNAMA213.htm**

Nuclear Madness and the Future of 'Clean' Energy: President Obama's 2011 budget increases the Department of Energy loan guarantee for nuclear projects by $36 billion, to a total of $54.5 billion. Renewables' potential share pales in comparison. The budget provides around one tenth of that amount for solar, wind, and other renewables -- with just $3 billion to $5 billion of loan guarantees for energy efficiency and renewable energy projects. To the budget's credit, it also includes a 30 percent tax credit for qualified investments in new, expanded, or re-equipped advanced energy manufacturing projects, allocating $5 billion to provide this tax credit to said RE projects. But if all of the nuclear money is allocated, admittedly a big if, it would leave solar, wind and energy efficiency far behind. **http://planetark.org/wen/56985** for more information. It's interesting that many supposed 'fiscal conservatives' support new nukes, (read more on that story here: **http://articles.latimes.com/2009/nov/28/opinion/la-ed-nuclear28-2009nov28**) even though they are vastly expensive, inefficient, uninsurable and dangerous source of energy that requires *massive* taxpayer bailouts. It hardly seems fiscally sound, does it?

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Toll Free: 877-627-4768 or 877-627-4778
Fax: 406-777-0830

Renewable Energy

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R.E. News Bites continued…. South Lags Behind Country in Energy Efficiency: **http://atlanta.bizjournals.com/atlanta/stories/2009/11/23/focus1.html?b=1258952400^2478451** for the story. The South is lagging behind other areas of the country in energy efficiency, which could save the region *millions* of dollars in the next decade. The South is one of the last regions in the country to embrace energy-efficiency programs and to develop an "energy-efficiency culture of consumer behavior." Further, it has the potential for a 1 percent reduction in energy costs every year for the next decade, which would significantly reduce its carbon emissions, postpone the need for new power plants and improve air quality. The South accounts for 44 percent of the nation's total energy consumption, while it has 36 percent of the U.S. population.**;** 77 percent of its energy consumption comes from fossil fuels.

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Why 'buy American' is not the whole answer: visit this site for some info about energy policies, what needs improvement, and why we lag behind other countries in clean energy technologies: **http://blogs.forbes.com/energysource/2010/03/08/beyond-buy-american-the-u-s-needs-a-clean-energy-strategy/**

QUOTABLE QUOTES: Fall seven times, stand up eight. --Japanese proverb

As sure as spring will follow the winter, prosperity and economic growth will follow the recession. --Bo Bennett

The spring has come; the earth has gladly received the embraces of the sun, and we shall soon see the results of their love. --Sitting Bull

Real intelligence is like a river; the deeper it is, the less noise it makes. --Barbara Delinsky

We load up on oat bran in the morning so we'll live forever. Then we spend the rest of the day living like there's no tomorrow. --Lee Iococca

The unleashed power of the atom has changed everything save our modes of thinking and thus we drift towards unparalleled disaster. --Einstein

I love spring everywhere, but if I could choose I would always greet it in a garden. --Ruth Stout

I hope we shall crush in its birth the aristocracy of our moneyed corporations which dare already to challenge our government in a trial of strength, and bid defiance to the laws of our country. --Thomas Jefferson, 1816

If we had no winter, the spring would not be so pleasant; if we sometimes did not taste of adversity, prosperity would not be so welcome.
--Anne Bradstreet

If you've never been thrilled to the very edges of your soul by a flower in spring bloom, maybe your soul has never been in bloom.
--Terri Guillemets