The Power House Times

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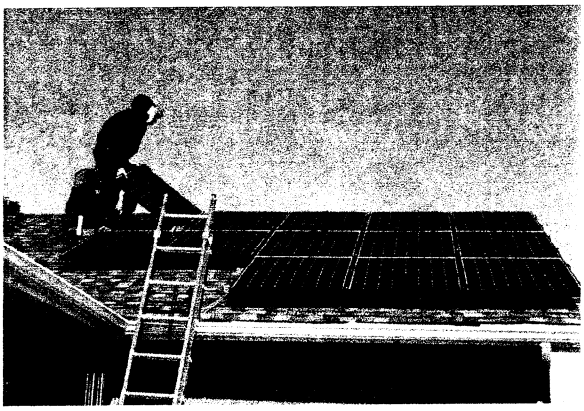
Grid-Tied Solar Systems

What's the juice on solar today ?

Solar seems to be in the news virtually everyday now. So what is grid-tied solar? A grid-tied solar system produces electricity whenever there is sunlight striking the solar panels (modules). The panels produce DC (Direct Current) electricity which must be converted to AC (Alternating Current) for the home or business. An inverter makes this conversion and synchronizes with the utility grid's frequency and phase. A grid-tied inverter does not use or require batteries, so the system operates much more efficiently while costing much less (this also eliminates battery maintenance and replacement.) The electricity that is produced is fed to the customer's main electrical panel and meets, exceeds, or supplements the electrical load. For example: if a solar system produces half of the home's electricity, the other half would be supplied by the utility/grid. If the solar system is producing 100% of the home's electrical load, then the utility meter will stop. When a solar system produces more electricity than the home is using, the meter will stop and then spin backwards! The electricity sent back to the utility is "banked" and used monthly towards the payment for electricity purchased from the utility (night-time, cloudy days, etc.) If there are "banked" kilowatt hours left over at the end of the year, you are paid for those excess kilowatt hours and the "bank" is zeroed for the beginning of the year.



Watts First?

So how many watts does it take to make your home or business solar? The first step is to determine the average annual electrical kilowatt hour (kWHr) usage. You can total the monthly kWHrs from 12 months of electrical bills or contact your utility company for that information. The formula is: Annual Kilowatt Hours ÷ Days in the Year ÷ System Efficiency ÷ Average Sun Hours.

For example: if your annual kWHr usage is 7,070 kWHrs the formula would look like this: 7,070 ÷ 365 ÷ .85 ÷ 5.7 = 4.0. This would mean you would need a 4.0 kilowatt (or 4,000 watt) solar system to provide 100% of the annual electricity used.

Call the experts at Power House Solar & Wind for more information, free on-site survey, system quotes, rebate and tax incentive information.

Black Hills

On-Site Solar Program

Black Hills is offering its Colorado electric customers incentives for installing photovoltaic (PV) solar power systems.

Requirements and incentives differ according to the size of the PV system. Smaller business and residential customers may want to consider a PV system up to 10 kilowatts. Higher usage customers may want to consider a system greater than 10 kilowatts, up to as much as 100 kilowatts.

Rebates and REC payments for PV systems up to 10 kilowatts will be calculated as follows:

The total size of the PV array, in DC Watts, will be multiplied by $2.00 per Watt to determine the rebate. For example, a 4.0 kilowatt (4,000 Watt) system will receive a rebate of $8,000.

In addition to the rebate, PV systems up to 10 kilowatts will also receive a one-time REC payment. Current REC (Renewable Energy Credit) payments are $2.50 per DC Watt, when installed system configuration is within 90% of optimum (180° South, 38° tilt, 0% shading.) The 4.0 kilowatt system would qualify for a $10,000 REC payment for a total up-front reimbursement of $18,000.

Program information and annual usage available from Black Hills at: 719-546-6406 and on the internet at: www.blackhillspv.programprocessing.com

Federal Incentives

30% Income Tax Credits

The federal Energy Policy Act of 2005 established a 30% tax credit up to $2,000 for the purchase and installation of residential solar electric property.

In October 2008, the Energy Improvement and Extension Act of 2008 extended the tax credits through December 31, 2016. A new tax credit for small wind-energy systems was also created. In February 2009, the American Recovery and Reinvestment Act of 2009 removed the maximum credit amount limit for all eligible technologies placed in service after 2008.

For all federal incentives, forms and guidelines, visit the DSIRE (Database of State Incentives for Renewables & Efficiency) website at www.dsireusa.org.