

Renewable Energy: energy resources solutions that support a sustainable environment

At Runestone Electric Association we believe that alternative energy sources and energy conservation are important steps in addressing our future energy needs. If you are planning to tap into alternative energy sources or if you're just curious about how alternative energy works, this brochure is intended to help answer your questions and provide you with introductory background information.



Rick Banke, CEO

Purchasing an alternative energy system is a major investment. I strongly encourage you to do your homework: talk to others that have a system; conduct thorough due diligence on economic benefits, legal issues, zoning regulations, operating and maintenance costs; and get references on vendors before making a purchase. When you've done all of the necessary background work and have made a decision to purchase, we can assist you in the process of connecting your system to the electric grid and will provide you with a contract to purchase the power you produce.



Net Metering

A net metering program allows the electric meters of customers with generating facilities to turn backwards- and send electricity back into the grid- when a customer's generator produces more energy than is used. Net metering allows customers to offset their electricity consumption over the entire billing period, not just instantaneously. This offset enables customers with generating facilities to receive retail prices for the excess electricity they generate.

Wind

Determine your wind potential

Consider installing a wind recording device for at least one year to determine the wind potential for your site. As you go up in the air the wind gets stronger and more consistent.

Interconnecting with your utility

In Minnesota, your utility is required to allow you to connect any turbine 40 kW or less. Working with your utility before you start construction can save you money.

Financing Considerations

Small wind turbines can be expensive. You can expect to pay \$3,000-\$5,000/kW based on size and location. As an example, a 20 kW turbine may cost \$65,000 - \$85,000.

Incentives

There are various federal and state tax incentives, grants and low cost financing options available. See the back of this brochure for more details.

Return on Investment

Returns will vary based on wind quality, incentives and project financing. In a cash purchase the typical return is 5-7 percent after incentives.

County Regulations and Permits

Contact your local county to determine if they will allow a wind turbine to be built on your property.

Electrical inspection

Minnesota requires all small energy producers to follow the national electric safety code. Wiring must be performed by a licensed electrical contractor.

Insurance

Contact your agent before you begin construction. It is a good idea to protect yourself against liability as well as properly insuring the equipment.

Dealers

You need to do your own "due diligence" investigation when considering a dealer for your project. Ask your dealer for references and a list of projects they have completed. For a comprehensive list of dealers see the MN Department of Commerce website.



Solar Thermal

Solar thermal energy

Solar thermal technologies use sunlight to provide heat for domestic hot water and space heating. These systems are generally divided into passive designs, which absorb and store the sun's heat, and active systems, which use collector panels and mechanical components to provide thermal energy to a building. Solar thermal systems are meant to supplement a building's primary hot water and space heating systems; usually not intended to replace them.

Potential Energy

A typical solar water heating system in Minnesota can provide 50 to 75% of total energy required for hot water. In Minnesota solar thermal can reduce a buildings need for other energy sources by up to 30%.

Cost

Solar hot water systems cost \$6,000-\$10,000 for a typical residence. For a residential system that employs both water and space heating, the range is \$18,000-\$25,000.

PV Solar

Solar Electricity

Solar electricity or photovoltaic is the use of sunlight to generate electricity. The single biggest barrier to solar electricity is the initial cost of installation; however, there are significant incentives available for PV solar.

First Step

Before investing in a solar electric system reduce your homes energy consumption by increasing efficiency. Increasing energy efficiency is more cost effective and will reduce the size of the solar energy system needed.

Benefits

Solar electric systems have low maintenance and can produce electricity for 30-50 years. After your initial purchase, your return on investment (in future years) will improve as electric rates increase.

Cost

The average cost of a typical home solar electric system is approximately \$10 per watt. A two kilowatt system would be \$20,000 before incentives.



Ten Steps to a sound decision

Questions for a potential contractor / dealer:

1. Does the company have experience installing grid-connected systems?
2. Does the company use licensed and certified contractors?
3. Does the company provide assistance in evaluating the potential electric production for your site and determine economic payback on your investment?
4. Does the company have any consumer complaints, judgments, or liens against it?
5. Will the company help with the applications required by the local building permitting agency and the utility for grid-connection systems?
6. How much, if any, of the work will be contracted out?
7. When will construction begin and how long will it take?
8. What type of warranty is offered? Will the company provide a performance bond?
9. Does the company do service and repairs on the equipment?
10. Will the company provide references of previous installations and can I contact them?

Resources

Wind

Minnesota Department of Commerce / Energy Information Center
<http://www.energy.mn.gov>

American Wind Energy Association
<http://www.awea.org/>

Office of Energy Efficiency and Renewable Energy
<http://www.eere.energy.gov>

Windustry
<http://www.windustry.org>

Solar

Minnesota Department of Commerce / Energy Information Center
<http://www.energy.mn.gov>

Solar Electric Power Association
<http://www.solarelectricpower.org>

Office of Energy Efficiency and Renewable Energy
<http://www.eere.energy.gov>

Grants & Tax Incentives

Minnesota Department of Commerce / Energy Information Center
<http://www.energy.mn.gov>

USDA Rural Development
<http://www.rurdev.usda.gov/mn/>

Database of State Incentives for Renewables & Efficiency
<http://www.dsireusa.org>

Energy Star®
<http://www.energystar.gov>



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Renewable Energy

Resource Guide for Small Energy Systems



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