

# What is a solar site assessment?

A solar site assessment is a document, prepared by a trained professional, which:

- Indicates the practicality of a solar installation on the site in question
- Provides advanced warning of all costs and jurisdiction authority requirements like engineering, permitting and necessary service size improvements
- Will uncover and indicate potential pitfalls by analyzing future concerns like vegetation growth, roofing conditions, existing equipment problems, etc...
- Determines utility interconnection and insurance requirements
- Identifies energy improvement possibilities
- Provide a load analysis and use this information to size your system
- Inform you of all rebates or incentives and provide financing or loan information
- Indicate which system types and configurations will best fit your needs
- Provides you with a production and financial analysis
- Provides information sources for you to research your project further
- Provides a list of the next steps to take

# Where can I find a Site Assessor?

[http://www.mreacsa.org/index.php?option=com\\_content&task=view&id=31&Itemid=43&state=MN](http://www.mreacsa.org/index.php?option=com_content&task=view&id=31&Itemid=43&state=MN)

[http://mnrenewables.org/site\\_assessments](http://mnrenewables.org/site_assessments)

<http://www.century.edu>



# What should I expect when the Site Assessor comes to do the assessment?

The assessor will require a minimum of 12 months utility history:

- Electric bills
- Natural gas bills
- Propane bills
- Fuel oil bills
- Lists of chord wood purchased
- Lists of wood pellets or corn purchased
- If bulk purchases were made, estimate how much fuel was used over a given time

**MOUNTAIN ELECTRIC COOPERATIVE**  
 18000 BIRCH CITY P.O. Box 100  
 1004 S. Church St. Mountain City, TN 37583  
 423.731.1400

**NEWBERRY**  
 P.O. Box 1040  
 1075 E. Poplar Highway Mountain City, TN 37587  
 423.732.0181

**ROSEN BROTHERS**  
 P.O. Box 100  
 8001 Hwy 11 E. Mountain City, TN 37587  
 423.733.0001

ACCOUNT NUMBER	ACCOUNT NAME	DATE	AMOUNT	DATE	AMOUNT
1000000000	1000000000	01/01/2010	100.00	12/31/2010	100.00
STATE TAX					
TOTAL CURRENT BILL DUE (SEE PAGE 2)					
PREVIOUS AMOUNT DUE					
TOTAL AMOUNT DUE					

**READING CODES:**  
 R = READ  
 F = FURNISHED  
 M = METERED  
 P = FULL  
 P = PROXIMATE  
 L = ESTIMATED  
 S = OTHER

**TO REPORT A POWER OUTAGE**  
 If service is interrupted at your residence, your utility should have been restored within 24 hours. If not, please call the number on the top of this bill.

# What to expect during an assessment (cont.)

There will be an interview process.  
Some of the types of questions might include:

- Why are you considering solar?
- Do you have any particular concerns like comfort or indoor air quality?
- Do you leave frequently for whole weekends or take frequent extended trips?
- What temperature water do you wash your clothes in?
- What temperature do you keep the thermostat in summer and winter?
- And many, many more...



# What to expect during an assessment (cont.)

The assessor will need to enter and see nearly every room, including the attic and utility room. They will be looking for ways to save energy and chases or routes to run wires and plumbing. Expect them to be photographing areas that will help them document their visit.



# What to expect during an assessment (cont.)

The assessor will then turn to the outside of the building. The primary task outside of the building is to determine site feasibility. They will be measuring for a solar window with a solar pathfinder or similar device. Sometimes this requires climbing on the roof and sometimes it can be done from the ground.

The assessor should inform you when they are finished and let you know when you can expect their final report.



Consider an independent site assessment from a certified site assessor.



An independent site assessor will provide an unbiased report and knows what to look for when visiting your site.

# What's the next step?

## Research, Research, Research!



Search the internet, visit local solar installations, take a solar workshop or class, join a renewable energy organization



**Minnesota Renewable Energy Society**

*connecting minnesotans with renewable energy resources*



Once you have a good understanding of what it is that you are looking for, start the search for a system designer and installer.

Where can I get a list of installers?

<http://www.mnseia.org/>

<http://mnrenewables.org/>

<http://www.thecleanenergybuilder.com/>

<http://www.nabcep.org/>

# Find someone that can answer your questions.



You need to have done your research and assembled a list of questions before interviewing your installer candidates.

# Warranties add a level of security.



## **Contractor Requirements:**

1 year free from defects caused by faulty workmanship and defective materials.

2 years free from defects caused by faulty installation.

## **Component Warranties:**

PV modules are usually 25 years.

Inverters are usually 10 years, with some now going to 25 years.

Thermal collectors are usually 10 years.

A solar system is a very large investment that will, many times, end up generating an income.



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Because it is such a large investment, a thorough analysis of system sizing, costs and benefits is essential.

# A good installer will not ignore simple energy efficiency solutions.



It is possible to substantially reduce the size of a solar system by decreasing the current load and therefore reducing system cost.

On the hand, the installer can sell a larger, more expensive system if consumption reduction is ignored.

PV systems produce electricity  
for your home or business.



System size depends on the goal  
that you're trying to accomplish

# PV Module Efficiency

Typically, 14% to 20% depending on crystalline structure type, but look at dollars/kwh of production.

# Inverter Efficiency

Typically 90% to 95%  
Look at warranties



# Shade Tolerance





# Solar Thermal System Performance

Azimuth, tilt and shading

System designs

Collector efficiencies

Heat exchanger efficiencies

System power consumption

Storage Capabilities

System fluid composition

Pipe sizing

# **System Monitoring**

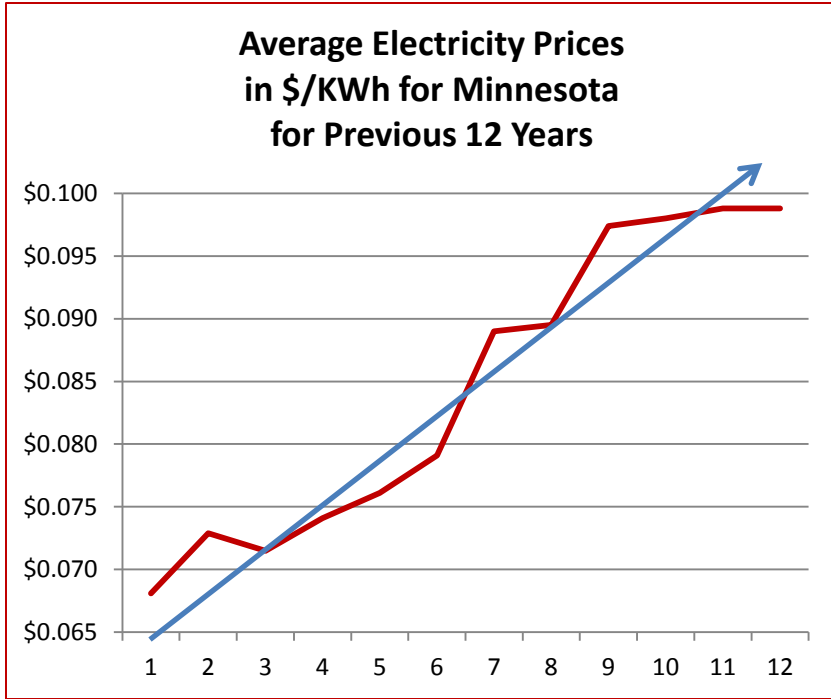
## **On site monitoring**

A monitoring system that allows persons to view system production on site only.

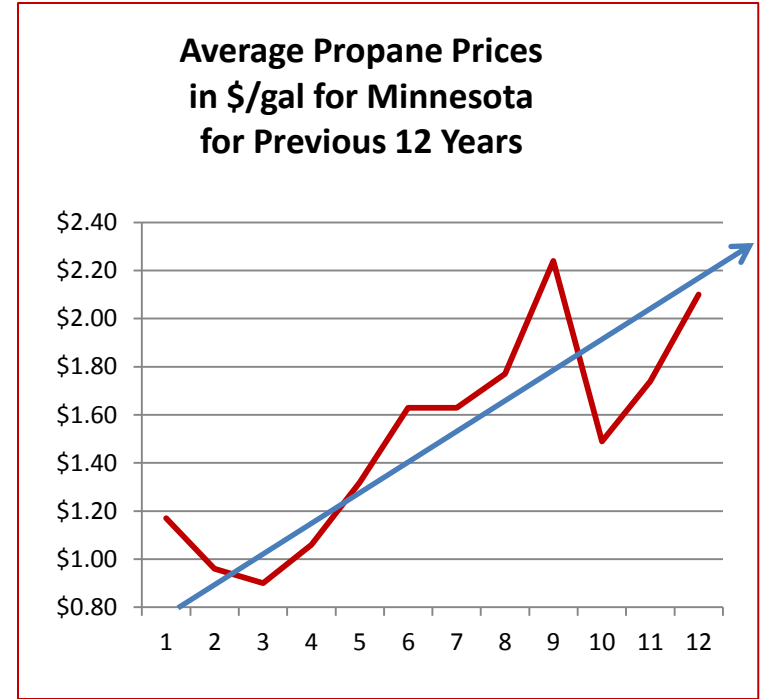
## **Web based monitoring**

A monitoring system that allows authorized persons to view system production and perform trouble shooting over the internet.

# Energy Inflation Rates



Data provided by: Citizens League



Data provided by: MN Dept. of Commerce

# Financial Analysis



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Simple Payback

Return on Investment

Lifetime Cost of Electricity

Total Cost of Ownership