EXPLORE solar energy technology

Angling catches the Sun

No matter what type of solar energy technology you choose, your system will work most efficiently when the solar panels are perpendicular to the Sun. The challenge is tracking the Sun as the seasons change.

Solar installer Ralph Jacobson explains how a solar tracker improves a system's performance by following the sun across the sky.

Courtesy MRES

Solar electric systems are used year-round.

Courtesy MRES

Solar heating systems are used primarily in the winter.

Trackers improve performance

Mounted on a tracker, your solar electric system automatically follows the Sun through the sky all day, all year. In Minnesota, a solar electric system on a tracker can generate 15% more electricity than if it was stationary.

Tilting by hand's worth the work

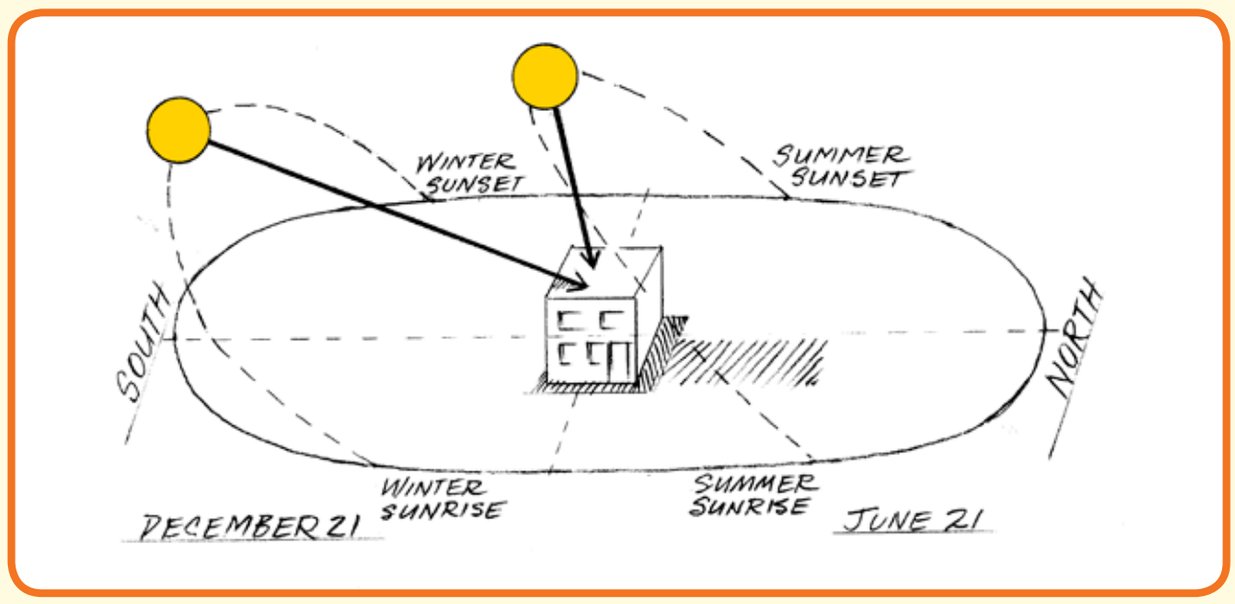
If a mechanical tracker won't work for you, mount your solar electric panels on an adjustable rack. Changing the angles by hand a few times a year to match the Sun's seasonal height in the sky is simple and takes just a few minutes.

Point thermal systems towards winter sun

Once solar hot water systems are installed they can't be moved. Mount them at a 45 to 60 degree angle to catch the low winter sun.

Sun's seasonal path

Understanding how the Sun moves helps you plan your solar energy installation.



Minnesota Renewable Energy Society (MRES)
www.mnrenewables.org

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Solar energy systems harness the Sun

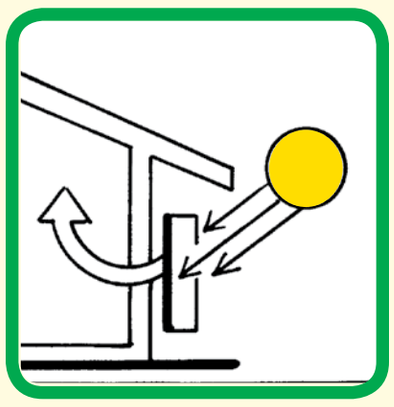
Understanding three basic solar energy systems helps you begin exploring and experimenting with solar energy technologies. Here's a glimpse at what they do and how they work.

Tapping solar energy amazes

MRES volunteers feel hot water heated by solar thermal tubes. Solar electric panels on the right make electricity.

Courtesy MRES

Solar thermal panels heat air

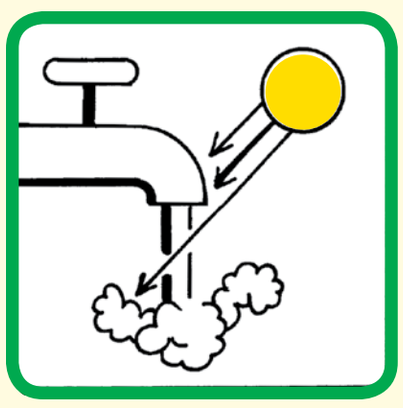


How it works

Solar thermal panels mounted on a wall or roof heat air that is moved through ducts to the living space by a small blower. When the air cools, it re-enters the panel through a duct placed near the floor, is re-heated and blown back into the room near the ceiling.

Courtesy MRES

Solar thermal tubes heat fluid

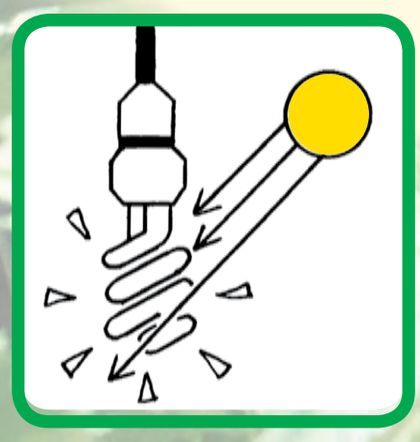


How it works

Solar tubes heat a non-toxic antifreeze. The heated antifreeze can circulate through tubes imbedded in a concrete floor or can pass through a heat exchanger to transfer its heat to a water tank for storage. The heated water can then provide heat to other systems, like a forced-air furnace or domestic hot water heater.

Courtesy MRES

Solar electric (photovoltaic) panels make electricity



How it works

When sunlight strikes these panels, they generate electricity that is carried by wires through the system components to the fuse box.The electricity can be used immediately or stored, either in batteries or on the grid.

Courtesy MRES

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