



Solar Power



For centuries, mankind has devised innovative ways to harness the power of the sun. From sun dials to solar powered gadgets, new technologies are being developed every day. Scientific advances during the last two and one half centuries have propelled solar technology into mainstream everyday applications.

What is solar power?

Quite literally, solar power is power or energy derived from sunlight. Sunlight can be directly utilized, converted in electrical energy, or converted into mechanical energy. Solar power is an important source of sustainable alternate energy.

Three common types of solar power are:

- **Passive Solar** – Passive solar technologies capture sunlight to heat and light buildings, allowing energy costs to remain low. Unlike active solar systems, passive solar design does not involve the use of mechanical or electrical devices, such as fans or pumps. A common structure that utilizes passive solar energy is a greenhouse. Just as with a greenhouse, schools, homes, and office buildings can take advantage of passive solar energy by including more windows in their design, using materials that help trap or pass heat, and constructing buildings at strategic angles so they will receive the most natural sunlight throughout the day.
- **Photovoltaic (“Solar Cells”)**–The Photovoltaic cell, also referred to as a PV device or “solar cell,” has the ability to directly convert solar energy into electrical energy. Once the electrical energy is generated, it has multiple commercial and residential uses. From wrist watches and small calculators to electric water pumps, photovoltaic cells can prove to be a useful power source.
- **Solar Thermal (Electric Power Plants)**–Unlike photovoltaic energy, solar thermal power is not generated directly from sunlight. Instead, the sun’s rays are concentrated and used to heat special fluids, which are then passed through pipes to heat water. The heated water produces steam which will provide mechanical energy through use of a turbine. That mechanical energy can then be converted into electrical energy by connecting the turbine to a generator. Various applications exist for power derived from solar thermal energy, including heating swimming pools, electric water heaters, and supplemental heating for homes.



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Residential Considerations and Safety Precautions

Many homeowners find solar power advantageous for both its cost effectiveness and environmental friendliness. Before you decide to install a solar power system for your home, there are a number of important considerations:

- Do your homework. Research the various solar power systems and installation options before investing.
- Assess whether your property is a good site for solar. In general, you will need an open rooftop space or land that is free of shade for at least five hours per day. Wind speeds, heavy snow, and salt water can also affect your solar array.
- Investigate local building codes, zoning ordinances, covenants, and special regulations pertaining to solar power systems.
- Check with your local utility company to determine the requirements and costs or rebates for connecting your system to the grid.
- Before adding an active solar system to your home, have your home electrical system evaluated by a licensed, qualified professional to ensure it can support this new technology.
- Always hire a professional to install and repair solar panels at your home or workplace. Specific licensures and qualifications must be obtained before attempting to install solar equipment.
- Building, electrical, and plumbing codes also apply to solar power installations. Ensure your installer requests the appropriate permits and follows all applicable codes.
- Solar power systems present unique safety challenges for fire fighters. In the event of a fire, inform all officials of the use of solar panels as well as identify the type used. This will help them mitigate the risks.

Did you know?

If you generate your own electricity using a renewable energy source, like solar or wind energy, you may be able to sell your excess electricity to the utility company. Requirements vary by state and utility.