Think GAIA

For Life and the Earth

SANYO

SANYO is a proud sponsor of the New American Home '09

SOLAR POWER ANSWERS

SOLAR IS CLEAN, RELIABLE ENERGY.

In spring 1953, Gerald Pearson, a physicist at Bell Laboratories, made the first solar cell. Two other scientists refined Pearson's discovery and created the first solar cell capable of powering everyday electrical equipment. The ability to harness the limitless power of the sun was a technological breakthrough. Today, solar cell technology has improved remarkably, and costs have dropped to a level that allows people like you, across the world, to produce clean, reliable electricity.

WHAT IS A SOLAR SYSTEM?

A solar system converts sunlight to electricity and is used to power electronics such as computers, lights, and household appliances.

HOW DO SOLAR SYSTEMS WORK?

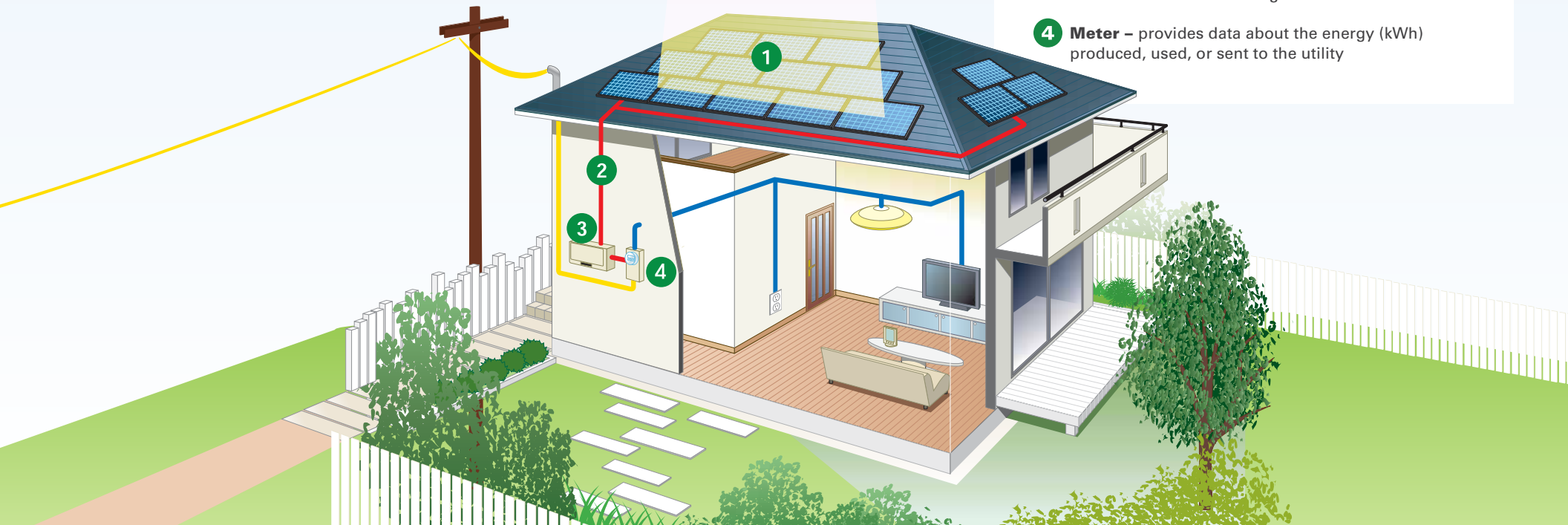
Solar systems work on the free and abundant energy of the sun. Most places have plenty of solar energy available to meet some or all of your needs. Homes and businesses located in areas with ample sunlight, where electricity prices are high, or where access to the electric grid is difficult, unstable or unreliable are all ideal areas to install solar systems. Homes and businesses near a coast with frequent fog, in areas of constant rain and clouds, or that have very low electric rates are less desirable for solar systems.

Solar systems work when sunlight strikes a solar photovoltaic module (called a solar panel, or PV panel) and excites electrons within the silicon solar cells. The electrons exit through wires on the back of the solar panel and enter your house through your circuit breaker and electric meter. The solar electricity is used immediately to power electronics and appliances within your house.

Often, solar systems produce more electricity than your home needs. Excess electricity is sent back to your electric utility. During the night, power for your house is provided by your utility. Solar systems have no moving parts and incur no mechanical wear and tear. Your solar system will last for many years with only minimal maintenance.

There are many different designs for solar systems, including rooftop systems, trellises, carports, deck coverings, awnings, and more. Solar panels can be arranged to follow the contours of your rooflines and blend in with the look of your home or business.

1. **Solar Panels –** change sunlight into direct current (DC) electricity.
2. **Wiring –** provides a path for electricity to flow
3. **Inverter –** changes DC to AC electricity used in residences & other buildings
4. **Meter –** provides data about the energy (kWh) produced, used, or sent to the utility



HELP THE ENVIRONMENT...

- No global warming impact
- No power generation noise emitted in your neighborhood
- No emissions, air pollution, or smog contributions for clearer skies and visibility
- No impact on local fisheries, wildlife and natural habitats
- No depletion of Earth's fossil fuels
- No harmful pollutants or waste discarded to landfills or oceans
- No drilling or pipelines in sensitive ecosystems

Courtesy of Solar Living Design

Courtesy of EI Solutions

- No soil, water, or atmosphere contamination
- No toxins, toxic spills, or hazardous waste to clean up
- No valuable groundwater used
- No corrosive materials, waste heat, or acid rain by-products
- No risk of power plant meltdown, flood, or explosion
- No smokestacks, industrial turbines, or nuclear towers spoiling the skyline

...AND YOUR COMMUNITY.

Energy Independence – Use of your native resource, sunlight, reduces your community's reliance on foreign sources of oil and fuels.

Wealth – Money invested in solar systems remains in local communities, and generates savings for residents for 30+ years.

Security – Your solar system reduces your community's vulnerability and the effect of failure of central power plants.

Quality Jobs – More jobs are created from solar electricity than conventional sources of electricity by 7 to 1 (Source SEIA).

Price Stability – The cost of sunlight never varies with demand and cannot be manipulated by markets. Communities, businesses, and homeowners of solar systems enjoy a hedge against volatile market fluctuations, rising energy rates, and spot market prices.

Tax Relief – The 100% clean power from solar electricity does not contain future financial burdens for taxpayers like conventional sources of energy do, such as health care and environmental cleanup costs because of pollution.

Peak Capacity – Your solar system helps your community meet its energy demand on hot sunny days during critical peak demand periods.

Less Energy Lost – Your solar system produces energy right where it is used – at your home or business – and avoids the losses of crowded transmission and distribution power lines.

Blackout Prevention – Solar systems keep businesses operating and homes functioning by improving the reliability, responsiveness, and power quality of the electric grid and decreasing the likelihood of failures and blackouts.

ELIMINATE ELECTRIC BILLS...

How much does a solar system cost?

A solar system for residential use typically costs between $20,000 and $60,000 (prices before rebates and tax credits). The complete cost of your solar system generally includes all equipment, installation, permits, labor, and other services to ensure your system is fully operating. Prices and payback time vary because of:

1) Your circumstances, such as how you finance your solar system
2) If rebates or other incentives are available in your area
3) The size of your system
4) The energy efficiency of your home
5) Your location and sunshine index where you live
6) Whether the solar system is integrated into the roof or placed on top of the existing roof
7) The rating and performance of the solar panels, inverters, and other equipment you select
8) If you opt for monitoring packages (recommended by SANYO)
9) The system configuration and
10) The solar provider you choose

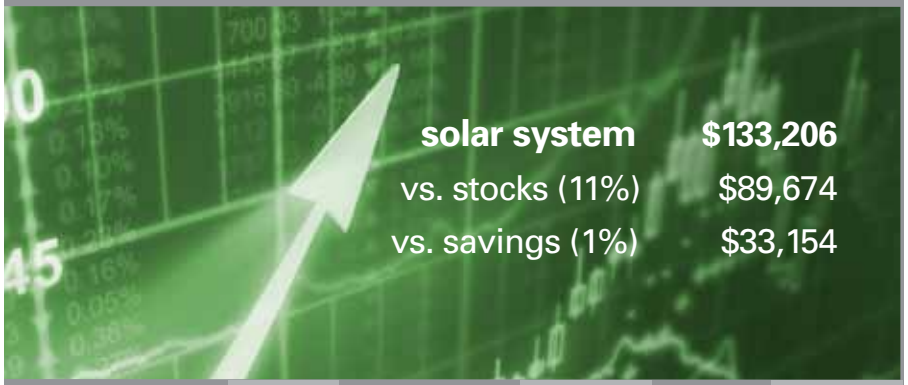
The initial expense of a solar system can be quite high. Many banks and credit unions now offer loans to help with upfront costs. One of the best ways to finance a solar system is through a home mortgage. The interest is often tax deductible, the rates are low, and you can work with your existing lenders.

When financing a solar system, monthly payments are often less than your monthly electric bills – creating positive cash flow in the form of savings for electricity no longer purchased.

Should I invest in stocks, savings or a solar system?

A solar system is an asset and will reduce or eliminate your electric bills. Compare the return on investment of a solar system to a savings account or stock portfolio.

10 Year Return on $30,000 Investment†



Investment Type	Investment Amount	Interest Earned or Bill Savings/Yr	After-Tax Value (Year 1)	After-Tax Value (Year 8)	Payback (inflation adj.)
Savings	$30,000	$300 (at 1% rate)	$188	$188	160 Years
Stocks	$30,000	$3,300 (at 11% rate)	$2069	$2069	14.5 Years
Solar System (5.5kW)	**$30,000**	**$2,069 (1st Year)**	**$2069**	**$2960**	**12.9 Years**

† pre-tax values, actual values may vary

This table shows typical savings for (California) solar system owners.

Monthly Electric Bill	KWh Used per Month	Solar System Size (CEC Rating)	Gross Cost	PG&E Rebate A $2.34/W	Final Net Cost (with $2K Federa Tax Credit)	Pre-Tax Com-pound Annual Rate of Return	Appraisal Equity/Resale Increase (Year 1)	New Monthly Electric Bill with Solar	Net Monthly Cash Flow (Compared to 7.5% 30 year loan) Year 1	Year 5	Total Savings over 25 Years
$100	675 kWh	3kW	$28K	$7K	$20K	11.3%	$20K	$11	($13K)	$0K	$43,000
$201	1010 kWh	5kW	$46K	$12K	$33K	14.5%	$44K	$6	$26K	$62K	$96,000
$374	1500 kWh	8kW	$72K	$19K	$51K	17.1%	$84K	$7	$106K	$181K	$183,000
$374	1500kWh	5kW	$46K	$12K	$33K	19.9%	$63K	$102	$104K	$160K	$137,000

* Source: OnGrid Solar Financial Analysis Tool www.ongrid.net

...AND IMPROVE PROPERTY VALUES.

How will solar improve my property value?
According to the Appraisal Journal, a home's value is increased by $20,000 for every $1,000 reduction in operating (energy) costs. Money saved from the reduction in energy costs can be spent on a larger mortgage or home, with no net change in the monthly cost of owning the home. In addition, the resale value of adding a solar system can be the highest of all possible home improvements.

Where can I find financial incentives?
There are significant financial and tax incentives offered by governments and communities to help reduce the cost of a solar system. In return, your solar system brings significant benefits to your community and environment. To view incentives offered in your area, visit www.dsireusa.org.

What are Renewable Energy Credits (RECs)?
RECs are accumulated over time as your system produces electricity. RECs are the financial value of the clean attributes of the electricity your system produces, such as the positive environmental and community effects of your solar electricity. In most areas, you can sell the RECs your solar system has generated (or will generate) to reduce the cost of your system. Ask your solar provider for details and programs in your area.

What is Net Metering?
Net metering is a special metering and billing agreement between you and your electric utility. Net metering is the key value driver for a solar system. Your solar system may produce more electricity than you can use during the day. When this happens your meter will run backwards. You will send excess electricity to your electric utility, and generate a credit on your account. At night, your solar system will not generate electricity. You will receive electricity from your utility, and consume your credit.

Your solar system may produce more electricity than your home uses. When this happens your meter will run backwards!

Your electric meter measures and tracks the difference between the amount of electricity you receive from the utility and the amount of electricity you generate from your solar system. Your monthly statements will show the net amount of electricity consumed or produced during the month. Credits and usage will vary monthly and you may generate more credits during sunny months and use up the credits in other months.

Credits often accumulate for up to twelve (12) months. However, most utilities are not required to pay you for excess electricity or unused credits. Therefore, make sure to get an appropriately sized solar system to cover the energy needs of the occupants in your home, and not more.

What are Time Of Use Rates (TOU)?
TOU rates allow you to purchase a smaller solar system while obtaining the financial effect of a larger system. During peak times of demand, electric rates are priced higher than low times of demand. You may not be home during the day when your solar system generates its electricity. By selecting a TOU rate from the utility, you get credit for the excess electricity sent to the utility during the day at the high rates. When you arrive home at night, you use up the credit at the low night-time rates. You will accumulate credits faster, and use them slower.

PRODUCTS

HIT Power N
Photovoltaic Module

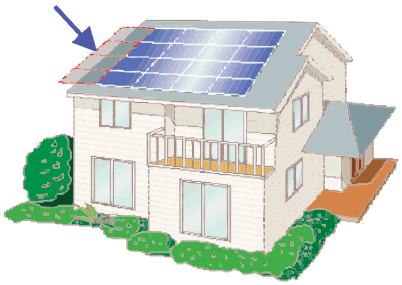
Highest Efficiency
SANYO's HIT® solar panels are world leaders in sunlight conversion efficiency, helping owners enjoy the maximum power per square foot from available space. In addition, solar providers save money by using fewer system attachments and racking materials and less time installing per watt.

Power Guarantee
SANYO guarantees customers will receive 100% of the panel's rated power (or more) at the time of purchase, enabling owners to generate more electricity (kWh) per rated watt and quicken their return on investment.

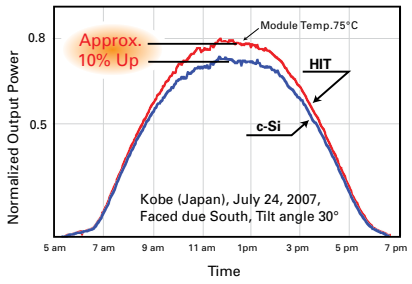
Hot Temperature Performance
As temperatures rise, HIT solar panels will produce over 10% more electricity (kWh) than conventional solar panels at the same operating temperature.

Proprietary Technology
HIT solar cells are hybrids of single crystalline silicon surrounded by ultra-thin amorphous silicon layers, and are available solely from SANYO.

Unnecessary Section When Using SANYO



Increased Performance with SANYO



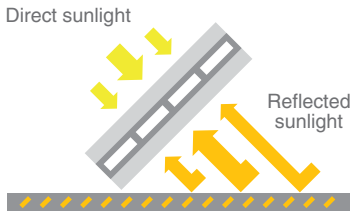
HIT Double
Photovoltaic Module

Power from Two Sides
SANYO's HIT Double® Series generates electricity from both sides simultaneously. Ambient light reflected off surrounding surfaces is captured by the back face of the panels and combines with light from the panel's front face. Depending upon your system design and site albedo, this results in up to 30% higher power generation per square foot – the best in the industry!

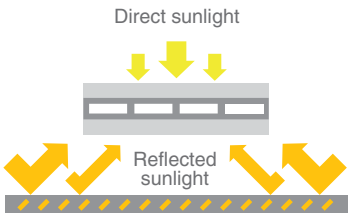
Unlimited Areas & Applications
For SANYO's HIT Double bifacial panels, a double glass structure allows some sunlight to penetrate portions of the panel, creating brilliant light and shadows for aesthetic and architectural applications such as:

- Architectural, Awnings, Balconies, Bus Shelters, BIPV
- Deck & Porch Coverings, Canopies, Carports, Facades
- Fences, Siding, Trellises, Tracking Systems

Slanted Installation



Horizontal Installation



HIT Double bifacial solar panels capture additional ambient or scattered sunlight to produce more power at any angle and any direction.

Strength & Safety

SANYO's HIT solar panels have a double-wall anodized aluminum frame for extra strength, and are tested up to 60PSF. The panels come pre-equipped with a touch safe junction box, USE-2 outdoor rated cables and MC4™ locking connectors, and are UL 1703 safety rated for wind, hail, and fire.

Valuable Features

SANYO's HIT solar panels operate silently and have no moving parts. Unique eco-packaging minimizes cardboard waste at the job site and the pallet density reduces transportation, fuel, and storage costs.

Factory Certificates

SANYO silicon wafers are made in the USA, and assembled at a certified factory. ISO 9001 (quality), 14001 (environment), 18001 (safety). SANYO's wafer factories are located in Carson, CA and Salem, OR.

Limited Warranties

SANYO HIT solar panels have a Limited 20-Year Power Output and 2- or 5-Year Product Workmanship Warranty.


Courtesy of Solar Living Design


Courtesy of Nova West Solar

FREQUENTLY ASKED QUESTIONS

How do I find a solar provider?
Most solar providers are found in your local phone book under Solar; or visit this helpful website: www.findsolar.com.

What should I look for in a solar provider?
Look for experience, proper licenses, insurance, references, close proximity, and a provider you feel comfortable with. To ensure a reasonable price, solicit bids from several providers and compare their offers:

-Do they provide a timeline and checklist?
-Do they offer on-site inspection and bill analysis?
-Do they provide a multi-year financial and energy prediction?
-Will they handle all paperwork, permits, utility agreements, etc.?
-Is there a full system warranty for five years (or more)?
-Have they accounted for shade, poles, wires or future buildings?
-Do they include annual maintenance checks or cleaning?
-Is there a monitoring package included, so you can view the results of your solar system over the Internet?

Is there any preparatory work needed within my house?
Yes, before you install a solar system, it is best to increase the energy efficiency of your house. Install new compact fluorescent lights and insulation, and upgrade to energy efficient appliances and windows, where possible. When your house is more energy efficient, the solar system you purchase can be smaller (and cost less!) to meet your energy needs.

What maintenance is required?
Wash dust and dirt off your solar panels twice per year with water and a soft brush. An easy solution is to ask your solar provider about a maintenance package, including cleaning, checking the electrical connections of the wiring and general condition of your system.

How can I maximize the power my solar system produces?
Solar systems should be oriented south or west to maximize performance. Shade severely affects solar system performance. Keep trees and bushes trimmed and wash panels as needed to keep off dust, dirt, and bird droppings. Allow space between your roof and panels to let air flow underneath and keep panels cool.

Why did my solar system produce more (or less) energy than expected?
Weather conditions vary from year to year, and can affect the output of your system by plus or minus 12% per year, so your system may produce more or less than originally estimated. (Source: DOE)

How long will installation take?
The ease of installation makes solar systems an easy choice for most people. Installation for a house usually takes 1-7 days depending on the size and complexity of your system.

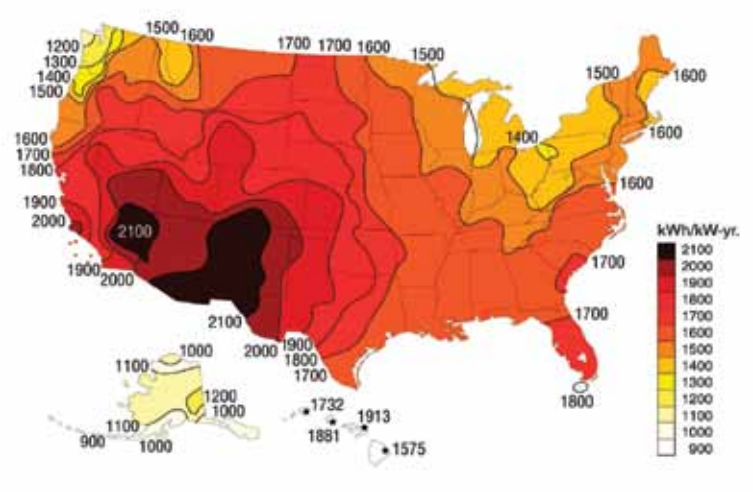
Do I have to be at the house when it is installed?
Talk with your solar provider about time requirements. Often, solar systems can be installed without the need to regularly enter your house.

Do I need to add anything else, like lightning rods, roof structures, etc.?
Your solar provider will know the details of connecting your system to the electric grid and complying with local codes. They will advise you about any additional components that may be necessary.

What happens if my solar system stops working?
There are no moving parts to break (meaning no mechanical wear and tear) so systems will last many years without failure, but if it does stop, contact your solar provider and request a visit. To be safe, do not attempt to repair the solar system yourself.

FREQUENTLY ASKED QUESTIONS

Sunshine Index



Do solar panels emit noise?

No. Solar panels are silent. However, the inverter may hum slightly.

Will a solar system produce electricity when it is cloudy?

Yes, because solar panels absorb various spectrums of visible and invisible light, but the energy produced by your solar system will be less than when the sky is clear and sunny.

Does a solar system work in cold weather?

Yes. Solar systems work in many weather conditions, and often work better in cold temperatures during winter months because cold temperatures cause an increase in the conductivity of metals and wires.

Will snow affect my solar system?

Not much. During the day, your solar panels capture heat from the sun, melting the snow, and are typically angled, which helps slough off snow, allowing your system to continue generating electricity. If you purchase SANYO HIT Double bifacial panels, the back face will continue to produce power even when snow covers the front face.

Does shade affect my solar system?

Yes, your solar system should be placed where there are minimal amounts of shade from trees, buildings, chimneys, satellite dishes or other objects.

How much space do I need for a solar system?

The amount of space your solar system needs depends on the amount of electricity you want to generate. Most homes require between 120ft.^{2} and 320ft.^{2}, which is equivalent to a solar system size of 2kW-5kW using SANYO HIT panels.

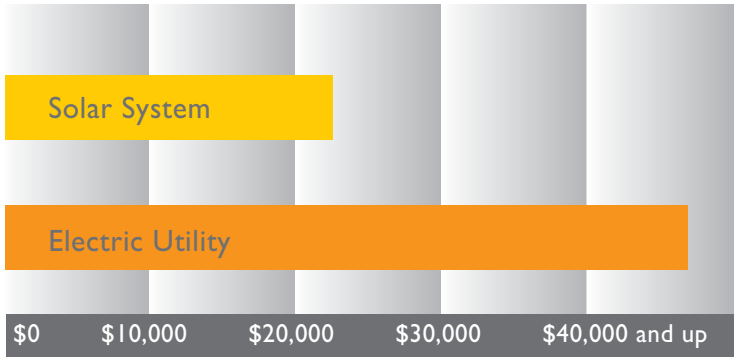
Should I repair my existing roof before installing a solar system?

Yes, if your roof is old or requires repair, fix or replace it at the same time you install a solar system to avoid future costs of removal and reinstallation of your solar system in order to access your roof.

Will hail, wind, or fire affect my solar system?

Solar panels are tested to meet certain safety requirements such as impacts of 1" hail, wind loads up to 50PSF, and certain fire standards. Your solar provider will attach and install your system and ensure it meets local requirements.

The Cost of 30 Years of Electricity



Source: CEC's Clean Power Estimator (System size 3.5kW a.c., tilt 30°, south, SanDiego, CA, as of April 2005)

sanyo.com/solar

Courtesy of Go Green Electric

Courtesy of Golden Energy Inc. and
Jesse Bornstein Architecture

Courtesy of KV Solar Supply

Courtesy of Green Technology

Courtesy of Eco Depot

Courtesy of Built Well Solar

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