



SOLAR ENERGY SYSTEMS FOR SHINGLE ROOFS

RESIDENTIAL INTEGRATED SOLAR ENERGY SOLUTIONS

A Complete System To Convert Sunlight Into Electricity For Your Home



STYLE +
SIMPLICITY



UNI-SOLAR[®]

BEAUTY, COMFORT AND SECURITY



Gone are the days of unattractive glass solar panels which are obtrusive and are viewed as a community eyesore. The modern SmartRoof solar systems available today are building integrated and actually add to the beauty and value of your home.

The SmartRoof is a solar electric system that can generate 50-90% of a typical family's daily electrical needs or even eliminate the electric bill entirely, while providing pollution-free power. The system can be seamlessly integrated into your roof and actually becomes both roof and energy supply.



YOUR WORLD



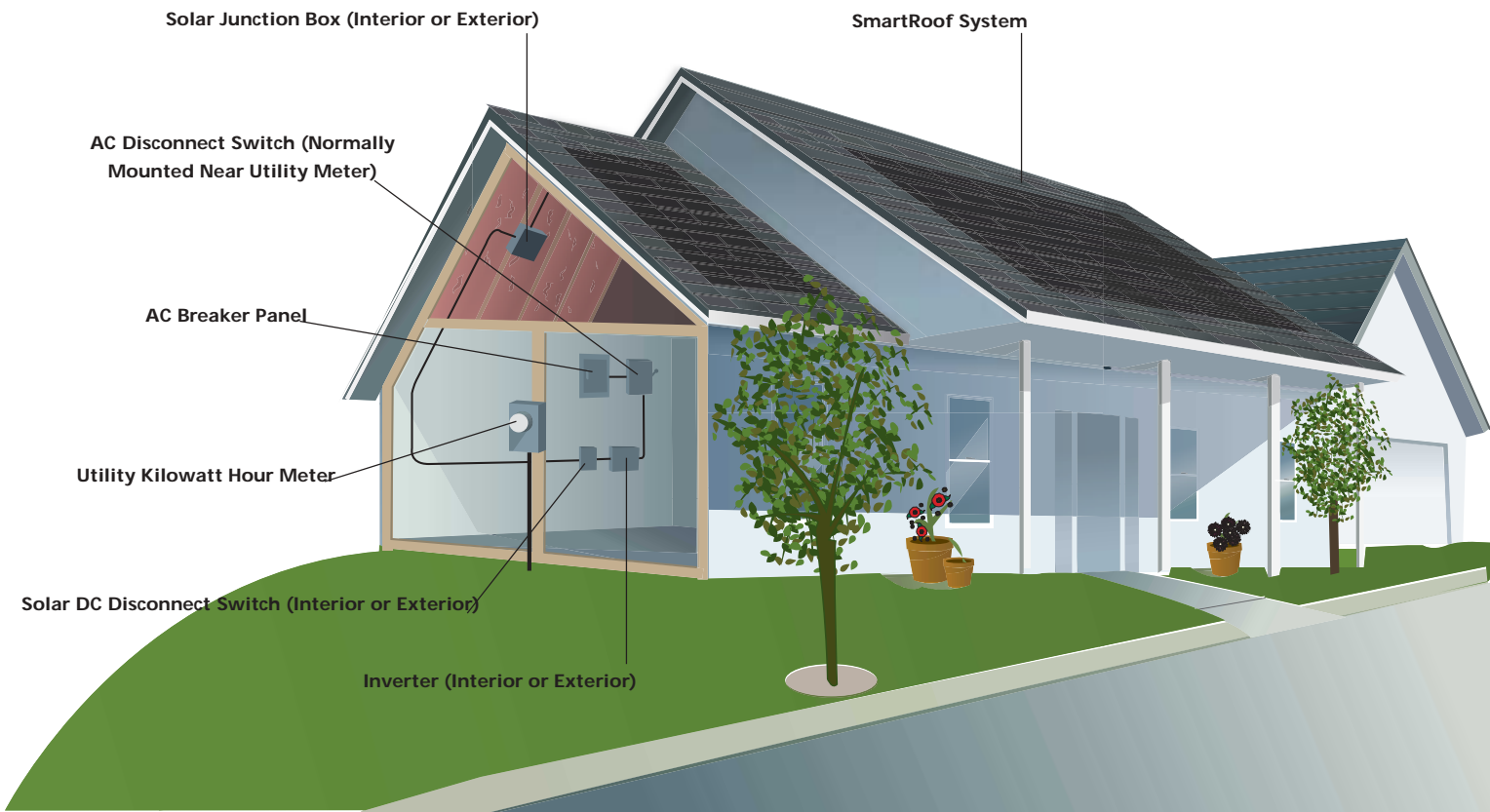
America's demand for electricity has risen more than 60% in the past 27 years. Our dependence on coal, oil, and nuclear plants affect the future of us all, including our children, our grandchildren, and our world.

Installing a SmartRoof solar electric system can reduce carbon dioxide emissions by more than two tons annually and provide years of FREE electricity!



FORM +
FUNCTION





SYSTEM BENEFITS

- Attractive style
- Fully integrated shingle roof
- Lower electric bill
- Free electricity
- Pollution-free power
- Increased home value
- Manufacturer backed warranty
- Protects the environment
- Exceptionally durable
- Great investment
- Significant state rebates available

SYSTEM FEATURES

- Architecturally pleasing systems that do not distract from the natural lines of the home
- Complete design freedom
- Solar shingles are structurally and aesthetically integrated roofing elements
- Capable of withstanding 80 mph wind loads
- No support structures needed
- UL Listed as prepared roofing cover
- Modules and inverters UL listed
- Wind and water tight roof
- Suitable both for renovation and for new construction
- 20-year power output and 5-year system warranty
- Direct nailing on wood decks with fire-resistant underlayment
- No back-ventilation of solar shingles necessary
- Easy to transport and install



Ease of Handling



Durable



Glass-Free



Shadow Tolerant



Lightweight

UNI-SOLAR

Almost any home can get a SmartRoof solar electric system by *UNI-SOLAR*. These systems come with everything you need to produce your own electricity. And with a 20 year power output and 5 year system warranty, they're sure to perform maintenance free for decades to come.



AVERAGE ANNUAL ENERGY PRODUCTION*

SmartRoof Shingle System

Using 17-Watt Solar Shingles	850	1800	2500	3600	5000	7500	10,000
Area 1 (ex. Houghton, Michigan)	739 kWh	1994 kWh	2806 kWh	3987 kWh	5612 kWh	8418 kWh	11,224 kWh
Area 2 (ex. New York City, New York)	844 kWh	2278 kWh	3207 kWh	4557 kWh	6413 kWh	9620 kWh	12,827 kWh
Area 3 (ex. Augusta, Georgia)	950 kWh	2563 kWh	3608 kWh	5127 kWh	7215 kWh	10,823 kWh	14,430 kWh
Area 4 (ex. Miami, Florida)	1055 kWh	2848 kWh	4008 kWh	5696 kWh	8017 kWh	12,025 kWh	16,034 kWh
Area 5 (ex. San Diego, California)	1118 kWh	3019 kWh	4249 kWh	6038 kWh	8498 kWh	12,747 kWh	16,996 kWh
Area 6 (ex. Phoenix, Arizona)	1203 kWh	3247 kWh	4570 kWh	6494 kWh	9139 kWh	13,709 kWh	18,278 kWh

During the first 8-10 weeks of operation, electrical output exceeds specified ratings. Power output may be higher by 15%, operating voltage may be higher by 11% and operating current may be higher by 4%. Electrical specifications ($\pm 10\%$) are based on measurements performed at standard test conditions of 1000 W/m² irradiance, Air Mass 1.5, and Cell Temperature of 25°C after long-term stabilization. Maximum system open-circuit voltage not to exceed 600 VDC. Specifications subject to change without notice.

* Assumptions: 5% loss due to high rooftop temperatures, 7% loss through the inverter and 3% loss due to wire and connection resistance. Modules are clean, have a south orientation and the roof pitch matches the latitude.



SMARTROOF SHINGLE SYSTEMS

SmartRoof System	850	1800	2500	3600	5000	7500	10,000
Number of 17 watt Solar Shingles	50	108	152	216	304	456	608
Roof Area Required For Solar Shingles	120 ft ²	324 ft ²	456 ft ²	648 ft ²	912 ft ²	1368 ft ²	1824 ft ²
Array DC Rating	850 watts	1836 watts	2584 watts	3672 watts	5168 watts	7752 watts	10,336 watts
Est. Peak Power Output (watts ac)	723 watts	1561 watts	2196 watts	3121 watts	4393 watts	6589 watts	8786 watts

APPLICATION CRITERION

- Mount 35 inches up from the eave (to ensure adequate wiring space below the roof deck)
- Install Versa Shield Underlayment directly on wood decking
- Extend Versa Shield Underlayment 12" around entire perimeter of the array
- Installed per manufacturer's Instructions
- Wood deck repairs must be completed before installation
- Use certified installer

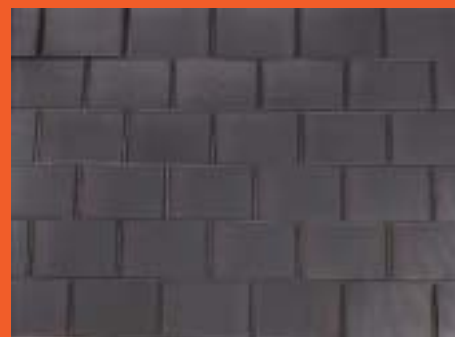
POWER ELECTRONICS

State program approved 1800 or 2500 UL listed inverter. Inverter can be located indoors or outdoors.

Inverter:	2500 or 1800
Rated Power (ac watts)	2500 or 1800 Watts Max.
Input Range VDC	150-550 VDC
Output Nominal VAC	2200 or 1585 Watts Continuous

Features: Anti-islanding (IEEE 1709), GFDI, internal lightning protection, Sine wave output with HD = <4%, IP65 enclosure and LCD display, with remote communications package available.

SOLAR SHINGLES



Minimum 3:12 slope (15°)
Maximum 21:12 slope (60°)

ROOF SLOPE

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