



# RESIDENTIAL SOLAR ENERGY GUIDE

*Detailed Information on  
Solar Water Heating and  
Photovoltaic (PV) Systems*



# Solar Water Heating Systems



Today's solar heaters, or solar thermal systems, provide environmentally friendly heat for water and swimming pools in residential applications.

The systems collect the sun's energy to heat air or a fluid. Two commonly used systems include active and passive systems. Active solar water heaters use pumps to circulate water or another fluid from the storage tanks through the collectors. Passive solar water heaters require no pumps or controls and combine the storage tank and collector in one unit.

The use of a solar water heater will benefit you by lowering your electric bills and insulating you from rising energy costs. When installed properly, solar water heaters are more economical over the life of the system than heating water with electricity, dedicated heat pumps, heat recovery units, natural gas or propane. Many systems include sleek, attractive, low-relief collectors that people often mistake for skylights. Properly designed and installed systems with glass-covered collectors should perform well for more than 20 years.

## IN YOUR HOME

The average system takes up just 40 square feet of roof space and should save between 50 to 85 percent of the hot water portion of the monthly electric bill. Most residential solar thermal systems cost between \$4,000 to \$5,000 to install. An average 40-square-foot collector should be able to offset 10 to 15 percent of the energy for homes that consume about 2,000 kilowatt hours a month.



## Low Interest Green Loan Options through the Orlando Federal Credit Union

| Rate (APR)   | Term (months) |
|--------------|---------------|
| <b>0.00%</b> | <b>36</b>     |
| <b>2.75%</b> | <b>60</b>     |
| <b>4.00%</b> | <b>84</b>     |

<sup>1</sup> Annual savings are examples only.

<sup>2</sup> Availability of federal tax credits should be verified prior to installation of a solar system.

<sup>3</sup> The average 40 sq. ft. solar thermal system in Central Florida produces 2,700 kWh per year. Source: pvwatt.com

<sup>4</sup> Production credits and electric rates are filed with the Florida Public Service Commission and are subject to change.

<sup>5</sup> The average 1 kilowatt PV system in Central Florida produces 1,350 kWh per year. Source: pvwatt.com

\* \$550 for customers who use the low interest loan option.

## RESIDENTIAL EXAMPLE WITH \$1,000 POINT OF SALE REBATE <sup>1</sup>

Average Solar Hot Water System  
Cost \$4,000 – \$5,000 – 40 sq.ft.collector

|  |                 |
|--|-----------------|
| Initial System cost (40 sq. ft. collector) | <b>\$4,500</b>  |
| Federal Tax Credit (30%) <sup>2</sup>      | <b>-\$1,350</b> |
|  | <b>\$3,150</b>  |

|  |                 |
|--|-----------------|
| Solar Thermal Point of Sale Rebate without Solar Green Loan* | <b>-\$1,000</b> |
|  | <b>\$2,150</b>  |

|  |                   |
|--|-------------------|
| Est. Avg. Annual Solar Production <sup>3</sup> | <b>2,700/KWH</b>  |
| Electric Savings <sup>4</sup>                  | <b>\$0.14/KWH</b> |

**Annual Savings: 2,700 KWH x \$0.14 = \$378**

# Solar Photovoltaic Systems



Photovoltaics (PV) are arrays of solar cells that convert light into electricity. Producing electricity with PV emits no pollution, produces no greenhouse gases and uses no finite fossil-fuel resources.

Since they were first introduced onto the market years ago, solar photovoltaic technologies have declined in price, driven by improved research and development, and most of all by steady increases in sales volume. Most home and business owners start small, since PV can be added in modular increments as your energy needs and investment capabilities grow. **Prior to sizing a solar PV system for your home or business, it is important to focus on reducing your overall energy use through energy efficiency and solar water heating.**

PV arrays can be mounted at a fixed angle facing south in an unshaded region of the roof or on a tracking device that follows the sun, and allows them to capture the most sunlight throughout the day. Integrated PV cells are available in a variety of shapes and sizes, including triangular-shaped panels and small roofing tiles.

## IN YOUR HOME

A one-kilowatt PV system will produce about 1,350 kilowatt hours (kWh) per year and has an expected lifetime of 30 years, for a total production of 40,500 kWh. To calculate a simple payback on your PV system, divide the total installed cost of your system by the monetary value of the energy produced from your system each year. Maintenance should also be considered. For a typical Florida home that consumes about 2,000 kWh a month a 4.0 kilowatt PV system should offset about 22 percent of the energy.

## SOLAR ELECTRIC (PV)

- A** Net metering.
- B** Production credit of \$0.05/kWh on your monthly bill.
- C** Low Interest Green Loan Options through the Orlando Federal Credit Union

| Rate (APR) | Term (months) |
|------------|---------------|
| 2.00%      | 36            |
| 4.00%      | 60            |
| 4.75%      | 84            |
| 5.50%      | 120           |

## PV SYSTEM EXAMPLE <sup>1</sup>

Average PV System Cost \$7–\$9/Watt

|  |                    |
|--|--------------------|
| Initial System Cost (4 KW)                     | \$ 32,000          |
| Federal Tax Credit (30%) <sup>2</sup>          | \$ 9,600           |
| <b>Net System Cost</b>                         | <b>\$ 22,400</b>   |
| <br>   |                    |
| Est. Avg. Annual Solar Production <sup>5</sup> | 5,400 KWH          |
| <br>   |                    |
| Solar PV Production Credit <sup>4</sup>        | \$ 0.05/KWH        |
| Electric Savings <sup>4</sup>                  | \$ 0.14/KWH        |
| <b>Total Savings</b>                           | <b>\$ 0.19/KWH</b> |

**Annual Savings: 5,400 KWH x (\$0.05 + \$0.14) = \$1,026**

## OUC's Solar Hot Water Rebate

OUC offers residential electric customers a Point of Sale rebate of \$1,000 that your contractor will provide at the time you purchase your solar hot water system. Pool heating systems are not included in the program. Through a partnership with the Orlando Federal Credit Union (OFCU), OUC also offers an option to finance your solar hot water system for as low as 0 percent over 36 months. Customers who choose to finance through this special program receive a Point of Sale rebate of \$550 in addition to OUC's interest rate buydown on the loan. All participants must use an OUC Preferred Contractor.

## OUC's Solar Photovoltaic Production Incentive

OUC provides all residential customers who install a solar photovoltaic system with the benefit of net metering. The term net metering means that you receive a credit at your current retail electric rate for any excess energy your system produces and feeds back to the utility. OUC also offers its residential customers a \$0.05/KWH production incentive on **all** of the energy that your solar photovoltaic system produces (whether you use it on site or send it back to the utility grid). In order to provide these credits, OUC installs an additional electric meter on your home that records all of the energy production from your solar system.

### Ready to Begin? Follow these Steps for a Successful Solar Installation with OUC:

- 1. Optional:** Contact OUC's Customer Service at **407.423.9018** to request an energy survey. OUC recommends an energy survey to ensure your home is operating efficiently prior to the installation of a solar system.
- 2.** Solicit quotes and select an OUC Preferred Contractor to install the system. OUC recommends getting at least three quotes. Remember to ask for equipment certified by the Florida Solar Energy Center (FSEC).
- 3. Optional:** Contact the Orlando Federal Credit Union (OFCU) to apply for a zero to low-interest loan. Call **407.835.3500** option 1 for pre-approval.
- 4.** Have your selected contractor pull all required permits from your local code jurisdiction.

### Thermal

- 5.** Have contractor complete solar installation.
- 6.** Have contractor submit rebate application and copy of invoice to OUC (contact information provided below).
- 7.** Contact OUC's Renewables Department with permit number once system passes code inspection.
- 8.** OUC's Solar Thermal PV Inspector will call the customer to schedule an inspection and approve the system.

### Photovoltaic

- 5.** Submit the OUC Residential Solar PV Application, Residential Solar Service Agreement, Interconnection Application, a copy of the invoice, and an electrical one-line diagram to OUC Renewables Department (contact information provided below).
- 6.** Have contractor complete solar installation, including the additional OUC electric meter base.
- 7.** Contact OUC's Renewables Department with permit number.
- 8.** OUC's Solar PV Inspector will call the customer to schedule an inspection and approve the system.



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## OUC Preferred Contractor Network

OUC connects customers needing a solar contractor or assistance with home repair with members of our Preferred Contractor Network. The OUC Preferred Contractor Network features contact data for contractors categorized by specialty. Our program includes standards of conduct, a Code of Ethics and a customer feedback mechanism. It doesn't matter if your need is big or small. The home repair and service professionals of the OUC Preferred Contractor Network are just a click away. Visit [www.ouc.com](http://www.ouc.com) for more information.



## Want to Learn More?

Be sure to visit OUC's Solar Website, [www.ouc.com/solar](http://www.ouc.com/solar) for more information on OUC's Solar Programs and how to participate.

