

# Converting Sunshine to Electricity with a Solar Photovoltaic Canopy



Orange County's 20 kilowatt (kW) photovoltaic (PV) solar array is an aluminum parking lot canopy structure which serves a dual purpose of producing clean electricity and providing shade for cars parked beneath. The PV system consists of 72 polycrystalline photovoltaic modules and 3 inverters which convert DC current from the solar panels to AC electricity. Each module produces 270 watts of DC power, for a total canopy production of just under 20,000 watts. The solar modules have a fixed tilt of 5 degrees and face south, toward the equator, to maximize the amount of sunlight captured.

In addition to reducing the electric bill for the Extension Center, Orange County's solar array also takes advantage of a rebate incentive offered by the local utility. Orlando Utilities Commission (OUC) provides a meter which measures the amount of power produced by the array. OUC's Solar Photovoltaic Production Incentive will pay \$0.05/kilowatt hour (kWh) for the power that is produced by the canopy. This incentive is provided in addition to Net Metering benefits, which is an effort to promote the use of clean, renewable energy on the electric grid.

## What is Net Metering?

Net Metering is for electric customers who generate their own electricity. This technology allows for the flow of electricity both to and from the customer – typically through a single, bi-directional meter. When a customer's generation exceeds the customer's use, electricity from the customer flows back to the grid, offsetting electricity consumed by the customer at a different time during the same billing cycle.

In effect, the customer uses excess generation to offset electricity that the customer otherwise would have to purchase at the utility's full retail rate. Net metering is required by law in most U.S. states, but state policies vary widely.





## What maintenance is required for Photovoltaic & Solar Thermal systems?

Photovoltaic and other types of solar systems typically do not require maintenance other than periodic cleaning of the panels. PV panel life is typically 25 years. Solar thermal systems, because they heat water or a heating fluid, may need valves replaced every 3-5 years and storage tanks replaced every 10 years. Collector life is usually in excess of 15 years. This assumes "good" water quality is used in your system, and it was properly installed.

## How much energy do 20 kW solar arrays generate and how much money is saved?

The 20kW photovoltaic array is rated to generate 27,000 kWh of electricity annually. This equates to about a \$266 savings in the monthly electric bill, or \$3,180 annually. Each year, the electricity generated has the capacity to power nearly 3 homes.

## How Do Solar Photovoltaic Systems Work?

Photovoltaics (PV) are arrays of solar cells that convert light into electricity. PV technology has improved in quality and declined in price since first introduced, due to a steady increase in sales volume. Most residents and business owners start small, since PV can be added in modular increments as your energy needs and investment capabilities grow.

*It is important to focus on reducing your overall energy use through energy efficiency and solar water heating prior to sizing a solar PV system for your home or business.*

