



## Residential Solar Electric Project Case Study

### Site Information

**Site Name:** Cauthen Residence

**City:** Bellaire, TX



### Solar System Description

**Renewable Energy Systems:** 3.85 KW DC Solar Electric System,  
64 Sf Collector/120 Gallon Solar Water Heating System,  
120 Sf Solar Pool Heating System

**Installer:** Alternative Power Solutions

**Date Installed:** March 2009, and Oct 2009

**System Cost ( Solar Electric at todays prices): \$25,000**

**Approximate Energy Provided:** Solar Electric – 400 KWh per month  
Solar Water Heating – Produces 220 gallons of hot water/day  
Solar Pool Heater – Used to preheat hot tub

**Approximate Cost Savings at 15 cents/kwh:** The solar PV systems saves the home owner approximately \$65/month or 35% off this extremely energy efficient homes standard electric bill. This system qualified the homeowner for a \$10,700 tax credit, increase the property value by \$14,760, and will produce over \$71,500 worth of solar energy during its lifetime.

The solar water heating systems save the homeowners another \$70 per month since the home is all electric. That equated to another 35% savings monthly.

A solar pool heating system was added to the project to defer the cost of heating the outdoor hot tub in the cooler month of the year. This system is designed to blend in with the roof tiles and extend the tub usage without the use of fossil fuels to 8 months per year.





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### **Description of Installation:**

The grid-tie 3.85 KW Solar PV system consists of 22 Suntech 175 Watt panels which are southern facing. The panels are attached to the substructure of the Spanish Tile roof. This system uses 22 Enphase Micro grid tie inverters to make the power conversion from DC to AC electricity at the panel itself. The micro-inverters reduce the standard current loss in the solar system.

The solar water heating system consists of two 32Sf water heating collectors and one eighty gallon solar storage tank. This is an AET solar Drain-back water heating system.

APS installed three 40Sf Terracotta colored solar pool heating collectors on the tile roof in the same vicinity as the PV and water heating collectors.

### **Green Building Extras/Notable Information:**

The Cauthen residence is one of the most energy efficient and green homes in the city of Houston. The size of this home and the many green certificates that are being attached to this property are a true testament that anyone can build green. This home is pre-certified LEED Platinum, NAHB Emerald, and Energy Star with a HERS rating of 40.