

GEA, with support from  
GIZ has installed an 8.46 kW  
Grid Tie PV System to:

- Promote the use of renewable energy in Guyana
- Gain understanding of grid tie opportunities to promote the use of renewable energy in Guyana
- Demonstrate the use and application of solar photovoltaic grid tie technology



The Guyana Energy Agency (GEA) is a semi-autonomous Government Agency established under the Guyana Energy Agency Act 1997. Part of the Agency's mandate is to develop and encourage the development and utilization of alternative sources of energy and disseminate information relating to energy conservation and efficiency and energy management.

The GEA's vision is to ensure  
*'Reliable Energy-economically,  
environmentally and socially sustainable- for  
all in Guyana.'*



GRID TIE

SOLAR  
PHOTOVOLTAIC  
DEMONSTRATION  
PROJECT



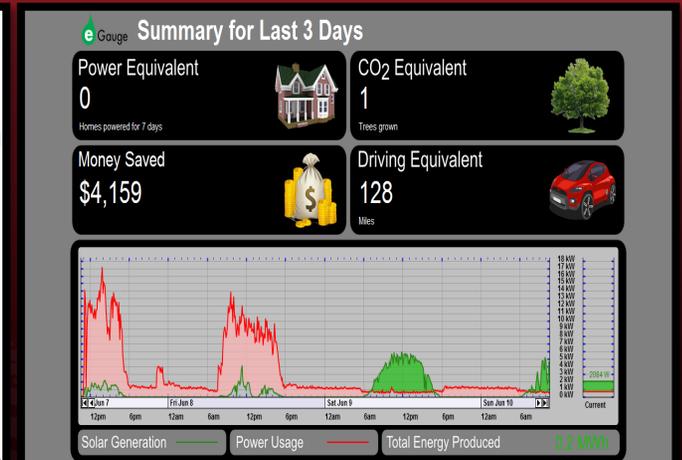
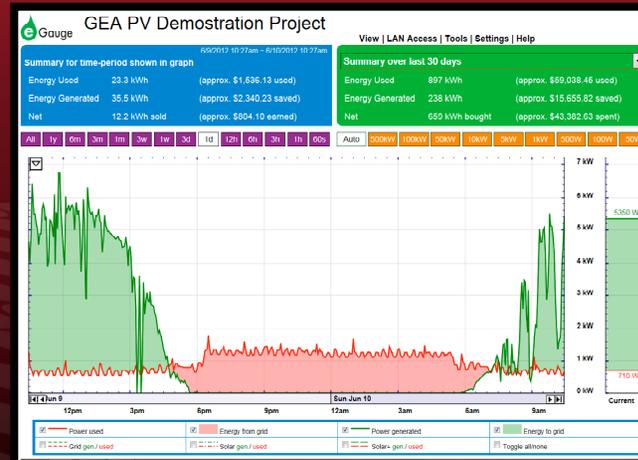
295 Quamina Street. 226-0394.

[www.gea.gov.gy](http://www.gea.gov.gy)

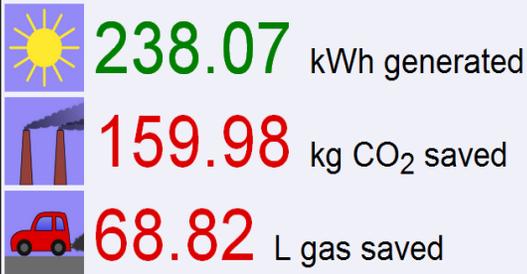
## Promoting Awareness

The system was complemented with a 40-inch Sony internet television which continuously monitors important operational data including:

- Actual power production in kW;
- Accumulated energy production in kWh;
- Avoided carbon dioxide emission in kg.



Since recording started



## Carbon dioxide Savings

The estimated energy production of 13,895 kWh per year from renewable solar power replaces energy that would have otherwise been supplied from diesel and fuel oil resources, which emit carbon dioxide, a greenhouse gas that contributes to climate change.

Using IPCC default value of 0.8kg CO<sub>2</sub> for a diesel plant, the estimated amount of CO<sub>2</sub> emissions avoided = 11,116 kg per year.

## Project Economics

While the installed capacity of the system is 8,460 watts, the actual power output will vary depending on the position of the sun, amount of sunlight, extent of cloud cover, efficiency of the panels and system losses throughout the day.

Assuming a system efficiency of 0.9, the PV system should generate approximately:

$$8.46 \text{ kW} \times 5 \text{ peak sun hours per day} \times 365 \text{ days per year} \times 0.9$$

$$= 13,895 \text{ kWh per year}$$

13,895 kWh of solar energy would therefore have replaced an equivalent amount of energy generated from fossil-based fuels and would result in savings of:

$$13,895 \text{ kWh per year} \times \text{G\$}65.81 \text{ per kWh} = \text{G\$}914,429 \text{ per year}$$

The simple payback for the project, based on a solar capital cost of G\$6,304,380 (after removing costs associated with demonstration), the payback would be just under 7 years.

Based on prevailing tariffs and provided that the panels and inverter remain functional, after year 7, the installation would accrue savings of G\$914,429 per year based on present value.