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Yabucoa Children's Playground Office Building (Refugee and Distribution Center)

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Community Contact:
Mayor Rafael Surillo
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Goals:

1. Provide electricity to the Refugee and Distribution Center by installing a solar photo-voltaic system.
2. Provide emergency backup electricity to this center for future emergencies.

Proposed Project:

- 9.0 Kw Solar Array System,
- Replacement of some florescent light tubes, fixtures and bulbs with LEDs

System Cost:

Solar Array System	$60,000

The Need

Hurricane Maria devastated the electrical grid in the town of Yabucoa, downing trees and wires, and destroying many homes. This Children's Playground Office Building will be converted to a Refugee Service center and Distribution Center in the case of an emergency. This building will also house the FEMA Operations Center for the influx of FEMA personnel.

Resiliency for the community during future destructive events is also a major concern. This building will be used as a refuge during and after the hurricane and a distribution center for emergency supplies.

The Setting

The Children's Playground Office Building is located on one of the main streets leading into the city of Yabucoa, a city of almost 40,000 inhabitants.

The office building will be outfitted with emergency supplies in preparation for an emergency and has office space for up to 20 FEMA personnel.

Recommendations and Actions

- Install a solar array on the upper flat concrete roof of the center building
- Install inverter and batteries in the electrical room and interconnect to the building electrical system
- Reduce the electrical load with replacement with LEDs
- Establish power for the Internet connection

Technical Description:

- Building Structure - The upper roof is a rectangular cement structure approximately 30 feet wide and 40 feet long.
- There are roof membrane vents which must not be blocked
- Solar Array – 9.0 kW, thirty 300 watt solar modules
- Inverters – one 8.0 kW Radian inverter by Outback Power
- Battery – one 48 volt 16 kWh battery
- Mounting Structure – Unirac rack, mounting bolts epoxied into cement roof
- Interconnection – transfer switch between grid in and solar inverter in breaker panel

Overview

The primary purpose of this project is to bring back lights and computers for the residents of the city on a 24/7 basis and to provide emergency backup in the future should the grid power go down in a future storm.

Local Project Support

This project was identified as high on the list of priorities supported by Mayor Rafael Surillo of Yabucoa, during our meeting with him and his staff.

It was also important to the Mayor to provide office space for FEMA personnel when they are on location in Yabucoa.

The installation will be performed by local solar engineers and electricians with Global Solace project management

Existing Electrical Conditions and Design Assumptions

GSI will move relevant electrical circuits from the existing electrical service breaker panel to a separate backup panel. A transfer switch and solar disconnect are installed for when the grid comes back up.

The center portion of the building has a flat concrete roof of approximately 30 by 40 feet. This roof is an appropriate location for a solar array.

We determined that a 8-kW solar inverter would be sufficient to power the loads of the office building plus the additional office, warehouse, and living spaces, however, replacement of some existing florescent tubes, fixtures, and incandescent light bulbs with LEDs is strongly recommended as is reducing the number of lights.