Department of Engineering

Messiah College

the Collaboratory for strategic partnerships and applied research

Design of a Solar Power System for Ekuphileni Bible Institute

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Fourteenth Annual School of Science, Engineering, and Health Symposium

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Our Client

The Theological College of Zimbabwe (TCZ)

6.9 kW solar power system

EBI

Ekuphileni Bible Institute (EBI)

The Problem

Definition of the Problem

Power production in Zimbabwe is not sufficient for power usage.

Power loss occurs roughly 40 time per week.

Load Shedding

Definition: Power supplier systematically limits power to large areas of power grid

- Regular time intervals
- All areas treated equally

Corrupt Load Shedding

Definition: Load shedding with ulterior motives.

- Random time intervals
- Wealthy = more power

The Solar Solution

Our Solution

Solar

Batteries

System Specifications

Budget: $20,000

Required Energy Production

- 5.3 kW System (With Classrooms)
- 4.0 kW System (Without Classrooms)

Energy Storage

- 400 Ah Capacity

What We Intend to Power

Photovoltaic System

- Kitchen
- Library
- ~~Classrooms~~

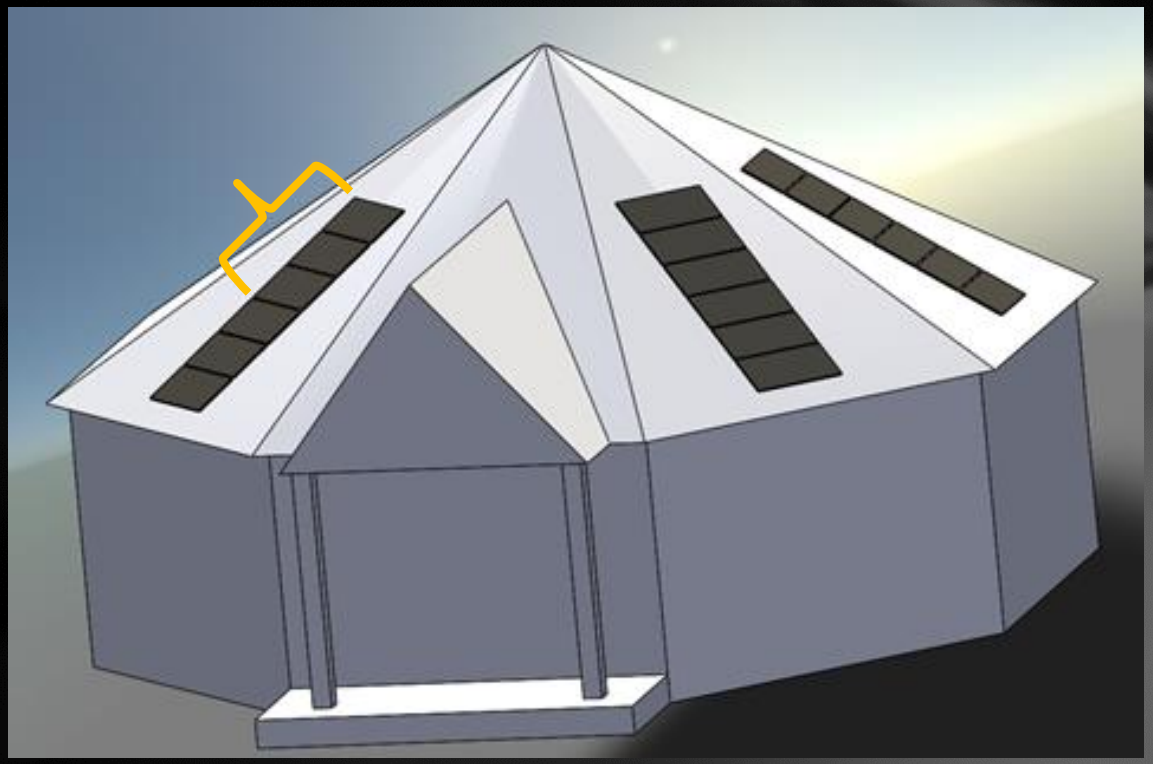
Why Choose the Library and Kitchen?

- Client specifications and concerns
  - Prevent food loss
  - Provide reliable Internet

The Design

Placement of Solar Panels

- 15 panels
- Pending funding: 3 panels



Component Board

- Custom made
- Distributor: Samansco

Outback components

OutBack Power Systems™

Upcoming Installation

Three week site team trip will occur in May-June 2017

Team consists of 5 students and 2 advisors

Acknowledgements

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The Collaboratory for Strategic Partnerships and Applied Research

Messiah College's Department of Engineering

Advisors: Dr. Michael Robinson, Nathan Charles, and Mark Brill

Solar PV project team members

Questions