Project Name – Existing Building with Green Initiatives

Overview
The project was to take the existing building (30,000 sq.ft.) and soon to be built new addition (40,000 sq.ft.) and equip it with green initiatives. Solar Innovations was interested in incorporating any type of green energy sources and do cost analyses of them. The technologies that were looked at included, solar panels, wind turbines, micro-hydro turbines, biomass boilers, and a trombe wall.

Objectives
Our team looked at these technologies and preformed analysis on the following:
- Cost-Benefit
- Energy
- Return on investment (ROI).

Approach
- Talked with the company weekly
- Spoke with professors to provided us with a better understanding of some technologies
- Analysed each system for their advantages to the building
- Made note of the disadvantages of some technologies
- Contacted professionals in industry for estimates as well as advantages for certain products
- Created a Solidworks model to provide lay of the land for the project

Outcomes
Our results are dependent whether our sponsor decides to invest in installing our designs, though below are the values on the return of each system:
- Wind Turbine: 1,224 kWh/year
- Micro-Hydro: 657 kWh/year
- Photovoltaic: 366,912 kWh/year
- Insulation: $19,116/year
- Green Roof: $7,571/year
- Trombe Wall: $1,734/year
- Biomass Boiler: Capable of delivering 10.3 million BTU/hour