GNG1103

Engineering Design

Deliverable C

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Design Criteria and Target Specifications

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The purpose of this document is to clarify the design criteria for the project, benchmark to see what we need, and to determine a list of target specifications for the final solution. This will help us plan out our solutions and test to see if they satisfy the customer needs. By the end we will know exactly what needs to be done to satisfy the client with an exact idea of the requirements in different specific areas.

Prioritized Design Criteria

- The solar power system will provide enough power for lighting, heating, and a couple outlets
- The solar power system will be child safe
- The solar power system will employ an easy and safe set up
- The solar power system will be easy to set up and take down to allow easy transportation.
- The solar power system will fit into the 4 ft x 8 ft house
- The solar power system will be inexpensive

Benchmarking

Specifications	Average Canadian Household	Miniature Homes (condos, small townhouses, etc)
Electricity usage	~11 879 kWh per year	~6000 kWh per year
Outlets	1 per 12 feet	1 per 12 feet
Safety	Plastic covers over outlets, GFCI-protected (prevent shock hazards)	GFCI-protected (prevent shock hazards)
Voltage	120V	120V
Heat	2200 square feet	1200 square feet
Costs	Hydro (141\$ per month)	Hydro (50-90\$ per month)
Lighting	26 light bulbs	13 light bulbs
Aesthetic	Wiring kept inside walls	Wiring kept inside walls
Setup	Done by professionals	Done by professionals
Amperage	100A	100A

Needs and Specifications

Target Needs	Target Specifications
Amperage	~9A
Voltage	120V
Safety	Child Safe/No Fire Hazards
Cost	≤\$100 (After solar panel, battery, inverter)
Lighting	1-2 light bulbs
Heating	Heat 32 square feet
Outlets	2-3 outlets, 120V
Tidiness	Not Exposed/Close to Walls
Setup Difficulty	Very Easy
Aesthetic	Clean

After meeting with the client, a vast majority of our questions were answered. Therefore, we were provided with a much better understanding of the situation and how to approach a solution. With better background information about the types of clients that would be settling in these homes, we were able to establish proper safety measures, for instance, making it child safe, handicap friendly, so on and so forth. Similarly, we were able to classify the needs of the client under a scale from 1-5, rating 5 as something that is required or obligated to contain. With this, we were able to develop our design criteria and specifications, to identify what would be needed to satisfy these conditions, all while staying under budget.