Green Tech Velocity Prep Program

Sol Stealers, Inc.

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Executive Summary

Sol Stealers is a company created through Green Tech Velocity Prep whose main goal is to find an energy solution for the La Presa Colonia, located outside Laredo, TX. The La Presa colonia-is a population of residents who are without electricity. This project is sponsored by TEES (Texas Engineering Experiment Station) and is composed of a group of high school students who spent 4 weeks of their summer working on a solution to this problem. The main goal of our company is to create the most effective solution for La Presa Colonia's energy problem.

Our main goal is to find an energy efficient solution for the residents of the La Presa Colonia's energy problem. The homes that are located within the Colonia's all suffer from the same problems; and not having energy is the main one. At this point, the residents are "borrowing" electricity from their neighbors to run their appliances. Being so hot, the residents are in constant need of cool air which is provided by the many three or five fans in their homes. By us coming up with an energy efficient system could make these families lives easier and happier just being provided with electricity to power their main household appliances.

We have come up with many solutions to this problem and have finally decided on one, which is a hybrid system solar panels and wind turbines. With the help of Maverick Solar's Photovoltaic System Design spreadsheet, we were able to calculate the amount of power each household needs and how many solar panels, batteries, inverters, etc. they would need to provide the same amount of electricity to each home. For one home we will need 10 solar panels, and 13 batteries. We will be using 100 instead of the 150 solar panels which we calculated for the 15 houses and we will include 5 wind turbines for each 15 houses. By adding

the 5 wind turbines, it will produce 1/3 of the power of the 150 solar panels, and since solar energy would only be out during the day, the wind turbines can collect energy overnight.

The cost for one system to power fifteen homes is $264,976.38, this includes the major components such as the solar panels, batteries, inverters (with a built in control system), wind turbines, wiring, storage containers, a fence (to enclose our panels), and labor and extra parts. Each component plays a key role to make this system do its job which is to provide electricity to the fifteen homes 24 hours a day.

The solar panels and wind turbines are gathering energy to put into the batteries so the homes have energy all day and night. The purpose of the wind turbines is to produce electricity at night, or on cloudy days. Since the wind turbines are constantly running and will be collecting day and night it will take some work off of the solar panels.

Company Profile

Sol Stealers, Inc.

Providing electricity for the La Presa Colonia.

“Sol for the Souls”

Green Tech Velocity Prep Program is a summer program for Eastside Memorial High School students who are interested in engineering and creating new ideas during a four week period. The Green Tech Velocity Prep students are chosen to create an energy solution for the La Presa Colonia, outside of Laredo, Texas. The energy solution is a stable system that will be effective for as long as possible. Using the following items batteries, wind turbines, storage containers, charging controllers, security hardware, inverters and solar panels; we will be using these components to power 15 houses.

Target Market

Colonia's are communities along the U.S border that are illegally subdivided by developers and because of this they are in need of water, wastewater systems and electricity. These communities usually have smaller plots and individuals with lower socioeconomic income. Due to the social and political issue associated with living in a Colonia, the residents have many problems.

1. Unreliable sources of energy are problematic because they are off the grid. Off the grid developments are not connected to urban utilities.
2. A typical Colonia household income is $22,000, which is at a 53% poverty level.
3. Electric companies are not helping them because of their location and policies that keep the companies from giving residents power.
4. Electric power is typically produced by gas generators. This can cost households as much as $600 a month.

Our electrical solution solves the problem because the people of La Presa will have energy 24 hours a day, there will be reliable energy, and they will have saved money because of a lower cost of energy compared to generators.

Project Product

To complete our project, we have been collaboratively researching energy solutions. Researching involves figuring out the budget plans, finding the cost of small wind turbines, batteries, inverters, storage containers, charging controllers, security hardware and solar panels. Looking up the weather conditions, number of homes, constructional view and how much watts each appliance takes. The description of project is detailed below. Our final product is one system to power 15 homes, each system consists of 100 solar panels, and 5 wind turbines to collect energy to power the 195 batteries.

Parts List

Concorde PVX-1040T Sun-Xtender (Batteries)

Helios Solar Works 255W (Solar Panels)

Skystream 3.7 (wind turbines)

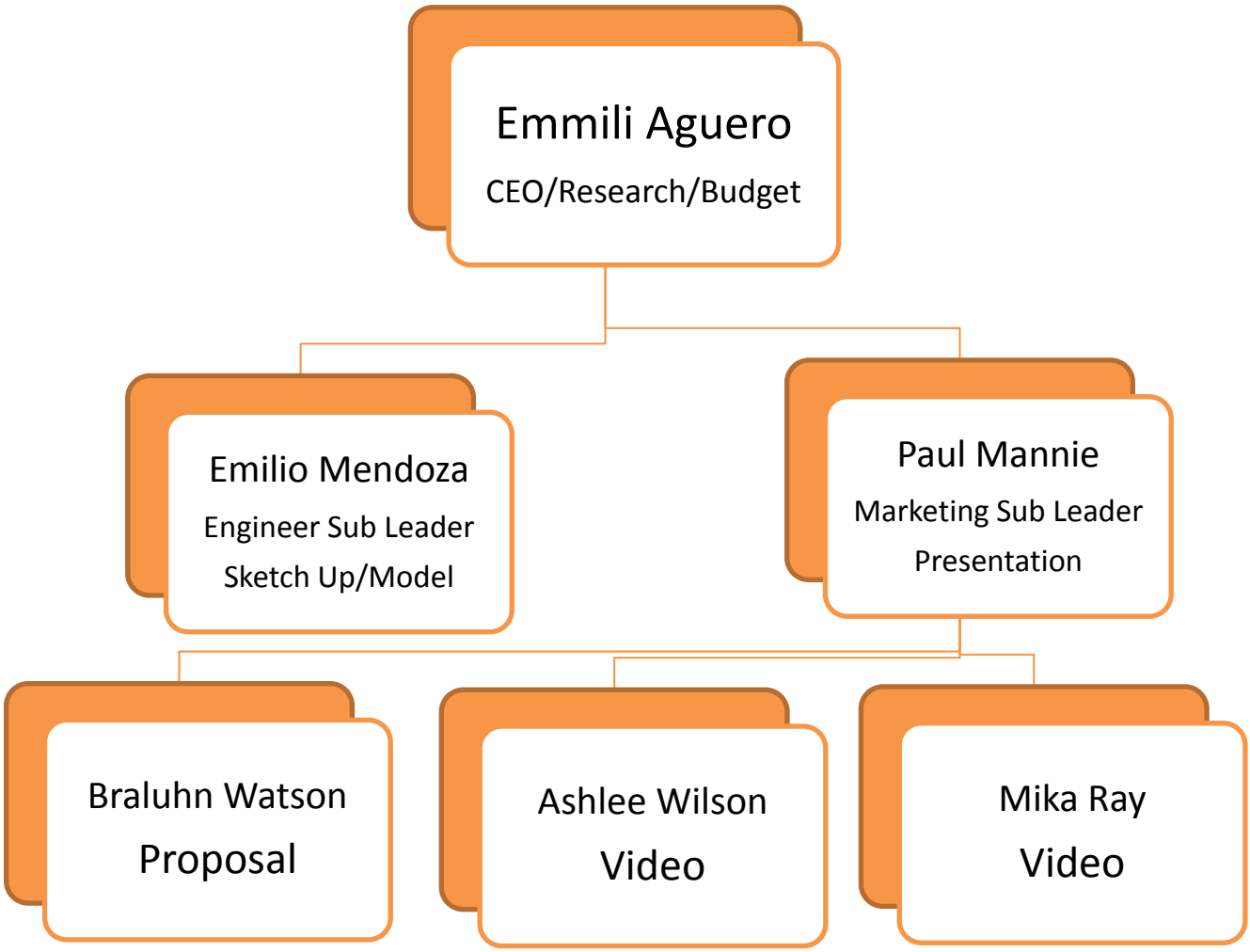
Wiring

Sunny Island3324/ 4248 / 4248-US (Inverters/charge controllers)

Chain link fence with razor wire

Shipping container

Team Management



Based on what each individual wanted to pursue (such as engineering, or marketing) we separated evenly into three companies. Sol Stealers Inc. was put together during the second week of this mission at Velocity Prep. The employees of Sol Stealers Inc. were all separated into two sub-teams based on the goals of each individual. The sub-teams were formed by putting each employee into the field they felt they were most helpful in, such as engineering and marketing. Both sub-teams have a team leader, who helped those who were in their team. The

engineering team consists of researching components, designs, prices, and quantity to fit the households needs. They also created digital sketch-ups of our final designs and built a model. The marketing team created a presentation of our research, designs, etc. to make this mission successful. They also created a video, and proposal that we will be presenting to our client; TEES.

During this four week period there were difficulties of agreeing on possible solutions, since we did not know where to begin. While researching affordable and effective plans of systems, we received presentations from different companies in relevant fields. We were visited by Maverick Solar, whom gave us important information on batteries, solar panels, inverters, and other components. Maverick Solar also gave explained to us which designs are cheaper and effective. System experts from Austin Energy reviewed our designs and gave us helpful, suggestions; they also gave us a tour of solar panels they put up at Austin Bergstrom International Airport which helped us understand how they functioned. We were visited by students from the University of Texas who did research on colonias in Redwood, Texas, right outside of San Marcos. They showed us the conditions and obstacles the families had to face not having any electricity.

Suggestions

While coming up with energy efficient plans for the residents of the La Presa Colonia we've stumbled upon several possibilities. Our initial system included a community laundry facility for the local residents. We wanted to include washers and dryers. The residents would pay$2.00 for the use of the washers and dryers, TEES wouldn't be making their money back for the community laundry facility. It would cost about $72,870.00 to build this system. TEES would not be making their money back within the 5 year limit nor will they be making back their money within 10 years. TEES could also change the amount of money per load in order to make back what they invested. Also, to know whether or not the residents would use this system we would send out surveys to see if it would be affective in La Presa, and if not, then the whole idea would not be put into effect. While coming up with a load analysis to figure out how many solar panels, batteries, inverters, etc. to use for the system, solar panels alone came out to a rough estimate of 47 thousand dollars and that was only for the washers.

We decided to not include dryers because dryers take up more energy and it would be twice as much for the washers. We decided to just include two washers for every fifteen homes and that the families could hang their clothes to dry, because of the environment and weather of La Presa. We came to the conclusion of two washers per fifteen families because we believe the average family does laundry once a week, and just for those two washers we would only need thirty-two solar panels and the cost would roughly be Sixteen thousand dollars.

After figuring out the number of washers, we realized that there would be no way to get water to these washers. Currently the families get water from a water pump, we didn't want to take the little water from the residents and we also figured out that we could get a grey water

system. Maybe TEEs could create a job for someone to truck water to the community laundry facility. That way the grey water they use would be re-used over and over just for the washers; again, that took a little too much money and extra work.

Cost for Washing System

Cost (including qty.)	Part
$47,405.00	Solar Panel
$17,946.20	Batteries
$3,350.00	Container
$4,165.34	Inverter/CC
$72,866.54	Total

- This spreadsheet shows the components and price it would be to create a washing system with two washers for 15 families.

Revenue for 15 Houses ($2.00 a Load)

Fifteen Families	
$2.00 a load	
1 Week	$30.00
1 Year	$1,560.00
5 Years	$7,800.00

- This calculates the how much money each family will be paying a week, a year, and in 5 years if they pay 2.00 a load.
- It's based off of the conclusion of each family doing laundry once a week.

Revenue with 5+ Years

Revenue within 5+ years	
5 Years	$7,800.00
6 Years	$9,360.00
7 Years	$10,920.00
8 Years	$12,480.00
9 Years	$14,040.00
10 Years	$15,600.00

- This shows the money TEES will be making back in 5+ years, it shows that they will not be making their money within 5 years nor in 10 years.

Team Biography

My name is Emmili Aguero; I am 17 years old and a senior at Eastside Memorial High School. I enjoy anything that gives back to the community and I believe this experience will help my communication skills, and hopefully I'll get to use it in the future, with what I decide to pursue.

I am Emilio Mendoza I am an upcoming senior at Eastside Memorial High school. I am interested in science mainly forensic science. I applied to the velocity program because I thought that it would be a good experience.

Paul Mannie, 17 Year old Jr. at Eastside Memorial New Tech High School. My interest is band and engineering. I signed up for Velocity Prep because I wanted to get a hand on experience with the career that I plan to go into.

Mika Ray, is a 17year old upcoming senior at eastside memorial. Enjoy going shopping and have fun with friends. Favorite thing to do overall is to laugh hysterically. Joined velocity pep because of the interest of learning and a good mentor.

Ashlee Wilson is a 16 year old Jr. at Eastside Memorial High School. She spent her freshman as well as sophomore year at Eastside. She is planning to attend ACC and Baylor University.

My name is Braluhn Watson I am attending Eastside Memorial high school I love playing ball. I wanted to do this program because wanted to have a little engineering experience because I know in the future it probably want be my focus.

Acknowledgments

1. Allison Bouwman
2. Leah Grossman
3. Lonny Stern
4. Carlos Olmedo
5. Leticia Aparicio
6. Andrew Olson
7. Paul Martinez
8. Dallas Swindle
9. Sachi DeCou
10. HelioVolt
11. RFC Team
12. Maverick Solar
13. Valence Battery

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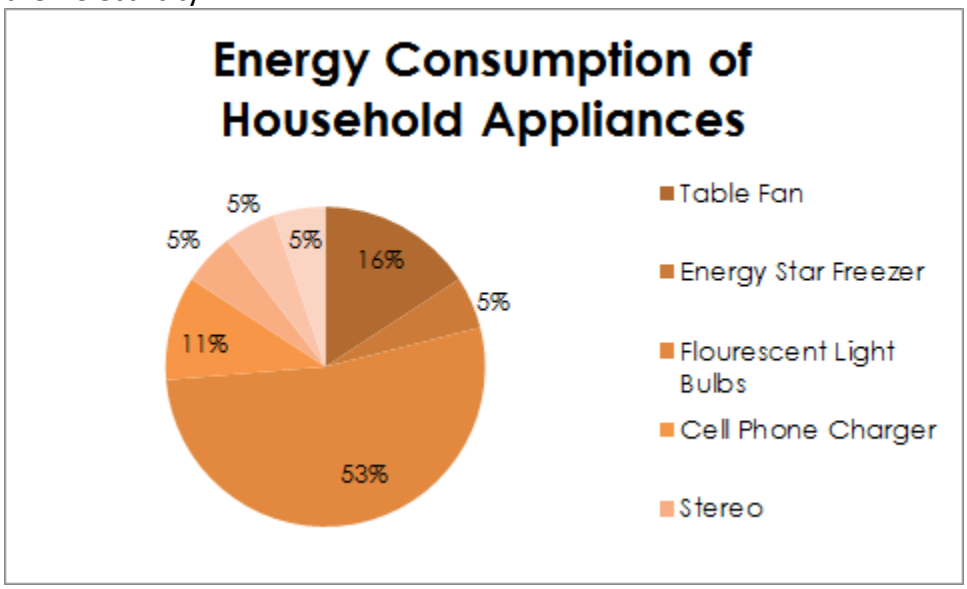
Load Analysis for one household.

Load Analysis				
Load Description	Qty.	Power Rating (W)	Operating Time (hr/day)	Energy Consumption (Wh/day)
Table Fan	3	25	24	1800
Energy Star Freezer	1	110	12	1320
Flourescent Light Bulbs	10	16	4	640
Cell Phone Charger	2	20	3	120
Stereo	1	50	2	100
Lap Top	1	140	6	840
T.V.	1	160	6	960
Daily Load (Watts)				5,780
Monthly Load (Watts)				173,400
Monthly Load (Kw)				173.4
Austin Pricing ($0.04 per KW)				$6.94
La Presa Pricing (Now - $2.50 per KW)				$433.50

- The Load Analysis above was created to give us a rough estimate of the KW each household in La Presa are using daily, and monthly.
- It also shows how much money the residents would be paying if they were given energy by Austin Energy.
- At the very bottom it shows how much money each household is paying now for their electricity.



- The pie chart above shows the percentage of KW each Household appliance is taking up daily.

PV System Design

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Consumption/Loads

Loads	QTY	DC Power Watts	Daily Duty Cycle (hrs)	Weekly Duty Cycle	Inverter Efficiency					Daily Watt Hours
Standby 1					100%					0.00
					100%					0.00
					100%					0.00
					100%					0.00
					100%					0.00
										0.00
		AC Power								
					89%					0.00
Table Fan	3	25.00	12	75	89%					1,011.24
Energy Star Freezer	1	110.00	15	110	89%					1,853.93
Flourescent Bulbs	10	16.00	5	160	89%					898.88
Cell Phone Charger	2	20.00	3	40	89%					134.83
Stereo	1	50.00	4	50	89%					224.72
Lap Top	1	140.00	5	140	89%					786.52
T.V.	1	160.00	6	160	89%					1,078.65
	0	0.00	0	0	89%					0.00
	0	0.00	0	0	89%					0.00
	0	0.00	0	0	89%					0.00
										5,988.76
				735.00				Total Load Watt-Hours		5,988.76

Battery and Inverter Information

Total DC Load	Total AC Load	Minimum Inverter Size	DC Battery Voltage	Peak Current Draw Amps	Wire Efficiency (Decimal)	Battery Efficiency (Decimal)	Corrected Load Watts	Corrected Load Amp-Hour
0.00	5,988.76	735	12.60	58.33	0.98	0.95	6,432.61	510.52
Recommended Inverter Size		1470		116.67				

Calculate System Battery Size

Corrected Watt-Hour Load	Storage Days	Maximum Depth of Discharge	Battery Efficiency	Required Battery Capacity	Capacity of Selected Battery	Batteries in Parallel	Battery Name	Battery Model
6,433	1	83%	0.95	647	104	6.23	Concorde	AGM
	recommended not higher than 50%					7.00		

	Minimum	Target	Max
	C / 20	C / 12	C / 6
	36.4	60.7	121.3

Nominal System Voltage	Nominal Battery Voltage	Batteries in Series	Batteries in Parallel	Total Batteries
12.60	12.4	1.016	7	7.11290323

Batteries in Parallel	Capacity of Battery	System Battery Capacity	Maximum Depth of Discharge	Usable Battery Capacity
7	104	728	83%	604.24

Calculate Design Current and Array Tilt

System Location:	Larado, TX		Latitude	27.54	W	Long.	97.7
Isolation Location:	TX		Latitude	27.54	W	Long.	99.47 N

http://rredc.nrel.gov/solar/old_data/nsrdb/redbook/sum2/state.html

	Tilt at -15			Tilt at Lat.			Tilt at +15		
Month	Corrected Load	Peak Sun	Design Watts	Corrected Load	Peak Sun	Design Watts	Corrected Load	Peak Sun	Design Watts
J	6433	3.70	1739	6433	4.20	1532	6433	4.40	1462
F	6433	4.40	1462	6433	4.80	1340	6433	5.00	1287
M	6433	5.20	1237	6433	5.40	1191	6433	5.30	1214
A	6433	5.60	1149	6433	5.50	1170	6433	5.10	1261
M	6433	5.80	1109	6433	5.50	1170	6433	4.90	1313
J	6433	6.40	1005	6433	5.90	1090	6433	5.10	1261
J	6433	6.70	960	6433	6.20	1038	6433	5.40	1191
A	6433	6.50	990	6433	6.30	1021	6433	5.70	1129
S	6433	5.70	1129	6433	5.80	1109	6433	5.50	1170
O	6433	5.00	1287	6433	5.40	1191	6433	5.50	1170
N	6433	4.10	1569	6433	4.60	1398	6433	4.80	1340
D	6433	3.50	1838	6433	4.00	1608	6433	4.30	1496
	min design watts		960	min design watts		1,021	min design watts		1,129
	max design watts		1,838	max design watts		1,608	max design watts		1,496
	average	5.22		average	5.30		average	5.08	

Calculate Solar Array Size

	Design Watts Required	Module Derate Factor	Derated Design Watts	Charge Controller Output Amps	Solar Module Rating (Wp)	Modules Required (MPPT)*	Panel Voltage (Vmp)	Modules Required in Series	Net Modules in Parallel	Gross Solar Module Watts
winter	1,608	0.9	1786.84	141.81	185	9.70	18.0	1	8.10	1798
summer	1,021	0.72	1418.12	112.55	185	7.70	36.0	1	6.40	1421
			142							

*Run Panels in Series/Parallel with MPPT Charge Controller for best voltage/wire size performance.

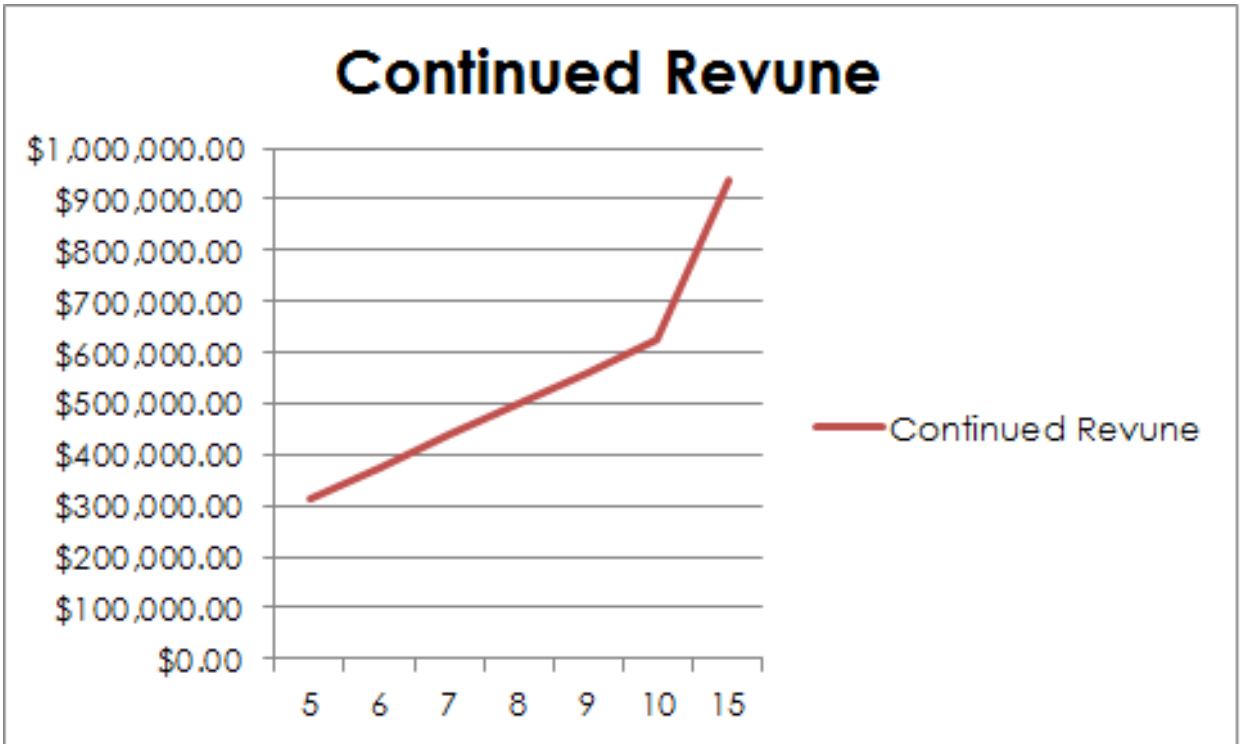
The spreadsheet above shows how many batteries, panels, and inverters are needed for one household. *Spreadsheet provided by Maverick Solar.

Financials

Part/Component	Price	Quantity	Total Price
Concorde PVX-1040T Sun-Xtender	$294.20	195	$57,369.00
Helios Solar Works 255W	$499.00	100	$49,900.00
Skystream 3.7 (Labor included)	$16,000.00	5	$80,000.00
Wireing	$15,000.00	1	$15,000.00
Sunny Island 3324 / 4248 / 4248-US	$4,165.34	7	$29,157.38
Fence	$5,200.00	1	$5,200.00
Shipping Container	$3,350.00	1	$3,350.00
Labor/Extra Parts	$25,000.00	1	$25,000.00
Total			$264,976.38

- The spreadsheet above shows the amount of money it costs to pay for one system. This includes the major parts that we have decided were most efficient for this system.

Revenue

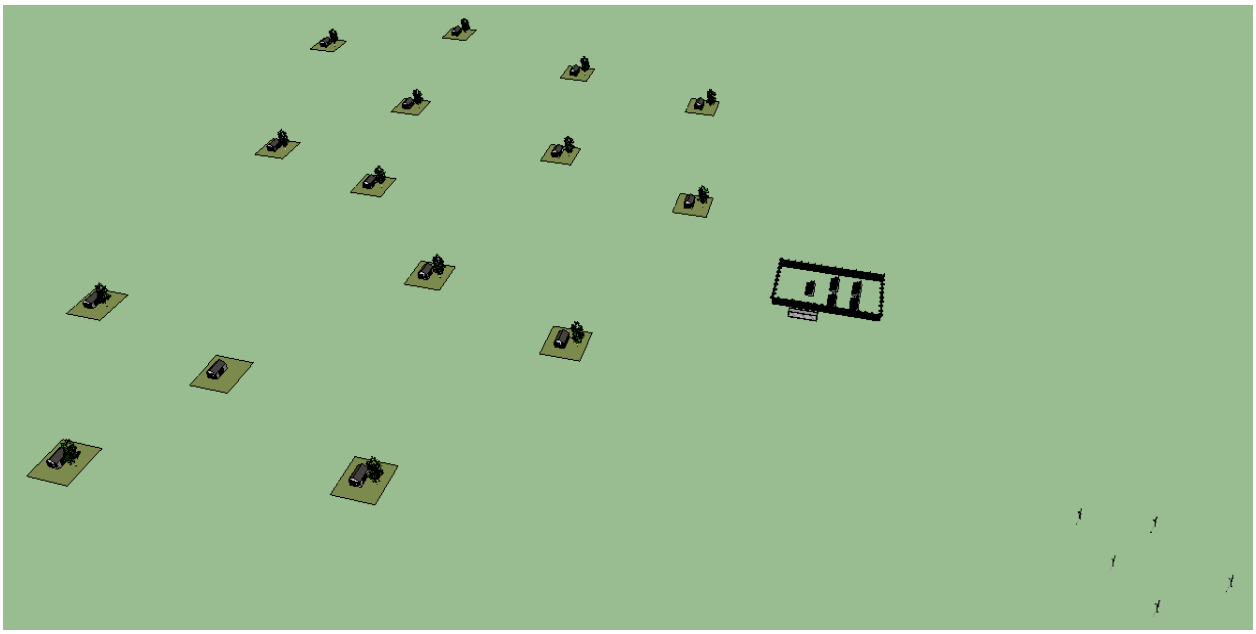


- The line graph shows how much money will be made back within the next 5+ years.

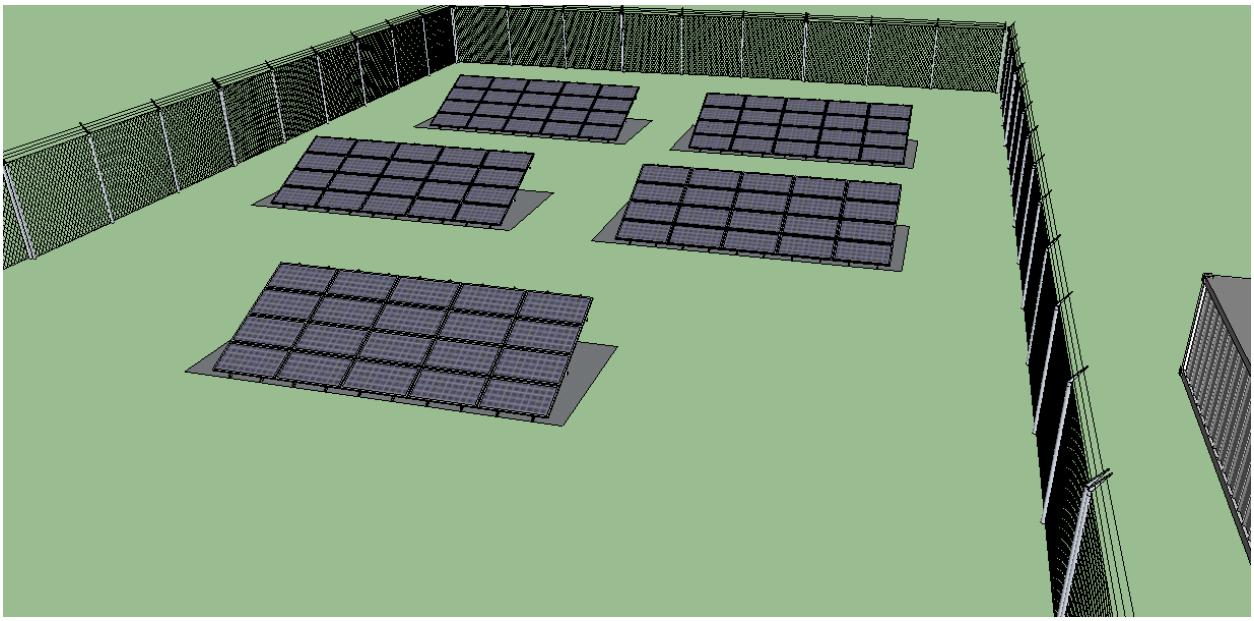
Year	Payment
5	$312,120.00
6	$374,544.00
7	$436,968.00
8	$499,392.00
9	$561,816.00
10	$624,240.00
15	$936,360.00

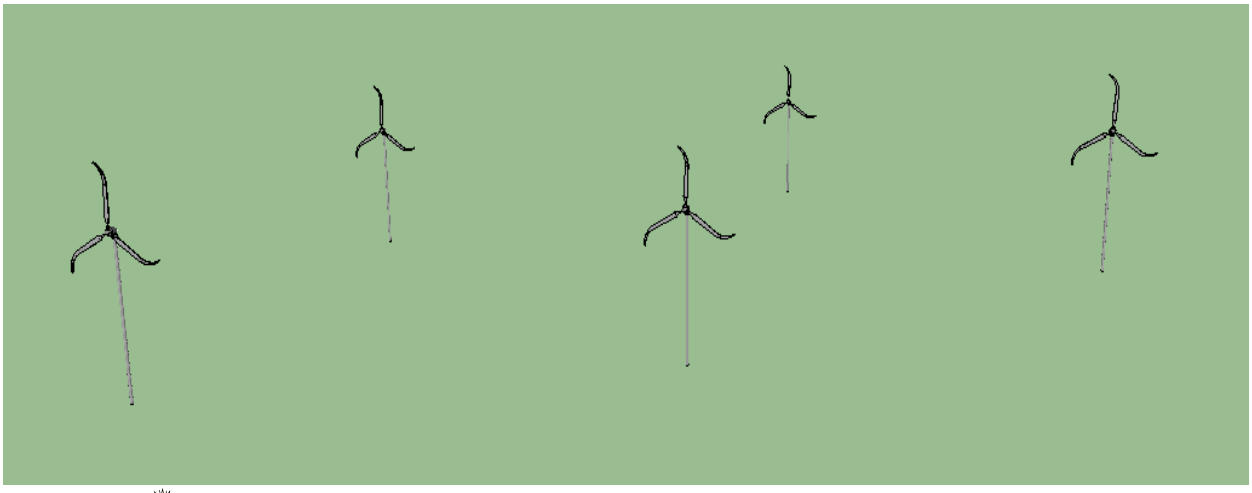
- This is in words, to show the exact amount of money TEES would make back in 5+ years.
- This is based off of $2.00 per KW.

Design / Sketch-Up

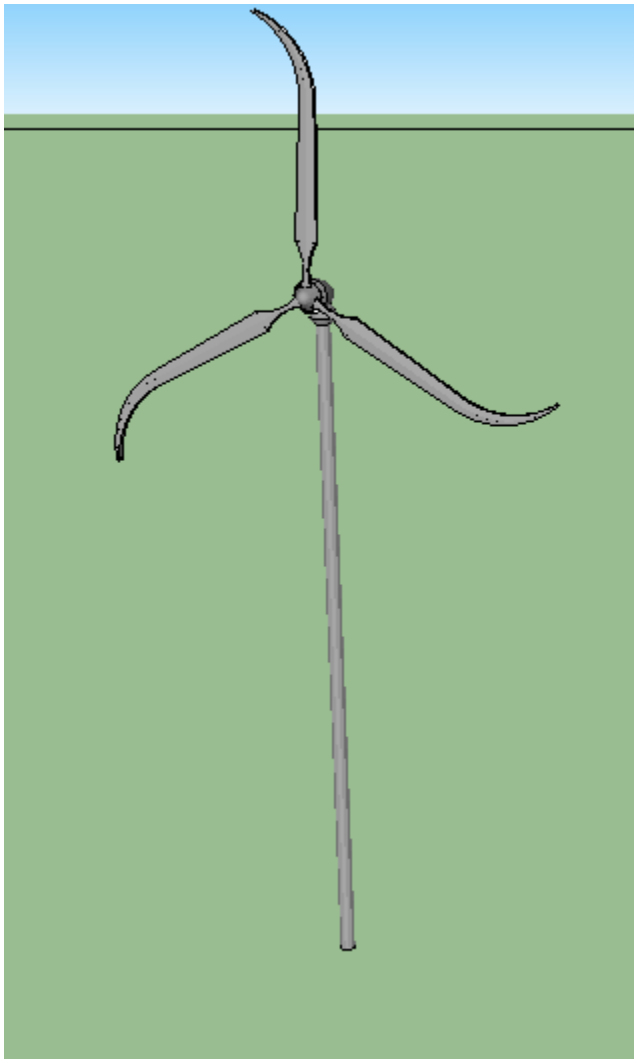


- This sketch up shows the 15 houses within a 1 square mile, behind the houses are the solar panels.
- The solar panels are secured by barbed wire fences.
- Off to the corner we have our five wind turbines.





- The sketch up shows the solar panels that are secured by the fences.
- These are the five wind turbines that will be powering the homes.



Appendix

Helios Solar Works 255W Monocrystalline Solar Panel, 6T Series, 6T 255

ONLY: $499.00
Item Number: 6T 255
Max Power Rating: 250
STC: 250
PTC: 225.6
Vmp: 30.3
Imp: 8.22
Voc: 37.4
Isc: 8.72
TempCorrI: 0.07
Min Temp: -40

Helios Solar Works manufactures high-performance monocrystalline solar modules for solar electric systems. By using only high-quality components and an advanced, automated manufacturing platform, Helios Solar offers solar modules that deliver higher efficiency, lower installation costs, and a smaller system footprint.

Helios Solar Works is headquartered in Milwaukee, Wisconsin. They manufacture their solar panels using materials sourced from regional and U.S. suppliers whenever possible.

Helios 255W Solar Panel
Item Number: 6T 255

Monocrystalline
Dimensions = 66.14" X 38.98" X 1.58"
Weight = 53.9 lbs lbs
Vm = 30.30 V
lm = 8.22 A
Voc = 37.4 V
lsc = 8.72 A

SUNNY ISLAND 4248-US

Simple
- For systems from 2 to 5 kW
- AC and DC coupling
- Simple installation

Efficient
- High efficiency
- Excellent price-performance ratio

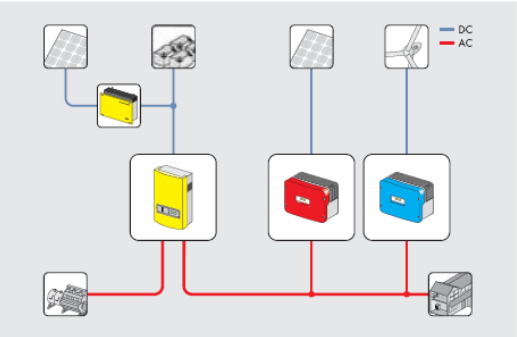
Durable
- Extreme overload capability
- 5-year warranty

SUNNY ISLAND 4248-US

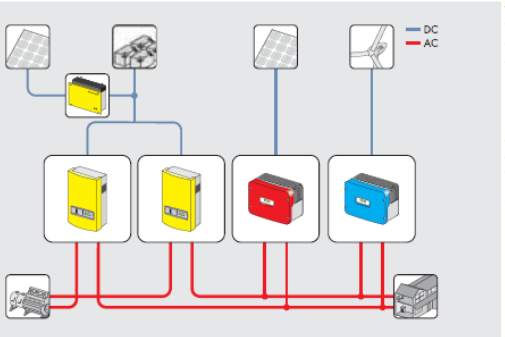
Making stand-alone grids easier than ever

Easy installation, safe operation and an outstanding price-performance ratio make the Sunny Island 4248-US battery inverter especially suitable for small and mid-sized stand-alone grids. Designed for countries with voltage systems compatible with the U.S. standard, the Sunny Island 4248-US guarantees a reliable and high-quality power supply. Due to its outstanding overload capabilities, and that it is designed to withstand high ambient temperatures, this inverter can be used under extreme weather conditions.

Technical data	Sunny Island 4248-US
AC output (loads)	
Nominal AC voltage (adjustable)	120 V (105 V – 132 V)
Nominal frequency (adjustable)	60 Hz (55 Hz – 65 Hz)
Continuous AC power at 25 °C / 45 °C (77 °F / 113 °F)	4200 W / 3400 W
AC output power at 25 °C (77 °F) for 30 min / 1 min / 3 s	5400 W / 7000 W / 11900 W
Nominal AC current / max. AC current (peak)	35 A / 140 A for 5 s
THD output voltage / power factor (cos φ)	< 3% / –1 to +1
AC input (generator or grid)	
AC input voltage (range)	120 V (80 V – 150 V)
AC input frequency (range)	60 Hz (54 Hz – 66 Hz)
Max. input current (adjustable) / Max. input power	56 A (2 – 56 A) / 6.7 kW
Battery DC input	
Battery voltage (range)	48 V (41 V – 63 V)
Max. battery charging current / continuous charging current at 25 °C (77 °F)	100 A / 80 A
Battery type / battery capacity (range)	lead / 100 – 6000 Ah
Charge control	IUoU process
Efficiency / operating consumption	
Max. efficiency	95%
Internal consumption with no load / standby	22 W / 4 W
Protection devices	
DC reverse polarity protection / DC fuse	●/●
AC short-circuit / AC overload	●/●
Overtemperature / excessive battery discharge	●/●
General data	
Dimensions (W / H / D) in mm (in)	390 / 590 / 245 (15 / 23 / 10)
Weight	39 kg (86 lb)
Operating temperature range	–25 °C ... +50 °C (–13 °F ... +122 °F)
Protection rating (according to IEC 60529)	indoors (NEMA 1)
Features / function	
Operation & display / multifunction relays	internal / 2
3-phase systems / parallel connection	–/–
Integrated bypass / multicluster operation	–/–
Charge level calculation / full- / equalization charge	–/●/●
Integrated soft start / generator support	●/–
Battery temperature sensor / communication cables	●/–
Warranty: 5 / 10 / 15 / 20 / 25 years	●/○/○/○/○
Certificates and permits	www.SMA-Solar.com
Accessories	
Battery cables / battery fuses	○/○
Interfaces (RS485 / Multicluster PB)	○/–
"GenMan" extended generator start	○
Load-shedding contactor / battery current measurement	○/–
● Standard features ○ Optional features – Not available	
Last revision: May 2010	
Type designation	SI 4248U



Single-phase system



Split-phase system (only with Sunny Island 4248-US)

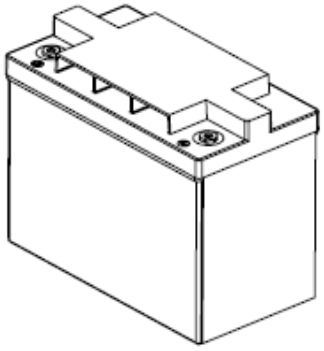
Toll Free +1 888 4 SMA USA
www.SMA-America.com

SMA America, LLC

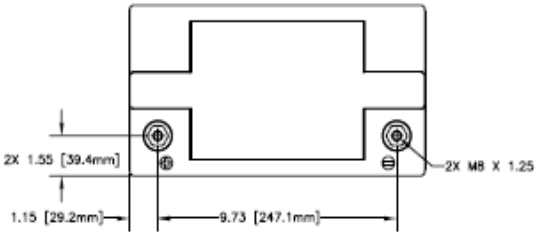
NOTES: UNLESS OTHERWISE SPECIFIED

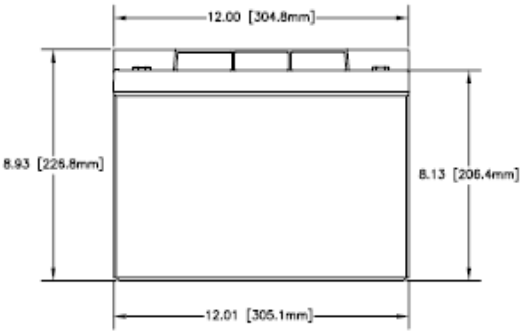
1. SEE DRAWING NO. CB-00285 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
2. ALL TESTING ARE IAW BATTERY COUNCIL INTERNATIONAL STANDARDS.
3. ALL DIMENSIONS ARE IN INCHES [MM].
4. ABBREVIATION USED IN TITLE IS: SEALED LEAD ACID (SLA).

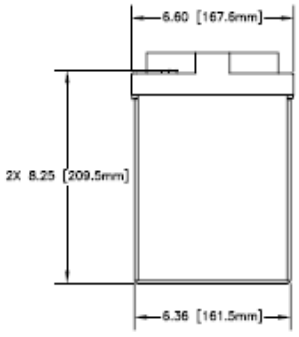
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	REMOVED SIDE HOLD-DOWNS	6/10/03	JBT



REFERENCE VIEW







CAPACITY RATINGS	
PART NUMBER	PVX-1040T
NOMINAL WEIGHT	66 LBS [30 KG]
AMPERE HOUR CAPACITY @ 24 HOUR 1.75 VOLTS/CELL @ 77°F (25°C)	104 AH

ENVELOPE DRAWING

PARTS LIST

CONTRACT NO.	NA
TITLE	BATTERY, SLA, 12 VOLT, PVX-1040T
SIZE	C
CAGE CODE	63017
DWG NO.	PVX-1040T
REV	A
MATL	NONE
SHEET	1 OF 1

CONCORDE BATTERY CORPORATION
2009 SAN BERNARDINO RD. W. COVINA, CA 91790

APPROVALS		DATE
DRAWN	CLH	5/13/01
CHECKED	HWF	5/21/01
APPROVED	JBT	5/22/01
RELEASED	AT	6/13/03

ENGINEERING COPY 13JUN03

SKYSTREAM 3.7®

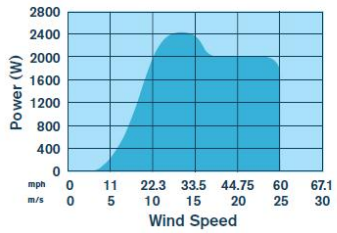
2.4 KW DISTRIBUTED WIND ENERGY SYSTEM

Take Control of Your Energy Needs

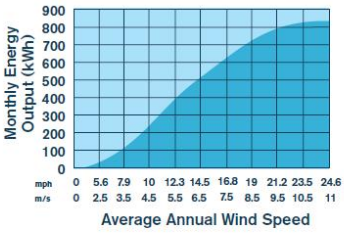
Designed for homes and small businesses, the Skystream 3.7® converts wind into clean electricity you can use. It's the first compact, user-friendly, all-inclusive wind generator (with controls and inverter built in) designed to provide quiet, clean electricity in very low winds.

With a rated capacity of 2.4 kW, Skystream can help offset a household or small business's total energy needs.[1] And because it operates at a low RPM, Skystream is as quiet as the trees blowing in the wind.

POWER[2]



MONTHLY ENERGY



FIVE YEAR WARRANTY

c SU us CE

Technical Specifications

Rated Capacity	2.4 kW
Rotor Diameter	12 ft (3.72 m)
Weight	170 lb (77 kg)
Swept Area	115.7 ft² (10.87 m²)
Type	Downwind rotor with stall regulation control
Direction of Rotation	Clockwise looking upwind
Blades	(3) Fiberglass reinforced composite
Rated Speed	50 - 330 rpm
Maximum Tip Speed	216.5 ft/s (66 m/s)
Alternator	Slotless permanent magnet brushless
Yaw Control	Passive
Grid Feeding	120/240 VAC Split 1 Ph, 60 Hz 120/208 VAC 3 Ph compatible, 60 Hz (Check with dealer for other configurations)
Battery Charging	Battery Charge Controller kit available for battery charging systems
Braking System	Electronic stall regulation with redundant relay switch control
Cut-in Wind Speed	8 mph (3.5 m/s)
Rated Wind Speed	29 mph (13 m/s)
User Monitoring	Wireless 2-way interface
Survival Wind Speed	140 mph (63 m/s)
Warranty	5 year limited warranty

Southwest Windpower
1801 W. Route 66
Flagstaff, AZ 86001 USA
928.779.9463
www.skystreamenergy.com

Makers of Skystream 3.7® / AIR / Whisper

[1] Actual savings is based on wind speed at the site and monthly energy consumption.
[2] Data measured and compiled by USDA-ARS Research Lab, Bushland, TX.

Printed on recycled paper with vegetable inks using 100% new wind energy.

3-CMLT-1338-01 REV H 4-10