Power System Update:

Before the last upgrade:

The generator would run twice a day, from 7:00am until around 1:30pm and then from 5:30pm until around 10pm. While the generator runs it simultaneously recharges our battery bank. When the generator shut off our energy supply comes from the batteries. Twice a day, around 5 am and 4 pm, we would be completely without power until we restarted the generator. Based on the old system we used we relied more on the generator than our batteries.

Where we are at now:

In the past few months we have purchased two Outback inverters and 16 new batteries. Last week we were able to finally install all of the components. We have already noticed a huge improvement.

The new system is computerized and provides us with feedback on the condition and amount of power generated. When the batteries drop to a certain voltage the computer is able to start the generator automatically. We now have power 24 hours a day, and we are running the generator less. We have been running the generator 4 times per day for a total of 9-10 hours. It should also be noted that this is with an average of 13 volunteers living here. The volunteer house is the biggest consumer of energy, and when we have fewer volunteers here we will see an even larger decrease in generator usage.

The way the system was running before was less than ideal for the batteries. Having the batteries get completely drained twice a day shortens their life expectancy. The computerized inverters are now able to monitor the battery voltage and detect when they are fully charged. This process takes just under 2.5 hours. According to experts in the field this is the ideal setup.

In Summary, we now have 24 hour power, use the generator less, and most importantly are treating our equipment better than ever.

Where we would like to be:

We are incredibly happy with our current upgrades. We have made a great investment in the reliability, quality, and cost effectiveness of energy at COTP. We have also been learning so much about off grid power systems that we don't want to stop here. We are proposing one more big upgrade which could save a hundred thousand dollars in 10 years.

We believe that the future of energy at COTP is solar. COTP already has a large investment in inverters and batteries, these are both expensive components of a solar energy systems.

Here is what it will take to have COTP go completely Solar:

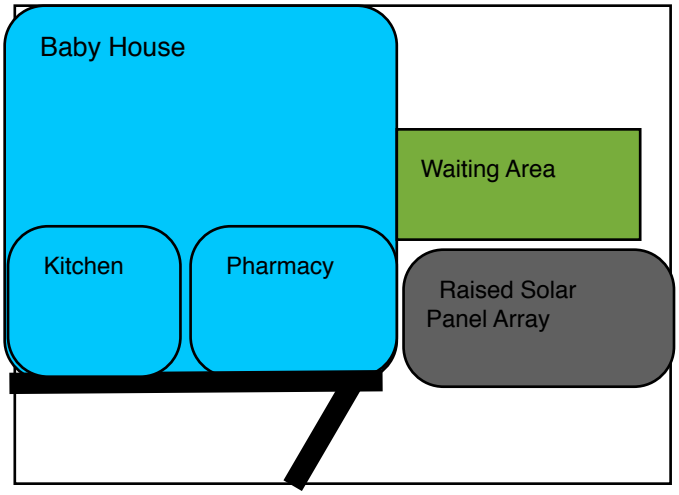
32 Solar Panels. Each costing approximately $605 or $19,360 for all 32. These panels generate 205 watts each. This will generate around 6.5kw of energy. Enough to completely power COTP at peak times as well as charge the batteries during the day. These panels have an expected lifespan of at least 25 years. They will far outlast our battery banks and inverters.

12 more batteries. These cost $300 each, which will cost us $3,600. These will be in addition to the 16 that we already have. Currently during the night our batteries last around 5 hours. With the extra batteries we should be able to go around 9 hours, and even more when less volunteers are here. This is something that we need to move on quicker than anything else because our batteries right now are still fairly new and we don't want to combine new batteries with older batteries.

Additional batteries without all of the solar panels will save us a significant amount of money. The more energy we can store the less frequently we need to run the generator. If this is the only part we buy, within the first year this could save us around $6,120. After the cost of the new batteries we would have net savings of around $2,520 the first year!

With the solar upgrade we will need 3 charge controllers. These are units that the solar energy passes through before they enter the charger. These act as gates for the energy. For example if it is very sunny and the batteries are full it will only allow a certain amount of energy to come through. At night solar panels will drain the batteries if you do not have have charge controllers connected to them. They cost $675 each.

We will need to mount the solar panels somewhere. They will need to go in the vicinity of the inverters in order minimize the length of cables. At this point we think the best option would be outside of the pharmacy by the waiting area. The solar panels will be raised and will provided a shaded sitting area underneath. All of the mounting equipment is pre manufactured and made of stainless steel and aluminum to prevent rust.



We have done our best to estimate the fuel costs of the generator. Our estimation does not include continual depreciation of the generator, or generator maintenance. The generator is currently at 11,000 hours. Minimizing our usage of the generator as well as our dependance on it will greatly benefit COTP. In the best case scenario which is what we are hoping for our generator will rarely run. Perhaps we will only be running it once per week for maintenance. To be conservative

we based our calculations on less than ideal conditions of the generator running once per day.

	Generator Fuel Costs	Gen. Fuel Costs W/ Solar	Savings
Per Day	$33.33	$8.00	$25.33
Per Month	$1,000.00	$240.00	$760.00
Per Year	$12,000.00	$2,880.00	$9,120.00
2 Years	$24,000.00	$5,760.00	$18,240.00
Four Years	$48,000.00	$8,640.00	**$39,360.00**
Ten Years	$120,000.00	$28,800.00	$91,200.00

The new inverters as well as batteries and related equipment have come from a Solar Energy store in Santiago, DR. Arlyn has been there a few times discussing our situation and what is the optimal solution. They speak great english and answer e-mails quickly! They have provided us with quotes, and stock all the equipment that is mentioned in this proposal. We have compared prices to many US solar energy stores and web-sites and believe that we are getting a better than fair price.

The savings are incredible. In the states people install solar panels with the hope that they will pay off in 15 or more years. Having the system pay for itself in four years is an incredible opportunity that will indisputably lead to amazing savings.

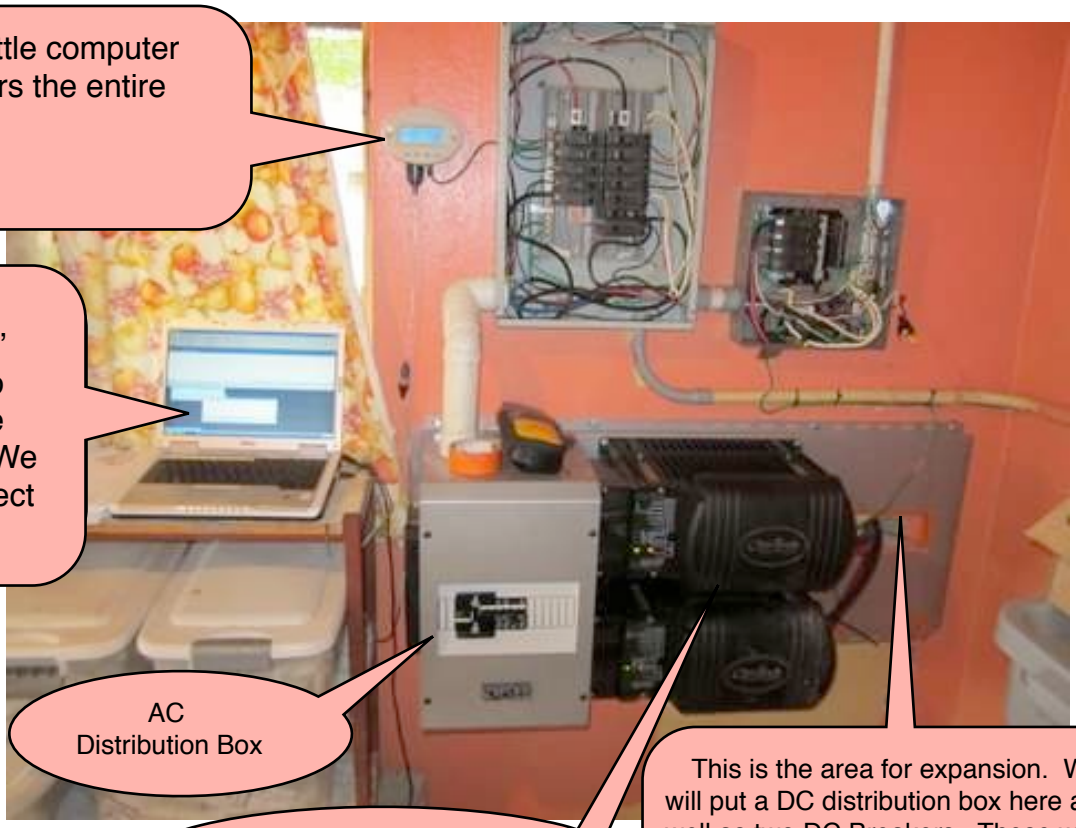
Thank You,
Nick Stolberg

Unit	Whats its for	How Many	Total Price
Charge Controller	Charging Batteries with Solar energy	3	$2025
Solar Panels	Collecting the Solar Energy	32	$22560
Batteries	Adding additional energy storage	12	$3600
Mounting Hardware	Mounts 4 panels	8	$3220
Cables	Connecting Batteries	15	$108
Combiner Box	Combines the wires from the solar panels	3	$350
Breakers	Connecting Solar Panels	8	$112
Lightning Arrestor	Protection against electrical storms	3	$375
Flexware Surge Protector	Connecting the Inverters to the AC System	2	$380
Flexware Breaker Enclosure	Connecting the charge controllers	1	$295
Breakers	250 amp	2	$290
DC Conduit Adapter	Connecting the components	2	$100
Flexnet DC	Monitoring the Batteries	1	$295
Mounting	Supplies to construct a structure to mount the panels		$500
	Grand Total		$34210

Our new batteries on the new battery table. We left room for 12 more batteries in the future.

The 'Mate' This little computer controls and monitors the entire system.

This computer connects to the 'Mate' and has allowed us to plot our energy usage over the past week. We used this data to project our solar need.



AC
Distribution Box

The two
new Outback Inverters

This is the area for expansion. We will put a DC distribution box here as well as two DC Breakers. These will make it much safer to do Maintenance on the battery bank. This is also where the two new Charge controllers will be installed.