

Peace and Prosperity Through Renewable Energy in Haiti  
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The goal of this project was to introduce “plug and play” solar powered devices that would generate electricity for those without it living near Mirebalais, Haiti. The intention was to help alleviate the serious conditions of energy poverty, and to prove the viability and sustainability of renewable solar power generation in off grid and limited grid areas. In addition to the Projects for Peace grant, I had several friends and relatives who also contributed services, funds and donated items to the project.

My project was to be carried out in three phases: a solar powered irrigation pump, the creation of solar lamp distribution program, and finally an off-grid solar panel system installation at a school and orphanage. While much went according to plan, some unforeseen things happened that affected my project in several ways.

Soon after arriving in Mirebalais, I quickly learned that there was no electricity in the city. It had already been out for many days due to unscheduled maintenance at the Peligre Dam that serviced the entire region with hydroelectric power. I suddenly found myself in a situation with very limited resources – specifically the lack of light and the ability to charge devices. This really underscored how vital electricity is to one’s progress when completing important tasks. Without it, progress is painfully slow or nonexistent. I never anticipated the degree to which I’d experience what it’s like to be an average Haitian struggling to make do without power. Even my health was affected when I fell ill a few days after arriving – probably as a direct result of the outage. I was diagnosed with a form of food poisoning that comes from food sitting at ambient temperature too long. I recovered after a few days, but never again will take for granted the value of electric refrigeration.

Worse still, I arrived in Haiti during the recent outbreak of Chikungunya – a tropical mosquito borne virus that, while not usually fatal, causes debilitating fever and severe joint and muscle pain that lasts for days with residual effects that can last months or years. Because of precautions, and probably just dumb luck, I didn’t contract it. However, throughout my stay in Haiti, it seemed that nearly everyone around me was afflicted or had just recently recuperated from Chikungunya. Many people that I had planned to meet with regarding the distribution of the solar lanterns were stricken with the disease which severely disrupted and delayed that planned first phase of my project. (Thankfully the outbreak has since subsided and my solar lamp distribution project has resumed; more on that below.)

Another phase was to install a solar irrigation pump. This required surveying an appropriate location around the general planned area of farmland that lies uphill from the Artibonite River just outside Mirebalais. The pump I’d brought, a Dankoff SlowPump model, had the capability to send water nearly 500 vertical feet using a relatively small amount of solar power – less than 200 watts. However, while the pump was engineered to run on ~160w, it was not designed to be highly “dirt tolerant.” Those pumps designed to run in dirtier water also require far more wattage to operate – and thus many more solar panels, too many, in fact, for the scope of this project. Aware of the possible sediment issue, I brought along a pump filter apparatus. However once I actually tested the water, I discovered more sediment than either I or the experts I consulted beforehand had anticipated. Thus after much back and forth with the pump’s seller, manufacturer and various engineers – those with real knowhow gained from doing similar drip irrigation projects in Africa – I reluctantly decided not to install it. Instead, I would redirect those solar panels that had been dedicated for the pump project toward upgrading the power of the solar array at the school.

Determined to see the third phase succeed, and despite being without internet, I was able to source extra deep cycle marine batteries in a hardware store in bustling Port Au Prince. When I surveyed the schoolhouse/orphanage site, I saw that the bracket’s I’d brought wouldn’t work to mount the panels on the cement roof. I needed to improvise a frame with the only the materials I had on hand. With the assistance of a local woodshop I was able to design, build and weatherproof a sturdy, windproof wooden

frame atop which the panels would sit. After testing the system's voltage, I securely mounted the panels, ran the cables, and finally connected everything to the charge controller, inverter and batteries. The director of the school and orphanage, Pastor Andrevil Benoit related to me how grateful he was that the children's needs would be finally be met. The solar array was able to provide lighting in the schoolhouse and dormitories of the orphanage, power to run a critical refrigerator and a water purification device (which had been run by a generator that had stopped working).

For the solar lamp distribution phase, I selected a small group of (mostly) women who after receiving training could sell the small portable solar lanterns and solar powered charging devices. As stated before, several of them, including the trainer from Port Au Prince, were unable to participate due to illness from Chikungunya. I have maintained contact with all of them, however, and will continue to implement this phase of the project from here in Atlanta. I am doing this in cooperation with Tom Adamson, a solar lamp distributor in Port Au Prince who has implemented a program that has trained many Haitian people to sell these solar powered, energy generating appliances. His model has resulted in the distribution of thousands of solar lamps thus spawning the creation of many related micro-businesses throughout Haiti. I plan to continue this phase until it is self-sustaining.

To define peace, I feel it best to defer to Webster's dictionary which defines it "as a state of tranquility or quiet; especially as freedom from civil disturbance; a state of security or order within a community, provided for by law or custom." Virtually everyone living in the modern industrial economy, indeed nearly everyone on Earth, requires basic needs to be met in order to enjoy peace as it is defined. Energy is one such critical need, and certainly nothing breeds insecurity like the lack of electricity. My project seeks to speed the adoption of solar energy to those places still lacking in either an electrical grid, or steady and reliable electricity; this will likely happen, regardless, as solar energy is an endless renewable resource, and solar cells are becoming considerably less costly and more efficient every year. However, for Haiti's sake, the sooner this adoption can take place, the more stable — indeed the more peaceful — the country will become.

While I was not able to install the solar powered pump as I had planned, I did manage to complete the solar panel system installation on time and within budget, as well as begin the solar lantern distribution program, despite several major setbacks. The project's accomplishments have already had an immediate impact on the lives of nearly two hundred people, mostly children, and will probably positively affect their progress and wellbeing long-term. I believe the system is sustainable and will become more affordable as the technology continues the trend of becoming less expensive. I can foresee a moment in the near future when solar panels and appliances are as ubiquitous as cell phones are currently in Haiti. As a follow-up to my project, I am currently creating a video in Haitian Creole and English, to promote the benefits of solar power. In adding to the existing development knowledge base, I have also reported my experience to noted experts such as Paul Polak of International Development Enterprises (IDE).

The weeks I spent living unexpectedly without power in Mirebalais were excruciatingly frustrating, and at times, infuriating. I felt powerless and incapable. The experience has instilled in me a genuine empathy for average Haitians' daily struggle in living with energy poverty. Nearly all the activities I once took for granted, from utilizing the internet to safely storing food in my refrigerator — even in writing this report — would be difficult or impossible without electricity. Now I fully realize what energy poverty means to so many in the developing world, and how peace, both the personal kind and that of the community, is threatened without it. My faith in solar energy as a potential solution for energy poverty has not been shaken, although I have a new appreciation for the level of effort required accomplish goals in a country as challenging as Haiti.

Going to Haiti to help assist in solving energy poverty, and unexpectedly becoming a victim of it myself, was not just ironic — it was an invaluable lesson in truly understanding the personal and societal impediment that comes from energy poverty. This project has proven both the viability and the urgency of the adoption of solar energy as a solution to the energy poverty crisis in Haiti and the developing world.



Measure twice, cut once: With the assistance of a local carpenter, using 2 x 4's I improvised a simple frame atop which the solar panels could be placed and mounted to a flat concrete roof. For the panels to receive the most sunlight, the frame's top angle needed to be about equal to the latitude of Haiti -- 18 degrees.



Consulting with farmers: My interpreter and I are interviewing Haitian farmers about how they are affected by the dry season, which starts in December and ends in April. During that time, they explain, it is virtually impossible to grow anything without irrigation.



The final connection: With the panels finally fastened to the now painted (waterproofed) frame, and after verifying the panels were producing the correct voltage, I connected the panels together in parallel fashion using easy to use branch adapters.