



Green Empowerment



Knightsbridge International



BORDER GREEN ENERGY TEAM



Kawthoolei Department of Health and Welfare



SunEnergy Power Corporation  
Sustainable Social Entrepreneurship™



Palang Thai

**Training location**  
Mae Sot Thailand

**Clinic locations**  
Eastern Burma

**Project dates**  
August 2003 – Current

**Clinics equipped to Date**  
35 Clinics  
2 Hospitals

**Medics trained to Date in Solar**  
90

**Medics trained to Date in Medical**  
90

**People served by clinics and hospitals**  
Approximately 175,000

**Clinic Equipment**  
1 120W solar panel  
1 deep cycle battery  
2 20W Lights  
1 LED Light  
1 12V Outlet

**Cost per system**  
\$3,000

**Hospital Equipment**  
6 120W solar panels  
9 deep cycle batteries  
6 fluorescent 2 Lights  
4 LED Lights  
2 12V Outlets  
5 220 V Outlets  
1 Vaccine Refrigerator

**Cost per system**  
\$20,000

# December, 2007

## Burma Solar Clinic and Hospital Project

### Solar Equipment and Training

### Medical Equipment and Training

Trainings, Equipment and installations  
for ethnic minority clinics in a warzone

“It is difficult”, said Eh Kalu Shwe Oo, “to perform amputations by flashlight.” Eh Kalu is director of the Karen Department of Health and Welfare (KDHW), and oversees a network of medical clinics located in the Karen State in eastern Burma.



Patient receives care under solar lights

Eastern Burma, along the border with Thailand, is a zone that has been under siege for the past several decades. The Burmese military has been burning villages, raping women, forcing people into slavery and killing the indigenous people of the area. In the past, it was sometimes possible to escape to refugee camps on the Thai side of the border.

# Border Green Energy Team SunEnergy Power, Knightsbridge International, and Green Empowerment Solar Clinic and Hospital Project November / December 2007

Numerous refugee camps, housing over 150,000 refugees, line the border with Thailand. However, political developments between Burma and Thailand have made it increasingly difficult to reach Thailand. Consequently, about 1 million internally displaced persons (IDPs) live in hiding in danger from landmines and military action. Dozens of people are killed each year by the land mines and many more are injured, according to the latest statistics kept by the Landmine Monitor Report.

In the recent 2006 / 2007 campaign, so many IDPs were created that a new refugee camp had to be formed, but it could only be established INSIDE Burma. It has grown from an initial 500 people to about 4,000 now. They built a hospital building there, but until now, this hospital has had no electricity and little in the way of supplies.

The KDHW clinics, scattered over 600 miles of roadless jungle, include a roster of approximately 75 Karen surgeons, medics, and nurses who provide the only medical care available for an estimated 200,000 IDPs. Malaria, parasites, and a variety of medical conditions (diarrhea, pneumonia, blindness) stemming from malnutrition are endemic. Land mines and mortar fire maim thousands.

## Solar electricity for lights.....and now more!

As of April, 2007, we had supplied training and equipment for 35 of the clinics. The solar-electric systems provide electricity lighting for nighttime medical procedures, and basic low-power medical equipment. The clinics were chosen because they were in areas considered "stable." That is, they were less likely to be destroyed by the army of the State Peace and Development Council (SPDC), widely believed to be one of the most brutal dictatorships on the planet.



In our last report, after our April, 2007 work, we discussed the need for electricity at the Hospital at the ETT Camp for Internally Displaced People (IDP) and at the DPN Referral Hospital. With the support of all of our partners, we were able to accomplish this goal in November and December of 2007.

## Hands-on Solar trainings and Equipment

So far, we have conducted seven solar-electric trainings, including the trainings in April and December of this year (2007). The first in August 2003 involved hands-on instruction for fourteen participants, and solar-electric systems for two medical clinics. After the first training, Mr. Eh Kalu from KDHW, who coordinated the pilot project and organized the training, said, "Our dream ten years ago was to have some kind of lighting for these clinics. And when we did the two clinics, I could only hope that we would be able to do so many more." In discussions this month with Eh Kalu, he continues to be amazed at what has been accomplished, and now expanded to the larger hospitals in the area.



Medic shows her clinics' nearly completed charge-controller box

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The trainings have several goals. The first goal is the provision of rugged, reliable solar-electric systems to clinics able to use them. The second goal is basic training in photovoltaic design, system construction, and operations and maintenance to clinic medics and other interested members of the medical community. Since the participants are responsible for installing their systems at their respective clinics, they must understand how to connect, re-connect, and troubleshoot the equipment. With recent developments as described below, we are now incorporating a third goal – that of medical equipment provision and training – into the Clinic Project.

After the training, the participants then carry the solar panels and other equipment back for weeks to reach their isolated bamboo clinics. The solar systems allow medics to address nighttime emergencies, have proper lighting for medical procedures, and use electric medical



The clinics are located in Eastern Burma (or Myanmar) near the border with Thailand

devices and laptop computers. Having built the systems themselves, the medics are fully trained to install, operate, and move the specially-designed mobile systems (if needed for safety reasons).



Medics transport solar electric equipment by foot for up to two weeks to remote clinics

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New Developments in 2007 – Hospital Electrical Systems, Acupuncture Training, and Medical Equipment and Drug Supply.

### Hospital Electrical Systems

The training and equipment supply projects that we have done through April of 2007 have been for small clinics, requiring a single, 120 Watt solar panel and a battery, for DC lighting and equipment. As we discussed last year, there has developed a huge need for energy systems in the IDP Hospital and the Referral Hospital in the area. The project this year set out to address these needs.



Medics work on the solar panel structure and wiring

This year, Walt Ratterman and Salinee Tavaranan led a group from BGET, KHWD, and CIDKP to complete the trainings and installations at the two hospitals. Participants included five technicians from ETT and five technicians from DPN, led by the able staff of the Border Green Energy Team.



Medics work on the charge controllers and inverters in the equipment room

The training lasted two weeks, starting on December 3<sup>rd</sup>, 2007. This included trainings in theory, installation, and maintenance and concluded in each case with the installation of the systems.

Based on a trip to ETT IDP Hospital earlier in the year to assess the needs of the hospital, we designed the system to provide energy for three uses: (a) Power outlets for minor surgery, eye surgery, laboratory microscopes, and computers; (b) Vaccine Refrigerators to form the beginnings of a cold chain in the area, and (c) lighting. We designed the system at each hospital to consist of three smaller sub-systems, called System A, B, and C, each of

which includes 2-120W panels, and its own charge controllers and inverters (where required.) This separate system design allows individual sub-systems to be relocated if necessary, and provides for a larger degree of equipment redundancy in the event of a single equipment failure.

At each site, ETT and DPN, System A and System B use inverters to produce AC energy from the DC energy made by the solar panels and stored in the batteries. On each System A and B, there are DC pigtailed with 12V DC receptacles so we can plug in small devices that work from DC – such as AA / AAA battery chargers, which we provided for each site. System C, on both sites is solely for the Vaccine Refrigerator. The vaccine refrigerator must be the only load on the system because the refrigerator has to stay powered all of the time.

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With the word that these systems have been installed two exciting things have taken place already.

An eye doctor who works in the area is now planning to go to each location – ETT and DPN and start cataract surgeries, in early January. Cataracts are a large problem, even with the younger people in their 30's, because of the bright sun and the work on the river.

Also – an NGO who does a lot of medical work in the area has decided to initiate a training in immunization to be held at ETT in January of 2008. They will base their training on the vaccine refrigerators we installed at ETT and DPN, and they will provide the vaccines necessary for the program to take place.



Group picture after the training and installation at  
ETT Camp



Medics can use microscope during the night by using  
the power from the installed solar systems.

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**Medical Equipment Supply and Training:**

Through the support of one of our key partners, Knightsbridge International, we were again able to bring medical training, and medical equipment supply to the project.



Kirk, an acupuncturist from Chicago, provide training in pain relief through acupuncture to medics

With Kirk Moulton, an acupuncturist from Chicago, we provided training in pain relief through acupuncture to a group of more than a dozen medics. These medics were then able to provide acupuncture services to residents of the IDP camp and the surrounding area. Under Kirk's supervision, the group held an outpatient clinic for several days and treated over 200 patients. The medics were left with a year's supply of acupuncture supplies and will continue the treatments.

Jim Simcoke was able to continue his twice yearly supply of medical equipment to the clinics and hospitals, delivering much needed surgical supplies valued at up to \$50,000 to the clinic / hospital system. This year, with the assistance of doctors in Thailand, Jim was able to provide some specifically requested drugs to the medics. Also, in our trip last year, Jim made measurements of one of the key medics and solar technicians who was the victim of a landmine several years ago, and on this trip, delivered a new, articulating prosthesis for him.



Medic with new Prosthesis

**Thanks!!**

Many thanks to all of our generous partners who provided support to this project this year including SunEnergy Power International, Green Empowerment, Knightsbridge International, Palang Thai, and all of our terrific private donors. These solar electrical systems, and the medical supplies and training have already been put to use, and will form the basis of the immunization training, provision of cataract eye surgery, and the first cold chain in the areas of ETT and DPN.

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**Goals for 2008:**

With Eh Kalu and his network of clinics, we plan to conduct additional trainings and equipment supply next year. These trainings will be for the medics, and the people who are responsible for taking care of the existing clinic systems. Due to the geographical diversity of the clinic locations, this training would have to be conducted twice – once for each area. Prior to this training, we will have reports completed describing any equipment that needs upgrading or replacement. The final result of the trainings will be a group that is even more capable of making the systems sustainable.

During our project this year, we worked with another group – FBR - that does medical trainings for backpack medic teams throughout several of the ethnic states being targeted by the junta. Besides the Karen, they work with the Kachin, Karenni, Shan and Chin ethnic groups. FBR now has 43 medic teams that return to the training center for refresher courses throughout the year. The training center is also a location for medical treatment for the area.

Our plan for 2008, if with sufficient funding, is to provide two trainings for the groups of medics and technicians utilizing the existing systems installed to date, and to provide an energy system for the FBR training center that will provide power for their recurring trainings, and medical needs.

We will also continue our practice of providing medical supplies, medical equipment and training along with the solar training and equipment.

We estimate that the costs of these trainings and solar equipment supply and installation will be \$70,000.

The following page is an excerpt from a recent FBR Newsletter describing their recent medic training.

**Goals for 2008:**

Provision of Solar Systems for a large clinic / and medic training center.

Provision of Surgical and Medical Equipment.

Provision of Solar Training for Staff working on all Systems.

Provision of selected medical training for medics.

**Targeted Time Frame:**

October / December 2008

**Participating Organizations:**

Border Green Energy Team  
SunEnergy Power  
Knightsbridge International  
Palang Thai  
Green Empowerment

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Dear friends,

Thanks for all of your encouragement and help. We just completed the training of 18 new Free Burma Ranger relief teams and we are now on the first mission with them. The new teams are very enthusiastic and the training included men and women from the Karen, Kachin, Karenni, Shan and Chin ethnic groups. With the addition of these 18 new teams, there are now 43 FBR humanitarian relief teams in the field providing assistance to the displaced in Burma. The training was completed in three phases. The first starting in April for the new FBR medics, the second starting in September for all members of the new teams and the third starting in October for the new teams as well as 14 advanced medics. The training was completed on 7 December 2007. The courses that the new teams completed were as follows:

Medical Training and Reporting, Delivery and simple surgery, Dental training, Human Rights violations recording and reporting, Video and digital photography, Solar power and Battery management, and many others.

We are grateful for all the help we received, including instructors from the Karen National Union (KNU), Karenni National Progressive Party (KNPP), the Kachin National Organization (KNO), the Womens League of Chinland and the Chin National Front (CNF), the Restoration Council of the Shan State (RCSS), the National Democratic Front.(NDF), Committee for Internally Displaced People (CIDKP), Karen Office for Relief and Development (KORD), Karen Human Rights Group (KHRG), and Partners Relief and Development (PRAD). We are grateful too for all of you helped make this training and the sending of new teams possible.

May God bless you,  
The Free Burma Rangers  
Karen State, Burma

The Free Burma Ranger's (FBR) mission is to provide hope, help and love to internally displaced people inside Burma, regardless of ethnicity or religion. Using a network of indigenous field teams, FBR reports on human rights abuses, casualties and the humanitarian needs of people who are under the oppression of the Burma Army. FBR provides medical, spiritual and educational resources for IDP communities as they struggle to survive Burmese military attacks.

For more information, please visit [www.freeburmarangers.org](http://www.freeburmarangers.org)

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Some additional Photographs:



Walt with DPN team members.



Solar Panels at DPN Hospital



Over 200 patients received acupuncture treatment during the training



FBR Relief Teams Heading Out



Senior FBR medic supervises trainees on IDP Clinic