SPRING 2016

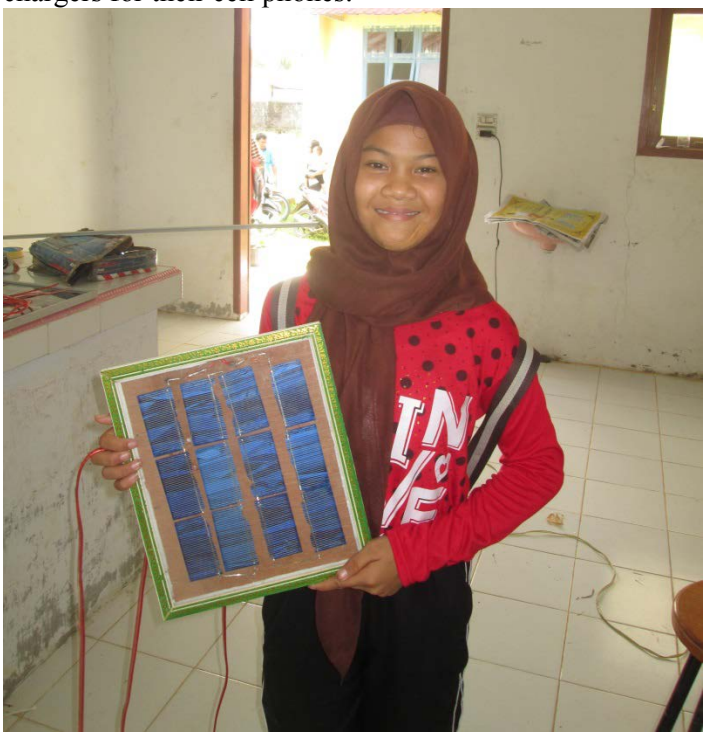
THE MAINE SUN

NEWSLETTER of the Maine Solar Energy Association

2nd Indonesian Solar Workshop

By Richard Komp

After crowdsourcing enough money for my travel expenses, I went back to Indonesia as I had promised. This time I went straight to Sibolga on the Island of Sumatra to start the solar course at the same school that I had taught at on my first trip last May. A few weeks ago there was a deluge of rain for two days and the flood washed mud into some of the solar cell phone chargers we built on my first trip. Because I wanted to review what the students did on my first visit, we started by them building new solar chargers for their cell phones.



One of the Muslim students with the solar cell phone charger she made – it works perfectly.

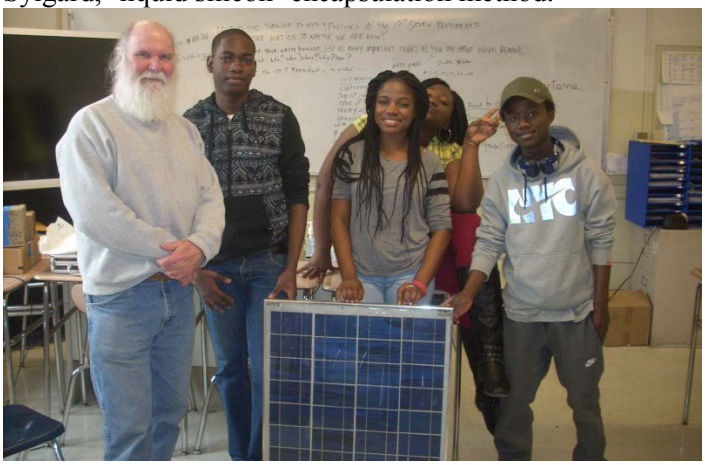
The students also practiced cutting the PV cells, cutting the big cells exactly in half and then soldering them together into series strings of six. Six strings make a perfectly square PV module that produces 32 watts of power to recharge 12 volt lead acid batteries. We assembled two of these modules and after making a sandwich of them with the ethylene-vinyl-acetate (EVA) and a transparent vinyl table cloth sheet, we loaded both strings at the same time into our new solar oven. Although the oven thermostat we used never read above 80º C, the actual temperature of the two module sandwiches had to be over 110º since both modules came ***continued on Page 3.***

MESEA 8th Year, PV Assembly in NYC

By John Burke

For the eighth year, Maine Solar Energy Association with dadsolar.com (Downeast Alternative Design Solar), John Burke has another solar assembly workshop accomplished. A two Saturday program, Mar 12 & 19, 2016, with the Environmental Club of Manhattan Comprehensive Night & Day High School, 2nd Ave. and 15th St, NYC, a diverse group of 10-12 students and interested faculty, enjoyed the sessions assembling a 65W PV module. We also did trouble-shooting on an earlier PV module and supplied the necessary fix!

March 12, was the initial day, selecting cells and soldering together four strings of 9 cells each, in series. A 36 cell module, with an 18V nominal output rating, with amperage rating of 3.5A, supplied the 65W status. We did use the Sylgard, 'liquid silicon' encapsulation method.



John Burke and students with the finished PV module

The students at Man Comp are looking forward to using the EVA sheet method of encapsulation when we have the solar oven available and a full sun for the thermal energy necessary. This is much less expensive than the 'laminating' machine used in the 'robotic' factories.

On Mar 19, there were fewer students, since the ATC 'testing' day was interfering with our focus. We did manage to repair the PV module that needed re-soldering, as well as getting the current PV module framed and wired.

Inside

The Maine Sun

Newsletter of the Maine Solar Energy Association

The Maine Sun is published four times a year by the Maine Solar Energy Association (MeSEA), a non-profit organization (sister chapter to the North East Sustainable Energy Association).

Our Mission:
We are dedicated to promoting the public awareness and use of:

- solar energy
- energy conservation
- other renewable non-polluting energy sources
- environmental and health awareness building practices throughout the state of Maine

The Maine Sun welcomes articles, submissions, photographs, and letters. Please send editorial materials to the following address: **MESEA, PO Box 184 Harrington, ME 04643**
Phone: 207-497-2204
E-mail**: sunwatt@juno.com or mainesolarenergyassociation @gmail.com**
Website: **www.mainesolar.org**

Receive the Maine Sun by e-mail or at our website to be green.

Printed on recycled paper.

Calendar of Events

MESEA Website WWW.mainesolar.org
Facebook: ***Maine Solar Energy Association***

The Maine Sustainability & Water Conference

Tuesday, March 29, 2016 at the Augusta Civic Center, Augusta, ME
Admission is only $45 and includes lunch and admission to all sessions

John Burke will be giving a MESEA presentation at this event in the **Maine's Energy Future** session. He will give a PowerPoint presentation on the original and new PV-Thermal Hybrid modules developed by Richard Komp.

For conference Information and to register go to: http://www.umaine.edu/mitchellcenter/.

The HOPE Festival - Orono Maine

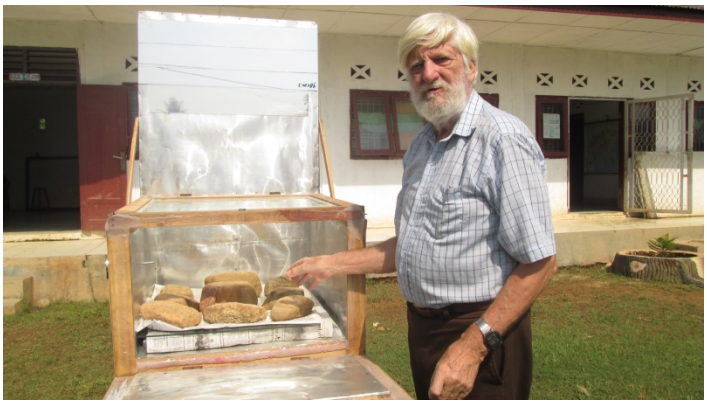
Solar Energy Association, with DADSolar & SEADS : will represent the Downeast Maine, Low-Tech, DIY Solar effort again at the Saturday, April 23, 2016, HOPE Festival, for Earth Day focus. From 11 AM to 3 PM, U. M. Orono, Recreation Center, Orono, ME, presented by the Peace & Justice Center of Eastern Maine. The group will present a 'hands-on' solar assembly demonstration, with a solar PV cell phone charger, for most phones, from scratch ! As well as other information and answers available for those interested in do-yourself-solar technologies .

OFF-GRID Solar PV Installation Workshop in Maine

Date: Saturday - Sunday May 14-15, 10 am-4 pm, Raindate May 21-22
Location: A private home in Cambridge, Maine (details on receiving your reservation fee).
Description: A small, simple 'off-grid' solar PV system, for lights and radio / TV, to be installed with the 'hands-on' help of a limited number of participants. This PV array will be 12 V, approximately 130 watt total (2 x 65 W), with 12 V battery bank and charge controller, as well as inside and outside wiring, for lighting and to accomplish the simple goals of the home-owner.
Cost: $50. per day, for full hands-on participation (one or two day participation available), $25. per day, for limited participation (one or two day, without hands-on experience). ($10 non-refundable)
Reservation fee / Deposit is required, asap, balance on arrival at the workshop.
Contact: John Burke, 207 546-1639, or Carol Gardener, 207 277-3191

Help finance the National Solar Tour and other American Solar Energy Society (ASES) Work. Go to the www.ases.org website for the new deal with Amazon at their www.smile.amazon.com website Or Join ASES!

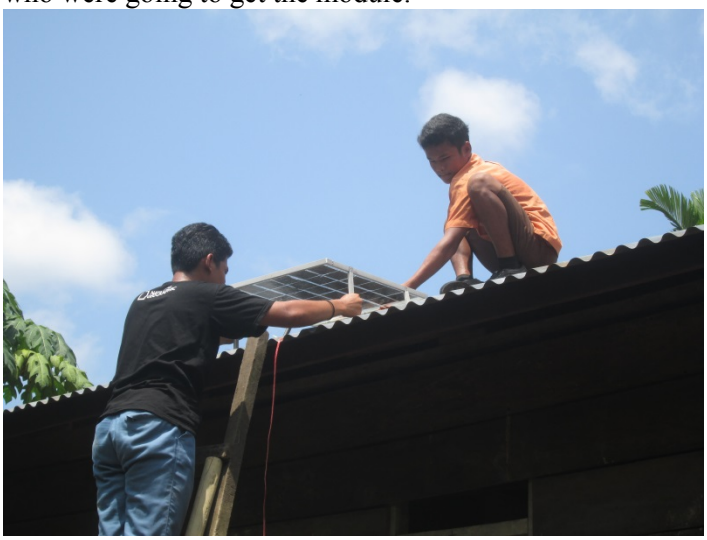
From Page 1 properly encapsulated and working perfectly.



The stack of PV module sandwiches in the solar oven with rocks for weight to properly squeeze the air out of the encapsulated modules

We used one of the new 32 watt PV modules to teach the students how to install PV systems. Alex,(our Chinese Buddhist) found some very nice 12 volt LED light fixtures and the students connected them up to a deep-cycle 12 volt lead-acid battery we purchased. After the system was connected to the PV module through a blocking diode and everything was working as it should, I had all the students draw the circuit diagram and then signed them when they were completely correct. I have also taught the students some basic quantum physics – demonstrating the wave particle duality of light and the existence of photons.

Nest we arranged to travel to a remote village to power a home using the second 32 watt PV module. The teachers at the local school for the village met our van full of students and led us to the home of the very poor family who were going to get the module.



Students installing the 32 watt module on the roof

While the roof installation was going on Alex was installing the electrical wiring in the inside of the home with the help of other students. I asked the students to switch off so that all the students would learn every step of the installation process.

Alex and the students installing the LED light and the light switch for the kitchen.

Once the wiring was finished and tested, we connected up the 35 Amp Hour battery and checked everything out. It all worked perfectly and the family was very pleased with having electricity of their own for the first time.

The family felt obligated to feed us lunch. Since they had no money, lunch was put together from their own grown rice with a stew put together from their own vegetables and meat from whatever they could catch. My stew had one lump of meat that had a tiny rib cage, which I discovered later was from a rice paddy rat, and two other lumps with bones I couldn't identify. Maye it is better not to know.

One evening it began to rain hard and it rained all night causing a flash flood. The water got so high at the school (about four feet from the watermarks on the classroom walls) that the solar oven floated away, as did the table the solar oven was sitting on. We never did find the oven or the table but Alex built a new solar oven from scraps in two days; so when I left, the students could continue to make bigger PV modules from the materials I left behind.

Because of the flooding, I couldn't teach one of the remaining days but Rudy (my translator and guide) Alex and I met together with Barbara Bianca to talk about marine PV systems for all the local fishermen. They use bright lights at night to attract fish to their nets so I came up with a system to use LED light bars (used by off-road vehicles at night) PV modules and deep-cycle batteries to do this work without a need to run the fishing boats' batteries all night. Alex is supposed to contact the manufacturer of the lights and try the system out so they might have another solar product to sell locally.

On the way back to the US I met with a Chinese businessman in Singapore, so I finally got to travel around in that city. It is a beautiful 1st World island in that area.

A New Wave of Climate Insurgents Defines Itself as Law Enforcers

By Jeremy Brecher

One in six Americans say they would personally engage in nonviolent civil disobedience against corporate or government activities that make global warming worse. That's about 40 million adults. The fate of the earth may depend on them - and others around the world - doing so.

Such actions are about to take a quantum leap both in numbers and in global coordination. From May 4-15, 350.org, Greenpeace and many other organizations - notably grassroots movement organizations from every continent - will hold a global week of action called Break Free From Fossil Fuels. They envision tens of thousands of people mobilizing worldwide to demand a rapid transition to renewable energy. Events will include nonviolent direct actions targeting extraction sites or infrastructure; pressure on political targets to shift policies around fossil fuel development; and support for clean energy alternatives. Mass actions in Australia, Brazil, Canada, Germany, Indonesia, Israel/Palestine, Nigeria, the Philippines, South Africa, Spain, Turkey, and the United States will target fossil fuel projects and support ambitious solutions. Before and during the week of action, additional, locally-initiated actions are expected in many other locations around the globe.

In the United States there will be actions in California, the Northwest, the Mountain West, the Midwest, Washington, DC, and the Northeast. They will include support for a moratorium on the auction of public land for fossil fuel development; mass trespass at fracking sites; land and flotilla blockades of refineries; actions at the facilities of pipeline companies; and blockades of trains carrying fracked oil. In each case the partners include not only national and international environmental organizations but dozens of community, indigenous, climate justice, labor, religious, citizen action and other groups that have long been campaigning locally against these targets.

Flipping the Script

Break Free From Fossil Fuels participants will define themselves to the movement, the public and the courts not as criminals but as law-enforcers trying to enforce legal rights and halt governments and corporations from committing the greatest crime in human history.

Fundamental principles embodied in the laws and constitutions of countries around the world provide a strong basis for these claims. Basic human and constitutional rights include the unalienable rights to life, liberty and property - including the property that belongs not just to us but to future generations of humanity. And pursuant to the public trust doctrine governments are the trustees of the vital natural resources on which human well-being depends; they have a "fiduciary duty" to manage them for the benefit of all present and future generations. Governments have no right to authorize the destruction of those resources today to the detriment of future generations and constitutional rights to life, liberty and property. These legal rights will help provide the frame for the public messaging and legal strategy of climate-protecting civil disobedience surrounding Break Free From Fossil Fuels.

Use of constitutional law and the public trust doctrine for climate protection has been pioneered by young people, supported by Our Children's Trust, who have brought lawsuits and/or rulemaking petitions in every US state and against the federal government, as well as in several other countries around the world. Their aim is to require governments to act on their public trust duty to protect the climate, as well as the fundamental constitutional rights of present and future generations.

"The Federal government has been making decisions in the best interest of multinational corporations and their profits, but not in the best interest of my generation and those to come," said Earth Guardians youth director Xiuhtezcatl Martinez, one of the lead youth plaintiffs in the landmark federal climate lawsuit now pending in the US District Court for the District of Oregon. "Instead of changing their business model to meet the scientific reality of climate change, these companies are demanding we adapt to an uninhabitable world that supports their profits. When you compare the two, I think it's clear that our right to clean air and a healthy atmosphere is more important than their 'need' to make money off destroying our future."

The American Fuel & Petrochemical Manufacturers, the American Petroleum Institute, and the National Association of Manufacturers filed a motion to "intervene" and join forces with the government against the youth in the Federal Constitutional and Public Trust lawsuit of Our Children's Trust. They argued that, "If plaintiffs succeed in this court ordering the elimination or massive reduction of US conventional fuel consumption and manufacturing processes that emit greenhouse gases beyond existing federal and other regulations, the members of each of the proposed intervener-defendants will be harmed."

Statement submitted to the Maine Public Utilities Commission by MESEA, 16 March 2016
By Richard Komp

Distributed generation is the best way to put solar energy into the utility grid. It makes the grid more resilient and helps the power company save money on upgrading the grid (in spite of what they will say). Electrical storage is a necessary part of the modern utility grid, and this is best done right next to the solar generating systems.

Putting the PV systems onto roofs puts the electricity generated right where it can be used, cuts the need to occupy good land that could be used for crops or some other use; and utilizes the big flat roofs of industrial sites, big-box stores and strip malls. Use land that is already pre-wrecked. Using solar electricity and wind are the cheapest ways to expand our power generation needs.

Global warming is very real and caused by our burning fossil fuels so fossil fuels are the power system of the past. Instead of a "survivalist" future of scarcity and competition, we can have a future of abundance and cooperation, but you must make the choice.

Coming:TheThird Edition

Now 36 pages with new material

The Maine Solar Primer

A compilation of practical information and diagrams from past issues of THE MAINE SUN

The Maine Solar Energy association has published a sourcebook for solar and other renewable energy resources in Maine and New England.
This booklet includes do it yourself plans and basic solar information for everybody.

The Maine Solar Primer is available for $12 inc. postage

f Distributed generation is the best way to

MeSEA Membership Form

Annual membership includes: a subscription to the quarterly MeSEA publication - *The Maine Sun,* 10% discount on workshop fees and MeSEA-sponsored events, networking with other like-minded people in Maine, contribution to the sustainability of our program, and the right to declare your donation to a 501(c)(3) on your taxes.

Special Joint MESEA – ASES Membership: $60 ***Go to the www.ases.org/join/ website to sign up with a credit card.***

Name(s): _____

Address: _____

_____

Phone: _____

E-mail: _____

Individual MESEA membership - $30.

□ new □ renewal □ upgrading

Family MESEA membership - $50. □

Lifetime MESEA membership - $1000. □

Corporate MESEA membership - $150.□ **

Would you prefer to receive your Maine Sun by e-mail? □ **yes** □ **no** E-mail saves us $4 per year.
**This includes a business card – sized ad in each *Maine Sun*, and promo on our website, as well.

Please make out your check to MeSEA. and mail to: MeSEA, PO Box 184 Harrington ME 04643

THE MAINE SUN
NEWSLETTER of the Maine Solar Energy Association

Maine Solar Energy Association
PO Box 184
Harrington ME 04643