

Living Energy Farm June - July 2022 Newsletter

Spreading the LEF Model

There is usually a lot going on at LEF, and the past two months have been no exception. We had six people from Puerto Rico here in July to learn how to build DC Microgrids. We have six more from Puerto Rico coming in August, as well as someone from a small solar company in West Africa. Pete Schwartz, the physics professor from California who invented Insulated Solar Electric Cookers (ISECs), was here in July and participated in our training program. Tito Kayak, a well-known Puerto Rican activist was here for ten days in June. Tito is also, conveniently, a career electrician. We taught Tito how to wire a DC Microgrid. He was an enthusiastic learner, and surely a great asset going forward. (Tito's stature in Puerto Rico is considerable. The state legislature passed a law specifically banning his style of public demonstration -- gathering with groups of people to walk onto construction sites of contested development projects -- though the courts later threw out the legislation.)

We ran workshops on how to convert AC appliances and shop tools to daylight drive DC. (Thanks to the folks who donated small appliances -- very helpful!) We taught classes on how to replace AC motors with DC motors, and how to wire up solar battery boxes. We ran numerous sessions on assembling ISECs, which can be made at various sizes and levels of complexity. Part of the experience for folks visiting was learning how to use our DC cookers and shop tools, which they did to such extent as time allowed. We are deeply indebted to Tara Rodriguez Besosa and the crew at El Departamento de la Comida (El Depa, for short) for all the work they have and continue to put in to bring LEF's DC Microgrid to Puerto Rico.



Vidal "I'm Just as Fast as You" Carrion



Vilmarie "Heavy Metal" Cartagena

The power grid in Puerto Rico is weak compared to the U.S. Hurricane Maria made things considerably worse. Recently, the grid has been privatized, which has made electricity both more expensive and less reliable. Everyone tells us that in some ways Puerto Rico is similar to the U.S., and in other ways very different. Some people have a lifestyle similar to the U.S., but many do not. Public services are comparatively weak. There are no public libraries in Puerto Rico for instance. Do all of these facts make it fertile ground for spreading DC Microgrids? Yes, but given resource constraints, probably not quickly.



Tara and Debbie

Another interesting development is that one of Pete's students has gone to The Source Farm in Jamaica. That is the organization we have been working with to try to promote DC Microgrids there. The short summary of events there is that they are selling the solar panels and what pumps we sent them, but they are stretched too thin to do much else right now (such as produce solar cookers).



CCW from right: Debbie, Alexis, Tara, Vilmarie, Themis, Elena, Epic, and Vidal -- and one well-made ISEC cooker.

The current plan going forward is to set up a few demonstration sites in Puerto Rico, and see what opportunities arise in West Africa, Jamaica or Arizona. We have shipments en route of solar fans, batteries, and other useful DC equipment. We will continue to develop the tools that make this all work, and continue to seek funding for more extensive development of our DC Microgrid model abroad. The number of people and organizations involved in this effort in Puerto Rico is more substantial than with any of our other outreach projects. But we still face the same problem that we are promoting a

conservationist energy model that is not well understood. Public acceptance is likely to be incremental in the U.S. and the Caribbean, at least at first.

Some of the folks working in Southern Africa (with whom we communicate via Pete's cooker project, which has weekly online meetings) have been making good headway in disseminating (selling mostly) daylight drive equipment. There are several organizations involved bringing in containers of solar panels and Chinese made daylight drive pressure cookers, as well as selling small, inexpensive solar pumps. The pumps are the same as the ones we sent to Jamaica. As for the Chinese made solar electric cookers, we got a couple to test. They seem to work well, and they are fairly cheap. We may or may not choose to import them. This international grassroots testing and development of daylight drive equipment is proving very helpful.

It is interesting to note that daylight drive DC water pumps have been on the market for many years because of the widespread need for rural water pumping. The daylight drive refrigerators were developed over 20 years ago but did not take off for lack of market demand. The Chinese made daylight drive pressure cooker (see photo) is a new and interesting attempt for the mass manufacturers entering the daylight drive appliance market. Yes, this appliance is yet another "consumable," but there is a difference. Any other electrical appliance is supported by coal, natural gas, nuclear power, and industrial solar fields. We have lost thousands of acres of



Mass-manufactured daylight drive electric pressure cooker. It works pretty well, and is fairly cheap.

hardwood forest in Louisiana to the latter. In Puerto Rico, some of the best farmland is being paved over to build solar fields on an island that imports over 80% of its food. Community groups are opposing that development. This group that we brought in from Puerto Rico includes some great organizers who are themselves living off-grid already. They are grateful to see a more effective and economical way to use solar energy, and motivated to spread the technology. With DC Microgrids, there is no need to destroy forest or farmlands for solar fields.

We will continue to watch the progress of the projects in Africa, and see if there are any opportunities for constructive engagement. It seems likely we can get this technology to take root in the Caribbean, at least incrementally. We have talked some with folks in and about other countries in the region (Dominican Republic, Haiti, Cuba), and we will see if there are opportunities arise. We are a small organization, so we have to plan where to put our resources carefully.

Insulated Solar Electric Cookers (ISECs)

We do most of our cooking with ISECs, and continue to develop the technology. We started with Pete's designs, but have added many new configurations, including many higher powered ones. We have noticed that, especially as we push the power levels upward, the electrical connection to the heating wire (nickel chromium, or nichrome) sometimes fails. Most of the electrical heating devices on the planet use nichrome wire. It's a very cheap material used in countless appliances. In looking at the commercial standard for how nichrome wires are connected, we have noticed that most of the wires are either spot welded, or riveted. We tried spot welding. That taught us that we would need a much more expensive spot welder. Try again. We are indebted to our friend Kris Ward in Missouri for setting us up to make crimped connections. Kris's help has been of immeasurable value. See photo. (Information on ISECs is at <http://sharedcurriculum.peteschwartz.net/solar-electric-cooking/>)

<http://sharedcurriculum.peteschwartz.net/wp-content/uploads/sites/3/2022/07/MECS-Final-Report-Revision-6.pdf>.)

Refrigerators

The quest for a decent daylight drive refrigerator continues. Some friends in France bought a daylight drive fridge from Freecold (which we had mentioned in prior newsletters), but they did not like it at all. We have been communicating with Sunstar (Indiana, not Canada), and we have confirmed that the Secop solar compressors will work in their chest refrigerator/ freezers, so that's one option. Meanwhile, Eric found a very interesting paper produced by the University of Hohenheim in Germany regarding a project to build DC refrigerators based on the Secop solar compressors. The Secop compressors were used in Sundanzer refrigerators, and have an unblemished reputation. The paper is here <https://energypedia.info/images/4/4c/2019-03-08-DIY-solar-cooling-Manual-University-of-Hohenheim.pdf>



Nichrome wire riveted to high temperature wire. Nice to have a real machinist on our team.

Going forward, we can either put Secop compressors in the Sunstars, or build refrigerators, if and when we can find the time or funding.

Simplified Combine Harvester

We had hoped the simplified combine harvester could be put into operation for the wheat harvest this June, but alas, it just didn't happen. We got the intake working, but the threshing process needs more work. We decided we had to punt for now. We have talked to a few organizations. There would almost certainly be funding for the project, but right now we do not have time to pursue that. We feel like this technology, like the DC Microgrid, could be hugely important. We move forward as best we can.



Who's watching the kids?

The Farm

Our farm is doing reasonably well this year. The rains have been consistent, so we have had to do very little watering. We cut back quite a lot from last year in terms of seed production. We have discussions daily with kids about how soon the cantaloupes and watermelons will get ripe. Summer is a glorious time on a farm, with lots of choices of fresh food.

Please support us if you can.

Living Energy Farm is a project to build a demonstration farm, community, and education center in Louisa County that uses no fossil fuels. For more information see our website www.livingenergyfarm.org, or contact us at livingenergyfarm@gmail.com or Living Energy Farm, 1022 Bibb Store Rd, Louisa VA, 23093. Donations to the Living Energy Farm Institute are tax deductible. To make tax deductible donations, go to the Virginia Organizing website at <https://virginia-organizing.org/>. Make sure to designate your donation for Living Energy Institute (formerly the Living Energy Education Fund).

Articles and videos about LEF:

Alexis conducted a presentation as part of a program sponsored by a division of the French government. The links are here

<https://www.youtube.com/watch?v=mdtyfEfy90Y>

and here

<https://www.youtube.com/watch?v=P1CMwChC3vE>

How to Never Pay an Electric Bill

<https://www.youtube.com/watch?v=N5Wk7inoIxI&t=201s>

This video is a walk-through of our energy systems at Living Energy Farm. It is a concise summary of how these systems work, and why they are not in common use already.

Solar Installations In The Navajo (Dine') And Hopi Reservations, March 2020

<http://livingenergyfarm.org/solar-installations-2020/>

This is a photo essay about our project to bring durable solar energy systems to the Dine' and Hopi Reservations, where thousands of people live without grid power involuntarily.

Support Living Energy Farm's Climate Justice Campaign, and Bring DC Microgrids to People Who Need Them

<http://livingenergyfarm.org/support-our-climate-justice-campaign/>

This is an updated web page describing our broader social justice ambitions.

How to Live Without Fossil Fuel (Introductory Video) <https://www.youtube.com/watch?v=Ri2U6u8p65E>
Powering a Community with Solar Electricity (LEF has the only DC powered community that we know of, here's how it works) <https://www.youtube.com/watch?v=FvdExgvHnRI&t=23s>
The Best Way to Store Off-Grid Energy Batteries that Last (almost) Forever <https://www.youtube.com/watch?v=2wOxQ3sL9zc>
<https://www.youtube.com/watch?v=dfrgLsyFs0E>

Virginia Homegrown created a program at LEF (the LEF part starts at the 29 minute mark in the program)

<https://www.youtube.com/watch?v=MDGP0C9MIzU>

International Permaculture has done 2 articles on LEF. One is in issue #93, Autumn 2017, and the second is in issue #94, Winter 2017. See <https://www.permaculture.co.uk/>

Article about LEF at the Atlantic Online Magazine

<https://www.theatlantic.com/politics/archive/2017/01/anarchism-intentional-communities-trump/513086/>

Article about LEF in The Central Virginian

<http://www.livingenergyfarm.org/cvarticle.pdf>

LEF on CNN

<http://www.cnn.com/interactive/2015/09/us/communes-american-story/>

Cville weekly in Charlottesville VA

<http://www.c-ville.com/off-grid-model-environmentalism-made-easy/#.VcHobF054yo>