

## Living Energy Farm

### August - September 2022 Newsletter

#### Spreading the LEF Model

Over the summer we brought more than a dozen people from Puerto Rico to LEF to learn how our DC Microgrid works, and how to design and build our systems. We also had Pete from Cal Poly (who invented the Insulated Solar Electric Cookers, ISECs), as well as Fatou from Africa Energy Connect, a small solar company that provides solar equipment to farmers and villages in West Africa (Liberia, Benin, Ivory Coast). We also hosted Ashok and Florina who are building an ecovillage in Chennai India.

The full list of projects in which we have some involvement is substantial. In **Puerto Rico**, we now have a group of organizations and people, including a good handful of talented and motivated organizers, who are interested in seeing our model spread. The current plan is to set up several demonstration sites in Puerto Rico this winter. In **Chennai India**, Ashok and Florina have a good start on building a community that will both serve as an environmental model as well as providing support to local low-income people. They have land, and some buildings constructed. Fortunately, they started from the beginning with a good sense of appropriate solar design and equipment. We



*The second group from Puerto Rico, and Fatou from West Africa, doing a workshop with Debbie, and making applesauce.*

are consulting with them and their solar installer as they move forward. In **West Africa**, Africa Energy Connect is continuing their business, now much better informed about daylight drive. Fatou is starting a project in Benin that is similar in scale and function to the project in Chennai, though the project is newer and nothing has been built yet. We are continuing to consult with Fatou on her projects. In **New Mexico**, we have had a couple of meetings with a couple of professors at the Navajo Technical University. We are hoping to seed a project there in which student volunteers deploy ISECs, and possibly other daylight drive equipment, to the Navajo and Hopi Nations. (We installed over 50 nickel iron solar kits in those areas before COVID.) At Little Flower, a small community in **Louisa**, the folks there are installing daylight drive equipment. Little Flower is a Catholic Worker that has done a huge amount of work to support immigrants and other people in need in our area. They received some donated funds to install solar equipment. We are providing material aid and consultation. **Las Palmas in Louisa** is a project started by immigrants to support other immigrants. They have a piece of land. We are providing consultation and material aid, including solar panels, a water pump, and a battery kit. At **Yogaville in Buckingham** a project is being organized to build some housing for some of the numerous people who want to stay and work at Yogaville. We have had several meetings with them. Most of the folks involved want private housing, which limits the utility of our DC Microgrid. But some of their buildings might be more community-oriented. We are trying to see how to make their project work better from an energy use perspective. In **Jamaica**, the folks there are marketing solar panels and daylight drive water pumps. They are stretched thin to do much more than that for now. We are supporting them as they are able to make use of such support. We have and

continue to offer consultation to small projects in the U.S., Costa Rica, France, New Zealand, and other areas as requested.

The be clear, if we can convince people to use daylight drive, DC based energy systems, that *eliminates the need for coal, natural gas, nuclear power, industrial “renewable” energy systems, or expensive, battery-based solar kits that only the wealthy can afford*. The prize is huge. Our energy system both reduces environmental impact and provides a cheaper, more durable way to utilize solar energy. DC energy systems are spreading rapidly, particularly in Sub-Saharan Africa. It’s much easier to sell solar ideas and equipment to people who do not have grid power.

### **A New Organization**

All of that said, LEF is currently 8 adults and two children, running a farm and several agricultural businesses, and working with donated money. At LEF, some of our folks prefer to work on the farm, not so much on our outreach projects. That is beneficial both as support to the community, as well as testing our ideas in a real-world context. We are proud of what we have achieved. The more seeds we plant, the faster and more quickly this movement can grow, and become global.

We are also stretched a bit thin in figuring out how and where best devote our energies. We are small group of volunteers. We cannot effectively move forward with a lot of projects in a lot of different places. Our current thinking so twofold. First, we want to focus primarily on material aid in Puerto Rico. That is most accessible to us, and the place where we have the strongest support from other organizers. It feels like the place where we can have the biggest impact, where we might be able to get this technology to really take root. Second, we want to spend some time this winter talking to people, seeking grants and other resources, to help these ideas become a movement. If you have specific ideas or personal connection to grant-giving entities, please contact us.

We are also (probably) re-structuring our approach to spreading our technologies. Our work in Puerto Rico has put us in touch with a lot of great folks who are interested in helping. At this point, we are leaning toward forming a new organization. We will probably terminate the LLC we started (Living Energy Lights). In consultation with an attorney, it has become clear that all of the work we are doing can be done on a non-profit basis. The new organization will (probably) be incorporated in Virginia as a “non-stock” corporation. Civic groups and non-profits are generally organized as non-stocks in Virginia. The new entity will have a board that will include some folks from LEF, as well as a number of other people. It will focus on spreading affordable, durable solar equipment. This feels like the right direction -- a means to get more people involved and facilitate the spread of our DC Microgrid. We are very excited to see increasing interest in our ideas.

Living Energy Farm will continue to operate as a community that is largely self-sufficient in the production of food and energy, thus serving as a testing ground for the ideas we espouse. It is clear that we have found a role developing small-scale affordable technologies that are needed by communities and farmers worldwide. To that end, the progress of our other technologies is as follows.

### **Solar Refrigerator**

We found a good daylight drive refrigerator made by Sundanzer, but they are not distributing that unit (much?) in the U.S. at this point. Without reviewing a rather long chain of events involving numerous conversations with various companies and experimenting with different refrigerators, we have at last arrived at an excellent solution. Sunstar is a solar refrigeration company in Indiana. (There is another unrelated Sunstar in Canada.) They make a refrigerator that is similar to the Sundanzer, but a bit better. The Sunstar is a little larger, and very well insulated. It is a chest design that can function as a refrigerator or freezer. Their pricing is a bit better, and we have found them easy to work with. We installed a Secop compressor in a Sunstar, and it has worked great. Secop is a German company that makes an excellent compressor that is designed to be run directly from a solar panel. Sunstar is going to make some of their fridges with Secop compressors especially for us. We are buying a modest run of about 16 units for now. Debbie put a lot of work into making this happen, and we are very pleased with the results. We will be distributing most of these refrigerators in Puerto Rico and some in the U.S.

Let us know if you are interested. Incidentally, these solar refrigerators are simple machines that can be repaired indefinitely. Some skill is required if the compressor has to be replaced, but any refrigeration repair person can do it. No more disposable appliances!

### **Biogas**

Work on our third-generation biogas digester was inhibited by our focus on hosting folks from abroad this past summer. (No regrets there!) Now we have finished installing a largish flat plate solar thermal heating system for the digester. This is exactly the same kind of equipment we use for our domestic hot water at LEF. Over the years, we have collected solar thermal panels when we can. What we have left are old, functional but a bit bedraggled set of thermal panels that will work great for the purpose of warming up the digester. The modest increase in tank temperature we have seen so far has resulted in a substantial increase in gas production.



*Solar thermal rack for our biogas digester, made from old thermal panels.*

In all of our work on biogas, we have never seen documentation of any other community scale, temperate climate biogas systems anywhere else in the world. There is a lot of industrial scale biogas, as well as a lot of small digesters in the tropics. Keeping the digester as warm as possible is critical. We tell people who tour LEF that community is the magic technology that makes renewable energy work. That is especially true in cooler climates. Electrical systems can be scaled up or down pretty easily, though community scale systems are far more cost effective. With biogas, it is very clear that single family systems would not make sense in a temperate or cold climate. They are just too expensive, too hard to keep warm, and too much trouble to feed. Having a community-scale system solves all of these problems. Biogas makes an excellent cooking fuel. It's just like having a "real" gas connection in the city. We are also hoping to use the biogas to power small tractors. We will keep you posted.

### **Simplified Harvester**

Now that the thermal system is complete on the biogas digester, Alexis is going to try to revise and complete the simplified combine harvester. We have talked to numerous organizations about this project. There is considerable interest, but larger grants require considerable overhead. It seems like the amount of work it would take to get the money to hire someone to build it is about the same as what it would take to just build it. So we are going to just build it. There is also an issue concerning how the technology is directed once the machine is operational. In talking to organizations in the U.S., the subject turns to how the machine might be adapted and used to help small farmers harvest grain so they can grow more beef. That is not our concern. We want to help small farmers all over the world effectively harvest rice, wheat, millet, sorghum, and the other foods that people need to eat. Our hope is that this machine will help make small scale grain farming for human consumption more economically viable. Wish us luck.



## Washing Machine

The direct drive washing machine is a rainy-day project. It has been moving forward slowly. We should finish the second prototype soon. It has a stainless drum, tilted a bit like a small cement mixer. It is powered by a scooter motor. It is a simple, inexpensive design that could be used and repaired indefinitely. Not a disposable appliance!

## Food Self-Sufficiency

This summer Eric organized trials of two protein-dense crops: dry beans and pumpkin seeds. While we have grown hundreds of pounds of dry bush lima beans in past seasons, these must be harvested continuously and we'd like more variety. We trialed five types of common bush beans and found that two black bean varieties (Black Turtle and Jamapa) did best by far. They are currently drying down in the barn and we will try threshing them with a stationary threshing machine (Almaco SBT) that Eric converted to run direct drive.



*Several varieties of pumpkins, all bred to make edible seeds.*

The pumpkin seed (or pepita) trial included about a dozen varieties of naked-seeded (or hullless) pumpkins (*C. pepo*). These pumpkins have been bred for large seeds, rich in fat and protein. The seeds are green because they have little or none of the white, fibrous outer hull that typical pumpkins have. Unfortunately, the fruits also tend to have dry and tasteless flesh that is best suited for compost or animal feed, though some varieties are better than others. One benefit of pumpkin seeds, compared to say peanuts, is that the harvest is less labor intensive and also less urgent: most of these pumpkins can be stored in the barn for a while and processed for seed as desired.

Support us if you can.



*Beans drying, lots of new varieties.*

*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](http://www.livingenergyfarm.org), or contact us at [livingenergyfarm@gmail.com](mailto: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, do not go to the Virginia Organizing website, go here instead** <https://donatenow.networkforgood.org/1388125> **Make sure to designate your donation for Living Energy Institute (formerly the Living Energy Education Fund).***

## **Articles and videos about LEF:**

### **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** <https://www.youtube.com/watch?v=2wOxQ3sL9zc>

**Batteries that Last (almost) Forever** <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>