

Living Energy Farm

January - February 2021 Newsletter

The past couple of months have been highly productive at Living Energy Farm, in spite of the inevitable slow-downs caused by winter weather. We have a very dedicated crew. We have made substantial progress on a number of projects.

Expanding the LEF Vision

We are packed over 1000 pounds of solar hardware in a large crate this week bound for Jamaica. That crate contains solar daylight drive breadfruit processing equipment (commercial scale), a water pump system powered by the same means, ten solar cookers (see ISECs, below), also daylight drive powered, and a half dozen more nickel iron battery lighting and charging systems (Iron Sun Boxes). We were planning to send a crew down to Jamaica soon after the equipment arrived, but given the timing of various projects to which we and our Jamaican friends are already committed, it looks like that will happen in July.

This feels like a pivotal time for LEF and our ideas. The hardware we are sending to Jamaica will be in the hands of a well organized and dedicated crew of Jamaicans who understand our ideas and our mission. Each one of these projects, now all packed in one large crate, has taken some work to pull together. Each of these technologies represents a means for ordinary people in their homes, as well as farmers and small businesses, to live well and earn a living without coal, natural gas, propane, nuclear power, or industrial “renewable” energy systems owned by large corporate interests. This, we hope, is the seed of a new kind of community empowerment that can take root and spread.

We have been communicating several times a week with the folks in Jamaica. Their plan is to start a “social enterprise,” a business that operates at a profit, but turns that profit back to socially worthwhile causes, rather than just trying to enrich the owners of the business. The social enterprise could market all of the technologies we have been developing. It is clear they have the talent. The limitation is money. Most of what we do can be done incrementally. Farmers and businesses can put in daylight drive equipment one piece at a time. The biggest cost for the various technologies we pursue are the nickel iron batteries. Those have to be purchased in large lots. They are going to try to raise the money in Jamaica. We may seek to raise funds in the U.S. to support those efforts. This is a super-exciting time for us. It seems like there is potential in Jamaica for the growth of our ideas on a new scale.

400 Bales of Straw in a Day

On Wednesday of this past week, our dedicated crew stacked 400 bales of straw around Magnolia house. (Which was originally purchased by a supporter of LEF, and which we are now working to take off grid as an extension of LEF’s educational mission.) That’s \$1600 dollars worth of straw, about a dozen people, stacked in one day. Magnolia has an open, well-lit, well ventilated design. It was built in 1951. It is cinder block house, which means it is largely un-insulated. How much energy does the average largish American home use in a winter month? To keep a house such as Magnolia at habitable temperatures for over 70 years requires hundreds of thousands of dollars worth of fossil fuel.



Some of the strawbale crew, front to back, Debbie, Althea, Alexis, Brenda (and Smoky), Michael, Rosa, and Aron.

In a single day, we fixed all that. And what an amazing crew! Since the bales were stacked, we have been finishing up details, and stuccoing. The first coat of stucco takes some work. The second coat goes fast. We have to blow some insulation in the attic, and then the house will be super-insulated. Then it will take less than 5% as much energy to heat and cool it as it did before, which can be done entirely with renewables. We deeply regret that bad weather and covid prevented us from making this a more public event. We took some pictures and videos and will get those out as soon as we can. These methods are not hard, nor overwhelmingly expensive, and they are time-tested. They resemble the building choices of poor people, which rich people mostly avoid.

Insulated Solar Electric Cookers

We mentioned in the last newsletter that we had found a new kind of solar cooker that we are very excited about -- Insulated Solar Electric Cookers, or ISECs. We have been working hard on that project, and our work has yielded results. We sent out a notice of a summary document at <http://conev.org/ISECmanual14.pdf> (also linked off the LEF website under LEF Technologies). We are pleased with the cookers we have developed. The cheapest is just a bucket of wood ashes. The next notch up is a cooker made with perlite. (That's a volcanic glass, the white pebbles you see in potting soil.) Perlite insulates well and tolerates high temperatures. The perlite cooker can be built for under \$20 dollars, not counting the photovoltaic panel. You can attach these cookers to most any solar PV panel, presuming you size your burner properly. We also developed some larger cookers that range from 300 to 1400 watts. (These can be attached to the DC side of a grid-tie solar PV system, if so desired.) Now we are doing most of our cooking with various daylight drive solar cookers. They work great! This project will have a global impact. We continue to work with the folks at Cal Poly, and the document we produced is being reviewed and used by the various organizations interested in this technology. The amazing thing about the ISECs, apart from the fact that they are pretty cheap, is that you can sit in your warm kitchen and cook when it's freezing cold and partly cloudy outside, with daylight drive solar electricity. We can cook breakfast with daylight drive solar electricity before 8 AM, even if it's below 20 F outside. No other solar cooking technology touches that! Most of our cooking on any moderately sunny day is now done using these cookers. Last year, we were running on solar and biogas in summer (no firewood, no rocket stoves). This year, we are running on solar biogas, no wood, at the first of March. That's the impact of our improved solar cookers. Once we put our new biogas digester into operation, I think we will be done with wood cooking for good.



Nika and Rosa dutifully executed their duty of knocking strawbales off the trailer at Magnolia.

Biogas

Our dedicated interns have continued work on the new, larger biogas digester. We have had to repair some annoying leaks. Sealing a lot of holes in a large plastic tank is a bit more complex than we had hoped. We brought in some of the straw from Magnolia and have mostly wrapped the tank. We are in the home stretch. Our previous digester is still operational. With the weather warming, we are ramping up gas production. We have begun the research work on how to containerize and filter the gas for use in our small tractors. This is another very exciting project.

Simplified Combine Harvester

We have continued work on the combine harvester, at least at the design level. Two interesting things have happened. First, we have learned a lot about the U.S. Patent Office databases. They have a filing system that is very similar to that used by universities and the Library of Congress. It is an alphanumeric filing system that breaks down subjects into ever finer details. For something like harvesters, there are hundreds of thousands of patents. But if you understand the categories, it is not so hard to drill down to the specific categories that fit the invention you are concerned with. This provides us with information about combine harvester designs covering two centuries -- a huge treasure trove of ideas and designs! The second interesting resource we have happened upon is a book *Combine Harvesters* by Petre Miu. It is an intricately detailed academic work describing the design of combine harvesters in painful detail. These resources combined have given us some further clarity about how our ideas fit into the history of harvesting machines. This research has enhanced our confidence that we can build a small, reasonably effective harvester for very, very cheap. The global grain supply is controlled at this time by very large corporations at every stage of production. A simple harvester would be a powerful tool to enhance community self determination.

The Community and the Crew at LEF

A very good quality baby grand piano was donated to LEF. Now we are often serenaded in the evenings by Brenda's amazing talents. Sometimes there are singalongs, all acoustic. And for the more high-tech events, we have been having some karaoke nights, all solar powered. *Total Eclipse of the Heart* is required at each karaoke event. Althea has been keeping tabs on the biogas, growing mealworms, helping with orchard development and maintenance. Michael



The new biogas digester being entombed in not one, but two layers of strawbales. The secret to biogas is to keep the digester very, very warm (and feed it every day).

and Aron have worked to keep us in firewood (yes, we use some of that still). They also repaired the drive train on a small tractor, and have done extensive work on the new biogas digester. Michael took the lead on renovations at Magnolia, and has had a big impact on that project. Deb has put been planning our farm activities for next year, putting up a hoophouse for seedlings (we want to build a real greenhouse). Rachel has been helping at Magnolia, and works daily to help many other projects happen. A number of folks have been working with Southern Exposure Seed Exchange, which is a noble way to help our bottom line. Everyone has pitched in on the big push to put straw around Magnolia. Rosa and Nika are going to their coop homeschooling program, which they love -- sometimes. Alexis has been working too much, but is having fun with lots of interesting projects. We have a good life. We would like to help others live well while remaining in greater harmony with our Sacred Earth. 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 Education Fund are tax deductible.

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 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>