Living Energy Farm

September 2019 Newsletter

Support our Climate Justice Campaign to take Solar Lighting to Arizona, Ghana and Beyond
https://www.gofundme.com/climate-justice-now
Tax deductible donations can go to https://donatenow.networkforgood.org/1388125 Designate Living Energy Farm

Living Energy Farm Needs You!

There is a tremendous new outpouring of energy in the movement to address climate change. We have been participating in local organizing and climate strikes, speaking publicly, and talking to people about solutions. This new awareness around climate change is hugely important. But most of the proposed solutions remain focused on policy changes that do not address the root of the problem, or expensive answers only the wealthy can afford. At LEF, we have built a prototype sustainable village model that could be a powerful tool. Long-term tools are less exciting than protests. We are going to continue to participate in local organizations, and continue to talk about effective, affordable solutions for climate change. We have to be clear -- the only way we can address climate change is to fundamentally re-shape how we live. The growth-based, centralized economy has made us into relentless consumers of disposable goods. We have to turn all that around. We have a tremendous amount of new energy and new people involved with LEF. We hope to do our part. For us, that looks like:

Climate Justice -- It's fine to advocate conservation, but no one wants to live in the cold and the dark. LEF is exporting it's DC Microgrid, which allows people to have modern services at a tiny fraction of the cost of grid power, to communities that need it most. We are building Living Energy Lighting and Charging Systems (LELCS see photo) to take to the Navajo Nation. We have raised over $20,000 so far. Thank you!!! The biggest expense in LELCS is the batteries. We have paid for the highly durable nickel-iron batteries for the 100 LELCS kits for Arizona. They are set to arrive in late November. At this point, **we need about $7,000 to finish what we have started, and put solar lighting in 100 homes in Arizona this winter as we have promised to do. We are in the home stretch. Please support us if you can.**

Our Navajo friend Manuel spent a month with us learning how to build off-grid solar electric systems using durable equipment.

Outreach to Navajo and Hopi Communities -- Everyone we talk with who does work with disadvantaged communities around the world is excited about our LELCS project. For us, we want to both provide lighting and charging services (for DC LED lights and cell phones, on which low-income people the world over depend), and to provide an expanding model of durable solar equipment. We are expanding the number of people and organizations we are talking to about the Arizona project. A LEF member will be in Arizona in late October to set up meetings to implement our current project and plan for the future.

Outreach to other countries -- We are also moving forward with a pilot project in Ghana. We are

working with the Global Ecovillage Network. The City of Charlottesville (very near LEF) has a sister-city project with Winneba, Ghana. They work with the Charlottesville-Winneba Foundation, who will be sending a shipping container full of medical supplies and other necessary goods to Winneba in February. We have talked to them, and plan to have 10 LELCS kits in that container. Those kits will be used to set up the pilot project.

We have had exciting contact with The Source Farm in Jamaica. We will send a few samples of LELCS kits there. They are a clearinghouse for environmental action and organic farming for the entire Caribbean region. We are also working with a field manager at Grid Alternatives, a California-based organization that has solar lighting projects in a few Latin American countries. They will get a sample LELCS kit too.

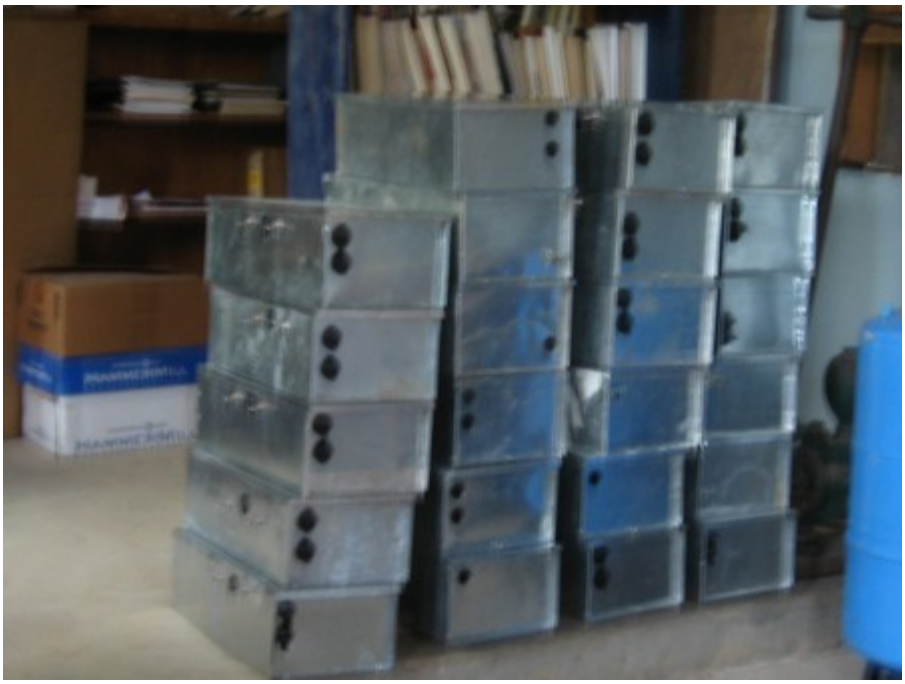
We need to address climate change. We need practical, effective tools to live more lightly on this sacred Earth. Protest and policy are exciting, and telling people to change their lifestyle so the community-based tools we have at LEF will work is a long road. We are still walking that road.

Got a Van You Aren't Using?

We are working on figuring our transportation for all of our gear to Arizona. Got a van you aren't using that you are willing to let us use for a month? Let us know.

Cooking with Renewable Energy

Our DC Microgrid at LEF has worked really well. We are even doing a lot of cooking now with direct-drive solar electricity (see last newsletter). But overall, finding sustainable, inexpensive, durable, all-weather cooking technology is proving challenging. We tried biogas some years ago, and found we could not make a lot of gas with a small setup. We tried high-temperature solar storage, and found it too expensive. We are now using solar cookers, solar powered electric cookers, rocket stoves, and biogas. It works, but golly is it complicated!



Our growing stack of LELCS kits. It takes 3 hours or more to build and wire each LELCS box. We have about 25 so far, and many more to go.

We are learning more about biogas. We have a bigger setup now. A few weeks ago, we were making enough biogas to run a high-output burner for 1.5 hours a day. Since then, we had some trouble managing inputs, and biogas production has plummeted. Sigh. Ideally, we want some fuel, or mix of fuels, that will allow ordinary people all over the world to cook more sustainably. Certainly the direct-drive solar cooking is a great new find! But it is time-sensitive, dependent on sunshine. The optimum answer is still not in our hands. A good biogas system is expensive and complicated, especially compared to rocket stoves. But can everyone in a city cook on rocket stoves? That's not a good answer.

We always tell people that renewable energy only works at a village level. That's true, except different renewable energy systems reach optimum scale at different levels. Solar lighting can be done efficiently for a single family (as per our LELCS kits). Optimum solar space heating (a huge climate change issue) and solar hot water both are optimized at a minimum of 10 people, probably maxing out at 50 people or so for one system (in terms of per-capita costs). Optimum biogas sizing is larger. A good digester, and the equipment to handle inputs and outputs from the digester (organic matter in, effluent out), dictates that an optimum biogas system would be

larger, even modest industrial size.

Where does all that leave us at LEF? Still working on it. Cooking is certainly a harder nut to crack than our DC Microgrid. We will figure it out in the next couple years though, and then we will teach others.

New People at LEF

There are a lot more people at and interested in LEF these days, which is great! Deb and Alexis have been here from the start, as have Rosa and Nika. Brenda, a friend of ours from Twin Oaks, lives here now. She is a great organizer, and has taken over correspondence. That's been a huge help. Stephanie and Xander (who's 10) are living here, exploring long-term membership. Xander has been a great playmate for Rosa and Nika. Stephanie runs Eagle Therapies (eagletherapies.com), and is a great organizer as well. We had our Navajo friend Manny with us for a month, though he has gone back to Navajo country now. He can build and install solar electric systems now. Rachel has been with us for a few months, and will be with us through the winter, perhaps longer. She loves farming and food. Kashev has been with us for a couple months, and will be moving on to his next internship in late October. He is a dedicated farmer as well. Onyx is here for a 6 month technical internship, and may stay longer. She has some good skills, and is managing a crew at Magnolia to take that off grid. (That's a house near LEF.) Gene is here, exploring a longer term stay. And we have lots more folks coming by, and asking to stay for a while. We are pleased to have so many people interested in what we are doing.

Solar Lighting -- For Profit or Not for Profit?

Our Arizona project to install LELCS kits in Navajo and Hopi communities has been an engaging project. All of the parts in our LELCS kits are easily available, except for the batteries. The only new, small nickel-iron batteries in North America are the ones being brought in by LEF. Otherwise, to get a 12 volt nickle-iron set through any other supplier costs nearly $1000. The battery company we are dealing with is taking a large loss on their first sale to us. They have nearly twice the costs in re-tooling to make custom batteries for us than they are making on the first shipment. They are doing this because they are cognizant that a billion people on the Earth have no electricity, and the LELCS kits represent a unique solution. (And for us, an environmental gateway to better solar technology that empowers off-grid living, and makes AC grids unnecessary in the long run.) The only other entity to pursue something like our DC-based LELCS (to our knowledge) is Sundaya in Indonesia. They developed their "Joulebox" using small, lithium batteries. The problem with that approach is that any small electric box is going to be cycled hard. And lithium batteries can't handle that over any length of time. Nickel-iron batteries can, but they have been stigmatized as an "old" technology. The battery company we are working with is adapting nickel-iron batteries to meet consumer desires. (There are two academic projects innovating nickel-iron technologies in the U.S., Dai Lab at Standford and Narayan Lab at Dornsife USC, but it is not clear if either of those technologies are commercially viable.) The manufacturer we are working with is set to release a maintenance-free nickel-iron battery (the first in history) in the coming months. That will be a big deal, as normal nickel-iron batteries need distilled water inputs regularly.

The Arizona project LEF is pursuing is being done on a non-profit basis. The kits are being provided free of charge to the recipients. We are importing a few extra batteries so we can send kits to Ghana, Jamaica, and select non-profits in the U.S. But going from here, we need to figure out the best way to provide LELCS kits to much larger numbers of people. Should we keep raising money and doing it on a non-profit basis? There are 15,000 people in Arizona who could (perhaps) use LELCS kits, and about a billion worldwide. That's a lot of fundraising. Certainly in Arizona, most people could afford a couple hundred dollars for a *durable* solar kit. Every house we visited in April had in excess of $1000 in solar hardware lying in disuse around the house because of failed batteries. That situation is global.

Another option for expanding the distribution of LELC is to set up a "benefits corporation" that sells LELCS kits at a modest profit, making enough money to continue expanding the project, but not trying to "get rich." The latter approach is needed. LEF could either sell or give away LELCS kits, but we can't do both at the same time. (It doesn't work to use a non-profit organization to promote your own for-profit products.)

As a working name, we are calling this theoretical benefits corporation Durable Battery Company. It would take a minimum of $30,000 to get Durable Battery started. It would make a profit. The distribution side

of the equation is the big challenge. That's the reason someone hasn't done it already (and no one else has LELCS kits). Durable Battery could not haul a few hundred dollars worth of batteries at a time to Arizona and still turn a profit. But if we could find 10 people who could each buy $2000 worth of batteries (average), these secondary distributors could either build LELCS kits or sell batteries to people who need them. (It takes less than $100 worth of batteries to build our smallest LELCS kit.) Then Durable Battery could haul $20,000 worth of batteries. That would be profitable, highly beneficial for the people who need them, and advance the cause of establishing a durable solar technology. The same model could work in Africa, where 600 million people do not have electricity. Either LEF would cease distributing LELCS on a non-profit basis, or Durable Battery would be an entirely separate entity. We looking for people interested in Durable Battery Company.

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 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
First video on youtube
https://www.youtube.com/watch?v=ppTBO8d6jhY
Second video on youtube
https://www.youtube.com/watch?v=wdSX_TIYkD4
Video on vimeo
https://vimeo.com/128744981
Slideshow produced by Alexis a while ago
https://www.youtube.com/watch?v=4x_C3iScoAw