**Living Energy Farm**
December 2021 -- January 2022 Newsletter

**Expanding LEF's Mission**

We have been moving forward as we are able to help other people adopt Living Energy Farm's highly efficient energy model. Our DC Microgrid supports a high level of modern services and comforts with an energy system that is modest in cost and has near zero maintenance cost. Our DC Microgrid allows for a modern lifestyle with a very low environmental footprint, but it is not a natural fit for modern consumerism. Wealthier people prefer grid power, and are generally happy to accept the messaging that centralized "renewable" energy systems can support their lifestyle regardless of a bounty of scientific information that contradicts that position. Low income people around the world would absolutely love to have what we have at LEF, but they lack the buying power to create markets for durable, daylight drive DC equipment.

Taking cell phones as an analogy, that technology has had many negative impacts and some positive ones. One thing is for sure, the cell phone market was built by selling products to wealthier people first, and then cheaper models later became available for low income people around the world. We are trying to figure out how to market DC Micgrogrids, but wealthier people are not naturally inclined to want what we have to offer.

*Eric doing solar cooker development at LEF. We are aiming to produce two cookers, one as cheap and simple as possible (pictured here) and a larger, oven-like one.*

So where does that leave us? We are pushing forward in every way we can. If we establish a market for highly efficient DC based off-grid systems in the U.S., that could create momentum and social acceptance of these technologies. We created an LLC called Living Energy Lights (LEL) to pursue that end. We are now investing more time and money into trying to make that work. It is our intent that LEL would market a range of DC tools and appliances, including nickel iron battery kits. Our preferred supplier for nickel iron batteries is ADS in Ukraine. After some negotiation, we talked them into shipping us a moderately sized shipment of their batteries. That shipment has been delayed by Russian military activity.

We are continuing our work in Jamaica. We are trying to establish an organization there called Living Energy Solutions (LES) in coordination with our Jamaican friends. We have successfully imported a shipment of photovoltaic panels and inexpensive DC water pumps. The Jamaican government bureaucracy is impeding our efforts. Six months of work and we still do not have a taxpayer ID number or bank account. That's very frustrating. We are continuing our support as we are able given these legal constraints. Our current plan is to send a couple dozen Insulated Solar Electric Cookers (ISECs) cookers down there to test market them. Our intent remains to set up a metal fabrication shop in Jamaica when we are able, but sending down some cookers now will allow LES to market PV panels, water pumps (which Jamaicans direly need) and ISECs in the interim.

We are trying to build connections with some folks in Puerto Rico to try to set up a project there. Our

thinking is that opening avenues in areas where people need good non-grid power sources might help build a market. With the ISEC project, we are networked with folks in Africa, India, and across the world. They are trying similar things, and we are trying to support each other's projects. Hopefully, that will bear fruit.

We have been reaching out to folks in Arizona on the Hopi and Navajo Nations where we helped install over 50 small solar kits. Certainly the ISECs would be very effective in the Arizona desert. We will ship some cookers out there and set up some some demonstrations/ workshops this spring if we are able.

We are changing the name of our fund at Virginia Organizing from the Living Energy Education Fund to the Living Energy Institute. As we see it, LEF is a community that has served as an off-grid home for many people, as well as a technology development and testing center for durable off-grid technologies. We are looking for funding to try to bolster our technology development efforts, thus the desire to have an "institute" that develops technology rather than an "education fund" that simply supports LEF. To effectively develop and disperse these technologies abroad is a task that is challenging for a farm-based community. We are in dialog with various entities who understand and promote these ideas to see if Living Energy Institute can become a vehicle to better develop these programs, and how we can work with other groups.

*A fancier, oven-like solar cooker.*

In short, our hands are full of more than we can carry. This is all good work, and we are pleased to be doing it. If we can find the funding, the Living Energy Institute may become an organization in it's own right. Certainly if we could find funding to establish a paid director and more focused and effective outreach, that would allow us to have a greater impact. Trying to do this work, as well as run a farm and a community that is largely self sufficient with food and farm earned income (from growing seeds, primarily) is a herculean task. We are looking for more resources to try to more effectively pursue these goals. The spread of DC Microgrids is impeded by the fact that one needs a full compliment of DC equipment (pumps, cookers, motors for shop tools, washing machine, DC fan, light bulbs, perhaps a small fridge). Pulling all that equipment together and establishing supply chains is a large challenge, and a big part of the reason DC Microgrids are not already dominant. If there are people, organizations, grants or other resources that you know of that can help, please let us know.

**Roxy Solar Oven Available for Purchase Soon at Livingenergylights.com**

For the last year we've been developing Insulated Solar Electric Cookers (ISECs) in coordination with an international effort to improve and establish these cookers around the world. (See http://sharedcurriculum.peteschwartz.net/solar-electric-cooking/ and http://conev.org/ISECmanual14.pdf) These are the best solar cookers in the world. They can be used from the comfort of your own kitchen. A solar photovoltaic (PV) panel is wired directly to a burner in an insulated box, which maintains high temperatures as solar conditions change. Depending on the PV input, these cookers may be used much the same as you would use a hot plate or crock pot. Oven designs are also excellent for baking and roasting.

We've designed a model we call Roxy Oven that we will be distributing soon through Living Energy Lights. ISECs are a brand new technology, and we are actively soliciting input on our design, and what is most important to people in a solar cooker. If you have any opinions about solar cookers, we would appreciate if you filled out this form:
https://docs.google.com/forms/d/e/1FAIpQLSfqAhgKnPFId6rqn06nOiDpQll9LzWzkCpv-vEy68zoH95HtQ/viewform?usp=sf_link

We are also offering Roxy Oven at a discount to anyone who is willing to follow up with us after purchase with design input, photos, recipes etc. Please contact us if you are interested.

**Simplified Combine Harvester**

If there are substantial financial and marketing impediments slowing the spread of DC Microgrids, there are no such problems with a simplified combine harvester. As it stands, grain in industrial countries is harvested with very large, expensive combines that many farmers struggle to afford. In China and India, small combines are produced that are a miniaturization of industrial combines. We have one of these machines. It is three feet wide. It works, but it has dozens of bearings and spinning shafts, conveyors, augurs, belts, and roller chains. It is complex and far beyond the means of small farmers around the world. (It is also challenging to operate and exposes the operator to a lot of dust and exhaust fumes.) The poorest farmers around the world harvest by hand with a sickle or scythe. With corn, that works fine. At LEF, we harvest corn by hand and see no reason to do otherwise. But for wheat, rice, soy, millet, rye, oats, barley or a number of other small kernel and highly important grains, hand harvesting is wasteful (a lot of grain in knocked off the stalk in the field), slow, and ineffective.

We have been working for years on a better answer, and we think we are getting close. We have been welding up a prototype harvester that has one shaft with two bearings, a blower, and simple sickle cutter. This machine will probably work better than the 3 foot Asian machines, and at about 10% of the complexity and cost. It could be welded together in small shops across the world, or mass produced for a few hundred dollars. The same technology could also be scaled from very small to moderate to large machines. It could be a game changer for farmers all over the world.

We put a provisional patent on our harvester, and put that patent under the ownership of a group of folks we trust to put public benefit first. The idea would be to make the harvester available to very small farmers for free, but use revenue from mass production to fund the expansion of DC Microgrids. We still have some time to think about it, but in looking at the various costs and benefits involved, we are likely to drop the patent entirely and put the project in the public domain. The resources required to create and defend a real patent on a global scale might not be a wise investment and could impede the achievement of our broader goals.

We are going to call our machine the Satyagraha Harvester. That is Ghandian term. It describes his philosophy of nonviolent resistance. But is also describes a belief that we should live in connection with the material economy that supports us. That strongly resonates with our work at LEF.

***Empowering Communities*, Second Edition**

Last year we published a book about the creation of LEF and the technologies that we use entitled *Empowering Communities.* We are now releasing a second edition. The largest revisions in this second edition concern cooking, particularly with ISECs. We have also added a couple of chapters about biogas and using human waste as biogas fuel and fertilizer. The book is available for download at conev.org. We are printing some copies, and they can be purchased from us for $10 USD.

**The Great Power Outage Winter 2021**

Virginia suffered a severe snowstorm recently. That storm dropped over a foot of very sticky, wet snow on us. Some of our friends went a week without electrical power, with nighttime temperatures in the single digits. Here at LEF, the house was sufficiently comfortable that we didn't build a fire in the woodstove in the days around the storm. We finished out 2021 with ZERO fuel burned to keep our buildings warm. We have built a few fires since then for heat and hot water, burning a total of about wheelbarrow load of firewood. Our model is not prohibitively expensive, but it is not well suited to the individualized, consumerist oriented society around us. Should we try to get local folks to pursue our model? Perhaps. Our culture is very focused on indulgence, and a perception of immediate comfort and gratification. Is that freedom, or are those gratifications actually chains?

**Persimmons and Jujubes -- Winter Fruit**

In the 11 years since we started LEF, we have made significant improvements in how much food we can grow on trees. Growing food on trees is by many measures the most benign way to grow food. Trees have massive root systems and can sustain themselves and produce fruit even in very dry years. There is no soil erosion in an orchard. Especially for Americans who eat too many animal products and too much processed food, fruit is very good for you.

In 2021, we produced a bounty of persimmons. Wild persimmons grow everywhere around here, and we simply graft domestic ones right onto the wild rootstock that sprouts up all over. The Nikita's Gift and the Rosseyanka are our favorites. We dried a lot of Nikita's Gifts, and they are as sweet as jelly beans. They are a most excellent food for snacking and travel, and the kids love them. With the Rosseyankas, we simply pick them in December and put them on a shelf in the barn. *We do not process them in any way.* They sit in outdoor temperatures all winter, and just get sweeter and sweeter all the while. Persimmons have excellent caloric value, and they are a significant contribution to our diet. It's mid February as I write these words, and the Rosseyankas are still of excellent quality, though the supply is dwindling owing to heavy predation by the humans.

*Rosseyanka Persimmons -- they store all winter with no processing. They are wonderfully sweet.*

Another tree fruit that we have really enjoyed this year are the jujubes. In China in particular, jujubes are a very popular fruit. The tree grows in desert conditions, so a lack of moisture only seems to encourage them. They tolerate our humid climate just fine. Jujubes have been bred along two lines, some for fresh eating, and some for drying. Our favorite fresh eating jujube is called Sugar Cane. It's like a small apple, very sweet, juicy and crisp. But unlike apples that get hammered with a long list of diseases and insects in humid areas, the jujube tree is not attacked by a single disease in our area.

The drying jujubes have taken a bit longer for us to figure out. The drying jujubes have low moisture content, which in theory makes them easy to dry. Straight off the tree, they are okay, but dried, they are fantastic! The problem is that in our humid climate, we have found that drying them is a challenge. Some years it works great, some years, not so great. This year we realized that cutting them into quarters makes them dry immaculately well. If you look on the websites that sell products from China, you will see numerous large jujube pitting machines for sale. Jujubes are a commodity over there. Butt we don't want something so large, so we are making a jujube pitter/ slicer in our machine shop. We love our winter fruit!

**Don't Look Up**

The movie *Don't Look Up* came out at Christmas, and has been causing quite a stir. It's a biting satire about a couple of scientists who try to warn the U.S. of a comet approaching, but are defeated by corrupt politicians and unscrupulous capitalists. The film has been setting records for viewership. The allegory to climate change is unmistakable in the film.

The film seems to inspire a lot of negative reviews. I think the mixed reviews originate at least in part from the emotional impact of seeing a story of the end of the world brought about by malfeasance and greed, and whether or not that set of emotions is something the viewer is willing to feel. Certainly, the more positive reviews seem to be coming from people working on climate change issues. Substituting a fictional comet for a slow-motion environmental holocaust on our Earth allows the writers to tell the story more quickly. A large comet would cause a mass extinction event. Climate change could be addressed if we made it a priority, but

with many years of ongoing neglect, climate change and economic "growth" more generally are causing a slow-motion mass extinction event not unlike a comet colliding with Earth.

*Don't Look Up* has a visceral impact. But what do we *do* about it? Cooperation, conservation, application of renewable energy. *In that order,* or we only make the problem worse.

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** 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