

Living Energy Farm
December 2022 Newsletter

DC Microgrids in Puerto Rico

We just shipped 8 pallets of solar equipment to Puerto Rico. The material we sent down includes 14 custom-made SunStar daylight drive refrigerator/freezers, 24 lithium battery kits, 10 Insulated Solar Electric Cookers, 2 DC pumps, and 9 nickel iron battery kits. We also sent some industrial DC motors for converting shop tools and appliances, and sundry tooling and parts.

We mentioned in the last newsletter that we made it through the second round of the Empower a Billion Lives competition hosted by the IEEE (Institute of Electrical and Electronics Engineers). We were invited to field test our DC Microgrid, which we will be doing at Fundación Bucarabón next January. IEEE set up a matching fund to help fund the field test. If you donate to LEF through their site, they will match funds up to \$1,500. See <https://give.ieeefoundation.org/team/470360>

Our GoFundMe campaign, which aims to fund solar refrigerators for two of our projects, has also been gaining steam. It's at <https://www.gofundme.com/f/solar-refrigeration-for-puerto-rico> Any support you can offer would be greatly appreciated.

We are hopeful that our DC Microgrids will gain a much higher level of acceptance in Puerto Rico than they have in the mainland US (where grid power is taken for granted). For example, we started marketing Sundanzer solar refrigerators in the US several years ago and only sold a couple. In Puerto Rico, we have already sold 14 Sunstar Solar refrigerators after just a few months. (The fridges are being sold at cost. The go-fund-me is for a couple of fridges for folks who need them but can't afford them.) There is a strong off-grid



Eight pallets of solar equipment left Louisa for Salinas, Puerto Rico on December 19. This is all durable equipment that will last a long, long time.

movement in Puerto Rico, in response to a dire need. Already many folks trying to go off-grid in PR have run into problems with the conventional AC approach. Many grid powered appliances are poorly designed from an efficiency standpoint simply because grid electricity is so powerful. Running these inefficient appliances off-grid, particularly refrigerators, is extremely difficult and expensive. The Sunstar refrigerators we are taking to Puerto Rico are well built, super-efficient, simple, and repairable indefinitely.

Similarly, many people in Puerto Rico struggle to pump water because they try to run inefficient AC single stage centrifugal pumps (shallow well pumps with very poor pressure output) from conventional off-grid systems with batteries. We have found a very nice multistage



This is an image of the multistage solar pumps we are bringing to Puerto Rico. We have tested them. They work well and have much, much better performance than AC shallow well pumps.

DC solar pump at a very modest price. These pumps are made to run straight from a set of solar panels. After the next hurricane, these pumps, refrigerators, battery kits, solar cookers and other equipment we are taking to Puerto Rico will still be operational and can provide needed services. This is the same equipment we use every day at LEF. We know its strengths and weaknesses. We live the same way we encourage other people to live.

We are taking 55 amp hour battery boxes to Puerto Rico that we manufactured. These 12V kits are for lights and electronics, and utilize nickel iron batteries made in Ukraine. We set up one of these kits at LEF and we have been very pleased with the performance. The size of these 55 AH kits is great. They are small enough to be modest in price, yet robust enough to support a household. If that household includes individuals who make their living on a computer, they would want two such kits, one for the computer, and one for the lighting and other electronics. We have used nickel iron batteries for years now. They are super-robust compared to any other battery.

In January, Debbie, Alexis, Rosa and Nika are going to Puerto Rico to build solar demonstration sites. Deb and Alexis are going to be busy in Puerto Rico, so we may or may not be able to put out a newsletter early next year.



Nickel iron battery boxes built by Debbie and Carrie. These will last a long, long time.

*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, 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>