

Living Energy Farm

Oct - Nov 2015 Newsletter

Come to our LEF Land Day Party!

Sat, Dec 12, starting at 2 PM

Location, LEF at 1022 Bibb Store Road, Louisa VA, 23093

Rain location Magnolia House, 217 Fredericksbug Ave, Louisa VA, 23093

Bring musical instructions, snacks to share if you want, and a paint brush. Treats will be served, all prepared in our zero fossil fuel kitchen. In an effort to beautify our spaces, the plan is to do a group mural on the wall of our newly expanded seeds barn. Bring your creative energy!

Beware that Fredericksburg Ave and Bibb Store Road are the same road. These two locations are a mile apart from each other. We will be at LEF unless there is significant rain. We promise to have an open house in the spring with a hay-ride so mobility limited folks can come out. But for this event you will need to walk a half mile over a bumpy road.

Workshops

Organic Orchard Management and Pruning

Sat, Feb 13, bad weather date Feb 20, 9 AM to 4 PM

Location, 912 Woodfolk Drive, Charlottesville VA, 23093

Cost: \$25, Contact Alexis, 540-205-0433 tradelocally at yahoo

This workshop will be conducted by Alexis Zeigler. It will focus on planning, pruning, and maintaining an organic home orchard without the use of toxic chemicals. This workshop will focus primarily on maintenance and pruning. (We will likely do another Orchard Planning workshop in the fall with Michael McConkey, as we did in 2015, that will focus more on planning and less on pruning.) The workshop location has an established orchard that produces a lot of fruit with no spraying and little maintenance. You will be able to learn how to take care of the trees hands-on. We are wimps about traveling in the snow. Light snowfall pushes us to the Feb 20 date.

Staying Warm in Our Solar Kitchen

As the cool fall weather arrives, we have been staying warm in our solar kitchen at LEF. The thick insulation in the walls and ceiling mean that most days the passive solar gain from the windows is enough to keep the kitchen warm. We have been running the active solar heat -- pumping heat down from the hot air collectors to the floor -- and that is working splendidly. It will take a year or two to have an accurate assessment, but all indications so far are that our forced air radiant slab heating system will mean the amount of firewood needed for supplemental heat will be very, very small.

We have been using our "direct drive" buck saw to cut firewood (see last newsletter) and it is now one of our favorite gizmos. Our 1400 watt, 180 volt solar rack now powers, without the use of any batteries, inverters or other electronics: our seeds drying blower, our main well, blowers for heating the main house and kitchen, the buck saw for cutting firewood, and the newest addition, and belt-drive grinder for sharpening tools. Using high-voltage DC to power all these tools was only a theory when we started. It has worked out far better than we expected. We have found that we can even put quite a demand on our solar rack, and the machines work fine. DC motors tolerate voltage variations quite well. Our one failure is that we had hoped to run household cordless power tools on low voltage DC, in the 12 - 24 volt range. The tools do run, but they don't last long. The high voltage DC is working out

much better. And, of course, we keep our hand tools sharp for when the extension cord isn't long enough.

We are finishing up the last of the seed processing -- dry beans, okra and winter squash. Overall the seeds season went well. But we had more than our share of critter problems this year. We probably lost about \$3,000 worth of seeds to the deer. Next year, we will plan some better fencing and other control measures.

Now that seed growing is not taking up our time, we have started back to working on EarthHeart, our main house. That's going really well. We were worried about how difficult it might be to build the solar collectors on EarthHeart. The system on the kitchen was pretty tedious, and the one on EarthHeart is quite a bit larger. We changed the design to make it easier to build, and that is paying off. It will still take some time, but compared to decades of cutting firewood, it's worth it. Many thanks to our interns, Brie, Shawn, and Mari, who have been working hard on EarthHeart.

Wintersweet Pears

Back in November, we sent out an announcement about a pear tree that we discovered growing wild at a friend's farm. The original tree died, but we had grafted several copies and have been growing them for about 5 years now. The tree is pretty amazing. It is very vigorous and fast growing, often growing twice as fast as other pear trees. So far it has shown no signs of fireblight or other diseases that plague pears in this climate. The



Deb and Brie working on solar roof.



Rosa with a Wintersweet at Thanksgiving

fruit is extraordinary, with an amazing sweet-tart flavor that is unlike any other pear. We had some at Thanksgiving, and the kids vigorously consumed them to the last bit. They are good winter keeper pears.

We plan to sell this tree through our nursery, and sent out an announcement asking for pre-orders. The announcement provoked a pretty amazing response. We have more pre-orders than we can graft trees at this point. Grit magazine will be doing an article mentioning the pear, coming out next fall. We feel that this tree is a useful addition for

people seeking self-sufficiency, and we are happy to be able to make it available.

Living Energy Farm as an Ecological Model

Living Energy Farm is intended to be a community and a farm that runs without fossil fuel on a daily basis. Cooperation and modesty are the guiding principles of the project. These principles guide every decision we make about what we build, what machines we choose to use or not, and how we live. We are trying to put together an integrated package of renewable energy systems, built as simply and cheaply as possible, that can be built by other communities all over the world.

Our high voltage, direct-drive DC economy is working really well. The integration of solar PV for multiple uses is working well. Our building designs seem to be working well, keeping us warm with no fossil fuel, no batteries, and no fancy electronics. The two energy projects that we need to move to completion now are better cooking systems, and farm traction (woodgas tractor).

We are relying on wood for much of our cooking heat right now. We have experimented with numerous devices, including various kinds of rocket stoves, biogas, solar ovens and parabolic cookers. You can make all kinds of things look good on a laboratory bench or in a grant proposal, but when you have to rely on it, day after day, it has to work, and it has to work well. That's what's different about LEF. We are relying on these technologies, not just experimenting. As such, we learn the limitations of the technologies. Rocket stoves look great, but they need high quality fuel, and you still invariably get smoke in your face. Not amusing when you are using these things 3 meals a day, 7 days a week. Biogas works, but needs inputs, and a lot of tending.

Most Americans scarcely give cooking fuel a second thought. But did you know that American kitchens use more energy than American farms, and that our refrigerators use more energy than all of the tractors on all of our farms? (source, Lester Brown). In the non-industrialized world, finding energy to cook food leads to deforestation, blindness (from smoke), and excessive expense imposed upon those who can afford it the least.

After months of research, we are now moving forward with a simplified solar boiler. We have researched all manner of devices using hot oil and other materials for storing solar heat. But at this point we think a simplified solar boiler is probably the cheapest, most effective way to store heat for cooking. If it works as we hope it will, the solar boiler will have numerous advantages. It will be largely "automated," tracking the sun each day using only small photovoltaic panels and a small DC motor. It will store heat for hours, maybe for days, making it as convenient to us as gas or electric. This is a big issue. Even poor people don't like having to stoke a fire all the time. It will need no inputs and generate no pollution once built. It will be usable in rural or urban situations. It is probably more than an individual household would want to tangle with, but it would work great for villages or cooperative houses. It could have an impact on a lot of people's lives. (See drawing for the solar boiler at the end of the newsletter.)

We are also pulling together information for a solar ammonia icemaker. Prototypes have been made of this technology by others, but detailed designs are not available, so we mostly on our own. We are also moving forward with the woodgas tractor. There is a lot of information and support for that technology (even a yahoo list), so it easier to answer questions about that technology.

We do not claim to be experts on international development or renewable energy engineering, but as far as we can tell, most of what is called renewable energy is either over-designed (expensive machines that are hard to maintain) or under-designed in a way that ignores user convenience. Balancing these these design questions led us to the solar boiler. We have found that most of our interns would rather cook over wood than figure out our solar parabolic cooker (which has to be aimed and tended). We have read about very large scale solar boilers overseas that are user-friendly to the cooks. We would like to imitate that on a more modest scale. We hope that, as we finish the house at LEF and

get our other systems running, that we will be able to support other communities and villages in pursuing sustainable lifestyles. The package of technologies that we are putting together at LEF -- especially the solar boiler -- could have use in villages all over the world. With your support, we would like to do as much as we can to make the package of technologies we are using at LEF available to whoever might benefit from it. If you are part of a group, or know of people who might want to pursue setting up fossil fuel free villages in the U.S. or abroad, get in touch with us. If you know of organizations that benefit from a mutual association, let us know.

It takes money to pay for grand ideas. We love our organic farm, but it generates a limited amount of income. We don't currently have enough cash to get all these systems operational. If you can help us out, please do. If you need for your donation to be tax deductible, you can donate to the LEF education fund (see the livingenergyfarm.org website). If you don't need a tax deduction, you could give money to LEF proper instead of the education fund. Thanks for your support!

Links for Media Articles About LEF

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

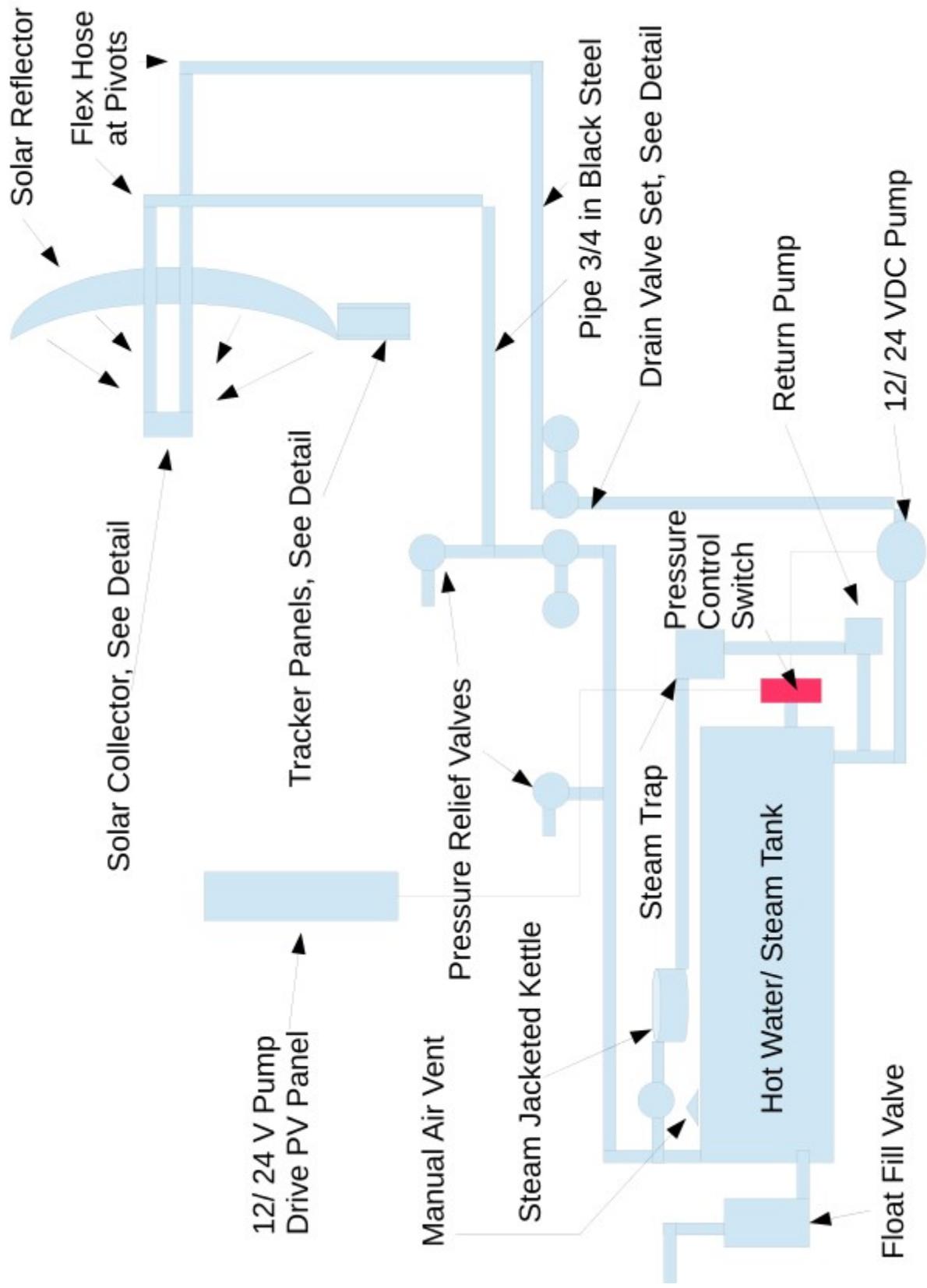
Video on vimeo

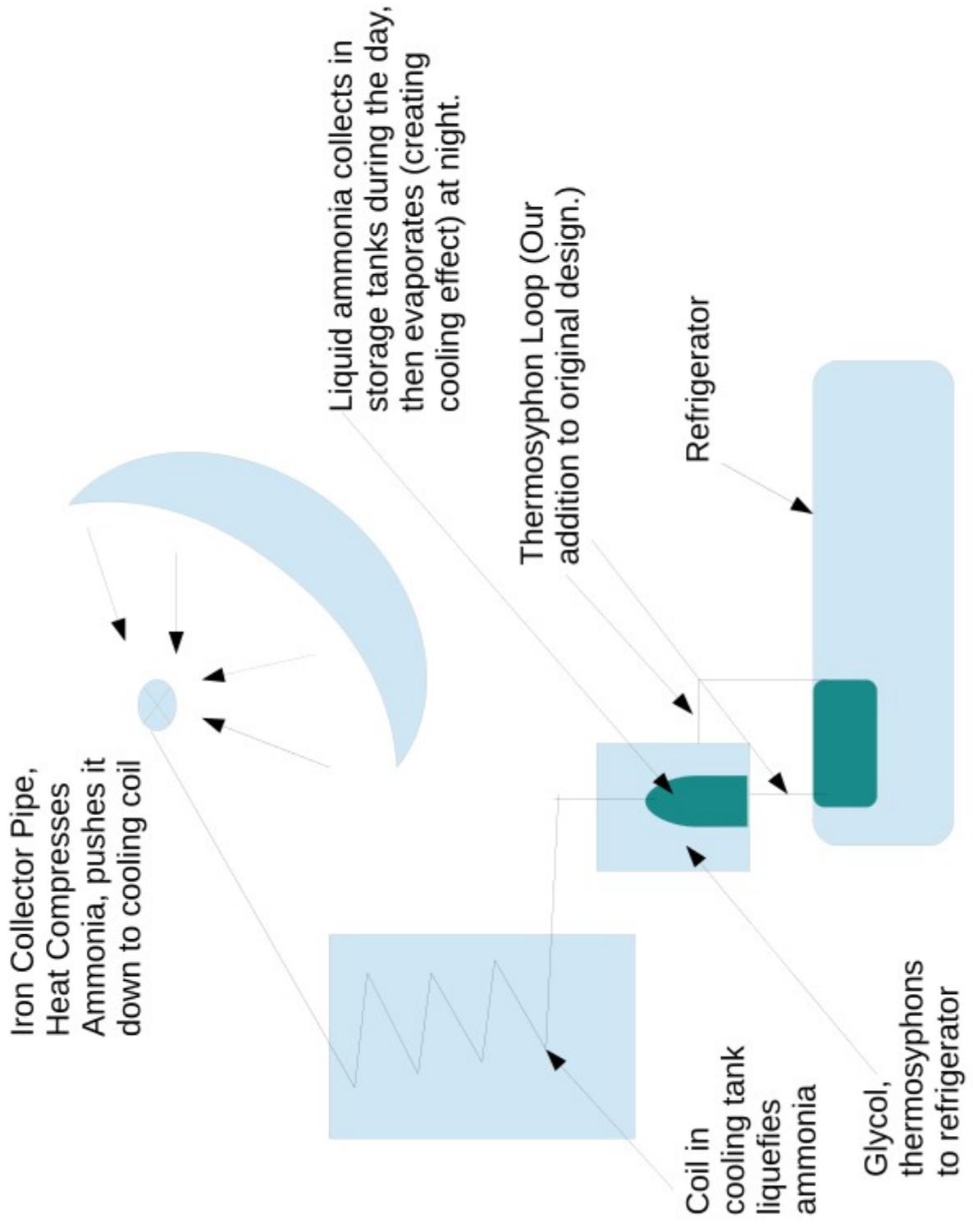
<https://vimeo.com/128744981>

Slideshow produced by Alexis a while ago

https://www.youtube.com/watch?v=4x_C3iScoAw

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. Donations to the Living Energy Farm Education Fund are tax deductible.





Iron Collector Pipe, Heat Compresses Ammonia, pushes it down to cooling coil

Liquid ammonia collects in storage tanks during the day, then evaporates (creating cooling effect) at night.

Thermosyphon Loop (Our addition to original design.)

Refrigerator

Coil in cooling tank liquefies ammonia

Glycol, thermosyphons to refrigerator