Creating Your Off-Grid Homestead

Radical Inspiration and Practical Advice

By Teri Page

Homestead-Honey.com

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Chapter One: Why Go Off-Grid?

Are you thinking about going off-grid? Congratulations! It will be the adventure of your life!

In October of 2012, my family of four packed our homestead of 14 years in Oregon, and moved across country to begin our own off-grid adventure: starting a homestead on raw land in NE Missouri. On my blog, Homestead Honey, I have shared the ins and outs of building our home, creating new gardens, adding livestock, and living without electricity or running water, while also working from home and homeschooling our two young children. Without fail, my most popular blog posts have been those describing the process of building a homestead from scratch, and living (very) off-grid.

While we had many years of homesteading experience prior to our move, starting a homestead from scratch was a huge learning opportunity. We did a lot of research and talked to experienced people, but ultimately just had to jump in. We made lots of mistakes along the way, and found that everything took much longer, and was more expensive than we anticipated.

In this book, I will give you all the information I wish I had when we began creating our off-grid homestead. It contains equal parts practical advice, information, and radical homesteading inspiration. I will share with you how our family created an off-grid homestead from scratch, working in phases, and adding projects and infrastructure as we had time and money. You'll hear what worked, where we made mistakes, and how much we invested.

I won't tell you what decisions to make for your own homestead, since every homestead journey is different. But I will offer plenty of questions for thought, so you can make the most informed decision for your unique situation. I also won't be telling you how to build or install your own off-grid systems, because, quite frankly, those are not my strengths. I will, however,

share with you my favorite resources so you can find the technical information you need.

I sincerely hope that this book will provide you with the support and inspiration you need to make your dreams come true.

Let’s get started!

Our Off-Grid Story

My husband and I learned to homestead in the Willamette Valley of Oregon. After completing an internship and work-exchange at a sustainable living skills center in the Spring of 1999, we were on-fire with energy and ideas, and ready to put our learning into practice. We rented a beautiful creek-side cabin on 35 acres, and our homesteading life began.

At first we started out slowly - growing a garden, planting a few fruit trees, fermenting and preserving food, and raising chickens. But as our excitement and feeling of empowerment grew, so did our desire to dive even deeper into self-sufficiency.

We bought goats and raised them for milk and meat. We kept beehives and harvested gallons of honey each year. We raised heritage pigs for meat, and then doubled the number we raised the next year. We sold raw milk and goat

cheese to friends. Each and every step felt so right. And yet, one thing was missing - our own land.

As we journeyed down the path of homesteading, we began to strongly feel the pull towards stewarding our own piece of land. But finances were our limiting factor. My husband and I have always cobbled together a patchwork of enjoyable self- and part-time employment. We live on small incomes (and need a lot less because of our way of life). While we had a small nest egg, thanks to an inheritance from my Great-Aunt and a gift from Brian's parents, we knew full well that we'd be laughed at in a traditional mortgage environment. We simply did not have the income to afford land in our area.

A phone call from a good friend changed the path of our life. He and his wife had moved to Northeast Missouri to begin an electricity-free intentional community in April of 2007. We journeyed by train to Missouri in October, 2010, stayed for a beautiful week of visiting and fun, and returned home full of questions and possibility. Missouri land was very, very affordable. Two sets of good friends had moved there, and it seemed possible that others with a similar yearning to homestead and create community might as well. Should we take a giant leap and move to Missouri?

Although it took us almost two years to make a decision, once we decided to move, we approached it with the momentum of 14 years of homesteading "practice." We purchased 20 acres of raw land in a community land trust, and in Fall of 2012, began to create the infrastructure of our new home. We were very excited about solar electricity, water catchment and natural building. Through conversations with neighbors, we began to develop the idea of living completely off the grid - no utilities at all, save perhaps internet and a cell phone.

We began work on our 350 square foot home in Spring of 2013, and soon moved onto our land. We camped first in a pop-up tent trailer, and then in a tent for five months while my husband built our house, I built our garden, and our children, then ages 2 and 5, lived and learned alongside us. In October, 2013 we moved into our well-insulated and warm, but unfinished

house. Thus began our first winter of lighting with candles, warming water on a wood stove, and going to bed soon after dark.

During our second summer on the land, we expanded upon what we had started the previous year, and finished much of the interior of our house. We even purchased solar panels through Backwoods Solar, an Idaho company that specializes in off-grid systems, and installed our solar panels in November, 2014. To suddenly be able to flip a switch and have electricity after a year and a half of living without seemed nothing short of marvelous!

We continue to work slowly to create infrastructure on our homestead - building a tool shed, shop, a cow barn, chicken coop and duck house. On the one hand, life feels so luxurious - now we have lights, a freezer, a smartphone, a laptop! And yet we still have SO far to go. We still have no running water at all, which makes for many, many buckets of water toted around the homestead.

I'll be totally honest - there are moments when I really long for the ease of a hot shower and running water. But the more powerful feeling I have is **how amazing is this life**! How amazing that we have built every single element of our homestead from scratch, with our own hands! How amazing that we can feed ourselves with our garden, provide milk from a cow, eggs from a chicken, electricity from the sun, and water from our rooftops. How amazing that we have done all of this without debt or a mortgage. How amazing that we are living in a rural area of a state in which this kind of life is possible.

The off-grid life we have created will certainly evolve - who knows, maybe some day we will decide to connect to municipal water, or build a real indoor bathroom. The off-grid life that YOU create will look very different than the off-grid experience we've created. That's okay! Living off-grid is all about self-empowerment. It's about learning the skills we need to care for ourselves, our family, and our community.

Why Go Off-Grid?

Living off-grid is an adventure in self-sufficiency and self-reliance. While most people agree that “off-grid” refers to disconnecting from utilities, most notably electric, there are a wide variety of reasons WHY people go off-grid. For some, living off-grid is a way to minimize our eco-footprint, while others just like the idea of having fewer monthly bills. Some embrace an off-grid lifestyle to prepare for natural or human-made disasters, while for others, going off-grid is a socio-political act. Let’s look a bit more closely at some of the reasons to go off-grid.

Environmental
The reality is that the creation of electricity is environmentally costly. Coal plants send carbon emissions into the atmosphere; hydroelectric plants disrupt migrating fish populations; wind turbines can be fatal to birds; transmission lines clear-cut wide swaths of forest, and impact agricultural practices. Even the manufacturing of solar panels has an environmental impact.

As you weigh the environmental costs and benefits of electricity production, you may decide, like we did, that small-scale solar makes the most sense for your bioregion. Or you may decide on something else - it's your homestead, after all!

Economic
Make no mistake. Going off-grid can be expensive. Our small solar electric system cost $5,000. However, if you have the initial capital investment to go off-grid, you can save quite a bit of money long-term. At one point we looked into running electricity to our homestead. Because we live a quarter mile from a gravel road, we were looking at high initial set-up costs. Between these and the monthly bill, we calculated that it would only take 4-5 years before we paid off our investment in a solar electric system.

Depending on where you live, and what kind of electricity is available to you, it may make more economic sense to investigate grid-tied solar.

Preparedness
The power grid is vulnerable to storms, cyber attacks, and other outages. Going off-grid eliminates many of these vulnerabilities. People who live off-grid think extensively about contingency plans - how will I cook, how will I stay warm, how will I source water if the power goes out, or if a storm event happens. Because we create the infrastructure to be self-sufficient in these situations, being prepared just becomes part of how we live.

Be the Change
Going off-grid is an expression of our family's values. It has allowed us to consume less, and be accountable for our own energy use. We truly believe in lessening our impact on the earth, and living off-grid is one way we "vote with our dollars."

Whatever your reason for creating an off-grid homestead, my hope is that this book will help provide inspiration and encouragement for your journey. Our way is not the only way, nor is it necessarily the best way, and we have made many mistakes along the way. But we have learned and grown in a way I never anticipated. I wish the same for you.

Chapter Two: Getting Started

Your Off-Grid Property

On the most basic level, there are three ways to create an off-grid homestead: 1) Alter your existing homestead to create off-grid systems, 2) purchase an off-grid homestead, or 3) create a new homestead. Most of the suggestions in this book can be applied to an existing property, home, or homestead with a bit of creativity. However, since my experience has been starting a new homestead from scratch, on acreage, in a rural area of the United States, it is from this perspective that I am writing.

You don't need a large piece of property to live off-grid; in fact there are many awesome small-lot off-grid homesteads. But if you're looking to grow large quantities of food, raise animals, or tend a woodlot, you might want to look for a property with a few acres of land. Selecting a piece of land on which to create an off-grid homestead is a rather subjective process. Aside from a few traits that I would consider non-negotiable - a water source and some southern exposure - I'd be hard pressed to give a list of "must haves." After all, each family's needs will be different, and your own personal preferences, and available finances, will influence your decision-making.

When we purchased our Missouri land we paid less attention to the features of the land, and more to the community and neighbors. We wanted to live in walking proximity to friends with whom we could create community and raise our kids as neighbors. We were invited to live within a homesteading community land trust, on which three neighbors steward 10 acres of land, and together co-own another 30 acres.

Our piece of land has a lot of wonderful features: It is located on a hilltop with ample southern sun exposure, and has an almost equal mixture of forest and pasture. An already established one acre pond is an easy walk from our front door. The forest is an excellent privacy feature, and buffers us

from North and Northwest winds. We have a sloped pasture that leads to a seasonal creek, so there is a wide diversity of wild edible plants, wildflowers, and grasses, and plenty of space to graze a few animals. The land was affordable and building codes are just about non-existent, enabling us to build our own structures and integrate lots of alternative building ideas.

On the flip side, our house and gardens sit atop a hill that was severely eroded, so we've had to work hard to improve soil to grow food and fruit trees. We have very little flat land, so tilling up a large garden is almost impossible. Our main water sources (the pond and the creek) are lower in elevation than our house, and we have no natural springs on the property. Our pasture (and thus, our barn) is downhill from our gardens, so we end up wheelbarrowing a lot of manure uphill. We are about 12 miles from the town where we do most of our shopping, cultural activities, etc., so we spend more time driving than I would prefer.

There are so many pros and cons to each and every place you might live, but it helps to think about your priorities and needs, and then try to meet those prioritized needs. For example, southern exposure is necessary for solar electricity, and running water with slope is a requirement of hydro-electricity. If you would like to heat with wood, having a small woodlot makes for free and easily accessible fuel.

A Word about Codes

One question I am frequently asked is, "Where is the best place to off-grid homestead?" My honest answer to this question is, "Wherever the codes are the most relaxed!" I believe in creating sound regulations that protect our clean air, water, and land. But unfortunately, most city and county codes have not adapted to meet the needs of those wanting to live off-grid or build with alternative materials. In addition, building permits and inspections can add significant costs to your dream of building a homestead from scratch.

If you plan to live entirely off-grid, you should get intimately acquainted with your county/city codes and permitting requirements. Consider finding local

mentors who have already found ways to create their off-grid homestead within the confines of code. If you're open to relocation, hop on some off-grid forums or Facebook groups and ask where people live! The absence of owner-builder codes in rural Missouri was one of the top reasons we moved to this state, and if you tour NE Missouri, you'll find pockets of amazing off-grid homesteads!

We lived in a not-to-code structure for almost 14 years, and I always felt a degree of fear that the "County" was going to come and kick us out of our home! It felt very unsettling. But some might decide that it is the option they feel most comfortable with, given their desires and budgets.

Questions for Thought

- Do you wish to live rurally or in an urban/suburban setting?
- What is your budget?
- Is there a particular town or county that you need to live in (for schools, jobs, etc.)?
- Do you have sufficient transportation to live on a more rural homestead?
- How important is it to you to have nearby neighbors? Or total privacy?
- What kinds of zoning restrictions or building codes might influence what you can or cannot do on your homestead?
- Do you have friends, family or community nearby? Interdependence is such an important part of homesteading, even when you are striving for self-sufficiency.
- Do other homesteaders or off-grid folks live in the area? Are they possible mentors?
- How "off-grid" do you wish to be? Are you looking to disconnect completely from utilities? Or do you want to have access to certain amenities such as DSL internet, a landline phone, or grid-tied electricity?
- What options exist for water? Is water catchment legal?
- What kinds of electricity production is your land or home best suited for?
- If you'll be heating with wood, do you have a woodlot?
- What is the soil like? Is it suitable for growing food?
- How much land do you have the capacity to care for?

Honestly, I'm not very knowledgeable about the actual finding and purchasing of property. Our friends called us when land next door came up for sale and we leapt at the opportunity. But to get started, I'd look in the following places:

- Local newspapers or publications
- Online real estate listings
- Agricultural magazines (For instance, Oregon Tilth's publication has a classified section in the back that often includes land listings.)
- Craigslist

I'd also suggest telling everyone you know that you are looking for land. Social connections create powerful networks, and you never know when someone might know someone who might know someone who is ready to sell, but hasn't listed their property yet! In our area, neighbors have had some success with writing letters to the owner of record of a piece of property, and asking them to be in touch if they ever decide to sell.

How Much Does it Cost to go Off-Grid?

One of the most popular blog posts on my website, Homestead-Honey.com, is “How Much Does it Cost to Build a Tiny House?” In this post, I detail the costs of building two tiny homes - our own, and our neighbor Beth’s. Despite the fact that our home is twice the size of Beth’s, it cost about half as much. And so, my overarching answer to the question, “How much does it cost to go off-grid?”, is the same as that for tiny houses: “It Depends.”

The cost to create an off-grid homestead will vary considerably based on factors such as:

- Permits and codes, or lack thereof
- Whether or not you are hiring labor
- Material costs
- Your skill level and desire to “Do it Yourself” or to purchase pre-made equipment
- The size of the home, and the type of infrastructure you wish to create
- The cost of land in your desired region

We were able to purchase our land for under $2,000/acre. We also came into off-grid living after homesteading on a rental property for 14 years. We had developed a wide array of skills, tools, and materials that allowed us to build our homestead in a rather affordable way. However, starting a homestead, even from scratch on raw land, takes money. True, you can spend time collecting reclaimed materials, building your own solar panels, demolishing old buildings for wood and materials, etc. But each of these tasks takes time. And time is another way of expending energy. So, you can spend time, or you can spend money, but you have to spend one or the other!

If you imagine a spectrum of homestead-creation, with one end being using all new materials, hiring labor, and buying new equipment, and the other end of the spectrum being using reclaimed or found materials, doing the building yourself, and constructing equipment such as solar panels, we'd be smack-dab in the middle of this spectrum. We have used a combination of new and reclaimed materials for all of our buildings. My husband Brian has built our home and outbuildings with his own hands (with occasional hired help), and we have purchased some brand-new, full-price equipment.

I have not tracked every penny and every person-hour that has gone into the creation of our homestead, although I wish I had. But we have tracked many of the expenses, particularly for large material purchases. Our numbers will give you an idea of the costs of starting an off-grid homestead from scratch; you can certainly spend less, and you can certainly spend A LOT more!

Cost estimate for a 20 acre off-grid homestead in rural Northeast Missouri:

- Land: $34,000 (20 acres)
- Driveway: $1,500 (initial gravel pour of a 1/4 mile driveway)
- 350 Square foot house: $10,000
- Tool shed: $400 (Mainly metal roofing and some structural wood. This structure used a lot of reclaimed materials purchased for very little.)
- Cow barn: $800 (new metal roofing, black locust wood posts, and some reclaimed metal roofing that was used for siding)
- Assorted outbuildings: $1,400 (chicken coop, duck coop, storage sheds, wood shed, lean to, blacksmith shop shed)
- Root Cellar: $2,100
- Water catchment system: $400 (gutters, 50 gallon barrels, plumbing fittings and hoses)
- Solar electric system: $5,000 (3 panels, 8 batteries, inverter. See Electricity chapter for more details)
- Miscellaneous equipment and tools: $4500 (generator, solar oven, rocket stove, propane stove, power tools specifically for building)
- Wood Stove: $2,000 (although we purchased this a decade ago, we couldn't live off-grid without it)

Estimated Total: $62,100

One Step at a Time

Living completely off-the-grid might be your end goal, as it was ours. Sometimes the end goal that we seek can feel rather overwhelming and it's hard to know where to begin. Keep in mind that there are many, many baby steps that can bring you closer to the off-grid lifestyle you seek. Our own approach has been to create when we have time and money available. Since we have young children and we're also self-employed homesteaders who do all building ourselves, we work at a slow pace, tackling one major project per summer, and a few smaller ones in the fall through spring.

If you're starting a new homestead, make a list of priorities. **What essentials do you need, and when do you need them?** We prioritized building a year-round shelter, since we knew we could not camp on our land in a Missouri winter, and didn't want to pay rent elsewhere. Our neighbors have approached their homesteading journey in a different way, leaving each winter to make money, and returning to camp on their land each spring. The

first year on their land, they focused on water, building a pond and swales, and their building process has taken four years. Yet another neighbor rented a room in a friend's house while building her tiny house on wheels. When she was ready to move onto her land, she hired a tractor to pull her house to its new location!

If you already have a home or homestead and want to go off-grid, take a look at your current situation and ask, "What is most important to me?" or "Where can I make the most impactful change?" You might look at your monthly electric bill and decide that you'd like to begin generating your own electricity through solar, wind, or hydro. Perhaps you start with a grid-tied system to save money on battery cost, and a few years down the line, purchase a battery bank.

Or maybe you love to garden and cringe every time you open your water bill. Perhaps your first step is to find some inexpensive barrels (we got ours from the local Pepsi distributor for $10) and begin catching water for irrigation.

With a small investment of money, time, or materials, you could purchase or assemble a solar oven, and make effortless summer bakes in your backyard. Or decide to turn off your lights each evening and light your home with beautiful beeswax candles that you dip yourself. Perhaps you set up a bucket toilet and begin composting your own "humanure."

Begin taking baby steps towards your goals by making a list of priorities and tackling one small project at a time, and soon you'll be living the off-grid life you desire.

Chapter Three: Water

Living without Running Water

Water is essential to life of the humans, plants, and animals that inhabit your homestead. For this reason, I'll focus first on the water systems we've created on our off-grid homestead. For the past two and a half years, our family has been living on our homestead without running water. Instead, we live with what I have heard referred to as "walking water." In our case, the walking part has been quite literal – walking hundreds of gallons of water, in buckets, from one place to another.

I admit, living without running water has been one of the bigger challenges of developing a homestead from scratch, particularly when our dreams, plans, and actions include planting hundreds of fruit trees and two large gardens, raising chickens, ducks, lambs, bees, dairy cows, and keeping a family of four clean, fed, and hydrated.

Why no Running Water?
Honestly, when we moved to NE Missouri, we didn't set out to live without running water. We had a well at our Oregon homestead, and several of our friends and neighbors here in MO have city water. Had there already been a water line installed on our land, we might have happily used it, filtering water for drinking and cooking, and using city water for animals, light garden irrigation, and bathing. But, our land came without any infrastructure, so we had to make decisions. The options we considered were:

1) City water
2) Digging a well
3) Rainwater catchment

In the end, the distance we would have had to lay pipe to run city water onto our property was too great, and too expensive. Similarly, digging a well was

an expense that we were not ready to pay. We decided to start with water catchment and see how it went. Two and a half years later, we've learned that it is a viable option for us, *if* we continue to add to our water storage capacity, preferably with an underground cistern. We observed our neighbor's cistern building this summer, and feel excited to tackle this project next summer.

What Would we do Differently?

Honestly, as a starter system, our water situation works well. I would like to fine-tune the way that water is transported, so we do not have to carry so many buckets of water to and fro! Water is something we have to think about every single day. When we have several weeks without rain, it is stressful to not know if our water stores will be sufficient. I'd like to feel a bit more secure about our drinking water, and look forward to building an underground cistern.

In some ways, it's ironic, and perhaps a sign of our times, that we have high-speed Internet in our home, but no running water! Although there is stress involved with not having a faucet that turns on and off, most of the time, I feel a huge sense of relief that we are able to provide our family with clean, good tasting, and non-treated water.

Water Catchment

We collect rainwater from the metal roofs of our house, toolshed, cow barn, and chicken coop. Water is collected via gutters, and a small piece of mesh captures larger pieces of debris. The water is collected in 50 gallon food grade barrels that we purchased at our local Pepsi Co. Distributer for $10 a piece. We have a total of 550 gallons of water storage, as well as a 100 gallon stock tank for the cows.

Black irrigation poly-pipe connects the barrels in series, so that as water flows into the primary barrel, all three are filled to the same level at the same time. Currently, overflow spills over onto the ground and drains via an earthen trench, to a submerged drain pipe and out into the forest.

Because we live in NE Missouri, where we typically get rain throughout the entire summer, we have had good success with this system. With no moving parts, there is not much that could go wrong (no expensive plumbing bills!). A simple improvement we could make would be to divert the first few minutes of rain water that comes off our roof away from our barrels. This would ensure that the water we later purify is as clean as possible.

Our biggest challenge has been in the winter months. We cannot use the system as is because it would freeze solid. A few years ago, we created an underground storage system that consisted of three barrels laid on their side, buried underground. An antique-style, pump from Lehman's brought water above ground. You might compare these buried barrels to an unheated greenhouse; they worked well as a "season extender" but did not prevent freezing (Missouri's average frost depth is 26 inches, so we should have buried the barrels much deeper - lesson learned!). What I like about the underground system is that it keeps the water very cool, and because the barrels are located underground, away from sunlight, prevents algal growth. What I dislike is that it is difficult to read the water level.

As we build systems for our homestead, we go through a process of research, plan, execute, and wait and see what happens. Sometimes, our projects turn out really well. Our current water catchment system works amazingly well for 8 or 9 months out of the year. In the winter months, we now use the following system: We capture snow-melt and rain water into open containers of water for use in our home. And for all other water needs, including bathing and animal watering, we rely on our homestead pond.

Our winter chores involve at least one trip to the pond to collect buckets of water. Usually, that involves breaking through at least 2 or 3 inches of ice! It's not a long-term solution for us, but it will make a great story when we're older!

Questions for Thought

- List your water needs - i.e. bathing, animals, cooking and drinking. Can you estimate how many gallons you need? (A water calculator like this one might be useful: http://www.home-water-works.org/calculator)
- Are you wanting a system that covers just the bare necessities, like ours, or do you need something more robust?
- What is your budget?
- What water sources already exist on your property? (Ponds, springs, wells, streams, city water)
- Where is the most logical place for a water system?
- Can you catch water higher than where you plan to use it to create pressure?

- What water system makes the most sense for your homestead? Wells, city water, water catchment, and springs are all options to consider.
- What are the local skills and resources that could help you create a system that you love?
- Could you hire a local person to consult with you?
- What about running a class in building a water catchment and hiring an expert to teach?

Water for Drinking and Cooking

Water will be the most essential element of your off-grid homestead, and water for drinking and cooking will need the highest level of attention. Not only do you need to ensure a source of potable water, but you also need to be satisfied with the quality of the drinking water. Is your water source something that you feel comfortable ingesting each and every day? Will your water bring health and vitality to your family, or does it contain elements that you do not desire (for instance, if you're concerned about drinking fluoridated water, or if your well contains arsenic).

After collecting rainwater or snowmelt from our metal roof, we use a Berkey brand water filter to purify the water for consumption. Water for drinking and cooking represents a mere fraction of our overall water use; I'd estimate we use about 3 gallons per day.

We chose to use a Berkey for several reasons:

- They are affordable - we paid roughly $250 for our Big Berkey, which serves our family of four quite well. Neighbors of ours have also made their own DIY version by purchasing the "Black Berkey" filtration elements, and placing them in homemade containers.

- They do not require electricity. Berkey water purifiers work simply with gravity. Water is poured into an upper compartment, where it slowly percolates through filters into a lower compartment, from which water is taken.

- They are powerful filtration and purification systems, extracting harmful viruses, bacteria, organic solvents, and many other contaminants without removing minerals from the water.

Since we are collecting rainwater, and not groundwater, we add trace minerals in liquid form to our filtered, purified drinking water. After water is

filtered through the Berkey, we add 10 drops of ConcenTrace brand trace minerals per gallon of water.

One really wonderful benefit about the system we use is that I feel really confident about our ability to weather any unexpected disaster. The Berkey is such a powerful filter that, *if we needed to*, we could even filter pond water to use in an emergency. We are largely self-sufficient in our water use, and that is empowering.

Dishwashing and Hot Water

Because we like to cook from scratch as much as possible, we end up with a lot of dirty dishes! I like very clean dishes with no greasy residue, so that means heating water for each and every batch of dishes. Washing dishes with cold water just does not cut it. We pour hot water and biodegradable dish soap into a plastic bin for washing, and simply pour clean water over dishes to rinse. We always have a five gallon bucket full of clean water at our kitchen sink, and another empty bucket below the sink to catch greywater.

To meet our hot water needs, we can heat water with our Rocket Stove, Sun Oven, or on a campfire, or in winter, we keep 1-2 pots of water on the stove top at all times. I love the cookstoves that have a water tank in the rear that holds hot water. I also have seen people successfully run pipe in a way that the wood stove heats water when fired up.

The "swing" seasons of Spring and Fall require the most juggling. On mild days, we are stuck in an in-between situation where it's not cold enough to fire up the wood stove, not quite sunny and warm enough to meet all of our water needs via the Sun Oven, and not pleasant enough to set up the outdoor kitchen for Rocket Stove use. On those days, we heat water on a propane stove.

Questions for Thought

- How much water do you use per day for drinking, cooking, and dishwashing?
- What is the quality of your homestead water source? Do you feel comfortable using it for drinking and cooking, or do you need a filtration or purification system?
- Are you interested in a system that requires electricity, or not?
- What is your budget?
- What kinds of resources do you need to make your potable water system function for your life, home and family?
- Do you enjoy hand-washing dishes, or would you prefer a dishwasher? If so, be sure to include the water and electricity needs of a dishwasher in your considerations.

Bathing

I often get asked how we take baths in a dry cabin with no bathroom. The simple answer is, “it’s not easy!” It’s manageable to keep the kids clean in-between bath days with sponge baths, but it’s a bit more challenging for the adults of the family!

Our bathing practice varies by season. In the summer months, we have the option of a quick jump in the pond, or a rinse in our outdoor shower. The shower is set up rather simply – a large barrel (a 50-gallon Pepsi barrel cut in half) is filled with warm water, which we pre-heat over a campfire. Brian usually stands on a ladder to pour the hot water into the white barrel, and mixes it with cool water until the perfect shower temperature is achieved. With a turn of a spigot, flexible tubing carries the water down to an antique brass shower head. The water pressure is amazing, and the whole set-up feels quite luxurious!

Winter bathing reminds me of a passage from one of the *Little House on the Prairie* books, where Laura describes each member of the family taking his or her turn bathing near the wood stove. We heat water in pots on the wood stove, combine it with cooler water to achieve the perfect temperature. A measuring cup is used to pour water over our heads as we stand in a galvanized steel tub, dumping the dirty water after each person's bath.

I tend to want a nice hot shower each week and I take care of this at our local YMCA. I pay for a yearly membership which enables me to use the workout facilities, take yoga class, and enjoy the hot water and shower pressure. It is bliss!

Ultimately, our plans will include a bathhouse. Even if we do not have running water, I still desire a permanent place in which to bathe, and with our current set-up, it's fairly awkward to host guests. In our previous home in Oregon, we had what we affectionately called a "Cannibal Tub." The Cannibal Tub was a normal metal bathtub built up on bricks, under which a fire was built. We would fill the tub with cold water, light a fire beneath, and let the

water heat. When it was steaming hot, we would carefully climb in - sitting on a piece of wood to protect our bottoms - leaving a small fire going underneath the tub, hence the 'Cannibal" term. The small fire would help maintain the warm water temperature, allowing for a nice long, hot soak.

I've also seen people make good use of backpacking shower-in-a-bag set ups. These inexpensive bags are filled with water, and then left in the sun all day to heat up. They hang from a high hook or nail, and gravity creates a small amount of water pressure as you shower below. You can purchase them at camping supply stores.

Questions for Thought

- Do you love taking hot showers or long baths?
- Do you need to shower or bathe every day, or just once or twice a week for your lifestyle or job?
- Do you have access to another shower or bath at your gym or at work?
- Do you have children or teens to consider?

Ponds and Swales

We were blessed to move onto a piece of land that already had a one-acre pond within walking distance to our homesite. This pond, which is 17 feet deep at its center, and ringed with cattails and willows, has been a lifeline, offering a place to cool off in the summer time, as well as water for irrigation, bathing, and animal watering. The pond is filled from a watershed that is completely contained on our land, so we know its source. Living in an agricultural region that relies heavily on pesticide and herbicide use, I personally would not feel comfortable using our pond water for people,

plants, and animals if I suspected agricultural runoff.

If your land does not include a water source, my suggestion would be to start right away with the development of a water storage system such as a cistern or a pond. Our neighbors hired an earthmover to dig a large homestead pond with a freeze-proof water hydrant the first summer on their land. By

the following spring, the pond had filled over half-way, and they were able to use it for swimming and irrigation. By the second year, the pond was full, and was a wonderful complement to their home water catchment system. They have already used it extensively for gardening and animal watering.

Recently, I've been inspired by a homesteading book, *The Resilient Farm and Homestead* by Ben Falk. In his book, Mr. Falk writes about designing and creating homestead water systems: "The resilient farmer and homesteader needs to be aware of how her site developments affect the movement and storage of water on site....The designer must always be asking the same question: How can I slow it, spread it, and sink it?" (p. 80)

One problem our specific site faces is that we built upon a hilltop (mostly to avoid flooding from the creek in the bottomlands, but also because we love being tucked into the forest for shade and wind-break). We could (and may) install a solar pump to move pond water up in elevation to our land. In NE Missouri, we have dense, heavy clay soils, and can literally dig a hole, and it fills in with water to become a pond. We've experimented with hand-digging a smaller pond for our poultry. This works well as long as there is rain every month to keep it full.

Larger, properly constructed ponds are expensive, and not feasible for all soils or regions. Another option is to slow and spread water through the use of swales. Swales, often talked about in permaculture circles, are ditches, human- or machine-made, that run along the contour of the land, and work to slow the movement of water down a slope. Permaculturalists can combine the water catchment properties of a swale with a mounded planting immediately below. Water collected by the swale slowly infiltrates the mounded planting for slow, natural watering.

Swales are definitely in our future, as our property is almost entirely sloped, but they require either extensive hand-digging, or earthmoving. We have already begun piling brush, sod, leaves, and other organic materials along a contour line to create the beginnings of raised mounds. It is small-scale earth moving, and we have a lot more shoveling to do to create the accompanying swale.

Creating a homestead dotted with farm ponds and swales, along with a well-functioning water catchment system will help us create a thriving homestead full of edible, native, and medicinal plants, abundant gardens, and healthy livestock.

Chapter Four: Shelter

When You're Starting from Scratch

My experience in going off-grid has been starting with raw land, and adding infrastructure from the ground up. Of course that does not mean that you cannot create an off-grid homestead on a piece of land that already has infrastructure, or a home that you already live in. In fact, it may be easier for you to take baby steps that allow for thorough research, and where you can implement changes in a financially sustainable way.

However, if you are starting out on raw land, one of your top priorities will be creating shelter. Camping on your land or living in an RV is a great first step, and I'll share my experience with this solution.

We moved to NE Missouri in October of 2012. Our neighbor's parents live in this area part-time and rent out their home for the winter months. So from October - June, we lived in their house in town while visiting our land each day. We made many plans and began working on projects as best we could between snowfalls. In fact, thanks to a warm stretch, we were able to sink the first posts of our home's structure in mid-February! When we finally moved onto our land in June of 2013, the skeletal structure of our 350 square foot home was in place, and brand new metal roof had already been installed.

This progress proved invaluable in two ways: First, because we were able to capture rainwater from our roof to use for our drinking and cooking needs. Second, because the roofed house provided some respite and shade from the incredibly hot summer days.

Our plan was to set up a tent on the land and camp. My husband Brian built a nice wooden platform under the shade of a few black walnut trees, and we erected a 6 person tent. Unfortunately, a very strong wind and rain storm

completely crushed the tent before we were ever able to move in, and we were left scrambling to find an alternative.

One of the reasons why homesteading is so much more successful in community, is because when you fall upon hard times, it's important to have friends to lean on. Those early days were some of the most difficult for us. We were about to embark on a new and totally foreign adventure, leaving behind the comforts of a gas stove, a hot shower, high speed Internet, and a dry house. When the tent was destroyed, it seemed somewhat ominous. What were we getting ourselves into?

Luckily, an extremely generous community member called to offer his pop-up tent trailer. It was an incredible gift, and one that made our transition to the land so joyous. The tent trailer was so cozy and cute and better still - dry. It really felt like home in those early days!

After a few months, tornado season had passed, and we felt comfortable setting up a replacement tent. We moved into the tent at the end of August,

and slept warmly until late October, at which time it was simply too cold for us to sleep outdoors with our two young children (then ages 5 and 2).

We moved into our insulated, but unfinished house, and laid a futon on the floor. We installed a wood stove, and lit it in the mornings to take the chill out of the house. It's amazing how luxurious it felt after months of tenting.

Not everyone's experience will be quite as rustic as ours, but many people creating a new homestead, particularly an off-grid homestead, will experience a similar situation. Likely many of you will rent another home until you're able to move into shelter on your land, or camp on the land in a tent or RV while you build.

Both options have their pros and cons. When I go back and read blog posts from the first few weeks of living on the land, I was filled with such joy and wonder at FINALLY living on our very own piece of land that the rustic conditions didn't bother me at all. (Of course I should be clear that I love backpacking in the wilderness, so camping in rustic conditions was already

something that our family did with regularity). The convenience of living right next to our home in progress was absolutely essential to being able to move forward quickly with the building project.

On the other hand, renting a house in town (about 5 miles away from our land) had its own benefits. We were able to easily meet our needs for water, laundry, internet, refrigeration, etc. so when we did head out to the land, we were able to dive into our tasks with energy and excitement.

In the following sections I'll talk a bit about our home, and why we decided to build a tiny house, as well as some of the philosophy and practice that guides our building.

Questions for Thought

- What kind of shelter am I imagining for my off-grid homestead?
- How large will this shelter need to be?
- What skills do I need to create my shelter? Do I have these skills myself? Will I need to hire someone to build?
- What is my budget? Can I build in phases to avoid going into debt?
- What impact does weather have on my choices of shelter? For instance, will I want a large shaded porch to stay cool in summer? Or will strong winds necessitate a windbreak?
- Can I situate my shelter to take advantage of passive solar heating and cooling?

Tiny Houses

I have written at length on my blog, **Homestead Honey** about our family's experience building and living in a 350 square foot tiny house. Tiny houses have been very trendy of late, and with good reason: They represent an accessible and affordable, perhaps even mortgage or debt-free opportunity to create your own shelter. And because they are super cute, they help the sustainable shelter movement appeal to a wider audience.

Should you find yourself creating an off-grid homestead on raw land, tiny houses are a great option for shelter for many reasons:

- **Tiny houses can be built very affordably.** Our house cost roughly $10,000, with Brian doing 99% of the labor himself. (Of course tiny houses can also be built with higher-end building materials, bumping the cost up significantly!)

- **Tiny houses are human scale building projects.** We needed no scaffolding, heavy equipment, or large crews to build our house. I was able to help with most of the two-person jobs, and when we needed extra hands, we traded work with members of our community.

- **Tiny houses can be built quickly.** We began work on our tiny house in February, and were able to move into the unfinished, yet well-insulated structure just 9 months later.

- **Tiny houses can be built on trailers**, allowing you to move your house to another location, sell it, or even turn it into guest accommodations.

- **A tiny house could easily be integrated into a larger building plan**. We framed in two large windows on the east side of our house that could be converted to large doorways; our plan is eventually to build an addition that is accessed through these passageways.

- Tiny houses are less expensive to insulate well, thus enabling you to build an energy-efficient home that will be **much easier to heat and cool.**

When we first started planning our homestead, we envisioned a two-stage building process: First, we thought we would build a summer shelter that included an outdoor kitchen and screened in sleeping area; Second, we'd build our "real house," a timber-framed strawbale home. And we imagined doing all of this in the course of one season!! Of course, we were delusional, and quickly realized we'd have to adjust our plans to a more realistic timeline. It was then that we began thinking of a tiny house that could be used as our shelter for a few years, and then used as a guest house in the future. But as our home began to take shape, we fell in love with the design, beauty, and coziness of the space, and ultimately decided it would be our permanent home.

The Truth about Tiny

To be totally transparent, there are many days in winter that I wish that we had a larger-than-tiny house. Keep this in mind when designing shelter: If you live in a climate where winter's cold or summer's heat makes it difficult to be outdoors, you might want to add on a bit of square footage. If your family is growing or might grow, consider how much space you'll desire when your kids are older.

My ideal is something about twice the size of our current home - roughly 700-800 square feet. We would like to build a timber frame and strawbale addition to our home that would include an open kitchen/living room with a wood cookstove, a loft bedroom for the kids, and perhaps a small bathroom nook.

Overall, I feel so grateful that we have such a cozy, warm, and beautiful home that we were able to build within our budget and with our own hands, and optimize for an off-grid experience. Our future projects will take place when we have the time and money available to move forward. In the meantime, we can dream, sketch, and be on the lookout for free or very low-cost reclaimed materials.

Sharing building plans or instructions on how to build a tiny house is beyond the scope of this book, but I documented the progress of of our house-building project on my blog.

Outbuildings

Our homestead features quite a few outbuildings, and the question has come up, why build a small house and then build multiple outbuildings for tools, storage, etc.? It is a good question, and I admit that there are days that I wish I had ALL of my books, supplies, and extra clothes tucked snugly into a large closet or attic in my house.

Outbuildings serve many functions on a homestead. Our current outbuildings include:

- Tool shed
- Blacksmith shop
- Chicken and duck coops
- Cow barn
- Freezer shed
- Wood shed
- A lean-to that stores Rubbermaid containers full of off-season clothing and extra shoes, boots, and linens

Most of these outbuildings were built very simply with reclaimed materials. (Early on in our building process, Brian found a listing for a barn tear-down, and its siding, dimensional lumber, and beams have featured heavily in our building.) In some cases, the only new materials were screws and metal roofing. The reasons why we opted to build multiple outbuildings, rather than a larger house are as follows:

- A small house is built faster than a larger house. It is also less expensive to build. Our limiting factors when we began building our homestead were time and money. We had to move into a warm house before winter.

- Insulated spaces cost more to build than non-insulated spaces. Our outbuildings cost so little because there is no need to insulate them. My books, boots, and winter clothes do not mind that I'm storing them in a non-insulated space. Mildew can be a problem in the hot, humid summers, but quite honestly, it's a problem inside our house, as well as in outbuildings!

- Outbuildings are also a lot of fun to design and create. Our chicken coop has a Gypsy Caravan sort of feel to it, and our cow barn has an antique appearance, thanks to reclaimed metal roofing that Brian used as siding. If you think of your home as the main dish of your homestead, the outbuildings are the saucy little side dishes, adding flavor and personality, as well as function.

A Permaculture Approach to Building

There is a mindset that lends itself well to homesteading, which is to look around and make best use of what is available. For instance, instead of finding a new recipe that we wish to try and purchasing the necessary ingredients to prepare a meal, we rather look first at what is growing in the garden or stored in the freezer or pantry, and then find a recipe to fit our ingredients.

Similarly, when we began to plan a new outbuilding, our 10 x 10 foot tool shed for instance, we could have gone directly to the lumberyard and purchased 4 x 4 pressure treated posts and lumber. But, assessing our land, we realized we had a valuable resource just sitting and waiting to be used: When the previous land owner had selectively logged larger black walnut trees, the loggers had removed the trunks for lumber, but left the crowns sitting in the woods. Many of these crowns have sections thick enough to mill into beautiful planks for interior finish work, and we've been also making use of them creating cutting and serving boards for our Etsy shop, Acorn Hill Handcrafts. Other parts of the crown had lengths of branches that were too thin for milling, but that had heartwood dimensions that are 4-5 inches in diameter, and though wavered, they remained essentially straight along their length.

On our homestead, we often employ permaculture principles, which encourage creative thinking and skill-building to transition from a consumer mindset to that of a producer. So, when building on our homestead, we can assess what resources our land has to offer, and create a design that best utilizes these resources. In our case, we are both clearing forest debris, and using ultra-local building materials.

So, we cut some lengths of logs, hauled them out of the woods with a log arch, and started hewing the sapwood off to create roughly square dimensional posts. With reasonably good rot resistance similar to white oak, these posts will last in the ground long enough to give us a useful outbuilding or shed. If we wanted a longer- lived structure, we could install them up on piers, with appropriate shear braces added into the structure of the walls.

Applying a Permaculture mindset to building on your homestead can save resources in hauling or transporting, is cost-effective, and can produce attractive structures that blend well into your surroundings.

Staying Cool

Creating spaces and systems to keep us cool in the summer months, and warm in the winter months has required a bit of creativity. Missouri summers are often unbearably hot and humid. Many people rely on their air conditioning to stay cool and comfortable. But, we do not have a robust photovoltaic system to run an air conditioner (and even if you're not off-grid, paying electric bills for a summer's worth of air conditioning is pricey!).

So how do we stay cool without air conditioning?

Smart design. Our house was designed with passive solar principles in mind. That means that in the winter, we get a wonderful amount of sunlight streaming into, and warming our home, while in the summer, the roofline of the house shades our windows from direct sun. We also built our home slightly recessed into the tree line, so large oak trees to the east, west, and north shade our home from late spring to early fall.

Shade cloths, screens, or fabrics can quickly and easily be rigged up to create shady outdoor nooks that can feel quite pleasant. Consider:

- Building a covered porch
- Erecting a pergola and grow trellising plants up the sides and top to create shade
- Placing hammocks or chairs in the shadiest part of your yard
- Setting up a temporary tarp, or a pop-up tent to create a shady retreat or sitting area

We also spend a lot of time in the water on hot days, going to the pond for a dip every few hours. It is simply necessary, and also lots of fun. It's also important to remember to drink lots and lots of water. If you are filtering water through a Berkey-type filter, get into the routine of topping it off morning and night, and if possible, store the filtered water in another container. When you're working hard to create a new homestead, you will need to keep drinking to stay hydrated!

This year we also bought ourselves a Vornado air circulator, which plays well with our photovoltaic system, has a timer so we can set it to turn off as/after we fall asleep, and really moves air! On the hottest days, it has made all the difference in making our small house feel like a cool refuge.

Keeping Warm

I'm going to just say it - I think a wood stove is an essential component of an off-grid homestead. Granted, I live in a four-season climate, so please feel free to ignore my strong statement if you live in a warm location! But for those that heat their home in winter, I suggest investing in as high quality of a wood stove as you're able. And if you have the funds and space for it, consider a wood cookstove.

Wood stoves are incredible for so many reasons, but here are a few:

- They keep you warm
- You can source wood for free or cheap if you own a wood lot, or are willing to be creative and resourceful (My father-in-law is a great example of this. In his suburban area, he keeps his eye open for tree-cutting. He asks the home owner if he can remove the wood from their yard; often they are

beyond happy to say yes to have someone haul and remove the wood for free!)
- You can cook on top of your wood stove
- You can bake on and in your wood stove
- You can heat water in pots on top of your wood stove, or even set up a system to continually warm water in pipes
- The sound of a cracking fire, and the beautiful flames are soothing and wonderful to experience with your senses

We purchased our wood stove years ago. They have since changed model names, but I believe the current equivalent is a Jotul F 3 CB. Its heating capacity far exceeds the size of our home, but if we do expand our living space, it will be perfect. Of course, I've since set my heart on a wood cookstove, so we can bake and heat our home simultaneously.

If you live in a city, or are retrofitting an existing home to go off-grid, a wood stove may not be an option for you. Some off-grid folks choose to run their electric heat source from their solar/wind/hydro-electric. This may be an expensive option, but then again, paying electric bills to heat your home is also costly.

Questions for Thought
- How much warmth do I need to create?
- What options exist in my area, given codes and regulations?
- For current homeowners, what is your current system? Would powering it via an alternative energy source work?
- What budget do you have to work with?
- Can you visit some off-grid homes in your area and learn from their experience heating their homes?

Chapter Five: Food Storage and Preparation

Outdoor Kitchens

One of our first priorities living on our raw land was setting up an outdoor kitchen where we could prepare, cook, and eat our meals. If you do a quick Google or Pinterest search for images of "Outdoor Kitchens," you'll find some rather inspiring, attractive, and no doubt, expensive arrangements of stainless steel appliances and grills. Many are centered around warm-season cooking and entertaining and provide space for seating, cooking, and shade.

Our first outdoor kitchen's shade came from a large tarp, there was no seating, and we cooked over a rocket stove and a two-burner propane stove, but the general premise remains the same.

There area many advantages to an outdoor kitchen, including:

- An outdoor kitchen allowed us to create from-scratch meals while building our house, and later while finishing indoor projects. In the early days of creating our homestead, an outdoor kitchen was a true necessity.
- An outdoor kitchen brings the heat outdoors. Cooking takes place outside, thus keeping your house cooler. This is particularly helpful when preserving food via water bath or pressure canning!
- Our outdoor kitchen effectively doubles our kitchen space in the summer months.
- We can watch the kids play in the yard or sandbox while we prepare meals.

Brian and I love cooking and spend hours each day in the kitchen. So creating an outdoor kitchen that is truly functional and also beautiful was a high priority. Our outdoor kitchen is tucked just to the west of our blue roofed house, and nestled underneath a shady oak tree. It includes:

- A cooking area with both a propane stove, and a wood-fired rocket stove. Because rocket stoves can get pretty sooty, we have designated pots and pans for the rocket stove.
- A sink with running water piped in from water catchment barrels on the east side of our house. This water is non-potable, so when we are using it for cooking or drinking, we run it through the Berkey filter. The water from the sink drains into 5 gallon buckets, which are emptied regularly.
- Counter space for food preparation
- A large wooden cabinet for storage
- A Sun Oven that we use for baking and roasting on sunny days, year-round
- Plastic tubs for critter-proof food storage
- A picnic table for dining

Our original outdoor kitchen had two levels, the lower one dedicated to food and flatware storage, while the upper level was where food preparation took place. I found this difficult to navigate quickly, as I was always climbing up and down to retrieve something I needed. I'd suggest keeping your outdoor kitchen all on one level and orienting key features (sink, cooking area, prep

area) in a triangle for ease of work flow. We have since remodeled the outdoor kitchen, and now all of the food preparation areas are on the lower level, and the picnic table is on the upper.

An effective homestead outdoor kitchen space could be as simple as setting up a few card tables under a shade structure, or as elaborate as you can imagine. I highly recommend making shade a priority, because in the hottest months, you will want to have a cool place to cook. Make your outdoor kitchen the most ideal spot to hang-out, and you will want to spend hours there preparing and enjoying homemade food!

Living without Refrigeration

Do you know anyone who lives without a refrigerator? I didn't, at least until a few years ago, when friends of ours moved to NE Missouri to start an electricity-free community. In building our off-grid homestead, I've learned a lot from their experience, and yet our family has also tailored our home to reflect our reality and our needs. We do not have a refrigerator, but we do keep food fresh and cold.

We moved onto our land in June of 2013, in the heat of the Missouri summer. Honestly, keeping food fresh was a challenge! But with a little bit of creative networking, we were able to make it work with the following situation: We arranged a work trade with a friend who lived a few miles away from our land. In exchange for caring for her horse and cats while she was away, we had permission to place milk jugs full of water in her chest freezer. Every 1-3 days (depending on how hot it was), we'd place the frozen jugs into large coolers. The coolers did a great job of keeping food fresh, except for the hottest of weeks. Luckily, our chickens didn't mind a little sour milk!

In winter months, when temps were regularly below freezing, the coolers acted as insulation, keeping food from freezing. When temperatures got close to 0 degrees, we found it necessary to bring the coolers indoors to keep the food within from freezing.

We transported jugs of ice water from our friend's freezer for a year and a half. After we finally installed our solar electric system in November, 2014, life got a lot easier! We keep the same ice jugs in our chest freezer, and change them out regularly.

Why not just get a refrigerator, you may ask? We may, or we may not. We bought a solar electric system with the capacity to add on in the future, but our current budget does not allow for the purchase of more panels, or an energy efficient fridge.

Questions for Thought

- Is a refrigerator a necessity for you? What about a freezer?
- Be sure to calculate the energy requirements for these appliances, and consider upgrading to energy efficient models.
- Do you have other land assets that might be used to keep food cool? For instance, a springhouse or cold water trough filled by a creek would work quite nicely to cool food. Or perhaps place a cooler in cold water, or construct a small pool in which to store watertight jars of food.
- Are you able to store your food elsewhere? At a neighbor's house?

Root Cellaring

One of the most exciting additions to our homestead is an underground root cellar. Root cellars are used to create conditions that are ideal for long-term storage of fruits, vegetables, meats, and cheeses. Root cellars create humid environments and moderate temperatures by maintaining contact with the earth - in the summer, the root cellar stays cool; in the winter, the root cellar is warmer than the outdoor temperature.

Root vegetables such as carrots, turnips, beets, rutabagas, and parsnips, fruits such as apples, pears, and quinces, hard cheeses, cured meats, and potatoes are examples of foods that will do well in a root cellar. Imagine the types of foods you would put in the crisper drawer of your refrigerator. Our root cellars will allow us to keep a variety of foods for a long period of time. We will still have need of our “refrigerator,” for foods that we need to access on a daily basis, but will also take frequent trips into the root cellar, with the goal of taking few trips to the grocery store.

Our root cellar, which is still in progress and needs to be covered with earth, was built into the hillside of our property, and features a walk-out doorway; Some root cellars look much like the storm shelter that Dorothy's family used in The Wizard of Oz. You can also use a basement, or a sectioned-off area of a basement as a root cellar. Last year, we did not have a root cellar, so we kept storage foods in the coolest part of our home - the mudroom. We were able to keep potatoes, beets, onions, and turnips for a month or two. Had the environment been more cool and humid, food would have certainly kept longer. We also experimented with keeping food in a buried bucket or trash can. With this method, you bury the can to just below the lid, so you can access it from above ground. In a very cold climate, you might also want to place a bale of straw on top the lid. Unfortunately, we found that this method did not work well for us, as our entire homestead is sloped, and the can filled with water that seeped in during heavy rains.

A root cellar is a valuable addition to any homestead. It enables growing or purchasing larger quantities of food from local farmers and preserving them without canning or freezing for eating all winter long.

Off-Grid Cooking

Cooking off-grid requires thinking about what kinds of fuel do you wish to use. Do you plan to cook exclusively on a wood cookstove and Rocket Stove? Then you only need a supply of dry, seasoned wood. Do you prefer the ease of cooking with a propane stove? What about baking? Do you have an oven? And if so, what type of fuel does it require?

Our current cooking set up includes the following:

Summer - An outdoor kitchen with both a two burner propane stove and a wood-fired Rocket Stove for cooking and a Sun Oven for baking. We also have a wood-fired grill, and a campfire.

Winter - We use the top surface of our heating wood stove for quite a bit of food preparation. Early morning hot fires will boil water for tea and fry eggs. Later, dampened-down fires work almost like a Crock Pot, keeping food at nice low simmer for hours on end. We also use our two burner propane stove, and have developed several creative strategies for baking (more about this in the next section on Off-Grid Baking).

Using Propane

We have chosen to use propane to power a two burner stove for one significant reason: It makes our lives easier. With the efforts of hauling buckets of water from a pond, caring for chickens, cows, lambs, ducks, and two young children, not to mention running several businesses, homeschooling, and cooking almost all of our meals from scratch, we needed a simple cooking solution. Owning a propane stove and importing propane is a solution that makes sense for our family in this “season” of our life.

However, we have redundant systems that make it possible to cook, even if we run out of propane. In the winter months, we have our wood stove; in the summer, we use a StoveTec Rocket Stove. Since the woodlot of our property supplies us with ample firewood, these solutions are appropriate to where

and how we live. You may find that other cooking systems make more sense for your needs.

Rocket Stoves

We use a StoveTec rocket stove, and it works well for heating foods quickly, using a very small amount of wood. Ideal uses for rocket stoves are boiling, canning, frying, and high-temperature sautéing. I have had less success with simmering, as it is tricky to maintain a consistent low temperature. My recommendation is to source a few pots and pans that you designate for exclusive rocket stove use, as they will get very sooty.

Hayboxes

One way to *reduce* the amount of fuel you need to cook is with a haybox. A haybox is a super-insulated space that is used to keep containers warm, for much longer than they would be exposed to air. A haybox can be a constructed box with built in insulation, an empty cooler with wool blankets tucked into insulate, or even as simple as just the blankets themselves, wrapped around a pot.

The basic premise behind a haybox is that you first heat the food/pot up, then place it in the super-insulated space, thus maintaining temperature as long as possible without any additional fuel consumption. They are a great way to cook rice or to just keep food warm until serving. They are also a fantastic way to culture yogurt and cheeses.

Off-Grid Baking

I love to bake and so does my husband, so not having an oven has been a bit, well, sad. I know that sounds a bit melodramatic, but I do love to make muffins, cookies, and cheesecake!

Thankfully, we have a few creative strategies that make some amount of baking possible. In the mostly sunny, hot Missouri summers, we make use of an incredible tool to bake, heat water, roast, and dehydrate foods: A Solar Oven.

We use a SunOven brand All-American model. There are also numerous tutorials online to make your own solar oven, should you desire a DIY option. It truly brings me joy to have a tool that allows me to bake my favorite foods (And who would want to bake indoors in the hot, humid summer months anyways!).

The SunOven has four reflective panels that fold flat when not in use. When set up, the panels focus the energy of the sun into a glass-covered compartment, in which food is cooked. On sunny days, we have easily reached temperatures of 300-350 degrees F, and have cooked a wide variety foods such as slow-cook stews, rice, roasted vegetables, braised rabbit, and zucchini muffins. Solar ovens can also be used to dehydrate food, and I've successfully made sun-dried tomatoes and fruit leather in my Sun Oven. They are also fantastic for slowly cooking down tomato puree or making apple butter!

What I love about the SunOven is that it is easy to use, quick to set up, and effective. However, in order to get the best results, here are a few tips:

- Keep the glass and reflective panels of your solar oven clean. I regularly wipe them down with a vinegar and water mixture.
- Track the sun. By adjusting direction and tilt to always follow the angle and position of the sun, we get the maximum heat.
- If we want to "turn down the oven," we simply face the Sun Oven slightly away from the direct sun. For instance, if I were making rice, I'd start by facing the Sun Oven directly toward the sun, and then *not* track the sun, so it slowly loses heat.

In the winter months, we rely on Dutch oven baking, stovetop baking, and wood stove baking.

Baking in Dutch Ovens

Being more of a backpacking family than a camping family, we had never really explored the world of Dutch oven baking until last year. While many Dutch Oven aficionados recommend using charcoal briquets as a way of controlling temperature for your baking, our family prefers to use wood. It's a lot cheaper, and we never run out of wood!

First, we build a great big campfire in our backyard, then, we pile red hot coals on top of the Dutch oven, and underneath. You'll want to put about 2/3 of the coals on top, and 1/3 on the bottom. It's important to keep a close eye on the bake, to avoid burning, but we've had some great success baking bread and stews in a Dutch oven.

Baking on a Stovetop

An easier, quicker method of baking a delicious fruit dessert, or a savory pot pie-like meal, is cooking a stovetop "slump". A slump is technically a stewed fruit dessert, in which a biscuit topping is put on top of the fruit filling. Rather than baking in the oven, you cook a slump on a stove top, and the moisture of the filling steam-cooks the topping. We first discovered the slump in the cookbook *Rustic Fruit Desserts*, and have come to love the ease with which we can "bake" such a satisfying and warm meal or dessert. We have found that we have the most success when we pre-cook the filling so it softens up a bit, and then add the biscuit topping.

Woodstove Baking

This winter, we practiced a new-to-us method of baking - baking INSIDE of our heating woodstove! This method takes a fair amount of advance planning and preparation, as you need a sufficient bed of coals on which to bake. We found that wood stove bakes were most effortless on winter days that reached approximately 40 degrees F. We'd build a nice hot fire upon waking to take the chill out of the house, then let it burn out completely. The resulting bed of coals (hot, but not red-hot) was just about perfect for baking bread and pies.

Again, it's important to watch your wood stove bakes very closely. We place our bake upon a few fire bricks so the bottom does not burn.

This year, we hope to add a small outdoor cob oven to our homestead. We have not yet experimented with cob, but in the early 2000's, Brian built a large brick wood-fired oven in which he baked up to 20 loaves of sourdough bread at a time! We regretfully had to leave that oven in Oregon, but look forward to once more baking bread and making pizza on a hearth.

Questions for Thought

- How important is baking to you? Are you one of the people who bake cookies as holiday gifts and brings a pie to every potluck gathering? Then you'll definitely want to consider how you'll meet your baking fix!
- Are you considering purchasing a wood stove? Could you upgrade slightly to a cookstove? There are so many models out there, even those that have a bake box below the fire box to make a smaller and more streamlined design.

Chapter Six: Electricity

Electricity Needs

Living on our homestead without electricity for over a year was an incredible experience that brought clarity to our needs and our wants surrounding electricity. We no longer had the ease of flipping on a switch or plugging into an outlet. Everything felt *harder*. Certainly not impossible, but it was a real eye-opener to suddenly have to worry about whether or not the sun would shine long enough to charge a phone. Or to wonder how we'd keep our online business running without an on-site computer.

We lived very simply during this non-electric period, and after this experience we could easily discern which electric needs truly feel like needs, and which felt like extra luxuries that we could do without (or have found that we prefer to do without).

Our needs are:

- A chest freezer, both for food preservation, and for freezing ice jugs to put in the coolers that act as our refrigerator.
- A computer and internet. As Brian and I run an Etsy shop and several websites, we rely heavily on a computer for business and communication.
- The ability to charge the hand tools, camera, and phone that are part of our daily life and business.
- Lights (We loved the ambiance of beeswax candles, but ultimately found that we preferred to have lights in our home.)

While waiting for the time and money to be available to research, purchase, and install a small-scale solar electric (photovoltaic) system for our homestead, we created strategies to meet our electricity needs.

This included:

- Keeping food cool: We rented space in a friend's shop to store our chest freezer and keep jugs of ice frozen.
- Using the computer: We house-sat for another friend, and in exchange for caring for her horse, home, and yard, we were able to place our computer and desk in her home, and make use of her electricity and internet.
- Charging our phone: Between car rides and a small solar charger, we were able to keep our phone charged throughout the summer. In the winter months, we moved to system that used a 3 panel solar electric set up to charge a car battery.
- Running power tools - We purchased a Honda EU2000i generator (I'll talk more about this tool later in this chapter).

You may want to try an experiential approach - turn off your lights for a week and see how it goes! Or try to keep your food cold without a refrigerator. Take note of what feels exciting to you, and what makes you want to cry! Once you've identified your true needs, you can use a tool such as this one (http://www.backwoodssolar.com/power-usage) to figure out how much off-grid power you would use.

Questions for Thought

- Does your work require specific tools that run on electric power?
- Do you have any medical conditions that require constant electric access?
- Do you enjoy a craft like sewing that uses equipment such as an iron and a machine?
- Can you afford to upgrade your appliances to energy efficient models?

Solar Electricity

Selecting a Solar Electric System
We started this process with very little prior knowledge of photovoltaic systems. So the first step was educating ourselves. I bought Brian a subscription to Home Power magazine for his birthday, we checked related books out of the library (books with titles like "Photovoltaics for Dummies"), and talked to people who had installed their own systems. We knew that we'd have to start small and expand over time, because a large system was simply not in our budget.

I should pause here and note that solar electric is not the only off-grid solution. Wind and hydro-electric are also possible electric sources for your homestead. Many off-grid homesteaders in our area use a combination of solar and wind to take advantage of abundant Midwest winds. However, wind and hydro-electric are topics in which I have no experience, so I can't speak to their effectiveness.

The main considerations that factored into our selection of a solar electric system were cost and technical support. Cost was the most important, and the largest limiting factor in our purchase. We knew we wanted to invest in quality components so we can expand the system as we are able, but our starting budget was $5,000. We thought about hiring a professional to install a system for us, but again, cost was an issue. Since Brian is a handy guy, we knew he could figure it out, as long as he had technical support and resources to ask questions as they arose.

Purchasing a System
We decided to purchase our system through Backwoods Solar. What we love about Backwoods Solar is that the company is staffed by people who actually use the systems they sell, and when you purchase a system through them, you get phone consultations and technical support as part of the price. We know that there are DIY ways to go about this process less expensively, but we felt more comfortable piecing together components with guidance. After coming up with our approximate electrical needs (check out this great

resource page), Backwoods Solar tailored a system to our needs and budget that included:

- Three 290 Watt Solar Panels
- Eight Trojan 6V batteries
- Charge controller and battery meter
- A high quality inverter that will allow us to expand as needed

Installing our System

By puzzling over manuals, talking frequently on the phone to the folks at Backwoods Solar, and with some assistance from my dad, Brian installed our PV system in November, 2014. Rather than a roof-mount, we opted to mount the three PV panels, or modules, in front of our house on a homemade support structure. We opted not to put holes in our roof or buy a mounting rack, and also there was a certain amount of shade on the roof from nearby trees that we wanted to avoid. Brian set the permanent angle of the modules to a recommended average between the summer and winter angles.

Positive and negative and ground wires come out of each module and feed down to our combiner box that was mounted under the eave of our porch. Each module goes through a breaker and combines, and from there, a single positive wire and negative wire lead into the house.

The heart of our PV system resides on the wall of our mud room. If we had a bigger house, we could have installed it in the cellar or utility room, a bit more removed from our living quarters, but in a tiny house, you have to make do with the space you have! At the upper left is the charge controller, which makes sure the batteries are charged properly, and not overcharged once they are full. From the battery box, heavy duty positive and negative wires lead up to the inverter, the large white box in the upper center, which takes the DC current and converts it to AC, and from there it feeds into the gray breaker box which is what any house connected to the grid would have. Last but not least, the small digital display to the lower left is our Trimetric battery meter, which allows for very accurate monitoring of battery status. The battery bank is one of the most expensive parts of our system, and one of the most vulnerable to damage if proper charging is not maintained, so this is a critical component.

Brian constructed a wooden box in which to store the eight 6-volt Trojan batteries, connected in two parallel 24-volt strings. The box has a well-sealed

hatch and a pipe leading outside the building, to safely vent off explosive hydrogen gas which is produced during charging.

We have used our system for a full year, watching how it handles different weather and light conditions. We currently run the following appliances and devices on our PV system:

Daily:
- Energy efficient chest freezer
- House lights (We purchased LED lights for our home)
- A desktop computer and printer
- Wireless internet
- iPhone charging

Occasionally:
- Charging batteries of small power tools, cameras, etc.
- Using a blender, food processor, and sewing machine
- Operating a laptop

When it's Sunny:

- A toaster
- Power tools such as a table saw and compound miter saw
- Waffle iron (!)

Overall, our PV system has far exceeded our expectations. In the summer months, when the days were long and the sun was plentiful, we were making far more electricity than we could use. There have only been two times when our batteries have dipped below 50%. The first instance was in June, during a week-long period of high heat and humidity coupled with overcast haze. Because it was so hot outside, our freezer, which is stored in an uninsulated shed, was working hard to stay cool, and our system was taxed. The other instance was in December, after a week of very grey, rainy weather. When our batteries get low, we go into conserve mode, switching off all unnecessary appliances and lights. If we needed a backup source of electricity, we do have our generator to power necessary items or to charge the battery bank.

Questions for Thought

- First, if you're considering solar electricity, it's important to evaluate your site. Is solar electricity the best option for your homestead?
- Have you considered other alternative energy sources such as wind power or micro-hydro?
- Do you have adequate southern exposure for solar electricity?
- Do you plan to be grid-tied or completely off-grid? There are pros and cons to each option: grid-tied systems save on the expense of battery banks, and you can select a system that will cover your needs *most* of the time, pulling from the grid when you need an extra boost of electricity. Off-grid systems are perfect for people who wish for a greater degree of energy independence, or who live far away from already existing electric poles.
- What is your budget?
- Can you purchase a small system now and add to it later?
- Are rebates or credits available in your city, county or state to help you with the initial investment?
- Who will do the installation?
- Do you feel confident doing it yourself, or should you budget in hiring a professional to assist you?

Generators

When I first learned that my husband wanted to purchase a generator, I was a bit nervous. My previous experience with generators had been in RV campgrounds, where the not-so-subtle drone of generators made it difficult to sleep at night. What was he possibly imagining us doing with something so noisy?

After extensive research, Brian decided to purchase a Honda EU2000i generator. It was reportedly one of the most quiet on the market, and was very efficient. Upon trying it out for the first time, I was very pleased. Yes, it was a bit noisy, but it certainly was more of a hum than a roar.

We purchased our generator for two reasons: 1) We knew that in order to build a house in under a year, we needed to use power tools. 2) We did not plan to purchase a solar electric system robust enough to run all of our power tools. We also figured that if we ever had a stretch of cloudy days and needed to charge up our system, we could do so with a generator.

It turns out that 1) Power tools enabled us to move into our house in under 9 months, and 2) On very sunny days, our solar electric system actually is robust enough to power a table saw, joiner, or planer. But the generator still gets our stamp of approval!

After our land purchase and house materials, our photovoltaic system is the most expensive item on our homestead. It meets our electricity needs well, but only because we took the time to really research and consider what kind of system, and how large of a system we truly needed. I hope this chapter has given you some food for thought about how to meet your off-grid electricity needs.

Chapter Seven: Off Grid Living

Composting Toilets

Lack of running water aside, some aspects of our very rustic off-grid system might not appeal to everyone. The fact that we poop in a bucket does not sit well with all of our visitors (although my own mother, who has never camped a day in her life, grins and bears the composting toilet situation with remarkable good humor). Of course, it all feels so *normal* to us and I'm imagining that if you're still reading this book, you also won't be phased by our oh-so-rustic bathroom situation.

So, picture this: It's a beautiful morning here on my homestead and I head outside to visit the privy. I remove the lid on a five-gallon bucket, and lower a toilet seat that has been conveniently mounted on the wall behind the bucket. I make a deposit in our "humanure" system, then toss toilet paper and a handful of sawdust into the bucket, and close the lid. In a few days, the contents of the bucket will be added to an enclosed compost pile, separate from the one we use in our garden, and over time, my own human poop will turn into rich, dark compost that we will use on our orchard and shrubs.

The bucket toilet is a very basic example of a composting toilet, a waterless system that takes advantage of the natural process of decomposition to turn human waste into a soil amendment. In an off-grid situation, composting toilets are an ideal solution for waste management because they do not require water or electricity.

Composting toilets run the gamut from simple DIY systems like the bucket approach described above, to commercial systems that conform to building codes. The process of using each of these composting toilets is relatively simple and consistent – do your business, and add a "bulking agent" such as peat moss or sawdust to provide air space for aerobic decomposition, and to control odors and insects. What happens next varies from system to system.

For instance, when our bucket fills, we manually transfer the contents to a larger pile, where it composts in isolation. Microorganisms, including heat-loving bacteria break down the human excrement in a relatively rapid aerobic process, akin to a garden compost pile. In some commercial systems, a fan provides a flow of oxygen and removes odors and excess moisture, and the waste decomposes in the unit, to be removed when it has been composted. Potential pathogens present in the waste are either killed by the high temperatures of decomposition, or die-off after composting for long periods of time. The end result is topsoil-like material that is appropriate for use on fruit trees or shrubs, or even in the garden.

There are some inherent challenges with a composting toilet system, namely odor, bug problems, and effort (and perhaps cost, if you're considering purchasing a code-approved commercial unit). Sawdust and peat moss are

incredibly effective at controlling odor, but when a system gets more use than it is designed for, such as when you're hosting house guests, compositing toilets can develop an odor. In our previous home, we had a horrible infestation of what I referred to as "poo moths." We simply could not rid our toilet of these pests without resorting to an insecticide. And while most commercial systems are created to minimize human contact with waste, there may be effort required to remove the composted humanure from your system.

We also discovered that using a bucket composting toilet in the winter months could be a bit challenging, as sometimes poop freezes inside a bucket and it's harder to empty into our composting pile. Luckily in our household, there is a clear division of labor around such tasks, and my very wonderful husband manages to keep the privy in great order.

But where do you pee?
Good question! Ideally, pee should not make up a significant amount of the composting toilet's waste. I mean, if you REALLY have to go, then by all means, pee in your composting toilet and add a bit extra sawdust. But ideally, you would pee elsewhere before pooping in your composting toilet. We employ "pee buckets" which are simply containers in which we pee. When they are about half-full, we dilute them with some water, and spread the contents as fertilizer on fruit trees, compost piles, or around shrubs. (Note: to avoid odor build-up, empty buckets regularly!). Plants thrive with this extra dose of nitrogen.

Sure, it's a bit of work to clean out a poop-filled bucket, but the benefits of using a composting toilet are worth it. It's empowering to watch something that most people consider an unpleasant waste product become something of value, simply through the natural process of decomposition.

Laundry

Between having two kids, doing hard physical work, and using cloth washrags for our milking routine, we generate a lot of laundry, typically between 3-4 loads per week.

Because we do not have pressurized running water, we are not able to run a regular washing machine. In our early days of living on this land, we had a beautiful dream of washing clothes by hand in an Amish-style washtub. The washtubs are quite dreamy, really. You simply fill one side with your washing water and soap, and let the dirty clothes soak for a bit. Then, you can use a washboard, or just agitate the clothing by hand. After washing, you run each piece of clothing through rollers to squeeze out the liquid, rinse on the other side with clear water, and then run the clothes back through the rollers to dry them before hanging on the line.

As beautiful and efficient as this sounds, the reality is, we simply don't have time to wash our clothes by hand. We will occasionally do small loads, partly because it is truly fun, and the kids are able to participate fully in the entire process. I also love that I CAN do laundry at home, completely self-sufficiently, even if this season of our life doesn't allow us to do so.

There are other off-grid laundry options. A friend offered us a small hand crank washer, but it only fits a few items of clothing at a time. For now, as unglamorous as it sounds, we do our laundry at the laundromat. Once a week we schedule our town errands such as laundry, library, and food shopping, and get everything done in one fell swoop. Instead of using the laundromat's dryers, we head home with our wet clothes and line dry.

Even in the winter months, we hang clothes outside on the line. In the coldest weather, wet laundry will freeze-dry quite effectively. During rain or snow storms, we get quite creative, stringing rope from one end of the house to the other to form makeshift clotheslines. We also have an enormous wooden

drying rack that we can set up outdoors for laundry overflow, or bring inside when it rains or snows.

For some, the absence of a home washing machine will be a big deal! I imagine that large families, people who work in professional settings, or even folks like massage therapists who go through many changes of sheets each day might want to consider looking into a washing machine what will work with their off-grid situation.

Off-Grid Communication

Nowadays, the number of places where you can live completely out of communication is shrinking. With satellite and cell phones, we're able to tap into a vast communication network. Perhaps this is a positive for you, perhaps it is a negative! I know that I really appreciate the few times a year when I'm completely unplugged, but having internet and phone access is critical for my business and personal well-being.

One of our first priorities when we arrived on our homestead was to secure phone access. Living rurally, and with two young children, having reliable phone coverage was essential. We do live close enough to landline coverage, and installation was reasonably priced. But after talking with local friends, we learned that long distance service was incredibly expensive, voice mail was not a supported service, and customer service with the local phone company was poor at best.

We decided that it made more sense to invest in a smartphone with Internet, and began a contract with a national carrier. This tool has been invaluable in our lives, allowing us to keep connected to friends and family, and perhaps more importantly, to be professionally available. As self-employed small business owners, it is very important that we receive orders in a timely manner and can communicate with our clients.

Before we purchased our photovoltaic system, we kept our phone charged with two tools: A small solar charger with USB ports, and a 3 panel 45 watt solar electric set designed for RV/marine use that was connected to a car battery. On sunny days, we'd simply use the small solar charger. We attached it to the exterior siding of our house, and ran the USB cord through a crack in the window. On cloudy days, and at night, we used the solar panels to charge a car battery. We hooked a car lighter up to the car battery, and then plugged the phone into the lighter power source.

I can only tell you what has worked for our family, in our specific location. What kind of communication you're able to access will depend on where you

live. And what you are willing to pay each month will also play a major role in deciding your off-grid communication strategy. Of course you can always do what we all did before WiFi and smartphones - go to a library or cafe with Internet, or just write letters!

Questions for Thought

- What services are available in your area?
- If you're thinking about installing a landline, would you have to pay for installation? How much?
- If you are wanting cellular service, what carrier provides the best coverage in your area?
- Do you need Internet connection? What services are available? DSL? Satellite? Wireless?
- How much are you willing to invest in a communication system each month?
- What companies or plans exist that can help bring costs down? (For instance, pay as you go services, family plans, etc.)

Living Off-Grid with Kids

We moved onto our raw piece of land when our kids were 2 1/2 and 5 1/2 years old. When you consider that my youngest was still nursing and co-sleeping, that's a big adventure for two very young children! I'm often asked how we managed with such young children, or how the kids like the adventure of living off the grid. My simple answer is that the kids are thriving.

But let's look at some of the nitty gritty details of living (very) off grid with children. In a lot of ways, our life here must have felt like a big, fun camping trip! After all, my kids have been backpacking since they were infants, and sleeping in a tent has always been associated with great fun! The pop-up tent trailer that we borrowed for a few months was cute and comfortable, and our tent was spacious and breezy.

However, there have been challenges, primarily keeping everyone clean and free of insect bites. We live on a gorgeous property with forests, seasonal creeks, rolling hills, and tall meadows - perfect habitats for ticks, chiggers, poison ivy, and mosquitos. We do nightly tick checks and chigger rubs, and try to stay out of the forest as much as possible in the summer months. But, despite our best efforts, we are all covered in bites by mid-July.

Keeping clean is also a bit of a challenge. While we now have a lovely home to retreat to, in the early days, our entire family was out of doors all day, every day. We took frequent trips to the pond, and before bed each night, scrubbed with a washcloth. Honestly, the kids never minded being dirty, it was only me, the parent!

We've always been committed to low-media for our kids. They occasionally watch a YouTube video or rarely, a movie. But we don't watch TV, and they don't have access to our phone or computer. So, "roughing it" while we built our home was not a huge departure from their normal activities. They play

outdoors, they work alongside us in the garden, they build fairy houses and create mud sculptures.

Two topics I'm regularly asked about are schooling and socializing with other children, and indeed, these are challenges that any rural dweller faces, even those that do not live off-grid. My husband and I both grew up in the suburbs where we had neighbors and playmates at our disposal at all times! Here, our closest neighbor is a 5 minute walk away, and the closest kid is 1/4 mile away. When we moved to NE Missouri, it was in part to live near our good friends - the parents of the closest kid. Our daughters are 5 months apart, and have become the best of friends. Thankfully, we live close enough to walk or bike them to each other for playdates. But the rest of our community of kids lives 5-15 miles away, and we see them infrequently.

We had always been interested in the idea of homeschooling our children, so when we moved to NE Missouri, we embraced the challenge of providing a Waldorf-inspired education for our kids. The first two years we lived here, I co-organized a weekly mixed ages kindergarten, complete with songs, stories, crafts, and circle time. Now, my neighbor and I collaborate to teach our two daughters, who are in Second Grade. We break up the teaching responsibilities in blocks, each of us teaching three days a week for one month, and then getting one month off. It has worked well for us.

Children are incredibly resilient and creative, and young children in particular will adapt readily to new situations, especially if changes are made with an attitude of excitement and adventure. If you have older children, you'll likely have the best possible experience by involving them in the process of planning for, and creating an off-grid homestead. Be prepared for an adjustment period, especially if you're making a radical shift from how you've always lived.

Animal Care

When we first moved to Missouri, we toured a few nearby eco-villages and communities. During one tour, I asked the question, “If you could share one piece of advice for starting a new homestead, what would it be?” The person responded, “Take care of the people before you get animals.”

Of course, I went home and promptly ignored her advice! Let me explain why: For the 14 years that we lived on a rental property in Oregon, we had slowly built a homestead that was abundant with fruit trees, gardens, a greenhouse and a menagerie of animals that gave us eggs, meat, and milk. We had to leave all of them behind when we moved to Missouri. It was heartbreaking for our family, and we were committed to getting “back to where we were” as soon as possible. This meant adding animals to our homestead as soon as we were able.

The first spring, before we had even moved onto our land, we raised 10 chicks. The second spring we added a few more chickens, some ducks, and a beehive. Later in the year, we purchased our first Jersey milk cow, who gave birth to a heifer calf in spring of 2015. In the summer of 2015 we added meat lambs and pigs to our homestead.

We are finally back to where we were. And it feels SO satisfying.

There have been some adjustments to the way we care for the animals on our off-grid homestead, particularly around water, fencing, and at chore time.

Water
Living without running water, has made raising animals a bit more challenging. There is a lot of water hauling, especially in the winter months. In summer, we have water catchments set up on the cow barn and chicken coop. Except for extended periods of drought, in which we have to haul water from the pond, our animals' water needs are met. In winter, we do our best to collect snow melt and rain water in open containers (we have to empty our barrels so they do not crack). When this is not possible, we haul water by hand or in carts to the animals. In the coldest temperatures, we augment this with hot water that has been warmed on the wood stove.

Fencing
Our chickens and ducks free-range our entire property, while our cows and lambs rotational graze in portable electric fencing that is charged by solar-powered energizers. This system works quite well, and allows us to keep four grazing animals on just under four acres of pasture.

Chore Time
In winter, we do our nighttime chores in the dark. When we lived without electricity, we got very used to lighting candles and using flashlights, so it is almost a muscle memory to walk to the chicken coop or cow barn with a flashlight at night. Since we work from home, we try to do the larger tasks, like mucking out the barn, in the daylight, and we have everything in the barn well organized for easy reach. We have also decided to milk our cow only once a day, in the morning.

Off-Grid Gardening

Gardening is one of my greatest passions and how I spend a lot of my homesteading time and effort. Living off-grid has caused me to adjust the way I garden.

For instance, because we have no running water on our property, keeping the garden watered is much more challenging! We have talked about setting up a small, solar-powered pump to transport water from our pond to our garden site, but until then, I have to rely on rainfall and hand-watering. I've gotten very good at following the forecast, anticipating the rain, and sowing seeds accordingly. When we are blessed with rain every 1-2 weeks, the garden needs very little irrigation. But toward the end of the summer there is typically a 1-2 month drought, during which I haul many buckets of water! Sometimes plants just don't make it through the heat and drought, and I end up with a much smaller fall/winter garden than I had planned.

My emphasis thus is on creating a garden that needs less water. I use a heavy straw mulch whenever possible, and plant thickly to keep the soil covered. I also have a 50 gallon barrel set up in the upper garden, which makes hand watering much more convenient.

Seed starting is another area in which I needed to readjust my methods. Previously, I had used a heat mat to start warm season seeds such as tomatoes, peppers, and eggplant. But plugging in a heat mat continuously

for days or weeks on end is simply not compatible with our solar electric system. Nowadays I set up a shelf right next to our wood stove, and germinate seeds indoors.

Fruit trees, shrubs, and perennial flowers have been the easiest to keep watered, because we use the rinse water from our dishwashing. We simply collect the greywater in five gallon buckets, and water our trees and plants in rotation.

Creating garden infrastructure is high on my personal priority list, but lower on our overall homestead list. I continue to look for ways to create systems that make growing a large and abundant garden more effortless.

In Closing

Five years ago, I would not have placed off-grid living on the top of my priority list. I worked from home and was the mother of a toddler and a newborn baby, and my priorities were more focused on getting enough sleep, breastfeeding, and sustaining our homestead (which at that time consisted of 9 Alpine goats, bees, pigs, chickens, and a large year-round garden - quite a task!).

But now, three years into making the move to a raw piece of land, and creating a homestead from scratch, I would absolutely place off-grid living on the top of my list. I love the self-sufficiency of being able to provide our own water and electricity. I love that we are not paying utility bills, and I love knowing that if a storm took out power locally, we would still be snugly curled up in our house, with ample water, warmth, and light. We are far more resilient a family than we ever were before, and far more prepared for the unknown.

I believe that living off-grid is one of the most tangible ways I can live into the vision of what I want to help create in this world. I now have a real, concrete knowledge of the resources that I consume; for instance, I know that each day my household uses around 20 gallons of water. We consciously think and reflect before we turn on a light switch, or use an appliance. And that is the kind of thinking and reflection that I *want* to be doing.

While we actively work to increase our self-sufficiency, our off grid homestead would not be possible without the assistance of friends and community. From garden work parties, to tree planting, and ditch digging, to crews of friends helping blow cellulose insulation, we have benefited greatly from the collaborative and generous spirit of our local homesteading community.

Living off-grid requires an adventurous spirit, a flexible attitude, some investment of time and money, and a bit of good old fashion elbow grease.

But the rewards are abundant. My hope is that this book has given you inspiration and practical advice that will help you create an off-grid homestead that works for *your* family, on your budget, with your unique experiences, and your aspirations. I truly would love to hear your story, so please feel free to email me at teri@homestead-honey.com, and say hello!

Living off-grid is a quiet, transformative, and revolutionary act. Creating an off-grid homestead has transformed my life. And it will transform yours, too.

Resources

These are the products we use regularly on our off-grid homestead. Except where noted, I have no affiliation with the companies, other than as a satisfied customer.

Backwoods Solar (http://www.backwoodssolar.com) - Backwoods Solar is, in my opinion, the way to go if you are looking for support in setting up an off-grid solar, wind, or micro-hydroelectric system. They have outstanding customer support as well as a wide assortment of products. Let them know that Homestead Honey sent you if you give them a call, as they are one of my blog sponsors.

Sun Oven (http://sunoven.com) - Sun Oven sells solar ovens, and accessories for cooking with the sun. We have their All-American model, which retails on their website for $349.00. We also purchased their dehydrating racks, which are great for drying fruit, or making multiple batches of cookies.

StoveTec (http://stovetecstore.net) - StoveTec is a maker of Rocket Stoves and accessories. We use their Lightweight Biomass Cookstove, and are testing their Firefly stove. Good friends of mine were instrumental in starting StoveTec, and they are a Homestead Honey sponsor, so I'm partial to this brand, but there are also a lot of DIY options out there for building your own rocket stove.

Jotul Woodstoves (http://jotul.com) - We love our Jotul stove, which we purchased almost a decade ago. The current equivalent of our stove is model F 3 CB. This model heats up to a 1300 Square foot house (so, it's overkill for our tiny home, but we already owned it when we moved here), and we love that we can cook on its top.

Berkey Water Purifier/Filter (http://waterpurificationfiltration.net) - We use a Big Berkey with three filters for our family of four, but there are many other Berkey sizes to meet your needs. I work with the company linked above, UES,

to offer periodic group discount sales. If you're interested in getting a Berkey or filters at a discount, send me an email at teri@homestead-honey.com, and I'll get you more information.

ConcenTrace (http://www.traceminerals.com/products/liquid-tablet-minerals/concentrace-ionic-minerals) - We add these trace mineral drops to our filtered drinking water to ensure that we're getting the minerals that our bodies need. I purchased ConcenTrace through a vitamin supply company for around $17 for an 8 oz. bottle, which has lasted well over a year.

IKEA Sunnan Solar Lamp (http://www.ikea.com/ms/en_US/sunnan/sunnan.html) - We own two of these solar lamps, and they are awesome! We still use them as reading lamps before bed, and prefer them to candles at bed time because of the risk of fire if we accidentally fell asleep with lit candles. They run around $20.

Solar Phone Charger - There are many portable solar phone chargers on the market. Ours cost around $65, and had two small solar panels as well as two USB ports.

45 Watt Solar Panel Kit (http://www.harborfreight.com/45-watt-solar-panel-kit-68751.html) - My father-in-law had purchased a system similar to this one for his RV, but gifted it to us when we moved onto our land. We used it in tandem with a car battery to be able to charge our phone on cloudy/rainy days.

Solar Energizer and Electric Fencing (https://www.premier1supplies.com) - We purchase most of the electric fencing supplies for our grazing animals from Premier 1.

Emergency Weather Radio - We purchased an emergency weather radio through LL Bean. While I'm not seeing the exact model on their website, the one we have features both a hand-crank and a solar panel for charging. We keep it tuned to the NOAA weather station for warnings of tornadoes or other storm events.

Honda EU2000i Generator (Here's a good review of its features: http://www.diy-experts.net/honda-eu2000i-review/) - We used our generator daily while building our house, and now weekly for building projects and to make items for our Etsy shop.

Homesteader Drying Rack (http://homesteadstore.myshopify.com/collections/homestead-laundry/products/homesteader-drying-rack) - We use a clothesline for most of our laundry drying needs, but on rainy days, in winter, and when I overflow our lines (which happens very often), I love my Homesteader drying rack from Homestead Store, another Homestead Honey sponsor. Use coupon code "homesteadhoney" to get 10% off.

The Humanure Handbook (http://humanurehandbook.com) - This book contains all the information you need to start your own humanure system at home.

Home Power Magazine (http://www.homepower.com) - I gave Brian a subscription to this magazine when we first started our homestead to feed our brains with the latest information about solar, wind, micro-hydro, and other off-grid technologies.

Tumbleweed Tiny House (http://www.tumbleweedhouses.com) - This company offers building plans for several models of tiny houses on wheels. Since we built our own house on a foundation and without formal blueprints, we have not used their plans, but those wishing to build a tiny house might find their website helpful.

Homestead Honey (http://homestead-honey.com) - My blog about homesteading, off-grid living, gardening, Waldorf-inspired homeschooling. In addition to this eBook, I offer an eCourse, Empowered Eating, that teaches how to source, preserve, and enjoy local, seasonal foods. I also offer one-on-one coaching for those that are wanting to turn their homesteading dreams into action, but need a bit of support.

Acknowledgements

This off-grid journey is one that I would have never, and could have never taken without the love and partnership of my husband, Brian. Brian has always dreamed of having a piece of land and building his own home. By some stroke of luck, I was bitten by the gardening bug, and our mutual love of food, simplicity, and community carried us on this wild ride to self-sufficiency.

Our children, Ella and Everett are the best homestead kids imaginable. I so admire their creativity, zest for all things wild and natural, and ability to go with the flow and see each moment as an adventure.

Friends near and far have supported us on this adventure with love, phone calls, emails, care packages, meals, conversation, and work parties. Our families have given us love and financial support toward making this dream a reality, and when they visit, they don't mind that we ask them to peel apples, braid garlic, install solar electric systems, or read dozens of books to our children. Thank you.

My fellow homestead bloggers are an incredible source of inspiration to me, especially my tribe of SAH soul sisters. And finally, to the Homestead Honey community, thank you so much for continuing to show up and dare to dream.