

TINY HOUSE UTILITIES

Electricity, water, propane, internet and all that jazz!

the  tiny project



Tiny House Systems

Power (on and off-grid)

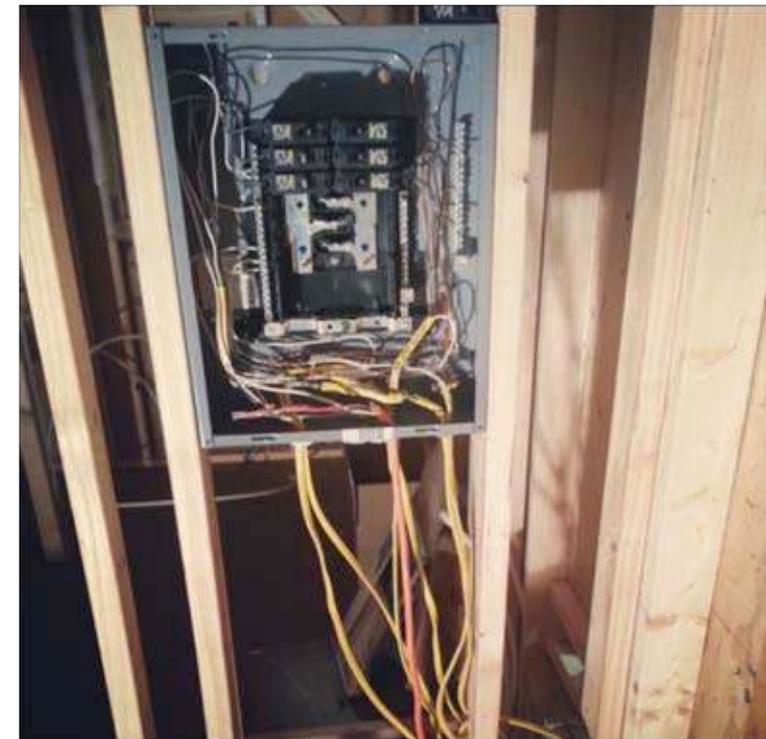
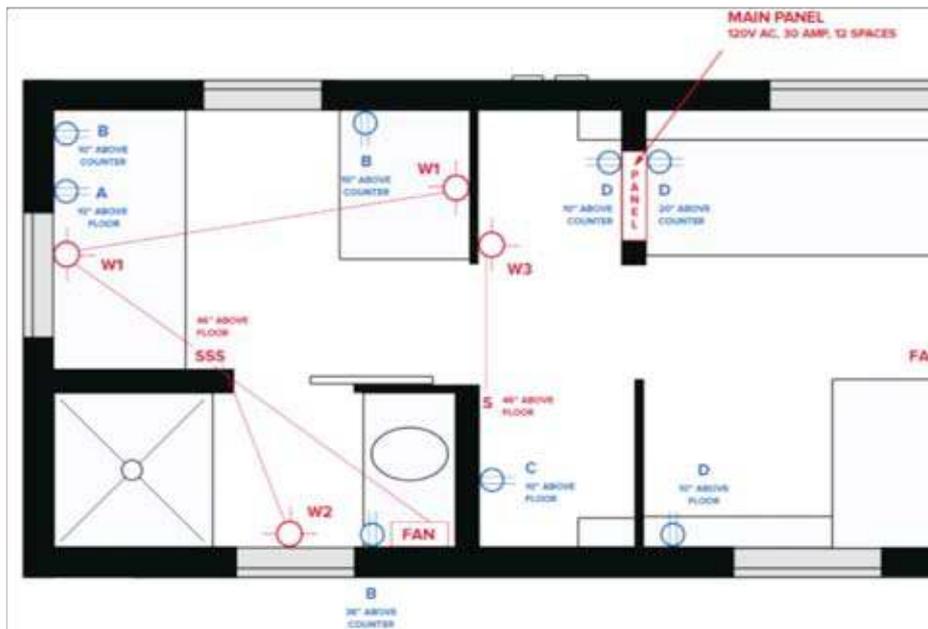
Water (fresh and waste)

Propane (safety!)

Internet

Our Power Setup

- What we have:
 - ▣ Heavy-duty 30amp RV extension cord coming from the “big house”
 - ▣ 120v breaker box, wired for AC power like a normal house



Our electrical panel

Electricity Options

- If THOW, RV-style 30 or 50-amp hookup is great so you can plug in at RV parks while traveling
- If power needs are high, may need 2 power inputs, not just one (for radiant floor heat, etc)
- For AC, RV standard is 120v. 240v would be more suitable for permanent house on a foundation
- DC (solar) is a great alternative for off-grid living



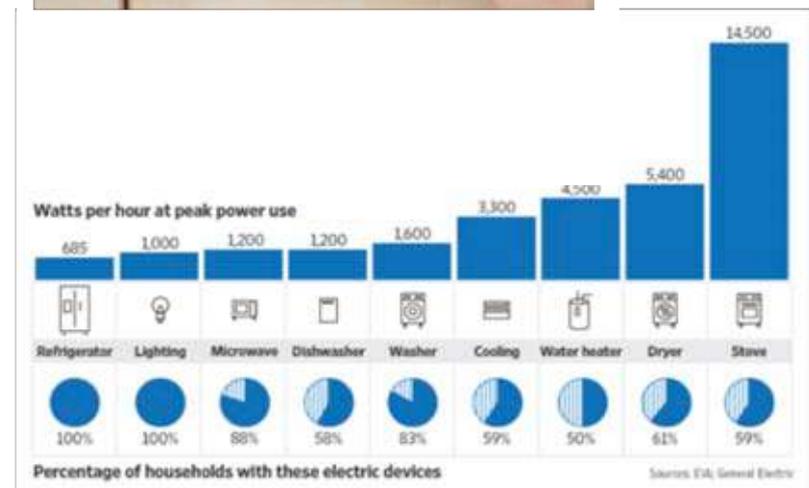
Our house “plugged in” at and RV park

Estimating Power Needs

Refer to a chart or use an electricity usage monitor to find out how much power you will need



U.S. Department of Energy



Sources: EIA, General Electric

On or Off-grid?

Consider pros and cons for each

Availability of utility connections

Cost/payback period

Power storage needs

True need vs. “cool” factor

Solar Off-grid Power

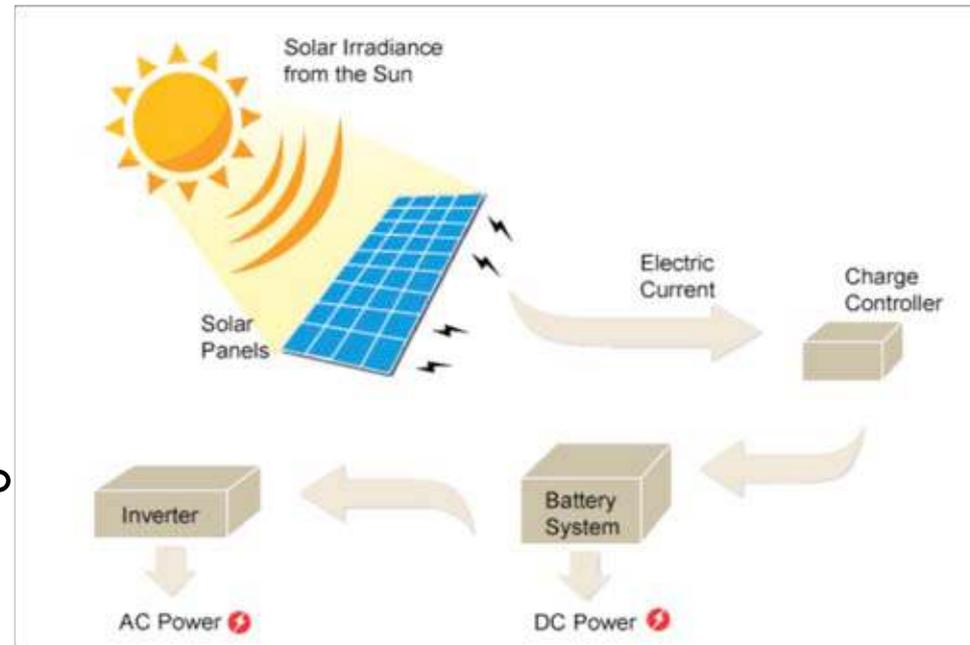
- ❑ Can live where city utilities are not provided
- ❑ Can avoid increasing energy prices
- ❑ Has limited collection and storage capacity, must pay much closer attention to usage: conserve
- ❑ Need back-up generator to be safe?
- ❑ Can be expensive investment (take many years to pay back vs. paying for grid power)



“Tiny House Build” solar array!

Solar Components

- Basic components consist of:
 - ▣ Solar (PV) panels
 - ▣ Charge controller
 - ▣ Battery system
 - ▣ Inverter
- Inverter is not 100% efficient – typically 5% - 20% is lost in DC to AC conversion
- Research the correct type of panels and components for the amount of sun/shade you get and your collection and storage needs



Basic off-grid solar components

Things to Consider

- Consider using DC current for your entire house, choosing appliances and fixtures designed for DC
- Consider using a propane fridge, stove, and/or water heater to help keep electricity demand low
- Since tiny houses usually do not use much electricity, cost off-grid solar (including battery bank) installation may take a long time to “pay back”



Propane refrigerator

Plugging into the Grid

- No up-front costs
- Power usage typically low, so monthly costs are small
- On demand – no need for storage, backup generator, etc.
- If designed right, can hook up to virtually any power outlet that can deliver enough amperage
- You can still feel good knowing your house uses just a fraction of the power of a larger house



The Tiny Project 30-amp RV power hookup

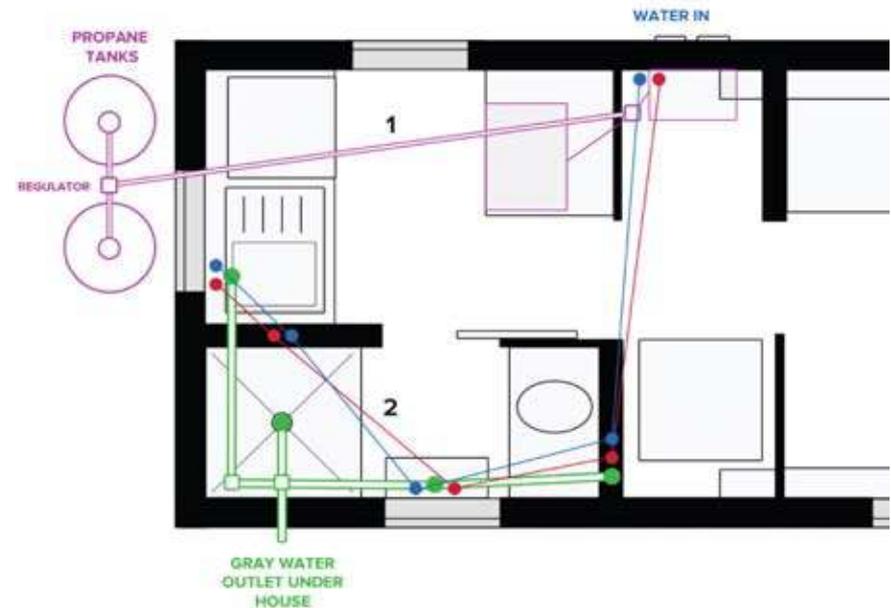
Water Options

- Possible sources:
 - ▣ City water
 - ▣ Well water
 - ▣ No running water (hand collected, minimal use)



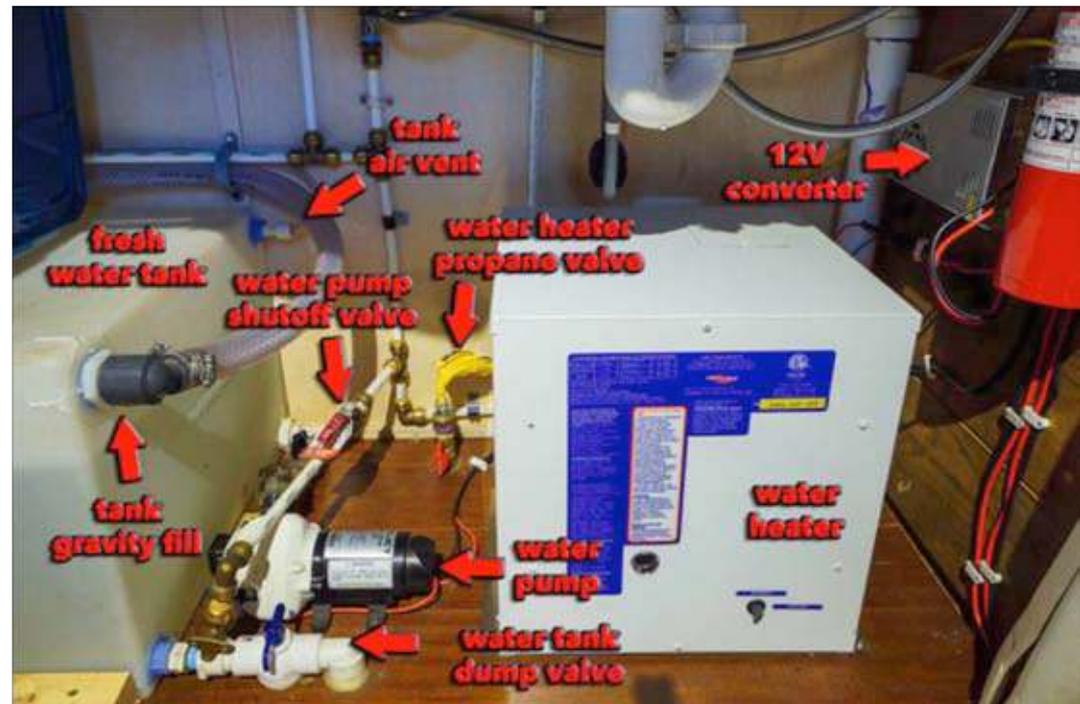
Example RV-style water inlet

- Basic Water Setup
 - ▣ Source > hose/pipe > hookup to house > PEX supply lines > Water heater > appliances/fixtures > drain pipes > disposal



Tank or No Tank?

- To keep things simple, we did not include water storage tanks, either for fresh water or greywater
- If using fresh water tank, then complexity increases with need for a pump. Make sure pump and all connections are in an accessible place for maintenance



Jenna and Guillaume's water tank setup

Greywater Options

- ❑ Sewer/septic
- ❑ Filtration wetland/pond
- ❑ Gravel-filled filtration buckets, down a slope
- ❑ French / Branched drain system
- ❑ Portable water tank, dumped off-site



"Blue Boy" greywater tank



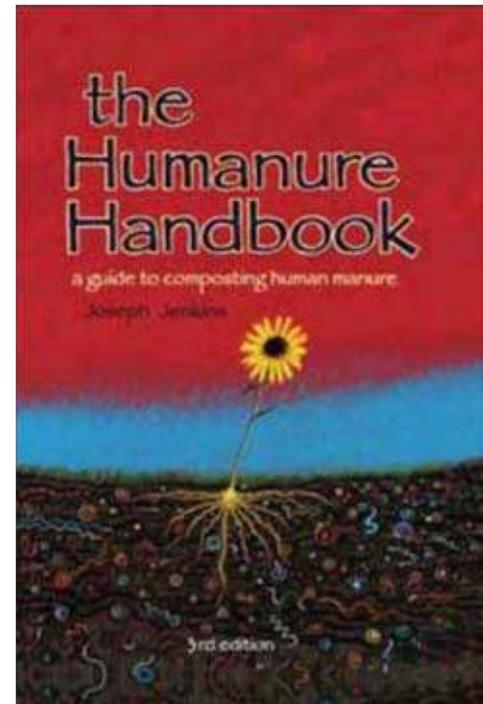
Branched drain system

Sewage or Black Water

- If have sewer/septic hookup, then normal flush toilet is an option
 - If you have a THOW, then requiring a sewage hookup severely limits your available places to park
- Otherwise some composting solution is most common
 - Composting toilet (expenses, problems reported)
 - Humanure Bucket system (nearly free, simple if up for the task)



Loveable Loo composting toilet



Our Propane Setup

- We use propane for both on-demand hot water and for our range/stove
- Inexpensive way to heat things. Electricity needs for heating elements are very high
- Two large propane tanks (always stored outside) with switchover. Black pipe supply lines come into house, then short flexible hose delivers propane to appliances



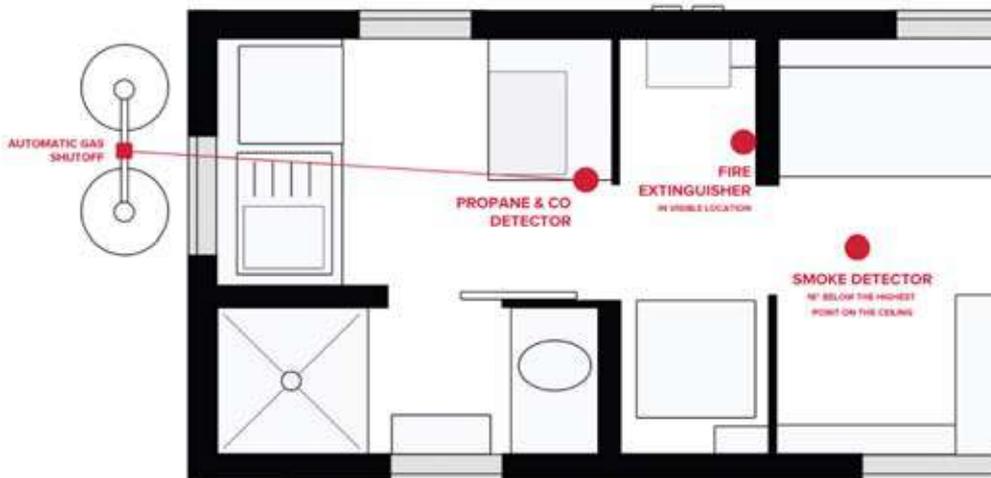
Our 2 40 gallon propane tanks and regulator

Propane Safety

With propane safety is always first!

- ❑ Tanks always located outside the house
- ❑ Always install a propane detector or even better an electric auto-shut-off switch at the source

- ❑ Keep pipe connections under the house or stub up into the house so joints are accessible for maintenance if a leak occurs
- ❑ Do a pressure test and check for leaks with a detector (or soap test)
- ❑ Use an exhaust fan to vent out the products of combustion and moisture from cooking



Propane detector

Internet Options

- Connect to existing house via cat-5 cable
- Use wifi signal booster to reach house
- Satellite internet (typically slow, not best option)
- Mobile hot-spot if data needs are not too high
- Use library, coffee shop, etc if no need for internet at home.



Cat-5 cable coming into our house from “big house”

For tiny house plans, photo book, resources, and articles about the realities of tiny house living, visit us at:

Tiny-Project.com

