

Off-Grid Power Systems

LibertyCon 36

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You found the location for your perfect house and cannot get electric service

What are your options?



When you think of
“living of the grid”
or “off-grid power
systems” what
does this mean to
you?



In today's society there is a need to stay connected; cell phones, computers, TVs (85 in. Monitor). And then there is the essentials; refrigerator/freezer, washer/dryer, heating and cooling, cooking. How do you provide power to all these devices?

Does living off the grid mean doing without?

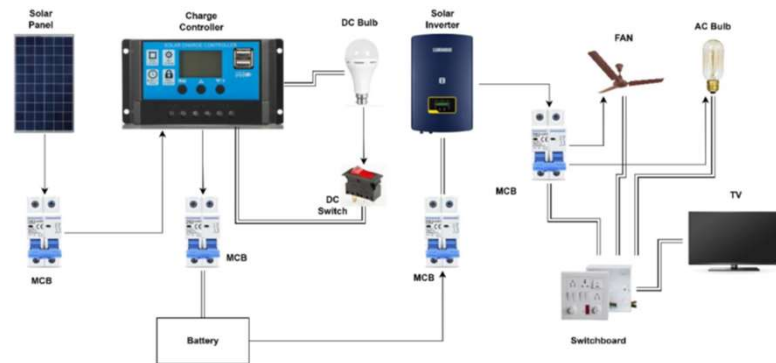
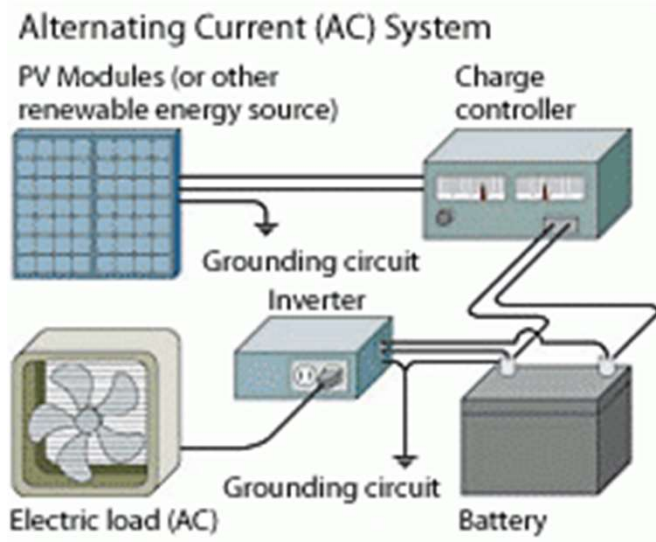
Can an off-grid power system provide for all of my needs?



Energy usage of common appliances

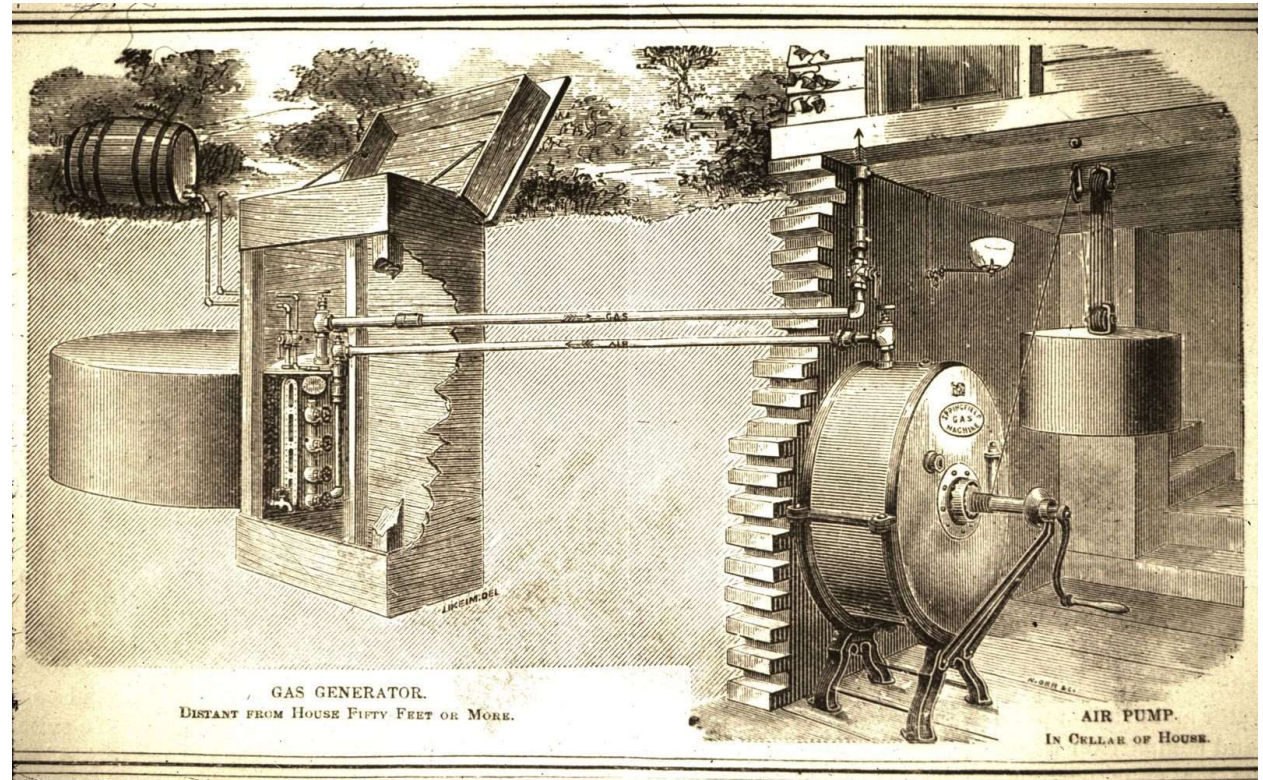
- * The daily energy values listed here are for the most efficient units in their class and the information was obtained from Consumer Guide to Home and the General Electric website.

Appliance				
Kitchen		Living Room		Tools
Blender	500	Bluray Player	15	Band Saw – 14"
Can Opener	150	Cable Box	35	Belt Sander – 3"
Coffee Machine	1000	DVD Player	15	Chain Saw – 12"
Dishwasher	1200-1500	TV – LCD	150	Circular Saw – 7-1/4"
Espresso Machine	800	TV – Plasma	200	Circular Saw 8-1/4"
Freezer – Upright – 15 cu. ft.	1240 Wh/Day**	Satellite Dish	25	Disc Sander – 9"
Freezer – Chest – 15 cu. ft.	1080 Wh/Day**	Stereo Receiver	450	Drill – 1/4"
Fridge – 20 cu. ft. (AC)	1411 Wh/day**	Video Game Console	150	Drill – 1/2"
Fridge -16 cu. ft. (AC)	1200 Wh/day**	Lights		Drill – 1"
Garbage Disposal	450	CFL Bulb – 40 Watt Equivalent	11	Hedge Trimmer
Kettle – Electric	1200	CFL Bulb – 60 Watt Equivalent	18	Weed Eater
Microwave	1000	CFL Bulb – 75 Watt Equivalent	20	Misc.
Oven – Electric	1200	CFL Bulb – 100 Watt Equivalent	30	Clock Radio
Toaster	850	Compact Fluorescent 20 Watt	22	Curting Iron
Toaster Oven	1200	Compact Fluorescent 25 Watt	28	Dehumidifier
Stand Mixer	300	Halogen – 40 Watt	40	Electric Shaver
Heating/Cooling		Incandescent 50 Watt	50	Electric Blanket
Box Fan	200	Incandescent 100 Watt	100	Hair Dryer
Ceiling Fan	120	LED Bulb – 40 Watt Equivalent	10	Humidifier
Central Air Conditioner – 24,000 BTU NA	3800	LED Bulb – 60 Watt Equivalent	13	Radiotelephone – Receive
Central Air Conditioner – 10,000 BTU NA	3250	LED Bulb – 75 watt equivalent	18	Radiotelephone – Transmit
Furnace Fan Blower	800	LED Bulb – 100 Watt Equivalent	23	Sewing Machine
Space Heater NA	1500	Office		Vacuum
Tankless Water Heater – Electric	18000	Desktop Computer (Standard)	200	Note: TVs, Computers, and other devices left plugged in but not turned on still draw power.
Water Heater – Electric	4500	Desktop Computer (Gaming)	500	**To estimate the number of hours that a refrigerator actually operates at its maximum wattage, divide the total time the refrigerator is plugged in by three. Refrigerators, although turned "on" all the time, actually cycle on and off as needed to maintain interior temperatures.
Window Air Conditioner 10,000 BTU NA	900	Laptop	100	
Window Air Conditioner 12,000 BTU NA	3250	LCD Monitor	100	
Well Pump – 1/3 1HP	750	Modem	7	
Laundry		Paper Shredder	150	
Clothes Dryer – Electric	3000	Printer	100	
Clothes Dryer – Gas	1800	Router	7	
Clothes Washer	800	Smart Phone – Recharge	6	
Iron	1200	Tablet – Recharge	8	



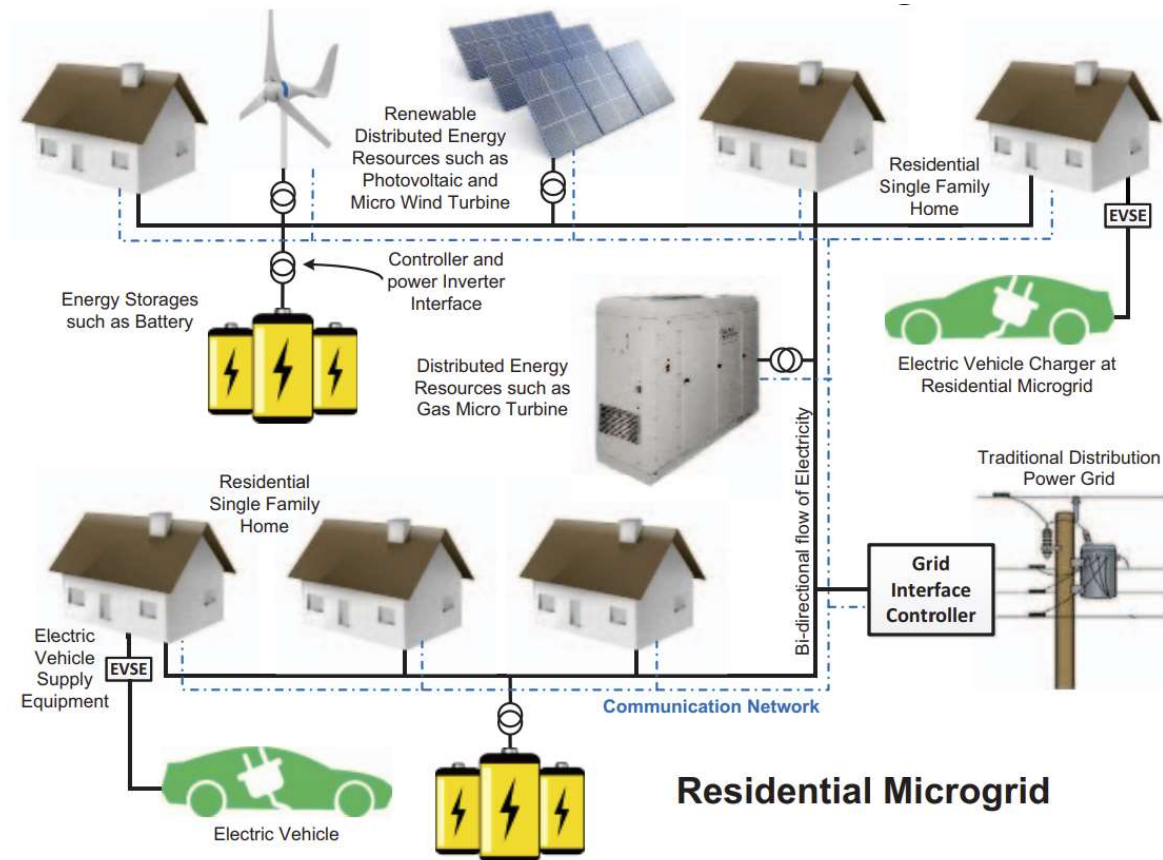
Are off-grid power systems very complex?

One of the primary components of an off-grid systems is storage. What does one need to know about storing energy?



Can a community be served by an off-grid power system? Or What is a MicroGrid?

- Part time connection to the power grid.
- Are there benefits when this type of solution is utilized?
- Are there global benefits when using a renewable off-grid solution?



Can you live off the grid full time?

Is living of the grid something you would do?

Open For
Questions

