

BETTER THAN SOLAR



By Damian Campbell

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Neither the author nor the publisher accepts any liability for any injury occurring from the actual application of the information herein. The information provided in this book is for educational purposes only. Electrical wiring and projects of this type are potentially dangerous and should only be conducted by a fully informed, trained, and prepared individually following all industry best-practices and safety guidelines.

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Introduction: Better Than Solar

If you depend on a steady supply of power from our electrical grid, you're a fool. I'm sorry, but there's simply no other way to say it. The LAST thing you should be relying on is our rickety, shaky, held-together-with-tape-and-hope power grid, which has been failing for YEARS. Our power grid ALREADY doesn't provide enough power — which is why high-profile states like California have a long history of imposing rolling blackouts on their population.

The Great Northeast Blackout of 2003 lasted up to 4 days for some of the people across multiple states (and in Canada) who were affected by it. The cause? Again, our weak power grid, which can collapse the moment anyone looks at it. Funny! All it takes is one problem to cascade into MANY problems that can collapse the power grid... and what takes only minutes to start can take days to repair.

Anyone who considers themselves a survivalist, a prepper, or simply the kind of citizen who likes to look out for the unexpected should have a backup power source. Now, I know you might be telling yourself that you can live without electricity in an emergency — and of course, you can. But you wouldn't be reading this if you didn't also understand just how useful electrical power is.

Being able to power your all-important communications devices, like your phone, tablet, computer, and small appliances... these are incredibly helpful in any power outage or other emergency. And if you just want to live off the grid and generate your own power (or you

want to lower your power bill by generating power to supplement what you want from the grid), then making a backup power source (or, heck, a primary power source) makes sense. You would be nuts, especially in these uncertain times, not to have a means of generating power. Even if it's just to power a phone so you can communicate with the rest of the world, you NEED electrical power. That's a fact and it's not going to change.

There's some good news, too. Building your own wind power system is not all that complicated. You don't need to be an electrician to do it. All you need to do is follow some basic instructions, then add in a little research based on what's available to you. Because everyone's system is different and everyone's power system will be unique, you'll just have to figure out how you want to execute the plans in this book.

How To Use This Book

A lot of people choose solar systems for “survival” and backup power generation. For reasons we'll explore in the next chapter, a wind turbine system makes better sense. Wind power is, in fact, *better than solar*, and this book will explain why.

We'll then go on to explain to you how to build a basic wind power system, as well as a “power box” — a battery box to store the power you collect. Because all of the plans in this book are general, you'll just need to figure out which specific components you want to

use. And if you get a little confused about details like wiring and so on, don't worry: there are plenty of answers on the Internet once you know what components you WANT to use.

That's how this book can help you execute a project of this type. It's a road map. No single book can tell you everything you need to know exactly because everybody's situation and resources are a little different. (For example, there's no way for a book to tell you exactly how many feet and what type of wire you'll need because your wind turbine will be a different distance from your power box compared to someone else reading this book.)

That won't be a problem, because again if you're reading this book, you're the type of person who knows that all it takes is a little detailed work to make a project come together. What matter is that you have this roadblock to explain the concept, the steps, and the components that you will need.

I've seen books and how-to guides on wind turbines that go into chapter and verse on exactly what tools you'll need, the size and types of drill bits, the exact pieces of wiring and other gear you'll want... and yes, if you want to exactly copy what somebody else has done, I guess you could do that. But with a 'conceptual roadmap' like "Better Than Solar" to help you, you can scale these plans, modify them, and adapt them to any situation. All it takes to get you started is somebody to explain what and how to do what you need to generate power from the wind.

Are you ready? Then let's get started.

Why Wind Power?

The first question you may be asking is (although you wouldn't be reading this if you hadn't already considered it), why wind power? You may have heard a lot of disinformation in the media about how relatively weak wind power is (usually in reports that take on solar, too). It doesn't help that the "sustainable power" industries have had a lot of con artists and other questionable business ventures tied to the technology. But none of that has anything to do with whether a wind power system is viable for YOU, as backup power or primary power system that frees you from the infrastructure of our power grid.

You've been trained not to think about the wind. You've been conditioned to ignore it. But think about this: Have you ever flown a kite? Maybe it's been years since you were a child. But there have been plenty of days when you flew kites and had no trouble getting that kite up into the air. There are countless days when the wind is blowing, even strongly, that you just didn't think about the power it represented.

Have you ever been driving down the highway, watching the tops of trees move in the wind? Even if the wind wasn't noticeable at ground level, where you were in your car, the wind higher up was tremendously powerful. Now imagine the blades of a wind turbine turning in that wind. In most locations, the higher you go, the more breeze there is... all the time.

Wind power provides MORE electrical power, more potential power, than any other source you can reasonably set up yourself,

including solar. For individuals running small systems, it makes good sense as a backup power method — and even as a primary source of collecting and storing electricity.

Why Battery Backups And “Power Banks” Aren’t Enough

A lot of prepared citizens — and people who just want to be able to get through the occasional power outage — rely on “power bank” style batteries. These are okay for short outages, and even just to keep your phone charged when you’re away from an outlet for an extended period of time. The problem with all “power bank” style batteries, is that they rely on the same electrical power grid that we’re trying to reduce dependency on. You have to charge them and keep them charged.

Human nature being what it is, if you do have some of these batteries, (and I’m willing to bet) it’s been a while since you charged it. Maybe when you get a word that a storm is coming, you plug them in to make sure they’re all topped off if the lights go out... but a lot of emergencies happen when don’t have much warning of them.

Even if you have many batteries, even if you keep them all charged all the time, they will last only for so long before they’re depleted during an emergency. Your average power bank will charge a smartphone, for what? — twice? maybe less? Then you’re out of luck if the power outage continues. These batteries always offer you less total run time than you think they do. Most devices, including phones and

tablets, are “high drain” devices, too. They suck up a LOT of juice, in other words.

More powerful battery packs are also expensive. That’s why a battery pack for, say, a common medical device like a CPAP machine, costs hundreds of dollars (as of this writing) and will MAYBE run a machine like that for six or seven hours, total. Without “resupply” from the power grid, it becomes a useless paperweight after one or two uses, tops.

Why Solar Systems Aren’t Enough

A lot of prepared citizens buy solar panels and even invest in solar systems, to provide them with a means of generating power. This is okay as far as it goes. A small phone-sized single panel (which is what a lot of these units are) can only trickle-charge a phone throughout the sunny day. Bigger panels, the size of sheets of paper, do a little better. Multiple fold-out panel systems are a little better... but the problem is, solar is SLOW. You can’t run a device directly off a solar panel; you’ve got to charge a battery and then run the device from that battery. Solar panels simply can work no faster than the sun can charge the photovoltaic cells.

Also, consider the circumstances under which you’ll want to use your backup power. In an emergency, there’s a good chance that the power goes out because of the storm, right? That’s not the only cause, of course, but it’s one of them. Your solar panel will be useless during

rainy, windy, dark weather... but these are exactly the circumstances under which a wind turbine will be operating at peak capacity!

Now, yes, solar panels have no moving parts, which is a point in their favor. But you've got to have a place to put them. Panels arranged on your roof will obstruct the roof whenever you need to maintain that structure... and they're vulnerable to damage sitting up there. Mobile panels that you hang or prop don't produce nearly the amount of power compared to a more "permanent" solar array. And larger "fields" of panels arranged, say, in your lawn will stop you from using that property for anything else (such as a garden).

Wind Power Just Makes Sense

For all the reasons, for the prepared citizen, survivalist, and prepper, wind turbines just make sense. This book contains a complete conceptual road map to what you'll need to do to set up your own wind power system. No, it isn't exhaustive — but no book could be. What it *does* do is empower you to set up your system according to your own resources, your own situation, and your own preferences.

All right, we're ready to get into the step-by-step specifics. Step one is to make sure that, before you go any farther, wind power will work in your own unique location.

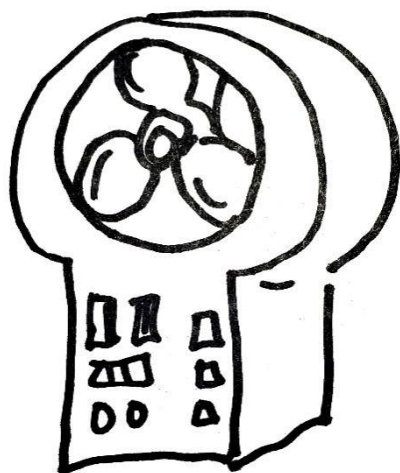
Wind Power In Your SPECIFIC Location

Multiple resources offer, as a rule of thumb, that your location should offer an AVERAGE breeze of 10 miles per hour. That doesn't mean that you need that level of wind at the ground, though. It means that wherever you locate your turbine, at the height you locate it, you'll want to make sure you can get that or more on average. There will be slow days, and there will be better days. You won't be powering devices straight from the turbine, meaning you won't be out of luck if there's no wind blowing at that exact moment and you need power. Instead, you'll be charging your power box (which we'll explain in this book) and then drawing power from that box.

So, your first task is to determine whether your proposed location gets enough wind. There are a few ways you can test this out. One is to keep a paper log and just check, each morning and night for a couple of weeks, to see if the air is still or if it's blowing at a good clip.

Now, I know what you're thinking. "How am I supposed to know exactly what the wind speed is so that I can enter my readings and

then make an average of the wind speeds?" Well, the answer is, as in



almost everything in life, a web search for the term “handheld wind speed meter.”

The device you’re looking to buy is called a **handheld anemometer**. There are tons of them on the market, and most of them are quite affordable. It looks like a little fan attached to a digital remote control. Take your wind speed meter, go to the location where you plan to set up your wind turbine and climb up on a stepladder that approximates the height that you think you’ll be mounting your wind turbine. We’re going to get into the specifics of all that, but for the moment I need you to jump ahead a little. The basic plan we’re going to share with you is to have a horizontal wind turbine that is mounted on a pole. Put it up higher than ground level, so a stepladder will help you approximate how high up the actual turbine will be.

Climb up onto your ladder in the morning and at night (you could even do a third reading at noon if you want to). Record the wind speed each time. If you gather two readings a day for five days, you’ll have ten readings. Add up all those numbers and divide by the number of readings (in this case, you’d be adding up ten readings and dividing it by ten) to get the average wind speed.

If that number is 10 miles per hour or better (the rule of thumb for wind turbines), then congratulations: Wind power will probably work for you in that spot. Just understand that if the number is LOWER than that (10 mph), you’ve got to pick a new location and try again. If none of your test locations yields a number of 10 miles per hour or

higher, wind power may not be the best choice in the location you're hoping to use.

Which Direction Does Your Wind Blow?

If you determine that you do have ENOUGH wind to work with, you're still not done. It's also useful to figure out from which direction your wind will blow most often. Now, wind can come from multiple directions, but in North America, it is predominantly from the southwest or the northwest. Unless you're willing to do a LOT of research and logging of the wind direction by installing your own windsock on your property (and writing down the direction every day for weeks) — and, sure, you could do that — you'll need to ask someone who knows. The easiest way to do THAT is to contact your local airports, particularly smaller airfields that handle single-engine aircraft (you're more likely to get a human being with a smaller airport).

Ask someone who can answer questions about local wind speed conditions, and inform them that you're installing a wind turbine on your property. You'll be surprised by how willing most people will be to help you. When you get someone on the line who can answer you, just ask them what they believe to be the prevailing wind direction in your area. You might also ask them if that holds true for most of the year, or if it changes from summer to winter, overall.

All right: You have determined that wind power can work on your property in the location of your choice, and you have determined generally where the prevailing winds will come from.

Now what?

Well, now you have to choose a design for your wind turbine. That's kind of misleading because, honestly, we've chosen the most reasonable one for you. But if you'd like to run through why that is true, it's not a problem. We will be happy to explain it to you. And, sure, if you want to go with a different design, you can. The basic principles will be the same, and you can supplement the specific details through your own research.

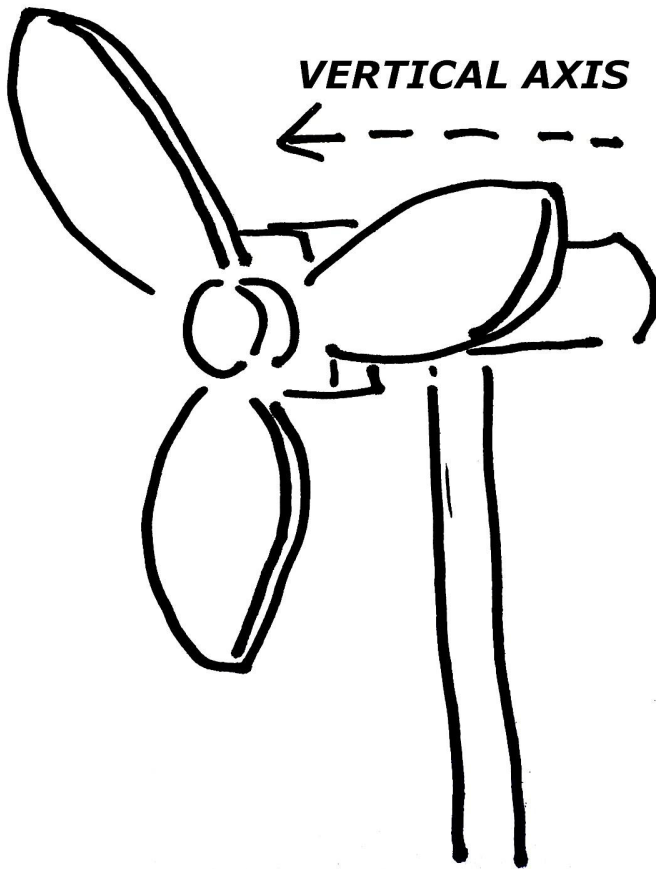
Horizontal Versus Vertical Wind Turbines

Now, we've already given away the secret by saying we'll be focusing on a horizontal wind turbine. That implies the existence of vertical wind turbines, you're probably thinking. Well, you're right. But what's the difference?

A horizontal wind turbine is like most of the big "fans" you see out there in the world. It's a big pole or platform with a giant propellor on it (these are what we'll call the fan blades of the turbine). You may be thinking that's "vertical" because the propellor blades point up and down, but "horizontal" refers to the axis on which the fan rotates. The axle around which the blade turns is horizontal or perpendicular to the ground.

Horizontal wind turbines are by far the most common type. They HAVE to point to the wind for it to work, so they aren't found at ground level. Instead, they're mounted on tall poles or towers high enough for better breeze. They also have a "yaw" mechanism that allows them to turn so they're always pointing into the wind (in other words, they rotate on top of the pole so they can point in different directions). Most horizontal wind turbines don't turn fast enough to generate electricity, so they incorporate gearing that translates the slow turn of the fan blades into a faster speed to turn a generator (the motor that produces power from the wind).

These types of wind turbines are quite efficient, but the downside (for industrial, commercial applications) is that they're GIGANTIC. If you've ever been traveling down a highway and seen a flatbed truck hauling what looks like a single airplane wing, what you're actually seeing is a single blade from the fan of a commercial wind turbine. Their size is deceptive because usually, you see them from afar. If you go up close, these electricity-generating fans are absolutely monstrous in size.



They are placed up at massive height where the wind is best, but they end up taking a lot of space — and all that heavy machinery must be assembled and hoisted into place at that elevation. The structure has to be very strong, in order to withstand the shearing forces of wind pushing the blades. Physics says that a spinning blade like that will try to flip itself over and turn itself inside out, so the amount of strain on these pieces of machinery is very considerable.

The good news for you, is that your personal horizontal wind turbine doesn't have to be anywhere near that big and won't be subjected to anything like those forces.

The reason we're not considering a vertical wind turbine — which looks like a weird piece of modern art, or even a box kite, spinning around a vertical axis — is because they're not as efficient and they're more complicated to build yourself. They ARE useful for areas where you can't get the turbine up high enough (such as where there are overhead restrictions). You mount vertical wind turbines at ground level, on roofs, on the sides of hills, and so on, so you can use them to take advantage of locations that have good wind passing through them. Generally, the horizontal wind fan is going to be the easier choice for your personal setup.

Okay, now you know why you need backup power, you know why wind is one of the most reasonable choices for that, and you know exactly what you're going to be putting together. The last thing you need to know before we get to actually building the system is where to put it and how to keep it there.

Finalizing Your Turbine Location

We've said that horizontal wind turbines make the most sense for an individual setup, and you know that this type of turbine has to be pointed into the wind. But it also has to be up higher than ground level — the higher the better.

Now, no, you're NOT going to mount this on the roof of your house. Even if there's enough wind moving across the top of your roof to make the turbine work, remember what we said about the shearing forces that are at work. Trying to bolt a wind turbine to your roof is a good way to rip off a piece of your house.

No, you want this thing higher than the roof, anyway, if you can manage it. That means you need either a free-standing tower or a pole with guy wires. But we're getting ahead of ourselves. There are some other things to consider first:

Make Sure The Location Can Be Used Year-Round

Once you have determined the prevailing wind direction, you need to choose a location on your property where you'll set up your wind turbine. The first consideration should be whether that location can be used all year-round. If there's some reason that the location is good during one part of the year, but unusable during another part of the year, it's not good.

For example, if the back corner of your yard is fine in the summer, but floods out in the spring, you wouldn't choose that location. If your RV is parked in a location during part of the year that would mean it's obstructing your wind turbine, that's not good either. Use your head and consider the location from the standpoint of a "permanent" wind turbine installation. It doesn't matter if you are designing your wind turbine to be something you can easily remove. You have to plan like it's planted into the ground with concrete when you choose where it will be set up. Because if it works well for you, you're not going to take it down.

Make Sure There Are No Obstructions

The next thing — and this is really important — is that whatever location you choose, it must be free from any obstructions that block the wind. If you live next to a hillside that naturally shields you from strong breezes, wind power probably won't work on your property. If you have plenty of wind on your property, setting up your turbine next to a barn, your house, or anything else that blocks the breezes simply will not work.

Don't just think in terms of permanent structures and natural obstructions, either. If you're locating your turbine somewhere that vehicles are occasionally parked, and if the angle is such that it would obstruct the wind (such as a house on a hilltop), you need to rethink where the turbine will go.

Always choose a location that can be used all year-round, and also free from wind obstructions ALL THE TIME.

The Higher The Voltage, The Greater The Distance

We've said multiple times that everybody's setup is going to be different. A lot depends on which type of motor you purchase (because let's be honest, nobody's building a motor from scratch). The more power your wind turbine produces, the farther away it can be from the spot where your wires go.

In other words, your wind turbine will be on top of the pole. It will consist of blades that are turned by the wind. The blades will turn a hub connected to the motor (such as by an axle of some sort), and that turning generates electricity that must go somewhere. The electricity will flow through wires from the motor to where the power is eventually collected in your power box (again, we'll get to that).

The distance between the turbine and the power box should be as short as possible, so that you can maximize the amount of power you can collect. However, the more powerful the motor, the farther away your setups can be.

Choose A Pole With Guy Wires

Okay, so how do you put your wind turbine on top of a pole? A free-standing power that looks like something that used to stand over

old oil rigs is certainly one way to get your wind turbine up into the air. Building one, for most people, is probably too labor-intensive and expensive. The good news is, you don't need that, just to get a wind turbine up into the air. And you can build to whatever size you can manage, based on your budget and the materials available to you.

Get yourself a big metal pole. It could be a massive pipe, a flag pole (if it is strong enough to hold the weight of the turbine), or any other pole that can take the weight and stress of the turbine. Using brackets (and you can do a little online research to find the right brackets for this purpose) you can then run a steel cable to hold it upright (or any other kind of guy wire strong enough for this task). Anchor the cables the best way that makes them as permanent as you need to be.

Now, yes, this is all very general. But picture this: You use a large metal pipe to form the tower. You use chain link fence brackets and steel hose clamps to secure the guy wires to the pipe. The guy wires can be anything from rope to steel cable to everything in between, as long as they're strong enough.

The guy wires hold the pole upright. The opposing force of three or four wires pulling the pipe in different directions is what holds it upright. You can secure the guy wires with stakes, you can build them into the ground permanently by digging holes and filling it with concrete, and you can secure the pole itself either by building a platform base (like the base of a table lamp) or again digging a hole and filling it with cement. The advantage of a wind turbine on a flat base

with tent-staked guy wires is that it can be moved around your property if you choose to do so.

Another advantage of using a metal pole is that it is hollow, which lets you run your wires down through the pipe to protect them from the environment. Pipe fittings make a great way to work all this out, and there are lots of tutorials online for the exact size and type of pipe fittings you would need to make this work.

To Sum Up

Planning your wind turbine comes down to these steps:

- Make sure your property has an average wind of 10 miles per hour.
- Determine the prevailing wind direction.
- Choose a location that is usable all year-round.
- Make sure that the location is free from any obstructions.
- Locate your power box as close as you can to the turbine, understanding that the more powerful the turbine's motor, the farther away the power box can be placed.

Once you have all that planning out of the way, you're ready to build your own turbine system. You have a lot of choices, and again, everybody's setup is going to be different. Your choices may be influenced by what you need or what you can make. For example, whether you need an inverter for the power you collect depends on

whether the motor you choose generates direct current (DC) or alternating current. But if you follow the conceptual guide we layout for you here, you'll be able to make informed decisions (and research the details of the rest). That's why this book makes such a great road map for building your own wind turbine.

Ready to start in on the specifics? We thought you were. Read on.

Building The Wind Turbine

Every wind turbine consists of the same basic components.

- The fan blades are mounted to a hub and usually an axle to connect them to the motor. The exact type of connections you need will depend on the motor you buy.
- The wind turns those blades, which turn the motor. “Motor” in this case refers to a generator. The motor, in other words, generates power when it is cranked. You won’t need to worry about a gearbox because your blades will be turning a motor that has the necessary components inside. You can buy these motors and they aren’t expensive.
- The motor, connected to the blades, is mounted on something (which could be as simple as a two-by-four) and has a big tail on the back, like the tail fin of an airplane. This provides for “yaw” so that the wind will push the turbine around so it is always facing INTO the wind.
- The two-by-four on which everything is mounted is affixed to the pole in such a way that it will pivot. There are lots of pipe fittings you can use to do this. If you drill a hole for the wires through the two-by-four, you can then run the wires from the motor down through the pipe to protect them. Make sure you do a little research

on how to prevent your wires from getting twisted up by the turning motion.

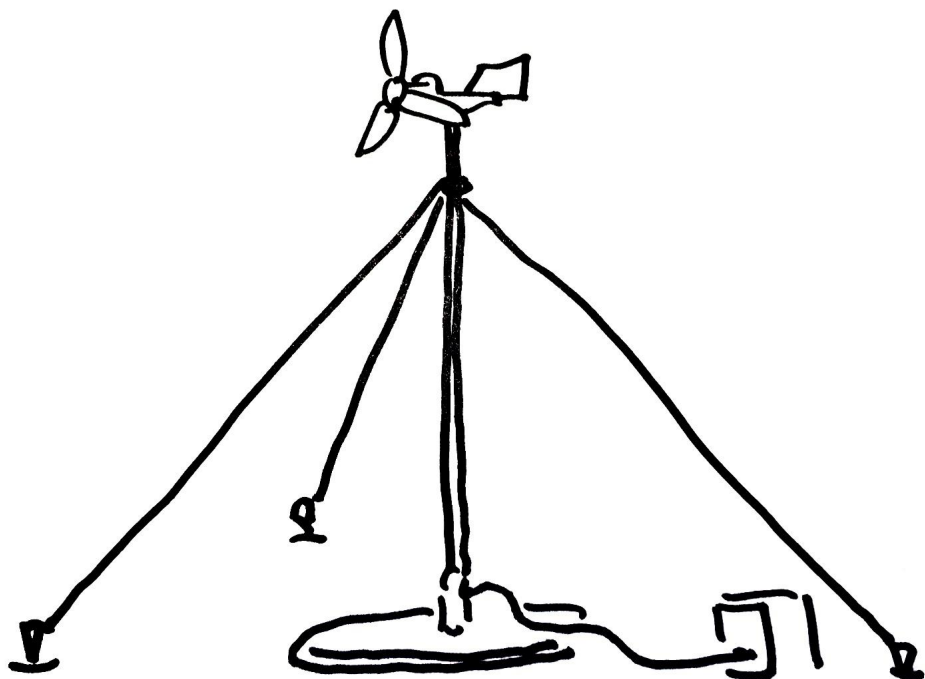
- The pole is mounted to a base and held in place with guy wires or cables.
- The wiring running down from the pole then runs to the power box where the electricity is connected (we'll cover the power box in the next section).

The Tower

Your tower is just a pole. If you use piping/conduit, there are lots of pipe fittings that can be used for mounting to the pole to base, mounting the turbine itself to the top of the pole, and so on. There are also fittings for giving the wires someplace to come out. The exact arrangement is up to you, as is how “permanent” you can make them. For example, several pieces of pipe connected with fittings could allow you to break down the whole setup for transportation, such as for use when camping.

Picture it: You get where you want to go with your tent or your camper, you break out your power generation equipment, assemble your pole, run your guy wires, secure them with tent stakes, and connect the wiring from your turbine to your power box. Now you have an off-grid power station while camping, bugging out, or anywhere else you want to stay off the grid while also staying reasonably mobile.

Of course, the whole thing could be a much more permanent setup if you secure the pole and the guy wires with cement, etc. That's up to you and it has to do with just how you intend to use your wind turbine.



The Blades

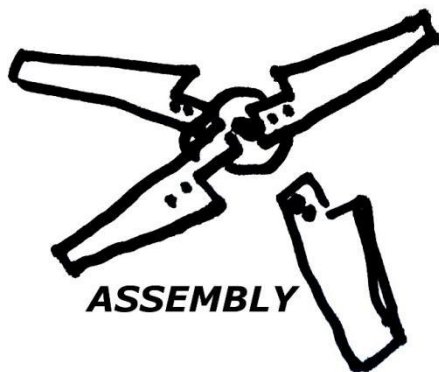
A lot of do-it-yourselfers make blades from large-diameter PVC pipe. PVC is just plastic, and it's easy to cut with a PVC saw. (You can also heat it and mold it, then let it cool in different shapes.) If you cut a “sort of flat” section out of the PVC, what you have is a sheet of plastic with a slight curve to it — exactly what you want for wind turbine blades.

Mount the blades to a central hub (literally just a round piece of metal, or another pipe fitting, that you pick up at the hardware store) and/or to an axle, depending on the type of motor you buy. The idea is, you want the wind to turn the blades so they turn the motor.

Make sure whatever you pick isn't too heavy. You don't want your blacksmith friend to make you up some wrought-iron fan blades, for example. They've got to be light enough so the wind will turn them, and whatever they're connected to has to be light enough to turn the motor without wrenching it off its base. There are LOTS of online tutorials with specific examples of these types of setups. It's up to you to choose which one you want to go with, based on the size and location of your turbine.



FAN BLADE FROM PVC PIPE



ASSEMBLY



HUB

The Yaw Control

Yaw control is a fancy way of saying you want your turbine to face into the wind. Think of a weather vane. A weather vane has a big tail fin, like the tail of an airplane, that catches the wind. The wind keeps pushing against this tail until the weather vane is pointed into the wind (at which point the flat face of the tail is perpendicular to the wind direction). Your yaw control for your wind turbine is the exact same thing: A big, flat piece of material, made of wood or even plastic (you could use a sheet of Plexiglas from the hardware store, for example), that catches the wind and turns the turbine on its pivot at the top of the pole.

The Motor/Generator

An induction generator or other motor — some of which are specifically labeled as being for wind turbines — can be bought online. You need to buy one that provides the most amount of power for the least amount of weight and can still sit on top of your wind turbine's framework (such as two-by-four). In other words, you have a LOT Of choices. Some tutorials online list specific types and sizes of motors, but we leave it to you to choose what works best. You're basically buying a big, magic cylinder that, when turned, produces electricity. You'll then run wires to this motor/generator so that the electricity produced flows away from the motor to wherever your wires lead.

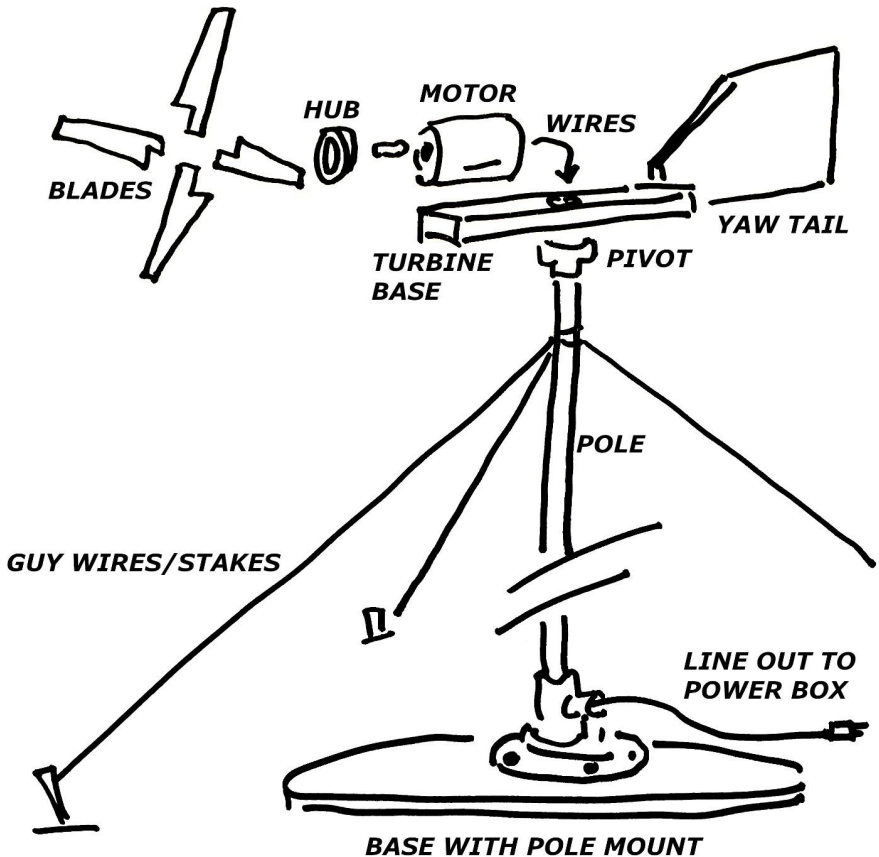
Wires to the Power Box

The electricity produced by your motor has to go somewhere. The wires will lead down from the generator (preferably inside the pole on which the generator is mounted) and away from the turbine to your power box. The power box is a separate set of conceptual instructions, which comes next.

We've separated the power box because it can be used with literally any power source, including solar. If you choose, you can set up a solar power array using the same layout for the power box to collect the juice you generate. After all, just because wind power is better than solar doesn't mean you should also gather free energy from the sun to supplement your wind power. Once again, it's all up to you.

Pulling It All Together

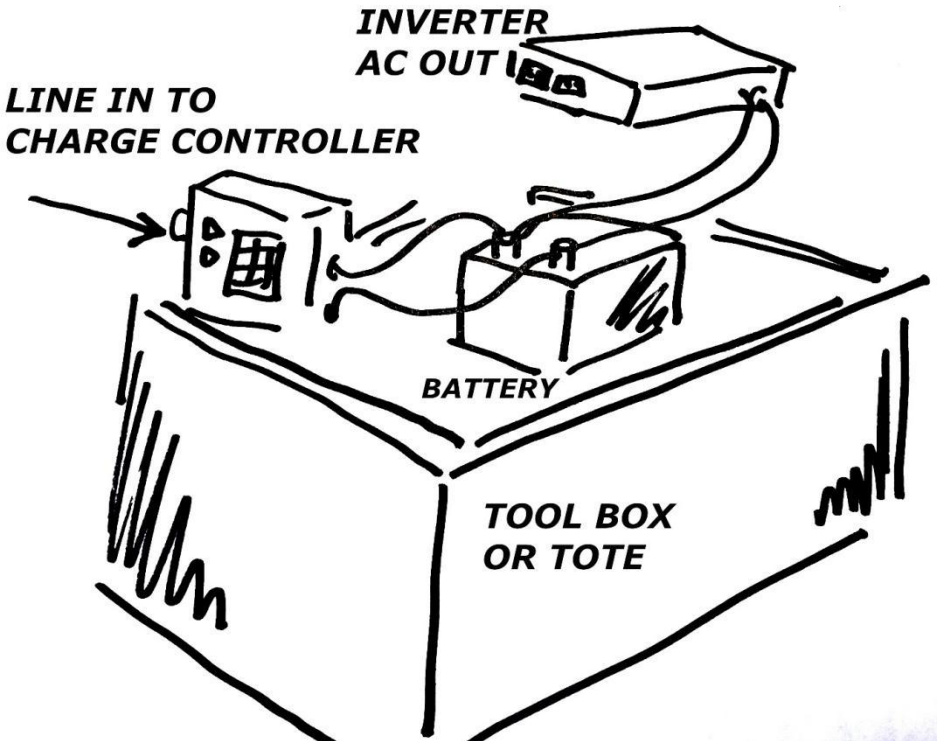
So, where are we now? Once you have your exact setup planned out, your basic wind turbine power generator will look like this:



It isn't complicated, and there are a lot of choices you will have to make to get from here to there... but the good news is, it isn't that much work at all. Better yet, you don't have to build it now.

Building A Power Box

The final stage of your project is building your power box. This is where your power is collected and used. The more powerful the wind turbine, the greater the length the wires can be between the turbine and the power box. Power boxes involve just a few simple components, all of which you can buy and connect. The exact size of the wiring will of course depend on the components you purchase.



There are even people who build parts of the power box from scratch, rather than buying commercial units. While you can do that if

you're something like an electrical whiz, it isn't necessary. If you're the type of person for whom that sounds doable (and even enjoyable), you don't need instructions from this book. Chances are, you already have the necessary tutorials and specs, or you can research them online. If, on the other hand, you don't fancy yourself much of an electrician, you don't have to worry. Everything you need, you can buy, and for not that much money, either.

By the time you read this, technology will have moved along that much farther, and the components will have gotten better (and cheaper) than ever. That's how technology works. Consider how much less bright and more expensive the first "tactical flashlights" were compared to modern LED flashlights, which are super cheap and blindingly bright. Power components are the same type of technology and they move just as fast as they get better.

Choose a Container

The first thing you need is a container for the power box. In some ways, we are putting the cart before the horse, because your container has to be big enough for your other components. You don't know how big the box has to be until you know how much space the other components take up. What we suggest is choosing a container, then determining whether the other components will fit. If you come up short, resize your container accordingly.

You can plan all these things out before you buy, and if you're the sort of person who has a shop, a garage, or barn full of old stuff that you might be able to leverage for a project, you can always choose from what's already available to you and upgrade accordingly.

Many people make power boxes out of large toolboxes. These have the advantage of being sturdy, and they have carrying handles that make moving the power box easy. Just make sure that whatever you choose, you can cut the holes in it to run wires if you want to and need to. A plastic container might be easier to work with than a metal one, as long as it is strong enough.

Wires From The Turbine Go To A Charge Controller

The wires from your wind turbine must go somewhere. The first place they'll connect is a charge controller. This is an electronic device that you can buy that regulates the flow of the generated power from the turbine to a battery for storage. You can't (or you shouldn't) just hook up a battery directly from the turbine. You want to connect the generator/motor to a charge controller.

The good news is that there are lots of charge controllers available in different sizes and ratings, many of which are intended for solar and wind power generation setups. Choose the one whose size and capacity fits your budget and the scope of your project. A little research will take you a long way, here.

Secure the controller in the charge box so that it won't shift around too much, run the wires from the turbine into the box and into the controller, and then get ready to hook the controller to your battery.

A quick note about assembling everything when there's actually electricity running through the system: Connect the power controller to the battery, then connect the controller to the cables from the generator/motor. Before there's any power running, this is less important, but follow that basic procedure anyway.

Also, when you start messing around with power and ground wires, make sure you follow all necessary safety procedures. And if you're the sort of person who builds a power controller from scratch, you'll want to follow electrostatic discharge procedures while you build. (If you regularly build electrical and electronic devices, though, you already knew that.)

Wires From The Charge Controller Go To A Battery

The charge controller puts out electricity that has been conditioned and regulated. Connect wires from the controller to your battery. This should be as large a battery as you can manage to fit in the power box, but it also has to meet your power requirements. All of these decisions flow from one to the next, which is why we can't specify what these SHOULD be. Once you make the decisions about the components involved, you can also connect them accordingly.

The battery itself could be as simple as a car battery (or a series of them wired together). Do a little research to see how this is done. It really isn't hard as long as you follow basic safety precautions and don't get "greedy." Trying to do too much could result in getting zapped or burned, so make sure you're careful as you go.

Wires From the Battery Go To An Inverter

Your battery, such as a car battery, will most likely be producing direct current (DC). You may not know it, but the war between direct current and the alternating current was one that Edison and Tesla waged back in the day. Edison is said to have gone around the country electrocuting animals with AC power as part of a campaign to prove AC was unsafe! These days, though, all your devices use alternating current.

If your battery is producing DC and you need AC to power your gear, what you need is an inverter. This is a common part of many solar systems and is incorporated in many wind turbine systems, too. The inverter turns the DC current from the battery into AC current that your devices can use.

Have you ever charged your phone through a USB connection in your car's cigarette lighter? That's an inverter, a device that takes DC power from your car's battery and turns it into the AC power that personal electronics use.

The Inverter Is AN AC Outlet For Your Devices

Your inverter becomes the “point of use” for your power generating system. Everything you’ve done to this point leads up to that. Some inverters are available that have multiple AC outlets, too.

Obviously, you can’t use more power than your inverter can provide. If you try, you won’t like the results. Choose the inverter that best suits the rest of your setup... and then use it to power your devices as your wind turbine generates an endless supply of free, off-the-grid energy.

Using Your Power Box And Wind Turbine

That’s it. That’s literally all there is to it. Once you have this setup built — be it mobile, intended for take-down and transport, or semi-permanent, for your off-grid homestead — you can generate power using the wind. These plans are endlessly scalable, too. By not giving you specific requirements, we’ve left you free to modify and adapt the design to whatever your resources and needs are.

The good news, too, is that this exact setup can be used with solar panels. Instead of connecting your power box to the output from the wind turbine, you connect your power box to the output from your photovoltaic cells (your solar panels).

There Are No Resources In This Book!

A lot of books on do-it-yourself and off-grid projects end with a list of resources. This has always seemed, at least to us, as kind of insulting. You're more than capable of looking up resources for projects of this type. In fact, for a lot of do-it-yourselfers, that's one of your favorite hobbies! Resources, especially those online, move fast, and there's nothing more annoying than buying a book for a project and finding that most of its references are already out of date.

As an off-grid citizen, as a prepared survivalist, you are a different kind of person. You are the sort of person who takes responsibility for the safety of his or her family. You are the sort of person who doesn't take for granted that the comforts of the modern world will always be there. That's why you're reading this book. That's why you are building your own wind turbine — or storing these plans for reference in case you DO need to build your own wind turbine in the future.

That's what makes you the kind of person that everyone relies on... and it's why you, and others like you, will always survive.

Good luck.