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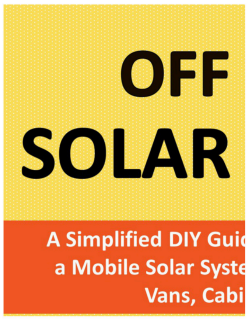
OFF GRID SOLAR POWER A SIMPLIFIED DIY GUIDE TO DESIGN AND INSTALL A MOBILE SOLAR SYSTEM IN YOUR



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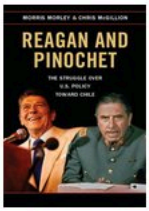

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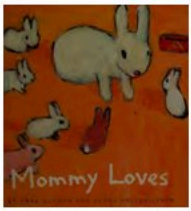
Real Estate Investment and Finance Strategies, Structures, Key Decisions (David Hartzell, Andrew



SAS Tracking Handbook (Barry Davies)



The Adaptation Advantage Let Go, Learn Fast, and Thrive in the Future of Work (Heather McGowan



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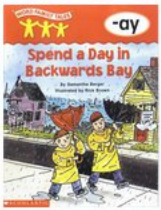

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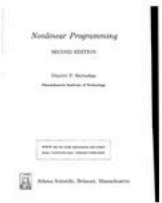

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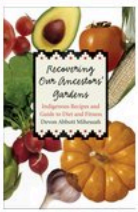

Recovering our ancestors gardens indigenous recipes and guide to diet and fitness (Devon Abbott

OFF SOLAR

A Simplified DIY Gui
a Mobile Solar Syste
Vans, Cabi

Off Grid Solar Power

A Simplified DIY Guide to Design and Install a Mobile Solar System in your Home, RVs, Vans, Cabins and Boats

Tyler J. Green

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onclusion

Introduction

olar electricity is a wonderful concept. The idea of taking powe rom the sun and using it for electrical power equipment is terrific irectly or indirectly, the sun supports all life forms and provide ll the power we need to exist.

he sun drives our weather and our climate. Without it, the eart ould be a frozen wasteland of ice-covered rock. Every hour, th arth is hit with more energy from the sun than the entire worl onsumes within a year.

o someone who has little experience in the solar system, installin solar panel, as well as knowing the right components to use, ma eem to be incredibly daunting. The truth, however, is that it i elatively simple to install your solar panel yourself. You need no ave a deep-rooted background in contracting work or wirin efore you decide to install your off-grid solar system yourself.

s a do-it-yourself enthusiast, once you have everything you nee o set up your off-grid solar system, you can go ahead to set it up ou do not need any help or technical assistance to set up unctioning off-grid solar system as assembling a solar system ha otten to a point where they are a plug-and-play type approach uppose you're planning on setting up an off-grid solar system; yo lready know that solar electricity is best for nature, nationa ecurity, and the air we breathe, not to mention your electricity bill ou've also probably heard that going solar can be cheaper tha aying for utility power.

olar power in the twenty-first century is expanding at remendous rate. Every time I go down the street, there's anothe ouse with solar panels on top of the roof or a traffic light syste hat has a small panel. Everywhere is going solar crazy, which i reat news.

nly a couple of wires are involved in installing an off-grid sola ystem, so if you're a DIY person, you can do this! Seeing thos omplex solar equipment and tools could steal anyone's confidence ut then, this book will show you how simple setting up an off-gri

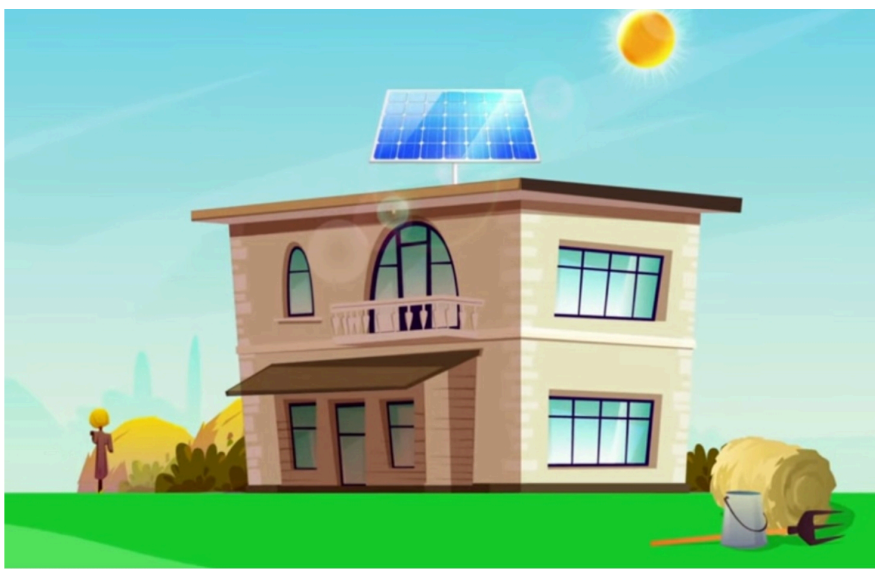
ervousness that comes with installing an off-grid solar syste ourself.

his book will also cover several other aspects like choosing th ight type of batteries to use and maintenance of your solar system part from setting up your solar system, you will also learn how t alculate the amount of load your home device draws and how t alculate the battery's capacity for an amount of load. Once yo ave successfully set up an off-grid solar system once, it's a lot lik ou learning how to ride a bicycle as you never forget or have t elearn the process again.

et's proceed to get your off-grid solar system running!

Chapter 1: Introducing Solar Energy

he science of turning sunlight directly into electricity is known a hotovoltaics (P.V.), referring to photons of volt and electricit ight. Solar panels contain solar cells, which are most commonl ade of silicon layers, a semiconductor material. When photons o ight from the sun enter a solar cell, they get absorbed and excit lectrons in the silicon layers, causing them to continuously mov nd flow through a wiring circuit that feeds into the P.V. system arnessing this electron flow is what provides you with electrica ower!



he electricity produced by your solar panels and used by al atteries is (D.C) direct current. For direct current, all the electron roduced by your solar cell move in one direction only. However our home's electrical system and most appliances use alternatin urrent (A.C). This is the principle behind solar power.

e cannot, however, use direct current to charge and powe lternating current appliances. This brings about the 'Inverter.' Th nverter converts the direct current supplied by the solar panel int lternating current that can be used for your appliances. For a lternating current, electrons move back and forth in alternatin irections about sixty times per second. Therefore, with a P.V

.C solar-generated electric current to usable A.C power for you ome or work appliance.

hy Choose a Solar electric system?

part from the financial benefits that solar has to offer, here ar ome reasons why you should go for solar:

. You should choose solar when the price of sustaining electrica ower is too much.

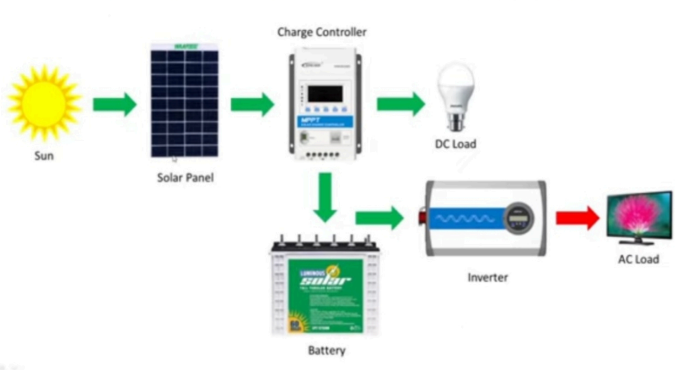
. You should choose solar when electric power in your area is no eliable or there is no other electric supply source.

. You should choose solar if the electricity supply in your area i oor. That way, with solar, it can act as a cost-effectiv ontingency.

. When your most safe and convenient option is a solar electri ystem.

ow Off-Grid Solar works

ith an off-grid solar set-up, you will mount the solar panel herever you want, safer as it is in a position where sunlight ca each it easily. The off-grid solar system does not have a utility grid nd therefore, the solar panel does not route to the utility grid. A ff-grid solar set-up is an obvious alternative to a ‘grid-tied sola ystem.’



or homeowners with no access or very difficult access to the utilit rid, off-grid solar systems are usually the best choice. Off-grid sola

ccess to electricity at all times. The backup generator is, however ptional. Off-grid systems also provide a solution for those wh ant to be energy independent.

typical off-grid solar system requires the following components i ddition to the P.V. solar panel for it to function fully:

- Solar Charge controller.
- Battery bank.
- D.C and A.C disconnect switches.
- System meter.
- Off-grid central inverters.
- Backup generators (optional but recommended)

he whole concept is to wire these components together to suppl urrent to the house.

ow how does the off-grid solar system utilize these components?

sually, when electricity from the solar panel flows first to th harge controller and through the battery bank, the battery ban ill store solar energy so you can have electricity at night or o loudy days. They usually are sized to keep your house running fo bout one to three cloudy days after fully charged.

n case of several weeks of cloudy days, the backup generators com n handy as they will provide electricity to replace the sun. It can b ueled with biodiesel, petrol, or diesel.

D.C disconnect switch is connected to the solar panel. It is used t nterrupt the flow of D.C electricity from the solar panel whe eeded.

he reason why electricity from the solar panel passes the sola harge controller before entering the battery is to protect you attery bank from under-charging or over-charging.

he system meter is then connected to your battery bank. Th ystem meter measures and displays your solar system performanc nd status, such as how full is your battery bank, how muc lectricity your solar panels are producing, or how much electricit s in use.

he electricity that flows from the solar charge controller passes th