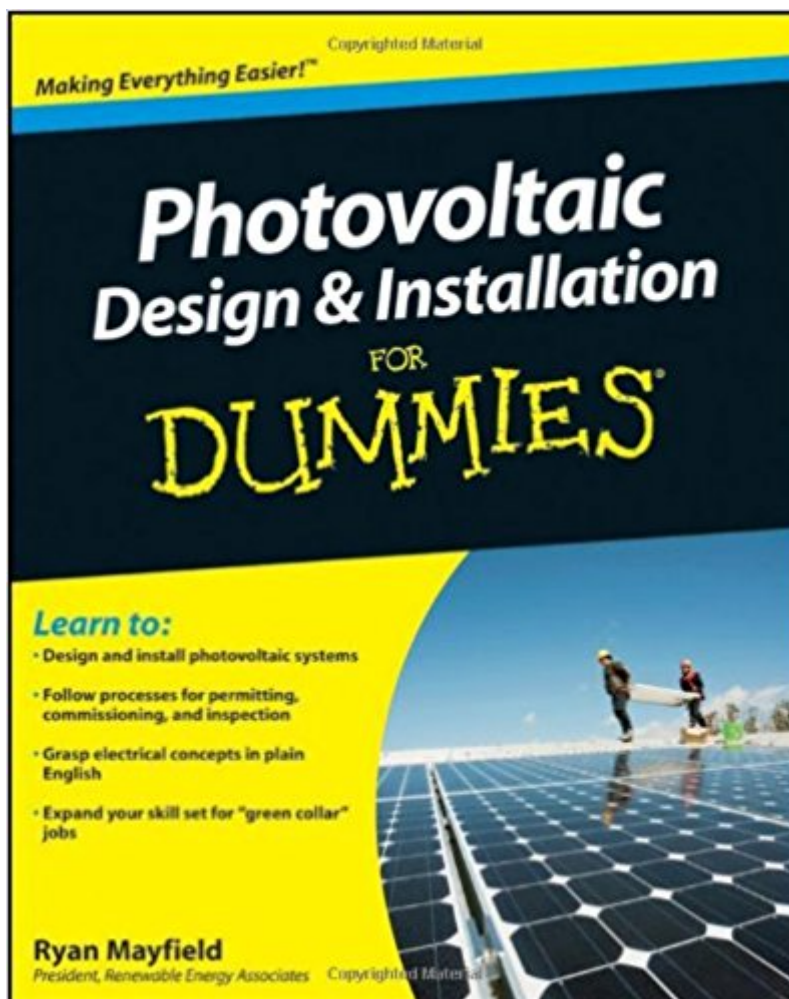


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# Photovoltaic Design And Installation For Dummies



## Synopsis

The fun and easy way to get a grip on photovoltaic design and installation Designing and installing solar panel systems is a trend that continues to grow. With 'green collar' jobs on the rise and homeowners looking for earth-friendly ways to stretch their dollars and lesson their carbon imprint, understanding photovoltaic design and installation is on the rise. Photovoltaic Design & Installation For Dummies gives you a comprehensive overview of the history, physics, design, installation, and operation of home-scale solar-panel systems. You'll also get an introduction to the foundational mathematic and electrical concepts you need to understand and work with photovoltaic systems. Covers all aspects of home-scale solar-power systems Viable resource for professionals, students, and technical laymen Can be used to study for the NABCEP exam Whether you're a building professional looking to expand your business and skills to meet the growing demand for solar power installation or are seeking a career in this rapidly expanding field, Photovoltaic Design & Installation For Dummies has you covered!

## Book Information

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## Customer Reviews

Get a grip on photovoltaic design and installation Are you looking to secure a job in the exciting field of photo-voltaic design and installation? This hands-on, friendly guide covers the workings of residential and small commercial-sized photovoltaic systems and gives you the essentials you need to safely install a system from start to finish. Shed some light on PV systems - get the

scoop on electricity basics and how the sun-earth relationship affects where a PV system will (or won't) work • Dig into the nitty-gritty of components • understand the technologies used in all types of PV systems, from modules and batteries to charge controllers, inverters, and more • Know that size matters • discover how to properly size a grid-direct system, a battery-based system, wiring, and safety devices • Safety first • follow helpful guidance for staying safe anytime you work on a PV system, from general construction and battery safety to working on ladders and roofs • Break ground • learn how to assemble mechanical parts and integrate electrical elements to put together your PV system • Open the book and find: Advice on figuring out which system type is right for you • Plain-English explanations of electricity basics • How to properly select a site for a PV system • The lowdown on PV modules, batteries, and other system components • Guidance for sizing the most common PV systems, as well as wiring and safety devices • Pointers for permitting, commissioning, inspection, and maintenance • Learn to: Design and install photovoltaic systems • Follow processes for permitting, commissioning, and inspection • Grasp electrical concepts in plain English • Expand your skill set for "green collar" jobs

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I'm coming at this as a homeowner and generally handy person who's up for a bit of a challenge, wanting to install my own PV system on the roof of my Southern California home. There seem to be a lot of books on solar power that are just kind of informational and theoretical and don't really tell you how to actually plan & install a system in a hands-on practical way. This is one of the few that actually aims to do that. Looking at a finished PV system sitting on someone's roof, it is kind of deceptively simple. And the nuts and bolts of installation are not that hard, if you can do electrical work, it's not that different from any other kind of electrical equipment installation. BUT. The planning and understanding the components is really quite a challenge. The equipment has very unique properties. You have to analyze your electrical needs, survey the site and it's solar potential, understand the impact of the daily and seasonal workings of the sun and weather, figure out if you want batteries and how much battery power you need, and understand the main components, the solar panels themselves, the charge controller, the inverter, and the circuits and safety provisions. Sizing all the components. Permitting and nuts and bolts hardware installation. The book covers all

of this, for the most part, in an organized, disciplined, and reasonably thorough manner. In fact, the book seems to have even higher goals than mine, which is just to plan, install, and manage my own home system. This book is also overtly aimed at those interested in becoming a professional PV installer. You'd be pretty well grounded in that goal having thoroughly absorbed this book, along with some experience actually installing some systems, I think. Is it perfect? No. For one thing, it's a "For Dummies" book so the introduction and organization are, frankly, kind of ridiculously repetitive. He tells us what he's going to tell us about 7 times - not exaggerating - before he actually starts the telling. And then at the start of each chapter, he tells you what he's gonna tell you another two or three times for good measure. Tiresome. This book is not really for dummies wanting to get a little basic information. True dummies, I think, are not going to be installing their own PV systems. It's for people with some ability who want to become experts. There are a few things that could simplify things for a lot of people. Yes, it's good and necessary to be able to analyze someone's electrical needs by going around to each appliance and light and electrical load and checking it's wattage and the owner's usage patterns. But there's an easier and even more accurate way that most solar pros make use of, which is to simply check the past electrical bills for average daily, monthly and seasonal energy consumption. That's not an estimation, that's hard data. And you're gonna want to do this even after you do a load analysis just to double check your work. Sure, newly constructed buildings won't have past electric bills. But a lot of cases certainly will. But absolutely no mention of this tactic is made in the section on load analysis. Really odd. Next, I would have liked to see some representative, carefully chosen, very specific examples of actual completed solar installations to illustrate in concrete terms the main types of installations (grid direct, stand-alone battery, and grid-connected with battery back-up.) How they were sized. The specific components used. Photos of the installations. That would have been immensely helpful in seeing how all the separate steps are brought together to a completed whole. There's nothing like that. This leaves all the separate chapters on various stages of the planning and execution seeming still theoretical and somewhat abstract. There's not a single actual photo in this book. The diagrams and charts are fairly good. But not enough. On balance, this is still a very good book with most of the critical theory and information in one place that you are absolutely going to need to do a proper PV installation. Are you really going to be ready to immediately plan and build a PV system? Probably not quite. But you'll have a very thorough grasp of what all the considerations are.

This is an excellent introduction to solar power. It is very well written by a man that obviously knows his subject. It is lucid and yet apparently comprehensive. I have a hard time getting my head around

many principles of electricity, but Mr. Mayfield gently nudges me along with illuminating analogies and precise, simple and understandable language. I have tried other books on the subject written by electrical engineers but my eyes have quickly glazed over. Although I usually pass by anything in the "Dummies" stable, this book is worth every penny and then some. Thanks to Mr. Mayfield for the considerable work that obviously went into the production of this fine technical publication.

This is the best of the half dozen books I have read about solar electricity generation. All the other books I have read teach you about solar systems in general but don't give you enough of the nitty gritty nuts and bolts details to actually put one together. This book literally tells you what nuts and bolts are needed. After having read the book I'm more excited about the info in the book than the prospect of actually being a PV installer. The trade sounds like a challenging if not overwhelming combination of electrician, electrical & electronic engineer, roofer and contractor. All signs indicate that PV has a bright future hardy har so for those who wish to get into the trade this is an excellent place to start and probably all the book learning you'll need.

This book is a great introductory book for someone thinking about taking on a small to medium size solar project, or for someone wanting to install PV on their own home. The book starts from fundamentals and does not assume any prior knowledge. A great book for someone wanting to know the fundamentals of PV.

Very well organized book for the do it yourselfer who wants to install a PV system in their home. Only drawback that I saw was the lack of info on installing a PV system with microinverters. After doing some other research, the microinverter option is really the simplest way to go.

This is the first 'for Dummies' publication I have read from front to back. I truly enjoyed the authors perspective and unique sense of humor as he delivers concepts that some readers may have a difficult time grasping. However, from my point of view, everything said in the book was straight forward and very sensible in delivery with practice examples and applications for either the home owner or the contractor. As an electrical engineer, I would have appreciated more explanation of the P-N junction and mathematical functions, but unless I pay \$400 for a college level text this is about the best I will get. Very happy with the purchase and the material in it.

Presents a lot of good, useful information. It would have been much better if a complete real-life

example had been included at the end that tied together all of the concepts presented. Also, more information on specific hardware pros and cons would have been helpful.

Good information. Worth it for me.

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