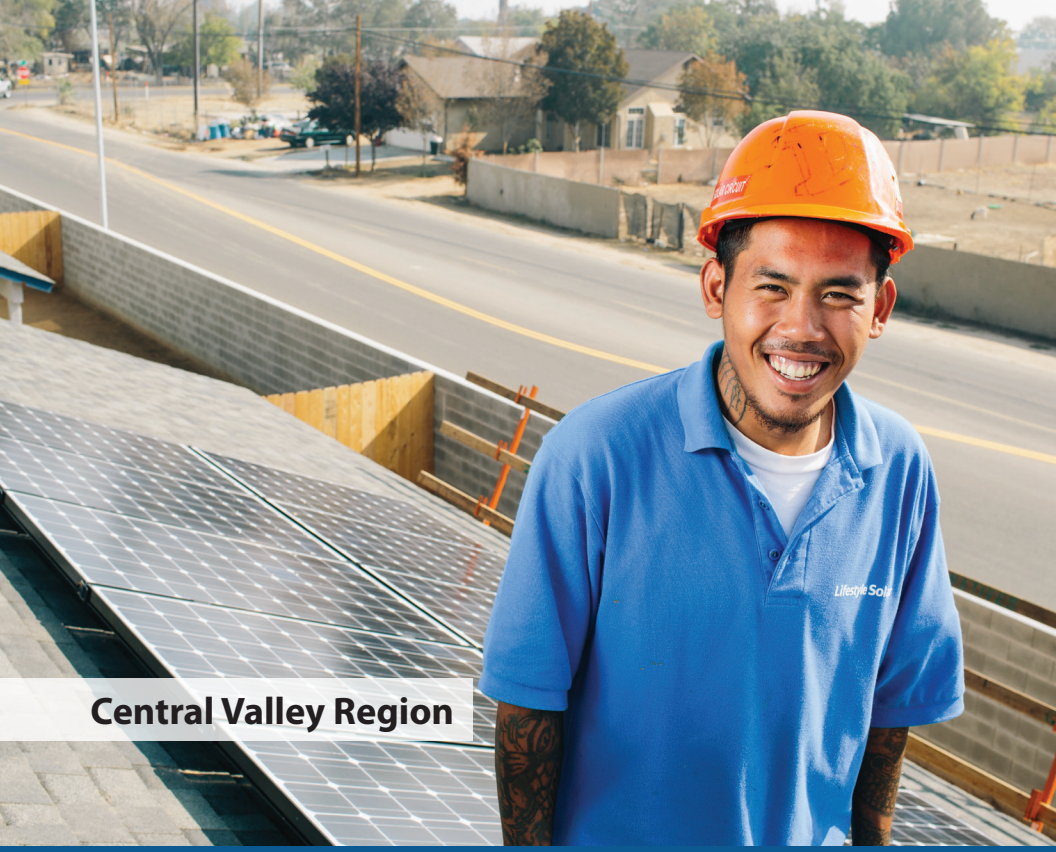

Central Valley Region

2015-2016

Solar Jobs Guidebook

GRID ALTERNATIVES

Compiled by

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Thanks to Wells Fargo for its support

of our workforce development program.

Solar Jobs Guidebook

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GRID Alternatives
Fresno Local Conservation Corps

INTRODUCTION

The solar industry has been an important part of America's economic recovery. Since 2010, the United States solar market has seen enormous growth, adding more than 115,000 new solar jobs. One factor holding back even more remarkable growth has been the lack of a trained workforce; in fact a recent survey reported that more than 75% of employers in all solar sectors reported having difficulty finding employees. This Solar Jobs Guidebook was created to provide a road map to industry jobs to help job seekers access opportunities in this growing industry.

GRID Alternatives is a nonprofit solar installer whose mission to make renewable energy technology and training accessible to underserved communities. Through a volunteer and job training model, GRID Alternatives gives individuals the opportunity to get real world, hands-on experience in the solar industry and related fields. GRID's work supports the solar industry's continued growth and advancement by providing a pipeline of job-ready candidates to meet the ever expanding demand for workers.

Over the last year, GRID Alternatives Central Valley (CV) has continued its commitment to helping build a properly trained and job ready workforce in the region. GRID CV has trained over 720 volunteers in solar using its Classroom on the Roof model. GRID Central Valley has achieved this success through the creation of exceptional partnerships with organizations like PROTEUS, Inc., Central Valley Opportunity Center California State University, Fresno State, KCCD and numerous other community based organizations. At GRID Central Valley we understand one thing: well-trained volunteers make great employees. We look forward to continuing to serve industry needs through dedicated safety training and teaching with state-of-the-art tools and equipment.

Special thanks for all these efforts must go to our colleagues in GRID Alternatives Greater Los Angeles office for pioneering the development of GRID's first Solar Jobs Guidebook. We would also like to acknowledge Volunteer and Workforce Coordinator Karina Gonzalez; Volunteer Training Assistant Michelle Barron; and GRID CV's Development Officer Jesse Arreguin, for their successful efforts to build partnerships connecting our volunteers and job trainees to opportunities that provide gainful employment in the solar industry. We hope the information in this guide helps to illuminate the way forward.

Tom Esqueda
EXECUTIVE DIRECTOR
GRID Alternatives Central Valley

SOLAR JOBS

PREFACE

This Solar Jobs Guidebook is broken down into four primary sections:

I. SOLAR JOBS OVERVIEW

This section provides an overview of three major job tracks that are most accessible to entry to mid-level candidates, construction, design and sales & marketing.

II. JOB TRACKS

This section provides a detailed description of specific, entry level employment opportunities and potential career paths within each of the three categories of accessible jobs.

III. INSIGHT FROM EMPLOYERS

This section provides insight into what employers are looking for in potential candidates. It also takes a look at the corporate cultures of some of the top residential solar companies in the Southern California region.

IV. TRAINING AND RESOURCES

This section provides links and resources that can be used to learn more about potential employment and career opportunities within the solar industry.

SOLAR JOBS

SECTION ONE

SOLAR INDUSTRY OVERVIEW

Solar energy is a clean, renewable energy source that may be used to compliment or supplement conventional energy sources. Solar energy has many benefits and applications, including heating water, generating power to operate remote equipment, and helping to reduce overall utility costs by reducing the use of grid power. [1]

Today, thousands of people power their homes and businesses with individual solar photovoltaic (PV) systems. Utility companies are also using PV technology for large power stations. Solar panels used to power homes and businesses are typically made from solar cells combined into modules that hold about 40 to 60 cells. A typical home energy system will use 10 to 20 solar panels. The panels are

mounted at a fixed angle facing south, west, or east, or mounted on a tracking device that follows the sun, allowing them to capture the most sunlight. Many solar panels combined together to create one system is called a solar array. For large electric utility or industrial applications, hundreds of solar arrays are interconnected to form a large utility-scale PV system. [2]

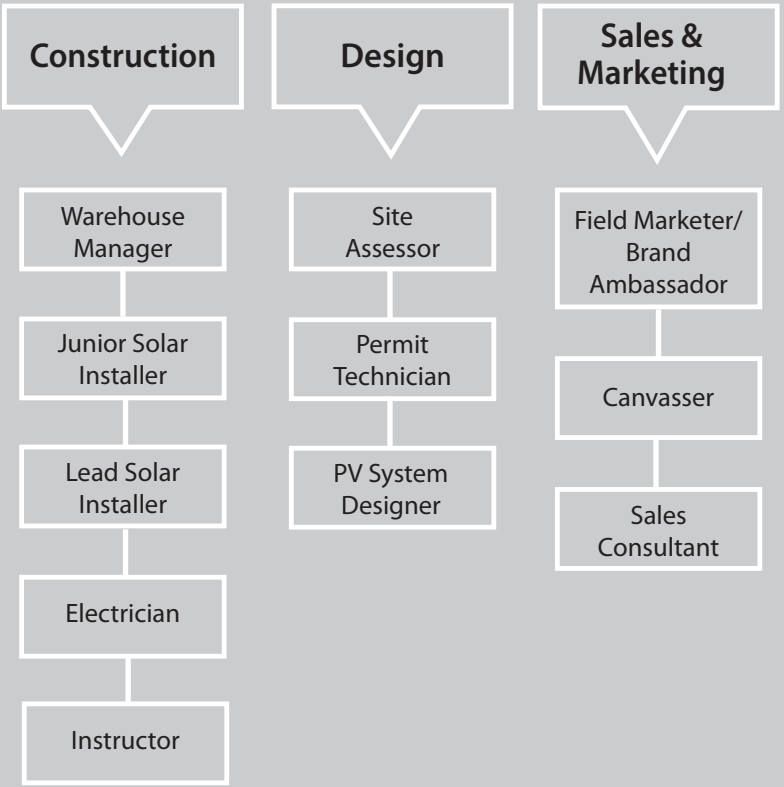
Europe is the most advanced market for solar energy generation. Germany leads the world in installed solar energy capacity, followed by Italy, the US, Spain, and China. China dominates manufacturing of PV cells, the leading technology used to produce solar power, accounting for about two-thirds of global production. [3]

The US solar power generation industry includes about 240 companies that provide a small but growing amount of the nation's electricity. Overall, solar energy accounts for less than one percent of the energy consumed in the US. [4] This makes the potential for future growth massive.


GRID

Solar Industry Jobs- Entry to Mid-Level

The solar industry can be broken down into three main job tracks. They are **CONSTRUCTION**, **DESIGN**, and **SALES & MARKETING**.



Under the main job tracks are the specific job titles that fall with in each of these catagories. You can find a more detailed description of each job listing in the **Job Tracks** section of this booklet starting on page 15. All occupations are broken down by salary, responsibilities, qualifications and benifits. We also include case studies of individuals who are now in the solar industry and how they got there.

JOB TRACK ONE

CONSTRUCTION

According to the US Department of Labor-Bureau of Labor Statistics, employment of construction laborers and helpers is projected to grow 25 percent from 2012 to 2022, much faster than the average for all occupations. Laborers and helpers work in all fields of construction, and demand for these workers will mirror the level of overall construction activity. The median annual wage for construction laborers and helpers was $29,160 in May 2012. [5]

Most construction laborers and helpers learn their trade through short-term on-the-job training. There are usually no specific education requirements.

DUTIES TYPICALLY REQUIRE:

- Basic tasks that require physical labor on construction sites
- Work at great heights or outdoors in all weather conditions
- Working knowledge of solar panel components, equipment, and installation

THE FACTS:

Solar Employment:

Eighty-three percent of the more than 35,000 new solar workers added in 2015 were new jobs, rather than existing positions that have added solar responsibilities, representing 29,000 new jobs created.

- Since the last census in 2014, one in every 83 new jobs in the U.S. was created by the solar industry, representing 1.2% of all new jobs.

- Installation represents the largest solar employment sector, at nearly 57% of all solar jobs, and is projected to add more than 20,000 jobs in 2016.

- Solar employment overall is expected to grow by 14.7% over the next 12 months, representing the addition of approximately 30,000 new solar workers.

- Employers from each of the solar industry sectors examined in the census expect significant employment growth over the next 12 months, with all of them projecting percentage job growth in the double-digits.

- Wages paid by solar firms are competitive, with the average solar installer earning $21 per hour, which is comparable to wages paid to skilled electricians and plumbers and higher than average rates for roofers and construction workers. Salespeople earn an average of $28 per hour, while production and assembly workers average $18 per hour.

- The solar industry is a strong employer of veterans of the U.S. Armed Services, who constitute 8.1% of all solar workers – compared with 7% in the national economy.

Source: The Solar Foundation 2015 Solar Jobs Census.

JOB TRACK TWO

DESIGN

Those in the design sector of solar typically perform site-specific engineering analysis or evaluation of energy efficiency, and solar projects involving residential, commercial, or industrial customers. They may also design solar domestic hot water and space heating systems for new and existing structures, applying knowledge of structural energy requirements, local climates, and solar technology.

SOME OTHER RESPONSIBILITIES MIGHT INCLUDE:

- Conduct engineering site audits to collect structural, electrical, and related site information for use in the design of residential or commercial solar power systems
- Design or coordinate design of photovoltaic (PV) or solar thermal systems, including system components, for residential and commercial buildings
- Create checklists for review or inspection of completed solar installation projects
- Create plans for solar energy system development, monitoring, and evaluation activities
- Develop design specifications and functional requirements for residential, commercial, or industrial solar energy systems or components
- Provide technical direction or support to installation teams during installation, start-up, testing, system commissioning, or performance monitoring
- Review specifications and recommend engineering or manufacturing changes to achieve solar design objectives
- Test or evaluate photovoltaic (PV) cells or modules

JOB TRACK THREE

SALES & MARKETING

Sales & marketing is defined as the creation, communication, and delivery of value as well as the management of customer relationships for its lifetime. [6] Marketing and sales/sales management work includes market research, connecting with customers, building strong brands, shaping the market offerings, delivering and communicating value, creating long-term growth, and developing marketing strategies and plans. [7]

Sales representatives are an important part of the deployment of solar to the end user. Sales representatives' primary duties are to make wholesale and retail buyers and purchasing agents interested in their merchandise and to address any of their clients' questions and concerns. Sales representatives demonstrate their products and explain how using those products can reduce costs and/or increase sales. [8]

DUTIES CAN INCLUDE:

- Study target audiences and building advertisements around those target audiences
- Expand the needs of returning customers and the acquisition of new customers
- Stay abreast of new products and the changing needs of their customers in a variety of ways
- Attend trade shows at which new products and technologies are showcased to meet other sales representatives and clients and discuss new product developments
- Participate in company-sponsored meetings to review sales performance, product development, sales goals, and profitability
- Follow leads from other clients, track advertisements in trade journals, participate in trade shows and conferences, and may visit potential clients

Our job profiles have been put together based on feedback from solar companies and the aggregation of solar job postings in 2014.


Madera, CA

CONSTRUCTION JOBS

WAREHOUSE MANAGER

YEARS OF EXPERIENCE

- 1-3 years

EDUCATIONAL LEVEL AND QUALIFICATIONS

- Most require high school degree or the equivalent, and provide on-the-job training
- Preferred qualifications:
    - o At least one year of field and classroom experience in solar
    - o Entry-level PV exam, apprenticeship, or Associate's degree

AVERAGE SALARY

- $26,760/year OR $12.86/hour

RESPONSIBILITIES

- Assist at construction job sites, supplying or holding materials or tools for solar installers
- Clean the work area and equipment
- Organize and maintain inventory in warehouse
- May also engage in many of the same activities as more experienced installers, including: Preparing the installation site, Designing system's layout based on characteristics of the site; Measuring, cutting, assembling, and bolting structural framing and solar module; Packing and unpacking the truck and assembling components

REQUIREMENTS

- Have some general electrician or plumbing knowledge (Preferred)
- Fast learner
- Ability to follow directions
- Problem solving skills
- Basic math skills
- Physical dexterity
- Resource management
- Communication skills
- Familiarity with the installation process
- Ability to work on a roof, outdoors, and/or in cramped quarters
- Possess a driver's license and successfully pass a drug test

JUNIOR SOLAR INSTALLER

YEARS OF EXPERIENCE

- Preferred 1-3 years

EDUCATIONAL LEVEL AND QUALIFICATIONS

- High school or equivalent
- Preferred qualifications:
    - o Previous experience in PV installations, roof work, general construction, or carpentry
    - o Certification from an accredited program
    - o Some PV technical training
    - o Basic understanding/experience with electrical wiring of AC and DC systems
    - o Experience working with all types of building materials (stucco, wood, concrete, etc.) and various roof types (shingle, concrete, metal etc…)

AVERAGE SALARY

- Starting $14.75/hour up to $21/hour

RESPONSIBILITIES

- Assist with site preparation and clean up, and complete installation reports and paperwork
- Maintain a clean work site
- Maintain inventory of equipment for each installation
- Pull inventory for each installation jobl
- Pre-assemble job components in the warehouse.
- Electrical wiring of solar array/system (AC and DC)
- Identify electrical, environmental and safety hazards associated with the installations and identify methods and locations for laying out, orienting, and mounting modules or arrays to ensure efficient installation, electrical configuration, or system maintenance
- Install photovoltaic (PV) systems in accordance with codes and standards using drawings, schematics and instructions
- Follow safety protocol

REQUIREMENTS

- Experience with the safe use of manual and power tools
- Ability to work in extreme environments, e.g. hot sun, crawl spaces, ladders, roofs, etc.
- Ability to lift an average minimum of 50 lbs.
- Enjoy working on a team
- Strong interest in renewable energy
- Conduit bending skills
- A clean driving record, criminal background and drug test
- OSHA 10-Hour Construction Certificate
- Working knowledge of NEC (National Electrical Code)

SPOTLIGHT

Bryson Pagh

SENIOR SOLAR INSTALLER
SOLARCITY

"The typical day as a Senior Solar Installer is very busy. I start off the day around 6am with a safety meeting. Safety is our priority, so we make sure we meet all safety standards from beginning to end of the install. I help prep the materials and equipment prior to install. My crew and I install the panels while the Electrical Lead wires the whole system. We usually end our day around 2:30pm.

Before solar, I used to work in the masonry field and went back to school—Fresno City College to take classes in Photovoltaic Systems. My instructor, Robert Martinez had such a positive experience volunteering with GRID, that he recommended our class to participate on an install.

I started volunteering back in 2010 and participated in the Madera Solarthon. My volunteer experience with GRID positively impacted my life. Initially, I went in as a volunteer that had minimal experience in solar and now I work in the industry. I am grateful for the staff reaching out to me after all these years.

My advice for those interested in pursuing a career in the solar industry is, have a goal in mind to work towards. If you want to climb the ladder in the solar industry it is important to be dedicated and work hard. Make sure you follow all safety standards! Take extra classes in solar to enrich your knowledge within the field. I also recommend that you become entry level NABCEP certified which will illustrate to potential employers that you know the fundamental principles of solar. Lastly, know what you are getting into and have a realistic understanding of the Central Valley heat.

I want to say thank you to the GRID Alternatives staff for providing the essential volunteer experience that prepared me for the job as a Senior Solar Installer. I will have my electrician's license and be NABCEP certified by this coming Fall."

LEAD SOLAR INSTALLER

YEARS OF EXPERIENCE

- 2-5 years

EDUCATIONAL LEVEL AND QUALIFICATIONS

- Certification and/or some PV education is preferred

AVERAGE SALARY

- $20-$30/hour based on experience

RESPONSIBILITIES

- Supervise worksites in an efficient and safe manner
- Ensure quality work for work team
- Ensure timely completion of projects
- Constantly work to improve performance and productivity of team
- See installation through inception and completion
- Mechanical and structural mounting of racking, modules and electrical equipment
- Electrical wiring of solar array/system (AC and DC)
- Document completion of installations
- Maintain a neat and clean job site
- Attend training sessions on new products, installation methodology and safety as directed
- Represent the company in a professional manner at all times, consistently maintaining a professional and courteous attitude when dealing with residents, coworkers and the general public
- Perform other duties as assigned by management

REQUIREMENTS

- Experience in all aspects of PV installation
- Ability to work in extreme environments (example: hot sun, cold, crawl spaces, etc.)
- Must be willing and able to climb ladders, stairs, work on rooftops and work on feet for long periods of time
- Excellent customer service skills
- Professional and positive attitude and appearance
- Pass a pre-employment criminal and drug screen
- Clean driving record and a valid state driver's license
- Attention to detail
- Comfort working at heights and on rooftops with proper safety apparatus
- Ability to read and interpret drawings, sketches, layouts and wiring diagrams
- Good communication skills and the ability to interact positively in a team environment

ELECTRICIAN

YEARS OF EXPERIENCE

- 4-5 years of electrical installation and repair experience

EDUCATIONAL LEVEL AND QUALIFICATIONS (PREFERRED)

- Previous experience in PV installations, roof work, general construction
- Certification from an accredited program
- Advanced pipe bending skills
- Working knowledge of the NEC (National Electric Codes)
- OSHA 10 or willing to get certified
- Journeyman/Master license/C-10
- Solar/NABCEP certification

AVERAGE SALARY

- $50,000/year

RESPONSIBILITIES

- Ensure work performed is of good workmanship and compliant with current NEC and local codes
- Troubleshoot system problems and resolve electrical issues
- Work with local inspectors to satisfy local requirements and expectations
- Read and understand electrical and structural diagrams
- Assist with completion of installation reports and paperwork
- Maintain tool management standards

REQUIREMENTS

- Knowledge of solar components, technology, equipment, electrical, roof, and ground work
- Detailed knowledge of solar best practices
- Strong interest in renewable energy
- Ability to read and understand electrical wiring and structural diagrams
- Valid driver's license and clean driving record
- Mandatory employer drug testing, medical exam and reference check
- Ability to comfortably lift 50-100lbs, climb ladders, work with tools, and work in crawl spaces and on rooftops in varying temperatures
- Ability to perform advanced electrical calculations
- Knowledge of NEC and ability to navigate it
- Understanding of wire and conduit sizing and how to make adjustments for environmental factors
- Excellent customer service skills
- Excellent written and verbal communication skills
- Ability to thrive in a team environment
- Willingness to work in high, precarious places with outdoor weather conditions and risk of electrical shock
- Ability to work independently with minimum supervision in a fast-paced, high-growth environment.

SOLAR ENERGY INSTRUCTOR – (VOCATIONAL)

YEARS OF EXPERIENCE

- 1 – 5 years of experience with PV Installations; or equivalent combination of education and experience

EDUCATIONAL LEVEL

- Associate degree or higher from an accredited college or university in a related field
- 40 hours of training in advanced solar photovoltaics

AVERAGE SALARY

- $36,000 - $50,000 / yr. depending on experience

BENEFITS FOR FULL TIME INSTRUCTORS

- Full benefits package including health, vision, dental insurance
- Vacation, sick and holiday pay
- 401(k) retirement plan

RESPONSIBILITIES

- Instruct and trains students on basic knowledge leading to entry-level certification in PV installation and maintenance
- Demonstrates methods and procedures involved in PV installation and maintenance including, safety basics, PV applications, electricity basics, solar energy fundamentals, system components, PV system electrical and mechanical design, PV module fundamentals and troubleshooting
- Supervise, manages and maintains all training operations and equipment
- Develop and maintains lesson plans, course objectives and curriculum
- Assess local needs relating to course content and revises and adjusts curricula to meet local employer needs
- Counsel students both on an individual and group basis in the area of responsibility, motivation and self-confidence
- Complete all necessary paperwork and systems data entry in a timely manner, documents participant files, and prepares written reports upon request of the Supervisor
- Understand how position integrates with the strategic plan

REQUIREMENTS

- Knowledge of National Electrical Code (NEC)
- Knowledge of proper use of tools used in the electrical industry
- Must possess or qualify for a California Vocational/ Career Technical Education Teaching Credential (Credential requirements must be met within seven years)
- Ability to calculate figures and apply concepts of basic algebra and geometry
- Valid driver's license and a clean driving record
- Excellent communication skills

SPOTLIGHT

Daniel Gibby

SALES SUPPORT SPECIALIST
SOLAR NEGOTIATORS

"I wear many hats as the Sales Support Specialist. I am usually in the office answering emails and making phone calls to those interested in our company. I support the Sales team by providing leads, as well as allotting marketing dollars to market our company over the radio. I do everything from taking permits to get signed through the City of Clovis and Fresno, to educating clients on how to read their net metering statement, and tabling at various events.

Before solar, I attained my degree in Business Administration from California State University, Fresno. Following college I wanted to pursue my interest for outdoor recreation, so through a partnership with the Business Administration program, I participated in program where I had the chance to work in the National Forest. Through my experience of working in the forest, I became more environmentally conscious and wanted to have a job that shed light on my passion for a clean and sustainable environment. After I completed the program, I began to research environmentally conscious jobs within the Central Valley and found GRID Alternatives!

I worked for GRID Alternatives for one year as the Volunteer Coordinator. My experience working with GRID Alternatives was awesome…I learned so much! If it wasn't for GRID Alternatives, I don't know where I would be. The knowledge that I attained regarding solar equipment prepared me for my current job. In fact, because of GRID Alternatives during an in-house volunteer orientation, I met my future employer.

If you are planning on getting a job in the solar field, learn and absorb information from the experts and make it your own. Don't be intimated by the technical aspects of solar and remain confident in your abilities."

SITE ASSESSOR

YEARS OF EXPERIENCE

- Minimum: 6 months experience in solar panel installation
- Preferred: 1-3 years or PV3 or equivalent design

EDUCATIONAL LEVEL

- High School degree or equivalent
- Basic electrical knowledge regarding the main electrical panel
- Preferred: Apprentice-level or post-secondary credential; Certification

AVERAGE SALARY

- $15-$20/hour

RESPONSIBILITIES

- Evaluate sites in-person or remotely to determine how much energy can be harvested at a given location
- Assess electrical systems and understand NEC (National Electric Codes)
- Measure and document customers' roofs
- Understand and analyze roof construction
- Preform shading analysis using devices
- Calculate potential costs and savings
- Communicate site details to the company's solar designers and installation teams
- Coordinate and obtain all permits and environmental clearances
- Photograph completed work

REQUIREMENTS

- Valid driver's license and clean driving record
- Ability to lift and maneuver 32-foot folding ladder
- Ability to travel to multiple sites
- Experience with Solmetric SunEye, SolarPathfinder and other related programs
- Electrical/thermal and roofing knowledge
- Knowledge of NEC codes
- Strong customer service skills
- Be detail oriented
- Energetic, self-starter, and a strong desire for upward mobility
- Comfort and skill working in a fast-paced environment
- Proficiency with Microsoft Office

PERMIT TECHNICIAN

YEARS OF EXPERIENCE

- Preferred: Some knowledge of solar or construction

EDUCATIONAL LEVEL

- High school degree or equivalent

AVERAGE SALARY

- $12-$15 per hour

BENEFITS

- Incentive programs
- Medical, dental, and vision insurance included
- Opportunities to advance

RESPONSIBILITIES

- Prepare permit submittal packages in accordance with jurisdictional requirements
- Drive or mail permit packets to local municipalities
- Pick up any permits submitted immediately following the specified turnaround time
- Communicate with jurisdictional employees to understand any changes in permitting requirements
- Understand specific permitting requirements and provide that information to the team
- Work with local jurisdictions to move toward ideal permitting conditions
- Organize time efficiently each day to maximize resources
- Follow up with old cases and email appropriate departments to move accounts forward in permitting process
- Represent the company in a professional and friendly manner
- Maintain a clean and neat appearance wearing business casual clothing or company specific apparel

REQUIREMENTS

- Ability to successfully pass a pre-employment criminal and drug screen
- Clean driving record, valid state driver's license and comfort driving everyday
- Ability to perform some manual labor tasks
- Ability to collaborate with colleagues across the organization
- Excellent customer service skills
- Professional appearance and interaction
- Excellent verbal and written communication skills
- Excellent organizational and time management skills
- Strong computer skills

PV SYSTEM DESIGNER

YEARS OF EXPERIENCE

- 1-5 years of experience working with AutoCAD or other design program in similar or related field

EDUCATIONAL LEVEL

- Applied associates program that combines green building and residential PV system design
- Preferred: Bachelor's degree conferred or in progress in one of the following areas: Architecture/Drafting, Engineering, Environmental Studies, or a related major

AVERAGE SALARY

- $54,000/year or $26/hour

RESPONSIBILITIES

- Prepare technical Sketch-up/AutoCAD based drawings and ensure that designs meet the client's requirements. Plan sets include electrical schematics, structural details, and equipment specifications
- Collaborate with Sales, Project Managers and Installers to ensure the customer is satisfied with the look and performance of their PV system
- Work with local permitting jurisdictions to ensure that proposals and designs meet requirements
- Review site intake sheets provided by outside sales consultants, complete preliminary designs, and draft sales proposals
- Keep apprised of design and financial considerations and the general market with a goal of staying competitive and offering efficient options for clients
- Work both in a team environment and under little supervision

REQUIREMENTS

- Familiarity with the latest NEC, IRC, IBC, IFC codes and other regulations set by the local jurisdictions
- Knowledge of residential and commercial construction
- Ability to handle multiple projects simultaneously and independently, including prioritizing, organizing, and planning effectively to meet all deadlines
- Valid driver's license
- Ability to read and interpret building plans, building codes, technical bulletins, code books, and other related documents
- Excellent attention to detail
- Strong math skills
- Excellent customer service
- Strong communication skills, both written and verbal
- Strong technical aptitude
- Self-directed, independent, and solution-oriented
- Proficient in Windows XP Professional and/or Windows 7, Microsoft Office suite including Excel and Word, and learning program design software
- Preferred: Working knowledge of Adobe Creative Suite or Creative Cloud, Camtasia, Captivate, Articulate Development Suite, HTML, and other authoring software

INSPECTION TECHNICIAN

YEARS OF EXPERIENCE

- 1–3 years of experience in general construction preferred

EDUCATIONAL LEVEL

- High school diploma
- Preferred: College degree

AVERAGE SALARY

- Average salary $16-20/hour

BENEFITS

- Full benefits package including health, vision, dental insurance
- Vacation, sick and holiday pay
- 401(k) retirement plan

RESPONSIBILITIES

- Schedule inspections and supervising deadlines
- Prepare job sites for inspection, including ladder set-up and opening electrical equipment
- Communicate with clients about follow-ups and installation timelines throughout the installation
- Keep track of documentation and filing
- Follow up on open cases, emails and voicemails in a timely manner
- Work with municipality plan checkers to drop off, understand and record technical corrections, and pick up approved permit packs

REQUIREMENTS

- Valid driver's license and a clean driving record
- Ability to pass a pre-employment criminal and drug test
- Ability to set up and secure 20-foot ladders
- Ability to work in extreme environments (example: hot sun, cold, crawl spaces, etc.)
- Willingness and ability to climb ladders and stairs, work on rooftops, and work on feet for long periods of time
- Excellent customer service skills
- Proficiency with Windows XP Professional and/or Windows 7 and Microsoft Office Suite, including Excel and Word
- Ability to read and interpret building plans, building codes, technical bulletins, code books, and other related documents
- Strong technical aptitude
- Strong communication skills, both written and verbal
- Ability to learn quickly and work well in a team environment
- Organized and self-motivated
- Preferred: Familiarity with OSHA safety rules

SALES & MARKETING JOBS

FIELD MARKETER/BRAND AMBASSADOR

YEARS OF EXPERIENCE

- Preferred: Background in promotions, brand ambassador experience, canvassing, sales, appointment setting, or customer service

EDUCATIONAL LEVEL

- Preferred: High School diploma

AVERAGE SALARY

- $700 weekly, with top performers making well over $1000 a week

BENEFITS (MAY OR MAY NOT INCLUDE)

- Medical, dental, vision, flexible spending accounts
- Vacation, sick and holiday pay

RESPONSIBILITIES

- Increase overall awareness of branding through event marketing, canvassing, and by establishing key partnerships within the service area
- Represent the face of the company through public events
- Engage potential customers and explaining the benefits of going solar

REQUIREMENTS

- Display enthusiasm and a can-do attitude
- Be a natural leader and motivator who thrives in performance driven environments
- Be able to work under minimal supervision

CANVASSER

YEARS OF EXPERIENCE

- Preferred: Background in sales or marketing; Previous experience canvassing for home renovations, improvements or solar

AVERAGE SALARY

- $10-$25/hour plus commission

BENEFITS (MAY OR MAY NOT INCLUDE)

- Flexible and part-time schedules
- Weekend work opportunities

RESPONSIBILITIES

- Support field-level marketing campaigns
- Identify qualified prospects for solar energy systems
- Create interest in solar using advocacy methods such as door-to-door interactions, trade shows, farmers' markets and community events and venues
- Collect referrals, qualify homes as solar ready, and set appointments for consultations

REQUIREMENTS

- Computer/Internet access and a mobile phone
- Reliable transportation to get to/from work areas
- Proficiency in the English language, both written and verbal; Spanish language skills are a plus
- Ability to pass a pre-employment background check and drug screen
- Ability to work on feet all day
- Good verbal communication skills, very organized and detail-oriented
- Be a quick learner, motivated to grow and have a superior work ethic
- Self-motivated and able to work with minimal supervision

SALES CONSULTANT

YEARS OF EXPERIENCE

- Preferred: 2-5 years consumer sales, call center and/or solar experience

EDUCATIONAL LEVEL

- At least some college course work completed
- Preferred: Associates or Bachelor's degree

AVERAGE SALARY

- Typically based on sales + commission

RESPONSIBILITIES

- Manage lead flow to ensure customer satisfaction and successfully grow team sales by securing new sales leads
- Actively build connections and relationships in different territories
- Prepare and deliver sales presentations
- Close deals and execute sales contracts
- Update and maintain company Customer Relationship Management (CRM) database
- Provide customers with information such as quotations, warranties, credit information, funding options, incentives and tax rebates
- Analyze customers' current and projected electrical usage and financial return on investment

REQUIREMENTS

- Ability to meet and exceed set quotas and work in a fast paced, high pressure environment
- Ability to work collaboratively
- Sound judgment in the customer qualifying process
- Strong multi-tasking, time management and organization skills
- Excellent interpersonal and customer service skills via telephone and in person
- Highly proficient with Microsoft Office Suite and CRM databases
- Ability to work weekend and evening hours
- Valid state driver's license and clean driving record
- Ability to pass pre-employment background and drug screen

Beatriz Hernandez

SOLAR INSTALLATION SUPERVISOR
GRID ALTERNATIVES

"I learned about GRID Alternatives through the internet. In addition, I was previously a Proteus student and advised by my instructor to volunteer with GRID Alternatives to fully understand the logistics of solar installation.

My first installation with GRID was an all-women installation. My volunteer experience with GRID was eye opening and opened the doors to many opportunities within the solar industry. I regularly volunteered with GRID Alternatives because I viewed it as an investment in learning different skills while having fun and giving back to my community.

In a typical day as a Solar Installation Supervisor, I am responsible for preparing for installations, revising site plans, and gathering all the necessary documentation for a successful install.

My advice for those interested in attaining a job within the solar industry is, surround yourself with experts from the field and learn from them. Set a goal and stay focused on your journey to a new career. Don't let fear cloud your judgment. Always ask questions and do your best! Because the solar industry is rapidly growing, continue to take the opportunity to learn of all the new techniques and materials in the industry.

Lastly, I recommend to get NABCEP certified, attain a local solar installation and an electrician license. It is important to keep up-to-date on the basics of the solar industry and government policies."

Kristi Spurrier

FOREMAN
SAN JOAQUIN ELECTRIC

"As a Foreman, I supervise about 15 guys. Recently we installed a three megawatt all roof mount. We do all the conduit bending, make sure all electrical work is installed and set transformers.

I first learned about GRID Alternatives back in 2009. I volunteered with Habitat for Humanity; during a build I learned about GRID and their partnership to put solar on the newly built houses.

My volunteer experience with GRID Alternatives was a lot of fun! I volunteered on and off for two years. During the process I had the opportunity to meet wonderful people with the same interest to help those in need.

For those seeking employment within the solar industry, stick with it because solar is the future! The solar industry can provide stable jobs because it is a booming business. Volunteering with GRID Alternatives is such a valuable experience, so if you haven't already, train with GRID Alternatives in order to gain the soft skills that will prepare you for a job ahead."


Supporting the Community

INSIGHT FROM EMPLOYERS

"We're interested in quality, not quantity. We have a very small front office, with two people who handle paperwork and the logistics of the installs. We want one, good strong team of installers who can complete installs in the shortest timeframe possible. As the volume in sales increases, we will hire more employees as needed – Sky's the limit."

As part of our research we spoke to 10 of the top solar companies in Southern California to gain more insight into what employers are specifically attuned to while recruiting for potential employees. We also wanted to get a better idea on company culture, preferred background, and other skills. Here is what some of the companies we interviewed told us.

GENERAL INSIGHT

What are the desired personality traits/characteristics?

- At least a few years' experience
- Detail-oriented
- Willing and able to follow instruction and direction
- Professional
- Ethical
- Responsible
- Respectful

What qualities matter most in an ideal candidate?

- Team player
- Eagerness to learn
- Knowledge
- Leadership skills
- Punctuality/reliability
- Strong work ethic
- Ability to get along well with others
- Excellent verbal and written communication skills

How important is a driving record and background check and what are you looking for?

- Depends on clientele being served
- Very critical in residential market
- Clean DMV record
- No DUI's in the last seven years

- Clean criminal background check going back seven years
- Minor offences are typically okay as long as not drug-related
- Proof and/or references that lifestyle changes have been made is helpful
- Clean drug test is very important

What characterizes a typical employee at your company?
- Safety-conscious
- Reliable
- Professional
- Inquisitive
- Resourceful
- Hardworking
- Independent
- Adaptable

What is one word that best describes your company culture?
- Laidback but professional
- Blue-collar, hard-working
- Progressive
- Dynamic
- Fast-paced

CONSTRUCTION-SPECIFIC INSIGHT

What's an ideal profile/desired skills of a candidate?
- Safety is key
- Conduit bending and routing
- Roof experience
- Electrical experience
- Mechanically inclined
- Fall protection training
- Basic solar knowledge
- Trainability/fast learner
- NABCEP and/or vocational, community college training

SALES & MARKETING-SPECIFIC INSIGHT

What are sales needs?
- Always in need of good sales people
- Proven sales history is good
- Used to closing at least 20%
- Coachable

What is the pay scale?
- Sales positions with commission can make upwards of 100K
- Sales consultants are strictly commission

SPOTLIGHT

Shane Hess

SOLAR INSTRUCTOR
PROTEUS INC.

"I found out about GRID Alternatives while attending Fresno City College, enrolled in the Photovoltaic Design and Installation course through the Applied Technology department. Tom and Alicia came to my class to talk about GRID Alternatives and how it can enrich our learning experience as well as provide community service. Prior to taking this class, I had experience in residential construction and some electrical skills. Due to the fall in real-estate, I decided to pursue my interest in solar.

My experience with GRID Alternatives was very rewarding! I initially didn't know what to expect, but my volunteer experience with GRID Alternatives reinforced my passion for solar and led me to become a Team Leader. However, it wasn't just learning about solar for me I really enjoyed working and meeting with the community as well as the environmental aspect. Altogether, my experience with GRID helped me obtain employment in the field as an; installer, electrician, designer, and a teacher within the solar industry.

Today, as a Solar Instructor with Proteus Inc., I use the first half of the day to teach curriculum from our PV textbook, OSHA safety, NEC code 690, mathematical calculations, theory, etc. The second half of the day is dedicated for my students to get more hands-on experience in our labs which consist of; mock roof set-up, inverter wiring, and conduit bending. So once my students go out on the two-day field trip with GRID Alternatives, they will be prepared, have some knowledge and experience working with solar.

My advice for those wanting to work in the solar industry is to continue to volunteer with GRID and become a team leader. Your volunteer experience will add value to your resume. In addition, the benefits will help you gain the soft skills to better prepare you for a job within the solar industry. I also recommend getting your apprenticeship electrical training card through the state or join the Laborers Union This will definitely take you to the next step in your career. Before applying for potential positions with other companies, practice interviewing and update your resume to cater to the needs of the industry.

I refer to the staff from GRID Alternatives as the Big Solar Family. From my experiences with GRID, I've learned that there are great opportunities to network within the organization. My job as a Solar Instructor is personally rewarding as I share my knowledge with my students in order to help them succeed within the solar industry.

SOLAR JOBS

SECTION FOUR

TRAINING & RESOURCES

WILLLIAM M. MAGUY SCHOOL OF EDUCATION/ PROTEUS INC.

PHOTOVOLTAIC DESIGN & INSTALLATION

http://www.proteusinc.org/index.php/solar-installation

This program is designed to prepare students to work in the Solar industry. Students will gain the knowledge and skills necessary to design and install Photovoltaic systems. The students will also receive an introduction to the North American Board of Certified Energy Practitioners (NABCEP) Photovoltaic Entry Level Certificate of Knowledge exam requirements. The overall course objective is to prepare students for an entry level position in the Solar industry.
The six week solar training class and four week weatherization training class offers an "Accredited Certification" through the Western Association of Schools and Colleges (W.A.S.C.) which, is nationally recognized. A ten week combination course of Energy Efficiency and Renewable Energy (E.E.R.E.) Technician Certification is also available.

DEGREES & CERTIFICATES INCLUDE:

- Accredited Certification through the Western Association of Schools & Colleges (W.A.S.C.)
- Energy Efficiency and Renewable Energy (E.E.R.E.) Technician Certification

STUDENT LEARNING OUTCOMES:

- Construction Basics
- OSHA 10 hour Safety
- Introduction to Photovoltaic (PV) Design & Installation
- Introduction to Electrical
- Overview of various forms of Renewable Energy
- Introduction to NABCEP concepts
- Off-site field experience

PROGRAM INFORMATION:

- Length – 210 Hours / 6 Weeks
- Class offered Monday – Friday; 8 – 4pm
- Locations – Fresno Training Center, Visalia Training Center, Delano Training Center

ITT TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING AND COMMUNICATION TECHNOLOGY

http://www.itt-tech.edu/campus/school.cfm?lloc_num=61

This program explores concepts and applications of renewable energy technology such as wind energy, solar power, hydro-electric energy, etc. Microcontrollers and their applications in embedded systems. Analysis and design of analog and digital electronics. Concepts of object oriented programming and provides hands-on exercises in C++ programming. Energy conversion, elements and the structure and operation of electric power systems. Concepts of fiber optic communication systems. Principles and applications of power electronics as well as telecommunications systems and technology. Basic energy conversion and physical phenomena in electrical machine operation. Mobile technology and wireless communications and their practical applications. Process control technology including analog and digital signal conditioning. Data communications networks and systems, local area networks, internetworks and the internet.

DEGREES & CERTIFICATES INCLUDE:

- Associate of Applied Science Degree - Electrical Engineering Technology
- Bachelors of Science Degree - Electrical Engineering and Communication Technology

PROGRAM INFORMATION:

- Length - 3.5 years
- Class offered - ET4580 Green Energy Technology, ET4640 Embedded Systems, ET4670 and ET4770 Electronic Circuit Analysis and Design I and II, ET4560 C++ Programming, ET3480 Power Systems, ET3430 Fiber Optic Communications, ET3380 Power Electronics, ET3330 Telecommunications Systems and Technology, ET3280 Electrical Machines and Energy Conversion, ET3220 Mobile Wireless Technology, ET3150 Automatic Industrial Control, ET3110 Networking and Communications.
- Evening classes offered Monday - Friday; 6-10pm (with lab component) or 6:00-10:55pm (without lab component) M-F

CENTRAL VALLEY OPPORTUNITIES CENTER INC.

CENTRAL VALLEY OPPORTUNITIES CENTER INC.

http://www.cvoc.org/courses

This program is designed to prepare students to work in the renewable energy industry. Students will gain the knowledge and skills necessary to design and install Photovoltaic systems. The students will also receive an introduction to the North American Board of Certified Energy Practitioners (NABCEP) Photovoltaic powered energy systems, gaining the knowledge needed for an entry level position with a dealer, installer, or other photovoltaic industry company. The course examines the history of solar photovoltaic power, and where the PV industry is headed. The course covers basic safety, including how to avoid potential accidents and how to create a safe work environment as well as the use of protective equipment. Course provides the fundamentals of electricity and solar energy, including how to calculate simple circuit values and predict solar position using Sun path diagrams. Students will complete OSHA 10 Hour Safety Course.

STUDENT LEARNING OUTCOMES:

Upon completion of this program, students have a thorough understanding of PV applications, working safety as it pertains to this field, basic electricity, and PV module fundamentals. Satisfactory course completion is based on written testing, observation and hands on tests. This program is for you if you want to learn the skills required for an entry level position with a dealer, installer, or other photovoltaic industry company.

PROGRAM INFORMATION:

- Length – 210 Clock Hours (6 Weeks)
- Class offered Monday – Friday; 8-3:30pm

KERN COMMUNITY COLLEGE DISTRICT

21ST CENTURY ENERGY CENTER

http://cleanenergyworkforce.com

The solar power industry is a rapidly growing field that is expected to help ease human dependence on the use of fossil fuels. Solar panels are now rated to produce up to 600 volts of electricity and the cost of purchasing and installing these panels for residential purposes has been reduced considerably. Because of this, the need for solar photovoltaic installers has increased and is projected to grow with the demand for solar installations. In response to this demand, NCCER has developed a curriculum for both entry level and advanced solar PV installation technicians – all in support of the North American Board of Energy Practitioners' (NABCEP's) educational standards for technicians. This one-level curriculum covers topics such as Introduction to Solar Photovoltaics, System Design, and System Installation.

DEGREES & CERTIFICATES INCLUDE:

- NCCER Solar Photovoltaics
- NCCER Electrical 1
- NCCER Core Curriculum

STUDENT LEARNING OUTCOMES:

Solar certification tells employers that a student has attained a range of employment enhancing skills that meet industry standards. All of KCCD solar students spend two full day volunteering at a solar install offered by GRID Alternatives.

Solar students complete the following; Introduction to Solar Photovoltaics, Site Assessment, System Design, System Installation and Inspection, Maintenance and Trouble-shooting, Electrical Theory, Electrical Circuits, Electrical Safety, Device Boxes, Hand Bending, Raceways and Fittings, Conductors and Cables, Electrical Construction Drawings.

PROGRAM INFORMATION:

- Length – 245 Hours (7 Weeks)
- Class offered Monday – Friday; 8:30am - 4:30 pm

RESOURCES

- **Green Jobs Guidebook**
http://www.greenprof.org/wpcontent/uploads/2009/12/Green_Jobs_Guidebook.pdf

- **Interstate Renewable Energy Council**
http://www.irecusa.org/workforce-education/solar-instructor-training-network/trainer-resources/solar-career-map/

- **Community Colleges and Certificate Programs**
http://energy.gov/eere/education/community-colleges-and-certificate-programs

- **NABCEP** (North American Board of Certified Energy Practitioners)
http://www.nabcep.org/

- **GRID Alternatives**
www.gridalternatives.org

- **SolarMooc**
http://solpowerpeople.com/category/solarmooc-lessons/

- **Solar Energy Industries Association**
http://www.seia.org/solar-jobs

- **Solar Energy International** (SEI)
http://www.solarenergy.org/

- **Solar Living Institute**
https://solarliving.org

- **GRID Alternatives Team Leader Resource page**
http://www.gridalternatives.org/volunteer/team-leader-program/team-leader-resources

- **GreenJobs.com**
www.greenjobs.com

Footnotes:

1 - http://www.agmrc.org/commodities__products/energy/solar-power-profile/

2 - http://www.nrel.gov/learning/re_photovoltaics.html

3 - http://www.firstresearch.com/Industry-Research/Solar-Power-Generation.html

4 - http://www.firstresearch.com/Industry-Research/Solar-Power-Generation.html

5 - http://www.thesolarfoundation.org/research/national-solar-jobs-census

6 - http://www.bls.gov/ooh/construction-and-extraction/construction-laborers-and-helpers.htm

7 - http://www.academia.edu/7922904/Chapter_1_Marketing_Creating_Capturing_Customer_Value_Marketing

8 - Redefining Management Practices & Marketing in Modern Age by Dr.Dilip B. Patil, Dr.Dinesh D.Bhakkad Pg.15

9 - Occupational Outlook Handbook 2009 edited by U.S. Department of Labor Pg. 532

How to **Jumpstart** Your Solar Career

1. Peruse this guidebook for job ideas
2. Delve into a specific track:
   a. Construction
   b. Design
   c. Sales & Marketing
3. Join one of our installations to learn more about solar and gain vital hands-on experience
   a. Consider becoming a Team Leader
   b. Stay active with some of our training activities
4. Further your classroom training
5. Update your resume and cover letter or participate in one of our mock interview and resume feedback sessions
6. Join us for one of our job fairs
7. Connect to the GRID network

GRID ALTERNATIVES

www.gridalternatives.org