



INTERSTATE RENEWABLE ENERGY COUNCIL

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DYNAMIC CAREERS IN THE SOLAR INDUSTRY

A Guide for
Career Counselors
and Job Seekers



March 2022

Rapid industry expansion has nearly tripled solar employment over the past decade. As the solar industry continues to be a leading source of job growth in the American energy sector, building a diverse and qualified workforce to keep pace with accelerating demand is a priority for solar employers nationwide.

The solar industry offers high-quality, family-supporting jobs, and a tremendous range of opportunities for individuals with diverse skill sets and interests. From skilled trades and technical roles to management and administrative functions, there is a growing need for talent across all levels and segments of the solar industry. Roles related to installation and construction make up the majority of solar industry employment and are some of the fastest-growing jobs in the country. Solar jobs are accessible to people from all backgrounds and life experiences. The industry has placed a priority on increasing representation among women, people of color, the LGBTQ community, and other diverse groups.

Focused on high-demand, entry-level roles, this guide aims to equip job seekers and career counselors with a greater understanding of job opportunities, career pathways, and career development resources available in the solar industry. It covers national trends and projections for the solar workforce, offers detailed descriptions of entry-level solar jobs, and describes pathways of advancement to dynamic careers.

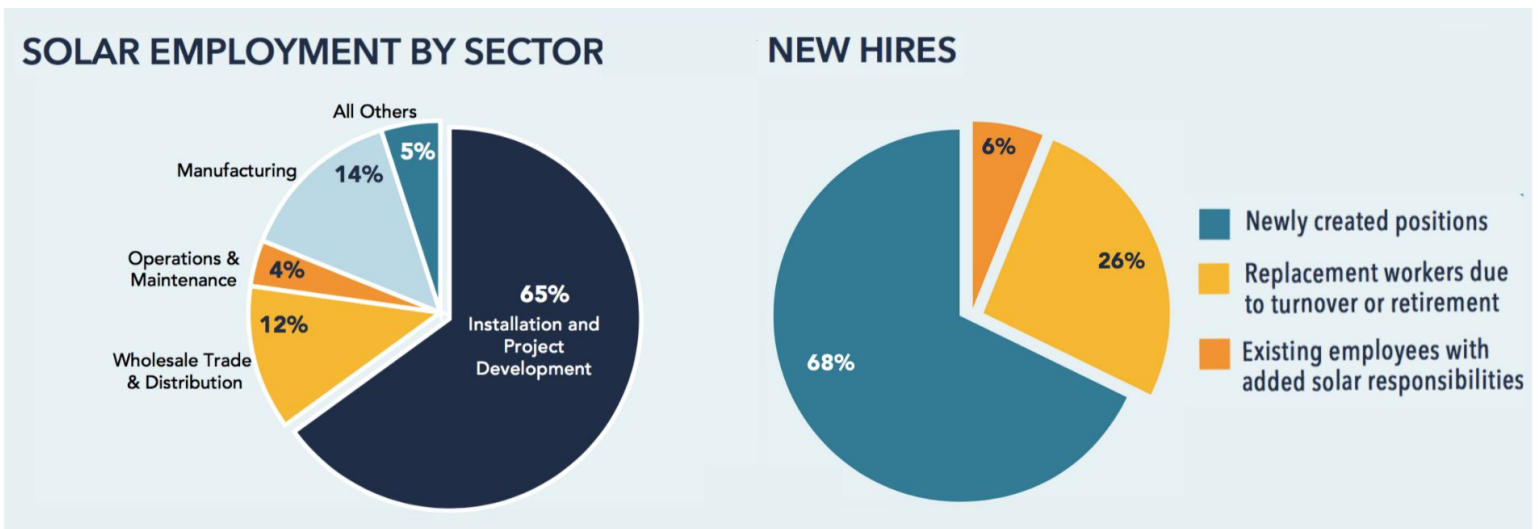
This document was developed by the Interstate Renewable Energy Council (IREC) and the Solar Energy Industries Association (SEIA) through the U.S. Department of Energy Solar Ready Vets Network™. See page 6 for more information about our resources for veterans.



A BRIGHT OUTLOOK FOR THE SOLAR INDUSTRY

The solar industry has seen momentous development in recent years—despite the labor downturn during the coronavirus pandemic, installed capacity grew by a **record-breaking 43 percent over 2020**. Solar policy advances and increasing demand year over year for new solar projects nationwide indicate that the industry is on track for continued rapid expansion over the next decade and beyond.

According to the **National Solar Jobs Census** published by IREC (formerly The Solar Foundation), between 2014 and 2019 solar employment grew about five times faster than job growth in the overall U.S. economy. Today, the solar industry employs over 230,000 workers across all 50 states, the District of Columbia, and Puerto Rico. In order to meet the Biden Administration’s clean energy goals, the industry will need to grow to 900,000 workers by 2035, and many solar companies are ramping up hiring in anticipation of record-breaking project pipelines in the coming years. The industry will also need to attract more people from diverse gender, ethnic, and racial backgrounds to expand and strengthen the workforce.



Source: National Solar Jobs Census 2020

UNDERSTANDING THE SOLAR JOBS MARKET

The solar industry offers high-quality, family-supporting jobs. Solar installers earn similar amounts to their peers in the roofing industry, while solar electricians, construction managers, and sales representatives tend to earn more than those in similar roles in other industries.

Job Title	Solar Industry	U.S. Overall
Solar Installer	\$46,263	---
Electrician	\$71,940	\$63,701
Sales Representative	\$96,800	\$68,624
Construction Manager	\$127,590	\$107,979

Bureau of Labor Statistics, Occupational Employment and Wage Statistics; 2021.

It is important to note the distinctions between industry segments. Solar installations can be categorized by scale, ranging from small residential rooftop installations, to mid-sized commercial-scale projects, to much larger ground-mount utility-scale installations. Regional solar markets vary by location, and are influenced by factors related to state-level policy.



Across industry sectors, the highest-demand jobs are concentrated in entry-level technical roles. In fact, [according to the Bureau of Labor Statistics](#), installation and construction jobs in the residential rooftop sector are some of the fastest-growing jobs in the country.

There are also increasing opportunities across project management, engineering, IT, research and development, and manufacturing. Like other technology-forward industries, these are complemented by business and administrative roles such as operations, accounting, human resources, corporate management, communications and marketing, and customer-centric careers.

TRAINING & CAREER DEVELOPMENT

SOLAR TRAINING

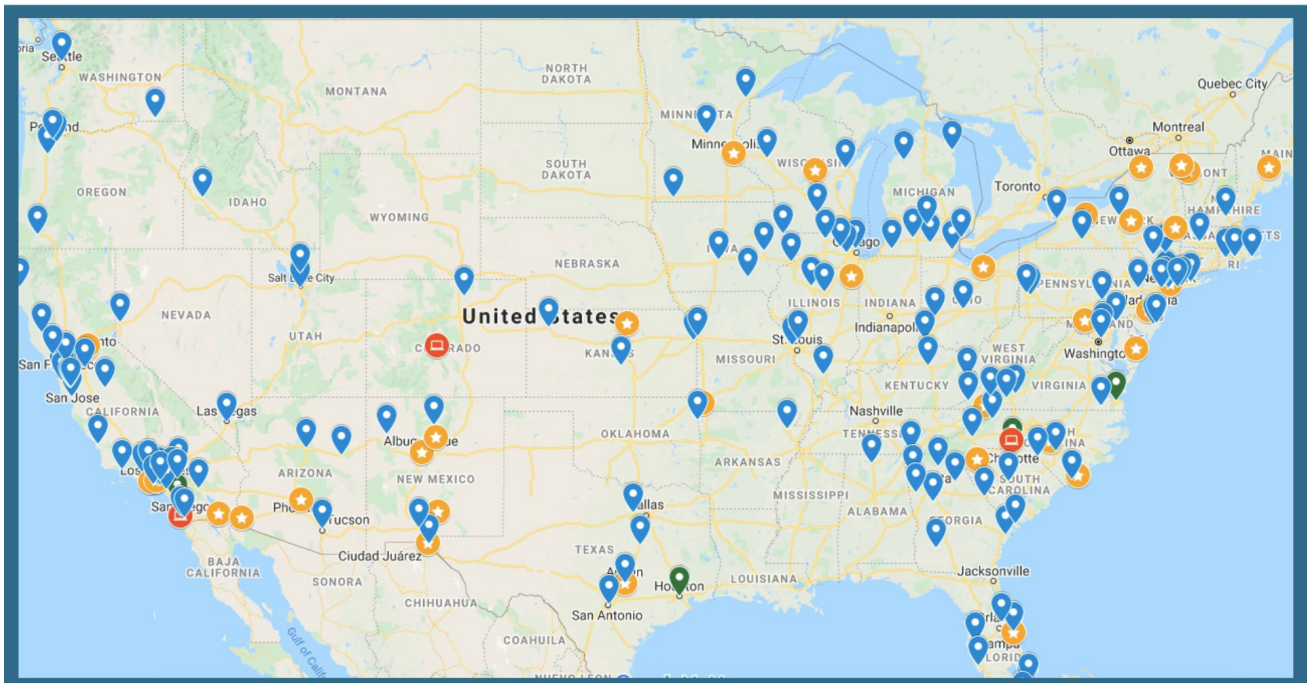
Solar training programs range from 40-hour certificate programs to two- and four-year degree programs and four- to five-year electrical apprenticeship programs. Identifying the right training program depends on the candidate's interests and goals. For example, to be well qualified for a solar installer role, a brief course covering the fundamentals of solar technology with a focus on safety and hands-on experience is suitable. Given the high demand for talent in the installation sector, many solar employers will train on the job, particularly for a candidate with some construction or electrical experience and a strong willingness to learn.



The North American Board of Certified Energy Practitioners (NABCEP) offers widely recognized credentials for renewable energy professionals. Certifications are typically not required for entry-level jobs, but can help individuals accelerate their career advancement.



IREC maintains a national [directory of solar training programs](#). Most solar training programs are offered through community colleges and vocational schools, and several high-quality options are available online as well. The directory is searchable by location, online options, NABCEP-registration, and GI Bill eligibility.



CAREER DEVELOPMENT & INDUSTRY RESOURCES



The [National Solar Jobs Census](#) is an annual report on solar jobs and the state of the solar workforce, featuring analysis of jobs by market segment, demographics, and workforce development trends, and an interactive map exploring state-level solar job trends.



IREC offers interactive [clean energy career maps](#) that can be used to explore the many diverse careers and routes for advancement across the growing clean energy sector. These include the Solar Career Map, HVAC/R Map, and Green Buildings Career Map.



[Solar Energy Industries Association](#), the national trade association for the solar and solar-plus-storage industries, offers these resources which can be useful to job seekers:

- [National Solar Database](#): A comprehensive directory of solar companies in the United States. This database helps identify where solar companies are located across the country.
- [Major Solar Projects List](#): A database of all larger-scale ground-mounted solar projects (those 1MW and above) that are either operating, under construction or under development. At each project stage, talent is needed to fill essential roles.

Many states have their own [solar industry associations](#), which offer valuable networking, continuing education programming, and other career resources. These organizations can help professionals get plugged into the industry, build their solar network, and connect with employers in their area.

NETWORKING & JOB BOARDS

- Solar Energy Industries Association offers a [Job Board](#), as do several [state affiliates](#).
- [NABCEP Job Board](#)
- [PV Magazine Job Board](#)
- [Women of Renewable Industries & Sustainable Energy Job Board](#)
- [ALLY](#) is a social network and job board for individuals interested in renewable energy careers. ALLY accelerates connections to power the energy workforce of the future and an equitable transition.

VETERANS IN THE SOLAR INDUSTRY

With unmatched leadership, teamwork, individual specialization, mastery of many technical skills, and a mission-completion work ethic, the diverse aptitudes and experiences that veterans gain through military service are highly transferable and in demand across the solar workforce.

IREC leads the [Solar Ready Vets Network](#) to connect veterans with solar training, career development, and employment opportunities, and advance the solar industry's efforts to recruit and retain military talent. This work is funded by the U.S. Department of Energy,



According to the [National Solar Jobs Census](#), veteran representation in the industry has risen about 20% over the past five years as solar employers have shown they are eager to recruit military talent. Today, veterans make up about 9% of the solar workforce (compared to 6% of the overall U.S. economy).

On rooftops, in the field, in offices, and labs across the country, military service members and veterans apply diverse technical and leadership skills to power the solar industry every day. IREC has collected a series of "[Service to Solar](#)" stories which demonstrate the range of opportunities that veterans have found in solar.

Through the Solar Ready Vets® program, our team has [secured approvals](#) from the U.S. Department of Veterans Affairs for all of NABCEP's solar certifications to be reimbursable through GI Bill. Several offer a "Veterans Fast Track"—a streamlined pathway to certification that recognizes relevant skills and experience gained through military service.

Veterans and transitioning service members are encouraged to join the Solar Ready Vets Network to stay current on all solar career events, resources, and other opportunities for the military community. [Join the network at SolarReadyVeterans.org.](#)

ENTRY-LEVEL PATHWAYS TO HIGH-DEMAND CAREERS

There is increasingly high demand for talent to fill skilled trades roles, offering a solid entry-level pathway to careers that require more experience or training, such as crew lead, electrician, solar system designer, or project manager. Similarly, there is a growing need for entry-level talent in customer-facing and office-based jobs with advancement opportunities into roles across operations and business development. With experience and continuing education, an entry-level solar job can become a powerful career.

Examples of Entry-Level Solar Roles with Advancement Opportunities:

VERY HIGH DEMAND

- Solar Installer/Helper
- Electrical Apprentice/Helper

HIGH DEMAND

- Sales Representative (Inside Sales/Outside Sales)
- Solar Site Surveyor

GROWING DEMAND

- Warehouse/Logistics Coordinator
- Operations & Maintenance/Service Technician
- Solar Designer

The following pages describe high-demand, entry-level jobs in the solar industry. For each of these roles, the key responsibilities, steps to get started, and routes of advancement are detailed in the following pages.

SOLAR INSTALLER/HELPER

VERY HIGH DEMAND

As the solar industry expands, demand continues to grow for qualified installers to fill positions from the entry-level to more advanced and specialized roles. (The exact title of an entry-level installer role may vary by company.)

Key responsibilities: Solar installers are the front lines of the solar industry. Installers assemble, mount, set up, and maintain solar systems, equipment, and electrical wiring. Installation work is done outdoors, and often on rooftops (though working at heights is not necessary for large, ground-mounted utility-scale projects).

Working at a rooftop solar installation company will typically require local travel to customers' homes and businesses. Working at a utility-scale solar construction company often requires more frequent, longer-distance travel as these larger-scale solar projects are typically located in remote areas.

How to get started: As an entry point, a beginner solar installer job typically requires a high school diploma (or equivalent), the ability to utilize basic hand and power tools, the ability to learn quickly on the job, and a willingness to work hard in an outdoor environment. Comfort working at heights, moving and installing equipment, and wearing the required safety equipment are also important for rooftop solar installation work. Employers tend to prefer candidates with basic carpentry, construction, or electrical skills; however, these skill sets are not necessarily required to get started as a solar installer. Many employers train on the job and invest in employees who are dependable and demonstrate an eagerness to advance. An ability to learn quickly, follow directions, work on a team, adhere to occupational health and safety practices, and have reliable transportation are essential. OSHA 10 certification is preferred but typically not required for entry-level installers, as some solar employers will provide that or equivalent safety training.

Career advancement: With further training, a couple of years of experience, and industry credentials, solar installers can move into more specialized or leadership roles such as solar crew lead/foreperson, with the opportunity to manage a team of installers and technicians. Other opportunities for advancement may include project management, system design, or advanced electrical work. NABCEP PV Associate and PV Installation Professional certifications can support career advancement, and a limited license is required in some states to advance beyond the entry-level.

ELECTRICAL APPRENTICE/HELPER

VERY HIGH DEMAND

There is extremely high demand across the solar industry for electricians with journey-level licenses, electrical apprentices, and electrician assistants. Demand continues to grow quickly in the residential, commercial, and utility-scale sectors.

Key responsibilities: This job varies by industry sector and company size. In general, solar electricians are responsible for installing, maintaining, and repairing electrical wiring, equipment, and fixtures for solar systems; testing systems to ensure compliance with electrical and building codes; and connecting solar equipment to the building's power supply and/or the electric grid.

How to get started: Credentials include a registered electrical apprenticeship and/or vocational training. Four or more years of experience as an electrical apprentice and passing a journey-level or general electrician license exam is usually required to become a journey-level electrician. (These requirements vary by state; see the [IREC licensing database](#) for more information).

Career advancement: Apprentice electricians can advance to become journey-level electricians and then master electricians with additional experience, technical training, and in some states a master electrician license.

SALES & CUSTOMER SERVICE REPRESENTATIVE

HIGH DEMAND

Key responsibilities: Solar sales representatives are a critical first link between solar companies and the customers they serve. Sales representatives gather leads by reaching out to prospective residential solar customers to determine their solar energy and equipment needs, evaluate and recommend systems, communicate the value proposition of solar, estimate costs and benefits, and follow up with customers. There is high demand for entry-level through specialized sales roles.

- Inside sales representatives connect with households by phone, calling lists of potential leads or responding to inquiries. May allow remote working.
- Outside sales representatives usually start their solar sales careers canvassing to set up appointments, before moving into a more senior position that entails more detailed home visits.

How to get started: Experience in sales or customer service roles is preferred, but often not required. Solar experience is not required for entry-level roles. Industry certification (such as NABCEP PV Technical Sales) is not required, but can help with career advancement. Sales representatives learn about the industry and the product on the job, so a college degree typically is not required, but salespeople come from a variety of educational backgrounds.

Career advancement: As with sales jobs in other industries, solar sales offers a high earning potential through commission. An experienced sales manager with a college degree could move into a business development role, which involves conducting market research and creating outreach programs and tools to drive business expansion.

SOLAR SITE SURVEYOR

GROWING DEMAND

Key responsibilities: Solar site surveyors conduct physical site assessments using equipment and tools (smart phone, UAVs/drones, measuring tape or similar digital/analog or manual tools, ladder, personal protective equipment, software, etc.) to measure roof dimensions and obstructions, capture photos, and collect data in preparation for rooftop solar PV projects.

How to get started: High school diploma (or equivalent), current driver's license with a clean driving record, strong time-management skills, and a willingness to work in an outdoor environment are all necessary. Comfort working at heights may be required. A trade school degree or experience in a discipline related to construction, roofing, or site assessment is preferred but often not required.

Career advancement: This entry-level role could lead to opportunities as a solar installer, and with additional training, as a solar designer or a variety of other roles within a solar company.

WAREHOUSE / LOGISTICS COORDINATOR

GROWING DEMAND

Key responsibilities: Plan, organize, manage, and control the procurement of materials, supplies, and services in support of company operations.

How to get started: Entry-level through specialized expertise roles are available. Certification or a college degree is not required for entry-level roles but can help with career advancement to a management position. Previous experience with inventory analysis is preferred. Driver's license and forklift certification / operation experience are often required.

Career Advancement: Strong performance in coordinator-level roles can lead to promotion to supervisory or management-level positions, often without the requirement for a bachelor's degree (although such a degree would likely increase career advancement opportunities).

OPERATIONS & MAINTENANCE TECHNICIAN

GROWING DEMAND

Key responsibilities: Solar operations & maintenance technicians (often called O&M technicians or service technicians) inspect, monitor, evaluate, test, clean, calibrate, and maintain solar module systems, mounting hardware, inverters, and other system equipment. Demand for O&M technicians is high and growing for entry-level through specialized roles, especially for large, utility-scale projects. At rooftop solar companies, these roles are often referred to as service technicians.

For work on utility-scale projects, these roles may be located in more remote areas. However, as these roles deal with projects that are already installed and operational, they do not require frequent long-distance travel like some utility-scale solar construction jobs.

How to get started: High school diploma (or equivalent), the ability to learn quickly while on the job, and a willingness to work hard in an outdoor environment are necessary. Some prior solar, electrical, or mechanical experience and certification are preferred but not necessarily required for entry-level roles. Comfort working at heights is important for rooftop solar service work but not for utility-scale project work. OSHA 10 certification is preferred.

Career advancement: Many companies have several levels of O&M technicians, ranging from entry-level to advanced specialists. Entry-level O&M technicians typically receive promotions as they complete on-the-job training, demonstrate new levels of expertise, and take on more advanced responsibilities. The NABCEP PV Commissioning & Maintenance Specialist Certification, and a college degree in engineering or similar field, are both valuable for advancing to roles such as solar plant manager or operations manager.

SOLAR DESIGNER

GROWING DEMAND

Key responsibilities: Prepare rooftop solar system designs including electrical calculations, electrical grid interconnection strategy, electrical equipment, racking, mounting, site layout drawing, and electrical and mechanical specifications. The designer may provide complete permit & construction-ready plan sets, work with code officials, distributors, and subcontractors, facilitate permit approvals, and participate in quality assurance and performance assessment. In a small firm, the system designer may also participate in site assessment and/or installation.

How to get started: An associate's or bachelor's degree focused on renewable energy, solar technology, or engineering is one way to start in a solar designer role. Applied associates programs that combine green building and residential solar system design can be an excellent point of entry. Another path to a designer role is for high-performing solar installers to get solar design training or on-the-job experience designing systems in AutoCAD.

Career advancement: The NABCEP PV Design Specialist Certification can help solar designers demonstrate their expertise and advance their solar careers. To work on large-scale solar projects, a bachelor's degree in engineering may be required.