



Solar PV and Thermal

Career Ladder, Curriculum and Job Descriptions

After decades of valuable technology and market experience, the solar industry has blossomed into a major domestic employer. Far from maturity, the U.S. solar industry employed roughly 93,000 people in 2010, double the number employed by the industry in 2009. Roughly 50 percent of these workers were employed in the installation sub-sector of the industry, followed by 20 percent working in the manufacturing sector. With recent (October 2010) National Solar Jobs Census projections of 36 and 22 percent employment growth in 2011 respectively, the solar industry installation and manufacturing sub-sectors show no signs of slowing down in the near future.

Of the 22 solar jobs described in this packet, detailed curriculum and career ladder information is provided for two especially noteworthy, promising jobs in the *solar photovoltaics* and *solar thermal* areas. Solar photovoltaics (PV) uses the sun to produce electricity through silicon-based cells which can then be routed to the electricity grid and/or straight to on-site uses, and solar thermal uses the sun to produce heat that can be used to warm water for multiple uses, such as domestic hot water heaters or swimming pool heaters.

The solar electric (PV) system installation technician and solar thermal system installer jobs can be excellent, obtainable targets for many disadvantaged and dislocated workers, especially in the West and Mid-Atlantic/Northeast Regions where most of the 16,703 solar employment locations can be found. These jobs are two excellent points of entry into what is expected to be a very lucrative industry well into the 21st Century.

Accreditation and Certification, and National Solar Standards

There are at least 150 formal solar education providers across the U.S., ranging from independent solar training centers to formal four-year university programs. The solar curriculum offered through these 150 entities falls into one of the five primary work/study areas: On-site Workshops/Programs, On-Line Courses, Community Colleges, Four-Year Schools and Apprenticeships. The best existing solar education programs tend to use a combination of these five areas.

SouthEastern Arizona Governments Organization (SEAGO) Recognized for Best Solar Education Practice

The SouthEastern Arizona Governments Organization (SEAGO) in Bisbee, Arizona combines classroom, online and hands-on solar training for their clients interested in finding work in the solar energy field. SEAGO's basic solar career training program already enjoys the strong support of national solar industry experts. Therefore, it is featured in this packet of helpful career ladder information.

The U.S. Department of Energy recently enlisted the Interstate Renewable Energy Council (IREC) to train solar workers across the U.S. through nine regional training centers. IREC is the North American licensee for the Institute for Sustainable Power Quality (ISPQ), which serves as the only existing major venue for solar education quality control. ISPQ develops guidelines and standards for comparing the “content, quality and resources” of solar training programs. Their International Standard 01022 establishes standards and metrics to accredit and certify training programs and instructors. As of late 2010, 25 programs are accredited, and there are 10 certified “Master Trainers” and 17 “Certified Instructors.”

ISPQ addresses solar curricula and the instructors, while the North American Board of Certified Energy Practitioners (NABCEP) is the organization responsible for certifying solar workers. NABCEP provides voluntary certifications for PV, solar thermal and PV technical sales. The NABCEP credential is widely recognized as the “gold standard” within the solar industry. As such, NABCEP solar certifications can help employees distinguish themselves within the industry.

Career Ladder

Solar Power Installation and Maintenance

Solar Power Development, Manufacturing, Sales and Project Management

Curriculums

Solar Electric Systems Installation Technician Career Path

Solar Thermal Systems Installer Career Path

Job Descriptions

Solar Power Installation and Maintenance

Solar Energy System Installer Assistant

ICE Technician (Instrumentation / Control / Electrical Systems)

Solar Thermal Installer

Solar Electric System Installation Technician (PV Installer)

Lead PV Installer

Solar Commercial Installation Electrician

Solar Commercial Installation Engineering Technician

Solar (Commercial) Installation Electrician Foreman

Solar Field Service Technician

Residential / Commercial Solar Sales Consultant

Solar Energy Engineer

Solar Commercial Installation Engineer

Solar Power Development, Manufacturing, Sales and Project Management

Solar Fabrication Technician

Solar Hot Water Manufacturing Technician

PV Fabrication and Testing Technician

Solar Energy Systems Designer

Solar Thermoelectric Plant Manager

PV Power Systems Engineer

PV Solar Cell Designer

Solar Lab Technician

M Design Engineer

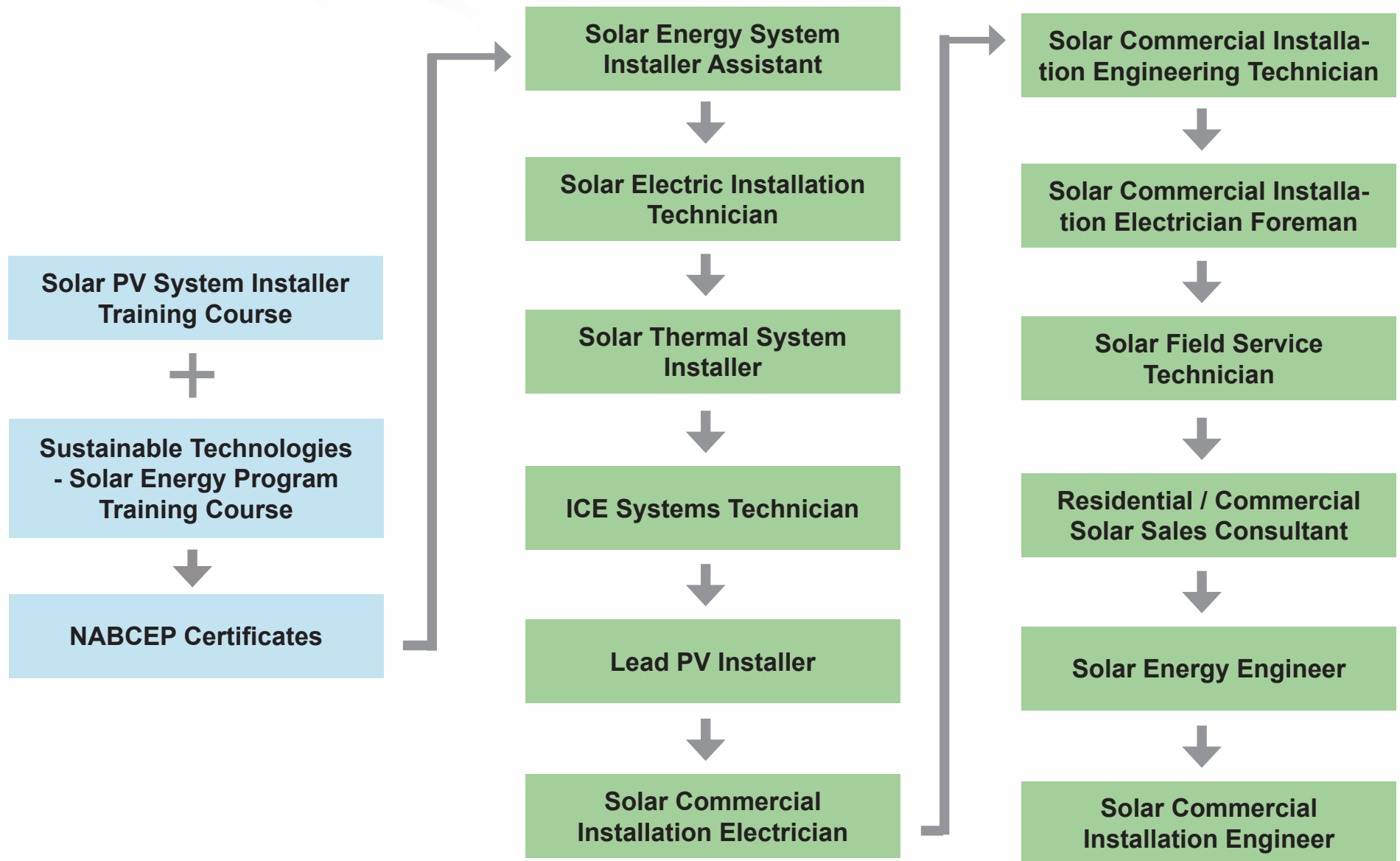
Solar Operations Engineer

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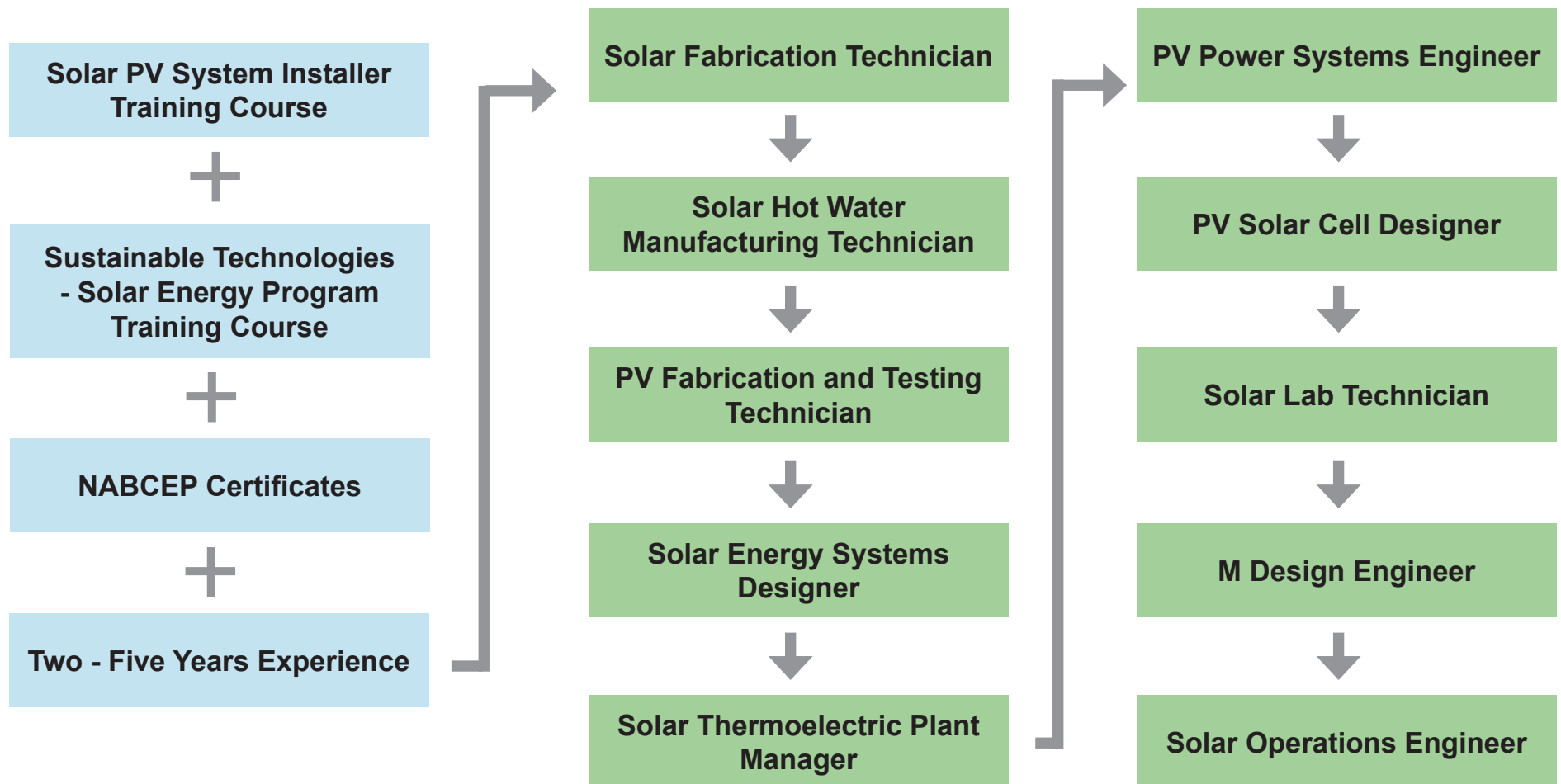
Solar Power Installation and Maintenance Career Path



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Solar Power Development, Manufacturing, Sales and Project Management Career Path



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Training Curriculums

Curriculums included in this packet of materials:

- *Solar PV System Installer*
- *Sustainable Technologies - Solar Energy Program*

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Solar Thermal or PV System Installer Training

Name of the Educational Institution: Training varies based on location, but is typically provided by an educational institution or similar accredited institution, including: Solar Energy International (SEI), Boots on the Roof, Solyndra, Florida Solar Energy Center, Midwest Renewable Energy Association, North Carolina Solar Center, Great Lakes Renewable Energy Association, Solar Living Institute or CleanEdison.

Prerequisites: This is an entry-level job and training; there are no prerequisites. The Solar PV System Installer training is intended for anyone, though is ideal for laborers who want to develop a speciality, or for contractors (electrical and traditional) who want to provide PV installation and maintenance services. Some training can be optimized for architects, engineers and journeyman electricians.

Description: This program is designed to create a basic understanding and competency around the principles of the application, design, installation, and operation of grid-tied and stand-alone PV systems. These programs are often intended to be preparation programs for the entry-level NABCEP exam and certification.

Representative Core Courses:

- o Introduction to Electricity and Photovoltaic
- o Solar Electric Design and Installation
- o Grid Direct Design and National Electric Code

Representative Elective Courses:

- o Battery-Based Design
- o Solar Thermal Design and Installation
- o PV Technical Sales

Length: The training lasts anywhere from six days to more than three months.

Components of Training: The training may include both classroom and laboratory instruction; online training may be offered. Upon completion, a Certificate of Completion will be offered by the training institute.

Cost of Training: \$,2000 - \$3,500 for basic programs; elective courses carry an extra cost.

Additional Information: There is often considerable variation in program curricula and cost depending on the training institute. Programs that prepare the student for sitting for the NABCEP exams may be more valuable over the long run, though may be more expensive. Some solar companies provide their own training institutions, though this is not standard. Financial aid for additional training is often difficult to find in this job placement.



Sustainable Technologies - Solar Energy Program Training Course

Name of the Educational Institution / Provider: Training varies by location, but is typically provided by a community colleges or educational extension service, including Santa Fe Community College, Red Rocks Community College, University of California Berkeley Extension, Salt Lake Community College, Hudson Valley Community College or Kennebec Valley Community College.

Prerequisites: There are no prerequisites for this training; it is intended for all audiences.

Description: These programs, which are more extensive than those offered by training institutions, can range from very specific certifications in solar technology to broader Associate of Science and Associate of Applied Science degrees in the solar and renewable energy industries.

Representative Core Courses:

- Intro to Energy
- Introduction to Electricity and Photovoltaic Systems
- Electrical Installations
- Roofing Materials and Methods
- Solar PV Grid-Tied Applications
- NABCEP Prep
- Estimating for Energy
- Maintenance and Trouble Shooting
- National Electric Code (NEC)
- Advanced Solar PV
- Solar Contracting

Representative Elective Courses:

- Building Energy Audit Tech
- Construction Tech
- Roof Framing
- Thermal Installation
- Technical Writing

Length: The training typically requires 20 to 30 credit hours for course completion.

Components of Training: The training may include class and laboratory instruction, as well as at least one internship. Upon completion, participants may receive a Solar PV Designer Certificate, Advanced PV Installation Certificate, POST EIC Degree Solar Photovoltaic Certificate, Associate of Science degree or Associate of Applied Science degree. The certifying body is the community college or educational extension service.

Cost of Training: \$2,000 - \$10,000 for a range of programs.

Additional Information: Pricing and curriculum varies according to the community college or extension service. Some solar companies pay for these courses. Financial aid is easier to obtain for this training.



Job Descriptions: Solar Power Installation and Maintenance

Job descriptions included in this packet of materials:

- *Solar Energy System Installer Assistant*
- *Instrumental Control Electrical Systems Technician*
- *Solar Thermal System Installer*
- *Solar Electric System Installation Technician (PV System Installer)*
- *Lead PV Installer*
- *Solar Commerical Installation Electrician*
- *Solar Commerical Installation Engineering Technician*
- *Solar Commerical Installation Electrician Foreman*
- *Solar Field Service Technican*
- *Residential / Commerical Solar Sales Consultant*
- *Solar Energy Engineer*
- *Solar Commercial Installation Engineer*

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Solar Energy System Installer Assistant

Job Description: The Solar Energy System Installer Assistant will assist a solar energy system installer in installing and repairing solar energy systems for residential, commercial or industrial use. The Installer Assistant position is entry-level for both the Solar PV or Thermal career tracks. This is an entry-level career position.

Average Salary: \$23,000/year or \$11.50/hour

Minimum Education Requirement: GED/high school diploma

Certifications: NABCEP Solar Thermal or PV Installer recommended

Experience: No previous experience required.

Growth Potential / Employment Outlook:

- Solar Electric Installation Technician (PV)
- Solar Thermal System Installer

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilities:

- Construction
- Plumbing
- Electrical

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Solar Energy System Installer Assistants are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.

Additional Comments: Outdoor work associated with this job can be physically demanding.



Instrumental Control Electrical (ICE) Systems Technician

Job Description: The ICE Systems Technician monitors and repairs the instrumentation, controls and electrical systems in a utility scale power-generating facility. This job is a mid-level career position.

Average Salary: \$32,000 - \$44,000/year or \$16.00 - \$22.00/hour

Minimum Education Requirement: GED/high school diploma

Certifications: NABCEP Solar Thermal or PV Installer certificates are helpful.

Experience: Two to three years of experience with increasing responsibilities in troubleshooting and repair of plant instruments is helpful to advance.

Growth Potential / Employment Outlook:

- Solar customer management
- Solar Planner (utility-only positions)

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilities:

- Construction
- Electrical

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: ICE Systems Technicians are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.

Additional Comments: Outdoor work associated with this job can be physically demanding.



Solar Thermal System Installer

Job Description: The Solar Thermal System Installer involves work in the field installing residential and commercial solar thermal systems, and installing and repairing solar energy systems designed to collect, store, and circulate solar-heated water or other medium for residential, commercial, or industrial use. These are entry to mid-level career positions.

Average Salary: \$35,000 - \$50,000/year or \$17.50 - \$25.00/hour

Minimum Education Requirement: GED/high school diploma

Certifications: Electrical and/or plumbing experience helpful, and NABCEP certification often preferred.

Experience: None, to one year in the solar field.

Growth Potential / Employment Outlook:

- Solar Electric System Installation Technician
- Technical Sales

Employer Type:

- Private Firms
- Government
- Power Plants/ Facilities

Previous Job Possibilities:

- Construction
- Plumbing
- Electrical
- Solar Thermal Systems Installer Assistant

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Solar Thermal System Installers are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.

Additional Comments: Outdoor work associated with this job can be physically demanding.



Solar Electric System Installation Technician (PV System Installer)

Job Description: The Solar Electric System Installation Technical (PV System Installer) typically works with a team to install rooftop photovoltaic arrays, including electric wiring and trenching for underground conduit. This job requires mostly outdoor work, often on roofs and pitches. This is an entry to mid-level career position.

Average Salary: \$30,000 - \$50,000/year or \$15.00 - \$25.00/hour

Minimum Education Requirement: GED/high school diploma

Certifications: Electrical experience helpful and NABCEP certification often preferred

Experience: No additional experience required; commercial and/or residential experience with electrical wiring helpful; knowledge of the construction industry also helpful. Necessary to be comfortable on roofs and pitches required.

Growth Potential / Employment Outlook:

- Lead PV Installer
- Technical Sales

Employer Type: Most jobs in this position are found in private companies.

Previous Job Possibilities:

- Construction
- Electrician

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Solar Electric System Installation Technicians (PV System Installers) are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.

Additional Comments: Outdoor work associated with this job can be physically demanding.



Lead PV Installer

Job Description: The Lead PV Installer will be the leader on installation teams, commissioning and trouble shooting on residential and commercial installed systems. Limited indoor office planning may also be required. This is a mid-level career position.

Average Salary: \$30,000 - \$50,000/year or \$15.00 - 25.00/hour

Minimum Education Requirement: GED/high school diploma

Certifications: NABCEP-certified and Solar PV Installer training required.

Experience: Construction experience and electrical knowledge is helpful.

Growth Potential / Employment Outlook:

- PV Systems Design
- Technical Sales
- Solar Commercial Installation Electrician

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilities:

- Construction
- Electrician

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Lead PV Installers are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.

Additional Comments: Outdoor work associated with this job can be physically demanding. Many localities require a plumbing license, electrical license or contractor's license to gain required permits.



Solar Commerical Installation Electrician

Job Description: The Solar Commercial Installation Electrician installs solar electric-generating systems at commercial and residential customer sites, and hardwires PV energy systems to the power grid. This is an entry to mid-level career position.

Average Salary: \$34,000 - \$62,000 or \$17.00 - 30.00/hour

Minimum Education Requirement: GED/high school diploma

Certifications: NABCEP-certified Solar PV Installer

Experience: Journey-level status expected.

Growth Potential / Employment Outlook:

- Solar Commercial Installation Engineering Technician
- Technical Sales

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilites:

- Electrician
- Solar Electric

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Solar Commercial Installation Electricians are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.

Additional Comments: Outdoor work associated with this job can be physically demanding. Many localities require a plumbing license, electrical license or contractor's license to gain required permits.



Solar Commerical Installation Engineering Technician

Job Description: The Solar Commercial Installation Engineering Technician provides technical support and assistance to field technicians and engineers. The job requires both office and field work, and is considered to be an entry to mid-level career position.

Average Salary: \$42,000 - \$62,000 or \$20.00 - \$30.00/hour

Minimum Education Requirement: Associates degree or the equivalent from trade school or apprenticeship required.

Certifications: Electrical and engineering experience helpful and NABCEP certification often preferred.

Experience: None, but solar field experience helpful.

Growth Potential / Employment Outlook:

- Master PV Certification
- Technical Sales

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilites:

- Solar Electric Installation Technician

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Solar Commercial Installation Engineering Technicans are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.

Additional Comments: Outdoor work associated with this job can be physically demanding.



Solar Commerical Installation Electrician Foreman

Job Description: The Solar Commercial Installation Electrician Foreman coordinates, directs, and manages installation of solar electric-generating systems at commercial or residential customer sites. This is a mid to high-level career position.

Average Salary: \$50,000 - \$76,000/year or \$25.00 - \$38.00/hour

Minimum Education Requirement: Trade school or apprenticeship preferred
Recommended college coursework: Solar or Renewable Energy

Certifications: NABCEP-certified Solar PV Installer

Experience: Journey level attained, plus three to five years of experience preferred. Direct experience in a construction environment in a similar capacity, and carpentry and/or roofing experience are required.

Growth Potential / Employment Outlook:

- Project Manager
- Residential Installation Electrician
- Technical Sales

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilities:

- PV Installer
- Electrician
- Construction

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Solar Commerical Installation Electrician Foremans are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.

Additional Comments: Outdoor work associated with this job can be physically demanding.



Solar Field Service Technician

Job Description: Solar Field Service Technicians provide on-site maintenance for solar electric systems. This is a high-level career position.

Average Salary: \$60,000 - \$80,000/year or \$30.00 - \$40.00/hour

Minimum Education Requirement: GED/high school diploma

Certifications: NABCEP certified

Experience: At least five years of technical experience performing on-site maintenance is required.

Growth Potential / Employment Outlook:

- Solar Electric System Installation Technician
- Technical Sales

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilities:

- PV Installer
- Electrician
- Construction

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Solar Field Service Technicians are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.

Additional Comments: Outdoor work associated with this job can be physically demanding.



Residential / Commercial Solar Sales Consultant

Job Description: Residential / Commercial Solar Sales Consultants establish sales plans, prepare proposals and close client deals. This is a mid to high-level career position.

Average Salary: \$45,000 - \$85,000/year or \$22.00 - \$42.00/hour, depending on commission.

Minimum Education Requirement: Bachelors degree required.

Certifications: Two to five years experience in commercial and/or in-home sales, and NABCEP certification helpful.

Experience:

- PV Installer
- Solar Thermal Installer

Growth Potential / Employment Outlook:

- Executive Management
- Energy Conservation Representative

Employer Type:

- Private Firms

Previous Job Possibilities:

- PV Installation
- PV Systems Design

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Residential / Commercial Solar Sales Consultants are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.



Solar Energy Engineer

Job Description: Solar Energy Engineers perform site-specific engineering analysis and evaluate energy- efficiency and solar projects for residential, commercial and industrial customers by utilizing building simulation software. This is a high-level career position.

Average Salary: \$75,000 - \$80,000/year or \$37.50 - \$40.00/hour

Minimum Education Requirement: Bachelors degree in an engineering discipline, masters degree preferred. Recommended college coursework: Engineering and Physics

Certifications: Professional Engineer, Engineer-In-Training and/or Certified Energy Manager (CEM) are desired.

Experience Needed/Desired: Three to ten years related experience/training; three to five years of facility-related engineering experience; and two to five years of experience within the green building, energy efficiency, building science or related field.

Growth Potential / Employment Outlook:

- Solar Operations Engineer
- Executive Management

Employer Type:

- Private Firms

Previous Job Possibilities:

- Electrical Engineer

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Solar Energy Engineers are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.



Solar Commerical Installation Engineer

Job Description: Solar Commercial Installation Engineers install solar panel systems on commercial structures; work with blueprints; and assist with technical concerns during installations. This is a mid-to-high level career position.

Average Salary: \$62,000 - \$100,000/year or 30.00 - \$50.00/hour

Minimum Education Requirement: Associates degree or the equivalent from trade school or apprenticeship (higher degree not required).

Certifications: NABCEP-certified Solar PV Installer recommended.

Experience Needed/Desired: Established engineer with experience in solar installation required.

Growth Potential / Employment Outlook:

- Technical Sales
- Management

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilites:

- Construction
- Residential PV Installer
- Residential PV Designer

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Solar Commercial Installation Engineers are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.

Additional Comments: Outdoor work associated with this job can be physically demanding.



Job Descriptions: Solar Power Development, Manufacturing, Sales and Project Management

Job descriptions included in this packet of materials:

- *Solar Fabrication Technician*
- *Solar Hot Water Manufacturing Technician*
- *PV Fabrication and Testing Technician*
- *Solar Energy Systems Designer*
- *Solar Thermoelectric Plant Manager*
- *PV Power Systems Engineer*
- *PV Solar Cell Designer*
- *Solar Lab Technician*
- *M Design Engineer*
- *Solar Operations Engineer*

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Solar Fabrication Technician

Job Description: Solar Fabrication Technicians fabricate and assemble metal solar collectors according to job order specifications, using machine shop tools and equipment. This is an entry to mid-level career position.

Average Salary: \$20,000 - \$40,000/year or \$10.00 - \$20.00/hour

Minimum Education Requirement: GED/high school diploma

Certifications: NABCEP certification is helpful.

Experience: A combination of three to six months of directly related training and/or experience is typically required.

Growth Potential / Employment Outlook:

- Production Management

Employer Type:

- Private Firms
- Government
- Power Plants/ Facilities

Previous Job Possibilities:

- Solar Energy System Installer Assistant
- Solar and PV Installation
- Construction

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Solar Fabrication Technicians are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.



Solar Hot Water Manufacturing Technician

Job Description: Solar Hot Water Manufacturing Technicians manufacture solar hot water heaters. This is an entry to mid-level career position.

Average Salary: \$44,000 - \$54,000/year or \$22.00 - \$27.00/hour

Minimum Education Requirement: Associates degree in Electronics/Electrical Engineering, Material Science, Physics, Chemistry, or related discipline or equivalent training and work experience. Recommended college coursework: Engineering, Sciences, Solar Technology

Certifications: NABCEP certification helpful.

Experience Needed/Desired: None required.

Growth Potential / Employment Outlook:

- Production Management

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilities:

- Solar Energy Systems Installer
- PV Fabrication
- Testing Technician

Geographic Focus: Solar Hot Water Manufacturing Technicians are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.



PV Fabrication and Testing Technician

Job Description: PV Fabrication and Testing Technicians fabricate and test flexible, translucent plastic solar cells. This is a mid-level career position.

Average Salary: \$44,000 - \$54,000/year or \$22.00 - \$27.00/hour

Minimum Education Requirement: Associates degree in Electronics/Electrical Engineering, Material Science, Physics, Chemistry, or related discipline or equivalent training and work experience. Recommended college coursework: Electronics, Electrical Engineering, Chemistry, Solar, Physics, Material Science

Certifications: None required.

Experience: Two years work experience in a laboratory environment is highly desirable.

Growth Potential / Employment Outlook:

- Production Management

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilities:

- Solar Lab Technician
- PV Installer
- PV Systems Designer

Geographic Focus: PV Fabrication and Testing Technicians are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.



Solar Energy Systems Designer

Job Description: Solar Energy Systems Designers design solar domestic hot water and space heating systems for new and existing structures, applying knowledge of energy requirements of structure, local climate conditions, solar technology and thermodynamics. This is a mid to high-level career position.

Average Salary: \$40,000 - \$70,000/year or \$20.00 - \$35.00/hour

Minimum Education Requirement: Technical School is required.

Certifications: NABCEP certification is required.

Experience: Mid-to-high level of work experience desired.

Growth Potential / Employment Outlook:

- Solar Electric-System Installation Technician
- Technical Sales

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilities:

- PV or Solar Systems Installer
- Systems Engineer

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Solar Energy Systems Designers are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.



Solar Thermoelectric Plant Manager

Job Description: Solar Thermoelectric Plant Managers manage an entire thermoelectric plant. This is a high-level career position.

Average Salary: \$74,000 - \$88,000/year or \$37.00 - \$44.00/hour

Minimum Education Requirement: Trade school, apprenticeship, or bachelors degree required. Recommended college coursework: Electrical, Electronic, and/or Energy Engineering

Certifications: Professional Engineer (P.E.) certification required.

Experience: Minimum two years working experience, familiarity with thermoelectric technology as well as the solar energy market is helpful.

Growth Potential / Employment Outlook:

- Executive Management

Employer Type:

- Power Plants/Facilities

Previous Job Possibilities:

- Solar Operations Engineer

Geographic Focus: Solar Thermoelectric Plant Managers are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.



PV Power Systems Engineer

Job Description: PV Power Systems Engineer drive the development and implementation of highly efficient grid-connected systems for concentrated PV technologies. This is a high-level career position.

Average Salary: \$76,000 - \$88,000/year or \$38.00 - \$44.00/hour

Minimum Education Requirement: Masters degree in Electric Power Engineering or Energy Efficiency; or Bachelors degree with strong work experience. Recommended college coursework: Electrical Engineering, Renewable Energy, and Physics

Certifications: None required.

Experience Needed/Desired: Three to eight years experience including large-scale grid interconnect systems experience.

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities
- Laboratories

Previous Job Possibilities:

- Solar Systems Designer
- PV Engineer
- Energy Engineer
- Electrical Engineer

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: PV Power Systems Engineers are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.



PV Solar Cell Designer

Job Description/Task: PV Solar Cell Designers design concentrated photovoltaic solar cells for mass production. This is a mid to high-level career position.

Average Salary: \$77,000 - \$91,000/year or \$38.50 - \$45.00/hour

Minimum Education Requirement: Advanced degree in Electrical Engineering, Materials Science, Chemistry, Physics, or related field. Recommended college coursework: Engineering, Sciences, Renewable Energies

Certifications: None required.

Experience: Minimum five years of industry experience; solar experience not required.

Growth Potential / Employment Outlook:

- Solar Energy Systems Designer
- Electrical Engineer

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilities:

- Electrical Engineering

Geographic Focus: PV Solar Cell Designers are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.



Solar Lab Technician

Job Description/Task: Solar Lab Technicians design concentrated photovoltaic solar cells for mass production. This is a high-level career position.

Average Salary: \$77,000 - \$91,000/year or \$38.50 - \$45.00/hour

Minimum Education Requirement: Advanced degree in Electrical Engineering, Materials Science, Chemistry, Physics, or related field. Recommended college coursework: Engineering, Sciences, Renewable Energies

Certifications: None required.

Experience: Minimum five years of industry experience; solar experience not required.

Growth Potential / Employment Outlook:

- Solar Energy Systems Designer

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilities:

- Electrical Engineer

Geographic Focus: Solar Lab Technicians are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.



M Design Engineer

Job Description/Task: M Design Engineers apply solar expertise to new system designs and collaborate with the design and process engineering teams. This is a high-level career position.

Average Salary: \$80,000 - \$100,000/ year or \$40.00 - \$50.00/hour

Minimum Education Requirement: Bachelors degree in Electrical Engineering, Mechanical Engineering, Architectural Design, Computer Science or an equivalent level of education and experience.

Certifications: None required.

Experience: Minimum of three years of solar design experience.

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilities:

- Solar System Design Engineer
- Solar Electric System Installation Technician
- Electrical Engineer

Geographic Focus: M Design Engineer positions are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.



Solar Operations Engineer

Job Level: High level

Job Description/Task: Solar Operations Engineers work with integration partners to design solar facilities and provide expertise on solar technology and innovation. This is a high-level career position.

Average Salary: \$90,000 - \$100,000/year or \$45.00 - \$50.00/hour

Minimum Education Requirement: Bachelor's degree in Electrical Engineering preferred. Recommended college coursework: Electrical Engineering, Solar Operations

Certifications: Professional Engineer (P.E.) accreditation required; NABCEP certificate and/or Electrical Contractors licenses preferred.

Experience: Experience designing and building PV electrical generation systems required.

Growth Potential/Employment Outlook:

- Executive Management

Employer Type:

- Private Firms
- Government
- Power Plants/Facilities

Previous Job Possibilities:

- Solar PV Designer

Critical Development Experiences: The number of installations and NABCEP certification are important for career advancement.

Geographic Focus: Solar Operations Engineer positions are necessary across the U.S., especially the West and Northeast/Mid-Atlantic.