



Appendix A

WORK PROCESS SCHEDULE

AND

RELATED INSTRUCTION OUTLINE



Appendix A

WORK PROCESS SCHEDULE

SOLAR TECHNICIAN (USDOL Existing Title: Residential Wireman)

O*NET-SOC CODE: 47-2111.00 RAPIDS CODE: 1022

This schedule is attached to and a part of these Standards for the above identified occupation.

1. APPRENTICESHIP APPROACH

Time-based Competency-based Hybrid

2. TERM OF APPRENTICESHIP

The term of the apprenticeship is approximately two years with an OJL attainment of 4,000 hours, supplemented by the minimum required 295 hours of related instruction.

3. RATIO OF APPRENTICES TO JOURNEYWORKERS

The apprentice to journeyworker ratio is: 1 Apprentice(s) to 1 Journeyworker(s).

4. APPRENTICE WAGE SCHEDULE

Apprentices shall be paid a progressively increasing schedule of wages based on either a percentage or a dollar amount of the current hourly journeyworker wage rate, which is: \$19.00/hour.

Period	Duration (Hours)	Wage (Hourly)	Description/Duration Requirements for Advancement
1st	2000	\$17.00	Apprentice start wage until successful completion of semesters 1 and 2 of the online related instruction (RI) and a minimum of 2,000 hours of on-the-job learning (OJL) and confirmed by their employer/mentor.
2nd	1000	\$17.50	Upon successful completion of semester 3 of the online related instruction (RI) and a minimum of 3,000 hours of on-the-job learning (OJL) and confirmed by their employer/mentor.
3rd	1000	\$18.00	Until finished with all OJL and RI hours.
End Wage	4000	\$19.00	Successful completion of all apprenticeship requirements.

5. PROBATIONARY PERIOD

Every applicant selected for apprenticeship will serve a probationary period of 500 hours or one year, whichever is less.

6. SELECTION PROCEDURES

See Selection Procedures after On-The-Job Learning Outline/Related Instruction Outline.



Appendix A
ON-THE-JOB LEARNING OUTLINE
SOLAR TECHNICIAN (USDOL Existing Title: Residential Wireman)
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Description	Approximate Hours
Mounting Structures <ul style="list-style-type: none"> • Explain the process for installing mounting structures. • Explain the process for installing mounting structure attachments and foundations. • Explain the process for grounding and bonding mounting structures. • Describe the methods used to properly torque mechanical connections on mounting structures. 	1000
PV Modules <ul style="list-style-type: none"> • Explain the process for determining the physical layout for PV modules. • Describe the process for installing a PV module. • Explain the process for connecting and wiring PV module circuits. • Explain the process for grounding and bonding PV modules. • Identify appropriate wire management techniques for PV modules. 	1125
Conduit <ul style="list-style-type: none"> • Identify applications and techniques for conduit bending. • Describe common techniques for conduit cutting. • Summarize applications and techniques for conduit mounting and burial. • Explain the process of trenching for conduit burial. • Identify commonly used fittings and their appropriate applications. • Explain best practices for wire pulling. • Identify alternative methods for protecting, supporting and securing conductors. 	500
Installation of Electrical Equipment <ul style="list-style-type: none"> • Identify commonly used electrical terminations and their appropriate applications. • Explain common techniques for wire stripping. • Identify commonly used electrical connectors and their appropriate applications. • Describe the methods used to properly torque mechanical connections on electrical equipment. • Explain the process for installing a combiner box. • Explain the process for installing a disconnect. • Explain the process for installing power distribution equipment/switchgear. • Explain the process for making different types of interconnections. 	500
Safety <ul style="list-style-type: none"> • Discuss how to perform a job hazard analysis. • Give examples of hazard prevention and control methods. • Explain safety considerations used when setting up equipment. • Describe commonly used forms of electrical personal protective equipment. 	125
Communications <ul style="list-style-type: none"> • Identify applications and installation methods for data cable. • Summarize the process for installing a monitoring system. • Summarize the key components of a data acquisition system. • Summarize the key components of a meteorological station. • Describe commonly used sensors and their applications. • Summarize the primary considerations for IT integration. 	250



Commissioning/Operations and Maintenance <ul style="list-style-type: none">• Explain the key steps in the commissioning process.• Identify key factors to evaluate during a physical inspection.• Explain the process for evaluating the performance of a PV system.• Summarize the troubleshooting process including key areas of focus.• Identify meter types and their appropriate applications in commissioning and operations and maintenance.• Describe how to use thermal imaging to support the maintenance of a system.• Explain the process for IV curve tracing.• Explain the process for performing insulation resistance tests.	250
Project Management <ul style="list-style-type: none">• Describe the key responsibilities of a project leader.• List the steps necessary to prepare materials for an installation.• Describe the optimal jobsite workflow.• Summarize the skills required to successfully manage teams.• Describe methods for ensuring quality during system installation.	250
TOTAL HOURS	4,000



Appendix A
RELATED INSTRUCTION OUTLINE
SOLAR TECHNICIAN (USDOL Existing Title: Residential Wireman)
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Provider	
Name: Solar Energy International	
Contact: Chris Turek	
Contact Title: VP of Marketing and Business Development	
Address: 39845 Mathews Lane, Paonia, CO 81428	
Email: chris@solarenergy.org	Phone Number: 970-445-8919
Method of Instruction (In Person, Online, Combination): Online	

Instruction shall include, but not be limited to:

Course or Training Name/Description	Number of Hours
Semester 1	
PVOL101: Solar Electric Design and Installation (Grid-Direct) – Part 1	30
OSHA 30 Hour – Construction	30
CE523: Residential/Commercial Roof-Mounted PV Installation Safety	12
CE525: Large-Scale Ground-Mounted PV Installation Safety	8
RE101: Fundamental Math for Solar Applications	4
Semester 1 Related Instruction Hours	84
Semester 2	
PVOL101: Solar Electric Design and Installation (Grid-Direct) – Part 2	30
PVOL350: PV Systems – Tools and Techniques for Operations and Maintenance	40
Semester 2 Related Instruction Hours	70
Semester 3	
PVOL202: Advanced PV System Design and the NEC (Grid-Direct)	60
CE540: 2023 National Electrical Code (NEC®) Updates: Solar and Storage Systems	4.5
Megawatt Scale Design	8
EV Charging Fundamentals	4
CE532: The Physics of Solar Cells and IV Curves	1.5
CE534: Dive into Diodes: A PV Circuit Perspective	2
CE536: Demystifying the Warranty	1.5
CE527: Thermography and Drones in PV Applications	4
Semester 3 Related Instruction Hours	85.5
Semester 4	
PVOL203: PV System Fundamentals (Battery-Based)	40
CE524: PVsyst for PV System Production Modeling	4
CE533: Comparing Battery Technologies	4



CE529: Hazards of Electrochemical Energy Storage in Solar + Storage Applications	8
<i>Semester 4 Related Instruction Hours</i>	<i>56</i>
<i>TOTAL RELATED INSTRUCTION HOURS</i>	<i>295.5</i>

SELECTION PROCEDURES

Applicants will need to fill out a Job Openings Form with a participating SEI Engage Solar Technician Apprenticeship Program Employer. If the applicant has any additional questions on the qualifications or needs additional information to complete the form, it will be provided by the employer.

1. Receipt of the properly completed Job Openings Form will be necessary before candidates are chosen.
2. Sponsor's policy is to only accept applications for currently open positions.
3. Applicants chosen for the interview process will then be required to fill out an employment application.
4. All applications will be identical in form and requirements.
5. Completed applications will be checked for minimum qualifications. Applicants deficient in one or more qualifications or requirements or making false statements on their applications will not qualify for further review. No further processing of such applications will be taken.
6. Applicants meeting the minimum qualifications and submitting the required documents will be notified where and when to appear for an interview.
7. Employer will schedule an interview and evaluation session. All applicants who have met the minimum qualifications and have submitted the required documents will be notified of the date, time, place and/or method for the interview. The recruiter/interviewer will record the questions asked and the general nature of the applicant's answers during this interview process. The employer's selecting official will evaluate each applicant interviewed on like factors taking into account the information on the application and required documents, as applicable using an Interview Summary Form.
8. Upon completing all interviews and analyzing the applicants' qualifications, the employer's selecting official will make a determination using the annotated Interview Forms. Applicant(s) with the highest evaluation will be selected first. The selected applicant(s), depending on the number of vacancies offered by the advertised announcement, will be offered employment in order of evaluation. Selected applicants, upon acceptance of employment, will be placed in the apprenticeship program after a background check and receipt of proof of eligibility to work in the U.S.
9. Selected applicants must respond to the offer of employment within 48 hours of notice of selection. If applicant(s) do not respond within the period specified the employer will move past their name to the next preferred applicant.
10. After all offers of employment have been extended and accepted by the selectee(s), as applicable, the remaining applicants in the pool of eligible applicants will be notified of their non-selection under this vacancy announcement. The non-selection notice will also include instructions on how they can apply for any future openings.
11. Once the employer has offered the position to the newly hired employee, that new employee will be enrolled as an apprentice in the SEI Engage Solar Technician Apprenticeship Related Instruction Program and RAPIDS system.



Direct Entry:

The sponsor will evaluate the training and prior work experience received to grant appropriate credit on the term of apprenticeship. Entry of apprenticeship candidates shall be done without regard to race, color, religion, national origin, or sex.

Incumbent Employees: An individual who is employed (incumbent employee) by the employer for a minimum of 6 months (1000 hours) and meets the minimum qualifications may be admitted directly into the program. Direct entry of incumbent employees shall be done without regard to race, color, religion, national origin, or sex.