



Related Technical Instruction (RTI) Outline for the Solar Technician Apprenticeship Program

Sponsor Name	
RTI Provider Name	Everblue
RTI Provider Address	8720 Camberly Road, Huntersville, NC 28078
RTI Contact Name	Jon Boggiano
RTI Contact Phone	(800) 460-2575
RTI Contact Email	training@support.goeverblue.com
Total Hours of Instruction	146

Course		Hours	
	PV101 Solar PV Associate	40	
	<ul style="list-style-type: none">• Types of Solar PV Systems• Solar Industry Drivers• Advantages & Disadvantages of Solar PV• PV System Sizing• Basics of Electricity• Solar Energy Principles• PV System Components• Relevant Codes• Safety• PV System Maintenance• Sales & Economics		
Course		Hours	
	PV201 Solar PV Installer	40	
	<ul style="list-style-type: none">• Tools of the Trade (including Inverters & Batteries)• PV System Components• PV System Sizing• Service Panels• PV System Design• Assembly of Solar Panels• Grid-Tied & Off-Grid Installation Technique• Grounding, Wiring & Mounting• Labeling• Safety• Commissioning & Troubleshooting		

Course	PV202 Solar PV Design	Hours	20
<ul style="list-style-type: none"> • Customer Expectations • Project Criteria • Project Site • Mechanical Design • Electrical Design • System Monitoring • Project Documentation • Permits and Approvals • System Design 			
Course	PV203 Solar Sales Professional	Hours	16
<ul style="list-style-type: none"> • Financial, Ethical, and Environmental Reasons to “Go Solar” • Customer Motivations & Qualifications • Solar Site Evaluation • Client Energy Analysis • Tax Incentives, Solar Renewable Energy Credits, and Grants • Net Metering • Return on Investment • Common Customer Questions • Solar Business Considerations 			
Course	OSHA 30 Construction Safety	Hours	30
<ul style="list-style-type: none"> • Personal Protective Equipment • Health Hazards in Construction • Stairways and Ladders • Fire Protection and Prevention • Materials Handling, Use, and Disposal • Safety and Health Programs • Scaffolds • Tools – Hand and Power • Welding and Cutting • Lead & Asbestos Exposure 			



Work Process Schedule

Solar Technician		
Job Description: Establish oneself with the knowledge, skills, and abilities to work in a variety of roles related to solar energy projects, including design, installation, and sales.		
RAPIDS Code:	O*NET Code: 47-2231.00	
Estimated Program Length: 1 year		
Apprenticeship Type: <input checked="" type="checkbox"/> Competency-Based <input type="checkbox"/> Time-Based <input type="checkbox"/> Hybrid		

Suggested On-the-Job Learning Outline

Encompasses all the knowledge of the fundamental principles of the application, design, installation, and operation & maintenance of Photovoltaic (PV) systems		
Competencies	Date Completed	Initial
A. Describes types of PV system applications: grid-interactive systems with and without storage; stand-alone systems for residential, commercial, and industrial applications; remote industrial systems; specialty applications; and solar-integrated products.		
B. Identifies key features and benefits of specific types of PV systems: energy security; predictable electricity costs; simplicity of design and installation; environmental impact and social benefit; economic benefits; portability of system; system cost; reliability of performance		
C. Lists the key components of specific types of PV systems: modules; structural attachments (e.g. racking, mounting); power electronics (e.g. inverters, optimizers, charge controllers); switch gear; balance of system components; point of utility interconnection; energy storage; monitoring equipment		
D. Lists the advantages and disadvantages of PV system compared to other electricity generation sources: economics; accessibility to the site; reliability of the system; maintenance; environmental impact; efficiency; distributed generation		
E. Identifies commonly used electrical test equipment and its purpose: multimeters; insulation testing devices; IV curve		

tracer; infrared thermometer; irradiance meter; battery capacity devices; hydrometer		
F. Demonstrates the ability to analyze simple electrical circuits		
G. Describes the effects of performance parameters that are commonly monitored for PV systems		
H. Describes different types and elements of system performance monitoring equipment		
I. Identifies common factors that result in deviations from expected system performance		

Demonstrates ability to design both the mechanical and electrical design components with confidence, accuracy, and safety		
Competencies	Date Completed	Initial
A. Ensures equipment is appropriate for intended use		
B. Identifies relevant codes and requirements that impact PV design and installation		
C. Recognizes electrical concepts and terminology		
D. Identifies factors impacting solar resource on design and performance		
E. Identifies equipment specification data		
F. Describes the functions of typical components in PV systems		
G. Explains PV system sizing components		
H. Reads an electrical diagram of a PV system		
I. Recognizes structural requirements of PV systems		

Demonstrates ability to work in a variety of decision-making roles on PV installation job sites		
Competencies	Date Completed	Initial
A. Identifies the elements of a complete site-specific safety plan, plan set, racking installation, electrical component installation, energy storage component installation, and system commissioning procedure		
B. Develops safety plan and safeguards against hazards		
C. Installs raceways, electrical equipment, DC PV system conductors, AC PV system conductors, grounding and bonding systems,		
D. Completes utility interconnection point		
E. Installs system monitoring, control, and communication hardware		

F. Installs battery equipment		
G. Installs ground-mounted structure		
H. Installs PV modules		
I. Reviews or develops commissioning protocol		
J. Completes visual and mechanical inspection		
K. Conducts mechanical and electrical tests		
L. Verifies system operation		
M. Confirms system completion		
N. Orients end user to system		

Establishes rapport with consumer/end user to ensure the successful implementation of the Solar PV system project and the accomplishment of stated goals		
Competencies	Date Completed	Initial
A. Determines necessary customer information to collect		
B. Identifies the customer's motivations to install solar		
C. Estimates the system size to meet the customer's financial objective		
D. Identifies information from a client customer utility bill relevant to grid-interactive solar		
E. Identifies information from the client on electricity usage relevant to stand-alone solar		
F. Lists key factors that impact the economics of solar		
G. Recognizes how policies and available financial benefits affect different PV markets		
H. Identifies financial risks associated with PV systems		
I. Identifies common financing options		
J. Identifies predictable maintenance costs over the life of the system		

Understands the safety concerns associated with the different types of PV systems.		
Competencies	Date Completed	Initial
A. Demonstrates knowledge of fall hazards		
B. Demonstrates knowledge of DC and AC hazards (e.g. electrical arcing, fire, arc flash)		
C. Demonstrates knowledge of shock hazards		
D. Demonstrates knowledge of environmental and jobsite hazards		
E. Demonstrates knowledge of proper lifting		
F. Demonstrates knowledge of hazardous materials		

G. Maintains an active OSHA 10 or OSHA 30 Construction Safety card		
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Suggested Related Instruction Outline

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Address: 8720 Camberly Road, Huntersville, NC 28078	
Email: training@support.goeverblue.com	Phone Number: (800) 460-2575
Suggested Related Instruction Hours: 144	

Course Number	Course Title	Contact Hours
PV101	Solar PV Associate	40
PV201	Solar PV Installer	40
PV202	Solar PV Designer	20
PV203	Solar Sales Professional	16
	OSHA 30 Training	30