Course Title: Solar Installer Training – Solar Electric Systems

Course Description: The course will entail basic knowledge of solar photovoltaic (PV) cells, modules and system components; electrical circuits; and PV system design estimation and code requirements. The courses follows the Institute for Sustainable Power Quality (ISPQ) standards and North American Board of Certified Energy Practitioners (NABCEP) Photovoltaic Entry Level Certificate of Knowledge (COK) of PV Systems Learning Objectives and Job Task Analysis including recommended safety procedures, system design, electrical code and industry standard practices. After completion, students will be eligible to take the NABCEP PV Entry Level Certificate of Knowledge Exam.

Course Prerequisite(s): N/A

Course Objectives:
1. Demonstrate knowledge and applications of key solar electric system terms and concepts.
2. Employ basic safety procedures for working around solar electric systems.
3. Identify the basic components that make up a solar electrical system.
4. Size and design a simple photovoltaic system.

Textbook(s): All materials provided and included in course fee.

Lesson Plan – by week or session
Session 1: Working Safely with Photovoltaic (PV) Systems
   OSHA Regulations, Electrical Safety, Fall Protection, Tools, Personal Protective Equipment (PPE), Working Space for Electrical Systems, Photovoltaic Modules, Battery Safety

Session 2: Conducting a Site Assessment
   Shading, Array Orientation, Array Location, Array Mounting Methods, BOS Locations
   Selecting a System Design
   Available Modules and Inverters,
   Adapting the Mechanical Design
   Roof Mounting, Mounting Materials, BOS Layout, Tracking Mounts

Session 3: Adapting the Electrical Designs
   PV Modules, Wire, Fuse, Circuit Breaker and Disconnect Sizing
   Temperature and Conduit Fill Corrections for Ampacity of Conductors,
   Voltage Drop for Circuits, Sizing Conductors Based on Power and Required OCPD Ratings, Grounding, Batteries and Battery Wiring, Charge Controllers and Linear Current Boosters, Generators, Inverters, Point of Utility Connection, Optional Standby System Panels

12/10/2012
Session 4: Installing Subsystems and Components at the Site (Roof Model Outside)
Electrical Component Mounting, Testing and Programming Equipment,
Marking and Labeling
Performing a System Checkout and Inspection
Maintaining and Troubleshooting a System
Array Maintenance, Battery Maintenance, Inverter and Charge Controller
Maintenance

Session 5:
Working Safely with Photovoltaic Systems
Conducting Site Assessment
Selecting a System Design
Adapting the Mechanical Design
Adapting the Electrical Design
Installing Systems and Subsystems at the Site
Performing a System Checkout and Inspection
Maintaining and Troubleshooting a System
Student Evaluation of Instruction