**Photovoltaic Systems – 2017 *NEC* (2-Part Series)**

**Provider:** International Association of Electrical Inspectors – International Office (IAEI-IO)

**Instructor:** Jim Rogers

**Course Length:** 3 Hours

**Course Description:**

This course provides information about installation and inspection of solar photovoltaic (PV) systems.  The program provides an overview of the major design issues and minimum Code requirements related to PV systems.  This material is primarily based on the requirements set forth in Article 690 of the 2017 NEC**.** The course utilizes photos and illustrations that enhance attendee understanding.

**Course Outline:**

**Part 1**

* Definitions in Article 100
* General Requirements
	+ Common PV Equipment Setup
	+ Identification of PV System Components and Common Configurations
	+ General Requirements for PV Systems, Equipment and Qualified Personnel
	+ PV Installation Concerns
	+ 690.2 Definitions
	+ Multiple Inverters
	+ Alternating-Current (ac) Modules
* Circuit Requirements
	+ Maximum Voltage
	+ PV Source and Output Circuits
	+ Circuit Sizing, Conductor Ampacity
	+ Overcurrent Protective Devices for PV Array
	+ Stand-Alone Systems
	+ Arc-Fault Circuit Protection (dc)
	+ Rapid Shutdown of PV Systems on Buildings
* Disconnecting Means
	+ PV System
	+ PV Equipment

**Part 2**

* Wiring Methods
	+ Wiring Systems
	+ Identification and Grouping
	+ Single-Conductor Cable
	+ Multiconductor Cable
	+ Flexible Cords and Cables Connected to Tracking PV Arrays
	+ Small-Conductor Cables
	+ PV System Direct-Current Circuits on or in a Building
	+ Flexible, Fine-Stranded Cables
	+ Bipolar PV Systems
* Grounding
	+ System Grounding
		- Grounding Configurations
		- Ground-Fault Protection
	+ Point of System Grounding Connection
	+ Equipment Grounding and Bonding
	+ Sizing of Equipment Grounding Conductors for PV Source and Output Circuits
	+ Grounding Electrode System
* Marking
	+ Modules
	+ Direct-Current PV Power Source
	+ Interactive System Point of Interconnection
	+ PV System Connected to Energy Storage System
	+ Identification of Power Sources
		- Facilities with Stand-Alone Systems
		- Facilities with Utility Services and PV Systems
		- Buildings with Rapid Shutdown
* Energy Storage Systems
	+ Definitions
	+ Equipment Approval
	+ System Installation
	+ Directory
	+ Point of Connection
	+ Interrupting and Short-Circuit Current Rating
	+ Disconnecting Means – Sources
	+ Disconnecting Means – Equipment
	+ Disconnect Devices
	+ Interactive System Disconnecting
	+ Overcurrent Protection
	+ Ground-Fault Protection
* Microgrid Systems
* Energy Storage Systems

**Methods of Presentation:** Pre-recorded GoToWebinar/Microsoft PowerPoint® Presentations

**Optional Materials:**

*Analysis of Changes, NEC 2017.* International Association of Electrical Inspectors (IAEI). 2016.

*National Electric Code 2017.* NFPA 70. 2017.