ACP 6000-2-2024

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FOREWORD AND BACKGROUND

The Foreword and Background sections are included with this document for information purposes only and are not part of the American Clean Power Association (ACP) ACP 6000-2-2024 *Solar Photovoltaic (PV) Energy Entry-Level Technician Minimum Standard*.

Foreword

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Background

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The American Clean Power Association has created this entry-level, utility-scale solar photovoltaic (PV) operations and maintenance technician guideline to establish minimum competencies for such entry-level technicians. This standard establishes the minimum knowledge, skills, abilities, and competencies for an entry-level solar PV operations and maintenance technician to safely perform required and supervised preventive and corrective maintenance.

2 Ps

This framework is intended to assist employers, workforce development and training professionals, academia, and others with standardized training and education for entry-level, utility-scale solar PV operations and maintenance technicians, serving as a point of reference for the development of a minimum program curriculum base. Programs should meet or exceed the framework developed.

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Term	Definition
megohmmeter	Used to measure insulation resistance and powered by an inbuilt DC generator or battery of a higher voltage range.

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6.1.6.1 Describe the difference between string inverters and central inverters

6.1.6.2 Describe MPPT

6.1.7 Demonstrate basic understanding and knowledge of the function and operation of each type of mounting system (fixed-tilt, single-axis tracker, dual-axis tracker):

6.1.7.1 Describe the basic wind stow and inclement weather operation

6.1.8 Describe different overcurrent protective devices (fuses, motor protection, circuit breakers, etc.) and surge protection devices:

6.1.8.1 Describe the protocol for system verification after a lightning strike nearby or within the plant

6.2 Describe site access procedures and restrictions

6.3 Describe NERC CIP regulations and cyber security in regard to site access, critical infrastructure control, and reporting requirements

6.4 Describe environmental rules and regulations, including waste handling, spill response for the chemicals in use on the site, permit conditions, and Spill Prevention Containment Countermeasures Plan and compliance

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aid to be rendered, the physical handling characteristics, combustion characteristics, chemical reactivity, and waste disposal

7.2 Recognize and understand employee responsibilities for workplace electrical safety requirements under *CFR* 29 §1910.269, *CFR* 29 §1910 Subpart S, and NFPA 70E

7.3 Demonstrate an understanding of LOTO. Identify a system the energy isolating devices. Identify a LOTO lock, tag, and articulate the conditions for both application and removal. Articulate the functions of the authorized person and the affected person per company LOTO policy; *CFR* 29 §1910.147

7.4 Using an equipment manual, articulate the safety hazards and proper PPE when using tools or around specified machinery

7.5 Successfully complete a nationally recognized first aid course (i.e., American Red Cross, American Heart Association, National Safety Council, Global Wind Organization, etc.), including bloodborne pathogens training. Recognize and treat medical injuries, including CPR and use of an AED

7.6 Complete training on the site's Emergency Action Plan including communications, evacuations, and locations

7.7 Complete training on the site's spill response procedures, typically SPCC Plan

7.8 Describe the safety risks and hazards of the solar PV facility, to include the following:

7.8.1 DC and AC voltages and locations of the equipment

7.8.2 Arc flash:

7.8.2.1 Articulate the meaning of the various distances and energy levels on the arc flash label

7.8.2.2 Identify the PPo3 ( )-12.2 (P)2.4 (V)2.3 4(1 (ac)-8 (ua)-12.3 (t)-1.1 (i)3.2 (o)-12.3 (ns)-8 (,)-1.2 (an)-1

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8.7.3.4 Pumps

9 Entry Level Technician Skills

9.1 Electrical theory and skills:

9.1.1 Demonstrate basic understanding of electrical systems, symbols, and charts

9.1.2 Basic electrical theory and general knowledge:

9.1.2.1 Electrical Safety – describe general electrical safety awareness

9.1.2.2 Demonstrate basic understanding of electrical systems, symbols, and charts

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9.1.7.2.3 Auxiliary transformer

9.1.8 Describe general knowledge of function and operation of protection relays

9.1.9 Demonstrate the understanding of checking fuse continuity

9.1.10 Describe general knowledge of function and operation of recloser or point of interconnection switchgear

9.1.11 Describe general knowledge of fiber optics:

9.1.12 Storage devices: expand to include knowledge function and dangers:

9.1.12.1 UPS:

9.1.12.1.1 Describe types and purposes of UPS for solar facilities

9.1.12.1.2 Describe danger associated with UPS

9.1.12.1.3 Describe isolation of UPS

9.1.12.2 Capacitor banks:

9.1.12.2.1 Describe types and purposes of capacitor banks used in the inverter

9.12.2.2 Describe danger associated with capacitor banks

9.1.13 Demonstrate understanding of the National Electrical Manufacturer Association/ingress protection enclosure ratings

10 Ref

Ref Title	Ref Num
Labor, Regulations Relating to Labor, Occupational Safety and Health Administration, Department of Labor, Occupational Safety and Health Standards; The Control o	

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