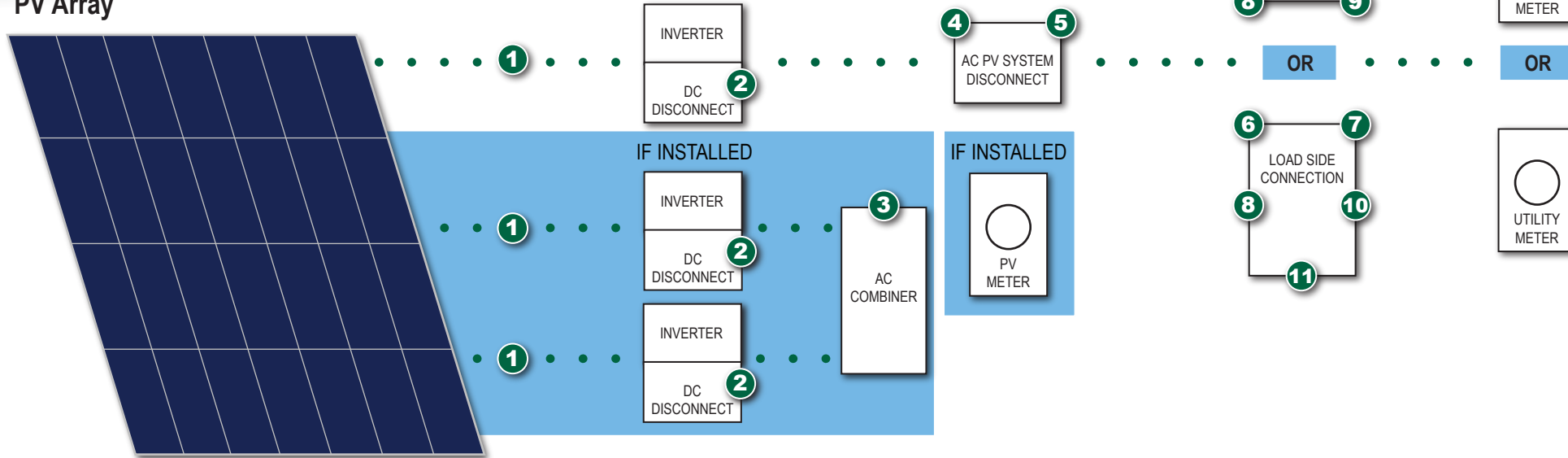


PV SYSTEM LABELING

Requirements for the 2020 Massachusetts Electrical Code¹

PV Array



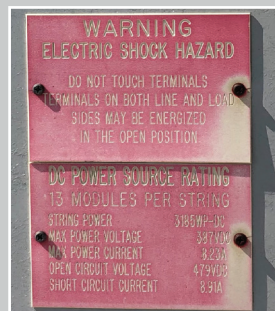
General Labeling Guidance

There are several marking and labeling requirements for PV systems and a variety of interpretations. This document provides a summary of the most common requirements and an example of each location. Because of the wide range of installations, systems may require fewer labels, or additional labels not outlined here.

When providing code-required markings, consideration should be given to environmental conditions and overall clarity of the content relative to its location. Excessive labeling may be confusing. Red and white labels should only be used when required by a specific code or ANSI standard. Section 110.21(B) requires permanent labels, not handwritten, and suitable for the environment in which they are installed. It also recommends the labels to follow ANSI Z535.4-2011 Product Safety Signs and Labels.



Example of ANSI Z535.4-2011 markings



Although placards are generally the most durable option, they need to be designed for exposure



Excessive labeling may be confusing

1 DC Raceway Label

Section 690.31(D)(2)

- On or in a building, unless location/purpose is evident
- Raceways, enclosures, every 10', suitable for environment
- Minimum 3/8" CAPS White on Red, Reflective

PHOTOVOLTAIC POWER SOURCE

OR

SOLAR PV DC CIRCUIT

2 DC PV Circuits

Section 690.53

- Maximum system voltage calculated in accordance with 690.7
- At one of the following locations:
 - DC PV system disconnect
 - PV system electronic power conversion equipment
 - Distribution equipment associated with the PV system

PV MAX SYSTEM VOLTAGE Vdc

3 Section 705.12(B)(3)(3) "AC Combiner Panel"

- Sum of ampere ratings, excluding source OCPD
- Label applied adjacent to distribution equipment
- The following or equivalent wording:



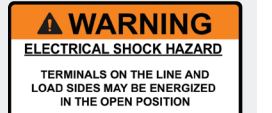
4 PV System Disconnect

Section 690.13(B):

- See Figure 690.1(b) diagrams for location in system
- Disconnects PV from all other wiring systems
- Installed in a readily accessible location
- Permanently marked: PV SYSTEM DISCONNECT, or equivalent
- Where line/load may be energized in open (off) position:
 - Marked with the following or equivalent:

PV SYSTEM DISCONNECT

Example of PV System Disconnect Identification



Example of Line/Load Energized marking

5 Buildings with Rapid Shutdown

Section 690.56(C)(2)

- Switch label that includes the following:
 - Minimum 3/8" CAPS, White on Red, Reflective
- Required for all system types!

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

6 AC Power Source

Section 690.54

- "All interactive system(s) points of interconnection with other sources shall be marked..."
- Accessible location at disconnecting means, as a power source:
 - Rated AC output current
 - Nominal operating AC voltage

PHOTOVOLTAIC POWER SOURCE
RATED AC OUTPUT CURRENT Aac
NOMINAL OPERATING VOLTAGE Vac

7 Identification of Power Sources

Section 690.56 (Informational Note)

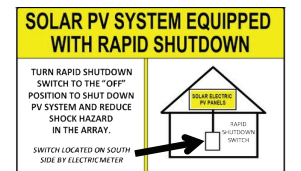
- MA Fire Code (527 CMR 1) requires signage:
 - Adjacent to building or service disconnect
 - Identifies responsible party for operation of system
 - Provides contact information



8 Buildings with Rapid Shutdown

Section 690.56(C)

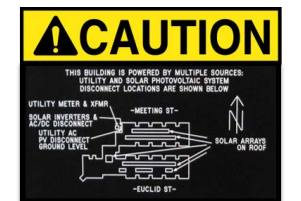
- Located at each service equipment location where PV is connected "or approved readily visible location"
- Shall indicate location of initiation device
- Shall include simple diagram of building and roof



9 Service Disconnect Directory

Sections 690.56(B)/705.10/712.10

- Permanent plaque or directory installed at either:
 - Each service equipment location
 - Approved readily visible location
- Marked with the following wording:
 - Denote location of each power source disconnect
 - Grouped with other plaques or directories
 - Correctly oriented with respect to diagram's location



10 Load-Side Source Connections

Section 705.12(C) Power Source Identification

- Equipment containing overcurrent devices supplying power to busbar or conductor
- Supplied from multiple sources
- "Marked to indicate the presence of all sources"

WARNING DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

11 Section 705.12(B)(3)(2) "Do Not Relocate"

- Two sources, opposite ends of busbar
- Label applied adjacent to back-fed breaker
- The following or equivalent wording:



¹The Massachusetts Electrical Code (MEC) is based on the National Electrical Code (NEC), with specific amendments. All code references in this document are to the 2020 edition of the MEC unless otherwise noted.

Wesco Renewables is your partner and source for industry-leading solar products and services. Locate your local branch, shop and view our digital catalogs at <https://buy.wesco.com/content/solar>. Then click on "Balance of Systems" within Product Categories.

Broad Solution Offerings Our broad product selection consists of more than one million electrical, industrial, data communication, security, and general MRO products, sourced from industry-leading suppliers. This offering enables us to meet virtually all of a customer's requirements. Specific to solar, our product and solution set includes:

- MODULES
- INVERTERS
- RACKING
- BALANCE OF SYSTEMS
- EV CHARGING
- STORAGE
- SAFETY TOOLS AND MRO

World-Class Supply Chain Solutions The first step in designing the right supply chain solution is an initial meeting with the WESCO team to assess your needs. We will lead the process, define the opportunities, and coordinate key activities from our extensive array of services to build a program that addresses your specific requirements.

- STOREROOM MANAGEMENT
- VENDOR MANAGED INVENTORY (VMI)
- CABLE MANAGEMENT
- ON SITE JOB TRAILERS
- KITTING
- ESTOCK
- DIGITAL PROCUREMENT

Solar Solutions

At WESCO, we partner with the world's industry-leading providers of solar products and solutions, including manufacturers of photovoltaic modules, inverters, racking, balance of systems (BOS) and energy storage. These partnerships, along with our unique supply chain value proposition, have made us a vendor of choice for residential and commercial contractors, installers, and utilities.

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This combination of products and services allows you to remain focused on selling and installing solar systems. The result is increased profitability for you and more solar energy on the grid.

Serving a Wide Range of Markets

Whether your focus is Residential, Commercial or Utility Scale Solar, WESCO Renewables has the products, solutions and expertise to improve your productivity and reduce operating costs.



Residential

- Modules, racking, inverters and storage
- Electrical Balance of Systems
- National Support, Branch-level Customer Focus
- Financing Programs and Solutions
- Nationally Scalable Project Kitting Solutions



Commercial

- Modules, racking, inverters and storage
- Small Electrical Balance of Systems
- Large Electrical Balance of Systems
- Controlled Product Delivery and Staging
- Applications engineer support to customer design team



Utility Scale Solar

- Wire and Wire Management Solutions
- Medium Voltage On-Site Storage and Material Management
- Customized Electrical Assembly Production and Procurement Options
- Established and Comprehensive Electrical Supplier Network

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World-Class Supply Chain Solutions

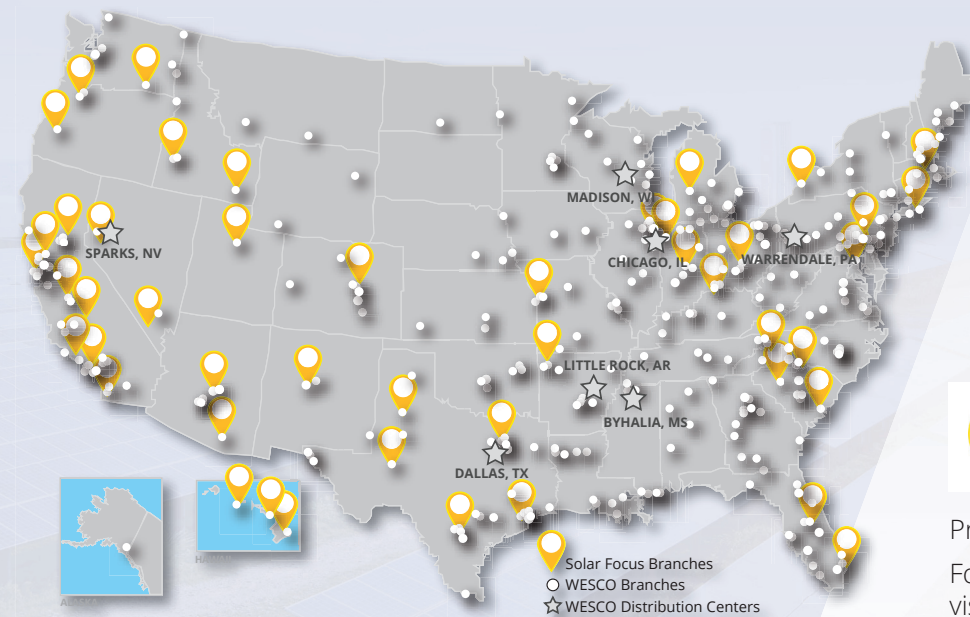
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- IDENTIFY NEEDS:** WESCO and the customer meet to identify what the customer needs to help them streamline their supply chain, alleviate pain points, reduce costs, or increase productivity.
- ALIGN SOLUTIONS:** WESCO's solution experts review all of the customer's requirements and align them with the solutions.
- PROPOSE AND REFINE:** WESCO shares a proposal for a solution designed specifically for their needs. WESCO and the customer work together to refine the proposed solution.
- CUSTOMIZE AND IMPLEMENT:** WESCO solution experts design and implement customized solutions to meet the customer's needs and deliver value.



WESCO's Solar Support Network



The WESCO Advantage

- Broad Product Offering
- Supply Chain Solutions
- Local Presence
- Financial Stability
- Competitive Advantage
- Proven Track Record
- Continuous Improvement Culture



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