



NECA 412-2012

Standard for

Installing and Maintaining Photovoltaic (PV) Power Systems

AN AMERICAN NATIONAL STANDARD



Published by

National Electrical Contractors Association

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(This foreword is not a part of the standard)

Foreword

National Electrical Installation Standards™ are intended to improve communication among specifiers, purchasers, and suppliers of electrical construction services. They define a minimum baseline of quality and workmanship for installing electrical products and systems. *NEIS™* are intended to be referenced in contract documents for electrical construction projects. The following language is recommended:

All electrical systems shall be commissioned in accordance with NECA 412-2012, *Standard for Installing and Maintaining Photovoltaic (PV) Power Systems* (ANSI).

Use of *NEIS* is voluntary, and the National Electrical Contractors Association assumes no obligation or liability to users of this publication. Existence of a standard shall not preclude any member or non-member of NECA from specifying or using alternate construction methods permitted by applicable regulations.

This publication is intended to comply with the edition of the National Electrical Code (NEC) in effect at the time of publication. Because they are quality standards, *NEIS* may in some instances go beyond the minimum requirements of the NEC. It is the responsibility of users of this publication to comply with state and local electrical codes when

installing electrical products and systems. Suggestions for revisions and improvements to this standard are welcome. They should be addressed to:

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1. Scope

This standard describes the application procedures for installing photovoltaic power systems and components.

1.1 Products and Applications Included

This standard covers the installation of low-voltage AC and DC photovoltaic power systems, rated 1000V and less, for grid-connected and stand-alone operation for residential, commercial, and industrial

applications. See *Figure 1.1* for an example of photovoltaic modules forming an array that is part of a photovoltaic power system.

1.2 Products and Applications Excluded

This standard does not apply to solar heating systems or photovoltaic power systems rated more than 1000V.

1.3 Regulatory and Other Requirements

a) All information in this publication is intended to conform to the National Electrical Code® (ANSI/NFPA Standard 70). Installers shall comply with the NEC®, applicable state and local codes, and manufacturer's instructions when installing solar photovoltaic power systems.

b) Only qualified persons as defined in the NEC familiar with the construction and installation of solar photovoltaic power systems should perform the technical work described in this publication. Administrative functions such as receiving, handling and storing required in Section 4, and other tasks can be performed under the supervision of a qualified person. All work should be performed in accordance with NFPA 70E, *Standard for Electrical Safety in the Workplace*.

c) General requirements for installing electrical products and systems are described in NECA 1-2010, *Standard Practices for Good Workmanship in Electrical Construction* (ANSI). Other *National Electrical Installation Standards* provide additional guidance for installing particular types of electrical products and systems. A complete list of *NEIS* is provided in Annex B.



Figure 1.1 Typical roof-mounted array of a photovoltaic power system (Photo: iStock)