**SOLAR SYSTEM GUIDELINES**:

## SOLAR SYSTEM SUCCESS GUIDELINES (v22416):

- Plans must include cut sheets for the panels and inverters indicating UL 1703 and UL 1741 Listings.
- Plans must include bus size, connected load and be field verified prior to permitting.
- Plans must indicate compliance with roof offsets as described in the Fire Marshal section below. Roof top plan must show dimensioned offsets.
- Information warnings may be stickers with exterior rated glue, see attached signage sheet
- Master or journeyman electrician must be present at final inspection
- Must have inch pound torque wrench

## THE FOLLOWING ARE REQUIRED BY THE FIRE MARSHAL

2012 IFC

**605.11 Solar photovoltaic power systems.** Solar photovoltaic power systems shall be installed in accordance with Sections 605.11.1 through 605.11.4, the *International Building Code* and NFPA 70.

> **Exception:** Detached, nonhabitable Group U structures including, but not limited to, parking shade structures, carports, solar trellises and similar structures shall not be subject to the requirements of this section.

**605.11.1 Marking.** Marking is required on interior and exterior direct-current (DC) conduit, enclosures, raceways, cable assemblies, junction boxes, combiner boxes and disconnects.

**605.11.1.1 Materials.** The materials used for marking shall be reflective, weather resistant and suitable for the environment. Marking as required in Sections605.11.1.2 through 605.11.1.4 shall have all letters capitalized with a minimum height of 3/8 inch (9.5 mm) white on red background.

**605.11.1.2 Marking content.** The marking shall contain the words “WARNING: PHOTOVOLTAIC POWER SOURCE.”

**605.11.1.3 Main service disconnect.** The markings hall be placed adjacent to the main service disconnect in a location clearly visible from the location where the disconnect is operated.

**605.11.1.4 Location of marking.** Marking shall be placed on interior and exterior DC conduit, raceways, enclosures and cable assemblies every 10 feet (3048mm), within 1 foot (305 mm) of turns or bends and within 1 foot (305 mm) above and below penetrations of roof/ceiling assemblies, walls or barriers.

**605.11.2 Locations of DC conductors.** Conduit, wiring systems, and raceways for photovoltaic circuits shall be located as close as possible to the ridge or hip or valley and from the hip or valley as directly as possible to an outside wall to reduce trip hazards and maximize ventilation opportunities. Conduit runs between sub arrays and to DC combiner boxes shall be installed in a manner that minimizes the total amount of conduit on the roof by taking the shortest path from the array to the DC combiner box. The DC combiner boxes shall be located such that conduit runs are minimized in the pathways between arrays. DC wiring shall be installed in metallic conduit or raceways when located within enclosed spaces in a building. Conduit shall run along the bottom of load bearing members.

**605.11.3 Access and pathways.** Roof access, pathways, and spacing requirements shall be provided in accordance with Sections 605.11.3.1 through 605.11.3.3.3.

> **Exceptions:** 1. Residential structures shall be designed so that each photovoltaic array is no greater than 150 feet (45 720 mm) by 150 feet (45 720 mm) in either axis.
>
> 2. Panels/modules shall be permitted to be located up to the roof ridge where an alternative ventilation method approved by the fire chief has been provided or where the fire chief has determined vertical ventilation techniques will not be employed.

**605.11.3.1 Roof access points.** Roof access points shall be located in areas that do not require the placement of ground ladders over openings such as windows or doors, and located at strong points of building construction in locations where the access point does not conflict with overhead obstructions such as tree limbs, wires, or signs.

**605.11.3.2 Residential systems for one- and two family dwellings.** Access to residential systems for one- and two-family dwellings shall be provided in accordance with Sections 605.11.3.2.1 through 605.11.3.2.4.

**605.11.3.2.1 Residential buildings with hip roof layouts.** Panels/modules installed on residential buildings with hip roof layouts shall be located in a manner that provides a 3-foot-wide (914 mm) clear access pathway from the eave to the ridge on each roof slope where panels/modules are located. The access pathway shall be located at a structurally strong location on the building capable of supporting the live load of fire fighters accessing the roof.

> **Exception:** These requirements shall not apply to roofs with slopes of two units vertical in 12 units horizontal (2:12) or less.

**605.11.3.2.2 Residential buildings with a single ridge.** Panels/modules installed on residential buildings with a single ridge shall be located in a manner that provides two, 3-foot-wide (914 mm) access pathways from the eave to the ridge on each roof slope where panels/modules are located.

> **Exception:** This requirement shall not apply to roofs with slopes of two units vertical in 12 units horizontal (2:12) or less.

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V04072015

SIGNAGE REQUIREMENTS

> RED BACKGROUND
> WHITE LETTERING
> MIN. 1/4" LETTER HEIGHT
> ALL CAPITAL LETTERS
> ARIAL OR SIMILAR FONT

WARNING
IF A GROUND FAULT IS INDICATED, THE NORMALLY GROUNDED CONDUCTORS MAY BE ENERGIZED AND UNGROUNDED.

REQ'D BY: NEC 690.5(C) — 1

APPLY TO:
INVERTER

SOLAR DC DISCONNECT

REQ' BY: NEC 690.14(C)(2) — 2

APPLY TO:
DC DISCONNECTS

SOLAR AC DISCONNECT

REQ' BY: NEC 690.14(C)(2) — 3

APPLY TO:
AC DISCONNECTS

WARNING
ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.

REQ'D BY: NEC 690.17 — 4

APPLY TO:
DISCONNECTS
SOLAR LOAD CENTERS
COMBINER BOXES

PHOTOVOLTAIC SYSTEM
DISCONNECT
AC CURRENT: 34.2 A
VOLTAGE: 240 VAC

REQ'D BY: NEC 690.54 — 6

APPLY TO:
PV SYSTEM BREAKER

THIS ELECTRIC SERVICE IS ALSO SERVED BY A PHOTOVOLTAIC SYSTEM

REQ'D BY: NEC 690.56(B) — 7

MAIN SERVICE PANEL

CAUTION
DO NOT INSTALL ADDITIONAL LOADS IN THIS PANEL

REQ'D BY: NEC 690.64(B)(2) — 8

APPLY TO:
SOLAR LOAD CENTER

WARNING
INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE

REQ'D BY: NEC 690.64(B)(7) — 9

APPLY TO:
PV SYSTEM BREAKER

CAUTION
SOLAR PV SYSTEM MAY REMAIN ENERGIZED AFTER DISCONNECT DURING DAYLIGHT HOURS.

REQ'D BY: AHJ — 10

APPLY TO:
MAIN SERVICE PANEL

CAUTION: SOLAR CIRCUIT

REQ'D BY: AHJ — 11

APPLY TO:
SOLAR CONDUIT

WARNING
ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THE PV SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED.

REQ'D BY: NEC 690.35(F) — 12

UNGROUNDED ARRAYS ONLY
JUNCTION BOXES
COMBINER BOXES
DC DISCONNECTS
INVERTERS

SCALE: 1" = 4