

# Inspection Checklist



**Address:** \_\_\_\_\_ **Permit #:** \_\_\_\_\_ **AHJ:** \_\_\_\_\_ **Scope of work:** \_\_\_\_\_

Interconnection at Main Service Panel		Pass
Single Phase Grid Voltage: INPUT Volts	240	<input type="checkbox"/>
System Point of Interconnection Compliance Method At Main Service Panel: 705.12 (B) (2) (3) (b), 120% Rule Where two sources, one a primary power source and the other another power source, are located at opposite ends of a busbar that contains loads, the sum of 125 percent of the power source(s) output circuit current and the rating of the overcurrent device protecting the busbar shall not exceed 120 percent of the ampacity of the busbar.		<input type="checkbox"/>
Backfeed breakers are at opposite load ends of the panel.		<input type="checkbox"/>

Main Service Panel Equipment		Pass
Main Breaker Ampere Rating Size: INPUT AMP	200 AMP	<input type="checkbox"/>
Main Bus Ampere Rating Size: INPUT AMP	225 AMP	<input type="checkbox"/>
Utility Service Rating: INPUT	200 AMP	<input type="checkbox"/>

Equipment Point of Interconnection		Pass
There is no existing Utility interactive power production source connected to the home's electric service. - Only the utility interactive power production sources and/or photovoltaic modules specified on this inspection checklist list are present on site.		<input type="checkbox"/>
All power production inverter outputs have the same point of connection.		<input type="checkbox"/>
If connected equipment is NOT within line of sight or closer than 10ft to the point of interconnection, disconnect or isolation means are installed.		<input type="checkbox"/>

Inverter		Pass
EGC Wire Size Inverter 1: INPUT	10	<input type="checkbox"/>
Overcurrent Protective Device rating: Inverter 1: INPUT	40AMP	<input type="checkbox"/>
AC Wire size Inverter 1: INPUT	8	<input type="checkbox"/>

Inverter		Pass
AC Circuit Conduit size Inverter 1: INPUT	3/4" trade size	<input type="checkbox"/>
Maximum number of AC current carrying THWN-2 wire conductors in raceway: INPUT	3	<input type="checkbox"/>
Inverter 1 model number: INPUT	SE7600H-US [240V]	<input type="checkbox"/>
Inverter 1 manufacturer: INPUT	SolarEdge Technologies Ltd.	<input type="checkbox"/>
Maximum number of THWN-2 DC current carrying conductors in raceway: INPUT	4	<input type="checkbox"/>
Maximum number of DC current carrying PV wire or USE-2 conductors in raceway: INPUT	4	<input type="checkbox"/>
DC Minimum Wire Size (PV Wire): INPUT	12	<input type="checkbox"/>
DC Minimum Conduit Size (PV Wire): INPUT	3/4"	<input type="checkbox"/>
DC Minimum Wire Size (THWN-2 Wire): INPUT	12	<input type="checkbox"/>
DC Minimum Conduit Size (THWN-2 Wire): INPUT	1/2"	<input type="checkbox"/>
Presence of Rapid Shutdown switch label per Fire Bulletin		<input type="checkbox"/>

Installation Details		Pass
DC and AC conductors are copper, Class B or Class C, and THWN-2, NM or PV Wire, or they are a jacketed multiconductor cable assembly listed and identified for the application.		<input type="checkbox"/>
All rooftop conduits are mounted at least 7/8" above the roof surface.		<input type="checkbox"/>
All PV Source Circuit conductors in free air are listed as PV Wire or USE-2.		<input type="checkbox"/>
PV Wires have a maximum outer diameter of 0.24" (6.1 mm).		<input type="checkbox"/>
All terminals are rated to 75°C, labeled for use with Cu wires, and accept minimum 8 AWG wire.		<input type="checkbox"/>
Conductors are properly terminated and wired per 690.31 and 110.14.		<input type="checkbox"/>
Where Equipment Grounding Conductors (EGC) are not routed with circuit conductors, will EGC either be minimum 6 AWG or protected from physical damage? [250.120(C)]		<input type="checkbox"/>
There is a minimum of 3' working clearance for all components that may require service.		<input type="checkbox"/>
If grounding electrode is rod, pipe or plate, then supplemental electrode is properly installed. Exception: If a single rod, pipe, or plate grounding electrode has a resistance to earth of 25 ohms or less, the supplemental electrode shall not be required.		<input type="checkbox"/>
EGC is installed ensuring continuity to all system components and finally to grounding electrode.		<input type="checkbox"/>

Roof		Pass
Roof Covering: INPUT	Plane 1 -Clay and concrete tile Plane 2 -Clay and concrete tile	<input type="checkbox"/>
Racking system model number is on list of approved modules to 2703 for grounding and bonding.		<input type="checkbox"/>
Attachment points of the mounting system be staggered: INPUT	Yes	<input type="checkbox"/>
Maximum spacing in inches between adjacent attachment points of the mounting system INPUT	72	<input type="checkbox"/>
Roof penetration sealant method has been installed per the manufacturers instructions.		<input type="checkbox"/>
The height of the modules, from roof surface to the module backsheet, does not		<input type="checkbox"/>

Roof		Pass
exceed 10"		
The roof structure appears to be structurally sound, without signs of alterations or significant structural deterioration or sagging.		<input type="checkbox"/>
Quantity and spacing of structural attachments match the installation instructions per manufacturer.		<input type="checkbox"/>
Array conductors are secured and supported.		<input type="checkbox"/>
Module 1 model number: INPUT	LR4-60HPB-355M	<input type="checkbox"/>
Module 1 manufacturer: INPUT	LONGi Green Energy Technology Co., Ltd.	<input type="checkbox"/>
Module 1 quantity: INPUT	24	<input type="checkbox"/>
Method of rapid shutdown compliance Inside the Array	AC module, microinverter, or DCDC converter installed on each module and listed for UL 1741 PVRSS used to comply with requirements for Rapid Shutdown	<input type="checkbox"/>

Fire		Pass
% of the Roof with a Solar Array INPUT	12.11%	<input type="checkbox"/>
Fire Pathways, venting and access in accordance with INPUT	Less Than 33/66	<input type="checkbox"/>
Disconnecting Means is in compliance with FPSolarAPP _1		<input type="checkbox"/>
CO and Smoke Detectors are in compliance with FPSolarAPP _1 or affidavit signed by customer		<input type="checkbox"/>
Signage, Placards, Directories and Markings in accordance with FPSolarAPP _1		<input type="checkbox"/>

**Corrections**

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# FIRE SAFETY CODE REQUIREMENTS

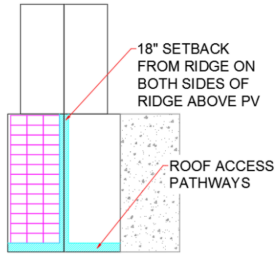
Does the home have sprinkler systems?	No
% of Roof Area covered with PV = Total Array Area/Total Roof Area: ({C17})/({I102}) = {C15}	12.11%

## Roof Access and Ventilation Diagrams

Fire Safety

### Ridge Setbacks

PV Less Than 33% Roof Area (66% for homes with sprinkler systems)



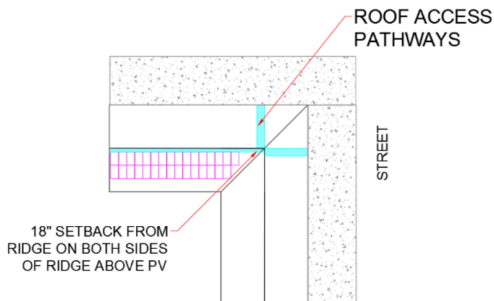
### Emergency Escape & Rescue Opening

Minimum 3' Emergency Escape Pathway

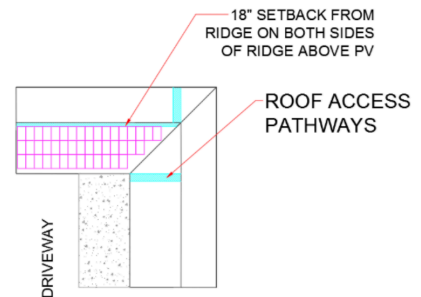


### Hips and Valley Setbacks

PV Less Than 33% Roof Area - Street Access (66% for homes with sprinkler systems)



PV Less Than 33% Roof Area - Driveway Access (66% for homes with sprinkler systems)



# SolarAPP Fire Bulletin

## Disconnecting Means

SolarAPP Fire Bulletin

PV system disconnecting means shall be provided in accordance with the 2017 National Electrical Code (NEC), NFPA 70.(R) [690.13]

A Rapid Shutdown switch shall be provided at a readily accessible location outside the building in accordance with the 2017 National Electrical Code (NEC), NFPA 70(R) [690.12(C)]

## Signs, Placards, Directories, and Markings

SolarAPP Fire Bulletin

### General

All labeling shall comply with Articles 690 and 705 of the 2017 National Electrical Code (NEC), NFPA 70 and Section 324 of the 2018 International Residential Code.

### Rapid Shutdown Label

A label shall be installed not greater than 3ft from the electric utility service location that includes the location of all identified Rapid Shutdown switches if not at the same location. (NEC), NFPA 70 and Section 324 of the 2018 International Residential Code.

The label shall indicate which type of Rapid Shutdown system is installed, and include a simple diagram with sections in red designating areas that are not controlled by the rapid shutdown switch. [NEC 690.56(C)(1)]

Buildings with more than one rapid shutdown type - A detailed plan view diagram showing each PV system and a dotted line around areas that remain energized after the rapid shutdown switch is operated. [NEC 690.56(C)(2)]

Rapid Shutdown (PV Hazard Control) switch - this switch shall have a label not greater than 3 feet from the switch that states the following: [NEC 690.56(C)(3)]

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

## SolarAPP Fire Bulletin *(cont'd)*

### Roof Access, Egress, and Ventilation

Access and minimum spacing shall be provided for access to specific areas of the roof, emergency egress from the roof, and opportunities for smoke ventilation in accordance with the 2018 International Residential Code [IRC R324.6]

#### Exceptions:

1. Detached, non-habitable structures
2. Access pathways and setbacks need not be provided if the code official has determined rooftop operations will not be employed
3. Requirements shall not apply to low-slope roofs. (<2:12)

#### References:

Access Pathways - [IRC R324.6.1]

Ridge Setbacks - [IRC R324.6.2]

Sprinklered Occupancies - [IRC R324.6.2.1]

Emergency escape and rescue openings - [IRC R324.6.2.2]

### CO and Smoke Detectors [IRC R314.2.1, R314.2.2, R315.2.1, R315.2.2]

### Fire Classification

Rooftop-mounted PV systems shall have the same fire classification as the roof assembly required in Section R902. [2018 IRC R324.4.2]

### Product Classifications

PV panels and modules shall be listed and labeled to UL 1703 and/or UL 61730 [NEC 690.4(B), IRC R324.3.1]

Inverters shall be listed and labeled to UL 1741 [NEC 690.4(B), IRC R324.3.1]

**Meter/Service Utility Location**

**SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN**

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY	SIMPLE DIAGRAM HERE
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Interactive system point of interconnection if made at busbar. [705.12(B)(2)(3)(c)]

**Requirements:**

- All labels shall comply with 110.21(B)

**Separate RSD Initiation Device**

**RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM**

Interactive system point of interconnection if made at busbar. [705.12(B)(2)(3)(c)]

**Requirements:**

- All labels shall comply with 110.21(B)

**Point of Interconnection**

**WARNING:**  
 THIS EQUIPMENT FED BY MULTIPLE SOURCES TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE SHALL NOT EXCEED AMPACITY OF BUSBAR

Interactive system point of interconnection if made at busbar. [705.12(B)(2)(3)(c)]

**Requirements:**

- All labels shall comply with 110.21(B)

**Point of Interconnection**

**WARNING:**  
 EQUIPMENT FED BY MULTIPLE SOURCES LOCATION OF DISCONNECTING MEANS

LAYOUT OR DESCRIPTION PROVIDED HERE

Utility Service equipment location(s) and location(s) of all system disconnects for interconnected power production sources. [705.10], [690.56(B)]

**Requirements:**

- All labels shall comply with 110.21(B)

**WARNING:**  
 DUAL POWER SOURCE  
 SECOND SOURCE IS PV SYSTEM

Electrical Equipment containing overcurrent devices in circuits supplying power to a busbar or conductor supplied from multiple sources [705.12(B)]

**Requirements:**

- All labels shall comply with 110.21(B)

**WARNING:**  
 POWER SOURCE OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

Interactive system point of interconnection if made at busbar. [705.12(B)(2)(3)(b)]

**Requirements:**

- All labels shall comply with 110.21(B)

**DC circuit Raceways**

**WARNING:**  
 PHOTOVOLTAIC POWER SOURCE

DC Disconnecting Means [690.13(B)]

**Requirements:**

Reflective, and all letters shall be capitalized and shall be a minimum height of 9.5 mm (3/8 in.) in white on a red background.

PV System Disconnect	
<p style="text-align: center;"><b>WARNING:</b> ELECTRIC SHOCK HAZARD TERMINALS ON LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION</p> <p>DC Disconnecting Means where terminals on both line and load side may remain energized. Example language or equivalent. [630.13(B)]</p> <p><b>Requirements:</b> Label shall comply with 110.21(B) Only required where line/load may be energized in the open position.</p>	<p style="text-align: center;">MAXIMUM VOLTAGE (V<sub>mp</sub>) <input type="text"/> MAXIMUM CURRENT (I<sub>mp</sub>) <input type="text"/></p> <p>Direct-current PV System Disconnecting Means and/or DC Equipment Disconnecting Means [690.53]</p> <p><b>Requirements:</b> Label shall comply with 110.21(B)</p>
<p style="text-align: center;">PHOTOVOLTAIC POWER SOURCE</p> <p>DC Circuit Raceways and Enclosures [690.31(G)(3)]</p> <p><b>Requirements:</b> 1. May be AC or DC</p>	<p style="text-align: center;">PV SYSTEM DISCONNECT</p> <p>PV System Disconnect (May be AC or DC) [690.13(B)]</p> <p><b>Requirements:</b> 1. May be AC or DC</p>

DC Equipment Disconnects	
<p style="text-align: center;"><b>WARNING:</b> ELECTRIC SHOCK HAZARD TERMINALS ON LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION</p> <p>DC Disconnecting Means where terminals on both line and load side may remain energized. Example language or equivalent. [630.13(B)]</p> <p><b>Requirements:</b> 1. May be AC or DC</p>	<p style="text-align: center;">MAXIMUM VOLTAGE (V<sub>mp</sub>) <input type="text"/> MAXIMUM CURRENT (I<sub>mp</sub>) <input type="text"/></p> <p>Direct-current PV System Disconnecting Means and/or DC Equipment Disconnecting Means [690.53]</p> <p><b>Requirements:</b> 1. May be AC or DC</p>
<p style="text-align: center;">PHOTOVOLTAIC DC DISCONNECT</p> <p>DC Disconnecting Means [690.13(B)]</p> <p><b>Requirements:</b> 1. May be AC or DC</p>	



# FIRE SAFETY CODE REQUIREMENTS

The following setbacks will be applicable to your PV system if either of the following statements are true:

Your PV Array coverage is less than 66% of the Roof Area and you have a sprinkler system.

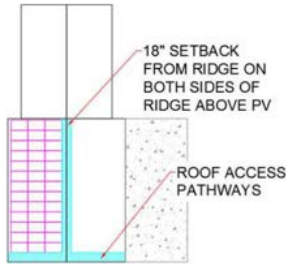
Your PV Array coverage is less than 33% of the Roof Area and you do not have a sprinkler system.

## Roof Access and Ventilation Diagrams

Fire Safety

### Ridge Setbacks

PV Less Than 33% Roof Area (66% for homes with sprinkler systems)



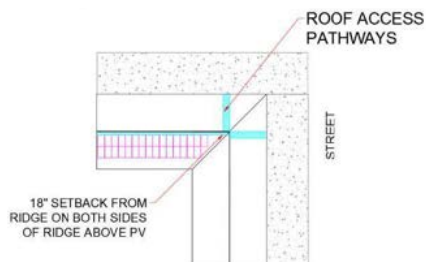
### Emergency Escape & Rescue Opening

Minimum 3' Emergency Escape Pathway

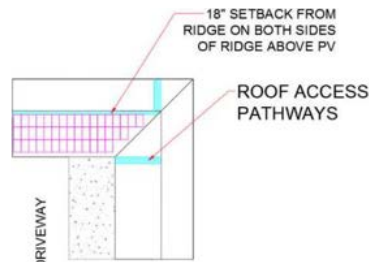


### Hips and Valley Setbacks

PV Less Than 33% Roof Area - Street Access (66% for homes with sprinkler systems)



PV Less Than 33% Roof Area - Driveway Access (66% for homes with sprinkler systems)



# FIRE SAFETY CODE REQUIREMENTS

The following setbacks will be applicable to your PV system if either of the following statements are true:

Your PV Array coverage is greater than 66% of the Roof Area and you have a sprinkler system.

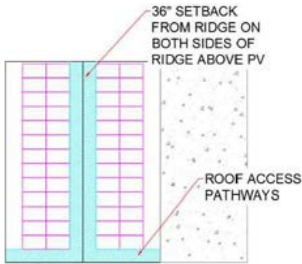
Your PV Array coverage is greater than 33% of the Roof Area and you do not have a sprinkler system.

## Roof Access and Ventilation Diagrams

Fire Safety

### Ridge Setbacks

PV More Than 33% Roof Area (66% for homes with sprinkler systems)



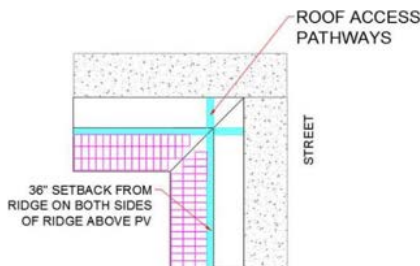
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Minimum 3' Emergency Escape Pathway

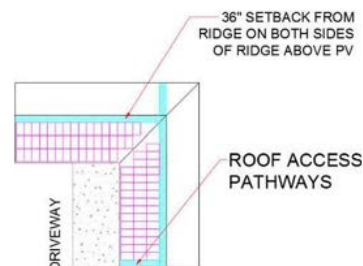


### Hips and Valley Setbacks

PV More Than 33% Roof Area - Street Access (66% for homes with sprinkler systems)



PV More Than 33% Roof Area - Driveway Access (66% for homes with sprinkler systems)



# INPUTS

## Permit Details [80.19(H) ; R105.3]

### GENERAL

#### Project Information

Project Title	
Address	
AHJ	
Project Type	<i>PV</i>
Scope of Work	
PV System Size AC (kW):	<i>7.616 kW</i>
Confirm you have reviewed SolarAPP eligibility:	<i>Yes</i>

#### Contractor Information

Installation Applicability and Compliance	
All work will comply with the 2017 National Electrical Code® (NFPA 70), and the 2018 International Residential Code (IRC), UL Standards, Manufacturer's instructions, and Municipal requirements.	<i>Yes</i>
State License	
Type	<i>state</i>
Number	

## City Business License

Type	city
Number	

## FIRE

Does the home have sprinkler systems? INPUT	No
What is the total array area? ( $\{I20\} \rightarrow ((\{CEC:L\}) * (\{I11\}) = \{C16\})$ ) square meters ( $\{C16\} * (10.764) = \{C17\}$ square feet	457.25
The total roof area: INPUT	3777
% of Roof Area covered with PV = Total Array Area/Total Roof Area: ( $\{C17\} / \{I102\} = \{C15\}$ )	12.11%
See INPUT Fire Setback Diagram attached.	Less Than 33/66

## STRUCTURAL DETAILS

### General

The weight of the PV system in lbs/sq ft: INPUT	3
Proposed maximum spacing in inches between adjacent attachment points of the mounting system INPUT	72"
Will attachment points of the mounting system be staggered? INPUT	Yes

The number of roof surfaces at different slopes and/or orientations that will be used for installation are: INPUT. Note: 1 means all roofs used have the same orientation.

2

## Mounting Planes

### Mounting Plane Type 1

This is a INPUT system.

*Flush mount*

The current roof covering is INPUT

*Plane 1:Clay and concrete tile  
Plane 2:Clay and concrete tile*

The pitch of the roof surface is INPUT

*Plane 1:4/12  
Plane 2:4/12*

The ground snow load is INPUT

0

You said your roof pitch is  $\geq 4/12$  and your ground snow load is  $\leq 20\text{psf}$

### Mounting Planes Type 2

## Ground Snow Load

Is the solar module and mounting system rated by the manufacturer to withstand the downward force of the local ground snow load and evenly distribute load into the supporting structure at the proposed maximum spacing? (validated through the UL 1703 or 61730 module rating for mechanical load rating, and UL 2703 mounting system mechanical load rating) YES

Yes

## Wind Speed

Is the solar module and mounting system rated by the manufacturer to withstand the upward force of the local wind speed and evenly distribute load into the supporting structure at the proposed maximum spacing, and confirmed in UL 1703 or 61730, and 2703 listings? YES [A53 when applicable]

Yes, 110 MPH

## Roof Condition

Does the roof structure appear to be structurally sound, without signs of alterations or significant structural deterioration or sagging? YES

Yes

## ELECTRICAL DETAILS

### Equipment

Architecture type used for all inverters in this project:

*String Inverter with DC-DC Converters*

#### Inverter 1

Inverter 1 Model Number: INPUT

*SE7600H-US [240V]*

Datasheet for Inverter 1 [90.7 ; 110.3(C) ; R106.1]: See attached.

*1615852081040-I9-[Datasheet] SolarEdge Energy Hub.pdf*

Inverter 1 Manufacturer: INPUT

*SolarEdge Technologies Ltd.*

Is Inverter 1 UL 1741 listed? [110.3(C) ; 690.4(B) ; R324.3.1] YES

Yes

#### Modules

Module 1 Model Number: INPUT

*LR4-60HPB-355M*

## Modules

Datasheet for Module 1 [90.7 ; 110.3(C) ; R106.1]: See attached.

*1615852251233-I12-LR4-60H  
PB\_345-365W\_V02.pdf*

Module 1 Manufacturer: INPUT

*LONGi Green Energy  
Technology Co., Ltd.*

Is Module 1 UL 1703 or UL 61730 (Part 1 & 2) listed? [110.3(C) ; 690.4(B) ; R324.3.1] YES

Yes

Module 1 quantity: INPUT

24

## Racking System 1/Flashing

Racking System 1 Model Number: INPUT

*SNAPNRACK ULTRARAIL TILE  
HOOK*

Datasheet for Racking System 1 [90.7 ; 110.3(C) ; R106.1](ensure your datasheet has the list of approved modules to 2703 for grounding and bonding): See attached.

*1620683193866-I15-SNAPNR  
ACK ULTRA\_RAIL ADJUSTABLE  
TILE HOOK.pdf*

Racking System 1 Manufacturer: INPUT

*SnapnRack*

Is Racking System 1 UL 2703 listed for grounding and bonding with the PV module models specified in this SolarAPP project? [90.7 ; 110.3(C) ; 690.43(A)]: YES

Yes

The combination of modules and racking system shall have the same fire classification as the roof assembly. R324.4.2: YES

Yes

Name/description of roof penetration sealant method to be used.

*CHEMLINK DURALINK 35*

You have agreed to install the flashing per the manufacturers instructions for the means of accomplishing weather proofing: YES.

Yes

## Rapid Shutdown

The AC module, microinverter, or DCDC converter installed on each module is listed for UL 1741 PVRSS and used to comply with requirements for Rapid Shutdown both inside and outside the array.

## Site Conditions

Ambient Dry Bulb Extreme Record Low Temperature (°C) [690.7(A)]: INPUT	1
Ambient Dry Bulb Average High Temperature (°C): INPUT	42
Single Phase Grid Voltage	240 V

## Installation Details

Is there an existing Utility interactive power production source connected to the home's electric service? NO	No
Are DC and AC conductors copper, Class B or Class C, and THWN-2, NM, USE-2, PV Wire, or jacketed multiconductor cable assembly listed and identified for the application? [690.8(B) ; 310.15(A) and (B)]: YES	Yes
NM cable is used for inverter output circuits and installed in locations and uses according to the Code YES	No
Are all rooftop conduits mounted at least $\frac{7}{8}$ " above the roof surface. [310.15(B)(3)(c)]: YES	Yes
Are all PV Source Circuit conductors in free air listed as PV Wire or USE-2? [690.31(C)]: YES	Yes
Does PV Wire have a maximum outer diameter of 0.24" (6.1 mm)? [690.31 (C) (2) informational note, NEC Chapter 9, Tables]: YES	Yes
Are all terminals rated to 75°C, labeled for use with Copper Class B or Class C wires, and accept minimum 8 AWG wire? [110.14]: YES	Yes
Where Equipment Grounding Conductors (EGC) are not routed with circuit conductors, will EGC either be larger than 6 AWG or protected from physical damage? [250.120(C)]: YES	Yes
Module voltage and current DC specifications fall within allowable range of connected equipment: YES	Yes



## String Inverter with DC-DC Converters [690.7(B)]

### Maximum PV Source Circuit Voltage

Max quantity modules in DC series string: INPUT

17

Are any series strings combined in parallel, with a maximum of 2 strings in parallel? INPUT

No

Does the quantity of series connected DC-DC converters exceed the manufacturers instructions to ensure a maximum string voltage of 600V? NO

No

Datasheet for DCDC converter See attached.

1616114529011-I70-[Datashet] SolarEdge Optimizer - P370 and Up.pdf

### PV Source Circuit

See Table 6 for selection of the minimum DC wire size.

Input maximum number of current carrying PV Wire or USE-2 conductors in raceway INPUT

4

Input maximum number of current carrying THWN-2 conductors in raceway INPUT

4

The minimum DC PV wire size is based on the Table 6 below.(CCC in Race) → High Temp → 2 Series/Single → DC-DC Max Output(I30, I40, I27) → Table#6 → T14 AWG

12AWG

The minimum DC THWN-2 wire size is based on the Table 6below.(CCC in Race) → High Temp → 2 Series/Single → DC-DC Max Output(I31, I40, I27) → Table#6 → T15 AWG

12AWG

## PV Source Circuit

**Table 6**

Current Carrying Conductors (CCC) in raceway	Site Average High Temperature	2 series strings in parallel	Single series string
=< 3 CCC	=< 35	10 AWG	12 AWG
	=< 40	10 AWG	12 AWG
	=< 45	10 AWG	12 AWG
	=< 50	10 AWG	12 AWG
4 - 6 CCC	=< 35	10 AWG	12 AWG
	=< 40	8 AWG	12 AWG
	=< 45	8 AWG	12 AWG
	=< 50	8 AWG	12 AWG
7 - 9 CCC	=< 35	8 AWG	12 AWG
	=< 40	8 AWG	12 AWG
	=< 45	8 AWG	12 AWG
	=< 50	8 AWG	12 AWG

[Table 310.15(B)(3)(a) ; Table 310.15(B)(2)(b) ; Table 310.15(B)(16) ; 690.8(A)(1) ; 690.8(B)]

## PV Source & Output Circuit Conduit Size

See Table 2 for selection of the minimum DC conduit size.

PV Wire T14 AWG based on PV Wire AWG size section, resulting conduit size = T16 inches trade size (CCC in Race) → PV Wire Size → \_\_\_ inches I30 → T14 → T16 inches

4 → 12 → 3/4"

THWN-2 Wire T15 AWG based on THWN-2 AWG size section, resulting conduit size = T17 inches trade size (CCC in Race) → THWN-2 Wire Size → \_\_\_ inches I31 → T15 → T17 inches

4 → 12 → 1/2"

**Table 2**

		2 CCC	3 CCC	4 CCC	5 CCC	6 CCC	7 CCC	8 CCC	9 CCC
PV Wire	12 AWG	1/2	3/4	3/4	1	1	1	1	1
	10 AWG	1/2	3/4	3/4	1	1	1	1	1
THWN - 2	12 AWG	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
	10 AWG	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4

## Inverter Output Circuit

See Table 3 below for selection of minimum Inverter output wire size and inverter output overcurrent protection size.

Inverter 1: Inverter Continuous Output Current = Power / Site Voltage: (I18 → INV:CEC:K:["Maximum Continuous Output Power at Unity Power Factor"]) W / C14 V = C5 A

31.73 A

## Inverter Output Circuit

**Table 3**

Table 3

Continuous Output Current	12.5	16.5	20.5	24.5	28.5	32.5	36.5	40.5	48.5	56.5	64.5	72.5	80.5	88.5	100	120	140	160
															5	5	5	5
OCPD amperage size	15	20	25	30	35	40	45	50	60	70	80	90	100	110	125	150	175	200
AWG wire size for = <3 CCC in raceway	12	12	10	10	8	8	8	8	6	4	4	3	3	2	1	1/0	2/0	3/0
AWG wire size for 4 - 6 CCC in raceway	12	12	10	10	8	8	8	8	6	4	4	3	3	2	1	1/0	2/0	3/0
AWG wire size for 7 - 9 CCC in raceway	12	12	10	10	8	8	8	6	6	4	4	3	3	2	1	2/0	3/0	4/0
NM wire	12	12	10	10	8	8	6	6	4	4	3	2	1	1	1/0	Not com pati ble	Not com pati ble	Not com pati ble

[240.4(D); Table 310.15(B)(3)(a) ; Table 310.15(B)(2)(b) ; Table 310.15(B)(16) ; 690.8; 690.9; 705.30]

Inverter 1 - See the Overcurrent Protective Device rating C5 → T18 A from Table 3 based on the inverter continuous output current rating. [690.9(A) ; 690.9(B)]

40AMP

Input maximum number of AC current carrying THWN-2 conductors in raceway: INPUT

3

Inverter 1 - See the AC wire size in raceway from Table 3: (I99, C5) → Table#3 → T21 AWG

8AWG

## Inverter Output Circuit Conduit Size

See Table 4 for selection of the minimum AC conduit size.

Inverter 1 - See the conduit size appropriate for the current carrying conductors within the conduit per Table 4 based on the largest conductor in the circuit. I99 → T21 → T24 AWG

3/4"

**Table 4**

THWN-2 wire	# of Current Carrying Conductors (CCC)							
	2	3	4	5	6	7	8	9
12 AWG	1/2	1/2	1/2	1/2	1/2	1/2	1/2	3/4
10 AWG	1/2	1/2	1/2	1/2	3/4	3/4	3/4	3/4
8 AWG	1/2	3/4	3/4	3/4	1	1	1	1 1/4
6 AWG	3/4	3/4	3/4	1	1	1 1/4	1 1/4	1 1/4
4 AWG	3/4	1	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2
3 AWG	1	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	2
2 AWG	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	2	2
1 AWG	1 1/4	1 1/4	1 1/2	2	2	2	2	2 1/2
1/0 AWG	1 1/4	1 1/2	2	2	2	2 1/2	2 1/2	2 1/2
2/0 AWG	1 1/4	1 1/2	2	2	2 1/2	2 1/2	2 1/2	3
3/0 AWG	1 1/4	2	2	2 1/2	2 1/2	2 1/2	2 1/2	3

## Grounding & Bonding

See Table 5 for selection of Equipment Grounding Conductor wire gauge.

Inverter 1 - Equipment Grounding Conductor (EGC) based on overcurrent protective device: T18 → T45 AWG

40 -> 10 AWG

### Table 5

Table 5

OCPD rating (amperes)	EGC wire gauge (AWG)
=< 15	14
=< 20	12
=< 30	10
=< 40	10
=< 60	10
=< 100	8
=< 200	6

[Table 250.122]

## New Panelboard for Relocated Loads

Will a new subpanel be installed with existing loads relocated into the new subpanel?

No

## Equipment Point of Interconnection

### Point of Connection

Will all power production inverter outputs have the same point of connection?

Yes

Sum of power production source overcurrent protective device ampere rating is: INPUT

40

If connected equipment is NOT within line of sight or closer than 10ft to the point of interconnection, disconnect or isolation means installed. [NEC 690.15 (A)]

## Point of Connection at Subpanel

### Existing Subpanel

Will power production inverter outputs be connected directly to an existing subpanel? \_\_\_ (175) \_\_\_

No

## Point of Connection at Main Panel

### System Point of Interconnection Compliance Method at MSP

INPUT	705.12 (B) (2) (3) (b)
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### Main Service Panel Equipment

Main Bus Ampere Rating: INPUT AMP	225 AMP
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Main Breaker/Service Disconnect Ampere Rating: INPUT AMP	200 AMP
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## Point of Connection

### Main Service Panel Equipment

What is the Utility service feed rated for? INPUT amp	200 AMP
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## Interconnection at Main Service Panel

### 705.12 (B) (2) (3) (b), 120% rule

Where two sources, one a primary power source and the other another power source, are located at opposite ends of a busbar that contains loads, the sum of 125 percent of the power source(s) output circuit current and the rating of the overcurrent device protecting the busbar shall not exceed 120 percent of the ampacity of the busbar. Enter the service disconnect ampere rating \_\_\_(I39)\_\_\_A Enter the main bus ampere rating \_\_\_(I38)\_\_\_A Enter the sum of power production source overcurrent protective device ampere rating \_\_\_C8\_\_\_A (calculated from architecture specific design section above) Since  $(I38 * 120\%) - I39 \geq C8$ , then YES Compatible with SolarAPP

Yes
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## WORKERS' COMP

By applying for this permit, you represent and warrant that you have (and will have during the performance of the work) all valid approvals, certifications, and licenses required for the performance of the work for which this permit is issued, (ii) carry (and will carry during the performance of the work) all necessary insurance required by law or governmental authority in the jurisdiction and (iii) will comply with all applicable laws required in the performance of the work.

**System**

New Rooftop Residential PV Systems Only  
 Installed by contractor with all licenses required by jurisdiction  
 No building integrated solar systems

**Electrical**

Limited to 2017 NEC  
 600V Max per DC System Size  
 Single phase only  
 No Aluminum Wires  
 Must Use 600V rated PV wire (due to outer diameter > 0.24" (6.1mm))  
 Must use 90 deg C rated insulated wire  
 Height of rooftop conduit > = 7/8"  
 Max 2 DC strings in parallel  
 Max 9 current carrying conductors in a raceway  
 Inverter output circuit conductors must be THWN-2, or listed NM  
 Terminals must be rated to 75 deg C, labeled for use with Cu wires, and accept minimum 8 AWG wire  
 If using microinverter, 1 module per microinverter  
 Permitted to install on up to or equal to 400A Service  
 Permitted to install on up to or equal to 225A Service Disconnect  
 Permitted to install on up to or equal to 225A busbars  
 No existing PV on site  
 May install only 1 module type  
 May install only 1 racking system type  
 May install up to 2 Inverters for String Inverters, up to 1 inverter type for Micro-inverters and AC modules Systems  
 Conduit may not be Schedule 80 PVC  
 Single Family Dwelling Only  
 Modules and Inverters must be listed on CEC  
 Rapid Shutdown cannot be satisfied using the method: No exposed wiring or conductive parts [690.12(B)(2)(3)]  
 Flat Plate PV Modules Only  
 No trenching allowed  
 All power production inverter outputs have the same point of connection

**Structural**

2018 IBC  
 PV system + hardware weight is less than or equal to 4psf  
 Limited to 10" above the roof for pitched (>2/12) roof  
 No metal roof or low-slope roof in areas with > 15psf snow load  
 No wood shake or wood shingle roofing  
 No carports or non-permanent structures  
 No ground mounted systems  
 Only one type of mounting hardware system per project

**Fire**

2018 IRC