

Inspection Checklist

Address:
36900 Annapolis Rd
Annapolis, CA 95412

Approval ID:
SA20220321-211-31-2039-A

AHJ:
County of Sonoma

Scope of work: Installing 7.9Kw PV system .

General Guidelines	
The installer shall follow the manufacturer's instructions for all installed equipment and shall have them available at the time of inspection.	
All wire sizes shown are a minimum, unless indicated otherwise, and the installer may upsize them at their discretion.	
All OCPD ratings shown must match the inspection checklist exactly, any ratings that do not match the inspection checklist are valid reasons for inspection failure.	
Conduit sizing to be confirmed at time of inspection. Contractor to provide conduit fill calculations where requested by inspector	

Interconnection at Existing Subpanel		Pass
System Point of Interconnection Compliance At Existing Subpanel: [NEC 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. [NEC 705.12 (B) (2) (3) (d)] 120% Rule for Center Fed Panels A connection at either end, but not both ends, of a center-fed panelboard in dwellings shall be permitted where the sum of 125 percent of the power source(s) output circuit current and the rating of the overcurrent device protecting the busbar does not exceed 120 percent of the current rating of the busbar.		<input type="checkbox"/>
Backfeed breakers are at opposite load ends of the subpanel.		<input type="checkbox"/>
For center fed panels, backfeed breakers are on one side of main breaker and not both in the subpanel.		<input type="checkbox"/>

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

Interconnection at Main Service Panel		Pass
Single Phase Grid Voltage	208 V	<input type="checkbox"/>
System Point of Interconnection Compliance Method At Main Service Panel: [NEC 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. [NEC 705.12 (B) (2) (3) (d)] 120% Rule for Center Fed Panels A connection at either end, but not both ends, of a center-fed panelboard in dwellings shall be permitted where the sum of 125 percent of the power source(s) output circuit current and the rating of the overcurrent device protecting the busbar does not exceed 120 percent of the current rating of the busbar.		<input type="checkbox"/>



Interconnection at Main Service Panel		Pass
Backfeed breakers are at opposite load ends of the panel.		<input type="checkbox"/>
For center fed panels, backfeed breakers are on one side of main breaker and not both in the panel.		<input type="checkbox"/>

Equipment Point of Interconnection		Pass
All power production inverter outputs have the same point of connection.		<input type="checkbox"/>
Connected equipment is within line of sight and closer than 10ft to the point of interconnection or a disconnect/isolation means are installed.		<input type="checkbox"/>
Inverter outputs are combined in a dedicated PV only combiner panel with no loads and = < 3 current carrying conductors in raceway for the output of the inverter combiner panel.		<input type="checkbox"/>
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"/>
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 power terminals are rated to 75°C or greater, labeled for use with Copper Class B or Class C wires, and accept at least 8 AWG wire.		<input type="checkbox"/>
Conductors are properly terminated and wired according to the code.		<input type="checkbox"/>
Where Equipment Grounding Conductors (EGC) are not routed with circuit conductors, EGC is a minimum of 6 AWG or it's protected from physical damage		<input type="checkbox"/>
There is a minimum of 3 feet working clearance, according to the code, for all components that may require service.		<input type="checkbox"/>
Busbar size of PV inverter only combiner panel	80 AMP	<input type="checkbox"/>

Existing Subpanel		Pass
Existing subpanel is used for System Point of Interconnection	Yes	<input type="checkbox"/>
Subpanel busbar ampere rating	125 AMP	<input type="checkbox"/>
Subpanel over current protection device (breaker) ampere rating	100 AMP	<input type="checkbox"/>

Inverter		Pass
Inverter architecture:	Microinverters	<input type="checkbox"/>
EGC Wire Size Inverter 1	12 AWG	<input type="checkbox"/>
EGC Wire Size Combined Inverters	10 AWG	<input type="checkbox"/>
Combined Inverter Output Overcurrent Protection Device Rating	40 A	<input type="checkbox"/>
AC Wire size Combined Inverter Output	8 AWG	<input type="checkbox"/>
Maximum number of AC current carrying THWN-2 wire conductors in combined raceway: INPUT	3	<input type="checkbox"/>
Overcurrent Protective Device rating: Inverter 1	20 AMP	<input type="checkbox"/>



Inverter		Pass
AC Wire size Inverter 1	12 AWG	<input type="checkbox"/>
Maximum number of THWN-2 conductors in an PV inverter AC output circuit raceway, excluding any equipment grounding conductors.	3	<input type="checkbox"/>
Inverter 1 model number	IQ7A-72-2-US [208V]	<input type="checkbox"/>
Inverter 1 manufacturer	Enphase Energy Inc.	<input type="checkbox"/>
Presence of Rapid Shutdown switch label per Fire Bulletin		<input type="checkbox"/>

Roof and PV Array		Pass
Racking System Model Number	xr-100-204b	<input type="checkbox"/>
Racking System Manufacturer	IronRidge	<input type="checkbox"/>
Attachment points of the mounting system are staggered	No	<input type="checkbox"/>
Maximum spacing in inches between adjacent attachment points of the mounting system	67"	<input type="checkbox"/>
Roof penetration sealant method has been installed per the manufacturers instructions.		<input type="checkbox"/>
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. Installed so as not to damage the cable, at intervals not exceeding 1.4 m (4.5 ft) and within 300 mm (12 in.) of every cable entry into enclosures such as outlet boxes, junction boxes, cabinets, or fittings.		<input type="checkbox"/>
PV Module model number	DNA-144-MF26-440W [Blk]	<input type="checkbox"/>
PV Module manufacturer	Aptos Solar Technology LLC	<input type="checkbox"/>
PV Module quantity	18	<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 or UL 3741 as PVRSS or PVRSE used to comply with requirements for Rapid Shutdown.	<input type="checkbox"/>
All rooftop conduits are mounted at least 7/8" above the roof surface.		<input type="checkbox"/>
All PV Source Circuit conductors installed without raceway are listed as PV Wire or USE-2.		<input type="checkbox"/>

Roof and PV Array 1		Pass
Plane 1 Roof Covering: INPUT	Metal roof shingles or panels	<input type="checkbox"/>
The distance from the module backsheet to the roof surface 1 does not exceed 10"		<input type="checkbox"/>

Fire		Pass
Percentage of the Roof with a Solar Array	14.53%	<input type="checkbox"/>
Fire Pathways, venting and access in accordance with	Less Than 33/66	<input type="checkbox"/>
Disconnecting Means are in compliance with the SolarAPP Fire Bulletin		<input type="checkbox"/>



Fire		Pass
Signage, Placards, Directories and Markings in accordance with the SolarAPP Fire Bulletin		<input type="checkbox"/>
Maximum AC operating current in labels	25.6 A	<input type="checkbox"/>
Maximum AC operating voltage in labels	208 V	<input type="checkbox"/>

Corrections



SolarAPP+ Fire Bulletin

Disconnecting Means

SolarAPP+ Fire Bulletin

PV System

PV system disconnecting means shall be provided in accordance with the 2017 National Electrical Code® (NEC), NFPA 70®. [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®. [690.12(C)]

Signs, Placards, Directories, and Markings Guidance

SolarAPP+ Fire Bulletin

General

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

All labeling shall comply with [NEC 110.21 (B)]

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. [IRC 324]

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:

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM [NEC 690.56(C)(3)]

Roof Access, Egress, and Ventilation

SolarAPP+ Fire Bulletin

General

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 324.6]

References:

Ridge Setbacks - [IRC R324.6.2]

Sprinklered Occupancies - [IRC R324.6.2.1]

Pathways - [IRC 324.6.1]

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



Exceptions:

Detached, non-inhabitable structures [IRC R324.6 Ex. 1]

Roof access, pathways and setbacks need not be provided where the code official has determined that rooftop operations will not be employed. [IRC R324.6 Ex. 2]

Low-slope roofs with pitch of less than or equal to 2:12; this exception may not be valid depending on the jurisdiction. [IRC R324.6 Ex. 3]

Carbon Monoxide, Smoke & Heat Detectors

SolarAPP+ Fire Bulletin

Guidance:

Carbon Monoxide and smoke detectors shall be provided in accordance with the code or an Affidavit has been provided by the customer. 2018 International Residential Code. [R314, R315]

Fire Classification

SolarAPP+ Fire Bulletin

PV System

Rooftop-mounted PV systems shall have the same fire classification as the roof assembly required in 2018 International Residential Code. [R902.4; R324.4.2]

Building-integrated photovoltaic products installed as the roof covering shall be tested, listed, and labeled for fire classification. [IRC R902.3, R324.5.2]

Building-integrated photovoltaic products installed as the roof covering shall comply with the minimum requirements for fire classification set by the jurisdiction. [IRC 902.1]

Product Certifications

SolarAPP+ Fire Bulletin

PV System

PV panels and modules shall be listed and labeled to UL 1703 and/or both UL 61730-1 and UL 61730-2 [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]

Hazard Control System

Hazard control system shall be listed and labeled to UL 3741 [NEC 90.7; 110.3(C); 690.4(B) 690.12(D)]



Service Disconnect

SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN	
TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN CONDUCTORS OUTSIDE THE ARRAY. CONDUCTORS IN ARRAY REMAIN ENERGIZED IN SUNLIGHT.	Simple Diagram Here

Location: No more than 1 m (3 ft) away from the service disconnecting means.

Code: [NEC 690.56(C)(1)(a)]

RSD Initiation Device

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

Location: Rapid shutdown initiation device.

Code: [NEC 690.56(C)(3)]

Point of Interconnection

WARNING:
EQUIPMENT FED BY MULTIPLE SOURCES LOCATION OF DISCONNECTING MEANS

(LAYOUT OR DESCRIPTION)

Location: At each service equipment location and at the location(s) of the system disconnect(s) for all electric power production sources capable of being interconnected.

Code: [NEC 705.10]

WARNING:
DUAL POWER SOURCE
SECOND SOURCE IS PV SYSTEM

Location: Electrical Equipment containing overcurrent devices in circuits supplying power to a busbar or conductor supplied from multiple sources

Code: [NEC 705.12(B)(3)]



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

Location: At back-fed breaker if using 120% rule (if applicable)

Code: [NEC 705.12(B)(2)(3)(b)]

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

Location: At distribution equipment adjacent to the back-fed
breaker from the power source when using this "sum of breakers"
code compliance rule.

Code: [NEC 705.12(B)(2)(3)(c)]

PHOTOVOLTAIC POINT OF INTERCONNECTION
MAXIMUM AC OPERATING CURRENT:
MAXIMUM AC OPERATING VOLTAGE:

Location: All interactive system(s) points of interconnection.

Code: [NEC 690.54]

DC Circuit Raceways and Enclosures

PHOTOVOLTAIC POWER SOURCE

Location: DC Circuit Raceways and Enclosures, conduit, and
combiner/junction boxes.

Code: [NEC 690.31(G)(3)]

PV System Disconnect

WARNING:
ELECTRIC SHOCK HAZARD TERMINALS ON LINE AND LOAD
SIDES MAY BE ENERGIZED IN THE OPEN POSITION

Location: DC Disconnecting Means where terminals on both line
and load side may remain energized. Example language or
equivalent.

Code: [NEC 690.13(B)]

PV SYSTEM DISCONNECT

Location: Each PV System Disconnect (May be AC or DC)

Code: [NEC 690.13(B)]



DC String Inverters Equipment Disconnects

WARNING:
ELECTRIC SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD
SIDES MAY BE
ENERGIZED IN THE OPEN POSITION

Location: Each PV system disconnecting means where line and load may be energized in the open position

Code: [NEC 690.13(B)]

PHOTOVOLTAIC DC DISCONNECT

Location: Each PV system disconnecting means.

Code: [NEC 690.13(B)]

Maximum Voltage:

Maximum Circuit Current:

Maximum rated output current of the charge controller or dc-to-dc converter (if installed):

Location: At each DC PV system disconnecting means.

Code: [NEC 690.53]



FIRE SAFETY CODE REQUIREMENTS

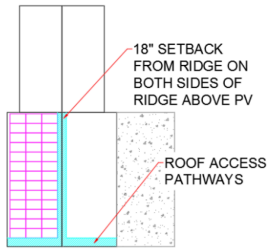
Does the home have sprinkler systems?	No
Percentage of Roof Area covered with PV Total Array Area / Total Roof Area	14.53%

Roof Access and Ventilation Diagrams

Fire Safety

Ridge Setbacks

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



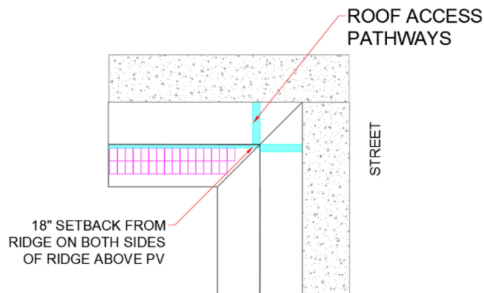
Emergency Escape & Rescue Opening

Minimum 3' Emergency Escape Pathway

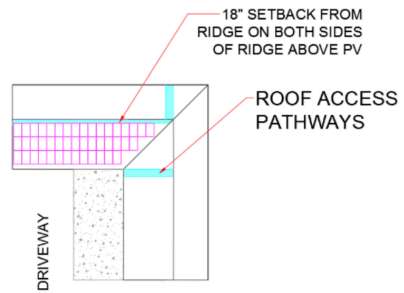


Hips and Valley Setbacks

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)



INPUTS

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

GENERAL

Project Information

Project Title	Holguin
Address	36900 Annapolis Rd Annapolis, CA 95412
Homeowner's full name	Efrain Holguin
Confirm that you have verified the homeowner's information and right to install on the property.	
AHJ	County of Sonoma
Project Type	PV
Code Cycle	2017/2018
Scope of Work	Installing 7.9Kw PV system .
PV System Size AC (kW)	5.272362 kW
Confirm you have reviewed SolarAPP eligibility:	Yes

Contractor Information

Installation Applicability and Compliance
All work will comply with the 2017 National Electrical Code (NFPA 70), the International Code Council 2018 I-Codes, Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI7-16), UL Standards, Manufacturer's instructions, and Municipal requirements.

State License	
Type	state



State License

Number

725684

Inspection Guidelines

The installer shall follow the manufacturer's instructions for all installed equipment and shall have them available at the time of inspection.

All wire sizes shown are, unless indicated otherwise, a minimum and the installer may upsize them at their discretion.

All OCPD ratings shown must match the inspection checklist exactly, any ratings that do not match the inspection checklist are valid reasons for inspection failure.

FIRE

I hereby affirm that I will comply with all requirements and guidelines as set out by the SolarAPP Fire Bulletin.

Does the home have sprinkler systems?

No

What is the total array area?

406.88 sqft

Total roof area

2800 sqft

Percentage of Roof Area covered with PV
Total Array Area / Total Roof Area

14.53%

See Fire Setback Diagram attached.

Less Than 33/66

STRUCTURAL DETAILS



General

The weight of the PV system in lbs/sq ft [IRC R301.4]	2.54 psf
The ground snow load is [IRC Table R301.2(1)] [IRC Fig R301.2(6)]	0 lb/sqft
Proposed maximum spacing in inches between adjacent attachment points of the mounting system	67"
Will attachment points of the mounting system be staggered?	No
The number of roof surfaces at different slopes and/or orientations that will be used for installation are: Note: 1 means all roofs used have the same orientation.	1
Type of mounting for the PV system	Flush mount

Mounting Planes

Mounting Plane Type 1	
Maximum distance from the module backsheet to the roof	5"
The current roof covering is [IRC Section R905]	Metal roof shingles or panels
The pitch of the roof surface is [IRC Section R905]	3/12

Wind Speed

Is the solar module and mounting system rated by the manufacturer to withstand the upward force of the local wind speed (105 MPH) and evenly distribute load into the supporting structure at the proposed maximum spacing, and confirmed in UL 1703 or 61730 (Part 1 & 2), and 2703 listings? [IRC R324.4.1.2]	Yes
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Roof Condition

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

Yes

ELECTRICAL DETAILS

Equipment

Architecture type used for all inverters in this project

Microinverters

Inverter 1

Inverter 1 Model Number

IQ7A-72-2-US [208V]

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

1647900896693-I9-Enphase micro inverter.pdf

Inverter 1 Manufacturer:

Enphase Energy Inc.

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

Yes

Modules

Module 1 Model Number

DNA-144-MF26-440W [Blk]

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

1647901006128-112-panel.pdf

Module 1 Manufacturer

Aptos Solar Technology LLC

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

Yes



Modules	
Module 1 quantity	18
Module open circuit voltage with record low temperature correction	54.27 V
Module short circuit current with average high temperature correction	11.47 A

Racking System	
Racking System Model Number	xr-100-204b
Datasheet for Racking System: See attached. [NEC 90.7; 110.3(C)][IRC R106.1]	1647901218126-115-Rail.pdf
Racking System Manufacturer	IronRidge
Is the Racking System UL 2703 listed for grounding and bonding with the PV module models specified in this SolarAPP project? [NEC 90.7; 110.3(C); 690.43(A)][IRC R324.4.2; R902.4]	Yes
The combination of modules and racking system shall have the same fire classification as the roof assembly. [IRC R324.4.2; R902.4]	Yes
Name/description of roof penetration sealant method to be used.	Henrys
You have agreed to install the sealant method per the manufacturer's instructions for the means of accomplishing weather proofing [IRC R324.4.3]	Yes

Rapid Shutdown	
The AC module, microinverter, or DCDC converter installed on each module is listed for UL 1741 or UL 3741 as PVRSS or PVRSE and used to comply with requirements for Rapid Shutdown both inside and outside the array. [690.12(B)(2)(2)]	

Site Conditions

Ambient Dry Bulb Extreme Record Low Temperature (°C) [690.7(A)]	-4.3 °C
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Ambient Dry Bulb Average High Temperature (°C)	44 °C
Single Phase Grid Voltage	208 V

Installation Details

Is there an existing Utility interactive power production source connected to the home's electric service?	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? [NEC 690.8(B); 690.31 (A) & (C), 310.15(A) and (B)]	Yes
NM cable is used for inverter output circuits and installed in locations and uses according to the Code [NEC 334.10]	No
Are all rooftop conduits mounted at least 7/8" above the roof surface [NEC 310.15(B)(3)(c)]:	Yes
Are all PV Source Circuit conductors installed without raceway listed as PV Wire or USE-2? [NEC 690.31(C)]	Yes
Are all power terminals rated to 75°C or greater, labeled for use with Copper Class B or Class C wires, and accept at least 8 AWG wire? [NEC 110.14]	Yes
Where Equipment Grounding Conductors (EGC) are not routed with circuit conductors, EGC is a minimum of 6 AWG or it's protected from physical damage [250.120(C)]	Yes
Module voltage and current DC specifications fall within allowable range of connected equipment	Yes
All equipment is listed for the application, rated equal to or greater than the connected overcurrent device and installed per the manufacturer's instructions. Documentation shall be provided at time of inspection.	Yes

Microinverter



PV Source Circuit

Is 1 microinverter used per module?

Yes

Inverter Output Circuit

Maximum number of Microinverters in a single branch (cannot exceed 16A continuous, applicable to 20A breaker)[NEC 690.8(A)(3); 690.9(B)]

6

You have selected to size all individual microinverter branch circuit OCPD to 20A

Yes

Calculated Inverter Branch Continuous Output current based of inverter Maximum Continuous Output Power at Unity Power Factor, Maximum number of microinverters in a single branch, and site voltage.

8 A

Inverter Branch Continuous Output current used for sizing inverter output circuits [NEC 220.5(B)]

16 A

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

Calculated Branch Overcurrent Protective Device rating, from Table 3 based on the total sum of inverter continuous output current ratings of parallel connected microinverters. [NEC 705.30]

20 A

Combined Inverter continuous output current

25.35 A

Calculated minimum combined Overcurrent Protective Device rating from Table 3 based on the total sum of inverter continuous output current ratings of parallel connected microinverters. [NEC 705.30]

35

Combined inverter output overcurrent Protection Device rating for total microinverter system. [NEC 690.9(A); 690.9(B)]

40 A

Maximum number of THWN-2 conductors in a raceway from the solar arrays to the OCPD, excluding any equipment grounding conductors

3

Branch wire size in raceway

12 AWG

Combined inverter output wire size in raceway

8



Inverter Output Circuit

Table 3 [NEC 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; 220.5(B)]

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	100.5	120.5	140.5	160.5
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	N/A	N/A	N/A

[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]

Grounding & Bonding

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

Branch - Equipment Grounding Conductor (EGC) based on overcurrent protective device

12 AWG

Combined Inverter Output - Equipment Grounding Conductor (EGC) based on overcurrent protective device

10 AWG

Table 5 [NEC Table 250.122]

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

[Table 250.122]

AC Modules

Inverter Output Circuit

You have selected to size all individual AC module branch circuit OCPD to 20A.

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

125% of the sum of power production sources continuous output current.

32 A

At the time of inspection, it will be verified that if connected equipment is NOT within line of sight or closer than 10ft to the point of interconnection, disconnect or isolation means are installed. [NEC 690.15 (A)]

PV Combiner Panel

Will inverter outputs be combined in a dedicated PV only combiner panel with no loads? (Note - only three current carrying conductors are allowed in the raceway for the output of the inverter combiner panel)

Yes

Busbar size of PV inverter only combiner panel

80 A

Point of Connection at Subpanel

Existing Subpanel

Will power production inverter outputs be connected directly to an existing subpanel?

Yes

Point of Connection

Existing Subpanel

Point of Interconnection compliance method at existing subpanel

120% rule

What is the subpanel busbar ampere rating?

125 A

Existing subpanel main over current protection device ampere rating

100 A

Point of Connection at Main Panel



Main Service Panel

Point of Interconnection compliance method at main service panel

120% rule

Main Bus Ampere Rating

200 A

Main Breaker/Service Disconnect Ampere Rating

200 A

What is the Utility service feed rated for?

200 A

Electrical Work

Main Panel Upgrades and Main Breaker Derates

A Main Panel Upgrade is being performed.

No

Interconnection at Main Service Panel

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. 705.12(B)(2)(3)(b)

Yes

Interconnection at Existing Subpanel

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.

Yes

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 Retrofit PV Systems

Installed by contractor with all licenses required by jurisdiction

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

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

Whenever used, microinverters or AC Modules must be rated for a 20A branch circuit overcurrent device

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 or ESS

May install only 1 module 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)]

No trenching allowed

All power production inverter outputs have the same point of connection

All equipment is assumed to be non-continuous rated

May install only 1 racking system type

Height of rooftop conduit > = 7/8"

Flat Plate PV Modules Only

Structural

Applicable International Residential Code

PV system + hardware weight is less than or equal to 4psf

No ground mounted systems

No carports or non-permanent structures

Installed on a permitted structure

No wood shake or wood shingle roofing

Limit of 10" above the roof for pitched (>2/12) roof systems

No metal roof or low-slope roof in areas with > 15psf snow load

Fire

Applicable International Residential Code

