



EXPEDITED PERMIT PROCESS FOR RESIDENTIAL SMALL-SCALE PV SYSTEMS
STANDARD STRING SYSTEM, MICRO-INVERTER, AC MODULE, OR SUPPLY SIDE

Required Information for Permit:

1. Two copies of site plan showing location of major components on the property. This drawing need not be exactly to scale, but it should represent relative location of components at site. PV arrays on dwellings with a 3' perimeter space at ridge and sides may not need separate fire service review.
2. Two copies of detail, note, elevation, or a combination thereof, indicating PV panels installed will be uniformly spaced above the roof surface less than 12 inches from roof surface and the PV panels will not extend past roof peak.
3. Two copies of electrical diagram showing PV array configuration, wiring system, overcurrent protection, inverter, disconnects, required signs, and ac connection to building.
4. Two copies of specification sheets and installation manuals for all manufactured components including, but not limited to, PV modules, inverter(s), combiner box, disconnects, and mounting system.
5. Printed name and signature of person responsible for design on all pages. Include license number if applicable.
6. Be advised that if any of the PV wiring is installed inside the dwelling, smoke alarms will need to be updated if not to current code per Florida Building Code Residential, Section R314.3

Step 1: Structural Review of PV Array Mounting System

Is the array to be mounted on a defined, permitted roof structure? Yes No

Roof Information:

1. Does the roof have a single roof covering? Yes No

If No, please describe roof covering: _____

Mounting System Information:

1. The mounting structure shall be engineered or a product approval.

2. Is the roof flat or sloped? Flat Sloped

If sloped, at what pitch? _____

3. For manufactured mounting systems, fill out information on the mounting system below:
 - a. Mounting System Manufacturer _____ Product Name and Model# _____
 - b. Total Weight of PV Modules and Rails _____ lbs
 - c. Total Number of Attachment Points _____
 - d. Weight per Attachment Point (b÷c) _____ lbs
 - e. Maximum Spacing Between Attachment Points on a Rail _____ inches (see product manual for maximum spacing allowed based on maximum design wind speed)
 - f. Total Surface Area of PV Modules (square feet) _____ ft²
 - g. Distributed Weight of PV Module on Roof (b÷f) _____ lbs/ft²

Step 2: Three-Day Plan Review of PV System

In order for a PV system to be considered for an expedited permit process, the following must apply:

1. PV modules, utility-interactive inverters, and combiner boxes are identified for use in PV systems.
2. The PV array is composed of 4 series strings or less per inverter.
3. The total inverter capacity has a continuous ac power output of 10,000 Watts or less.
4. One of the standard electrical diagrams can be used to accurately represent the PV system.
5. The PV system, when installed on a historic property, is not located on a character defining feature and is not visible from the street.
6. The PV system extends no further than 12” above mounting surface, and is uniformly spaced above a sloped roof surface.
7. The PV system does not extend past the roof peak.

Step 3: Separate Permits Required

Per the Florida Administrative Code, Rule 61G4-15.021, “Solar contractors may install new or replace existing power and control wiring in photovoltaic (PV) source circuits, PV output circuits, battery storage system circuits, and power conditioning unit. In an interactive system that operates parallel with a primary source of electrical energy, this work is limited to the PV supply side of the power conditioning unit. In a stand-alone, or non-grid connected system, the work above-referenced shall be limited to the PV supply side of the power conditioning unit and shall not include wiring integral to the building premises. All work shall be done in accordance with the National Electric Code”.

Any work integral to the building premises wiring shall be done by a licensed electrical contractor. A separate electrical permit will be required for this work, and should be submitted at the same time as the permit application for the PV system.

Print Name: _____ Company Name (if applicable): _____

Signature: _____ License Number (if applicable): _____

Date: _____



EXPEDITED PERMITTING CHECKLIST FOR RESIDENTIAL PHOTOVOLTAIC SYSTEMS: ROOFTOP-MOUNTED

Required Paperwork Checklist:

- This Document
- Permit Application with Notice of Commencement for the installation.
- Separate Electrical permit application if applicable.
- Small scale PV system package with supporting documentation, drawings, and specifications.

1 Project Information:

Project Applicant:	
Site Owner Name:	
Project Address:	
PV system description:	

2 Project Requirements

- PV system is designed and proposed for a detached single-family house.
- PV system is designed for rooftop of a house in general compliance with applicable codes.
- Mounting system is engineered and designed for PV.
- Panels are mounted no higher than 12" above the surface of the roof and are uniformly spaced above the roof surface. No portion of the system exceeds the peak of the roof.
- If located on a "historic property," does the installation comply with the City's historic preservation regulations?
"Whenever possible, equipment such as solar panels... should not be affixed to the building, but sited in the rear or side yard locations and fully screened with landscaping, fence or wall. When placement upon the building is unavoidable, such equipment... shall be located on a non-character defining elevation or roof slope that is not visible from the street. In no instance, shall the equipment be allowed to be placed upon any character defining feature."
(see www.boynton-beach.org/departments/historic_preservation)
- Method and type of weatherproofing roof penetrations are provided.
- Home is code compliant to setbacks and height, or code allows expansion of nonconformity for solar panels.

➔ If all above criteria are met, please proceed to determine if project qualifies for an expedited permit.

3 Determine if your project qualifies for an expedited permit (3-day turnaround).

Solar and Electrical contractors can apply for an expedited permit where the PV system meets the requirements listed in this Checklist and use a template electrical diagram provided by the City. All project plans and supporting documentation must be provided on-site for the inspector. Project will be subject to a field inspection.

	Yes	No	N/A
a) PV modules, utility-interactive inverters, and combiner boxes are identified and listed and labeled for location and use in PV systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) The system meets all current FBC, City, and Electrical Code requirements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) For Split-Buss panels the AC interconnection must be one of the six service disconnects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Maximum load added to the panelboard is based on the rating of the PV system and is limited to 10,000 watts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) I have attached the following Electrical Template and Site Plan: <ul style="list-style-type: none"> <input type="checkbox"/> Electrical Diagram- Standard Strings / Standard String with DC Converter <input type="checkbox"/> Electrical Diagram- Micro Inverter <input type="checkbox"/> Electrical Diagram- AC Module <input type="checkbox"/> Electrical Diagram- Supply Side <input type="checkbox"/> None of the above- Electrical Permit with Plan Review Required 			
Comments:			



If you answered yes to all of the above questions (yes or N/A for item c), and are using a template diagram provided by the City or followed the template and provided a signed and sealed drawing, your project qualifies for an expedited permit.

4 Submit this Checklist, the Building and Electrical (if applicable) Permit Applications with notarized signature, and 2 copies of the Template Electrical Drawing and Site Plan

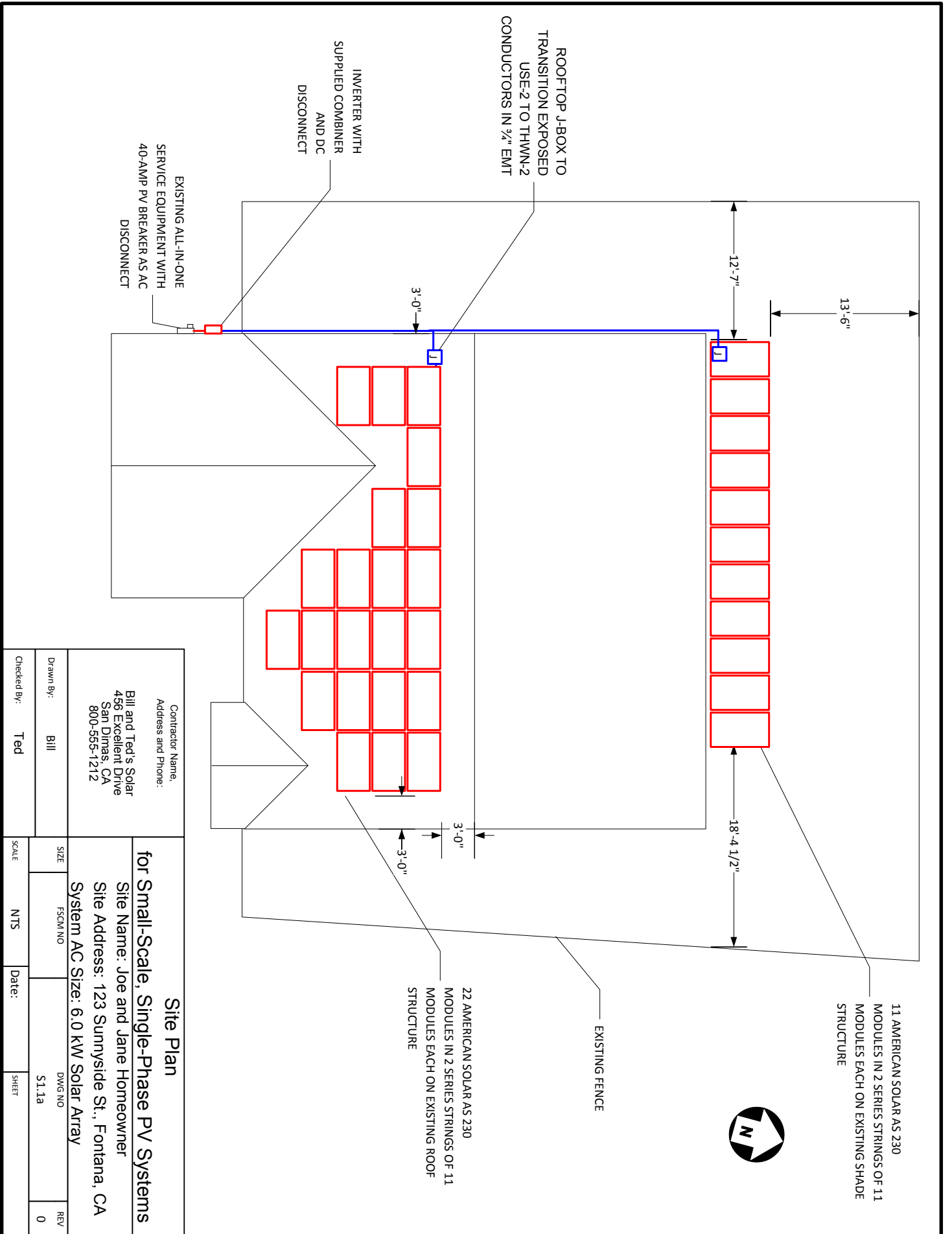
to: Permit Processing, Development Services Dept., 100 E Boynton Beach Blvd., Boynton Beach, FL 33425



I attest that all information in this checklist is accurate to the best of my knowledge.

Applicant Signature:	Date:
Applicant Name (Please Print):	
License Number (if applicable):	
Electrical Contractor and electrical permit required for all building premises wiring per Florida Administrative Code, Rule 61G4-15.021 and FBC 105.1	

SITE PLAN



Contractor Name:
Address and Phone:
Bill and Ted's Solar
456 Excellent Drive
San Dimas, CA
800-555-1212

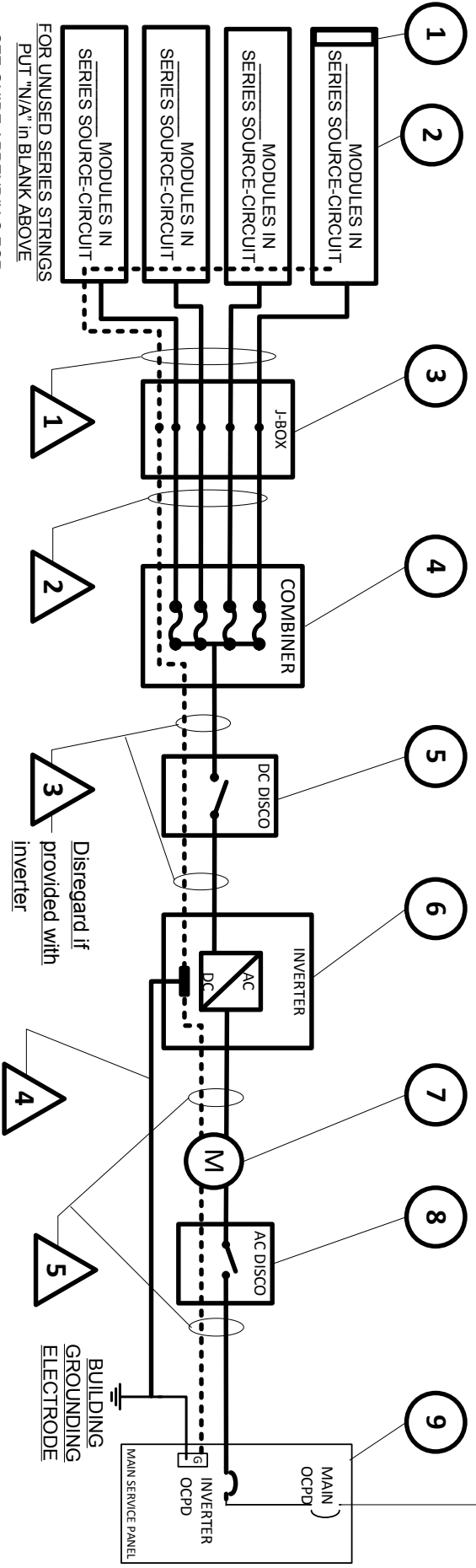
Site Plan
for Small-Scale, Single-Phase PV Systems
Site Name: Joe and Jane Homeowner
Site Address: 123 Sunnyside St., Fontana, CA
System AC Size: 6.0 kW Solar Array

Drawn By: Bill	SIZE	DWG/NO
Checked By: Ted	SCALE	REV
	NTS	S1.1a
	Date:	0
	SHEET	

STANDARD ELECTRICAL DIAGRAM

EQUIPMENT SCHEDULE			
TAG	DESCRIPTION	PART NUMBER	NOTES
1	SOLAR PV MODULE		
2	PV ARRAY		
3	J-BOX (IF USED)		
4	COMBINER (IF USED)		
5	DC DISCONNECT		
6	DC/AC INVERTER		
7	GEN METER (IF USED)		
8	AC DISCONNECT (IF USED)		
9	SERVICE PANEL		

VAC, _____ A MAIN, _____ A BUS, _____ A INVERTER OCPD
 (SEE NOTE 5 FOR INVERTER OCPDS, ALSO SEE GUIDE SECTION 9)



FOR UNUSED SERIES STRINGS PUT "N/A" IN BLANK ABOVE
 SEE GUIDE APPENDIX C FOR INFORMATION ON MODULE AND ARRAY GROUNDING

CONDUIT AND CONDUCTOR SCHEDULE				
TAG	DESCRIPTION OR CONDUCTOR TYPE	COND. GAUGE	NUMBER OF CONDUCTORS	CONDUIT TYPE AND SIZE
1	USE-2 <input type="checkbox"/> or PV WIRE <input type="checkbox"/>			N/A
2	BARE COPPER EQ. GRD. COND. (EGC)			N/A
3	THWN-2 <input type="checkbox"/> or XHHW-2 <input type="checkbox"/> or RHW-2 <input type="checkbox"/>			N/A
4	THWN-2 <input type="checkbox"/> or XHHW-2 <input type="checkbox"/> or RHW-2 <input type="checkbox"/>			N/A
5	THWN-2 <input type="checkbox"/> or XHHW-2 <input type="checkbox"/> or RHW-2 <input type="checkbox"/>			N/A

TAG	DESCRIPTION OR CONDUCTOR TYPE	COND. GAUGE	NUMBER OF CONDUCTORS	CONDUIT TYPE	CONDUIT SIZE
1	USE-2 <input type="checkbox"/> or PV WIRE <input type="checkbox"/>			N/A	N/A
2	BARE COPPER EQ. GRD. COND. (EGC)			N/A	N/A
3	THWN-2 <input type="checkbox"/> or XHHW-2 <input type="checkbox"/> or RHW-2 <input type="checkbox"/>			N/A	N/A
4	THWN-2 <input type="checkbox"/> or XHHW-2 <input type="checkbox"/> or RHW-2 <input type="checkbox"/>			N/A	N/A
5	THWN-2 <input type="checkbox"/> or XHHW-2 <input type="checkbox"/> or RHW-2 <input type="checkbox"/>			N/A	N/A

Contractor Name, Address and Phone: _____

Drawn By: _____

Checked By: _____

One-Line Standard Electrical Diagram for Small-Scale, Single-Phase PV Systems

Site Name: _____

Site Address: _____

System AC Size: _____

Scale: _____ NTS

Date: _____

DWG NO: E1.1

REV: _____

NOTES FOR STANDARD ELECTRICAL DIAGRAM

PV MODULE RATINGS @ STC (Guide Section 5)

MODULE MAKE	
MODULE MODEL	
MAX POWER-POINT CURRENT (I_{mp})	A
MAX POWER-POINT VOLTAGE (V_{mp})	V
OPEN-CIRCUIT VOLTAGE (V_{oc})	V
SHORT-CIRCUIT CURRENT (I_{sc})	A
MAX SERIES FUSE (OCPD)	A
MAXIMUM POWER (P_{max})	W
MAX VOLTAGE (TYP 600V _{DC})	V
VOC TEMP COEFF (mV/°C <input type="checkbox"/> or %/°C <input type="checkbox"/>)	
IF COEFF SUPPLIED, CIRCLE UNITS	

NOTES FOR ALL DRAWINGS:

OCPD = OVERCURRENT PROTECTION DEVICE
 NATIONAL ELECTRICAL CODE® REFERENCES
 SHOWN AS (NEC XXX.XX)

INVERTER RATINGS (Guide Section 4)

INVERTER MAKE	
INVERTER MODEL	
MAX DC VOLT RATING	V
MAX POWER @ 40°C	W
NOMINAL AC VOLTAGE	V
MAX AC CURRENT	A
MAX OCPD RATING	A

SIGNS-SEE GUIDE SECTION 7

SIGN FOR DC DISCONNECT

PHOTOVOLTAIC POWER SOURCE	
RATED MPP CURRENT	A
RATED MPP VOLTAGE	V
MAX SYSTEM VOLTAGE	V
MAX CIRCUIT CURRENT	A
WARNING: ELECTRICAL SHOCK HAZARD-LINE AND LOAD MAY BE ENERGIZED IN OPEN POSITION	

SIGN FOR INVERTER OCPD AND AC DISCONNECT (IF USED)

SOLAR PV SYSTEM	
AC POINT OF CONNECTION	A
AC OUTPUT CURRENT	A
NOMINAL AC VOLTAGE	V
THIS PANEL FED BY MULTIPLE SOURCES (UTILITY AND SOLAR)	

NOTES FOR ARRAY CIRCUIT WIRING (Guide Section 6 and 8 and Appendix D):

- 1.) LOWEST EXPECT AMBIENT TEMPERATURE BASED ON ASHRAE MINIMUM MEAN EXTREME DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. LOWEST EXPECTED AMBIENT TEMP _____°C
- 2.) HIGHEST CONTINUOUS AMBIENT TEMPERATURE BASED ON ASHRAE HIGHEST MONTH 2% DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. HIGHEST CONTINUOUS TEMPERATURE _____°C
- 2.) 2005 ASHRAE FUNDAMENTALS 2% DESIGN TEMPERATURES DO NOT EXCEED 47°C IN THE UNITED STATES (PALM SPRINGS, CA IS 44.1°C). FOR LESS THAN 9 CURRENT-CARRYING CONDUCTORS IN ROOF-MOUNTED SUNLIT CONDUIT AT LEAST 0.5" ABOVE ROOF AND USING THE OUTDOOR DESIGN TEMPERATURE OF 47°C OR LESS (ALL OF UNITED STATES),
 - a) 12 AWG, 90°C CONDUCTORS ARE GENERALLY ACCEPTABLE FOR MODULES WITH I_{sc} OF 7.68 AMPS OR LESS WHEN PROTECTED BY A 12-AMP OR SMALLER FUSE.
 - b) 10 AWG, 90°C CONDUCTORS ARE GENERALLY ACCEPTABLE FOR MODULES WITH I_{sc} OF 9.6 AMPS OR LESS WHEN PROTECTED BY A 15-AMP OR SMALLER FUSE.

NOTES FOR INVERTER CIRCUITS (Guide Section 8 and 9):

- 1) IF UTILITY REQUIRES A VISIBLE-BREAK SWITCH, DOES THIS SWITCH MEET THE REQUIREMENT? YES NO N/A
- 2) IF GENERATION METER REQUIRED, DOES THIS METER SOCKET MEET THE REQUIREMENT? YES NO N/A
- 3) SIZE PHOTOVOLTAIC POWER SOURCE (DC) CONDUCTORS BASED ON MAX CURRENT ON NEC 690.53 SIGN OR OCPD RATING AT DISCONNECT
- 4) SIZE INVERTER OUTPUT CIRCUIT (AC) CONDUCTORS ACCORDING TO INVERTER OCPD AMPERE RATING. (See Guide Section 9)
- 5) TOTAL OF _____ INVERTER OCPD(S), ONE FOR EACH INVERTER. DOES TOTAL SUPPLY BREAKERS COMPLY WITH 120% BUSBAR EXCEPTION IN 690.64(B)(2)(a)?
 YES NO

Contractor Name:
 Address and Phone:

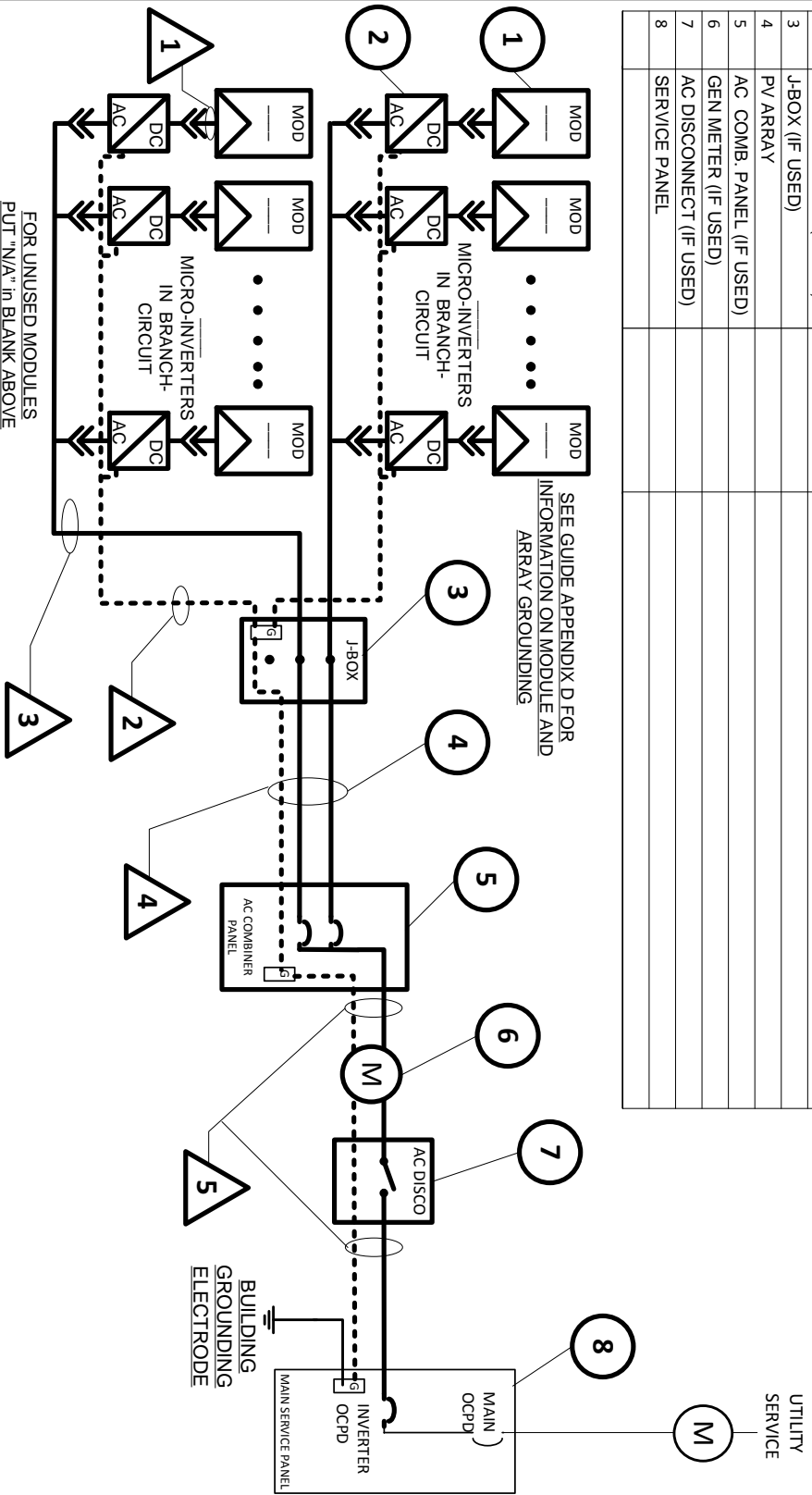
Notes for One-Line Standard Electrical Diagram for Single-Phase PV Systems

Site Name: _____
 Site Address: _____
 System AC Size: _____

Drawn By:	SIZE	FSCM NO	DWG NO	REV
Checked By:	SCALE	NTS	Date:	SHEET
			E1.2	

MICRO-INVERTER ELECTRICAL DIAGRAM

EQUIPMENT SCHEDULE			
○ TAG	DESCRIPTION	PART NUMBER	NOTES
1	PV DC or AC MODULE		
2	DC/AC INVERTER (MICRO)		
3	J-BOX (IF USED)		
4	PV ARRAY		
5	AC COMB. PANEL (IF USED)		
6	GEN METER (IF USED)		
7	AC DISCONNECT (IF USED)		
8	SERVICE PANEL		



△ TAG	DESCRIPTION OR CONDUCTOR TYPE	COND. GAUGE	NUMBER OF CONDUCTORS	CONDUIT TYPE	CONDUIT SIZE
1	USE-2-□ or PV WIRE □	MFG	MFG Cable	N/A	N/A
2	GEC □ EGC □ X ALL THAT APPLY	MFG	MFG Cable	N/A	N/A
3	EXTERIOR CABLE LISTED W/ INV.	MFG	MFG Cable	N/A	N/A
4	THWN-2 □ or XHHW-2 □ or RHW-2 □			SAME	SAME
	GEC □ EGC □ X ALL THAT APPLY			SAME	SAME
	NO DC GEC IF 690.35 SYSTEM				
5	THWN-2 □ or XHHW-2 □ or RHW-2 □			SAME	SAME
	GEC □ EGC □ X ALL THAT APPLY			SAME	SAME

Contractor Name: Address and Phone:		One-Line Standard Electrical Diagram for Micro-Inverter PV Systems	
Site Name: Site Address: System AC Size:		SIZE FSCM NO	DWG NO E1.1a
Drawn By:	Checked By:	SCALE NTS	Date:
		REV 0	SHEET

NOTES FOR MICRO-INVERTER ELECTRICAL DIAGRAM

PV MODULE RATINGS @ STC (Guide Section 5)

MODULE MAKE	
MODULE MODEL	
MAX POWER-POINT CURRENT (I_{mp})	
MAX POWER-POINT VOLTAGE (V_{mp})	
OPEN-CIRCUIT VOLTAGE (V_{oc})	
SHORT-CIRCUIT CURRENT (I_{sc})	
MAX SERIES FUSE (OCPPD)	
MAXIMUM POWER (P_{max})	
MAX VOLTAGE (TYP 600V _{DC})	
VOC TEMP COEFF ($mV/^{\circ}C$ <input type="checkbox"/> or $\%/^{\circ}C$ <input type="checkbox"/>)	
IF COEFF SUPPLIED, CIRCLE UNITS	

NOTES FOR ALL DRAWINGS:

OCPPD = OVERCURRENT PROTECTION DEVICE
 NATIONAL ELECTRICAL CODE® REFERENCES
 SHOWN AS (NEC XXX.XX)

INVERTER RATINGS (Guide Section 4)

INVERTER MAKE	
INVERTER MODEL	
MAX DC VOLT RATING	
MAX POWER @ 40°C	
NOMINAL AC VOLTAGE	
MAX AC CURRENT	
MAX OCPD RATING	

SIGNS-SEE GUIDE SECTION 7

SIGN FOR DC DISCONNECT
 No sign necessary since 690.51 marking on PV module covers needed information

SIGN FOR INVERTER OCPD AND AC DISCONNECT (IF USED)
SOLAR PV SYSTEM
AC POINT OF CONNECTION
 AC OUTPUT CURRENT
 NOMINAL AC VOLTAGE
THIS PANEL FED BY MULTIPLE SOURCES (UTILITY AND SOLAR)

NOTES FOR ARRAY CIRCUIT WIRING (Guide Section 6 and 8 and Appendix E):

- 1.) LOWEST EXPECT AMBIENT TEMPERATURE BASED ON ASHRAE MINIMUM MEAN EXTREME DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. LOWEST EXPECTED AMBIENT TEMP ____°C
- 2.) HIGHEST CONTINUOUS AMBIENT TEMPERATURE BASED ON ASHRAE HIGHEST MONTH 2% DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. HIGHEST CONTINUOUS TEMPERATURE ____°C
- 2.) 2009 ASHRAE FUNDAMENTALS 2% DESIGN TEMPERATURES DO NOT EXCEED 47°C IN THE UNITED STATES (PALM SPRINGS, CA IS 44.1°C). FOR LESS THAN 9 CURRENT-CARRYING CONDUCTORS IN ROOF-MOUNTED SUNLIT CONDUIT AT LEAST 0.5" ABOVE ROOF AND USING THE OUTDOOR DESIGN TEMPERATURE OF 47°C OR LESS (ALL OF UNITED STATES).
 - a) 12 AWG, 90°C CONDUCTORS ARE GENERALLY ACCEPTABLE FOR MODULES WITH I_{sc} OF 7.68 AMPS OR LESS WHEN PROTECTED BY A 12-AMP OR SMALLER FUSE.
 - b) 10 AWG, 90°C CONDUCTORS ARE GENERALLY ACCEPTABLE FOR MODULES WITH I_{sc} OF 9.6 AMPS OR LESS WHEN PROTECTED BY A 15-AMP OR SMALLER FUSE.

NOTES FOR INVERTER CIRCUITS (Guide Section 8 and 9):

- 1) IF UTILITY REQUIRES A VISIBLE-BREAK SWITCH, DOES THIS SWITCH MEET THE REQUIREMENT? YES NO N/A
- 2) IF GENERATION METER REQUIRED, DOES THIS METER SOCKET MEET THE REQUIREMENT? YES NO N/A
- 3) SIZE PHOTOVOLTAIC POWER SOURCE (DC) CONDUCTORS BASED ON MAX CURRENT ON NEC 690.53 SIGN OR OCPD RATING AT DISCONNECT
- 4) SIZE INVERTER OUTPUT CIRCUIT (AC) CONDUCTORS ACCORDING TO INVERTER OCPD AMPERE RATING. (See Guide Section 9)
- 5) TOTAL OF _____ INVERTER OUTPUT CIRCUIT OCPD(S). ONE FOR EACH MICRO-INVERTER CIRCUIT. DOES TOTAL SUPPLY BREAKERS COMPLY WITH 120% BUSBAR EXCEPTION IN 690.64(B)(2)(a)? YES NO

Contractor Name:
 Address and Phone:

Notes for One-Line Standard Electrical Diagram for Single-Phase PV Systems

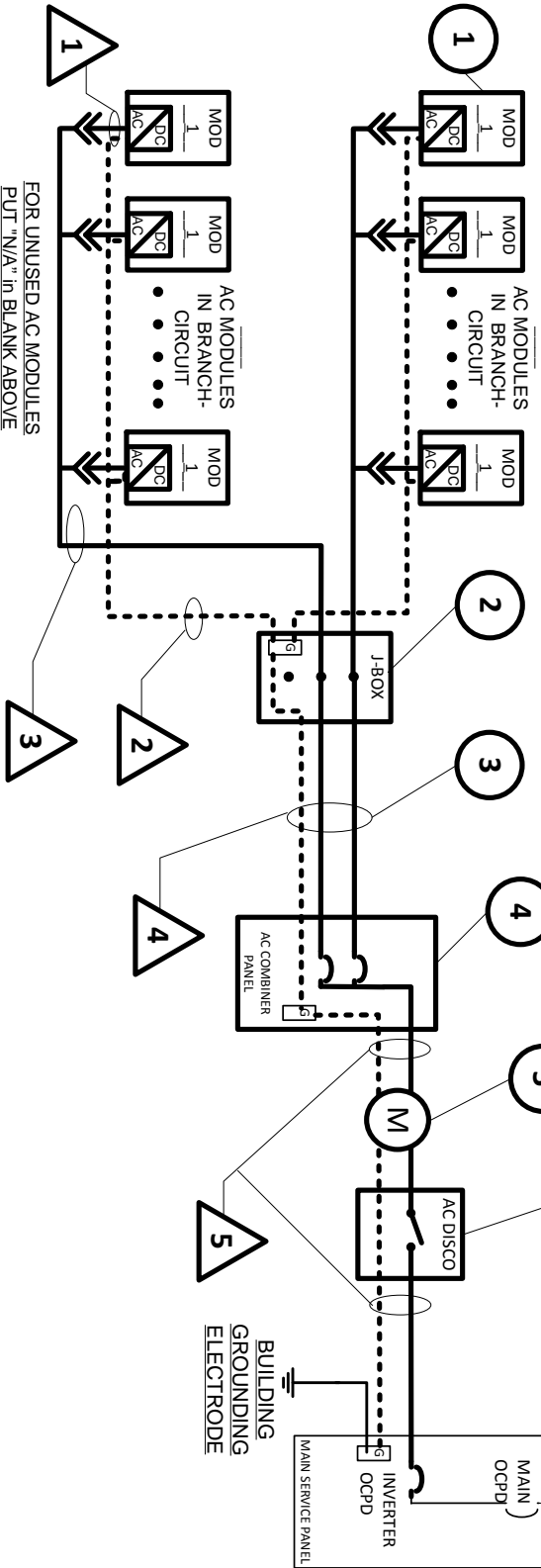
Site Name:
 Site Address:
 System AC Size:

Drawn By:	SIZE	FSCM NO	DWG NO	REV
Checked By:	SCALE	NTS	Date:	SHEET

AC MODULE ELECTRICAL DIAGRAM

EQUIPMENT SCHEDULE			
○ TAG	DESCRIPTION	PART NUMBER	NOTES
1			
2			
3			
4			
5			
6			
7			

SEE GUIDE APPENDIX D FOR INFORMATION ON MODULE AND ARRAY GROUNDING



CONDUIT AND CONDUCTOR SCHEDULE

▽ TAG	DESCRIPTION OR CONDUCTOR TYPE	COND. GAUGE	NUMBER OF CONDUCTORS	CONDUIT TYPE	CONDUIT SIZE
1	USE-2 <input type="checkbox"/> or PV WIRE <input type="checkbox"/>				
2	GEC <input type="checkbox"/> EGC <input type="checkbox"/> X ALL THAT APPLY	MFG Cable	N/A	N/A	N/A
3	EXTERIOR CABLE LISTED W/INV.	MFG Cable	N/A	N/A	N/A
4	THWN-2 <input type="checkbox"/> or XHHW-2 <input type="checkbox"/> or RHW-2 <input type="checkbox"/>				
	GEC <input type="checkbox"/> EGC <input type="checkbox"/> X ALL THAT APPLY				
	NO DC GEC. IF 690.35 SYSTEM				
5	THWN-2 <input type="checkbox"/> or XHHW-2 <input type="checkbox"/> or RHW-2 <input type="checkbox"/>				
	GEC <input type="checkbox"/> EGC <input type="checkbox"/> X ALL THAT APPLY				

Contractor Name, Address and Phone:		One-Line Standard Electrical Diagram for AC Module PV Systems	
Site Name:		Site Address:	
System AC Size:		System AC Size:	
Drawn By:	SIZE	ESCHMNO	DWGNO
Checked By:	SCALE	NTS	REV
	Date:		ET.1b
			SHEET

NOTES FOR AC MODULE ELECTRICAL DIAGRAM

NOTES FOR ALL DRAWINGS:

OCPD = OVERCURRENT PROTECTION DEVICE
 NATIONAL ELECTRICAL CODE® REFERENCES
 SHOWN AS (NEC XXX.XX)

AC MODULE RATINGS (Guide Appendix C)

AC MODULE MAKE	
AC MODULE MODEL	
NOMINAL OPERATING AC VOLTAGE	
NOMINAL OPERATING AC FREQUENCY	
MAXIMUM AC POWER	
MAXIMUM AC CURRENT	
MAXIMUM OCPD RATING	

SIGNS-SEE GUIDE SECTION 7

SIGN FOR DC DISCONNECT

N/A since no dc wiring

SIGN FOR INVERTER OCPD AND AC DISCONNECT (IF USED)

SOLAR PV SYSTEM
 AC POINT OF CONNECTION
 AC OUTPUT CURRENT
 NOMINAL AC VOLTAGE

THIS PANEL FED BY MULTIPLE SOURCES (UTILITY AND SOLAR)

NOTES FOR ARRAY CIRCUIT WIRING (Guide Section 6 and 8 and Appendix E):

- 1.) LOWEST EXPECT AMBIENT TEMPERATURE BASED ON ASHRAE MINIMUM MEAN EXTREME DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. LOWEST EXPECTED AMBIENT TEMP ____ °C
- 2.) HIGHEST CONTINUOUS AMBIENT TEMPERATURE BASED ON ASHRAE HIGHEST MONTH 2% DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. HIGHEST CONTINUOUS TEMPERATURE ____ °C
- 2.) 2009 ASHRAE FUNDAMENTALS 2% DESIGN TEMPERATURES DO NOT EXCEED 47°C IN THE UNITED STATES (PALM SPRINGS, CA IS 44.1°C); FOR 6 OR LESS CURRENT-CARRYING CONDUCTORS IN ROOF-MOUNTED SUNLIT CONDUIT AT LEAST 0.5" ABOVE ROOF AND USING THE OUTDOOR DESIGN TEMPERATURE OF 47°C OR LESS (ALL OF UNITED STATES).
- a) 12 AWG, 90°C CONDUCTORS ARE GENERALLY ACCEPTABLE FOR AC MODULES INVERTER OUTPUT CIRCUITS WITH 12 AMPS OR LESS WHEN PROTECTED BY A 15-AMP OR SMALLER OCPD.
- b) 10 AWG, 90°C CONDUCTORS ARE GENERALLY ACCEPTABLE FOR AC MODULES INVERTER OUTPUT CIRCUITS WITH 16 AMPS OR LESS WHEN PROTECTED BY A 20-AMP OR SMALLER OCPD.

NOTES FOR INVERTER CIRCUITS (Guide Section 8 and 9):

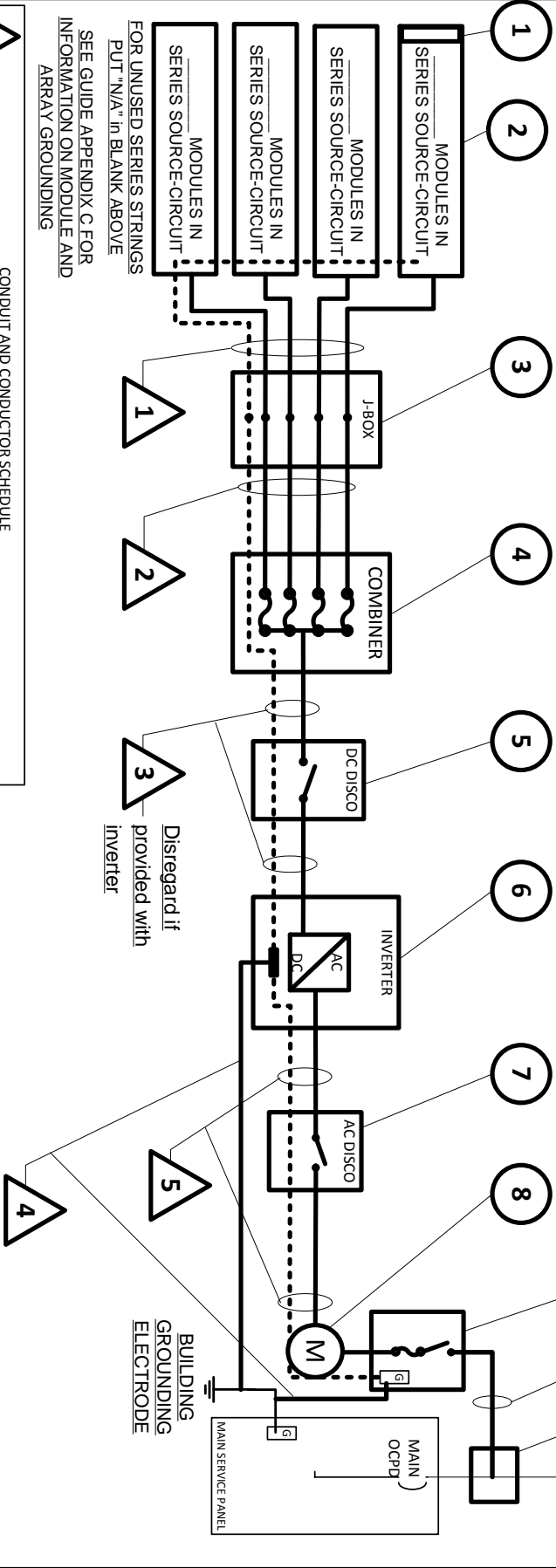
- 1) IF UTILITY REQUIRES A VISIBLE-BREAK SWITCH, DOES THIS SWITCH MEET THE REQUIREMENT? YES NO N/A
- 2) IF GENERATION METER REQUIRED, DOES THIS METER SOCKET MEET THE REQUIREMENT? YES NO N/A
- 3) SIZE PHOTOVOLTAIC POWER SOURCE (DC) CONDUCTORS BASED ON MAX CURRENT ON NEC 690.53 SIGN OR OCPD RATING AT DISCONNECT (N/A)
- 4) SIZE INVERTER OUTPUT CIRCUIT (AC) CONDUCTORS ACCORDING TO INVERTER OCPD AMPERE RATING. (See Guide Section 9)
- 5) TOTAL OF ____ INVERTER OUTPUT CIRCUIT OCPD(s). ONE FOR EACH AC MODULE CIRCUIT. DOES TOTAL SUPPLY BREAKERS COMPLY WITH 120% BUSBAR EXCEPTION IN 690.64(B)(2)(a)? YES NO

Notes for One-Line Standard Electrical Diagram for Single-Phase PV Systems

Contractor Name: Address and Phone:		Site Name:	
Drawn By: Bill		Site Address:	
Checked By: Ted		System AC Size:	
SIZE	FSCM NO	DWG NO	REV
SCALE	NTS	Date:	E1.2b 0
		SHEET	

SUPPLY-SIDE CONNECTED ELECTRICAL DIAGRAM

EQUIPMENT SCHEDULE			
○ TAG	DESCRIPTION	PART NUMBER	NOTES
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			



△ TAG	DESCRIPTION OR CONDUCTOR TYPE	COND. GAUGE	NUMBER OF CONDUCTORS	CONDUIT TYPE	CONDUIT SIZE
1	USE 2-□ or PV WIRE □				
2	BARE COPPER EQ. GRD. COND. (EGC)				
3	THWN-2 □ or XHHW-2 □ or RHW-2 □				
4	THWN-2 □ or XHHW-2 □ or RHW-2 □				
5	INSULATED EGC				
6	GROUNDING ELECTRODE COND.				
7	THWN-2 □ or XHHW-2 □ or RHW-2 □				
8	INSULATED EGC				
9	THWN-2 □ or XHHW-2 □ or RHW-2 □				
10					

Contractor Name:
Address and Phone:

One-Line Electrical Diagram for Supply-Side Connected Single-Phase PV Systems

Site Name:
Site Address:
System AC Size:

Drawn By: _____

Checked By: _____

SIZE: _____ FSCM NO: _____ DWG NO: E1.1c REV: 0

SCALE: _____ NTS: _____ Date: _____ SHEET: _____

NOTES FOR SUPPLY-SIDE CONNECTED ELECTRICAL DIAGRAM

PV MODULE RATINGS @ STC (Guide Section 5)

MODULE MAKE	
MODULE MODEL	
MAX POWER-POINT CURRENT (I_{MP})	A
MAX POWER-POINT VOLTAGE (V_{MP})	V
OPEN-CIRCUIT VOLTAGE (V_{OC})	V
SHORT-CIRCUIT CURRENT (I_{SC})	A
MAX SERIES FUSE (OCPD)	A
MAXIMUM POWER (P_{MAX})	W
MAX VOLTAGE (TYP 600V _{DC})	V
VOC TEMP COEFF (mV/ $^{\circ}$ C <input type="checkbox"/> or %/ $^{\circ}$ C <input type="checkbox"/>)	
IF COEFF SUPPLIED, CIRCLE UNITS	

NOTES FOR ALL DRAWINGS:

OCPD = OVERCURRENT PROTECTION DEVICE
 NATIONAL ELECTRICAL CODE® REFERENCES
 SHOWN AS (NEC XXX.XX)

INVERTER RATINGS (Guide Section 4)

INVERTER MAKE	
INVERTER MODEL	
MAX DC VOLT RATING	V
MAX POWER @ 40 $^{\circ}$ C	W
NOMINAL AC VOLTAGE	V
MAX AC CURRENT	A
MAX OCPD RATING	A

SIGNS-SEE GUIDE SECTION Z

SIGN FOR DC DISCONNECT

PHOTOVOLTAIC POWER SOURCE	
RATED MPP CURRENT	A
RATED MPP VOLTAGE	V
MAX SYSTEM VOLTAGE	V
MAX CIRCUIT CURRENT	A

WARNING: ELECTRICAL SHOCK
 HAZARD-LINE AND LOAD MAY BE
 ENERGIZED IN OPEN POSITION

SIGN FOR INVERTER OCPD AND AC DISCONNECT (IF USED)

SOLAR PV SYSTEM	
AC POINT OF CONNECTION	A
AC OUTPUT CURRENT	A
NOMINAL AC VOLTAGE	V

THIS PANEL FED BY MULTIPLE
 SOURCES (UTILITY AND SOLAR)

NOTES FOR ARRAY CIRCUIT WIRING (Guide Section 6 and 8 and Appendix D):

- 1.) LOWEST EXPECT AMBIENT TEMPERATURE BASED ON ASHRAE MINIMUM MEAN EXTREME DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. LOWEST EXPECTED AMBIENT TEMP _____ $^{\circ}$ C
- 2.) HIGHEST CONTINUOUS AMBIENT TEMPERATURE BASED ON ASHRAE HIGHEST MONTH 2% DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. HIGHEST CONTINUOUS TEMPERATURE _____ $^{\circ}$ C
- 2.) 2005 ASHRAE FUNDAMENTALS 2% DESIGN TEMPERATURES DO NOT EXCEED 47 $^{\circ}$ C IN THE UNITED STATES (PALM SPRINGS, CA IS 44.1 $^{\circ}$ C). FOR LESS THAN 9 CURRENT-CARRYING CONDUCTORS IN ROOF-MOUNTED SUNLIT CONDUIT AT LEAST 0.5' ABOVE ROOF AND USING THE OUTDOOR DESIGN TEMPERATURE OF 47 $^{\circ}$ C OR LESS (ALL OF UNITED STATES).
- a) 12 AWG, 90 $^{\circ}$ C CONDUCTORS ARE GENERALLY ACCEPTABLE FOR MODULES WITH I_{sc} OF 7.68 AMPS OR LESS WHEN PROTECTED BY A 12-AMP OR SMALLER FUSE
- b) 10 AWG, 90 $^{\circ}$ C CONDUCTORS ARE GENERALLY ACCEPTABLE FOR MODULES WITH I_{sc} OF 9.6 AMPS OR LESS WHEN PROTECTED BY A 15-AMP OR SMALLER FUSE.

NOTES FOR INVERTER CIRCUITS (Guide Section 8 and 9):

- 1) IF UTILITY REQUIRES A VISIBLE-BREAK SWITCH, DOES THIS SWITCH MEET THE REQUIREMENT? YES NO N/A
- 2) IF GENERATION METER REQUIRED, DOES THIS METER SOCKET MEET THE REQUIREMENT? YES NO N/A
- 3) SIZE PHOTOVOLTAIC POWER SOURCE (DC) CONDUCTORS BASED ON MAX CURRENT ON NEC 690.53 SIGN OR OCPD RATING AT DISCONNECT
- 4) SIZE INVERTER OUTPUT CIRCUIT (AC) CONDUCTORS ACCORDING TO INVERTER OCPD AMPERE RATING. (See Guide Section 9)
- 5) TOTAL OF _____ INVERTER OCPD(S), ONE FOR EACH INVERTER. DOES TOTAL SUPPLY BREAKERS COMPLY WITH 120% BUSBAR EXCEPTION IN 690.64(B)(2)(a)? YES NO

Notes for One-Line Standard Electrical Diagram for Single-Phase PV Systems

Contractor Name: Address and Phone:		Notes for One-Line Standard Electrical Diagram for Single-Phase PV Systems	
Site Name: _____ Site Address: _____ System AC Size: _____			
Drawn By:	SIZE	FSCM NO	DWG NO
Checked By:	SCALE	NTS	REV
			E.1.2
			SHEET