


## BLOCK DIAGRAM SOLAR PV INSTALLATION

### 1.0 GENERAL NOTES:

- 1.1 ALL EQUIPMENT AND INSTALLATION SHALL MEET ALL APPLICABLE PROVISIONS OF THE FOLLOWING STANDARDS: UL STANDARD 1703, IEEE 929-2000, AND UL STANDARD 1741.
- 1.2 ALL EQUIPMENT AND INSTALLATION SHALL COMPLY WITH ALAMEDA MUNICIPAL POWER'S (AMP'S) INTERCONNECTION AND PURCHASE AGREEMENT FOR ELIGIBLE RENEWABLE GENERATION METERING, AMP'S RULES AND REGULATIONS, ALAMEDA ELECTRICAL CODE, CALIFORNIA ELECTRICAL CODE, NATIONAL ELECTRICAL CODE ARTICLE 690, CALIFORNIA STATE FIRE MARSHAL REGULATIONS, AND CALIFORNIA ENERGY COMMISSION'S (CEC) NEW SOLAR HOME PARTNERSHIP (NSHP) OR CALIFORNIA PUBLIC UTILITIES COMMISSION'S (CPUC) CALIFORNIA SOLAR INITIATIVE (CSI) LISTS OF ELIGIBLE EQUIPMENT.
- 1.3 IF THE EXISTING ELECTRICAL METER IS NOT CAPABLE OF MEASURING THE FLOW OF ELECTRICITY IN TWO DIRECTIONS, THE CUSTOMER SHALL BE RESPONSIBLE FOR ALL EXPENSES INVOLVED IN PURCHASING AND INSTALLING A NET KWH METER THAT IS ABLE TO MEASURE ELECTRICITY FLOW IN TWO DIRECTIONS.
- 1.4 CUSTOMER SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE SOLAR PHOTOVOLTAIC SYSTEM INSTALLATION INCLUDING ALL AMP'S COSTS THAT ARE RELATED TO THE PROJECT.
- 1.5 CUSTOMER SHALL OBTAIN A CITY OF ALAMEDA ELECTRICAL PERMIT.
- 1.6 SOLAR PHOTOVOLTAIC SYSTEM SHALL TERMINATE ON ITS OWN AC BREAKER IN THE MAIN SERVICE EQUIPMENT EXCLUSIVELY.
- 1.7 THE DC DISCONNECT AND THE INVERTER AT GRADE LEVEL WILL NOT BE REQUIRED IF MICRO-INVERTER TECHNOLOGY IS PROPOSED ON THE SOLAR PV MODULES.
- 1.8 AMP RESERVES THE RIGHT TO WITNESS THE FUNCTIONAL TESTS OF THE SOLAR PHOTOVOLTAIC SYSTEM INSTALLATION. THE CUSTOMER SHALL NOTIFY AMP AT LEAST 5 DAYS PRIOR TO THE ESTABLISHED DATE OF INSPECTION OR TESTING.
- 1.9 APPROVAL FOR PARALLEL OPERATION WITH AMP'S DISTRIBUTION SYSTEM IS SUBJECT TO SUCCESSFULLY MEETING ALL REQUIREMENTS BY THE CITY'S BUILDING SERVICES DEPARTMENT AND AMP.
- 1.10 CUSTOMER SHALL SUBMIT DETAILED INFORMATION ON THE INVERTER TO VERIFY UL 1741 COMPLIANCE. THE CUSTOMER INVERTER SHALL HAVE THE FOLLOWING MINIMUM SPECIFICATIONS FOR PARALLEL OPERATION WITH AMP'S ELECTRIC DISTRIBUTION SYSTEM:
  - INVERTER OUTPUT SHALL AUTOMATICALLY DISCONNECT FROM AMP'S UTILITY SOURCE UPON LOSS OF UTILITY VOLTAGE AND SHALL NOT BE RECONNECTED UNTIL THE UTILITY VOLTAGE HAS BEEN RESTORED.
  - INVERTER SHALL AUTOMATICALLY DISCONNECT FROM AMP'S UTILITY SOURCE WITHIN 2 CYCLES (33ms) IF THE UTILITY VOLTAGE FLUCTUATES BEYOND  $\pm 10\%$ .
  - INVERTER SHALL AUTOMATICALLY DISCONNECT FROM AMP'S UTILITY SOURCE WITHIN 3 CYCLES (50ms) IF THE UTILITY FREQUENCY FLUCTUATES  $\pm 1$  CYCLE (16ms).
  - INVERTER OUTPUT DISTORTION SHALL MEET THE IEEE 519 STANDARDS.

M:\PwrDwgs\ConstructionStd\1613-1.DWG December 21, 2016

 <b>ALAMEDA MUNICIPAL POWER</b> <small>A Department of the City of Alameda 2000 GRAND STREET, P.O. BOX 11 ALAMEDA, CALIFORNIA 94501</small>				TITLE : <b>SINGLE METER SOLAR PV INSTALLATION ELIGIBLE RENEWABLE GENERATION (UP TO 10KW)</b>											
				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">DRAWN :</td> <td style="width: 20%;"><i>reych/2016</i></td> <td style="width: 20%;">DATE: DEC. 21, 2016</td> <td style="width: 20%;">DWG. NO. :</td> <td style="width: 20%;">REV.</td> </tr> <tr> <td>REVIEWED:</td> <td><i>[Signature]</i></td> <td></td> <td style="text-align: center;"><b>1-L-613</b></td> <td style="text-align: center;">0</td> </tr> <tr> <td>APPROVED:</td> <td><i>[Signature]</i></td> <td></td> <td>SCALE : NTS</td> <td>SHT <u>1</u> OF <u>2</u></td> </tr> </table>	DRAWN :	<i>reych/2016</i>	DATE: DEC. 21, 2016	DWG. NO. :	REV.	REVIEWED:	<i>[Signature]</i>		<b>1-L-613</b>	0	APPROVED:
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REV	DESCRIPTION	BY	DATE												
0	NEW DRAWING	LS	12/21/16												

**2.0 INSTALLATION REQUIREMENTS:**

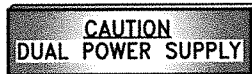
- 2.1 THERE WILL BE A MINIMUM OF 36" WALKING SPACE AROUND THE PERIMETER OF SOLAR ARRAYS INSTALLED ON ROOFS.
- 2.2 GROUND MOUNTED SOLAR ARRAYS WILL BE ERECTED IN AREAS CLEAR OF COMBUSTIBLE VEGETATION. A MINIMUM VEGETATION CLEARANCE OR MOWED PERIMETER OF 10" SHALL BE MAINTAINED.
- 2.3 ALL SOLAR CONDUITS, INTERIOR OR EXTERIOR, SHALL BE PERMANENTLY LABELED WITH FADE RESISTANT MATERIAL AS SHOWN IN 3.6. THIS LABEL SHALL BE INSTALLED EVERY 20'. FOR VERTICAL CONDUIT, A MINIMUM OF ONE LABEL SHALL BE AFFIXED AT EYE LEVEL.
- 2.4 BATTERY STORAGE IN ENCLOSED ROOMS TO BE MOUNTED A MINIMUM OF 24" ABOVE FLOOR. IF CONTAINED WITHIN CABINET, A PERMANENT PLACARD IS TO BE POSTED.
- 2.5 PERMANENT PLACARD SHALL BE INSTALLED ON EXTERIOR OF MAIN ELECTRICAL PANEL AS SHOWN IN 3.1.
- 2.6 ALL DISCONNECTS SHALL BE ACCESSIBLE TO AUTHORIZED REPRESENTATIVES OF THE CITY OF ALAMEDA. THE NET KWH METER, AC DISCONNECT, INVERTER AND DC DISCONNECT SHALL BE LOCATED TOGETHER WHEN POSSIBLE.
- 2.7 THE MAXIMUM LENGTH OR WIDTH OF THE SOLAR ARRAY SHALL NOT EXCEED 100 FEET.

**3.0 LABELING REQUIREMENTS**

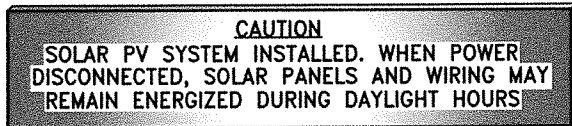
LABELS SHALL HAVE A RED BACKGROUND WITH REFLECTIVE WHITE LETTERING AND SHALL BE FADE-RESISTANT. LETTERS SHALL BE 1/4-INCH MINIMUM. ALL LABELS SHALL BE PERMANENTLY INSTALLED ON EQUIPMENT.

**LABEL LOCATION AND LABELING**

3.1 ELECTRIC PANEL (NOTE 2.5)



AND



3.2 ELECTRIC PANEL PV BREAKER. LETTERS MAY BE REDUCED TO 1/8-INCH MINIMUM IN HEIGHT AND INSTALLED IN THE MAIN ELECTRICAL PANEL, ADJACENT TO THE BREAKER.



3.3 AC DISCONNECT



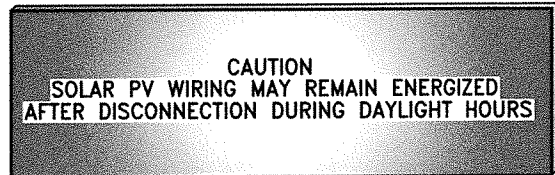
3.4 INVERTER



3.5 DC DISCONNECTS (NEAR INVERTER)




3.6 CONDUITS (NOTE 2.3)



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REV	DESCRIPTION	BY	DATE
0	NEW DRAWING	LS	12/21/16



**ALAMEDA MUNICIPAL POWER**  
A Department of the City of Alameda  
 2000 GRAND STREET, P.O. BOX 11  
 ALAMEDA, CALIFORNIA 94501

TITLE : **SINGLE METER SOLAR PV INSTALLATION ELIGIBLE RENEWABLE GENERATION (UP TO 10KW)**

DRAWN :	<i>revel/2016</i>	DATE: DEC. 21, 2016	DWG. NO. :	REV.
REVIEWED:	<i>[Signature]</i>		<b>1-L-613</b>	0
APPROVED:	<i>[Signature]</i>		SCALE : NTS	SHT <u>2</u> OF <u>2</u>



PRELIMINARY SINGLE METER SOLAR PV INSTALLATION
ELIGIBLE RENEWABLE GENERATION
(UP TO 10 KW) PLANNING SHEET

Project Name:
Location:
Electrical Consultant or Applicant Completing Form:
Address: Telephone No.:
Tentative Date of Parallel Operation of the Solar PV installation with the Utility System:

BUILDING AND METERING INFORMATION

- Number of Meters in the Building:
Customer Meter Number:

SOLAR PV EQUIPMENT INFORMATION

- PV Modules (per UL Standard 1703):
Orientation (90°E to 270°W): ; Tilt/Incline (0° to 60°):
Model #: ; Rating (Watt/Module): ; No. of Modules:
No. of Strings of Modules:; String Protection: Yes; No
Inverter (per UL Standard 1741); Micro-Inverter: Yes; No
CSI/NSHP Listed; Outdoor (NEMA 3R or better); Indoor (NEMA 1 or better)
Model: ; Size (Watts): ; Efficiency (%):
Output System Rating (AC Watts): ; Volts: ; Amps: ; %THD
Includes Performance Meter: Yes; No
PV Energy Storage Subsystem: None: ; Battery: ; UPS:
AC Lockable Disc. Rating: Amps; Knife Blade; Fused Switch; OR Breaker
Breaker Rating in Main Electrical Srvc Panel: Main Amps; PV Amps
Main Panel Busbar Rating: Amps
DC Lockable Disc. Rating: Amps; Knife Blade; Fused Switch; OR Breaker
Warning Labels & Equipment Compliance (per AMP Standard Dwg 1-L-578): Yes; No

OTHER REQUIRED INFORMATION

Cost Breakdown for Meter Socket Installation Submitted to AMP: Yes; No
Drawing Submittals: Site Plan & System Layout; 1-Line or 3-Line Diagram;
Equipment data and/or Cut-sheets; Other:
Alameda Municipal Power Interconnection and Purchase Agreement Yes; No
City of Alameda Electrical Application Permit Number:

NOTE: Alameda Municipal Power intends to use this form for preliminary job planning.
The service equipment will also have to be inspected and approved by the City's Electrical
Inspector, (510) 748-4634, and the Alameda Fire Department, (510) 337-2120, before it can be
energized.