Expedited Permit Process for PV Systems

Site Plan

24 AMERICAN SOLAR AS 175 MODULES IN 2 SERIES STRINGS OF 12 MODULES EACH ON EXISTING SHADE STRUCTURE

10'-8"

12'-7"

11'-3"

3'-0"

3'-0"

3'-0"

EXISTING FENCE

ROOFTOP J-BOX TO TRANSITION EXPOSED USE-2 TO THWN-2 CONDUCTORS IN ¾" EMT

INVERTER WITH SUPPLIED COMBINER AND DC DISCONNECT

EXISTING ALL-IN-ONE SERVICE EQUIPMENT WITH 40-AMP PV BREAKER AS AC DISCONNECT

Site Plan

for Small-Scale, Single-Phase PV Systems

Site Name: Joe and Jane Homeowner
Site Address: 123 Sunnyside St., San Jose, CA
System AC Size: 6.9 kW Solar Array

Contractor Name, Address and Phone:
Bill and Ted’s Solar
456 Industrial Drive
San Jose, CA
408-555-1212

Drawn By: Bill
Checked By: Ted

S1.1
REV 0

Sheet
Standard Electrical Diagram

EQUIPMENT SCHEDULE

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<tr>
<th>TAG</th>
<th>DESCRIPTION</th>
<th>PART NUMBER</th>
<th>NOTES</th>
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<tr>
<td>1</td>
<td>SOLAR PV MODULE</td>
<td></td>
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<tr>
<td>2</td>
<td>PV ARRAY</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>J-BOX (IF USED)</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>COMBINER (IF USED)</td>
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<td>5</td>
<td>DC DISCONNECT</td>
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<td>6</td>
<td>DC/AC INVERTER</td>
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<tr>
<td>7</td>
<td>GEN METER (IF USED)</td>
<td></td>
<td></td>
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<tr>
<td>8</td>
<td>AC DISCONNECT (IF USED)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>SERVICE PANEL</td>
<td>VAC, A MAIN, A BUS, A INVERTER OCPD</td>
<td>(SEE NOTE 5 FOR INVERTER OCPDs, ALSO SEE GUIDE SECTION 9)</td>
</tr>
</tbody>
</table>

SITE PLAN

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

Site Name: ____________________________  
Site Address: __________________________  
System AC Size: _______________________  

Contractor Name, Address and Phone: ____________________________________________

Drawn By: ____________________________  
Checked By: ____________________________  
Date: ____________________________  
Scale: NTS  
Sheet:
PV MODULE RATINGS @ STC (Guide Section 5)

<table>
<thead>
<tr>
<th>MODULE MAKE</th>
<th>MODULE MODEL</th>
<th>MAX POWER-POINT CURRENT ($I_{pp}$)</th>
<th>MAX POWER-POINT VOLTAGE ($V_{mp}$)</th>
<th>OPEN-CIRCUIT VOLTAGE ($V_{oc}$)</th>
<th>MAX SERIES FUSE (OCPD)</th>
<th>MAXIMUM POWER ($P_{max}$)</th>
<th>MAX VOLTAGE (TYP 600VDC)</th>
<th>VOC TEMP COEFF (mV/°C or %/°C)</th>
</tr>
</thead>
</table>

Notes for Electrical Diagram

NOTES FOR ALL DRAWINGS:

- OCPD = OVERCURRENT PROTECTION DEVICE
- NATIONAL ELECTRICAL CODE® REFERENCES SHOWN AS (NEC XXX.XX)
- INVERTER RATINGS (Guide Section 4)

<table>
<thead>
<tr>
<th>INVERTER MAKE</th>
<th>INVERTER MODEL</th>
<th>MAX DC VOLT RATING</th>
<th>MAX POWER @ 40°C</th>
<th>NOMINAL AC VOLTAGE</th>
<th>MAX AC CURRENT</th>
<th>MAX OCPD RATING</th>
</tr>
</thead>
</table>

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 INVERTER CIRCUITS (Guide Section 8 and 9):

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
3) 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 Isc 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 Isc OF 9.6 AMPS OR LESS WHEN PROTECTED BY A 15-AMP OR SMALLER FUSE.
4) 2005 ASHRAE FUNDAMENTALS 2% DESIGN TEMPERATURES DO NOT EXCEED 47°C IN THE UNITED STATES (PALM SPRINGS, CA IS 44.1°C).

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

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 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
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   b) 10 AWG, 90°C CONDUCTORS ARE GENERALLY ACCEPTABLE FOR MODULES WITH Isc OF 9.6 AMPS OR LESS WHEN PROTECTED BY A 15-AMP OR SMALLER FUSE.