

# TOOL E: SAMPLE PERMITTING PROCESS CHECKLISTS FOR CUSTOMERS

## EXAMPLE 1: SIMPLE CHECKLIST FOR PERMITTING PROCESS AND REQUIREMENTS

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### SOLAR PERMITTING PROCESS CHECKLIST FOR JURISDICTION NAME

(Text in green is to be filled out by jurisdiction.)

Applicant Information:

Applicant Address:

Installation Address, if different:

Installer Name:

Contact Information:

#### GENERAL INFORMATION

##### System size:

- Less than 5kW
- More than 5kW but less than 14kW
- More than 14kW but less than 20kW
- Greater than 20kW

##### Grid connection intentions:

- Off-grid system
- Grid-tied system  
(See <insert website of utility provider>  
for interconnection arrangement)

##### System location:

- Ground-mounted
- Roof-mounted

#### EXPEDITED PROCESS

As a Solar Ready Community, we have established a streamlined process for approving the most common residential solar PV installations. Your system may qualify for this expedited process if it meets all of the following criteria:

- An array composed of 4 or fewer series strings.
- An inverter with rated output of 13.44 kW or less.
- Use of an engineered mounting system on a code-compliant roof and a rooftop distributed weight of less than 5 lb/sq. ft. and less than 40 lbs. per attachment.

**YES**, my system qualifies for the expedited permitting process.

**NO**, my system does not meet these requirements—proceed to next section  
(provide information and link application form for non-expedited systems)

...Continued

## 1 Additional Information Requirements

- a. For ground-mounted systems:
  - i. Site plan (describe what you want the applicant to include in site plan)
- b. For roof-mounted systems:
  - i. Roof information (describe what you want the applicant to include—this request can include roof plan diagram, type of structural roof deck type, condition of roof, roofing material)
- c. For all systems:
  - i. Electrical diagram
  - ii. Installation manuals
- d. OTHER: (if there are other requirements that your jurisdiction has)

## 2 Permits Required

- a. You will be directed to the permits required for your system; all permits can be found here (insert URL or location for each jurisdiction)
- b. When completed, permit(s) should be submitted to (who/where) for review. The review process may take up to three business days.

## 3 Fees

- a. Fees are based on the type of permit(s) required for your system. The standard fee schedule for (jurisdiction) is:

(List your permit fees here)

## 4 Inspections

- a. Completed installations will require inspections based on the types of permits that were required by the system. In most cases, only one final inspection is required; if your system is specialized and requires in-process inspections in addition to a final inspection, you will be notified at the time of application.
- b. Inspection appointments are scheduled by contacting (who/where). Appointments will be scheduled for 1-3 days out, and will be given in appointment windows of 2-3 hours.
- c. Inspections will confirm compliance for health, safety, and code requirements. Although not an exclusive list, the following are common requirements that will be addressed during a final solar inspection:
  - Number of PV modules and model number matches plans, and specification sheets.
  - Array conductors and components are installed in a professional manner.
  - PV array is properly grounded.
  - Electrical boxes are accessible and connections are suitable for environment.
  - Array is fastened and sealed according to attachment detail.
  - Conductors ratings and sizes match plans.
  - Appropriate signs are properly constructed, installed, and displayed.
  - Equipment ratings are consistent with application and installed signs on the installation.

(Add contact information for your jurisdiction)

# EXAMPLE 2: SOLAR AMERICAN BOARD FOR CODES AND STANDARDS (SOLAR ABC'S) SAMPLE EXPEDITED PERMITTING PROCESS CHECKLIST

(For more information on this template, sample worksheets and other Solar ABC resources, visit <http://www.solarabcs.org/>)

## EXPEDITED PERMIT PROCESS FOR PV SYSTEMS

The information in this guideline is intended to help local jurisdictions and contractors identify when PV system installations are simple, needing only a basic review, and when an installation is more complex. It is likely that 50%-75% of all residential systems will comply with these simple criteria. For projects that fail to meet the simple criteria, resolution steps have been suggested to provide as a path to permit approval.

### Required Information for Permit:

1. 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 (see supplied example site plan). PV arrays on dwellings with a 3' perimeter space at ridge and sides may not need separate fire service review.
2. Electrical diagram showing PV array configuration, wiring system, overcurrent protection, inverter, disconnects, required signs, and ac connection to building (see supplied standard electrical diagram).
3. Specification sheets and installation manuals (if available) for all manufactured components including, but not limited to, PV modules, inverter(s), combiner box, disconnects, and mounting system.

### Step 1: Structural Review of PV Array Mounting System

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

*If No due to non-compliant roof or a ground mount, submit completed worksheet for the structure WKS1.*

#### Roof Information:

1. Is the roofing type lightweight (Yes = composition, lightweight masonry, metal, etc...) \_\_\_\_\_  
*If No, submit completed worksheet for roof structure WKS1 (No = heavy masonry, slate, etc...).*
2. Does the roof have a single roof covering?  Yes  No  
*If No, submit completed worksheet for roof structure WKS1.*
3. Provide method and type of weatherproofing roof penetrations (e.g. flashing, caulk). \_\_\_\_\_

#### Mounting System Information:

1. Is the mounting structure an engineered product designed to mount PV modules?  Yes  No  
*If No, provide details of structural attachment certified by a design professional.*
2. 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 (if greater than 45 lbs, see WKS1)
  - 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) \_\_\_\_\_ ft<sup>2</sup>
  - g. Distributed Weight of PV Module on Roof (b ÷ f) \_\_\_\_\_ lbs/ft<sup>2</sup>  
*If distributed weight of the PV system is greater than 5 lbs/ft<sup>2</sup>, see WKS1.*

### Step 2: Electrical Review of PV System (Calculations for Electrical Diagram)

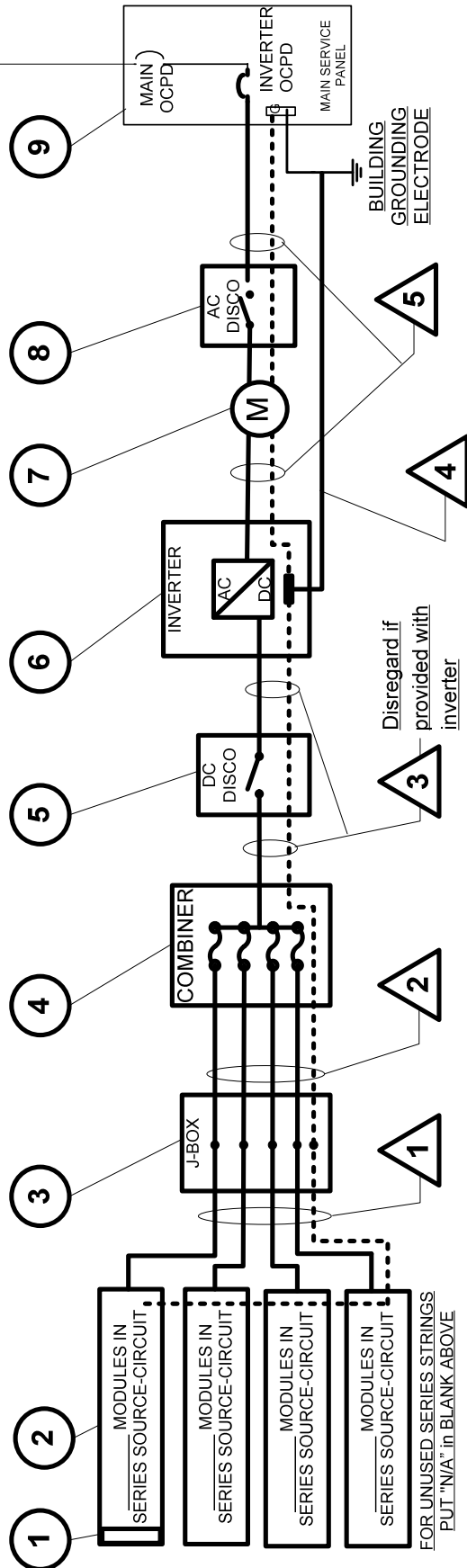
In order for a PV system to be considered for an expedited permit process, the following must apply:

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, and 15 kWSTC or less.
3. The total inverter capacity has a continuous ac power output 13,440 Watts or less
4. The ac interconnection point is on the load side of service disconnecting means (690.64(B)).
5. The electrical diagram (E1.1) can be used to accurately represent the PV system.

*Fill out the standard electrical diagram completely. A guide to the electrical diagram is provided to help the applicant understand each blank to fill in. If the electrical system is more complex than the standard electrical diagram can effectively communicate, provide an alternative diagram with appropriate detail.*

<div style="border: 1px solid black; min-height: 80px;"></div>	<b>Site Plan</b> <b>for Small-Scale, Single-Phase PV Systems</b>								
Contractor Name, Address and Phone: _____ _____ _____ _____	Site Name: _____ Site Address: _____ System AC Size: _____								
Drawn By: _____	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">SIZE</td> <td style="width: 25%;">FSCM NO</td> <td style="width: 25%;">DWG NO</td> <td style="width: 25%;">REV</td> </tr> <tr> <td></td> <td></td> <td>S1.1</td> <td></td> </tr> </table>	SIZE	FSCM NO	DWG NO	REV			S1.1	
SIZE	FSCM NO	DWG NO	REV						
		S1.1							
Checked By: _____	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">SCALE</td> <td style="width: 50%;">NTS</td> </tr> <tr> <td></td> <td>Date: _____</td> </tr> </table>	SCALE	NTS		Date: _____				
SCALE	NTS								
	Date: _____								

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)



Disregard if provided with inverter

FOR UNUSED SERIES STRINGS PUT "N/A" IN BLANK ABOVE

SEE GUIDE APPENDIX B 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"/>			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"/>				
	THWN-2 <input type="checkbox"/> or XHHW-2 <input type="checkbox"/> or RHW-2 <input type="checkbox"/>				
	INSULATED EGC				
4	DC GROUNDING ELECTRODE COND.				
5	THWN-2 <input type="checkbox"/> or XHHW-2 <input type="checkbox"/> or RHW-2 <input type="checkbox"/>				
	INSULATED EGC				

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

Contractor Name: \_\_\_\_\_  
Address and Phone: \_\_\_\_\_

Site Name: \_\_\_\_\_  
Site Address: \_\_\_\_\_  
System AC Size: \_\_\_\_\_

Drawn By: \_\_\_\_\_ FSCM NO \_\_\_\_\_ DWG NO E1.1 REV \_\_\_\_\_  
Checked By: \_\_\_\_\_ SCALE NTS Date: \_\_\_\_\_ SHEET \_\_\_\_\_

SIGNS-SEE GUIDE SECTION 7

NOTES FOR ALL DRAWINGS:

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 <sub>dc</sub> )	V
VOC TEMP COEFF (mV/°C) <input type="checkbox"/> or %/°C <input type="checkbox"/>	
IF COEFF SUPPLIED, CIRCLE UNITS	

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

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	
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):

- 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
- 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
- 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).
  - 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.
  - 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):

- IF UTILITY REQUIRES A VISIBLE-BREAK SWITCH, DOES THIS SWITCH MEET THE REQUIREMENT? YES  NO  N/A
- IF GENERATION METER REQUIRED, DOES THIS METER SOCKET MEET THE REQUIREMENT? YES  NO  N/A
- SIZE PHOTOVOLTAIC POWER SOURCE (DC) CONDUCTORS BASED ON MAX CURRENT ON NEC 690.53 SIGN OR OCPD RATING AT DISCONNECT
- SIZE INVERTER OUTPUT CIRCUIT (AC) CONDUCTORS ACCORDING TO INVERTER OCPD AMPERE RATING. (See Guide Section 9)
- 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: \_\_\_\_\_

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

Drawn By:

Checked By: