Inspection Guidelines and Suggested Practices
Inspection Process

• To verify that the installation is in conformance with the design of the approved set of plans

• To verify that the installation is in compliance with the California Electrical Code and other applicable codes and regulations
Purpose of the Code

“….the practical safeguarding of persons and property from hazards arising from the use of electricity”
Bases on the 2008 National Electrical Code
Inspection Process

- Contractor/owner responsibility to schedule and coordinate all required inspections
- Responsible party on site
- Provide access to all elements of system installation
Inspection

• Ground-mounted
  1. footings for array frame
  2. underground raceways
  3. final

Observe regulations for -
  Brush Management Zones,
  Environmentally Sensitive Lands, and
  Multiple Habitat Planning Areas
Inspection (continued)

- Roof mounted arrays
- Rough electrical (for any concealed work)
- Roof array and bond (for integrated systems or for tile roofs)
- Final inspection
Necessary Paperwork on Site

- Approved plans
- Inspection record card (DS-1798)
- Manufacturer’s Installation instructions – modules, racking, inverter
Installation manuals – inverters, modules
Roof Access

- Cal-OSHA Compliant Ladder
- Sitting squarely on level surface
- Secured at top
Building Integrated PV

Division of Building, Construction and Safety
Racking Installation
Flashing and Weather Protection
Clearance to Vents
Plumbing Vents

• Plumbing vents cannot be covered by module installation
• Vents shall terminate a minimum of
  • 6” above or 1’ away horizontally from adjacent PV modules
  • Termination shall not be higher than the highest point of the existing roof
• Vents less than 3” can be extended/offset but shall be properly and independently supported
• All extensions shall meet the requirements of the California Plumbing Code
  • Extension on any plumbing vent 3” diameter or larger is not allowed
Using Identified grounding points and approved devices and materials
Combiner Boxes, Junction Boxes and Wiring Methods

- Listed equipment
- Installed per manufacturer's installation instructions
- Cable Management
- Conduit support
Combiner boxes, wiring method
Junction boxes, conduit support
Wiring methods and materials
Cable Management
Inverters and DC Disconnects

- Listed utility interactive inverters
- As-built conforms to the design
- Installed per manufacturer’s installation instructions or recommendations
- System grounding electrode conductor properly terminated
Listed Utility-Interactive Inverter
Conductor terminations
Inverter locations
Service Equipment

- bus rating
- existing main overcurrent protection
- PV overcurrent protection
- manufacturer breakers
- cable or conduit entry
- labeling
- multiwire branch circuit relocation and balanced load on bus
- grounding system
PV breakers and existing multi-wire circuits
Service Upgrades involving Scheduled Outages with SDG&E

- Schedule DSD inspection for day of the scheduled outage
- Contact the inspector re: time frame
- Equipment installed,
- framing weather-protected,
- grounded,
- service entrance raceway or riser and service entrance conductors installed
Ready for reconnection?
Grounding

• Verify acceptable grounding for existing service equipment or provide a supplemental electrode
• Provide service and system grounding compliant with the Code
Water piping ground must be supplemented
Driven Ground Rod
DC and AC wiring through a structure
CAUTION – Notching and Boring Wood Members
Development Services Department
Division of Building, Construction and Safety

NOTCHING & BORING WOOD FRAME MEMBERS

- NOT LESS THAN 2"
- NOT MORE THAN 1/3 DEPTH OF MEMBER TOTAL.
- NOT MORE THAN 1/6 DEPTH OF MEMBER, ONE OR BOTH.

- NOT TO EXCEED 1/3 OF SPAN
- NO NOTCHES IN CENTER 1/3 OF SPAN

NAILPLATE WHERE CABLES ARE IN NOTCHES AND/OR BORED HOLES ARE LESS THAN 1 1/4" FROM EDGE OF FRAMING MEMBERS.

EXTERIOR AND/OR BEARING WALL MEMBERS SHALL NOT BE NOTCHED MORE THAN 25% OR BORED MORE THAN 40%. BORED HOLES MUST BE 5/8" MINIMUM TO EDGE OF FRAMING MEMBER.
Properly fire stop around all penetrations of rated assemblies
Signage and Placarding

- Alternate power source placard
- DC raceways and DC disconnects
- Cautionary
- Site specific design
- PV disconnect for utility operation
Alternate Power Source Placard

CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM PHOTO VOLTAIC WITH DISCONNECTS LOCATED AS SHOWN:

DC DISCONNECT APPENDIX TO 3.2(CEC) KWAC INVERTER
COMBINER BOX 2 STRINGS WITH FUSES DISCONNECT
AC DISCONNECT 30 AMPS 2 POLES FUSES

SERVICE POINT AND UTILITY METERING

INSTALLED BY
A ROVER ELECTRIC, INC
858-603-7000
CAUTION: SOLAR CIRCUIT

PHOTOVOLTAIC ARRAY
DC DISCONNECT

PHOTOVOLTAIC DISCONNECT
FOR UTILITY OPERATION

Development Services Department
Division of Building, Construction and Safety
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Division of Building, Construction and Safety

SYSTEM CHARACTERISTICS

- SYSTEM SIZE: kW
- SYSTEM OPEN CIRCUIT VOLTAGE: V dc
- SYSTEM OPERATING VOLTAGE: V dc
- MAXIMUM ALLOWABLE DC VOLTAGE: V dc
- SYSTEM OPERATING CURRENT: Amps
- SYSTEM SHORT CIRCUIT CURRENT: Amps

SUNNY BOY
Inverter Interfacing Inverter Inverter

Model: SB 7000US
Serial No: 2001086114
Date of Manufacture: 12/2009
Rated Input Power: 7000 Wac

WARNING

Risk of electric shock. DO NOT REMOVE COVER. For use by authorized personnel only. Refer all servicing to qualified service personnel.

For technical support, call 800-886-6179.
Suggested practices

• Survey the site – verify the adequacy and condition of the existing electrical system to accommodate a PV system
• A service upgrade or other corrections may be required
Inadequate work space
Service Disconnects – Maximum Six Handles without a Main Disconnect
Existing Service Entrance
Existing service
Service supplied by SIDA cable
Alternative Energy Systems installed with safeguarding life and property in mind
Questions?