

Building and Safety Division

245 E Bonita Avenue

Ph: 909-394-6260 E-Mail: solar@ci.san-dimas.ca.us

Solar PV Standard Plan — Simplified Central/String Inverter Systems for One- and Two-Family Dwellings

SCOPE: Use this plan ONLY for utility-interactive central/string inverter systems not exceeding a system AC inverter output rating of 10kW on the roof of a one- or two-family dwelling or accessory structure. The photovoltaic system must interconnect to the load side of a single-phase AC service panel of nominal 120/240Vac with a bus bar rating of 225A or less. This plan is not intended for bipolar systems, hybrid systems or systems that utilize storage batteries, charge controllers, trackers, more than two inverters or more than one DC combiner (noninverter-integrated) per inverter. Systems must be in compliance with current California Building Standards Codes and local amendments of the authority having jurisdiction (AHJ). Other Articles of the California Electrical Code (CEC) shall apply as specified in 690.3.

MANUFACTURER'S SPECIFICATION SHEETS MUST BE PROVIDED for proposed inverter, modules, combiner/junction boxes and racking systems. Installation instructions for bonding and grounding equipment shall be provided, and local AHJs may require additional details. Listed and labeled equipment shall be installed and used in accordance with any instructions included in the listing or labeling (CEC 110.3). Equipment intended for use with PV system shall be identified and listed for the application (CEC 690.4[D]).

Job Address:	Permit #:
Contractor/ Engineer Name:	License # and Class:
Signature: Date	:: Phone Number:
Total # of Inverters installed: (If more than Calculation Sheets" and the "Load Center Calculations	n one inverter, complete and attach the "Supplemental" if a new load center is to be used.)
Inverter 1 AC Output Power Rating:	Watts Inverter
2 AC Output Power Rating (if applicable):	Watts Combined
Inverter Output Power Rating:	≤ 10,000 Watts
Location Ambient Temperatures:	
1) Lowest expected ambient temperature for the	
Average ambient high temperature $(T_H) = 37$	°C
Note: For a lower T _L or a higher T _H , use the Com	prehensive Standard Plan
DC Information:	
Module Manufacturer:	Model:
2) Module V _{oc} (from module nameplate): Volts	3) Module I _{sc} (from module nameplate):Amps
4) Module DC output power under standard test co	nditions (STC) = Watts (STC)

string) for inverter 1 shown on the roof plan with a Tag (e.g. A,B,C,)		ber of i			, , , , , , , ,										to be
					Con	nbine	er 1:								
					-										
					Con	nbine	er 2:								
					-										
Total number of source circuits	or inver	ter 1:													
6) Are DC/DC Converters	used?	□ Y	es [l No	If No	o, ski	p to	Step	7. If	Yes e	nter i	nfo k	elo	Ν.	
DC/DC Converter Model #:					D	C/DC (Conve	rter N	/lax D0	CInput	t Volta	ge:		_ Volt	S
Max DC Output Current:				ps								_		_ Volt	
Max # of DC/DC Converters in	ın Input	Circuit:			D	C/DC (Conve	rter N	lax DC	Input	Powe	r:		Watts	5
7) Maximum System DC V	oltage -	– Use A	A1 or A2	for syst	ems wit	thout	DC/DC	Conv	erters.	and B	1 or B2	with	DC/D	C Conv	erters.
□ A1. Module V_{oc} (STEP 2) =															
		^		J (0 . L . c	/		^-	(_ 0 0,	,	-, _			_ ·
Table 1. Maximum Number of PV Modules in Series Based on Module Rated V_{oc} for 600 Vdc Rated Equipment (CEC 690.7)															
Table 1. Maximum Numbe	of PV N	1odules	in Serie	es Based	on Mo	dule R	Rated \	√ _{oc} for	600 V	dc Rat	ed Equ	ıipmeı	nt (Cl	EC 690	.7)
Table 1. Maximum Numbe Max. Rated Module V _{oc} (*1.1. (Volt	2)	Т		T		Т	Т				Π	Т	Т		
Max. Rated Module V _{oc} (*1.12	29.7	Т		35.71 15		Т	21 44				Π	Т	.96 7		
Max. Rated Module V _{oc} (*1.1. (Volt	29.7	6 31.5	1 33.48	35.71	38.27	41.2	21 44	.64 4	18.70	53.57	59.5	2 66.	.96 7	6.53	89.29
Max. Rated Module V _{oc} (*1.1. (Volt	29.70 (c) 18	6 31.52	1 33.48	35.71 15	38.27	41.2	21 44	.64 4	11	53.57 10	59.5	2 66.	.96 7	7	89.29
Max. Rated Module V _{oc} (*1.1: (Volt Max # of Modules for 600 Vo Use for DC/DC converters. The v	2) 29.70 c 18	6 31.52 17 ulated b	1 33.48 16	35.71 15 uust be le	38.27 14	41.2 13	21 44 1	.64 ² 2 verter	11 max D	53.57 10 OC inpu	59.5 9	2 66. 8 ge (ST	.96 7 EEP 6)	7	89.29
Max. Rated Module V _{oc} (*1.1: (Volt Max # of Modules for 600 Vo Use for DC/DC converters. The v	2) 29.70 c 18	6 31.52 17 ulated b	1 33.48 16	35.71 15 uust be le	38.27 14	41.2 13	21 44 1	.64 ² 2 verter	11 max D	53.57 10 OC inpu	59.5 9	2 66. 8 ge (ST	.96 7 EEP 6)	7	89.29
Max. Rated Module V _{oc} (*1.1: (Volt Max # of Modules for 600 Vo Use for DC/DC converters. The v	2) 29.76 c 18	6 31.5: 17 ulated b	1 33.48 16 pelow m	35.71 15 uust be k	38.27 14 ess than	41.2 13 DC/D	21 444 1 0C conv	.64	18.70 11 max D	53.57 10 0C inpu	59.5 9 at volta ≤ -5°C,	2 66. 8 ge (ST	.96 7 EP 6)	7	89.29 6 V
Max. Rated Module V _{oc} (*1.1.2 (Volt Max # of Modules for 600 Vo Use for DC/DC converters. The v □ B1. Module V _{oc} (STEP 2) = Table 2. Largest Module V _{oc} Max. Rated Module V _{oc} (*1.1.2	29.70 29.70 18 29.70 18 29.70 20.70 20.70 20.70 20.70 20.70 20.70 20.70 20.70 20.70 2	5 31.52 17 ulated k	1 33.48 16 Delow modules public DC/I	3 35.71 15 uust be ke	38.27 14 ess than erter (S	41.2 13 DC/D TEP 6)	21 44 1 1 OC conv	.64	11 max D	53.57 10 0C inpu 1 ≤ T _L	59.5. 9 tt volta ≤ -5°C,	2 66. 8 ge (ST STEP	.96 7 (EP 6) 1) = _	7 7	89.29 6 V
Max. Rated Module V _{oc} (*1.1.2 (Volt Max # of Modules for 600 Vo Use for DC/DC converters. The v □ B1. Module V _{oc} (STEP 2) = Table 2. Largest Module V _{oc} Max. Rated Module V _{oc} (*1.1.2	29.70 29.70 18 29.70 18 29.70 29.70 20.70 2	5 31.52 17 ulated k	1 33.48 16 Delow modules public DC/I	3 35.71 15 uust be ke	38.27 14 ess than erter (S	41.2 13 DC/D TEP 6)	21 44 1 1 OC conv	.64	11 max D	53.57 10 0C inpu 1 ≤ T _L	59.5. 9 tt volta ≤ -5°C,	2 66. 8 ge (ST STEP	.96 7 (EP 6) 1) = _	7 7	89.29 6 V
Max. Rated Module V _{oc} (*1.1: (Volt Max # of Modules for 600 Vo Use for DC/DC converters. The v ■ B1. Module V _{oc} (STEP 2) = Table 2. Largest Module V _{oc} (Volt	29.70 29.70 18 29.70 18 29.70 20.70 2	6 31.52 17 ulated k	1 33.48 16 Delow modules public DC/I	3 35.71 15 uust be ke	38.27 14 ess than erter (S	41.2 13 DC/D TEP 6)	21 44 1 1 OC conv	.64	11 max D	53.57 10 0C inpu 1 ≤ T _L	59.5. 9 tt volta ≤ -5°C,	2 66. 8 ge (ST STEP	.96 7 (EP 6) 1) = _	7 7	89.29 6 V
Max. Rated Module V _{oc} (*1.1.2 (Volt Max # of Modules for 600 Vo Use for DC/DC converters. The v □ B1. Module V _{oc} (STEP 2) = Table 2. Largest Module V _{oc} (*1.1.2 (Volt DC/DC Converter Max DC Inpr	29.70 29.70 18 29.70 18 29.70 20.70 2	6 31.52 17 ulated k	1 33.48 16 Delow modules pulle DC/I	3 35.71 15 uust be ke	38.27 14 ess than erter (Secreter Co	41.2 13 DC/D TEP 6)	21 44 1 0C conv	x 1. 51.8	max D 12 (If -	53.57 10 OC inpu 1 ≤ T ₁ AFCI C	59.5 9 tt volta ≤ -5°C, ap) (Cl	gge (ST STEP	96 7 FEP 6) 1) = _	76.53 7	89.29 6 V 11) 70.5
Max. Rated Module V _{oc} (*1.1: (Volt Max # of Modules for 600 Vo Use for DC/DC converters. The v □ B1. Module V _{oc} (STEP 2) = Table 2. Largest Module V _{oc} Max. Rated Module V _{oc} (*1.1: (Volt DC/DC Converter Max DC Inpr (Step #6) (Volt	29.70 c 18 dalue calcumate	6 31.52 17 ulated b # of mo	1 33.48 16 Delow modules pulle DC/I	3 35.71 15 uust be le per conversion 20 C Conversion 3 46	38.27 14 ess than erter (S' erter Cc 43.8	41.2 13 DC/D TEP 6) 46.4	21 44 10 C conv	x 1. 51.8	max D 12 (If - 180 V 54.5	53.57 10 OC input 1 ≤ T ₁ AFCI C 57.1	59.5 9 tt volta ≤ -5°C, ap) (Cl 59.8	2 66.8 8 gge (ST STEP	96 7 TEP 6) 1) = _ 65.2	76.53 7 d 690.	89.29 6
Max. Rated Module V _{oc} (*1.1.2 (Volt Max # of Modules for 600 Vo Use for DC/DC converters. The v □ B1. Module V _{oc} (STEP 2) = Table 2. Largest Module V _{oc} (*1.1.2 (Volt DC/DC Converter Max DC Inpr	29.70 c 18 dalue calcus x for Single (2) (3) (3) (4) (5) (5) (6) (7) (7) (8) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	6 31.52 17 17 ullated but # of module-Module 33.0 3 37 from	1 33.48 16 Delow modules pulle DC/I	3 35.71 15 uust be le Der conversion 20 C Conversion 3 46	38.27 14 ess than erter (S erter Cc 43.8 49	41.2 13 DC/D TEP 6) 46.4 52	21 44 10 C conv	x 1. 51.8	max D 12 (If - 180 V 54.5	53.57 10 OC input 1 ≤ T ₁ AFCI C 57.1	59.5 9 tt volta ≤ -5°C, ap) (Cl 59.8	2 66.8 8 gge (ST STEP	96 7 TEP 6) 1) = _ 65.2	76.53 7 d 690.	89.29 6

10) Sizing Source Circuit Conductors Source Circuit Conductor Size = Min. #10 AWG copper conductor, 90°C wet (USE-2, PV Wire, XHHW-2, THWN-2, RHW-2) For up to 8 conductors in roof-mounted conduit exposed to sunlight at least ½" from the roof covering (CEC 310) Note: For over 8 conductors in the conduit or mounting height of lower than ½" from the roof, use Comprehensive Plan.										
11) Are PV source circuits combined prior to the inverter? □ Yes □ No If No, use Single Line Diagram 1 and proceed to Step 13. If Yes, use Single Line Diagram 2 with Single Line Diagram 4 and proceed to Step 12. Is source circuit OCPD required? □ Yes □ No Source circuit OCPD size (if needed): 15 Amps										
12) Sizing PV Output Circuit Conductors — If a combiner box will NOT be used (Step 11), Output Circuit Conductor Size = Min. #6 AWG copper conductor										
13) Inverter DC Disconnect Does the inverter have an integrated DC disconnect? Yes No If Yes, proceed to step 14. If No, the external DC disconnect to be installed is rated for Amps (DC) and Volts (DC)										
14) Inverter Information Manufacturer: Model: Max. Continuous AC Output Current Rating: Amps Integrated DC Arc-Fault Circuit Protection? □ Yes □ No (If No is selected, Comprehensive Standard Plan) Grounded or Ungrounded System? □ Grounded □ Ungrounded										
AC Information:										
15) Sizing Inverter Output Circuit Conductors and OCPD Inverter Output OCPD rating = Amps (Table 3) Inverter Output Circuit Conductor Size = AWG (Table 3)										
Table 3. Minimum Inverter Output OCPD and Circuit Conductor Size										
Inverter Continuous Output Current Rating (Amps) (Step 14) 12 16 20 24 28 32 36 40 48										
Minimum OCPD Size (Amps) 15 20 25 30 35 40 45 50 60										
Minimum Conductor Size (AWG, 75°C, Copper) 14 12 10 10 8 8 6 6 6										
Integrated DC Arc-Fault Circuit Protection? ☐ Yes ☐ No (If No is selected, Comprehensive Standard Plan) Grounded or Ungrounded System? ☐ Grounded ☐ Ungrounded										

16) Point of Connection to Utility

Only load side connections are permitted with this plan. Otherwise, use Comprehensive Standard Plan.

Is the PV OCPD positioned at the opposite end from input feeder location or main OCPD location?

Yes

No
If Yes, circle the Max Combined PV System OCPD(s) at 120% value as determined from Step 15 (or Step S20), bus bar Rating, and Main OCPD as shown in Table 4.

If No, circle the Max Combined PV System OCPD(s) at 100% value as determined from Step 15 (or Step S20), bus bar Rating, and Main OCPD as shown in Table 4.

Per 705.12(D)(2): [Inverter output OCPD size [Step #15 or S20] + Main OCPD Size] ≤ [bus size x (100% or 120%)]

Table 4. Maximum Combined Supply OCPDs Based on Bus Bar Rating (Amps) per CEC 705.12(D)(2)										
Bus Bar Rating	100	125	125	200	200	200	225	225	225	
Main OCPD	100	100	125	150	175	200	175	200	225	
Max Combined PV System OCPD(s) at 120% of Bus Bar Rating	20	50	25	60*	60*	40	60*	60*	45	
Max Combined PV System OCPD(s) at 100% Bus Bar Rating	0	25	0	50	25	0	50	25	0	

^{*}This value has been lowered to 60 A from the calculated value to reflect 10 kW AC size maximum.

Reduction of the main breaker is not permitted with this plan. Otherwise, use Comprehensive Standard Plan.

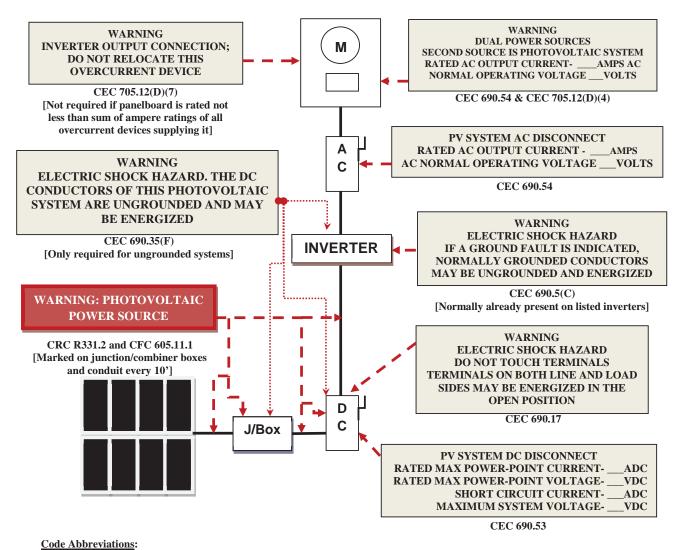
17 & 18 & 19) Labels and Grounding and Bonding

This content is covered by the labels on the next page and the Single Line Diagram(s). For background information, refer to the Comprehensive Standard Plan.

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Markings

CEC Articles 690 and 705 and CRC Section R331 require the following labels or markings be installed at these components of the photovoltaic system:



California Electrical Code (CEC)
California Residential Code (CRC)
California Fire Code (CFC)

Informational note: ANSI Z535.4 provides guidelines for the design of safety signs and labels for application to products. A phenolic plaque with contrasting colors between the text and background would meet the intent of the code for permanency. No type size is specified, but 20 point (3/8") should be considered the minimum.

CEC 705.12 requires a permanent plaque or directory denoting all electric power sources on or in the premises.

Solar PV Standard Plan – Simplified Central/String Inverter System for One- and Two-Family Dwellings

1	DESCRIPTION SOLAR PV MOD		\ 			SING	GLE-LINE DIAGRAM #1 – NO STRINGS COMBINED PRIOR TO INVERTE
3 4 5 6 7 8 9	SOURCE CIRCU SEPARATE DC INTERNAL INVE CENTRAL INVE LOAD CENTER PV PRODUCTIO *SEPARATE AC CONNECT TO II	RTERS INSTALLED? JIT JUNCTION BOX IN: DISCONNECT INSTAL RTER RTER INSTALLED?: YES / DIM METER INSTALLED DISCONNECT INSTAL VVERTER #2 (USE DUR IOGAL AHJ and /or Utilit	STALLED?: Y LED?: YES / CT: YES / N NO ?: YES / NO LED?: YES LINE DIAGRA	NO O O O	6 & 8 REQUIRED)	FOR U	CK A BOX FOR WHETHER SYSTEM IS GROUNDED OR UNGROUNDED: GROUNDED (INCLUDE GEC) UNGROUNDED SYSTEMS: OCPD MUST DISCONNECT BOTH CONDUCTORS OF EACH SOURCE CIRCUIT GROUNDED CONDUCTORS MUST BE IDENTIFIED PER 210.5(C). WHITE-FINISHED CONDUCTORS ARE NOT PERMITTED.
M	ODULES ODULES ODULES	A		A B	<u>\$</u>	<u>6</u>	MAIN SERVICE PANEL MAIN OCPD PV OCPD CB 2 CB
		CONDUCT	OR/CONDUIT	SCHEDI II F			IF DC/DC CONVERTERS ARE USED, CHECK THE BOX BELOW THE CORRESPONDING CONFIGURATION OF THE CORRESPONDING CORRESPONDING CORRESPONDING CONFIGURATION OF THE CORRESPONDING CORRESPONDI
☐ TAG	DESCRIPTION A	ND CONDUCTOR TYPE			CONDUIT/CABLE TYPE	CONDUIT SIZE	
A	USE-2 □ OR	PV-WIRE □	JILL	CONDUCTORS	TIFL		┤
- 	EGC/GEC:						┤
В							/
	EGC/GEC:						
С							
	EGC/GEC:						ENTER "N/A" WHERE SUITABLE FOR PARALLEL DC/DC CONVERTERS ON ONE DC/DC CONVERTERS ARE ALL RUN
D							WHEN NOT USING CONDUIT OR CABLE SOURCE CIRCUIT (FIXED UNIT VOLTAGE IN SERIES (FIXED SOURCE CIRCUIT
	EGC/GEC:						AS PERMITTED BY CODE DC/DC CONVERTERS) VOLTAGE DC/DC CONVERTERS)

Solar PV Standard Plan – Simplified Central/String Inverter System for One- and Two-Family Dwellings

▲ TAG	DESCRIPTION SOLAR PV MODULE / STRIN	10					SINGLE-LINE DI	IACDAN	1 #2 C	MDINING	CTDING	SC DDI	OD TO INIVE	DTED
2	DC/DC CONVERTERS INSTA		S / NO (IF	YES STEPS 6 &	8 REQUIRED		SINGLE-LINE DI	IAGRAIN	1 #2 - C	DIVIDINING	SIKING	30 PKI	OK TO INVE	KIEK
3	SOURCE CIRCUIT JUNCTIO					<i>'</i>								
4	COMBINER BOX (STEPS 11	& 12 REQUI	RED)				CHECK A BOX FOR WHETHE	R SYSTEM IS	GROUNDED O	R UNGROUNDED:	GROUN	NDED (INCLU	JDE GEC)	
5	SEPARATE DC DISCONNEC			0							UNGRO	TINDED		
6	INTERNAL INVERTER DC DI	ISCONNECT	: YES / NO			F	OR UNGROUNDED SYSTEM	1S:				JONDED		
7	CENTRAL INVERTER						DC OCPD MUST DISCONNE	CT BOTH CON	IDUCTORS OF	EACH SOURCE CIR	CUIT			
8	LOAD CENTER INSTALLED?						UNGROUNDED CONDUCTO	ORS MUST BE	IDENTIFIED PE	R 210.5(C). WHITI	E-FINISHED CO	NDUCTORS	ARE NOT PERMITTED.	
9	PV PRODUCTION METER IN *SEPARATE AC DISCONNEC			10										
10	CONNECT TO INVERTER #													
		,	IL DIAGRAM 4)										
* Consult with your local AHJ and /or Utility MODULES MODULES MODULES MODULES MODULES MODULES MODULES MODULES MODULES								CB1 CB2	M	E E	MA	PV	MAIN OCPD OCPD	INVERTER
	COMBINER C	ONDUCTOR/	CONDUIT SCHED	32			NON-COMBINED STRINGS	CONDUCTOR/	CONDUIT SCHE	OULF (IF APPLICABL	F)		DOC/	1 /1
	DESCRIPTION AND	CONDUCTOR	NUMBER OF	CONDUIT/CABLE			DESCRIPTION AND	CONDUCTOR	NUMBER OF	CONDUIT/CABLE	,		ĕ <u>_</u> L	/
TAG	CONDUCTOR TYPE	SIZE	CONDUCTORS	TYPE	CONDUIT SIZE	TAG	CONDUCTOR TYPE		CONDUCTORS	TYPE	CONDUIT SIZE			
A1	USE-2 □ OR PV-WIRE □	J.2L	20.120010/10			A2	USE-2 □ OR PV-WIRE □	3,22	23112301013	111 5			l ≭ =	
	EGC/GEC:						EGC/GEC:						_ 	<i> </i>
B1						B2								<i> </i>
	EGC/GEC:						EGC/GEC:						│	/
С						-	•	*				•	I I .	_// I
	EGC/GEC:													
D														
	EGC/GEC:					ENIT	TER "N/A" WHERE SUITABLE FC	OD WILLEN NOT I	ISING CONDUIT	OD CADLE AS DEDAY	IITTEN BV CONE			
Е	, - :					EINI	LIN IN/A WHERE SUITABLE FU	ON WHEN INOT	JOING CONDUIT	ON CADLE AS PERIV	III IED BI CODE		IF DC/DC CONVERTERS AR	
⊢ <u> </u>	EGC/GEC:												ARE RUN IN SERIES (FIX CIRCUIT VOLTAGE DC/DC	

Solar PV Standard Plan — Simplified Central/String Inverter Systems for One- and Two-Family Dwellings

Supplemental Calculation Sheets for Inverter #2 (Only include if <u>second</u> inverter is used)

DC Information:

Module Manufacturer: _		Model:								
S2) Module V _{oc} (from modu	le nameplate): Volts	S3) Module I _{sc} (from module nameplate): Amps								
S4) Module DC output power under standard test conditions (STC) = Watts (STC)										
S5) DC Module Layout										
Identify each source circuit (string) for inverter 1 shown on the roof plan with a Tag (e.g. A,B,C,)	Number of modules per source circuit for inverter 1	Identify, by tag, which source circuits on the roof are to be paralleled (if none, put N/A)								
		Combiner 1:								
		Combiner 2:								
		_								
Total number of source circuits	s for inverter 1:									
S6) Are DC/DC Converte	rs used? □ Yes □ No	If No, skip to Step S7. If Yes, enter info below.								
DC/DC Converter Model #:		DC/DC Converter Max DC Input Voltage: Volts								
Max DC Output Current:	Amps	Max DC Output Current: Volts								
Max # of DC/DC Converters in	an Input Circuit:	DC/DC Converter Max DC Input Power: Watts								

S7) Maximum System DC Vo	_															
Table 1. Maximum Number o	f PV M	odule	s in Se	eries	Based	on Mod	dule Ra	ted \	/ _{oc} fo	r 600 V	dc Rate	ed Equ	ipmer	nt (CE	C 690.	.7)
Max. Rated Module V _{oc} (*1.12) (Volts)	29.76	31.5	1 33	.48	35.71	38.27	41.21	L 44	.64	48.70	53.57	59.52	66.9	96 76	5.53	89.29
Max # of Modules for 600 Vdc	18	17	1	6	15	14	13	1	2	11	10	9	8		7	6
Use for DC/DC converters. The value	l ie calcu	lated	below	, mus	st be le	ss than	DC/DC	conv	/erter	max D	C inpu	 t voltaį	 ge (ST	 EP S6)		
B1. Module V_{oc} (STEP S2) = x # of modules per converter (STEP S6) x 1.12 (If -1 ≤ T_L ≤ -5°C, STEP S1) = V																
Table 2. Largest Module V_{oc} fo	r Single	-Mod	ule DO	^/DC	Conve	rter Co	nfigura	tions	s (wit	h 80 V	AFCI C	an) (CF	C 690) 7 and	1 690	11)
Max. Rated Module V _{oc} (*1.12) (Volts)						43.8		_		П						
DC/DC Converter Max DC Input (Step 6) (Volts)		37	40	43		49	52	55	58		64	67	70	73	76	79
S8) Maximum System DC V Maximum System DC V S9) Maximum Source Circu Is Module ISC below 9. S10) Sizing Source Circuit Co Source Circuit Conductor THWN-2, RHW-2) For up to 8 conductors in Note: For over 8 conductor	it Cur 6 Amp nduct Size =	rent os (St ors Min.	#10 / ed co	3)? AW@	Copp	es er cor	□ Nonducto) (If I or, 90 ght a	No, ()°C w	use Covet (U!	ompro SE-2, F from t	ehens PV Wi	sive S	Stand HHW Vering	dard '-2, g (CEC	Plan)
Note: For over 8 conductors in the conduit or mounting height of lower than ½" from the roof, use Comprehensive Plan. S11) Are PV source circuits combined prior to the inverter?																
S13) Inverter DC Disconnect Does the inverter have ar If No, the external DC d	_															s (DC)

S14) Inverter Information										
	Manufacturer: Model:										
	Max. Continuous AC Output Current Rating: Amps										
	Integrated DC Arc-Fault Circuit Protection? Yes No (If No is selected, Comprehensive Standard Plan)										
	Grounded or Ungrounded System? ☐ Grounded ☐ Ungrounded										
AC In	AC Information:										
S15) Sizing Inverter Output Circuit Conductors and	I OCPE)								
	Inverter Output OCPD rating = Amps (Tal										
	Inverter Output Circuit Conductor Size =	-	Table 3))							
	Table 3. Minimum Inverter	Output	OCPD ar	nd Circu	it Condı	uctor Siz	е				
	Inverter Continuous Output Current Rating (Amps) (Step 14)	12	16	20	24	28	32	36	40	48	
	Minimum OCPD Size (Amps)	15	20	25	30	35	40	45	50	60	
	Minimum Conductor Size (AWG, 75°C, Copper)	14	12	10	10	8	8	6	6	6	
ĺ											

Load Center Calculations (Omit if a load center will not be installed for PV OCPDs)

S20) Load Center Output: Calculate the sum of the maximum AC outputs from each inverter.		
Inverter #1 Max Continuous AC Output Current Rating [STEP S14]	× 1.25 =	Amps
Inverter #2 Max Continuous AC Output Current Rating [STEP S14]	× 1.25 =	Amps
Total inverter currents connected to load center (sum of above)	=	Amps
Conductor Size: AWG Overcurrent Protection Device: Amps Load center bus bar rating: Amps The sum of the ampere ratings of overcurrent devices in circuits supplying shall not exceed 120 percent of the rating of the bus bar or conductor.	g power to a bus	bar or conductor

Solar PV Standard Plan – Simplified Central/String Inverter System for One- and Two-Family Dwelling

1	DESCRIPTION SOLAR PV MODULE / STRING	SINGLE-LINE DIAGRAM #3 -	ADDITIONAL INVERTER FOR DIAGRAM #1							
3	DC/DC CONVERTERS INSTALLED? YES / NO (IF YES, STEPS 6 & 8 REQUIRED) SOURCE CIRCUIT JUNCTION BOX INSTALLED?: YES / NO	INVERTER # 2								
4	SEPARATE DC DISCONNECT INSTALLED?: YES / NO	=								
5	INTERNAL INVERTER DC DISCONNECT: YES / NO									
6	CENTRAL INVERTER	CHECK A BOX FOR WHETHER SYSTEM IS GROUNDED	OR UNGROUNDED: GROUNDED (INCLUDE GEC)							
7	*SEPARATE AC DISCONNECT INSTALLED?: YES / NO	UNGROUNDED								
8	TO LOAD CENTER ON LINE DIAGRAM 1	FOR UNGROUNDED SYSTEMS:	UNGROUNDED							
	* Consult with your local AHJ and /or Utility	- DC OCPD MUST DISCONNECT BOTH CONDUCTORS	OF EACH SOURCE CIRCUIT							
			PER 210.5(C). WHITE-FINISHED CONDUCTORS ARE NOT PERMITTED.							
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	MODULES • Total Control Contro	<u> </u>								
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			Le parine conventence and victor division and the conventence of the parine							
			IF DC/DC CONVERTERS ARE USED, CHECK THE BOX BELOW THE CORRESPONDING CONFIGURATION							
			INVERTER INVERTER							
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	CONDUCTOR/CONDUIT SCHEDULE									
	CONDUCTOR NUMBER OF CONDUIT/CABLE		- \ - / /							
L TA	G DESCRIPTION AND CONDUCTOR TYPE SIZE CONDUCTORS TYPE CONDUCTORS	UIT SIZE	▎┌╗━┛┤╎┤┌╗┤╴╎┤							
Α	USE-2 OR PV-WIRE O									
	EGC/EGC:	 								
	EUC/EUC.									
В	500/500	 								
	EGC/EGC:	ENTER "N/A" WHERE SUITABLE FOR WHEN	PARALLEL DC/DC CONVERTERS ON ONE DC/DC CONVERTERS ARE ALL RUN							
С		NOT USING CONDUIT OR CABLE AS	SOURCE CIRCUIT (FIXED UNIT VOLTAGE IN SERIES (FIXED SOURCE CIRCUIT							
	EGC/EGC:	PERMITTED BY CODE	DC/DC CONVERTERS) VOLTAGE DC/DC CONVERTERS)							

Solar PV Standard Plan – Simplified Central/String Inverter System for One- and Two-Family Dwellings

1	DESCRIPTION SOLAR PV MODULE / STRING		NO (IEVEC	CTEDC C 8 0 DE	OLUBED)	SING	GLE-LINE DIAGF	RAM #4	– ADDITI	ONAL IN	VERTER I	FOR DIAGRAM #2
3	DC/DC CONVERTERS INSTAL SOURCE CIRCUIT JUNCTION COMBINER BOX (STEPS 11 & SEPARATE DC DISCONNECT INTERNAL INVERTER DC DISC CENTRAL INVERTER *SEPARATE AC DISCONNECT TO LOAD CENTER ON LINE D * Consult with your local AHJ and / MODULES MODULES MODULES MODULES MODULES MODULES MODULES	LED? YES / BOX INSTALL 12 REQUIRED INSTALLED?: CONNECT: Y INSTALLED?: IAGRAM 3	ED?: YES / N D) YES / NO ES / NO		QUIRED)	CHECK A	RTER # 2 A BOX FOR WHETHER SYSTEMS: PD MUST DISCONNECT BOTH DUNDED CONDUCTORS MUST DO D	IS GROUND	ED OR UNGROU	UNDED: G	ROUNDED (INCL JNGROUNDED	.UDE GEC)
	, and the second			B2								DC/DC CONVERTER
	COMBINER	CONDUCTOR/C	ONDUIT SCHED	ULE			NON-COMBINED STRINGS	CONDUCTOR/	CONDUIT SCHED	OULE (IF APPLICAB	BLE)	
TAG	DESCRIPTION AND			CONDUIT/CABLE	CONDUIT SIZE	TAG				CONDUIT/CABLE	CONDUIT SIZE	<u>-\</u> _ /
	CONDUCTOR TYPE	SIZE	CONDUCTORS	TYPE			CONDUCTOR TYPE USE-2 OR PV-WIRE	SIZE	CONDUCTORS	TYPE	+	7 ~ /
A1	USE-2 OR PV-WIRE DEGC/GEC:						EGC/GEC:				+	1 — 1 1/ 11
B1	LUC/ULC.					B2	LOG OLC.					
D1	EGC/GEC:						EGC/GEC:					
С	LOG/OLC.						,		I			
	EGC/GEC:	1										
D	,					ENTED "NI /	A" MULEDE CUITADI E EOR MULEN	NOT LICINIC CO	ANDUIT OF CARL	T AC DEDIAITTED D	V CODE	IF DC/DC CONVERTERS ARE USED, THEY ARE RUN IN SERIES (FIXED SOURCE
	EGC/GEC:					ENTER "N/	A" WHERE SUITABLE FOR WHEN	NOT USING CO	UNDUIT OR CABLE	E A2 PERMITTED B	Y CODE	CIRCUIT VOLTAGE DC/DC CONVERTERS)