Larimer County Community Development Division
Larimer County Building Department

2015 International Codes adopted and enforced.

Solar Panel/Module Arrays Plans Submittal Checklist

Roof Mounted Systems:

_____ *Colorado Registered Engineers letter on the structures roof system ability to handle dead and uplift loads of the system proposed to be installed thereon. – All systems.

_____ The Engineer's Anchoring connections shall be outlined in the Engineer's letter as well as having actual detail drawings of the proper connections. – All Systems.

_____ Provide roof layout plans delineating the location of the solar panel/module array and any related equipment on the roof system, (i.e. dedicated PV system meter, PV array DC disconnect switch, PV system utility AC disconnect switch, inverter, etc., these items for PV type systems.) (Liquid mix/water solar panel systems need roof layout and associated equipment on roof shown).

_____ Mounting system plans for panels/modules along with any specifications including details of actual required attachment to roof system framing.

_____ Panel/Module product Cut Sheet showing Manufacturer, Listing Agency and Size of panels or modules being used. – All systems.

_____ Product Cut Sheets on all system associated hardware, electrical or other.

_____ Plan Notes Required: When installing a solar water heating system, a note shall be added to the plans to include the requirement that solar water heating equipment shall be installed in compliance with the adopted plumbing code. Similarly PV systems construction notes shall include the requirement that they comply with the adopted electrical code. – All systems

Ground Mounted Systems:

In addition to the items noted as required for Roof Installations, the following shall be provided for Ground Mounted Systems;

_____ Provide 5 site plans delineating the location of the Solar panels/modules array as well as the solar collectors, as well as the location and labeling of all other mounted solar equipment. (Instead of a roof layout plan.)

_____ *The Colorado Registered Engineer's letter and detail sheets shall address the foundation/piers system or ballast type anchoring system to be used for the proposed solar panels system(s).

Wall Mounted Systems:

_____ *Shall have a Colorado Registered Engineers seal upon the plans when alterations are required to be made to the structure for their mounting that will affect the structural integrity of the structure concerned, or the load of the system affects the structural integrity of the structure concerned. As determined by the Building Department.
_____ Engineers detail sheets of the actual mounting requirements and required alterations to the structural framing of the structure concerned for the installation.
____ Product cut sheets as required on roof and ground mounted systems are required for wall mount systems as well.

* **Project Engineers letters** shall include the wind and snow load design criteria for the area in which the system(s) are being installed.

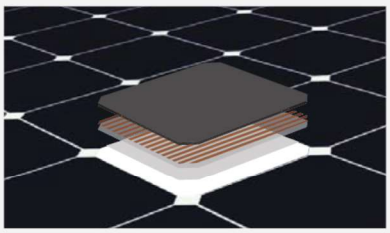
See the following code sections concerning solar system(s) installations for further information:
Section 1510.7, 1512.1, 1607.12.5 - 2015 International Building Code
Section 605.11 - 2015 International Fire Code Chapter 23 - 2015
International Residential Code & the 2014 NEC

SUNPOWER™

MORE ENERGY. FOR LIFE.™

E-SERIES SOLAR PANELS

- **20.4% efficiency**
  Ideal for roofs where space is at a premium or where future expansion might be needed.
- **High performance**
  Delivers excellent performance in real world conditions, such as high temperatures, clouds and low light.[1,2,3]
- **Proven value**
  Designed for residential rooftops, E-Series panels deliver the features, value and performance for any home.



Maxeon™ Solar Cells: Fundamentally better.
Engineered for performance, designed for durability.

Engineered for peace of mind
Designed to deliver consistent, trouble-free energy over a very long lifetime.[4,5]

Designed for durability
The SunPower Maxeon Solar Cell is the only cell built on a solid copper foundation. Virtually impervious to the corrosion and cracking that degrade Conventional Panels.[4,5]

#1 Ranked in Fraunhofer durability test.[10]
100% power maintained in Atlas 25+ comprehensive PVDI Durability test.[11]

HIGH PERFORMANCE & EXCELLENT DURABILITY

E20 - 327 PANEL

E20 SERIES

HIGH EFFICIENCY[6]

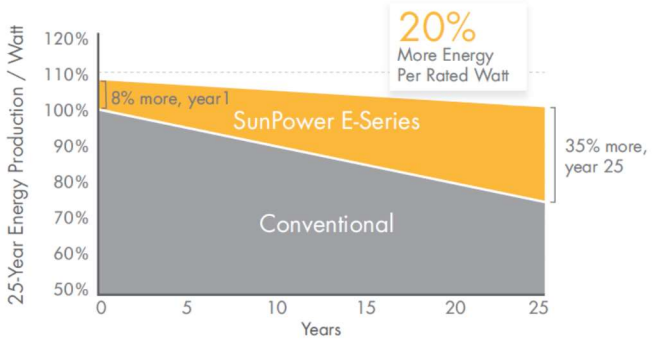
Generate more energy per square meter

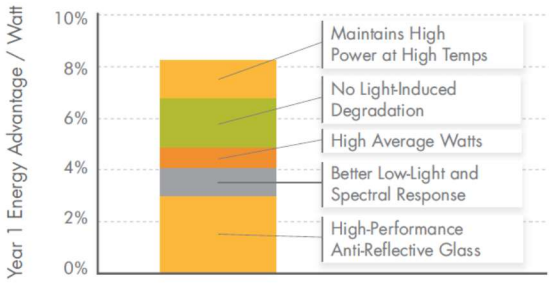
E-Series residential panels convert more sunlight to electricity producing 36% more power per panel,[1] and 60% more energy per square meter over 25 years.[3,4]

HIGH ENERGY PRODUCTION[7]

Produce more energy per rated watt

High year one performance delivers 7-9% more energy per rated watt.[3] This advantage increases over time, producing 20% more energy over the first 25 years to meet your needs.[4]





MOST ENERGY PER WATT
1
PHOTON
2012 FIELD TEST

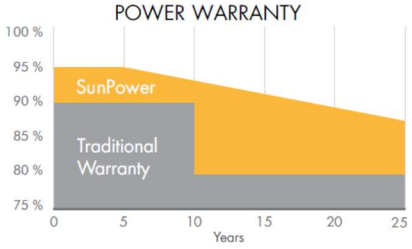
SUNPOWER

MORE ENERGY. FOR LIFE.™

E-SERIES SOLAR PANELS

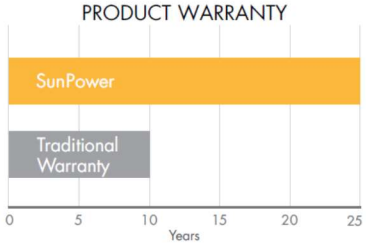
SUNPOWER OFFERS THE BEST COMBINED POWER AND PRODUCT WARRANTY

POWER WARRANTY



More guaranteed power: 95% for first 5 years, -0.4%/yr. to year 25.[8]

PRODUCT WARRANTY

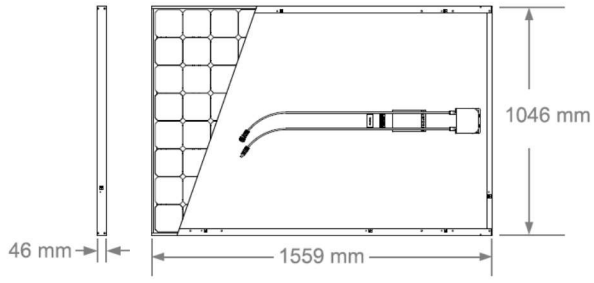


Combined Power and Product defect 25 year coverage that includes panel replacement costs.[9]

ELECTRICAL DATA		
	E20-327	**E19-320**
Nominal Power[12] (Pnom)	327 W	320 W
Power Tolerance	+5/–0%	+5/–0%
Avg. Panel Efficiency[13]	20.4%	19.8%
Rated Voltage (Vmpp)	54.7 V	54.7 V
Rated Current (Impp)	5.98 A	5.86 A
Open-Circuit Voltage (Voc)	64.9 V	64.8 V
Short-Circuit Current (Isc)	6.46 A	6.24 A
Max. System Voltage	1000 V IEC & 600 V UL	
Maximum Series Fuse	20 A	
Power Temp Coef.	–0.38% / °C	
Voltage Temp Coef.	–176.6 mV / °C	
Current Temp Coef.	3.5 mA / °C	

OPERATING CONDITION AND MECHANICAL DATA	
Temperature	– 40°C to +85°C
Max load	Wind: 2400 Pa, 245 kg/m² front & back Snow: 5400 Pa, 550 kg/m² front
Impact resistance	25mm diameter hail at 23 m/s
Appearance	Class A
Solar Cells	96 Monocrystalline Maxeon Gen II
Tempered Glass	High transmission tempered Anti-Reflective
Junction Box	IP-65 Rated
Connectors	MC4
Frame	Class 1 black anodized (highest AAMA rating)
Weight	18,6 kg

TESTS AND CERTIFICATIONS	
Standard tests	IEC 61215, IEC 61730, UL1703
Quality tests	ISO 9001:2008, ISO 14001:2004
EHS Compliance	RoHS, OHSAS 18001:2007, lead free, PV Cycle
Ammonia test	IEC 62716
Salt Spray test	IEC 61701 (passed maximum severity)
PID test	Potential-Induced Degradation free: 1000V[10]
Available listings	TUV, MCS, UL, JET, KEMCO, CSA, CEC, FSEC



REFERENCES:

1 All comparisons are SPR-E20-327 vs. a representative conventional panel: 240W, approx. 1.6 m², 15% efficiency.
2 PVEvolution Labs "SunPower Shading Study," Feb 2013.
3 Typically 7-9% more energy per watt, BEW/DNV Engineering "SunPower Yield Report," Jan 2013.
4 SunPower 0.25%/yr degradation vs. 1.0%/yr conv. panel. Campeau, Z. et al. "SunPower Module Degradation Rate," SunPower white paper, Feb 2013; Jordan, Dirk "SunPower Test Report," NREL, Oct 2012.
5 "SunPower Module 40-Year Useful Life" SunPower white paper, Feb 2013. Useful life is 99 out of 100 panels operating at more than 70% of rated power.
6 Out of all 2600 panels listed in Photon International, Feb 2012.
7 8% more energy than the average of the top 10 panel companies tested in 2012 (151 panels, 102 companies), Photon International, March 2013.
8 Compared with the top 15 manufacturers. SunPower Warranty Review, Feb 2013.
9 Some exclusions apply. See warranty for details.
10 5 of top 8 panel manufacturers were tested by Fraunhofer ISE, "PV Module Durability Initiative Public Report," Feb 2013.
11 Compared with the non-stress-tested control panel. Atlas 25+ Durability test report, Feb 2013.
12 Standard Test Conditions (1000 W/m² irradiance, AM 1.5, 25° C).
13 Based on average of measured power values during production

See http://www.sunpowercorp.com/facts for more reference information.
For more details, see extended datasheet: www.sunpowercorp.com/datasheets. Read safety and installation instructions before using this product.