



2023 EWEB Greenpower Grant Application

Contact Information:

Greenhill Humane Society

NAME OF ORGANIZATION

Cary Lieberman

CONTACT NAME

Executive Director

CONTACT TITLE

88530 Green Hill Rd.

STREET ADDRESS

Eugene, OR 97402

CITY/STATE/ZIP

(541) 689-1503 ext 113

TELEPHONE

(541) 689-5261

FAX

director@green-hill.org

E-MAIL

https://www.green-hill.org

WEBSITE

Greenhill Solar Electric System

PROPOSAL TITLE

\$50,000

GRANT AMOUNT REQUESTED

Cary Lieberman

Digitally signed by Cary Lieberman
Date: 2023.03.24
12:08:09 -0700

3/24/2023

SIGNATURE

DATE

Email completed application and proposal to:

Cheryl Froehlich

Cheryl.Froehlich@eweb.org

1. Background:

- Mission of the organization
- The needs your organization addresses
- The population your organization serves
- A brief description of your current programs and operating budget

2. Project Description:

- Statement of the primary purpose of the project and its relationship to EWEB's mission
- The population you plan to serve and how they will benefit from the project
- Strategies you will employ to implement the project

3. Project Evaluation

- Your criteria for a successful project
- The results you hope to achieve by the end of the funding period
- The method by which you will measure effectiveness

4. Budget and Timeline

- A budget for the project for which funds are requested, including any additional funding which has been secured at the time of application.
- Timeline of the project

5. Attachments

- Proof of nonprofit status (copy of IRS letter)*
- List of board of directors*
- One-paragraph resumes of key staff working on the project
- Amount and source of any other funding support previously received from EWEB (if applicable)
- Proof of ownership or authority to install equipment at or otherwise modify building, if request for facility construction project

*Optional or not needed for public and academic institutions.

Application deadline: Must be submitted no later than March 31, 2023

Questions? Contact Cheryl Froehlich, Cheryl.froehlich@eweb.org, 541-685-7676

Greenhill Humane Society Solar Electric System

Mission

Greenhill Humane Society provides care and shelter for animals, support and resources for people, and education to promote the humane treatment of animals.

Needs addressed by Greenhill Humane Society

Greenhill Humane Society has been caring for animals and supporting people in Lane County since 1944. We operate the only animal shelter within the Eugene/Springfield area. It is estimated that 70% of Lane County households own pets. When those pets become lost, when families with pets have challenges or are in crisis, or when a family is looking to bring home a new pet, we are this community's primary resource. We also shelter and care for abandoned, abused, and neglected animals. Recent years have seen rising challenges in our community that Greenhill has stepped up to meet including increased financial challenges, lack of secure housing, and natural disasters. Greenhill distributes an average of 20 tons of pet food and supplies annually to individuals, families, and organizations in need throughout Lane County. Greenhill also provides emergency animal shelter and veterinary care for individuals and families with pets needing to evacuate their homes because of wildfire or in situations of extreme heat or cold.

Population served

Greenhill Humane Society serves residents within the wider Lane County region, as well as animals and people throughout Oregon. Our Crisis Care programs, programs for distributing pet food and supplies, and disaster response primarily helps local individuals and families who are senior, disabled, limited-income, rural, lack secure housing, or a combination.

Current Programs

- Animal Sheltering that includes a high-level of medical care and behavioral enrichment.
- Last year, we sheltered and cared for 3,422 animals.
- Adoption of homeless animals to individuals and families;
- Reuniting lost animals with their families;
- Crisis Care sheltering of animals in situations of domestic violence, medical emergencies, and other crisis situations;
- Low-cost spay/neuter surgeries for free roaming, un-owned community cats;
- Pet food and supply pantry for individuals and families who have pets and are struggling financially. This program also distributes pet food and supplies to local community organizations.
- Humane education, promoting respect and care for pets and people.
- Disaster response including community coordination, resource distribution, and providing sheltering for pets so families can safely escape and recover from a disaster.

Operating Budget: Fiscal Year 22/23: \$3,340,866

Greenhill Humane Society Solar Electric System

Project Description

With this grant, Greenhill hopes to install a 12.48 KW Solar Electric System on its recently constructed Dog Adoption Building. This project will increase resiliency, reduce our dependence on non-renewable resources, while reducing expenses, enabling us to put more resources into helping the community.

Greenhill Humane Society is the sole organization in our community that provides large-scale sheltering and veterinary care during times of crisis and disaster for the 70% of our community who owns companion animals. It's critical that Greenhill's organization is sustainable and its campus resilient to potential disasters.

In 2020, Greenhill Humane Society completed a \$6 million first-phase expansion and remodel of its humane animal care campus. The first phase enabled Greenhill to provide a higher level of animal care while at the same time expanding animal sheltering capacity. This past year, Greenhill started the second phase of construction designed to create campus resiliency during increasing natural disasters, reduce dependency and use of non-renewable resources, and address the economic challenges that are facing our community. An on-site water storage system was constructed that enables the shelter to operate for a minimum of 10 days if a natural disaster impacts the water supply to the campus. Additionally, we completed construction of an on-site warehouse that can store up to 40 pallets of pet food and supplies. This additional storage enables larger deliveries, reducing trips and fossil-fuel consumption while at the same time enabling the shelter to operate independently for longer spans of time without needing to replenish supplies. The final phase of this resiliency project includes the addition of solar electric panels and, eventually, battery storage to enable the shelter to operate independently should the electric grid fail during a disaster event.

This project complements Greenhill's other environmental initiatives designed into the first phase of construction which include extensive use of natural light, energy efficient heating and cooling systems and on-site waste-water filtration. The project is consistent with EWEB's mission to enhance our community's vitality in a manner that matches the community values of environmental consciousness, sustainability, and equity.

As noted, the completion of the granted project will enhance Greenhill's mission to help people and animals in this community, particularly those who need us most in normal times and in times of crisis: limited income, seniors, disabled, and individuals and families with housing insecurity.

Greenhill intends to engage Advanced Energy Systems to install the proposed project. Specific details of the project can be seen in the proposal by Advanced Energy Systems that is attached. Solar panels will be installed on the west-facing roof of Greenhill's dog adoption building. While the solar panel project is constructed, we also intend to widely publicize the project; promoting what it represents from an environmental and sustainable perspective as well as what it will do to enhance our community as a whole. Greenhill Humane Society is also a destination for many people locally as well as those visiting Eugene. The solar panel project will be a living example of our community's values and a model for other communities.

Greenhill Humane Society Solar Electric System

Project Evaluation

The project will be successful when installed and generating electricity as planned. We are ready to install the planned panels and equipment as soon as funding is available. We will be monitoring our actual solar energy production through web-based tools and will be able to see the direct impact this project has achieved.

Over its lifetime, this project is estimated to offset 7.4 tons of CO₂ and save the organization over \$108,000 which will be used to further Greenhill's humane mission.

This project will have an immediate impact on our current programs that help animals and people within Lane County through two ways. First, the project will result in real energy cost savings which means that more resources can be put directly into helping animals and people. Secondly, the project itself, including visible solar panels and web-based monitoring will serve as an educational opportunity. This ties in well with our humane education programs which focus on compassionate and respectful treatment of animals, people, and the environment in which we all live.

The project will have two potential longer-term impacts as well. First, in the event of a natural disaster that takes down utility supplied power in the area, the solar panels will enable us to operate some of our equipment and lighting while the panels generate power. Second, this project will serve as the beginning of a larger system that includes more solar panels and battery backup, ultimately increasing solar electric production and creating more resilience in the event of a disaster.

Assuming that installation of the panels goes smoothly and within budget, long-term effectiveness will be measured by comparing estimated-to-real electricity production and real-time stress testing during disaster events.

Budget and Timeline

The \$50,000 grant will be used to cover the full cost of the proposed system as designed. Any additional funds that may be required to complete the project will come from Greenhill's general fund. See the attached proposal from Advanced Energy Systems.

Greenhill is ready to move forward on installation of the project as soon as the funds are committed.

Thank you for your consideration of this grant.

Sincerely,

Cary Lieberman
Executive Director
Greenhill Humane Society



Turning tax liability into renewable energy



Greenhill Humane Society

Site Location: 88530 Green Hill Road
Eugene, Oregon 97402

12.48 KW Solar Electric System

Presented by
Justin Wilbur
Wednesday, March 15, 2023

Since 2002 Advanced Energy Systems has completed hundreds of solar energy installations throughout the state. Our clients include private commercial, industrial, and residential customers, as well as local, state and federal agencies. We provide a turn-key solution including site evaluation, energy analysis, grant writing, tax incentive analysis, engineering, custom design, project management, installation, and service. Advanced Energy Systems is an Oregon-based company. www.AESrenew.com

This Proposal is valid until 4/14/2023

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Advanced Energy Systems • 65 Centennial Loop, Eugene, OR 97401 • 541-683-2345 • www.aesrenew.com • CCB 160523



Turning tax liability into renewable energy

To: Cary Lieberman
Re: Greenhill Humane Society
88530 Green Hill Road
Eugene, Oregon 97402

12.48 KW Solar Electric System

System Description:

A 12.48 kW PV power system, including Qcell 480 watt solar modules, a customized racking system, stainless steel module fastening hardware, SMA SB5.0-1SP-US-41 inverter(s), live solar monitoring web page and all necessary conduit, wire, fuses and disconnects for an NEC-compliant system. Permit fees and utility paperwork included.

Total Cost Installed		\$50,000
EWEB Grant	(50,000)	
Total Tax Credit & Incentives	<u>(\$50,000)</u>	
Installed Net Cost Sub-Total		\$0
Income Benefit		
35 Year Energy Savings	<u>(108,026)</u>	
Net System Balance		<u>(\$108,026)</u>

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Energy Savings



First Year Savings
16,224 kWh First Year Savings
x \$0.106 From EWEB
= \$1,721.37 Savings



35 Year Energy Savings
522,125 kWh
at 3.7% Energy Rate Inflation
= \$108,026 Total Savings

Environmental Benefits

During its lifetime, this system will offset:



7.4 Tons of CO2

Which is the equivalent to the conservation of:



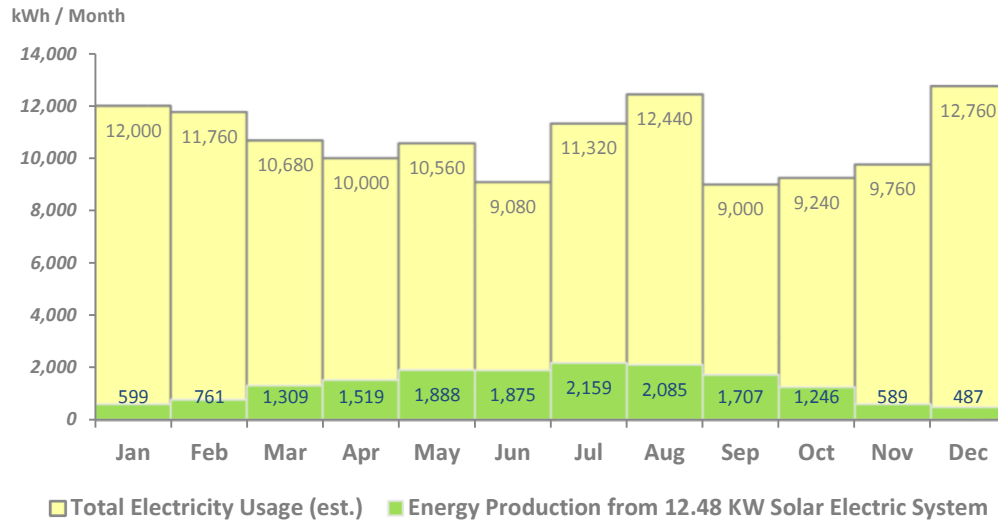
5,460 Trees

or . . .



23,970 Gallons of Gasoline

Electrical Usage & Solar Production



Utility Provided Energy Offset by Solar: 13%



Notes:

1. The system will require electrical and structural engineering reports to verify feasibility. These reports are required for obtaining permits. The costs of these reports are included in the total system cost quoted above. The cost estimates in this proposal assume standard installation techniques applicable to most buildings. If engineering determines structural or electrical upgrades are necessary to meet current building codes, the cost of the upgrades will be presented as a change order. Additional cost from change orders is also eligible for tax credits and depreciation benefits to the system owner.
2. Live web based monitoring requires an accessible owner supplied connection to the internet no farther than 25 feet distance from the Solar Inverter. Advanced Energy Systems will either run an ethernet jumper or use ethernet power over wire (pow) "bricks" to make the final ethernet connection to the inverter. If these methods do not work Advanced Energy Systems LLC will change additional labor and materials at Time and Material rates.
3. Utility or Energy Trust incentives are limited and available on a "first come first served" basis. These incentives require systems to remain operational for a period of time, failure to do so may result in repayment of the prorated grant amount. Cash grants are taxable, check with your financial advisor to determine applicable rates.
4. Specialized roofing procedures, if required by roofing contractor or roofing manufacturer of record, may increase the total cost.
5. Pricing excludes removing trees, brush, vines.

SUNNY BOY 3.0-US / 3.8-US / 5.0-US / 6.0-US / 7.0-US / 7.7-US



SB3.0-1SP-US-41 / SB3.8-1SP-US-41 / SB5.0-1SP-US-41 / SB6.0-1SP-US-41 / SB7.0-1SP-US-41 / SB7.7-1SP-US-41 / SB3.0-1TP-US-41 / SB3.8-1TP-US-41 / SB5.0-1TP-US-41 / SB6.0-1TP-US-41 / SB7.0-1TP-US-41 / SB7.7-1TP-US-41



Value-Added Improvements	Reduced Labor	Optimized Power Production	Trouble-Free Service
<ul style="list-style-type: none"> • SunSpec certified technology for cost-effective module-level shutdown • Advanced AFCI compliant to UL 1699B for arc fault protection 	<ul style="list-style-type: none"> • New Installation Assistant with direct access via smartphone minimizes time in the field • Advanced communication interface with fewer components creates 50% faster setup and commissioning 	<ul style="list-style-type: none"> • ShadeFix, SMA's proprietary shade management solution, produces more power than alternatives • Reduced component count provides maximum system reliability 	<ul style="list-style-type: none"> • SMA Service Mobile App provides simplified, expedited field service • Equipped with SMA Smart Connected, a proactive service solution that is integrated into Sunny Portal

SUNNY BOY 3.0-US / 3.8-US / 5.0-US / 6.0-US / 7.0-US / 7.7-US

Power with a purpose

The residential PV market is changing rapidly. Your bottom line matters more than ever—so we've designed a superior residential solution to help you decrease costs at every stage of your business operations. The Sunny Boy 3.0-US/3.8-US/5.0-US/6.0-US/7.0-US/7.7-US join the SMA lineup of field-proven solar technology backed by the world's #1 service team. This improved residential solution features ShadeFix, SMA's proprietary technology that optimizes system performance. ShadeFix also provides superior power production with a reduced component count versus competitors, which provides maximum reliability. No other optimized solution generates more power or is as easy as systems featuring SMA ShadeFix and SunSpec certified devices. Finally, SMA Smart Connected will automatically detect errors and initiate the repair and replacement process so that installers can reduce service calls and save time and money.

Technical data	Sunny Boy 3.0-US		Sunny Boy 3.8-US		Sunny Boy 5.0-US	
	208 V	240 V	208 V	240 V	208 V	240 V
Input (DC)						
Max. PV power	4800 Wp		6144 Wp		8000 Wp	
Max. DC voltage			600 V			
Rated MPP voltage range	155 - 480 V		195 - 480 V		220 - 480 V	
MPPT operating voltage range			100 - 550 V			
Min. DC voltage / start voltage			100 V / 125 V			
Max. operating input current per MPPT			10 A			
Max. short circuit current per MPPT			18 A			
Number of MPPT tracker / string per MPPT tracker			2/1		3 / 1	
Output (AC)						
AC nominal power	3000 W	3000 W	3330 W	3840 W	5000 W	5000 W
Max. AC apparent power	3000 VA	3000 VA	3330 VA	3840 VA	5000 VA	5000 VA
Nominal voltage / adjustable	208 V / ●	240 V / ●	208 V / ●	240 V / ●	208 V / ●	240 V / ●
AC voltage range	183 - 229 V	211 - 264 V	183 - 229 V	211 - 264 V	183 - 229 V	211 - 264 V
AC grid frequency			60 Hz / 50 Hz			
Max. output current	14.5 A	12.5 A	16.0 A	16.0 A	24.0 A	21.0 A
Power factor (cos φ) / harmonics			1 / < 4 %			
Output phases / line connections			1 / 2			
Efficiency						
Max. efficiency	97.2 %	97.6 %	97.3 %	97.6 %	97.3 %	97.6 %
CEC efficiency	96.0 %	96.5 %	96.5 %	96.5 %	96.5 %	97.0 %
Protection devices						
DC disconnect device / DC reverse polarity protection			● / ●			
Ground fault monitoring / Grid monitoring			●			
AC short circuit protection			●			
All-pole sensitive residual current monitoring unit (RCMU)			●			
Arc fault circuit interrupter (AFCI)			●			
Protection class / overvoltage category			I / IV			
General data						
Dimensions (W / H / D) in mm (in)			535 x 730 x 198 (21.1 x 28.5 x 7.8)			
Packaging dimensions (W / H / D) in mm (in)			600 x 800 x 300 (23.6 x 31.5 x 11.8)			
Weight / packaging weight			26 kg (57 lb) / 30 kg (66 lb)			
Temperature range: operating / non-operating			-25 °C ...+60 °C / -40 °C ...+60 °C			
Environmental protection rating			NEMA 3R			
Noise emission (typical)			39 dB(A)			
Internal power consumption at night			< 5 W			
Topology / cooling concept			transformerless / convection			
Features						
Ethernet ports			2			
Secure Power Supply			● 1)			
Display (2 x 16 characters)			●			
2.4 GHz WLAN / External WLAN antenna			▲ / ○			
ShadeFix technology for string level optimization			●			
Cellular (4G / 3G) / Revenue Grade Meter			○ / ○ 2)			
Warranty: 10 / 15 / 20 years			● / ○ / ○ 3)			
Certificates and approvals			UL 1741, UL 1741 SA incl. CA Rule 21 RSD, UL 1998, UL 1699B Ed. 1, IEEE1547, FCC Part 15 (Class A & B), CAN/CSA V22.2 107.1-1, HECO Rule 14H, PV Rapid Shutdown System Equipment			
● Standard features ○ Optional features – Not available ▲ Subject to availability						
Data at nominal conditions 1) Not compatible with SunSpec shutdown devices 2) Standard in SBX.X-ITP-US-41						
Type designation	SB3.0-1SP-US-41 / SB3.0-1TP-US-41		SB3.8-1SP-US-41 / SB3.8-1TP-US-41		SB5.0-1SP-US-41 / SB5.0-1TP-US-41	



External WLAN antenna
EXTANT-US-40



SunSpec Certified
Rapid Shutdown
Receivers

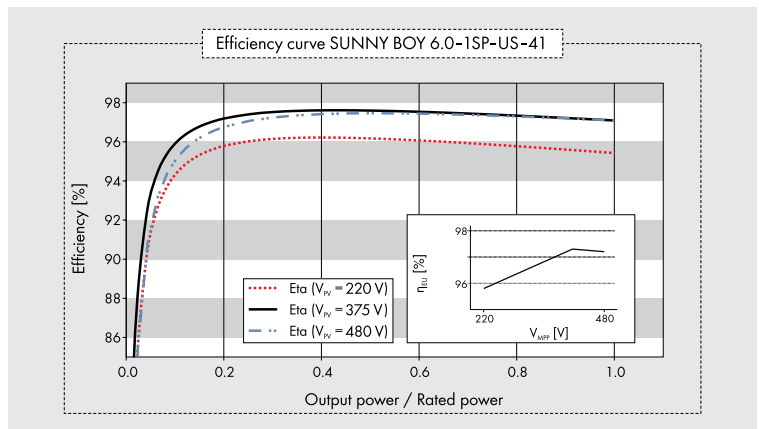


Revenue Grade
Meter Kit
RGM05KIT-US-10



Cellular Modem Kit
CELLMODKIT-US-10

3) Listed warranty terms are applicable in SMA-designated primary support countries, including the U.S., Canada, and Mexico. Reduced terms or restrictions may apply in other Americas regions and territories including the Pacific and Caribbean.



Technical data	Sunny Boy 6.0-US		Sunny Boy 7.0-US		Sunny Boy 7.7-US	
	208 V	240 V	208 V	240 V	208 V	240 V
Input (DC)						
Max. PV power	9600 W _p		11200 W _p		12320 W _p	
Max. DC Voltage	600 V					
Rated MPP Voltage range	220 - 480 V		245 - 480 V		270 - 480 V	
MPPT operating voltage range	100 - 550 V					
Min. DC voltage / start voltage	100 V / 125 V					
Max. operating input current per MPPT	10 A					
Max. short circuit current per MPPT	18 A					
Number of MPPT tracker / string per MPPT tracker	3 / 1					
Output (AC)						
AC nominal power	5200 W	6000 W	6660 W	7000 W	6660 W	7680 W
Max. AC apparent power	5200 VA	6000 VA	6660 VA	7000 VA	6660 VA	7680 VA
Nominal voltage / adjustable	208 V / ●	240 V / ●	208 V / ●	240 V / ●	208 V / ●	240 V / ●
AC voltage range	183 - 229 V	211 - 264 V	183 - 229 V	211 - 264 V	183 - 229 V	211 - 264 V
AC grid frequency	60 Hz / 50 Hz					
Max. output current	25.0 A	25.0 A	32.0 A	29.2 A	32.0 A	32.0 A
Power factor (cos φ) / harmonics	1 / < 4 %					
Output phases / line connections	1 / 2					
Efficiency						
Max. efficiency	97.3 %	97.7 %	97.3 %	97.9 %	97.3 %	97.5 %
CEC efficiency	96.5 %	97.0 %	96.5 %	97.0 %	96.5 %	97.0 %
Protection devices						
DC disconnect device / DC reverse polarity protection	● / ●					
Ground fault monitoring / Grid monitoring	●					
AC short circuit protection	●					
All-pole sensitive residual current monitoring unit (RCMU)	●					
Arc fault circuit interrupter (AFCI)	●					
Protection class / overvoltage category	I / IV					
General data						
Dimensions (W / H / D) in mm (in)	535 x 730 x 198 (21.1 x 28.5 x 7.8)					
Packaging Dimensions (W / H / D) in mm (in)	600 x 800 x 300 (23.6 x 31.5 x 11.8)					
Weight / packaging weight	26 kg (57 lb) / 30 kg (66 lb)					
Temperature range: operating / non-operating	-25 °C ...+60 °C / -40 °C ...+60 °C					
Environmental protection rating	NEMA 3R					
Noise emission (typical)	39 dB(A)				45 dB(A)	
Internal power consumption at night	< 5 W					
Topology / cooling concept	transformerless / convection			transformerless / fan		
Features						
Ethernet ports	2					
Secure Power Supply	● ¹⁾					
Display (2 x 16 characters)	●					
2.4 GHz WLAN / External WLAN antenna	▲ / ○					
ShadeFix technology for string level optimization	●					
Cellular (4G / 3G) / Revenue Grade Meter	○ / ○ ²⁾					
Warranty: 10 / 15 / 20 years	● / ○ / ○ ³⁾					
Certificates and approvals	UL 1741, UL 1741 SA incl. CA Rule 21 RSD, UL 1998, UL 1699B Ed. 1, IEEE1547, FCC Part 15 (Class A & B), CAN/CSA V22.2 107.1-1, HECO Rule 14H, PV Rapid Shutdown System Equipment					
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THE SMA ENERGY SYSTEM HOME

The SMA Energy System Home combines legendary SMA inverter performance and SunSpec certified shutdown devices in one cost-effective, comprehensive package. In addition, SMA ShadeFix technology optimizes power production and provides greater reliability than alternatives.

This rapid shutdown solution fulfills UL 1741, NEC 2014, and NEC 2017 requirements and is certified to the power line-based SunSpec Rapid Shutdown communication signal over DC wires, making it the most simple and cost-effective rapid shutdown solution on the market.

Visit www.SMA-America.com for more information.





SIMPLE, FLEXIBLE DESIGN

Speed the completion of customer proposals and maximize the efficiency of your design team with the Sunny Boy-US series, which provides a new level of flexibility in system design by offering:

- » Hundreds of stringing configurations and multiple independent MPPTs
- » SMA's proprietary ShadeFix technology optimizes power production
- » Diverse application options including on- and off-grid compatibility



VALUE-DRIVEN SALES ENABLEMENT

SMA wants to enable your sales team by arming them with an abundance of feature/benefit support. Show your customers the value of the Sunny Boy-US series by utilizing:

- » The opportunity to join the SMA PowerUP network of installers who receive in-depth training, enhanced service, and prioritized marketing support
- » SMA's 40 year history and status as the #1 global inverter manufacturer instills homeowners with peace of mind and the long-term security they demand from a PV investment
- » The most economical solution for shade mitigation with superior power production



IMPROVED STOCKING AND ORDERING

Ensure that your back office business operations run smoothly and succinctly while mitigating potential errors. The Sunny Boy-US series can help achieve cost savings in these areas by providing:

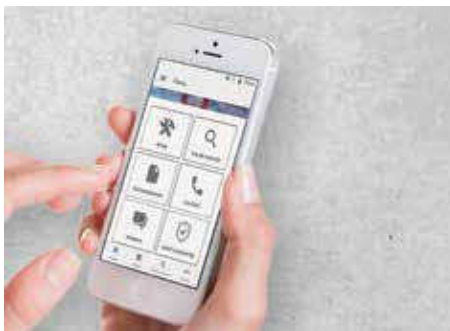
- » An integrated DC disconnect that simplifies equipment stocking and allows for a single inverter part number
- » All communications integrated into the inverter, eliminating the need to order additional equipment



STREAMLINED INSTALLATION AND COMMISSIONING

Expedite your operations in the field by taking advantage of the new Sunny Boy's installer-friendly feature set including:

- » Direct access via smartphone and utilization of SMA's Installation Assistant, which minimizes time/labor spent in the field and speeds the path to commissioning
- » Simple commissioning and monitoring setup in a single online portal
- » The fastest, easiest installation thanks to SMA ShadeFix and SunSpec certified shutdown devices



SUPERIOR SERVICE

SMA understands the factors that contribute to lifetime PV ownership cost, that's why the Sunny Boy-US series was designed for maximum reliability and backstopped by an unmatched service offering. Benefit from:

- » SMA Smart Connected, a proactive service solution integrated into Sunny Portal that automatically detects errors and initiates the repair and replacement process
- » The SMA Service Mobile App, which provides simplified, expedited field service

powered by

Q.ANTUM / DUO / Z

Q.PEAK DUO XL-G10.c

475-495

ENDURING HIGH
PERFORMANCE



BREAKING THE 21% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 21.6%.



LOW ELECTRICITY GENERATION COSTS

Higher yield per surface area, lower BOS costs and up to 80 watts more module power than standard 144 half-cell modules.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.



EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400Pa) and wind loads (3000Pa).



A RELIABLE INVESTMENT

Inclusive 12-year product warranty and 25-year linear performance warranty².



STATE OF THE ART MODULE TECHNOLOGY

Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology.

¹ APT test conditions according to IEC/TS 62804-1:2015, method A (-1500V, 96h)

² See data sheet on rear for further information.



THE IDEAL SOLUTION FOR:

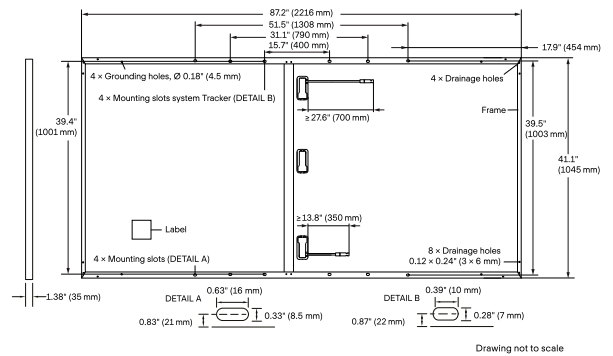


Ground-mounted
solar power plants

MECHANICAL SPECIFICATION

Format	87.2 in × 41.1 in × 1.38 in (including frame) (2216 mm × 1045 mm × 35 mm)
Weight	58.4 lbs (26.5 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Anodized aluminum
Cell	6 × 26 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 27.6 in (700 mm), (-) ≥ 13.8 in (350 mm)*
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4; IP68

*Long cables (+) ≥ 57.1 in (1450 mm), (-) ≥ 57.1 in (1450 mm) for landscape installation are available upon request.

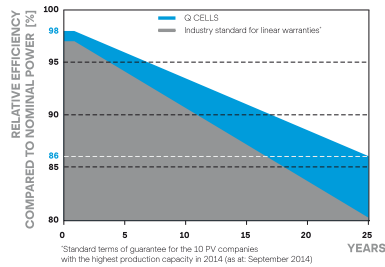


ELECTRICAL CHARACTERISTICS

POWER CLASS		475	480	485	490	495	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W / -0 W)							
Minimum	Power at MPP ¹	P _{MPP} [W]	475	480	485	490	495
	Short Circuit Current ¹	I _{SC} [A]	11.24	11.26	11.29	11.31	11.34
	Open Circuit Voltage ¹	V _{OC} [V]	53.58	53.61	53.64	53.68	53.71
	Current at MPP	I _{MPP} [A]	10.66	10.71	10.76	10.81	10.86
	Voltage at MPP	V _{MPP} [V]	44.54	44.81	45.07	45.33	45.59
	Efficiency ¹	η [%]	≥ 20.5	≥ 20.7	≥ 20.9	≥ 21.2	≥ 21.4
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT ²							
Minimum	Power at MPP	P _{MPP} [W]	356.4	360.1	363.9	367.6	371.4
	Short Circuit Current	I _{SC} [A]	9.05	9.07	9.09	9.12	9.14
	Open Circuit Voltage	V _{OC} [V]	50.53	50.56	50.59	50.62	50.65
	Current at MPP	I _{MPP} [A]	8.39	8.43	8.47	8.52	8.56
	Voltage at MPP	V _{MPP} [V]	42.49	42.72	42.94	43.17	43.39

¹Measurement tolerances P_{MPP} ± 3%; I_{SC}; V_{OC} ± 5% at STC: 1000 W/m², 25 ± 2°C, AM 1.5 according to IEC 60904-3 • 800 W/m², NMOT, spectrum AM 1.5

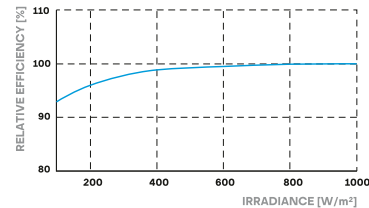
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25°C, 1000 W/m²)

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	α	[%/K]	+0.04	Temperature Coefficient of V _{OC}	β	[%/K]	-0.27
Temperature Coefficient of P _{MPP}	γ	[%/K]	-0.34	Nominal Module Operating Temperature	NMOT	[°F]	109 ± 5.4 (43 ± 3°C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V _{sys}	[V]	1500 (IEC)/1500 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 1
Max. Design Load, Push / Pull ³	[lbs/ft ²]	75 (3600 Pa) / 42 (2000 Pa)	Permitted Module Temperature on Continuous Duty	-40°F up to +185°F (-40°C up to +85°C)
Max. Test Load, Push / Pull ³	[lbs/ft ²]	113 (5400 Pa) / 63 (3000 Pa)		

³See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant,
IEC 61215:2016,
IEC 61730:2016,
U.S. Patent No. 9,893,215
(solar cells);
Certification in process.



Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

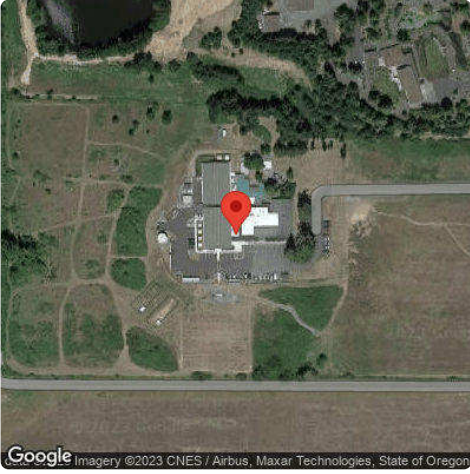
Hanwha Q CELLS America Inc.

400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us

GreenPower Greenhill Humane Society, 88530 Green Hill Road Eugene, Oregon 97402

🔑 Design	
Design	GreenPower
DC Nameplate	12.5 kW
AC Nameplate	10.00 kW (1.25 DC/AC)
Last Modified	AES Design (Today at 9:11 PM)

📍 Project Location



Google Imagery ©2023 CNES / Airbus, Maxar Technologies, State of Oregon

📦 Components		
Component	Name	Count
Inverters	SB5.0-1SP-US-41 (240V) (SMA)	2 (10.00 kW)
Strings	10 AWG (Copper)	4 (227.2 ft)
Module	Hanwha Q Cells, Q.Peak DUO XL-G10.3/BFG 480 (480W)	26 (12.5 kW)

🏗️ Field Segments									
Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
PV1	Flush Mount	Portrait (Vertical)	9.46°	268.26428°	0.0 ft	1x1	26	26	12.5 kW

🔌 Wiring Zones			
Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	6-10	Along Racking

Detailed Layout



Greenhill Humane Society
Board of Directors
2023

Jennifer Morrocco
Renee Watts, DDS
Heather Nelson
Sandra Smalley, DVM
Vi Jaqua, Pharm.D
Angie Robinson-Grein
Lilly Storment
Mary Reilly
Sam Maslin
Jennifer Biglan

Greenhill Humane Society
Key Staff Working on Project

Executive Director: Cary Lieberman, CAWA

Cary has been Greenhill's Executive Director since October 2007. Prior to that, he served 3 years as a member of the Board of Directors and spent a year as the shelter's Development Director. In addition to his time at Greenhill, Cary has volunteered with S.P.O.T., the Feral Cat Coalition of Oregon, and served on the Lane County Animal Services Advisory Committee. He brings extensive experience in animal welfare, marketing, public relations and non-profit development. Cary previously worked in the development office at the University of Oregon. In 2009, Cary received his designation as a Certified Animal Welfare Administrator, and in 2014, he completed certification in No-Kill Animal Shelter Management.

Internal Revenue Service
EP/EO Disclosure Desk
P.O. Box 2350 Los Angeles, CA 90059

Person to Contact:

Felicia C. Miraflores

Telephone Number:

(213)894-4252

Refer Reply to:

90-20

Date:

MAR 27 1990

GREENHILL HUMANE SOCIETY

88530 N GREENHILL RD
EUGENE, OR 97402

RE: 93-0467412

GREENHILL HUMANE SOCIETY

Gentlemen:

This is in response to your request for a determination letter of the above-named organization.

A review of our records indicates that the above-named organization was recognized to be exempt from Federal income tax in May 1957, as an organization described in Internal Revenue Code section 501(c)(3). It is further classified as an organization that is not a private foundation as defined in section 509(a) of the code, because it is an organization described in section 170(b)(1)(A)(vi).

We are not however, able to provide you with a copy of the exemption letter at this time. The determination letter issued on May 1957 continues to be in effect.

If you are in need of further assistance, please feel free to contact me at the above address.

We appreciate your cooperation in this regard.

Sincerely,

Felicia C. Miraflores

Disclosure Assistant

April 21, 2020

As a 501c3, we are not required to submit an IRS Form 940.


Cary Lieberman
Executive Director



AFTER RECORDING RETURN TO:
CASCADE TITLE COMPANY
811 WILLAMETTE ST., EUGENE, OR 97401

Lane County Clerk
Lane County Deeds and Records

2018-041194



\$97.00

01741345201800411940030038

08/31/2018 11:57:00 AM

RPR-DEED Cnt=1 Stn=41 CASHIER 04

\$15.00 \$11.00 \$61.00 \$10.00



TITLE NO. 0308211
ESCROW NO. EU18-1483 *MAA*
TAX ACCT. NO. 0460699
MAP/TAX LOT NO. 17 04 30 #800

GRANTOR

GREENHILL HUMANE SOCIETY AND SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS

GRANTEE

GREENHILL HUMANE SOCIETY AND SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS

no change

Until a change is requested
all tax statements shall be
sent to the following address:
SAME AS GRANTEE

After recording return to:
CASCADE TITLE CO.
811 WILLAMETTE
EUGENE, OR 97401

BARGAIN AND SALE DEED

GREENHILL HUMANE SOCIETY AND SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS, which acquired title as GREENHILL HUMANE SOCIETY, SPCA, as to Parcel 1 and GREENHILL HUMANE SOCIETY AND SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS, which acquired title as GREEN HILL HUMANE SOCIETY AND S.P.C.A., as to Parcel 2, Grantor, conveys to GREENHILL HUMANE SOCIETY AND SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS, an Oregon non-profit corporation, Grantee

hereinafter called grantee, and unto grantee's heirs, successors and assigns all of that certain real property with the tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining, situated in the County of Lane, State of Oregon, described as follows, to-wit:

SEE EXHIBIT A WHICH IS MADE A PART HEREOF BY THIS REFERENCE

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300 (Definitions for ORS 195.300 to 195.336), 195.301 (Legislative findings) AND 195.305 (Compensation for restriction of use of real property due to land use regulation) TO 195.336 (Compensation and Conservation Fund) AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 (Definitions for ORS 92.010 to 92.192) OR 215.010 (Definitions), TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930 (Definitions for ORS 30.930 to 30.947), AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300 (Definitions for ORS 195.300 to 195.336), 195.301 (Legislative findings) AND 195.305 (Compensation for restriction of use of real property due to land use regulation) TO 195.336 (Compensation and Conservation Fund) AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

The true consideration for this conveyance is to change vesting.

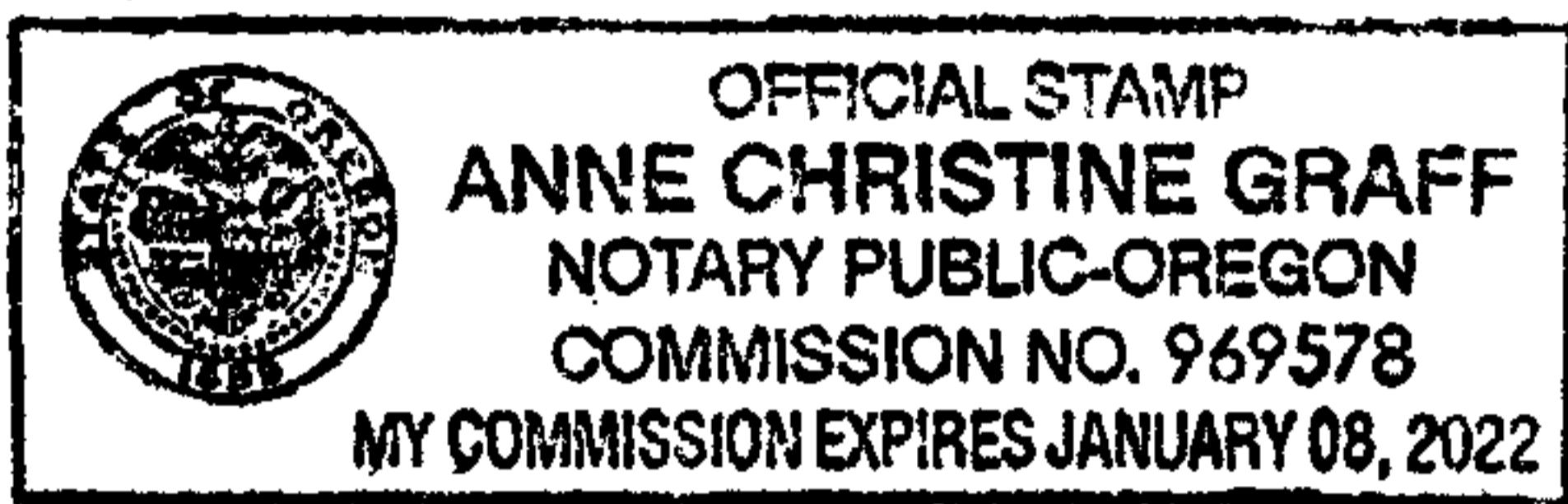
Dated this 28 day of August, 2018.

GREENHILL HUMANE SOCIETY AND SOCIETY FOR
THE PREVENTION OF CRUELTY TO ANIMALS

BY: [Signature]
CARY LIEBERMAN, EXECUTIVE DIRECTOR

State of Oregon
County of ~~Lane~~ Multnomah

This instrument was acknowledged before me on August 28, 2018 by CARY LIEBERMAN,
EXECUTIVE DIRECTOR OF GREENHILL HUMANE SOCIETY AND SOCIETY FOR THE PREVENTION OF
CRUELTY TO ANIMALS.



Anne Christine Graff
(Notary Public for Oregon)
My commission expires Jan. 08, 2022

Exhibit "A"

PARCEL 1:

The South half of the Southeast quarter of the Northeast quarter of Section 30, Township 17 South, Range 4 West of the Willamette Meridian, Lane County, Oregon.

EXCEPT: Beginning at a point that is North 89° 45' 48" West 30.00 feet and North 0° 27' 40" West 575.50 feet from the brass cap marking the East one-quarter corner of Section 30, Township 17 South, Range 4 West, Willamette Meridian, said point also being on the Westerly right-of-way of Green Hill Road; run thence North 89° 48' 25" West 613.31 feet; thence North 3° 03' 32" West 84.09 feet; thence South 89° 48' 13" East 617.12 feet; thence South 0° 27' 40" East 84.00 feet to the place of beginning, in Lane County, Oregon.

PARCEL 2:

Beginning at a point that is North 89° 45' 48" West 30.00 feet and North 0° 27' 40" West 659.50 feet from the brass cap marking the East one-quarter corner of Section 30, Township 17 South, Range 4 West of the Willamette Meridian, said point also being on the Westerly right-of-way of Green Hill Road; run thence North 89° 48' 13" West 617.12 feet to the true point of beginning; run thence North 89° 48' 13" West 672.49 feet; thence North 0° 23' 15" West 77.05 feet; thence South 89° 48' 25" East 668.89 feet; thence South 3° 03' 32" East 77.21 feet to the true point of beginning, in Lane County Oregon.