

DOCKETED

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Document Title:	Envision Solar Comments: Solar Tree DCFC - 1st Off-Grid Solar 50 kW DC Fast Charging Station. No circuit- No Demand Charges.
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Solar Tree DCFC - 1st Off-Grid Solar 50 kW DC Fast Charging Station. No circuit-No Demand Charges.

Overview

Envision Solar's Solar Tree arrays are the highest quality, fastest deployed, and most attractive turnkey photovoltaic parking shade systems in the industry. Offered with either 17kW or 24kW of tracking solar power and the flexibility to seamlessly connect to either 208V or 480V three-phase grid systems, they are an efficient, aesthetic, and scalable solution for new site development or upgrades to existing building infrastructure. Clean renewable energy produced from each Solar Tree array offsets site energy demand, lowering operating costs of current systems or newly added EV charging. If more energy offset is needed, multiple Solar Tree arrays can be installed to create a synchronized Solar Grove.

Each Solar Tree Array ships as a complete kit with the required parts and tools needed to assemble from the ground up. Kit specifications outline all electrical and structural interface requirements allowing site planners to incorporate what's needed below ground into their current design and plans for future growth. With foundations and electrical connections installed ahead of time, parking disruptions are minimized during an initial Solar Tree installation and when the time comes to grow into a larger Solar Grove.

Highlights:

Patented and exclusive EnvisionTrak sun tracking technology boosts energy production up to 25% over fixed solar arrays, enables tracking regardless of parking space heading, and prevents array encroachment on drive aisles.

Synchronized Solar Grove tracking with EnvisionTrak adds a high-tech, artistic look to any parking area

Large 17 or 24 kW solar array provides functional shade for up to eight parking spaces

Advanced solar inverters provide seamless integration with either 208V or 480V three phase grids

Compact mounting interface and integrated LED lights replace parking lot lighting systems without reducing available spaces

Integrated communications compatible with any existing internet connection for remote monitoring and control

Kit assembly minimizes parking disruption during installation and permits planning for future growth

Clean solar energy offsets utility bills and qualifies for LEED points

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Integrated communications compatible with any existing internet connection for remote monitoring and control
Kit assembly minimizes parking disruption during installation and permits planning for future growth
Clean solar energy offsets utility bills and qualifies for LEED points

Solar Tree DCFC which comes as a kit of pre-engineered components designed for ease and speed of deployment. The only site disturbance is the installation of a pre-engineered foundation. EVs will be able to charge within 7 days of the products arrival on site and there are no utility bills or black outs “ ever.

The Solar Tree DCFC comes as a kit of pre-engineered components designed for ease and speed of deployment.

The Solar Tree DCFC’s start at \$250,000.00 and may be equipped with either a 150 kWhr, 200 kWh or 250 kWhs of lithium ion battery storage specifically sized for site and usage.

Envision Solar will design, engineer, manufacturer and deliver the Solar Tree DCFC to the project location. The Solar Tree DCFC will be right-sized for local conditions and anticipated usage in conjunction and consultation with the client.

Envision Solar can supervise the installation of the Solar Tree DCFC by qualified, local licensed contractors for each trade appropriate to the scope described below in accordance with Envision Solar’s installation methodology, assuring quality in the finished product . This includes; steel erection, assembly and commissioning of Solar Tree on site. For grid Solar Tree DCFC; all trenching, electrical, civil engineering, circuit upgrade, permitting, interconnection agreements, etc., in other words, all work away from the Solar Tree is to be completed prior to the Envision Solar technician's arrival on site as according to our standard specification and methodology.

General specifications:

24 kW - DC 35' X 35' array

Up to 500-700 e miles per day*

One (1) 50 kW (400v) DC Fast Charger (can be selected by customer)

Two (2) level-2 (7.2 kW de-rated) J1772 plugs

Exclusive and patented EnvisionTrak Tracking

12’ standard minimum vertical clearance (upgradeable to 18')

Truss-integrated LED light strips (4)

ARC Power Storage Technology - 100-150 kWhs (upgrade available - 200 kWhs)

Customizable architectural tapered column

Color of your choice “ Paint or Powder-coat finish

Rapid installation “ 7 days or less

§ Up to 25-30 year warranty on PV

Optional features:

Branded valance and badging

Other integrated components:

CCTV cameras

Wireless Access Points

Call Stations

Power receptacles

* All dimensions, cost capacity and production numbers are approximate.

Additional submitted attachment is included below.

Solar Tree®



Envision Solar's Solar Tree® Arrays are the highest quality, fastest deployed and most attractive photovoltaic parking shade systems in the industry.

- Two Solar Tree base models to choose from:
Solar Tree® HVLC & Solar Tree® DCFC
- 17.1 kW & 24 kW
- Grid tied, off-grid or grid-buffered
- Made in USA
- Modularized engineered for fast 7 day deployment
- Structure shades six to eight standard car parking spaces
- Depending on location, can deliver up to 700 e miles
- The energy produced can be used to reduce your utility bill, charge EVs and be stored for use in an emergency

Solar Tree® arrays are the ideal combination of form, function and sustainability.



Solar Tree® - 7 Day Install



Modular design of highest quality components

Reduced assembly & installation
time from weeks to days – industry best

Kit of engineered parts reduces field labor and risks
to a minimum



Day 1



Day 2



Days 3/4



Day 5



Day 6



Day 7

Model: DCFC – 100% Off Grid or Grid Buffered



Solar Tree® DCFC (DC Fast Charger) kit is the most sustainable and rapidly deployed DC Fast Charger available today. Solar Tree® DCFC delivers up to 700 e miles per day, without connecting to the grid.

The product is delivered to the site as a kit of parts and is rapidly and easily erected. “Islanded” installations require no trenching. The only site disturbance is the installation of a pre-engineered foundation.

Solar Tree® DCFC can be deployed anywhere there is a requirement for DC fast charging and the grid is either hard to access or expensive (demand charges etc.). It is particularly valued in more remote locations where trenching over long distances would be required to bring sufficient circuit to a grid tied system. EVs will be able to charge within 7 days of the products arrival on site and there are no utility bills or black outs – ever.



Solar Tree® DCFC can also be connected to the grid for grid balancing and the stored energy can be used for any purpose in times of disaster or grid failure.

*All dimensions, cost capacity and production numbers are approximate. Discounts for volume TBD

Solar Tree® Model: DCFC (Off-Grid)

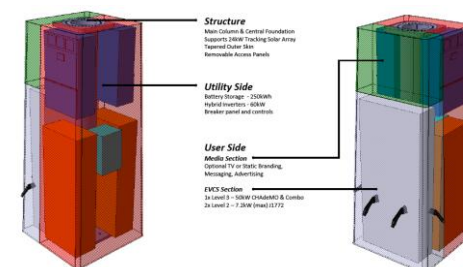


Standard features *

- 50kW (400v) DC Fast with 2 Level EVSE (7.2kW split)
- 24kW DC, 35'X35' array
- EnvisionTrak™ Tracking
- 12' standard minimum vertical clearance
- ARC™ Power Storage Technology
150kWh, 200kWh, 250 kWh lithium ion, capacity right-sized for local conditions and anticipated usage
- Up to 700 e miles per day*
- Truss-integrated LED lights (4)
- Rapid installation – 7 days or less
- Up to 30 year warranty on PV and inverters

Optional features

- Column mounted LED up-lighting (2-4)
- Color of your choice – Paint or Powder-coat finish
- Branded valance and badging
- Corrosion resistant ACM - aluminum composite ceiling
- Other integrated components:
 - CCTV cameras
 - Digital display
 - Wireless Access Points
 - Call Stations
 - Power receptacles



Solar Tree® DCFC – Column Layout
©ENVISIONSOLAR INTERNATIONAL, INC. 2016 SOLAR TREE® DCFC CONCEPT RENDERING

*All dimensions, cost capacity and production numbers are approximate. Discounts for volume TBD

Solar Tree® Model: HVLC (Grid- Tied)



Standard features *

- 17.1kW or 24kW DC,
- 60 -70 PV module array
- Up to 700 e miles per day*
- 12' standard minimum vertical clearance
- Galvanized steel structure
- Architectural tapered column
- Up to 30 year warranty on PV and inverters
- Rapid deployment – 7 days

Optional features

- EnvisionTrak™ Tracking
- SunCharge™ EV charging (1-6 chargers)
- Truss-integrated LED lights (4)
- Column mounted LED up-lighting (2-4)
- Color of your choice
 - Paint or Powder-coat finish
- Corrosion resistant ACM ceiling
- ARC™ Power Storage Technology
- Other integrated components:

- CCTV cameras

*All dimensions, cost capacity and production numbers are approximate. Discounts for volume TBD

- Wireless Access Points

- Call Stations



Solar Tree® - Product Specifications



		ST-17-208	ST-17-480	ST-24-208	ST-22-480
Solar Array Power ¹	kW	17.1	17.1	24.2	24.8
Annual Energy Production w/ Tracking ²	MWh	37	37	44	42
Number of Parallel Inverters	n/a	2	1	2	1
Number of Panels	n/a	60	60	70	66
String Configuration (Panels - MPPT1/MPPT2)	n/a	12 - 2/1; 1/1	12 - 3/2	7 - 3/2; 3/2	11 - 3/3
Max Output Current Per Inverter	A	27.7	21	33.3	27.3
Grid Connection	VAC	208 / 240	480 Delta +N	208 / 240	480 Delta +N
Inverter CEC Efficiency	%	96.5%	96.5%	96.5%	96.5%
A - Canopy Dimensions (L x W)	ft	33.7 x 33.7		36 x 36	
B - Canopy Footprint w/ Tracking (L x W)	ft	6.5 x 36.5		38.7 x 38.7	
C - Maximum Column Height	ft	10.5		10.5	
D - Max Canopy Height	ft	Footing + Column + 13.8		Footing + Column + 14.2	
E - Min Canopy Clearance	ft	Footing + Column + 1.4		Footing + Column + 1	
Operating Temperature	°C (°F)	-40 to 60 (-40 to 140)		-40 to 60 (-40 to 140)	
Standard Overturning Moment ^{3,4}	kip-ft	75		90	
Standard Static Weight	lbs	15,000		16,000	
Auxiliary Power Input (Tracking & Lights)	VAC	120 (L,N,GND)			
Communications	n/a	Ethernet (CAT6 or Fiber) and Modbus (RS495 w/ Master/Drone Architecture)			
Remote Monitoring	n/a	Yes - With Site Provided Internet Connection			
Tracking System (Optional)	n/a	Patented EnvisionTrak™			
Max EV Charger Circuits	n/a	Per Grid Circuit Availability			
EV Charger Types	n/a	Basic and Networked Options Available			
Standard Shipping Method	n/a	2 Flatbed Trucks			
Assembly Tools	n/a	Assembly Kit (Included); Additional Heavy Lift Equipment Required			
Major Component Ratings Test, Certs, Listings	n/a	Available on Component Documentation			

Notes: 1 Actual nameplate output may vary by +/- 3% based on panel availability

2 Energy production estimate for San Diego, CA and will vary based on local conditions

3 Moment calculated at column base flange using design wind load of 130mph. Local load combinations will be evaluated as needed.

4 Reference provided base flange detail for anchor positions

EV ARC™ and Solar Tree® Energy Storage Asset



Because all our products can store sunlight to work day and night, they are also the perfect source of energy for backup power whenever you need it.

No generator to fuel, no oil changes and no pollution, just the most reliable source of energy available today. It will be there when you need it.



EV ARC™ Energy Storage Enclosure



Our products will keep your lights on when all else has failed.

Optional Features – Customizable and Dynamic



EV ARC™ and **Solar Tree®** stations are excellent mounting assets for any device that enhances your campus, commercial or residential parking lot or parking garage.

Optional Features Include:

- CCTV cameras
- Digital outdoor screen for messaging , advertising or directories
- USB ports
- 120V outlets
- Wireless access point
- Loud speakers
- Bench seating
- Customized Tapered Column
- Single and Multi-space parking metering



Solar Tree® - CO2 Emissions Reduction Data



Transportation accounts for 40% of US Greenhouse Gas Emissions. The generation of electricity accounts for another 30%. Our products displace gasoline and grid powered electricity so that every time you use a **Solar Tree®** you are doing your bit to reduce 70% of our GHGs.

The table below shows what an **Solar Tree®** can do to make the environment better.

Solar Tree® Potential CO2 Reductions*

Average US fuel Economy	23.6 mpg
Gasoline CO2 Emissions Reductions	0.0089 metric tons/gallon
US Utility Grid Emissions Reductions	0.00068 metric tons/kw/h

Solar Tree® Model	kWhs produced daily	miles/day	miles/year	gasoline displaced (gallons)	Co2 Emissions Displaced over gasoline (metric tons)	Co2 Emissions Displaced over grid (metric tons)
Standard	153.9	615.6	224,694	9521	84.7	38.20
Boost	178.2	712.8	260,172	11024	98.1	44.23

*Based on ideal conditons for the Solar Tree®

Envision Solar – Trusted by





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Thank you

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