

DOCKETED

Docket Number:	16-ALT-01
Project Title:	Funding Strategies for Electric Vehicle Infrastructure Workshop
TN #:	211980
Document Title:	Envision Solar Comments: Mobile Solar EV Charging Station - No Trenching Required. Turnkey. Now on State DGS contract.
Description:	N/A
Filer:	System
Organization:	Envision Solar/David Greenfader
Submitter Role:	Public
Submission Date:	6/27/2016 10:20:01 AM
Docketed Date:	6/27/2016

Comment Received From: David Greenfader

Submitted On: 6/27/2016

Docket Number: 16-ALT-01

Mobile Solar EV Charging Station - No Trenching Required. Turnkey. Now on State DGS contract.

Mobile Solar EV Charging Station - The EV ARC
No Trenching Required. Complete Turnkey Technology
On Statewide Mandatory DGS contract. No RFP Required!

Introducing our latest innovation currently available on a statewide mandatory contract through the Department of General Services (1-15-61-16). These standalone plug-and-play stations have been deployed for more than a dozen Caltrans locations, Office of Inspector General, DGS, California State University, City of San Francisco, City of Shasta Lake, NYC-DCAS, USVI-St. Croix, Google, J&J, Genentech and others.

Introducing the EV ARC (Autonomous Renewable Charger) which is ready-made solution. ZERO installation is required. It is literally a turnkey installation. It is the fastest, simplest and most scalable EV charging solution available today because it avoids all site-acquisition and civil engineering headaches normally associated with installing EV charging in the ground. It can be installed in open lots or roofless parking garages.

EV ARC - Autonomous Renewable Charger

Deployed in the matter of minutes, it arrives to your property fully intact and is fitted into a standard 9'x18' parking space is ADA compliant and can start charging EVs in a matter of minutes. It is the fastest, easiest and most scalable solution in the industry today.

An EV ARC requires:

- NO construction
- NO permitting
- NO foundation
- NO trenching
- NO switch-gear upgrades
- NO transformer upgrades
- NO interconnect agreements
- NO demand charges or kWhs from grid
- NO site acquisition
- NO resurfacing
- NO striping
- NO utility bill

About Envision Solar and the products we manufacturer in San Diego, CA. Envision Solar is an innovative and disruptive San Diego-based sustainable technology company, offering turnkey solar powered products for electric vehicle charging, energy security and outdoor advertising. These products provide critical solutions that uniquely enable governments, corporations and property owners to significantly reduce costs and complications for electric vehicle charging infrastructure, to create meaningful revenue via outdoor advertising, multi-space parking metering and reduce their vulnerability to expensive and dangerous blackouts.

Today, Envision Solar continues to reduce dependence on the grid and dirty energy, while increasing EV adoption, air quality and energy security. Envision has brought the dream of Driving on Sunshine to governments including the

State of California, New York City, as well as Fortune 500s ranging from Google to Johnson & Johnson and General Motors.

Customers range from the most discerning corporate brands, to the largest states and cities. Each customer represents significant opportunities for repeat sales, and generates further interest among other organizations that require the solutions provided by these products. International partnerships reflect a vibrant and global interest, resulting in exceptional growth opportunities. This includes a strategic distribution partnership with a renewable energy operator in Europe, along with subsequent plans to develop a regional subsidiary to support its sales. A distribution partnership has also been entered into for Asia, with sales from these relationships expected to begin in early 2016.

Our innovation and manufacturing facility is staffed by a remarkable team of highly motivated combat veterans, disabled workers, minorities and others. This team is especially eager to displace foreign energy with highly sought after American-made products.

Additional submitted attachment is included below.

Next Generation Solar Powered Charging Infrastructure



Something New Under the Sun

Fixed

Solar Tree®

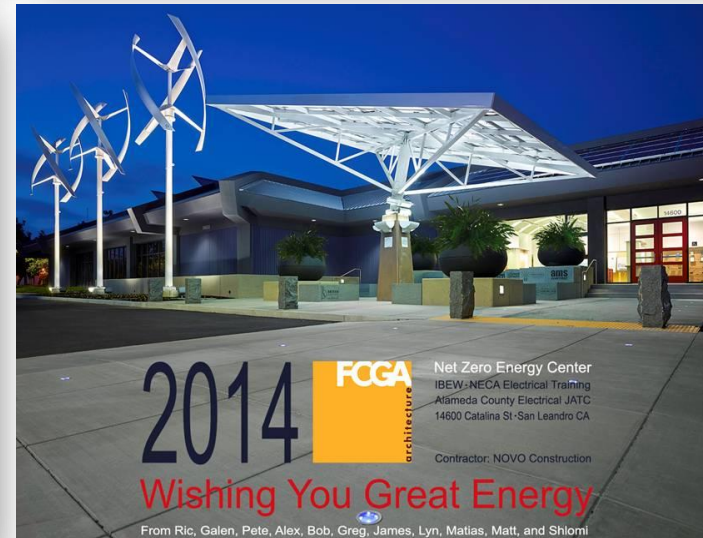


Transportable

EV ARC™



Solar Powered EV Charging That Works Anywhere



Sun Charging by Day



Battery or Grid Buffered Charging at Night



Standard EV ARC™ – Autonomous Renewable Charger



EnvisionTrak™
Patented and exclusive sun-tracking
technology

Solar Support Structure

Solar Array (s)
3.4kW (EV ARC™3)
4.1 kW (EV ARC™4)

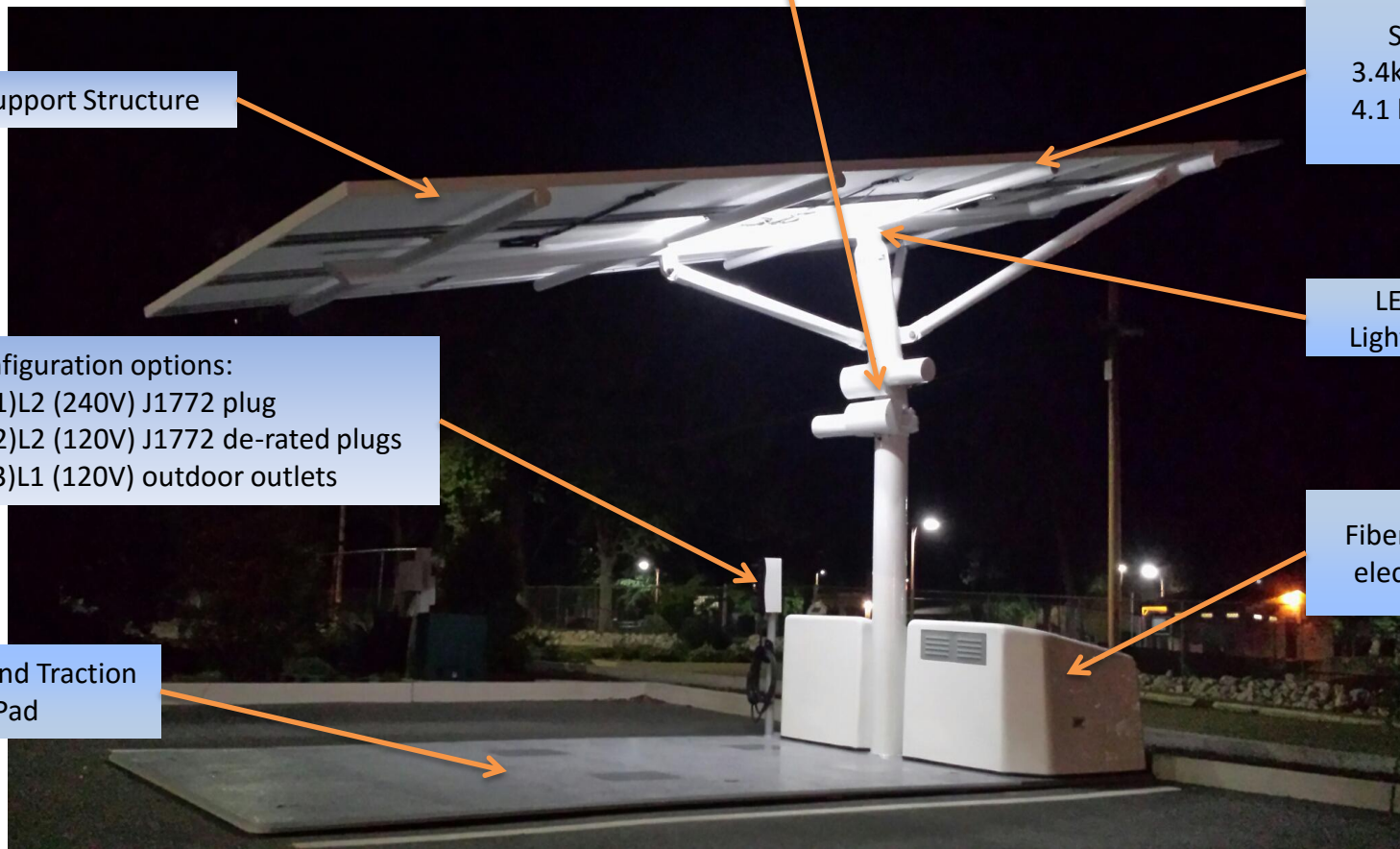
LED
Lighting

EVSE configuration options:

- One (1)L2 (240V) J1772 plug
- Two (2)L2 (120V) J1772 de-rated plugs
- Three (3)L1 (120V) outdoor outlets

Fiberglass composite
electrical enclosure

Ballast and Traction
Pad





State of California

EV ARC™ DGS Statewide Mandatory Contract for
State & Local Public Agencies

1-15-61-16

<https://www.bidsync.com/DPX?ac=agencycontview&contid=115616>

1. QUICK PURCHASE **NO RFP Requirement**
2. Special Discounted pricing:
3. 90 day delivery schedule (< 50 units)
4. Bundled all inclusive 12-month pricing:
 - i. Includes (S&H) Shipping & Handling
 - ii. Includes (RMMS) Remote Monitoring Management System and Optional Smart Charger Network Subscriptions
 - iii. O&M



How Much Power Do You Need?



Your power requirements will be driven by how many e miles people need to take from your charger each day. Here are some facts to help you:

1. 8 out of 10 employees use around 12 miles of charge for half their commute.
2. The average American drives 36.4 miles per day.
3. A Level II EV charger delivers 10 to 15 e miles every hour, no matter how it's powered, so you are not likely to deliver more than 80 miles a day in a typical work environment.
4. The average number of e miles delivered daily by all Level II chargers across the US is less than 40.

EV ARC Model	E Miles Per Day	Hours of charging per day	Number of average employees per day	Number of average American Drivers per day
EV ARC™ 4	up to 150	up to 15	12	4
EV ARC™ 3	up to 120	up to 12	10	3

*Results will vary depending on location, time of year and other local factors

EV ARC™ - Simple, Elegant and Versatile for Multiple Uses

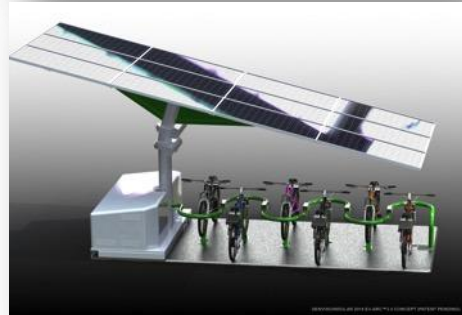


Ride Sharing Station

EVs, NEVs, eScooters, eBikes, golf carts

Parklet Amenity

Seating, USB and 120V outlets

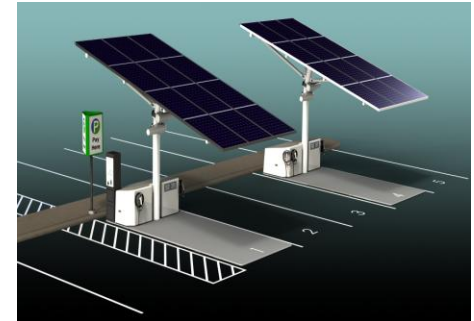


E bicycle charging/locking station

The perfect way to get around your campus or city

Parking Meter/Pay Stations

Multi and Single-Space



Disaster Preparedness Asset

Renewable Solar Power Generating Station

DOOH Media Street Furniture

Outdoor Branding, advertising and educational Platform



**ISLANDED SYSTEM
NO GRID REQUIRED**

We ship EV ARC™ configured for your requirement and we'll bundle Scooters or e Bikes to as part of the package. Call us to learn more.

EV ARC™ - Unique Differentiators



- ✓ NO civil engineering
- ✓ NO permitting
- ✓ NO construction
- ✓ NO foundation
- ✓ NO trenching
- ✓ NO electrical circuit
- ✓ NO transformer/switchgear upgrades
- ✓ NO meter
- ✓ NO interconnect agreements
- ✓ NO utility bills
- ✓ NO carbon footprint

- ✓ SAVE money
- ✓ MAKE money



**Delivered to your site ready to
charge in just minutes!**

EV ARC™ - Deployed in Minutes



Fully transportable and can be moved at any time

Using either a 15,000 forklift and truck or our specialized trailer, ARC Mobility™, it is easy to tow an EV ARC™ to any location in the US. The only limitation is available parking and sunlight.



Ship & Charge – Fits intact in a shipping container



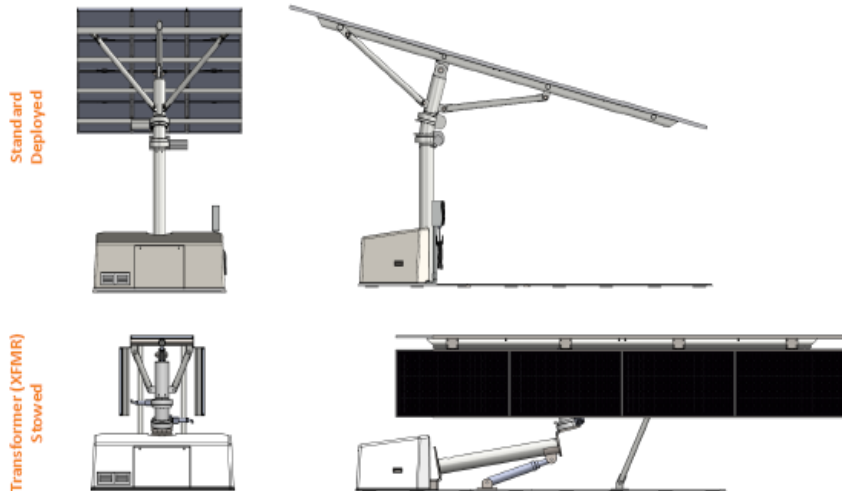
The EV ARC™ Transformer (optional) upgrade allows the EV ARC™ to be hydraulically lowered onto itself to fit inside a 40 foot container or lifted comfortably onto a flatbed truck without incurring prohibitively expensive penalties for oversized loads.

This feature is also intended to allow purchaser to lower station out of harm's way in severe weather environments with winds in excess of 110 MPH.

The Transformer upgrade requires a transformer kit (sold separately) and a hydraulic power pack capable of producing 3000PSI to operate the hydraulic ram (also sold separately). Envision Solar can provide the power pack or deliver specifications for a customer provided unit.



EV ARC™ in a stowed position will continue producing energy from sunshine for EV charging or anything else.



EV ARC™ - Fits into a Standard Parking Space



EV ARC™ is ADA compliant and it does not reduce your available parking.



EV charging day or night and even during power cuts – with the EV ARC™ you'll never get stranded.

1. **Avoided costs.** When civil engineering costs are prohibitively expensive due to excessive trenching, circuit upgrades etc.
2. When **site acquisition** is onerous, time consuming or difficult, e.g. easements, permitting, interconnection agreements.
3. **Leased** properties
4. **Redevelopment**, avoids encumbering property with conduit running underground.
5. **Uncertainty** about where to deploy EV chargers. The EV ARC™ can be used to test locations in order to determine best locations for utilization. When sites are identified; EV ARCs™ can be either be left alone at location or grid connected.
6. EV ARCs™ as **revenue producing** systems, i.e. digital/static advertising displays, parking metering, green branding, CSR, makes good financial sense.
7. **Disaster preparedness** asset.

EV ARC™ with Battery Storage = Distributed Generation



Because EV ARC™ can store sunlight to work day and night, they are also the perfect tertiary source of emergency backup power whenever you need it most.

No generator to fuel, no services, no oil changes, no pollution. Just the most reliable source of energy available today, solar with battery storage.

We use the finest compact and light weight lithium ion batteries which combine the highest quality cells with a passive thermal management system that delivers industry-leading energy density.



“EV charging day or night and even during power cuts – with the EV ARC™ you’ll never get stranded.”

Desmond Wheatley, CEO – Envision Solar

What's Next?

Hurricanes, Earthquakes and other Natural Disasters

- Sandy, October 22, 2012
- Fukushima Daiichi, Japan, March 11, 2011
- Katrina, August 23, 2005
- Northridge, January 17, 1994

Terrorism and Vandalism and other Manmade Disasters

- Metcalf Substation, Palo Alto April 16, 2013



EnvisionTrak™- Patented & Exclusive Sun Tracker (Secret Sauce #1)



Increases solar electric generation by **up to 25%** over conventional fixed arrays

1. ARRAY BOWS TOWARDS SUN: Specifically designed for parking environments. Dual synchronous tracking array avoids drive aisle obstructions by maintaining lineal alignment over parking area.
2. Allows for taller vehicles, e.g. handicap vans and trucks to park adjacent to station without being damaged by swinging array.
3. EnvisionTrak™ capture the sun no matter which direction you point them.
4. EnvisionTrak™ has a very low maintenance requirement. Equipped with our remote monitoring and management systems (RMMS), you'll always know how your station is doing.



EnvisionTrak™ has been described as the *“most reliable, most robust and most cost effective tracking technology in the industry.”*

San Diego Gas and Electric

Google - Mountain View, CA
Northern facing parking spot.

EV ARC™ Ballast Plate (Secret Sauce #2)



8,000 lb of ballast weight requires no fasteners nor anchor bolts.

1. No impact to ground, no spoilage removal, and no disruption of any kind.
2. No ground penetrations means no permitting requirements in most jurisdictions.
3. Independently verified to withstand up to 110 MPH winds.
4. Specialized rubber traction strips prevents slippage
5. Works in off grade environments and tops of roofless parking garages.



EV ARC™ - Real Time Data



Standard Features

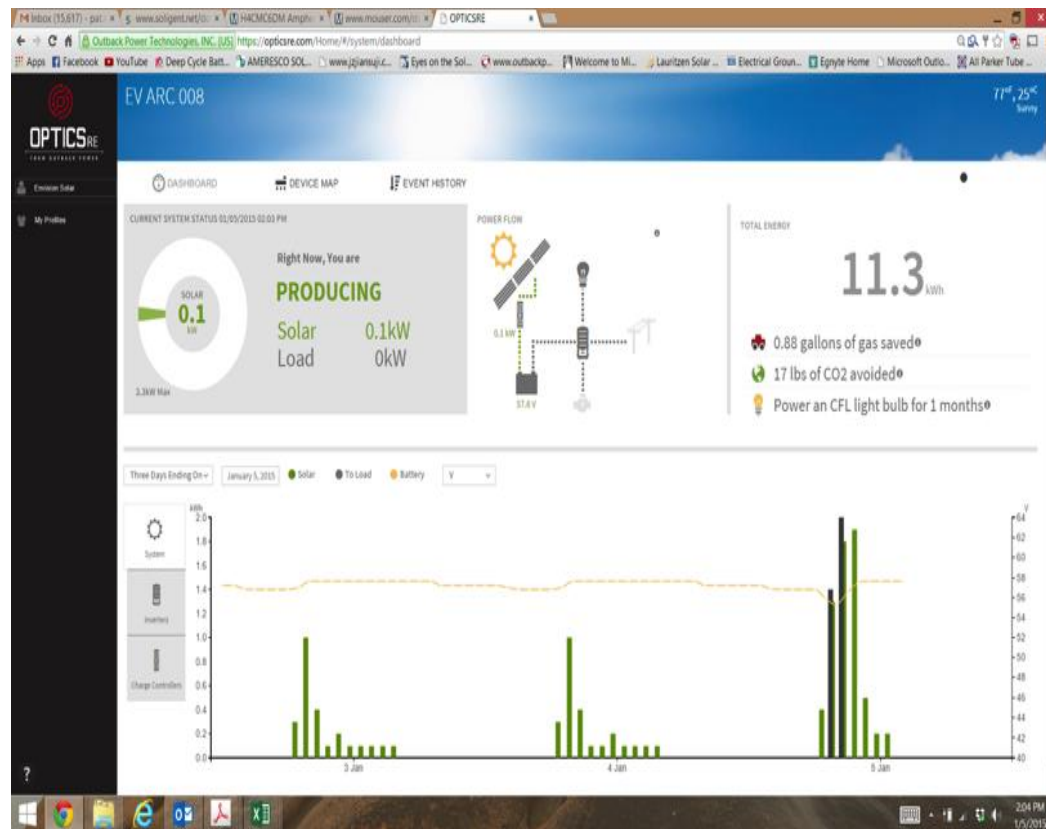
The EV ARCs™ come standard with a wireless* system which provides real time reporting on:

- state of batteries
- state of PV charging
- amount of discharging

Optional Features

EV ARCs can also provide the following data as an added option without a networked charger:

- length of charge
- time of charge
- kWh taken etc.



*Data connection not included, averages \$20 / month

EV ARC™ - 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 every time you use an **EV ARC™** you are doing your bit to reduce 70% of our GHGs.

The table below shows what an **EV ARC™** can do to make the environment better.

EV ARC™ 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

EV ARC™ Model	kWhs produced daily	miles/day	miles/year	gasoline displaced (gallons)	Co2 Emmissions Displaced over gasoline (metric tons)	Co2 Emmissions Displaced over grid (metric tons)
25	22.5	90	32850	1392	12.4	5.58
33	30	120	43800	1856	16.5	7.45
41	37.5	150	54750	2320	20.6	9.31

*Based on ideal conditons for the EV ARC™

EV ARC™ - Product Specification



		EV ARC™ 3	EV ARC™ 4
Solar Array Power ¹	kW	3.4	4.1
Max Daily EV Range (Solar) ²	e-miles	100	120
Canopy Dimensions (L x W)	ft	22 x 9.9	20.5 x 10.5
Max Canopy Height	ft	13.3	13
Min Clearance	ft	7.6	7.7
Total Battery Storage	kWh	24 or 30	
Reserve Battery EV Range ³	e-miles	64 or 80	
Operating Temperature ⁴	°C (°F)	-20 to 50 (-4 to 122)	
Max Wind Load	mph	110	
Base Pad Footprint (L x W)	ft	18 x 7.5	
Weight ⁵	lbs	7633	
Surface Pressure ⁶	psi	5	
Max Total EV Charger Power ⁷	kW	4.2	
Max EV Charger Circuits ⁸	na	1 (L2 J1772); 2 (L1 J1772); 3 (L1 Outlets)	
EV Charger Types	na	Basic and Networked Options Available	
Standard Shipping Method	na	Custom ARC Mobility™ Trailer	
Optional XFMR Shipping Size (L x W x H) ⁹	ft	24 x 7.5 x 7.5	
Major Component Ratings ¹⁰	na	UL 94 V-0 (Battery); UL 1741, CSA C22.2 No.107.1 (Inverter and Charge Controller); UL 1778 Annex FF (Inverter); UL 1703, IEC 61215, IEC 61730 (Solar Panels); UL 2594, UL 2231 (EVCS)	

REFERENCES:

1. Actual nameplate output may vary by +/- 5% based on panel availability
2. Range will vary based on local conditions
3. Range assuming 25°C
4. Cold weather package allows for operation to -40°C
5. Exact weight varies based on EV ARC model

6. Pressure calculated with weight evenly distributed over 8, 8in x 24in anti-skid pads
7. Actual total output power depends on EV and EVCS (3.3 to 3.8kW common in L2 charging)
8. Output power may be reduced based on number of circuits, EV models, and EVCS types
9. Enables domestic and int'l shipping on a standard flatbed trailer or shipping container
10. Subset of ratings are listed; additional component listings furnished upon request



David Greenfader
VP – Business Development
Tel (310) 961.4669

david.greenfader@envisionsolar.com

Thank you

**Take Advantage of Tax Credits and Other
Generous Incentives Available Today!**

ALL IDEAS, DESIGNS, ARRANGEMENTS, CONCEPTS AND PLANS INDICATED OR REPRESENTED BY THE CONTENTS OF THIS PACKAGE ARE OWNED BY AND THE PROPERTY OF ENVISION SOLAR INTERNATIONAL, INC., AND WERE CREATED, EVOLVED AND DEVELOPED FOR USE ON AND IN CONNECTION WITH THE SPECIFIED PROJECT OR ENVISION'S BUSINESS ACTIVITIES. NONE OF SUCH IDEAS, DESIGNS, ARRANGEMENTS, CONCEPTS OR PLANS SHALL BE USED BY OR DISCLOSED TO ANY PERSON, FIRM OR CORPORATION FOR ANY PURPOSE WHATSOEVER WITHOUT THE WRITTEN PERMISSION OF ENVISION SOLAR. FILING THESE DRAWINGS OR SPECIFICATIONS WITH ANY PUBLIC AGENCY IS NOT PUBLICATION OF SAME AND NO COPYING, REPRODUCTION OR USE THEREOF IS PERMISSABLE WITHOUT THE CONSENT OF ENVISION SOLAR. ALL INTELLECTUAL PROPERTY, INCLUDING TRADE NAMES AND TRADEMARKS, WHETHER PROPRIETARY, COPYRIGHTED, PATENTS PENDING, PATENTED, OR OTHERWISE INVENTED, DESIGNED OR ENGINEERED BY ENVISION SOLAR INTERNATIONAL, INC. (THE COMPANY), ARE THE PROPERTY OF THE COMPANY, AND CANNOT BE USED FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF THE COMPANY. SOLAR TREE®, SOLAR GROVE®, ENVISIONTRAK™, CLEANCHARGE™ AND OTHER BRANDS AND PROPRIETARY DESIGNS OF THE COMPANY, WHEN INCLUDED IN THIS PACKAGE, ARE LICENSED FOR USE RELATED TO THIS PRODUCT ONLY, AND FOR THE CLIENT INDICATED, AND ARE SUBJECT TO THE TERMS OF THE AGREEMENT BETWEEN THE COMPANY AND THE CLIENT. IF NO AGREEMENT EXISTS THE RECIPIENT AGREES THAT IT SHALL NOT USE ANY OF THE ENCLOSED INFORMATION WITHOUT ENVISION SOLAR'S WRITTEN CONSENT. BY RECEIVING THESE DRAWINGS, DATA POINTS, RENDERINGS, IDEAS, CONCEPTS OR OTHER INFORMATION, THE OWNER/RECIPIENT AGREES THAT THESE DRAWINGS AND ASSOCIATED DOCUMENTS ARE ONLY TO BE USED ON PROJECTS WHERE ENVISION SOLAR PERFORMS A MUTUALLY AGREED UPON SCOPE OF WORK OR WITH ENVISION SOLAR'S WRITTEN CONSENT. IN THE EVENT SAID PARTIES DO NOT COME TO AN AGREEMENT ON A SCOPE OF WORK, THEN PERMISSION IS HEREBY DENIED TO USE ANY OF THE DRAWINGS, CALCULATIONS, DESIGNS, MATERIALS, CONCEPTS, ETC. FOR ANY PURPOSE.