Veranda SOLAR

Bringing Solar to a Mass Market

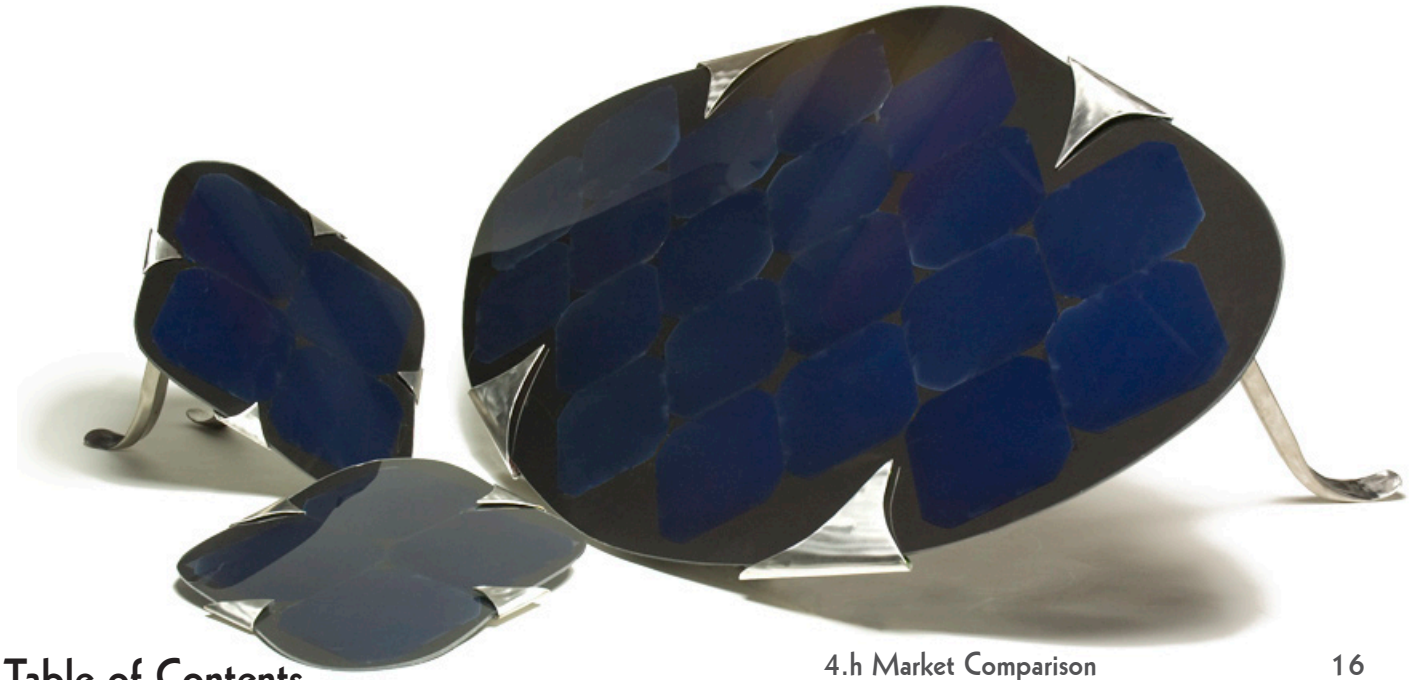


Table of Contents

Contact: Capra J'neva | 503.407.4714
capra@verandasolar.com

1 Executive Summary

Veranda Solar manufactures beautiful, affordable solar panels that mount easily in a variety of locations: outside windows, on walls, roofs or balconies. Our plug-&-play, snap-together systems fold flat, install with a screwdriver, plug into an ordinary wall socket and reduce the need for electrician oversight, government subsidies or rebates. Our modular plug-&-play inverter allows our customers to add to their system as their budgets and spaces grow, empowering ordinary people to invest in their own personal green energy future for as little as $600. The iconic design of our panels makes a bold statement about collecting energy from the sun, creating a community of impassioned power generators whose personal efforts combine to make a giant impact.

By targeting a mass market at an affordable price point, we predict that within five years our panels would generate 150 million dollars in sales and profits in excess of 20 million dollars, even with very low market penetrations. Unlike most solar startups, we are not a risky lab project pushing the boundaries of materials to transform solar energy into electricity. Instead, we use the best of existing technologies and remove the barriers to their adoption, which means that our product will come to market far faster than other startup energy companies.

Our founders developed our product at Stanford University and confirmed our research with SunPower Corporation, whose high-efficiency cells form the basis of our panel prototypes. Our design innovation method, which involves gaining insight into customers' underlying needs, is key to our strategy and gives us a competitive advantage in a market whose products have been dominated by an engineering mind-set.

Veranda Solar's product and business plan won $125,000 in the PICNIC Green Challenge in September 2008, allowing us to assemble a team that has completed our market research and is finishing product development, securing IP for our inventions, and creating prototypes. We are pursuing $1.5 million in seed funding for a startup phase that will allow us to complete our management team, set up supply chains, get appropriate certifications, negotiate contract manufacturing deals and begin manufacturing and sales of our products through a mixture of retail and direct sales. This should position us for our first round of funding in 2010 that will help us expand production and achieve profitability.

1.a Market Opportunity

Our target market of environmentally aware young urban people from the age of 20-40 comprises 65 million households in the US alone, and is growing as the energy crisis deepens and fears about climate change loom. Already, enthusiasm and interest in our product has spread well outside this market and across the globe as we receive thousands of requests for panel systems from every continent on earth.

Companies within the exploding solar industry have focused their attention on creating more efficient cells and on manufacturing innovations to bring the cost per watt of power down to grid parity.

Almost no attention has been placed on the customer's adoption and use of the product, so products still require engineering to fit individual roofs, and they cost so much that state subsidies are required for even wealthy consumers to afford them.

1.b The Veranda Solar Difference

Veranda Solar turns the concept of a roof-mounted solar panel on its head, opening the grid intertie market to those who might only be able to afford gadgets in the current market. Veranda Solar's unique scalable systems allow customers to start generating solar and add to their system as their budget allows.

Our plug-&-play system reduces installation costs and hassles, allowing us to offer our panels for around $6-8 per watt installed, the same or less than the cost of installed traditional solar. Our portable systems eliminate worries about moving before the panel has paid for itself, and allow customers to meet their need to do something active for the environment that is visible and tangible to themselves and others.

1.c The Products

Fig 1.1: Panel Installed*

Fig 1.2: Solar Petals, working prototype*

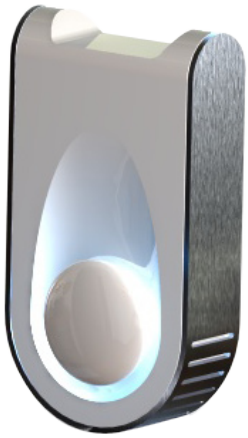


Fig 1.3: Inverter, in development*

Users easily install their portable, fold-flat panels and add additional panels as their budget allows. Quick-connect cables make it easy and safe to connect panels to one another and to the inverter that plugs into the grid through a wall socket. The inverter clearly shows users how much power their system generates throughout the day, month and year and connects them to others via mobile networked applications.

*prototypes in development, designs subject to change

1.d Marketing and Distribution

Our product's "friendly" profile makes it fit in home decoration stores such as Pottery Barn or Restoration Hardware, as well as being sold in technical solar shops and home improvement stores. In our first years we will offer panels through utilities' green power programs for a monthly fee that will allow users to lease or purchase their system and help us to set up working relationships with utilities.

We have a growing database of potential customers and distributors worldwide because of the global media exposure our product received in the New York Times, Forbes and BBC. We will launch another media campaign to coincide with the release of our product with features planned for magazines and newspapers such as the Boston Globe and Popular Science among others.

We will also use online networking tools built into our products to create viral attention for our panels. Through groups, applications and widgets for online networking sites and mobile devices, we give our customers a chance to connect around their excitement for our product and to share their power generation and savings.

1.e The Numbers

We expect to reach our sales goals within five to ten years by aggressively manufacturing and marketing our products in the US and abroad, and expanding our market over time with new products and services that allow a mass market to start generating energy.

Because our business is not vertically integrated or tied to intellectual property related to a particular solar collecting material, we have the flexibility to improve our panels' efficiency and affordability by utilizing the latest technologies from traditional silicon to nano-coatings and dyes. Our product road map includes concentrating solar products that drastically increase efficiency and cost.

Our products are priced to allow 40% wholesale margins and 33% retail margins, and still allow consumers to put together a functional system for starting prices around 600 dollars.

1.f Our Team

Capra J'neva, CEO – 12 years marketing and design with clients such as Intel, Merck, Nike, Miele, Clorox, Suez, the Port of Portland and Hewlitt Packard. Executive experience in nonprofit management. Masters of Product Design, Stanford University. BA, University of Oregon/Occidental College. 1 European patent. Winner of AIGA Award for Industrial Design and 2nd place prize of 100,000 Euros in the PICNIC Green Challenge for Veranda Solar.

Peter Jones, VP of Engineering – After 12 years product development and engineering with Ziba & Yakima, his products are in many homes, cars and sidewalks throughout the world. Experienced in all phases of product development, from concept and budget to design, engineering, production and distribution. BA, Physics/Chemistry, Colorado College. 8 US and International patents.

Additional Contractors:
Zac Elder, Design Engineer, Industrial Designer - Senior Model Maker, Design Researcher, ID, Yakima.
Emilie Fetscher, Research and Design - MSE, Stanford University. Design Engineer, Black Diamond.
Steven Kung, Electrical Engineering - Power Conversion Engineer, Maxim.
Eric Roesinger, Distribution Channel Development - Category Business Manager, Yakima.
Brian Amble, Prototyping & CAD/CAM - Electrical and Mechanical Engineer, Inventor, 2 Cedar electric car.

Advisory Board:
Dana-Lee Smirin. Principal, Dana Smirin Consulting.
Barbara Karanian. Stanford Center for Design Research Visiting Professor. Associate Professor of Humanities, Social Sciences and Management, Wentworth Institute of Technology.
Marc Theuwees. Associate Professor, Stanford University. Director of Mobile Products, Gracenote. Senior Manager, Nokia.

Additional Advisors:
Bill Burnett. Executive Director, Stanford Joint Program in Design. Board member and fellow at D2M. Former Product Developer for Apple Computers.
Banny Bannerjee. Academic Director, Stanford Joint Program in Design. Recently Project Manager at IDEO.
Jim Patell, Ph.D. Former Associate Dean of Stanford Graduate Business School. Herbert Hoover Professor of Public and Private Management at Stanford University.
Kingsley Chen, Albert Change Applications Engineers, SunPower Corporation.

1.g Timeline of Activities and Profits

	Q1 09 - Research, Engineering & Business Development	Q2 09 - Engineering & Pre- Production	Q3 09 - Test & Certification	Q4 09 - Production & Pilot Sales	2009	Q1 10 - Ramp Up, Marketing & Sales	Q2 10 - Expansion & International Cert.
# Customers				300	300	400	500
Gross Sales				259,090	259,090	562,861	703,577
COGS				163,945	163,945	400,200	500,250
Total Income	62,500	62,500	0	95,145	220,145	162,661	203,327
Total Expenses	72,173	234,039	151,088	65,894	550,793	428,999	474,456
EBITDA	$ (9,673)	$ (171,539)	$ (151,088)	$ 29,251	$ (330,649)	$ (266,338)	$ (271,130)
NET INCOME	$ (9,673)	$ (171,539)	$ (151,088)	$ 29,251	$ (330,649)	$ (266,338)	$ (271,130)

Activities:
- Prototyping & User Testing
- Engineering II
- IP & Patents
- Supply Chain
- Develop Utility Partnerships
- Channel Development & LOIs
- Funding

Activities:
- Prototyping & User Testing
- Engineering III
- Electrical Development
- Lock Supply Chain Agreements
- Develop Utility Partnerships
- Channel Development & LOIs

Activities:
- Final Prototypes & Models
- Package Design
- UL Investigation
- Set Up Manufacturing Lines
- Develop Utility Partnerships
- Channel Development & LOIs

Activities:
- Begin Production
- Begin Sales
- Begin Customer Support
- Marketing & PR Campaign
- Install Utility Pilot Project
- Engineering I for 2010 Product Map
- Develop Utility Partnerships

Activities:
- Continued Market Research
- Prototyping, User Testing & Engineering II for 2010 Product Roadmap
- Global User Study
- Develop Utility Partnerships
- Begin Home Decor Sales

Activities:
- Engineering III for 2010 Product Roadmap
- CE Preliminary Investigation
- Develop Utility Partnerships
- Add doors
- Channel Innovation, Viral Videos
- Build Online

	Q3 10 - Product Lines & International Cert.	Q4 10 - Product Line & International Production	2010	2011 - Strategic International Expansion	2012 - Capital Expansion	2013 - Tipping Point
	600	800	2,300	10,000	30,000	80,000
	844,292	1,125,723	3,236,452	17,446,686	52,591,763	140,580,310
	600,300	800,400	2,301,150	10,005,001	30,015,004	80,040,009
	243,992	325,322	935,302	7,441,684	22,576,760	60,540,301
	493,285	524,292	1,901,858	3,638,592	8,825,549	15,837,921
	$ (249,293)	$ (198,970)	$ (966,556)	$ 3,803,092	$ 13,751,210	$ 44,702,380
	$ (249,293)	$ (198,970)	$ (966,556)	$ 2,133,715	$ 8,938,287	$ 29,056,547

Activities:
- CE Testing
- UL Testing for 2010 Product Roadmap
- Develop Utility Partnerships
- Begin Home Improvement Sales
- Add doors
- Channel Innovation
- Build Online Community
- Technology Search

Activities:
- Engineering I for 2011 Product Roadmap - CPVs
- Develop International Utility Partnerships
- International PR & Marketing
- Begin Production on 2010 Products
- Online Community Challenges

Activities:
- Expand to Select International Markets
- Move testing in-house
- User Studies, Engineering, Testing & Patenting Next-Generation Technologies
- Web - Community Solar Challenge

Activities:
- Expand to Broader International Market
- Add Doors & Channels to Existing Markets
- Assess Capital Equipment Needs
- Explore Off-Grid Product Map

Activities:
- Manufacturing Innovation
- Off-Grid Applications for International Market
- Supply Chain Innovation
- Assess Incorporation of New Materials (DOE)

Veranda SOLAR
Contact: Capra J'neva, CEO | 503.407.4714 | capra@verandasolar.com

2 Business Plan

Veranda Solar was formed in the spring of 2008 to bring the solar industry a much-needed breath of fresh air. Selected for a 100,000 Euro prize in the September 2008 PICNIC Green Challenge business plan competition to award ideas for innovations that reduce carbon sources and have the chance to be realized as a profitable business, Veranda Solar was officially born.

With the help of a massive media campaign from PICNIC, and the support of advisors from Stanford University and the Silicon Valley business and manufacturing establishment, we have begun a product development stage that includes research, engineering and marketing channel development.

Veranda Solar's product was originally conceived in the fall of 2007 at Stanford University in answer to a simple question: How can we get solar into the hands of those who most want it? Our founder Capra J'neva's eight years of experience in environmental design led her to believe that the most passionate advocates for the environment are often people whose budgets force them into modest lifestyles that include either renting or compromising their environmental values as they remodel their starter homes.

A plug-&-play, scalable solar electric system was the result of this inquiry, and the basis of our product line.

2.a Mission

We are committed to creating a line of high-quality products that allow our customers to create a more sustainable lifestyle while serving their needs to be part of a larger community so they can feel the collective impact of their actions.

2.b Design-Thinking: A Core Value

At Veranda Solar, we don't just design products in a vacuum. We base our product roadmap on the needs of real users, and we use the latest ethnographic techniques to evaluate those needs. Then we create real prototypes and put them in the hands of our users, so that we end up with a product that people really want, need and will be able to use intuitively and effectively.

Our design method helps us probe into the future to see needs that are going unnoticed in the rest of the industry, and rise to meet those needs before our competitors do. It assures us a quality product that will surprise users with its ease of use, and its ability to connect them to a wider community of impassioned individuals generating power. By determining the real needs of our users and watching them use the product successfully, we eliminate marketplace risk by making sure we develop the product that people need and want now, and that they'll enjoy using so much that they'll recommend it to their friends.

We use our innovation method to stay one step ahead of our competitors, so that by the time they have copied our first system, we'll be releasing our next revolutionary product. Over time we build our brand value around aesthetics and usability, assuring a strong market position.

3 Veranda Solar Products

3.a Panels

Fig 3.1 Solar Petals, Working Prototypes

A Veranda Solar electric system consists of any number of snap-together panels, cables and our unique plug-&-play inverter. The iconic look of our panel makes a bold statement about our customers' choice to create electricity from the sun.

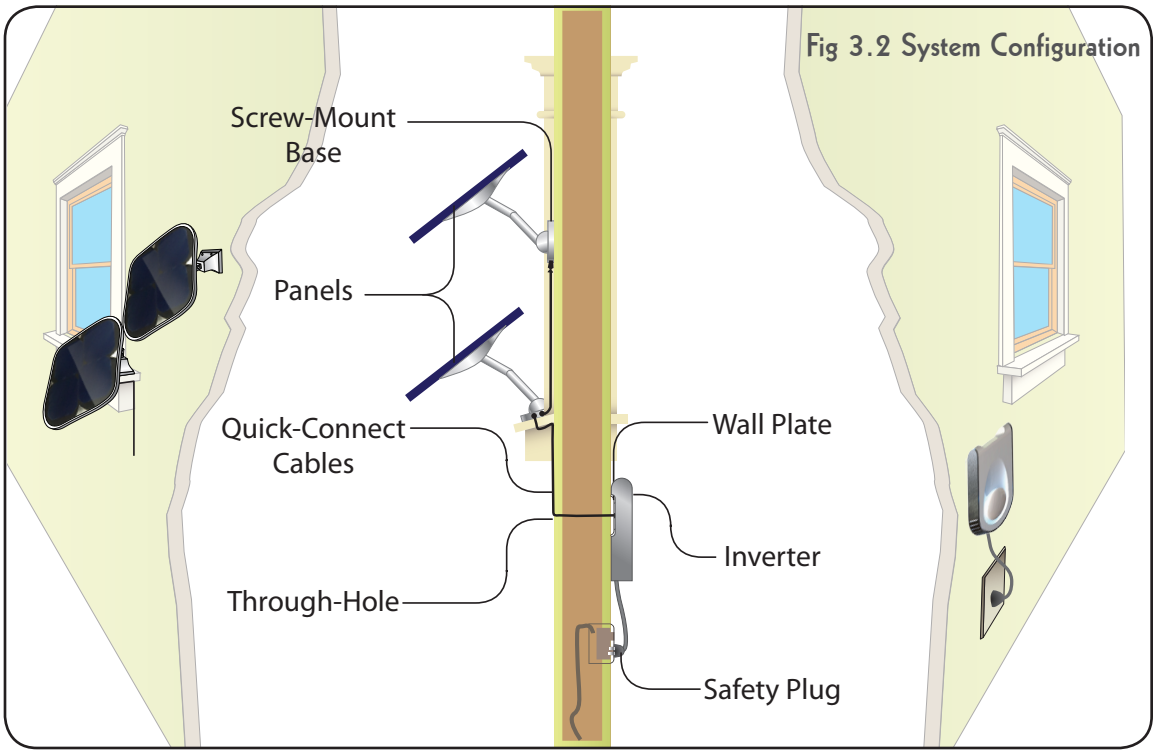


Fig 3.2 System Configuration

Our panels mount to walls, window sills, roofs and eaves with a simple screw-mount that detaches from the panel. The panel snaps in place and is then adjusted to face the sun. Multiple panels can be snapped together with special quick-connect cables. The inverter is plugged into a wall socket outside or mounted inside with a cable is run through the wall or window adapter.

3.b Plug-&-Play Inverter

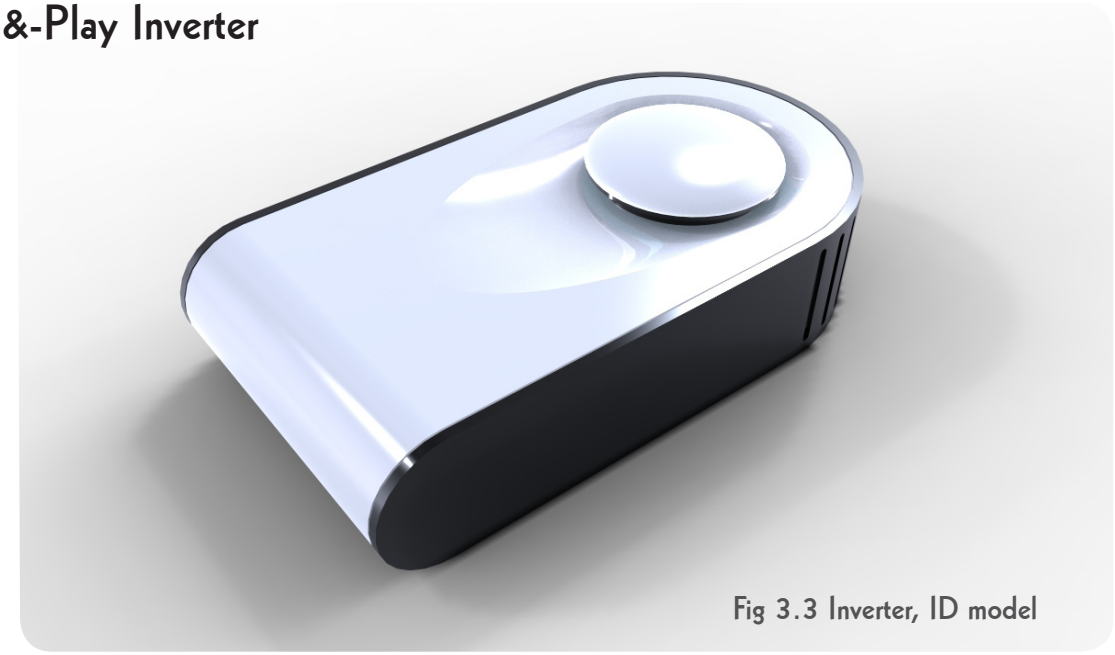


Fig 3.3 Inverter, ID model

The inverter plugs directly into an ordinary wall socket, providing easy plug-&-play grid intertie operation, essentially feeding power back into the electrical system of the house where it slows down the meter or runs it backward, selling power back to the utility's power grid, leaving users with savings on their electrical bills. The inverter logs the power created so that users can enjoy discovering how much of their power usage is being generated by sunlight.

60 watt panel
600 watt inverter - 10 panels/inverter
3 inverters/household circuit

Safety shut-off built into inverter, won't overload circuits
Anti-islanding & safety plug
External Shut-off for utility workers

3.c Networked User Interface

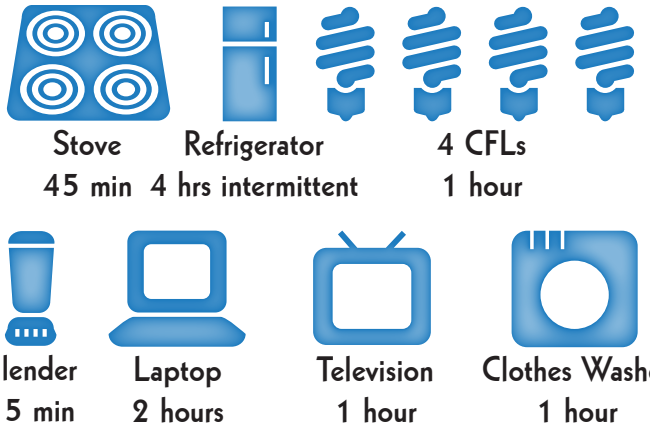


Fig 3.4 Networked User Interface and Data Retrieval

Wireless chips in the inverter allow it to communicate with computers and mobile devices. Software delivered via the Internet helps our customers understand the power being generated by their panels, the power being used in their home, and their collective impact with others in their region or state, as well as among friends on their social networking sites. Our mobile and network applications serve a double purpose to help our users form a strong, impassioned community of power generators, and to spread the word about our remarkable products.

3.d Comparison of Veranda Solar with Traditional Roof-Mount Residential System

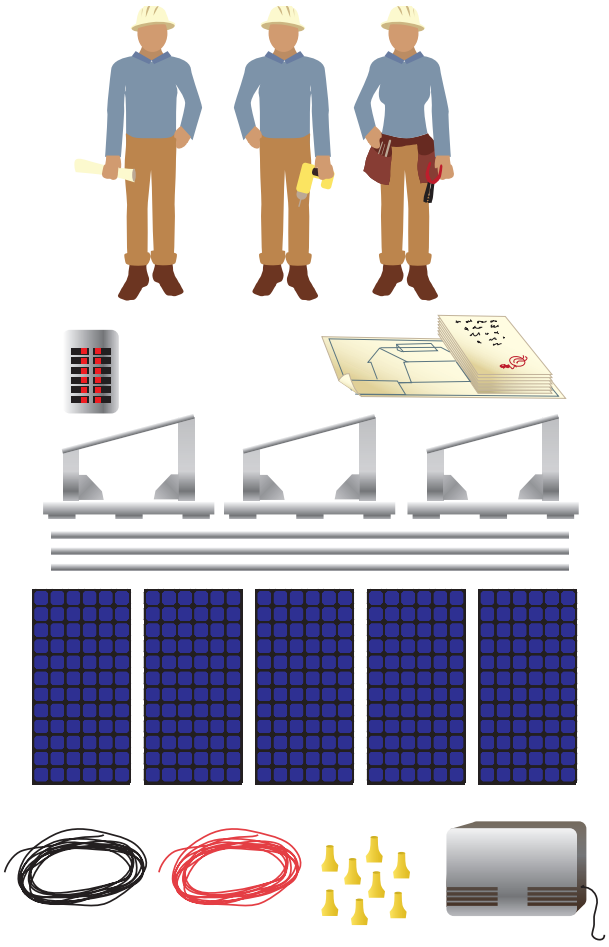


Fig 3.5 Traditional Roof-Mount System

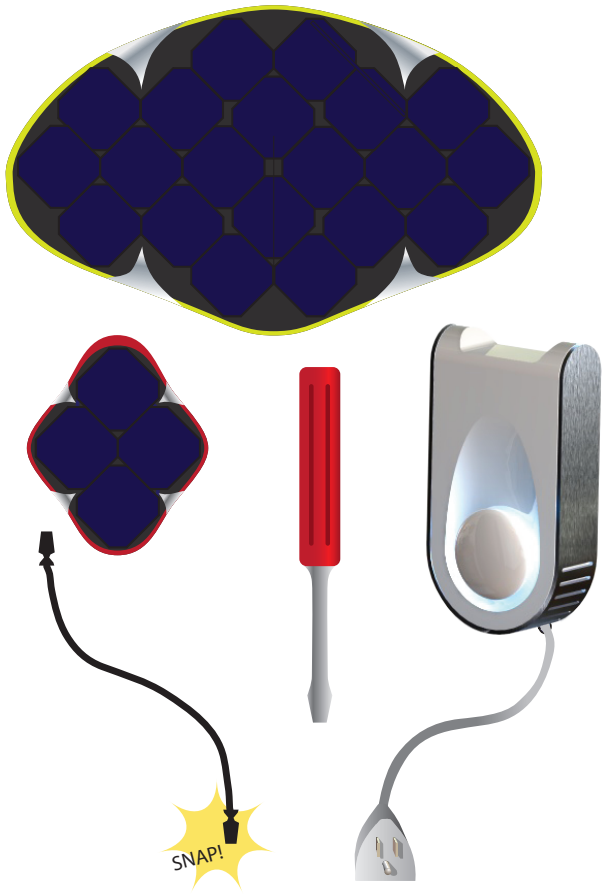


Fig 3.6 Veranda Solar Easy-Mount System

With Veranda Solar's system, there are no toxic batteries, no engineers and no electricians or installers needed. The simplicity of the system and its installation removes key barriers to the consumer adoption of solar. Instead of a months-long process involving specially trained engineers and installers, electricians, inspectors and city paperwork, a customer can simply make the decision to use solar, purchase their system and install it in a single afternoon.

3.e Product Features

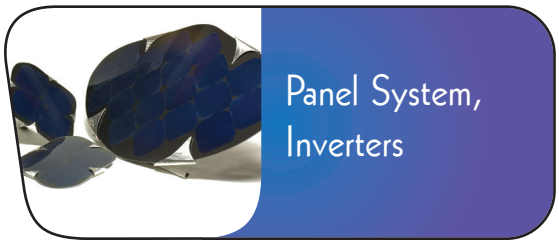
21-23.4% efficient cell
Bypass filters and DC boosting chips at each panel keep power efficiency across system
>95% efficient inverter converts most power to usable electricity
25 year limited warranty on power output of panels
10 year warranty on inverter
1.5 year energy payback on panel
$6-8/watt competitive with current solar market
Easy, user-friendly plug-ins to Facebook, iPhones and other online activities to understand power generated and collective impact
Easy set-up and installation allows users to move panels and get full payback on their investment

Fig 3.7 Panel Prototype Installed

VerandaSOLAR
Contact: Capra J'neva, CEO | 503.407.4714 | capra@verandasolar.com

3.f Product Roadmap

We will achieve our sales and electrical generating goals by producing panel systems, flexible attachment devices that allow our products to be mounted in a variety of places from rooftops to gardens and through deployment of new concentrating solar products that allow us to produce a much larger amount of power with less expensive materials.



2009:
60 Watt Panels
Cables
Inverter
Supporting Mobile Network & Applications

2010:
Racking System
Alternative-Sized Panels
Alternative Mounts

2011-2012:
Concentrating Photovoltaics
Possible Thin-Film Low-Cost Panels
Mobile Panel System
Enter Foreign Markets

Fig 3.8 Product Roadmap

3.g Product Lifecycle and Take-back program

- Electronics built to European environmental and take-back standards
- Design and housing engineered to minimize take-back labor
- Tin Silver solder, no lead
- ~1.5 year embedded energy payback from solar generated
- Implementing US Take-Back program
- Minimize materials in housing and attachments while maximizing quality and lifespan
- 25 year limited warranty on panels, 10 year warranty on inverters
- Avoid tetra-flouride compounds in cell etching process
- Distributed Power eliminates grid line losses

All our packaging and communication about the device will clearly explain these benefits and the time period to pay back the energy embedded in each component. Packaging will give users a clear pictorial understanding of how the product got to them and how to properly reuse it once they are finished with it. We will implement a take-back program within the USA to help our users deal with the end of the product lifecycle in a way they can feel good about, and which will help us recover and refurbish valuable components and recycle precious metals.

4 Market, Competition & Distribution

At Veranda Solar, we understand our market well. Our user-centered approach has helped us understand our market segmentation and size, and how to best reach our intended customers.

4.a Current Solar Market

The residential solar market worth $2.5 billion in 2007 is expected to reach $39.3 billion by 2014 (Wintergreen Research, 2008). Because of that explosive growth, there is a glut of panel manufacturers in the market, driving pricing down to commodity levels. Solar companies are working hard to differentiate their products. (See Appendix 3 on competitive analysis for more information.)

4.b Veranda Solar Difference: Eliminate Hassles, Scalable System, New Channels

By opening up a new market and offering a hassle-free mount that saves the cost of installation, we create customers who were previously outside the market for residential solar panels because they could not understand or afford them.

Price points between the cost of gadgets and full-house systems allow us to convert walk-outs from conventional solar retailers into sales, by providing a product that allows would-be solar owners to "try out" a system, confident that they can add to it if they are satisfied with its performance.

Our novel channel innovations with utility clean power programs, combined with our use of the viral potential of online networking, help us reach customers well outside the conventional solar panel market who have never considered owning solar panels. Within our market of 67 million US households, we compare market penetration and growth within clean power programs and traditional solar. We predict we can reach market penetrations of 1.5% for a clientele of 2 million customers.

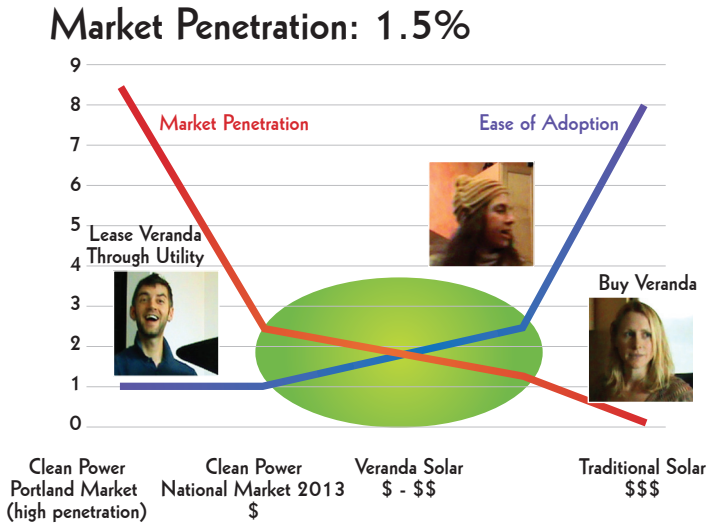


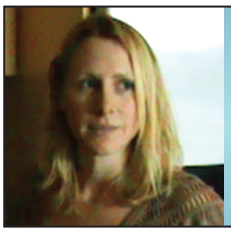
Fig 3.9 Market Penetration vs. Ease of Adoption

4.c Our Primary Customers

- **Conscious Consumers**, driven by lifestyle concerns, and want to do the right thing, but without sacrifices.
- **Maker Naturalists**, leaders in their communities who will work hard and make changes in their routine to move toward a completely sustainable lifestyle.
- **Networked Youth**, who want to take their first steps to contribute to the environment while honoring their budget concerns.

All our customers want to feel like they are part of a larger community doing something powerful for the environment.

4.d Market Segmentation



Green Consumers
Age: 30-40, 50-65
Home/Condo owners
Income: 60-300K (each)
Goal: Trendsetting among friends

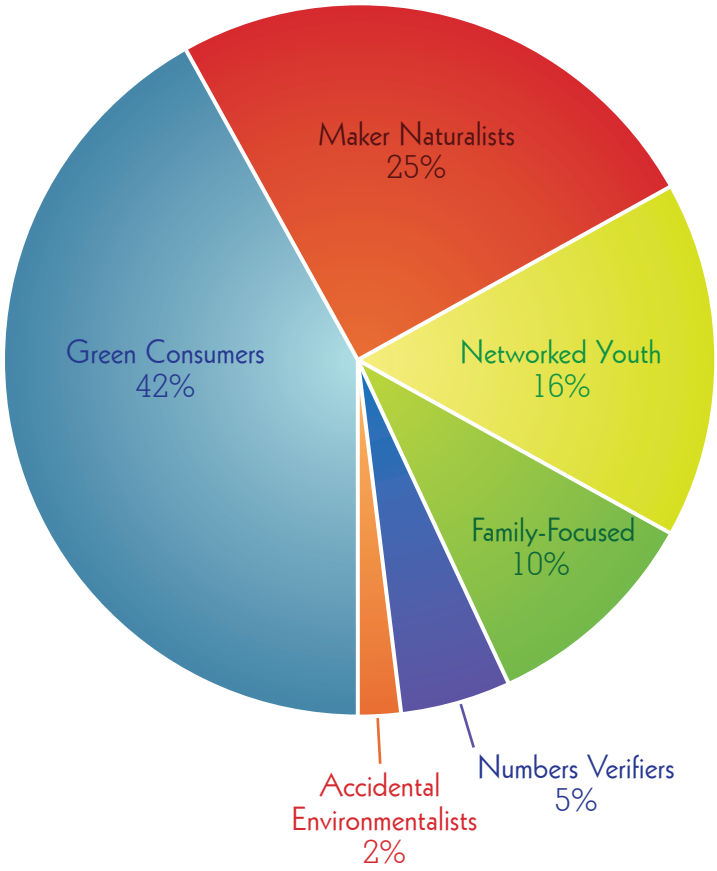
Maker Naturalists
Age: 20-50
Rent, own, travel, goal of homesteading
Income: 20-80K
Goal: Completely sustainable lifestyle

Networked Youth
Age: 18-40
Rent
Income: 10-36K
Goal: Contribute to their community

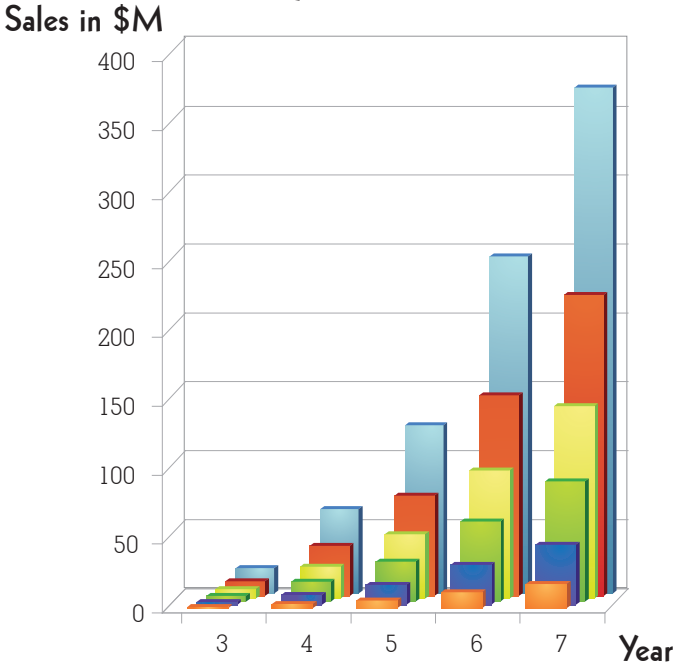
Family-Focused
Age: 30-45
Homeowners
Income: 80-180K combined income
Goal: A safe, healthy home environment.
Teach and learn about sustainability with kids.

Numbers Verifiers
Age: (n.a.), gender – male
Rent, own, potentially landlords
Income: 40-120K
Goal: Earn back investment. Get best deal.

Accidental Environmentalists
Age: 18-55
Rent, may own, may own businesses
Income: 30-90K
Goal: Accomplish two tasks for the price of one.

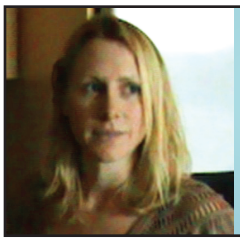


Sales by Market Segment



VerandaSOLAR
Contact: Capra J'neva, CEO | 503.407.4714 | capra@verandasolar.com

4.e Market Needs



Green Consumers
convey environmental status
plug & play (low effort installation, maintenance)
clean look
no permanent damage to home

Maker Naturalists
small enough to easily carry
customizable: create artistic statement
produce significant power
understand amount of power produced

Networked Youth
affordable (low initial investment)
part of something bigger: connects to other parts of life, has a community website component
easy install, little technical knowledge needed

Family-Focused
the kids want it
enriches children's lives
clearly understandable technology (very little magic)
safety first

Numbers Verifiers
cheaper $/watt than current roof install system
clearly understandable technology - know all performance factors
energy investment that pays itself off in ~10 years

Accidental Environmentalists
not viewed as trendy or part of a fad
secondary benefit: (i.e. can produce power when grid fails or cheaper power)
solid environmental benefit with complete LCA

4.f Competition

Primary Competitors	Value Proposition	Disadvantages	Veranda Difference
Grid Power	Status Quo	Dirty Sources	Do something for the environment
Grid Clean Power	Easy way to reduce carbon footprint	Etherial, customer pays more for same power as everyone else	Tangible Clean Power directly to one's home, slightly higher price
Traditional Residential Solar	Clean Power directly to one's home	High barrier to entry, cost and effort	Lower barrier to entry, understandable, status symbol
Thin Film Solar	Lower $/watt than traditional solar	Low yields require larger panels, unstable cells degenerate rapidly	Pack most power into smallest space, high quality
Solar Gadgets	Affordable entry to solar, mobility, no wiring, depends on device	Low quality cell technology, poor lifespan, high $/watt, often single-use	Multiple use, grid intertie, higher quality and significant power grid intertie for same price

Because, in essence, solar power delivers electricity, the main competitor to our product is the grid itself. Most panel and cell manufacturers understand this, so the drive within their departments is to achieve "grid parity"–the price at which solar power is on par with that being delivered over the grid, and they have neglected product design for consumers. Utilities understand the demand for clean energy, and many offer rate programs that charge a premium for customers to offset all their power consumption with energy from clean sources.

Veranda Solar partners with utilities to bring our product to market in their Clean Power programs. By creating these relationships, we ensure our inverters work with local utilities regulatory requirements for feeding power back into the grid, while eliminating our number one competitor by joining forces with them to make their product offering more tangible and appealing.

4.g Our Competitive Advantage

4.g.i Scalable Systems - Price Point Appeal

Veranda solar rises into an empty space in a market clamoring for lower-cost grid intertie options. Because our systems can be expanded at will, they match the budgets of our potential customers, allowing them to pick the system that best suits their needs and to add to it over time. Offering the panels through utilities' clean power programs opens the price point to yet another market, and gives a variety of options from leasing to owning, all for a simple monthly payment itemized on the electric bill.

4.g.ii Premium Brand

Our products utilize the highest efficiency silicon available in the marketplace to compact the most power in the smallest space. We create systems known for their quality, beauty, and for their ability to extract the most useful power from the system.

- 21-23.4% efficient cell
- Back-contact enhances beauty/simplicity of the design
- DC boosting performs power matching for panels, ensuring consistency at peak output
- >95% efficient inverter, yields higher grid-worthy power
- Monocrystalline silicon technology is most stable over time, 80% warranted power output for 25 years

4.g.iii Iconic Look - Status Symbol

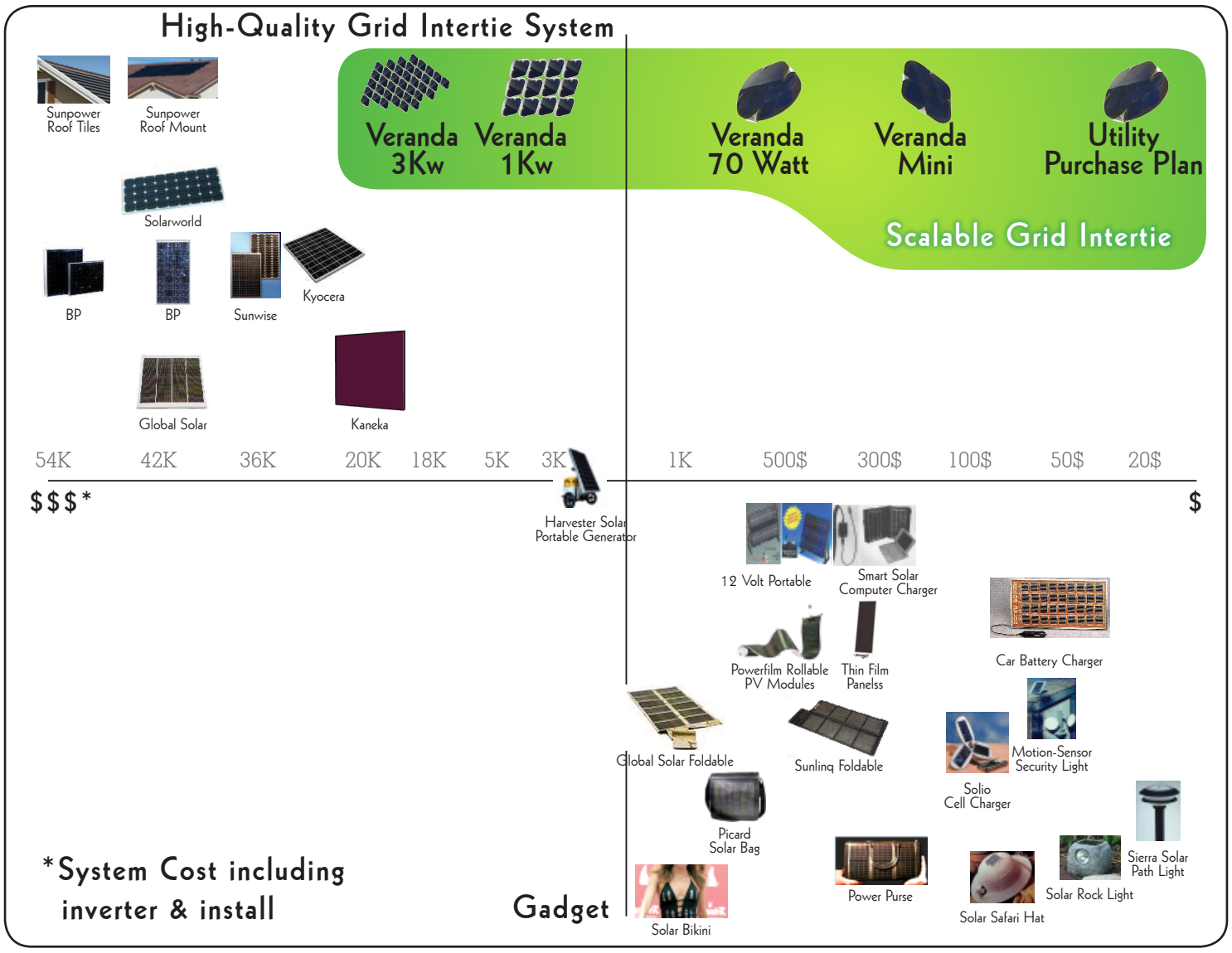
With our emphasis on design and usability, we find interesting and novel approaches to spread solar energy to the mainstream, and hope to become the Apple computing of consumer solar products.

4.g.iv Leverage Community

Our inverter's networking abilities deliver information about the system to our customers in a way that is fun and connects them to others in their community so that they can enjoy the collective impact of their efforts.

Owning a Veranda Solar panel is more than just an attempt to generate energy—it is a lifestyle choice that brings people closer to others who are similarly committed and lets them share in the fun of harvesting energy created by the sun. By emphasizing fun and community in an affordable package, we impassion a new generation of young people who can finally participate in making a difference.

Fig. 4.4 Comparison, System Quality to Price



4.h Market Comparison

Product	Price	Specs	Uninstalled $/Watt	Use	Scalable	Installation	Aesthetics	Ease of Use	Technology/ Quality	Target Market
Verano 70	$450	70 watt 12 volt	$6.40			User Installed <2 Hours			Back-Etched Silicon	Young Urbanites 53 Million US Households
Verano 30	$250	32 watt 12 volt	$7.60			User Installed <2 Hours			Back-Etched Silicon	Young Urbanites 53 Million US Households
Verano 90	$770	90 watt 34 volt	$8.56			Engineer, Electricians			Back-Etched Silicon	Millionaires 3 Million US Households
Sunpower 90	$35K	? watt ? volt	$10.00			New Homes or Roofs Only			Back-Etched Silicon	Millionaires 3 Million US Households
Sunpower 80	$680	80 watt 12 volt	$8.50			Engineer, Electricians			Monocrystalline Silicon	Millionaires 3 Million US Households
Solar World	$400	32 watt 12 volt	$13.30			Engineer, Electricians			Multicrystalline Silicon	Millionaires 3 Million US Households
BP 30c	$250	60 watt 12 volt	$8.00			Engineer, Electricians			Amorphous	Millionaires 3 Million US Households
Shell 90	$450	80 watt 12 volt	$5.60			Engineer, Electricians			Monocrystalline Silicon	Millionaires 3 Million US Households
Shell 80	$650	75 watt 12 volt	$8.67			Wear			Multicrystalline Silicon	Millionaires 3 Million US Households
BP 37	$340	60 watt 48 volt	$5.60			Engineer, Electricians			Amorphous	Millionaires 3 Million US Households
Kyocera	$460	65 watt 12 volt	$7.08			Engineer, Electricians			Multicrystalline Silicon	Millionaires 3 Million US Households
Kyocera 65T	$507	60 watt 12 volt	$8.45			Engineer, Electricians			Multicrystalline Silicon	Millionaires 3 Million US Households
Sunwize	$104	12 watt 12 volt	$8.67			Engineer, Electricians			Amorphous	Millionaires 3 Million US Households
Global Solar 18	$450	80 watt 12 volt	$5.63			Engineer, Electricians			Multicrystalline/ Amorphous	Millionaires 3 Million US Households
Shell 80	$425	80 watt 12 volt	$5.31			Engineer, Electricians			Multicrystalline Silicon	Millionaires 3 Million US Households
Sunvo										

Product	Price	Specs	Uninstalled $/Watt	Use	Scalable	Installation	Aesthetics	Ease of Use	Technology/ Quality	Target Market
Shell	$511	85 watt 17 volt	$6.01			User Installed <2 Hours			Monocrystalline Silicon	Millionaires 3 Million US Households
Hawaiian Comfort	$2875	80 watt 17 volt	$35.94			Roll into Place			Multicrystalline Silicon	Outdoor Adventurers 16-20 Million in US
Portable Pal Portable	$399	20 watt 15 volt	$19.95			Unroll, hook up inverter			Amorphous	Outdoor Adventurers 16-20 Million in US
Carport Array	$55	2 watt 12 volt	$27.50	1		Connect to Terminals			Multicrystalline Silicon	Car Owners 280 Million in US
Solar Charger	$275	20 watt 12 volt	$13.75	1		Unfold, hook up inverter			Multicrystalline Silicon	Young Urbanites 53 Million US Households
Solar Charger Combo	$400	25 watt 12 volt	$16.00			Unfold, hook up inverter			Amorphous	Outdoor Adventurers 16-20 Million in US
Suntura	$860	48 watt 24 volt	$17.90			Unfold, hook up inverter			Amorphous	Outdoor Adventurers 16-20 Million in US
Global Solar Portable	$50	3.9 watt 8-10 volt	$15.60			User Installed <2 Hours			Amorphous	Outdoor Adventurers 16-20 Million in US
Thin Film Panel	$530	64 watt	$8.28			User Installed <6 Hours			Multicrystalline Silicon	Boaters 20 Million in US
Marine Kit	$109	<8 watt	$13.60	1		Unfold, prop plug-in			Multicrystalline Silicon	Young Urbanites 53 Million US Households
Solio Phone Solio Charger	$78	3 watt	$26.00	1		User Installed <2 Hours			Multicrystalline Silicon	Home Owners 60 Million US Households
Motion Light	$28	4.8 hours of light	$18.6	1		User Installed <1 Hour			Multicrystalline Silicon - Resin	Hand Crafters 68 Million US Households
Solar Path Light	$670	32 watt 12 volt	$8.00			Sling Over Shoulder			Amorphous	Young Urbanites 53 Million US Households
Pocket Solar Fan	$76	powers fan in hat	$95.20	1		Engineer, Electricians			Back-Etched Silicon	Outdoor Adventurers 16-20 Million in US
Solar Safari Hat	$40	8 hours of light	$26.70	1		User Installed <10 Minutes			Back-Etched Silicon	Home Owners 60 Million US Households
Solar Rock										

Legend

Use: Roofs, Windows, Gardens, Balconies, Walls, Portable, Camping, Boats, Single Use

Aesthetics / Ease of Use / Technology/Quality: Best, Good, Average, Bad, Worst

Sources: originating company's product
Veranda Market Research Study

VerandaSOLAR
Contact: Capra J'neva, CEO | 503.407.4714 | capra@verandasolar.com

4.i Marketing and Distribution

Our unique product suggests a unique approach to channel innovation.

More than 800 utilities in the nation offer green power programs, with more than 600,000 customers participating in such programs across the nation, which are growing at a rate of 20% (source: California Green Solutions). By offering the panels through utilities' green power programs, we accomplish several of our objectives. We tap into this rapidly expanding and large market through flyers inserted with monthly bills. We are able to offer our products at an even more affordable price point, and we ensure that our systems are tailored to each utility's reporting needs and are able to sell power back into the grid effectively as net metering and feed-in tariff programs take effect.

Because a significant and growing segment of our market is focused on their community and networking through the internet and mobile applications, we intend to integrate our marketing into our product offering through mobile applications that connect users directly to our online store. By creating a Community Solar Challenge, we not only give our customers an idea of how their solar panel is contributing to their community's clean power supply, we also create a competition to urge them to get their neighbors involved by adding their own panels.

We assume a one-tier distribution plan in our first two years, as we distribute our product mainly through direct sales on our website and through a massive campaign with utilities' clean power programs.

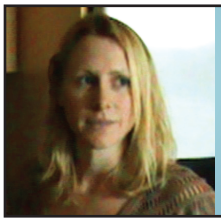
As we add retail channels in Home Decor, Consumer Electronics and Home Improvement categories, we move to a two-tier distribution program to handle our increased sales volume. Our financial model accommodates varying rates of growth within these channels.

4.j LOIs

We currently have unsolicited Letters of Intent from a network of international distributors, including Artechnica (high-design home decor lighting with 144 doors in the US), an LOI for 25,000 units over 3 years in the Netherlands, and requests for distribution from markets all across the US and internationally, including Pakistan, India, Western and Northern Europe, China, Japan, Turkey, Africa, New Zealand and Australia.

Our customer waiting list, utility pilot programs and distributor LOIs help us to predict manufacturing volume, and create accurate financial models. Because of our backlog of product requests, we expect that our conservative financial estimates are too conservative for the demand for our product and we plan to ramp up production more strongly.

4.k Distribution Mix



Home Decor
Pottery Barn
Restoration Hardware
Smith & Hawken
Design Within Reach

Home Improvement
Lowes
Home Depot
True Value Hardware
Corner Hardware Store

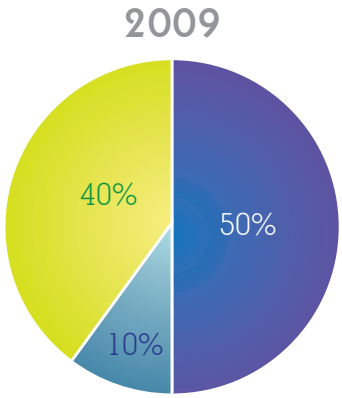
Channel Innovation
Utilities' Clean Power Programs
Mobile Network Applications
Community Solar Challenge

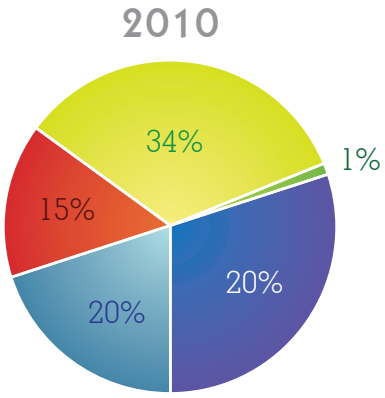
Kid-Focused Innovation
Square Foot of Sun-Forest
School Power Gardens

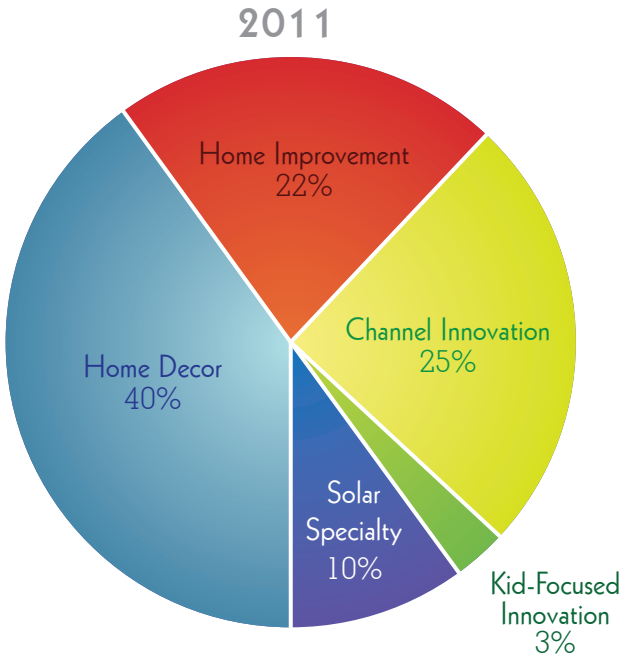
Solar Specialty
Solar Stores
Installers
Trade Shows
Online Stores

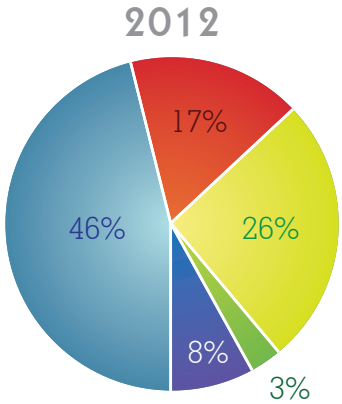
Distribution starts with Utilities' Clean Power Plans and Direct Sales based on customer backlog

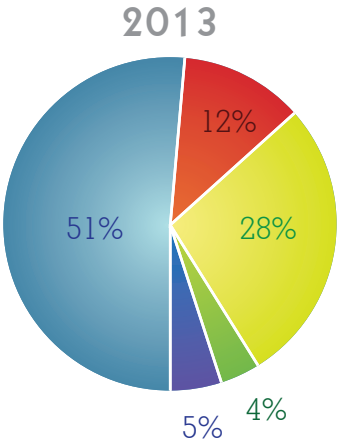
Distribution Mix in 3rd Year (profitable)
Moving away from Solar Specialty to a stronger presence in Home Decor & Home Improvement stores. Channel Innovation continues, with more emphasis on sales from Mobile Network Applications.











Verandasolar
Contact: Capra J'neva, CEO | 503.407.4714 | capra@verandasolar.com

5 Management

Capra J'neva, President and CEO Capra's background in the fine arts brings a design basis to her involvement in the sciences and engineering of everything from 3-D software to revolutionary fuel systems. She is a recent graduate of Stanford's Product Design Master's Program where she received the American Institute of Graphic Arts (AIGA) Award for industrial design, created affordable solar solutions for renters, helped invent a laser cutting machine to make drip tape for the world's poorest farmers and garnered 1 European patent.

She has 12 years experience running her own multimedia development firm, and has worked with clients such as Intel, Merck, Nike, Miele, Clorox, SunPower, Suez and Hewlitt Packard to create software, animations, product designs, market research and marketing communications. As a leader in the integrated ecological design, natural building and alternative fuels movements, she has lectured at Stanford University, Lewis & Clark College, Evergreen State in Washington, Portland State University and the Xopilote Institute in Mexico. Her background also includes business development, nonprofit management and board memberships, including fund-raising and grant proposals to provide seed funding and operational support for environmental, community and arts-focused organizations and projects. She enjoys bringing her skills in consensus facilitation and nonviolent communication to create a passionate energy among team members and employees working toward successful projects.

She is excited about providing affordable plug-&-play alternatives to help citizens contribute to a more sustainable future in their own communities and promote the joys of lives enriched by social capital. She loves gardening, repairing things and is also an accomplished musician and artist who has enjoyed touring the world as a performer.

Capra is Cofounder, President and CEO of Veranda Solar. She is also the Treasurer and temporarily the acting CFO. She hopes to one day hand over her post and settle in as the head of Research & Design.

Peter Jones, VP of Engineering Peter is a professional in all phases of product development and a specialist in design for the environment and sustainable product manufacturing business practices. He received a BA in Physics with a Chemistry Minor from Colorado College, but has been designing and constructing functional objects since he could write.

He has independently designed and developed several products in addition to working as a Design Engineer for award-winning Ziba Design in Portland, OR and as a Senior Design Engineer for Yakima Products Inc., where he led one of four new product development teams through a full product line redesign. He is listed as an inventor on 8 domestic and international patents ranging from design to mechanical, fluid dynamic, and electromechanical systems. His experience designing car rack systems for Yakima is a perfect match for Veranda Solar's wind load and theft resistance requirements. He has an in-depth understanding of the consumer, and has worked professionally in all phases of Product Development, from concept and budget generation, design and engineering, to production and distribution.

He takes the result of his mass produced environmental impact seriously. He sees his work as an opportunity to save exponential amounts of energy and resources. An avid outdoorsman, weekends see Peter in the mountains and on rivers, where he once worked as a kayaking guide.

Peter is Veranda Solar's Cofounder and VP of Engineering. He is also handling supply chain management and manufacturing.

Dana Smirin, Business Strategy Advisor Dana has managed a San Francisco-based sustainability consulting practice for over a decade and recently completed a two year position as the Special Assistant to the Dean of the College of Natural Resources at the University of California at Berkeley.

Recent consulting clients include the CleanTech Group, Innovation Norway; the Global Footprint Network; and in the Netherlands, the Business in Development Network and Oxycom. Her work at Berkeley includes developing partnerships with innovators in the biofuels, green chemistry, water, agro-forestry, agriculture, and plant molecular biology sectors and relating this work into emerging markets. She produced conferences in South Africa related to Green Chemistry and helped develop the African Green Revolution Conference in Oslo in 2007.

Prior to her work as a consultant, she helped launch energy companies such as Green Mountain Energy, Foresight Energy Services, and At the Moment Trading. This followed leading the marketing function for the Center for Renewable Energy and Sustainable Technology (CREST) and founding Chute Recycling Systems in 1993. She actively developed multi-stakeholder endeavors as Director of Education Africa and later as Fauna Flora Internationals Director, launching Flower Valley Trust and other successful micro enterprises.

In addition to her work as a consultant, Smirin is the founding Chairwoman of Cleantech Bay, Cleantech Industry Trade Association c-(6) and is an adviser to various Clean Technology Funds and the Mayor of San Francisco's Clean Tech Advisory Board. She was awarded the American Council on Germany's McCloy Environmental Fellowship in 2005 to explore the acceleration of bringing Clean Technologies to market. She speaks on a variety of sustainability and development related topics in Southern Africa and beyond. Smirin is a native of South Africa and has lived and worked in the United States, Europe, and Africa. Her lifelong passion is exploring nature as model for design. She enjoys water sports, gardening, cooking, and cultural exploration.

Dana advises Veranda Solar on business development and strategy, funding and networking in the Cleantech sector, and formation of the company's board of directors.

Marc Theeuwes, Manufacturing Strategy Advisor Marc is a Consultant and Consulting Associate Professor at Stanford University's School of Engineering. He has over 18 years of experience in management, engineering, and business development working with Fortune 500 and private corporations such as Nokia, Sony, LifeChart, OmniCell, and Johnson & Johnson. He has received numerous awards for academic and business excellence and today lives and works in the Bay Area. His past responsibilities have included Vice President of Corporate Development, Director of Operations, Director of Business Development, Director Mobile Products, and Senior Product Manager. Marc has P&L, staff, budget, and international experience. Marc is the founding professor of ME233 Make It Big, and is the author of "Make It Big: Crossing the Entrepreneur's Gap."

He holds a Masters of Science in Manufacturing Systems Engineering from Stanford, and was awarded an AIM fellowship for academic achievement and the California Microwave Award from the department of Electrical Engineering. Marc also holds an MBA from Santa Clara University, a BS in Biochemistry and BA in Fine Arts from the University of California at Davis, and an AS in Computer Science. He is a member of IEEE, IDSA, and the ASME.

Marc is advising Veranda Solar on all aspects of production and manufacturing of our devices. He has provided feedback on our manufacturing plan, production ramp-up, BOM and tooling costs. He is helping the company to evaluate contracting prototyping facilities and contract manufacturers.

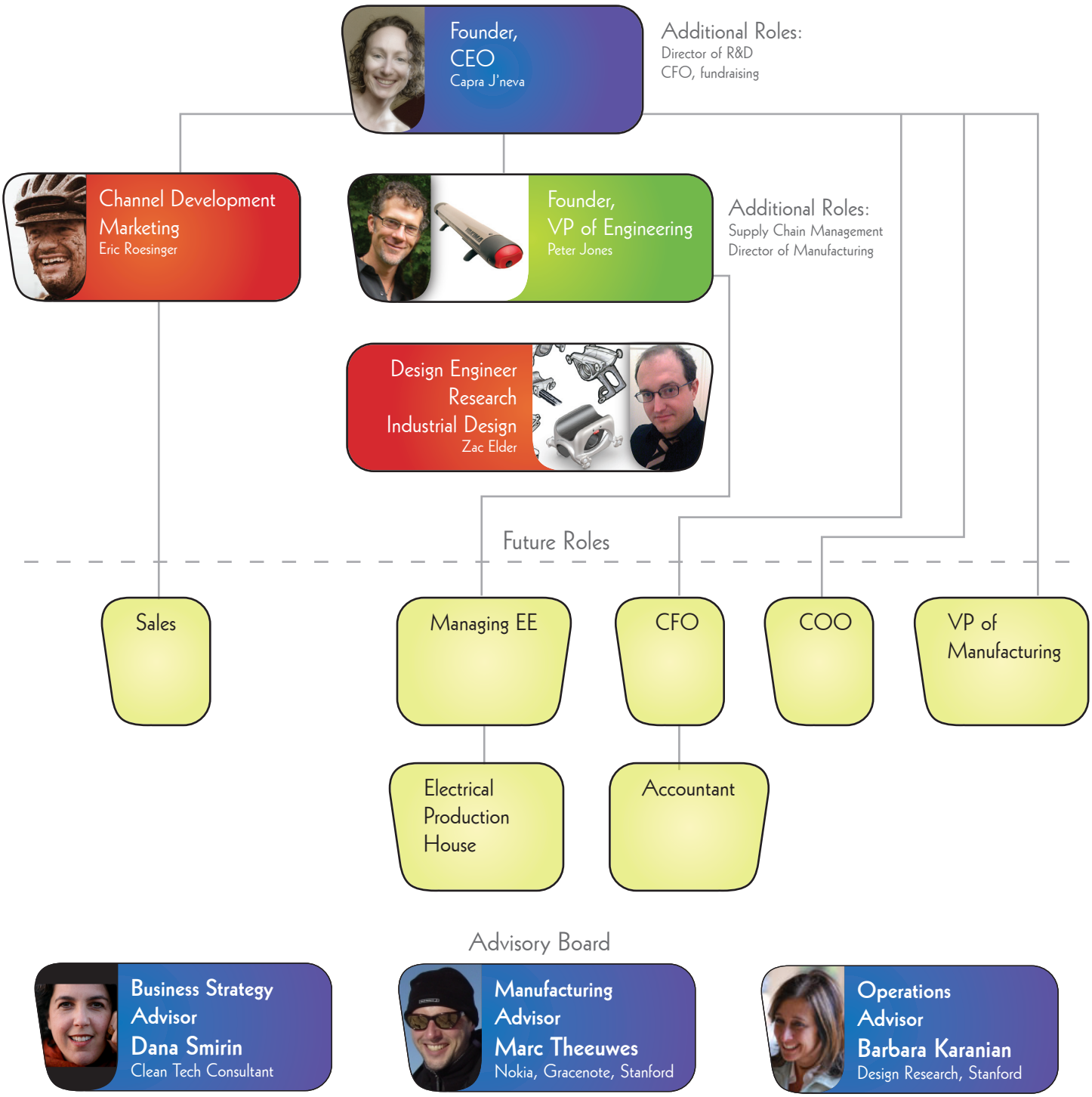
Barbara Karanian, Secretary, Operations Strategy Advisor Barbara is a visiting Professor in residence at the School of Engineering, Stanford University, where she is examining the variables that make entrepreneurial leadership explicit. She focuses on the ways design entrepreneurial leaders form connections to create amazing diverse team environments. A participant observer in Professor Larry Leifer's industry-sponsored grad engineering ME 310 Master's course, "Engineering Design," she helps conduct experiments on responses to fuzzy vs. technical prototypes and teaches a new iteration of the ME 397 doctoral methods seminar, "Telling Your Research or Project Story." Barbara is also part of the Product Design graduate thesis teaching team for 2008-2009.

From Wentworth Institute of Technology in Boston and the Michael T. Anthony Professor through 2010, she has 20 years experience teaching Industrial-Organizational Psychology, Behavioral Aspects of Design, and Leadership courses to engineering, architecture, design, and construction management students. The only non-engineer on the Electromechanical Engineering Committee, she also critiques senior projects in construction and design.

Independent work with changing organizations includes carrying out transformation and group projects with small start-up companies as well as the larger, more established firms: Progress Software, Profiles, Raytheon, Episcopal City Mission, Kidde-Fenwal, Payette Design, Novartis, PRTM and Digital Film Tree. Barbara is also a permanent adjunct Associate Professor in Social Sciences and Policy Studies at Worcester Polytechnic Institute. Barbara received her Ph.D. in Educational Studies in Organizational Behavior from Lesley University; the M.Ed. in Art Therapy; and was awarded a Teaching Fellowship in Leadership at the Harvard University Graduate School of Education. She holds a B.A. in the double major of Psychology and Fine Arts from the College of the Holy Cross.

Barbara serves on Veranda Solar's board as Secretary and advises the company on corporate structure and operations, management and personnel, corporate communications and provides an important link to the Stanford engineering and design network.

5.a Organization Chart



6 Legal

6.a Corporate Structure

Veranda Solar is incorporated as a corporation in the state of Delaware. We operate as a foreign corporation in California and Oregon. Our corporate headquarters are currently located in Portland, Oregon and our prototyping facility is in Oakland, California.

6.b Legal Representation

We are represented by San Francisco law firm Morrison and Foerster's Clean Tech Group, working directly with Andrea Cohen and Braden Penhoet.

6.c Patents and Intellectual Property

We are working on patents for our panel system design and our inverter architecture, especially its wall plug-in and safety features. We have conducted a freedom to operate search for our inverter and have found no instances of a wall-connected grid intertie inverter. We are working with development partners who have a portfolio of IP and Patents relating to pertinent power-regulating algorithms and communication features of our inverter, which we will license from them for its manufacture.

6.d UL & CE

We have started the UL approval process and are currently authorizing a preliminary investigation for our product, which will determine features and a testing plan to help us engineer a product that will meet all necessary code, safety and engineering requirements. Our UL testing facility will complete product testing for wind loads, aging, impacts and relevant electrical requirements assuring its safe use in any household. As soon as our product is ready for release in the American market, we will turn to CE testing to create an internationally compliant one.

6.e Codes and Utilities

In meetings with urban code officials, we have determined that our device will be categorized as an appliance and will not trigger city or state electrical or structural reviews requiring permits, inspections or licensed contractors to install if it meets design requirements for adequate shielding, shut-off and outdoor use, which will be rigorously tested during our UL approvals process. Some more invasive installations may require permits. We will include instruction manuals with a detailed installation guide that clearly notes where homeowners permits must be used. It is the opinion of the chief inspectors with whom we have spoken that a structural review will not be triggered as long as users follow our manual, per NEC 110.3(b), requiring installation to be done according to manufacturer's instructions.

Our inverter is designed to communicate with utilities to comply with anti-islanding regulations (which automatically shut off power generating devices to protect workers during line work) and with net metering or smart metering programs. Its software can be upgraded through its wireless chip, which ensures it will remain compliant with future developments as utilities bring new smart metering and net metering programs online or reporting programs change. We are vigorously courting utilities as a distribution channel for pilot projects to establish our product within their transmission and delivery requirements.

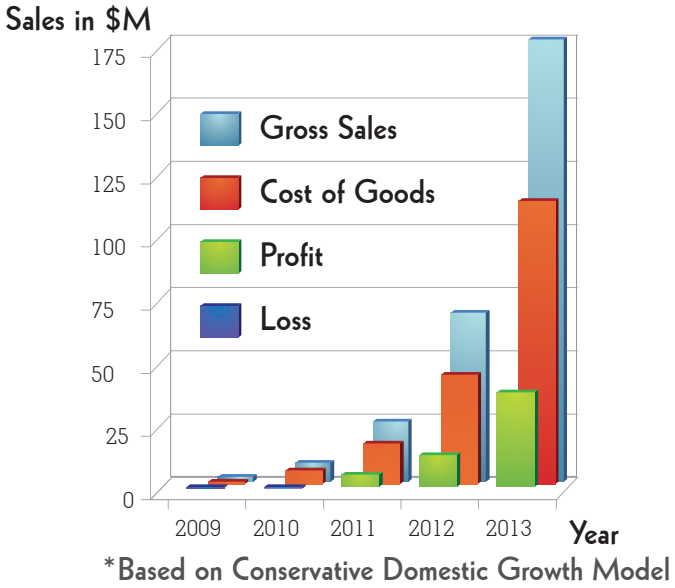
7 Finances

Veranda Solar is currently operating on funds received from the PICNIC Green Challenge runner-up award of 100,000 euros, which exchanged to $124K.

We plan to ramp up production quickly after our product launch and initial market testing. Activities in our second year include a campaign to have the product accepted nationwide as an option on utilities' green power plans, which should help us achieve our aggressive plan goal of finding at least 8,000 customers that year, but we conservatively plan for 2300 customers and profitability in our third year. We break even for the cost of our product development cycle and two years of operations at 5243 units sold.

We are seeking 1.5 million dollars of angel funding to carry us through our first 18 months. This funding will help us to take our products through UL approvals, set up supply chains, negotiate contract manufacturing deals and begin manufacturing and sales of our products through a mixture of retail and direct sales. We plan to seek between 5-6 million in our first round of funding in two years.

7.a Revenues & Profits

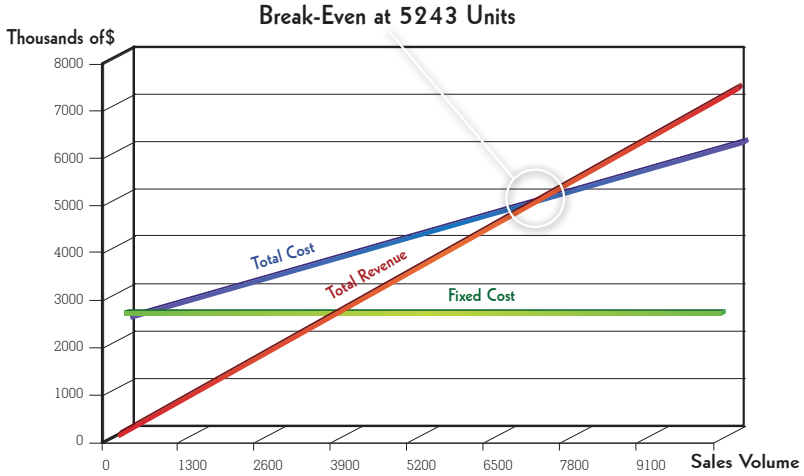


*Based on Conservative Domestic Growth Model

7.b Cost of Goods Sold

Panel System	
Panel Mounting	22.42
60 watt Panel	130.74
Panel System Subtotal	153.16
Error Factor	22.97
Duty@1.5%	2.64
Subtotal	178.77
Warrantee @ 2%	3.58
Shipping	1.77
Unburdened Cost Panel	184.12
Overhead @ 28%	42.88
Burdened Subtotal	227.01
Wholesale Margin	90.80
Wholesale Cost	317.81
Retail Margin	111.23
Retail Cost	$429.04
Power Converter	
Penetration	1.50
Power Converter Enclosure	16.63
Power Conversion Electronics	43.37
Packaging	1.25
Power Converter Subtotal	62.75
Error Factor	9.41
Duty@1.5%	1.08
Subtotal	73.24
Warrantee @ 2%	1.46
Shipping	0.19
Unburdened Cost Inverter	74.90
Overhead	17.57
Burdened Subtotal	92.47
Wholesale Margin	36.99
Wholesale Cost	129.46
Retail Margin	45.31
Retail Cost	$174.77

7.c Break Even Analysis



VerandaSOLAR
Contact: Capra J'neva, CEO | 503.407.4714 | capra@verandasolar.com

7.d Profit & Loss Summary

	1Q09	2Q09	3Q09	4Q09	2009	1Q10	2Q10	3Q10	4Q10	2010	2011	2012	2013
Revenue													
Panel Sales				220,262	220,262	511,091	638,864	766,637	1,022,182	2,938,774	16,152,430	48,708,996	130,226,265
Inverter Sales				38,828	38,828	51,770	64,713	77,655	103,540	297,679	1,294,256	3,882,767	10,354,045
Gross Sales				259,090	259,090	562,861	703,577	844,292	1,125,723	3,236,452	17,446,686	52,591,763	140,580,310
COGS				163,945	163,945	400,200	500,250	600,300	800,400	2,301,150	10,005,001	30,015,004	80,040,009
Product Gross Margin				95,145	95,145	162,661	203,327	243,992	325,322	935,302	7,441,684	22,576,760	60,540,301
Product Gross Margin %				36.72%	36.72%	28.90%	28.90%	28.90%	28.90%	28.90%	42.65%	42.93%	43.06%
Other Income	62,500	62,500			125,000.00								
Total Income	$ 62,500	$ 62,500	$ 0	$ 95,145	$ 220,145	$ 162,661	$ 203,327	$ 243,992	$ 325,322	$ 935,302	$ 7,441,684	$ 22,576,760	$ 60,540,301
Expenses													
Corporate Formation	11,775.00	0	0	0	11,775	0	0	0	1,450	1,450	950	950	950
Overhead	3,629	7,110	7,964	6,739	25,442	43,321	22,174	20,074	8,134	93,703	75,982	163,532	235,557
Services	15,950	117,364	9,514	550	143,377	13,740	33,958	22,807	13,134	83,639	270,436	394,872	607,592
Capital Equipment	0	0	12,535	0	0	103,200	0	0	0	0	0	1,053,000	0
Prototyping	200	40,230	3,150	3,150	46,730	11,000	6,120	39,420	6,200	62,740	123,840	160,640	194,640
Marketing/Advertising	2,152	3,550	5,840	0	11,542	24,675	3,803	3,244	3,840	35,562	102,983	283,283	439,908
Warehousing	0	0	0	0	6,000	0	0	0	0	7,600	26,000	66,000	724,000
Testing	0	20,000	85,000	0	105,000	40,000	70,000	10,000	0	120,000	50,000	52,000	200,000
Salaries	33,400	38,600	30,600	42,600	166,800	234,672	267,922	317,672	317,672	1,137,938	2,218,212	4,902,212	9,710,212
Payroll	5,067	7,186	9,020	12,855	34,127	61,591	70,480	80,068	173,862	359,226	770,189	1,749,060	3,725,062
Total Expenses	$ 72,173	$ 234,039	$ 151,088	$ 65,894	$ 550,793	$ 428,999	$ 474,456	$ 493,285	$ 524,292	$ 1,901,858	$ 3,638,592	$ 8,825,549	$ 15,837,921
EBITDA	$ (9,673)	$ (171,539)	$ (151,088)	$ 29,251	$ (330,649)	$ (266,338)	$ (271,130)	$ (249,293)	$ (198,970)	$ (966,556)	$ 3,803,092	$ 13,751,210	$ 44,702,380
Loss Carryover										$ (330,649)	$ (966,556)	0	0
Taxes (35%)					0.00					0.00	1,669,377	4,812,924	15,645,833
NET INCOME	$ (9,673)	$ (171,539)	$ (151,088)	$ 29,251	$ (330,649)	$ (266,338)	$ (271,130)	$ (249,293)	$ (198,970)	$ (966,556)	$ 2,133,715	$ 8,938,287	$ 29,056,547
Cash Flow Adjustments													
Depreciation					2,943					14,619	24,101	251,273	282,379
Tooling I & II (depreciated)					2,507					23,147	23,147	23,147	23,147
Capital Expenses					0					0	0	70,200	70,200
NET CASH FLOW					$ (327,706)					$ (951,937)	$ 2,157,816	$ 9,189,559	$ 29,268,725

Contact: Capra J'neva, CEO | 503.407.4714 | capra@verandasolar.com

7.e Expenses

Expenses													
	1Q09	2Q09	3Q09	4Q09	2009	1Q10	2Q10	3Q10	4Q10	2010	2011	2012	2013
Total Corporate Formation	11,775	0	0	0	11,775	0	0	0	1,450	1,450	950	950	950
Overhead													
Utilities	0	0	414	484	898	809	809	809	809	3,236	4,072	4,072	4,072
Office Supplies	80	30	165	30	305	460	400	660	480	2,000	500	700	955
IT	300	0	245	45	590	6,845	45	345	45	7,280	10,100	15,600	28,500
Office Equipment	1,239	80	2,340	180	3,839	29,507	14,920	11,660	200	56,287	39,310	68,160	127,030
Fees	10	0	0	0	10	150	0	0	0	150			
Rent	0	0	1,800	3,000	4,800	3,000	3,000	3,000	3,000	12,000	12,000	60,000	60,000
Insurance (Corporate)	0	5,000	0	0	5,000	2,550	3,000	3,600	3,600	12,750	10,000	15,000	15,000
Travel	2,000	2,000	3,000	3,000	10,000	5,000	5,000	5,000	5,000	20,000	60,000	80,000	90,000
Total Overhead	5,248	7,220	11,542	7,962	31,972	81,750	39,157	34,357	10,477	165,741	134,036	256,136	400,186
Services													
IT	0	0	150	150	300	500	500	500	500	2,000	5,000	7,000	7,000
Payroll	0	64	64	100	227	115	133	157	484	889	2,136	4,872	10,092
Accounting	400	300	300	300	1,300	1,500	1,500	1,500	1,500	6,000	10,000	20,000	7,000
Cleaning	0	0	0	0	0	600	600	600	600	2,400	1,800	3,000	3,500
Maintenance	0	0	0	0	0	0	200	0	0	200			
Notary	0	0	0	0	0	25	25	50	50	150	500		
Lawyer	9,850	56,000	0	0	65,850	6,000	26,000	10,000	0	42,000	86,000	60,000	60,000
Engineering Contractors	4,200	54,000	9,000	0	67,200	5,000	5,000	10,000	10,000	30,000	105,000	170,000	290,000
Marketing Contractors	1,500	0	0	0	1,500	5,000	0	0	0	5,000	30,000	60,000	100,000
Executive Consultants	0	7,000	0	0	7,000	5,000	5,000	5,000	0	15,000	30,000	70,000	130,000
Total Services	15,950	117,364	9,364	400	143,077	23,240	38,458	27,307	12,634	101,639	265,436	387,872	600,592
Total Capital Equipment	0	0	0	0	0	0	0	0	0	0	0	1,053,000	0
Total Prototyping	200	40,230	3,150	3,150	46,730	11,000	6,120	39,420	6,200	62,740	123,840	160,640	194,640
Marketing/Advertising													
web	37	600	0	0	637	6,215	0	64	0	6,279	5,058	1,358	1,358
Print/Advertising	240	0	0	0	240								
Trade Shows	1,875	2,950	4,700	0	9,525	5,300	3,000	3,000	3,600	14,900	6,200	8,300	6,800
In-Store	0	0	0	0	0	0	0	0	0	0	55,000	160,000	250,000
Total Marketing/Advertising	2,189	7,100	10,540	0	21,944	36,190	6,803	6,308	7,440	56,741	169,241	452,941	698,066
Warehousing													
Total Warehousing	0	0	0	0	6,000	0	0	0	0	7,600	26,000	66,000	724,000
Total Testing	0	20,000	85,000	0	105,000	40,000	70,000	10,000	0	120,000	50,000	52,000	200,000
Salaries													
CEO	15,600	15,600	15,600	15,600	62,400	20,000	20,000	20,000	20,000	80,000	120,000	140,000	220,000
Director Engineering	12,500	15,000	15,000	15,000	57,500	20,000	20,000	20,000	20,000	80,000	110,000	110,000	120,000
Director Design/Research	0	0	0	0	0	0	0	0	0	0	100,000	100,000	120,000
Director Manufacturing	0	0	0	0	0	22,500	22,500	22,500	22,500	90,000	90,000	90,000	100,000
Director Sales/Marketing	1,500	0	0	0	1,500	25,000	25,000	25,000	25,000	100,000	100,000	100,000	120,000
Director Operations	0	0	0	0	0	20,000	20,000	20,000	20,000	80,000	120,000	120,000	120,000
Director Finance	0	3,000	0	0	3,000	22,500	22,500	22,500	22,500	90,000	100,000	100,000	120,000
Engineering	0	0	0	12,000	12,000	17,500	17,500	52,500	52,500	140,000	420,000	1,200,000	2,400,000
Design	3,800	5,000	0	0	30,400	15,000	15,000	15,000	15,000	60,000	240,000	490,000	700,000
Manufacturing	0	0	0	0	0	15,000	15,000	15,000	15,000	60,000	90,000	450,000	1,200,000
Prototyping	0	0	0	0	0	0	0	0	0	0	36,000	72,000	150,000
Marketing	0	0	0	0	0	12,500	25,000	25,000	25,000	87,500	180,000	240,000	240,000
Sales	0	0	0	0	0	20,672	29,422	38,172	38,172	126,438	200,212	550,212	900,212
Support	0	0	0	0	0	12,000	18,000	24,000	24,000	78,000	240,000	780,000	2,240,000
Warehouse	0	0	0	0	0	12,000	18,000	18,000	18,000	66,000	72,000	360,000	960,000
Total Salaries	33,400	38,600	30,600	42,600	166,800	234,672	267,922	317,672	317,672	1,137,938	2,218,212	4,902,212	9,710,212
Total Full Salaries					136,400	202,172	235,422	250,172	250,172	937,938	1,648,212	3,422,212	6,690,212
Payroll													
Healthcare	2,700	3,375	5,400	8,100	19,575	31,050	35,100	40,500	40,500	147,150	297,000	707,400	1,490,400
401K	0	845	845	845	2,535	7,935	8,970	10,350	10,350	37,605	75,900	180,780	380,880
Life Insurance	0	0	0	0	0	0	0	0	0	0	85,800	204,360	430,560
Gov't tax withholdings													
Social Security	1,742	2,207	1,897	2,641	8,488	12,535	14,596	15,511	15,511	58,152	102,189	212,177	414,793
Medicare	407	487	444	618	1,956	2,931	3,414	3,627	3,627	13,600	23,899	49,622	97,008
Unemployment Insuranc	217	271	434	651	1,573	7,140	8,400	10,080	10,080	8,925	20,580	52,500	113,400
Miscellaneous Benefits	0	0	0	0	0	0	0	0	93,794	93,794	164,821	342,221	798,021
Total Payroll	5,067	7,186	9,020	12,855	34,127	61,591	70,480	80,068	173,862	359,226	770,189	1,749,060	3,725,062
Total Expenses	$ 73,829	$ 237,699	$ 159,216	$ 66,967	$ 567,425	$ 488,444	$ 498,939	$ 515,132	$ 529,735	$ 2,013,075	$ 3,757,904	$ 9,080,811	$ 16,253,708
(Total Depreciable Expenses)	12,214	0	2,500	0	14,714					58,380	47,410	1,135,860	155,530
(Total Capital Expenses)												1,053,000	
Burn Rate	11,329	186,528	345,744	545,654		1,099,565	1,441,339	1,739,730	2,074,286		7,296,687	6,701,469	(8,914,836)

7.f Financial Assumptions

Veranda Solar is still in an early stage of product development. For that reason, to create our BOM, we chose to pick one of our most likely stage 1 designs for the product and develop a Bill of Materials that would reflect the costs involved to produce that product. Specifics are likely to change, but our team is experienced in designing products to meet both engineering and use scenarios, while balancing the needs of manufacturing and price control.

In our market, it is essential that we meet certain cost targets. We are engineering our products to minimize materials so that we can keep the product lifecycle environmental costs in control while achieving our objective margins. By following our environmental aspirations, we also minimize material commodity costs.

Because there is a certain amount of risk in making cost assumptions at this stage, we have built in generous error factors to both our bill of materials and projected costs of tooling. To create our pricing scheme, we assume an overhead of 28% and build that into our margin. We have calculated overhead separately to verify the actual expenditures we anticipate.

We have created our margins based on the assumption that we will start the business with a one-tier distribution system, selling directly to retailers at a company margin, and doing direct sales via our already-popular online presence. In year three, we move to a two-tier distribution system, and utilize distributors to put our products in the hands of retailers as our market expands. We continue to sell our products directly through utilities in a one-tier model.

We amortize tooling created for our pilot production run and initial smaller production run of under 100,000 units over the first five years. These tools have an expected lifespan of two to five years at the volumes we intend to produce. We amortize large-production run tooling over a ten year period.

We are able to contain our costs during our start-up phase by using donated office space and utilities in the home of one of our founders. We also use our own computers and office equipment during the first several years.

Fig 7.1 Growth Scenarios

Aggressive International Expansion

	2009	2010	2011	2012	2013
Number Customers	**1,000**	**10,000**	**30,000**	**100,000**	**200,000**
Gross Sales	1,024,986	18,392,750	55,178,250	183,927,500	367,855,000
COGS	557,134	10,564,271	34,860,535	117,081,609	235,075,942
Net Sales	**467,852**	**7,828,479**	**20,317,715**	**66,845,890**	**132,779,058**
Other Income	122,000	0	0	0	0
Overhead	633,412	2,187,136	4,548,241	11,737,981	27,716,363
EBITA	(43,561)	5,641,342	15,769,474	55,107,910	105,062,695
Loss Carryover	0	(69,651)	5,533,926	0	0
Amortization	2,943	14,619	24,101	251,273	282,379
Tooling I & II (amortized)	23,147	23,147	34,067	34,067	34,067
EBIT	(69,651)	5,533,926	21,245,232	54,822,570	104,746,249
Taxes	0	0	7,010,927	18,091,448	34,566,262
PROFIT	**(69,651)**	**5,533,926**	**14,234,306**	**36,731,122**	**70,179,987**

International Expansion

	Year 1	Year 2	Year 3	Year 4	Year 5
Number Customers	**500**	**8,000**	**15,000**	**40,000**	**100,000**
Gross Sales	512,493	14,714,200	27,589,125	73,571,000	183,927,500
COGS	278,567	8,451,417	17,430,268	46,832,644	117,537,971
Net Sales	**233,926**	**6,262,783**	**10,158,857**	**26,738,356**	**66,389,529**
Other Income	122,000	0	0	0	0
Overhead	550,793	2,092,043	4,002,452	9,708,104	17,421,714
Amortizable Overhead	14,714	58,380	47,410	1,135,860	155,530
Total Expenses	565,507.4	2,150,423	4,049,861.7	10,843,964	17,577,244
EBITA	(194,868)	4,170,740	6,156,406	17,030,252	48,967,815
Loss Carryover	0	(220,957)	3,912,016	0	0
Amortization	2,943	14,619	24,101	251,273	282,379
Tooling I & II (amortized)	23,147	23,147	34,067	34,067	34,067
EBIT	(220,957)	3,912,016	10,010,254	16,744,912	48,651,369
Taxes	0	0	3,303,384	5,525,821	16,054,952
PROFIT	**(220,957)**	**3,912,016**	**6,706,870**	**11,219,091**	**32,596,418**

Conservative Domestic Growth

	Year 1	Year 2	Year 3	Year 4	Year 5
Number Customers	**400**	**2,300**	**10,000**	**30,000**	**80,000**
Gross Sales	413,142	4,349,174	18,909,452	56,728,357	151,275,618
COGS	217,739	2,454,478	11,803,802	35,683,052	95,512,693
Net Sales	**195,403**	**1,894,696**	**7,105,650**	**21,045,305**	**55,762,925**
Other Income	122,000	0	0	0	0
Overhead	550,793	1,901,858	3,638,592	8,825,549	15,837,921
Total Expenses	672,793	1,901,858	3,638,592	8,825,549	15,837,921
EBITA	(233,390)	(7,162)	3,467,058	12,219,756	39,925,003
Loss Carryover	0	(259,480)	(304,408)	0	0
Amortization	2,943	14,619	24,101	251,273	282,379
Tooling I & II (amortized)	23,147	23,147	34,067	34,067	34,067
EBIT	(259,480)	(304,408)	3,104,482	11,934,416	39,608,558
Taxes	0	0	1,024,479	3,938,357	13,070,824
PROFIT	**(259,480)**	**(304,408)**	**2,080,003**	**7,996,059**	**26,537,734**

8 Operations & Manufacturing

Veranda Solar currently has two full-time employees and three contractors. We have employed two other contractors and a market research firm to develop our inverter specification and complete our engineering and market research. For efficiency, we are currently operating in donated office space. We do our mechanical prototyping in-house at a donated facility in downtown Oakland which includes 6000 square feet of floor space, four CNC mills, two CNC lathes, an injection molding machine, CNC 2-D cutters and other welding and metal-working facilities capable of creating our prototyping tooling and plastic parts. We are evaluating prototyping houses and manufacturers for our inverter both in the Bay Area and in Portland, Oregon.

Because we are operating with a lean team to keep our product development costs low, our team members are skilled in wearing many hats. See our organization chart for a description of our titles and roles. We have specifically chosen team members with the ability, experience and desire to work across broad areas of expertise.

We plan to initially contract our manufacturing and are working with a high-quality back-contact cell and module manufacturer in Hong Kong to finalize a production agreement. We hope to manufacture as much of our product as possible domestically, including final assembly and boxing in domestic facilities. We expect to use contract manufacturing for production runs up to 40,000 units.

As we expand production to 100,000 units, we will evaluate creating our own factory facilities and automated lines for our panel manufacturing, which would require another capital campaign, or using tier three manufacturing facilities abroad.

Appendix 1: SWOT Analysis

Strengths

Product
- Affordable & Attractive to those who most want solar
- Easy to install, Plug-&-Play
- Scalable system can be expanded as budget allows
- Obvious status symbol
- Resembles non-solar products used to decorate house, lowering barrier to entry

Team
- Design engineering expertise
- Experience with clip on, secure racking
- Stanford Innovation method
- Stanford network
- Marketing Channel Expertise
- Advisors bring many years experience in scaling manufacturing, funding, business
- Soft job market makes expertise available
- Added contractors with model building, channel development, industrial design expertise

Manufacturing
- Product not dependent on state of cell technology, flexibly interchange cell micro-architectures to use most efficient and affordable technology available

Business
- Substantive market research and results already collected
- Working prototypes in hand
- Research and prototypes validated by major cell/module manufacturer (SunPower)
- Full access to 6000sq ft. CNC enabled manufacturing facility for production of product prototypes and initial manufacturing = 10K/month value

Financial
- 126,000 in seed money, prize

Marketing
- Substantial press from PICNIC Green Challenge, sparks interest worldwide

Legal
- Portland code officials agree plug-&-play device would not trigger code/inspections reviews
- Representation by Morrison | Foerster

Weaknesses

Product
- Needs UL Approval

Financial
- Need angel funds to complete product development & launch: 1.5 M

Team
- Need EE to manage Inverter development
- Aggressive timeline requires hiring in a field with high demand for skills

Manufacturing
- No reputation to use to create relationship with contract manufacturers
- With small scale production, supply of silicon cells and III-Vs may be compromised given global demand for cells.
- Risk involved in manufacturing and supply-chain assumptions.

Business
- Veranda is a new business lacking market success/reputation

Marketing
- Need to develop channel connections, LOI

Legal
- Some installations may require permitting under current code law. Have to work with code officials to change national code for complete self-install.

Opportunities

Market/Innovation
- Core values make our product independent of dollars/watt and commodity driven market
- Poised to take advantage of under-exploited market
- Team strong in product development keeps ahead of innovation curve
- Green lifestyle trend increases demand – other products are out of reach of core market
- Competitors blindsided to enormity of this market by their emphasis on dollars/watt and power generation on a utility scale

Industry
- Established industry ripe for innovation
- Rapidly developing core technologies

Network
- Connections to Stanford engineers at cutting edge of solar
- Connection to Sunpower (cell supplier) and thermal glass producers
- Team members involved in Stanford energy conference have opportunity to affect energy policy
- Connection to utilities, officials in green building sector
- Connection through PICNIC opens doors

Threats

Commodities Market
- Increasing demand on raw materials sends commodities through the roof
- Spiraling cost of petrochemicals increases expense of all materials and transportation
- Potential problems securing silicon cells in overstretched silicon market
- Glut of panel manufacturers over-supplies market, forcing down prices and margins

Legal
- Plug & play code legalities must be confronted on a region-by-region basis and with all utilities involved
- Crowded patent landscape could limit ability to operate or require expensive licensing agreements

Competition
- Larger manufacturers seize on market success and are able to scale up production faster
- Inability to access channel innovations due to small size of Veranda, lack of reputation

Veranda SOLAR
Contact: Capra J'neva, CEO | 503.407.4714 | capra@verandasolar.com

Appendix 2: Market Profile Research Results

Our market consists of two main groups: conscious consumers, and young people with a strong environmental focus.

"Conscious Consumers" are a familiar market category, and are sometimes called LOHAS, for Lifestyle of Health and Sustainability (although we break down the LOHAS segment into two categories "Conscious Consumers" and "Maker Naturalists" because their needs relating to our product are distinct). They are focused on maintaining a lifestyle that ranges from hip to luxurious, and they are aware of environmental issues and trying to do their best to live in harmony with the environment. For this group, that means voting with their dollars—making consumer decisions towards products that are manufactured locally, made of non-toxic materials, with fair labor practices and organically grown or sustainably forested components. They aspire toward products that would reduce their environmental impact, especially if such products carry a status premium, such as the Prius. They shop at Whole Foods and Design Within Reach, and they carry gadgets and personal electronics, especially quality status symbols such as the iPhone. While they try to do their best, they are deeply confused as to what actually constitutes "sustainable," are plagued by feelings of guilt for not knowing and tend to make choices spuriously and intuitively, often based on the messages conveyed by packaging. They favor a clean, sophisticated design look and their choices have a strong influence on the mainstream. While they may be of any age, this market tends to be younger people and couples without children and older people who were raised with environmental values but have fallen into a more comfortable lifestyle as they have aged. Parents of young children, who have similar concerns, tend to focus more on the health and well-being of their children and less on their own environmental status symbols. While Conscious Consumers genuinely care about the environment, they are not willing to make more than minor lifestyle changes to accomplish their environmental goals. They want their significant purchases to give them environmental "bragging rights," and therefore products that serve them must be convenient to use, attractive and status-oriented.

This market has an above-average income profile and tend to own homes or condos. They are often located in urban areas and loft condominiums.

They would tend to purchase our products at electronics stores, home improvement stores, online (especially after seeing them in person) or as part of a wedding gift registry, and at furniture and lifestyle stores ranging the gamut from Restoration Hardware and Pottery Barn to Design Within Reach. They already purchase green power, and would be open to buying panels from the utility, as long as they would own the panels, not lease them.

Young people, who we call **"Networked Youth,"** start out with less of a market share within our company, because solar has been undersold to them and oversold to wealthy older people living in established housing. However, once this market has been opened to the idea that solar is within their reach, we expect this group to grow at the fastest rate, because their networking skills have been established during the digital age, and they tend to care about the environment as a matter of course, having the most to lose from carbon-related climate change.

This group consists primarily of renters between the ages of 20-30, comprising some 10 million households in urban areas of the US alone (Source: American Housing Survey). In most of the country, they represent 25% of urban dwellers. Active and energetic, this group is idealistic, enjoys volunteering, and engages actively in their civic life and duties. They see themselves as a smaller part of a whole, and

thus are eager to engage with a community that will help their individual effort create a larger impact. They have limited means, and frequently weigh purchasing decisions against sacrifices they will have to make. They try to make environmentally responsible consumer choices, but make frequent compromises to fit their budget.

They use computers, mobile applications and media to stay in touch with large networks of people, to access their communities' social calendars, to share their enthusiasm for entertainment and products, and to accomplish their goals. This YouTube generation is focused on making their own content, not just taking for granted what is given to them. They are adept at reusing Goodwill finds and furniture found on the street or at discount stores.

This group is most interested in purchasing or leasing our product through a utility, especially if there is a monthly payment plan that allows them to avoid paying a lump sum. Many of them already pay a bit extra for green power, and primarily live in small spaces with minimal electrical bills and needs. Their first action after getting a panel would be to tell all their friends via Twitter or a Facebook status update that they were going solar, even before installing the panel. They would likely own only one panel at the outset, but would be important in spreading fervor for the product to their friends. They are prime candidates for expanding their systems as their budgets and lifestyles improve over time.

Our other primary market, we call **"Maker Naturalists"** an environmentally-oriented segment of the "creative class" which is estimated to comprise 30% of Americans. These are strong environmental advocates who will make deep lifestyle and financial sacrifices to meet their ecological goals. They are often charismatic leaders and mavens in their communities, with active social lives that are often engaged around community and environmental projects. This group focuses their early environmental efforts around food. Most grow an edible garden and may even keep chickens in an urban area. They strive for a completely sustainable lifestyle epitomized by homesteading in the countryside (though very few ever achieve this goal), are self-aware of personal hypocrisy and tend to be distrustful of technology. They view personal effort and sacrifice toward the environment more positively than simply making "green" purchasing decisions. Green Consumers follow in their footsteps, but won't make the same sacrifices.

Makers are most likely to create novel and interesting ways of hanging and displaying their panels, viewing them as "artwork." They like to research their larger environmental purchases, but may have less technical understanding or interest than the "Numbers Verifiers." They are less worried about payback period and more about getting something that fits their budget while advancing their environmental goals.

This group would purchase our panels from home improvement and local hardware stores, directly from the company or online. They would love to purchase panels from a utility, especially if they would own the panels themselves.

Smaller market segments are represented by **"Parents"**, **"Numbers Verifiers"** and **"Accidental Environmentalists." Parents** are predisposed to have an environmental bent from their children, but are more likely to learn about or take interest in our products if they see them as having an educational benefit to their children. They focus their environmental purchasing on products that will help to create a more healthy home environment such as toxin-free cleansers and organic food.

Appendix 2: Market Profile Research Results (continued)

Numbers Verifiers are often handy people adept at making home repairs and comfortable with a ladder. They want to be sure that the products will achieve a payback period that will give them a good deal for their money. They are attracted to our product because they can bring it with them when they leave one house for another, and are therefore more likely to recoup an investment, but they may be more interested in larger traditional systems. They would research any purchase thoroughly and try to get the best price per watt, while balancing data about the system's lifespan and warranties. Our product's highly efficient electrical output will be a strong selling point to them, but they need to clearly understand the difference between dollars per watt on the panel rating (which unfortunately is the industry standard at the moment) and the system performance in terms of usable power output available at the inverter.

Accidental Environmentalists usually make environmentally positive decisions without any thought for the environment. For instance, they may take a bus or ride a bike, simply because they save the money and hassle of a car. Others may see them as being environmental, but they don't think of themselves that way. For this reason, while some of them may be interested in our panels if they seem to convey a secondary benefit, we do not see them as a primary market.

Appendix 3: Competition Analysis

The residential solar market would simply not exist were it not for government subsidies (usually in the form of rebates from states and utilities) that require panel system owners to connect their panels to the grid. In essence this market relies on consumers motivated by environmental sentiment who are paying at least half the cost of creating a small-scale power plant for their local utility. The fact that this is a $2.5 billion industry hints at just how motivated those consumers are.

In the residential rooftop sector, there is a glut of panel manufacturers, chief among them being Sharp Corp. (SHCAY), who own 27% of the market share (including commercial). They are joined by Sanyo, Kaneka, Kyocera SunPower, BP Solar, Global Solar, First Solar and Solar World AG. The current panel surplus is driving down margins and forcing these companies to differentiate their products. While they certainly have the means to produce innovations, their engineering focus has blinded them to consumer-facing solutions, and they favor incremental change over ground-breaking innovations because of their aversion to risk.

Companies such as Konarka, Energy Conversion Devices, Inc. and Nanosolar are on the leading edge of innovative technologies that could drive down the cost of solar and allow more ubiquitous solar applications. Their coatings can be applied to many substrates and have the potential to revolutionize how solar is used; however, many of these products will be many years in development before they are commercially available, and companies such as Nanosolar are focused exclusively on the utility-scale market.

In the existing residential solar market, installation companies are generally putting more effort into creating a smooth consumer experience, offering innovation in financing, rooftop evaluation and engineering and in the installation process. For instance, SolarCity added an easy monthly-payment financing program to their offering just as bank loans were tightening up around the credit crisis, and saw their sales jump 40% within a month. Some companies offer panel leasing programs, satellite imagery-enhanced roof space evaluations and other turn-key options that allow homeowners to get a solar electric system with less hassle. These companies must still create marketing to overcome the widely held perception of mystery around the acquisition of a solar panel system, as well as the fact that a large number of customers are not satisfied with only leasing a system. When the costs of a loan and interest are factored into the price of the solar generating system, the cost-payback period for the system can reach up to 20 years.

Most consumer-facing solar product development has been confined to the realm of gadgets. Foldable or rollable solar panels and bags designed to charge laptop batteries represent the best of these products, and they typically employ extremely low-efficiency amorphous silicon cells, which, while better at harvesting sunlight coming from any angle of incidence, require large panels to generate even small amounts of power. Typically designed more for portability than for ease of use or for beauty, notable exceptions include the Solio cell phone charger and some path light products. Devices in this category generally boast dollars per watt prices that easily shoot to a stratospheric $36/watt. Because many products in this category serve a dual purpose—providing power on the road, or eliminating the need to install wires underground to hook up path lights—these are the types of products likely to appeal to the Accidental Environmentalists in our market analysis. The low prices of some products in this category have created a ready market for them. For instance, solar path lights, by eliminating the need for electrical installation,

Appendix 3: Competition Analysis (continued)

are more affordable and easier to install than their grid-powered cousins. While their resin-coated panels degrade in as few as two to three years, their low price tag of $30-100 for a set of four allows people to treat them as a disposable product, easily replaced with a new set. Noticeably, many solar gadgets have a single use, such as powering a fan or lighting product. Nearly all rely on battery technologies with attendant inefficiencies and lifecycle impacts, as battery quality rapidly degrades and toxins in the batteries represent a disposal issue at the end of their life.

The true benefits of a distributed power system should also be taken into account when considering our product's environmental impact. Centralized utility-scale solar power plants are often located in deserts, where they require millions of dollars of investment in transmission lines. The grid itself is inefficient, losing vast amounts of power during transmission. When power is used close to the source of its generation, those line-losses are avoided, leading to more useful power available for consumption.

Appendix 4: Sources Consulted

World Wealth Report 2007
Worldwatch & Natural Marketing
Wintergreen Research 2008 Report on Solar Residential Market
American Housing Survey 2007
US Census Bureau
US Energy Information Administration
US Department of Energy
Intersolar Conference 2008
IEEE
Solar Oregon, Consumer Advocacy Group
Precourt Institute for Energy Efficiency's 2008 Smart Metering Conference, Stanford University
Veranda Solar Market Research, October-November 2008
Tinder Labs Market Research for Veranda Solar Inverter Interface, February 2009
"Addressing Isolation as an Ecological Problem: Celebratory Mobile Plug-&-Play Infrastructure," Product Design Master's Thesis, Stanford University