

**DOES SOLAR PAY?:
AN ANALYSIS AND STRATEGY FOR SUCCESS
IN THE CHANGING REAL ESTATE MARKET**

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Introduction

In order to progress in my career, I decided to pursue a Masters of Science in Real Estate at Johns Hopkins University's Carey Business School to broaden my knowledge base in areas such as real estate law and regulation, construction, architecture and more sophisticated financial analysis that otherwise are not presently available in the work environment. The Hopkins program provided me a comprehensive core real estate curriculum but also allowed for a niche specialization. I believe the additional exposure and foundation that I gained from this educational experience will enable me to have an additional layer of real estate credibility when starting my own real estate business. Two years ago the world was a different place. While the financial world and the real estate market have changed drastically since I began my educational journey; I am determined to capitalize on my graduate-level education. Given the current tenor of the real estate marketplace, I am deterred from becoming a real estate owner and or developer due to the lack of the availability of debt financing, high costs associated with new construction and the difficulty in determining appropriate valuation due to limited transaction volume. However, I am attracted to the trend of sustainability in "Going Green" and in particular solar power and the concept of "Going Solar."

My real estate practicum paper will describe a business plan for a solar installation company. Further, the paper will address the key question of many real estate owners "Does Solar Pay?" The photovoltaic solar panel system company will install both standard and custom modules upon existing roofs of commercial and residential properties. The paper will discuss the growing trend and appeal of installing photovoltaic solar systems and provide an analysis of the financial benefits of adopting solar power for

commercial and residential real estate property owners in Maryland in the post American Recovery and Reinvestment Act of 2009 (“ARRA”) climate.

Summary Business Plan

The marketplace for photovoltaic solar systems is growing exponentially in the United States and demand for clean energy alternatives for residential and commercial real estate property owners is not being adequately addressed.¹ Solar energy is clean to produce, is a less expensive source of electricity than the local utility company and reduces a property's carbon footprint. Abramson Solar, Inc. ("Abramson Solar", the "Company" or the "New Venture") will provide turnkey solar service for homeowners and commercial property owners interested in purchasing and installing solar panels on their respective rooftops. The mission of the New Venture is to spread solar panel systems to rooftops across the Mid-Atlantic States coupled with a focus on maximizing new owner's return on investment.

The Company's initial footprint will be in the state of Maryland. Maryland is particularly appealing for solar users because of the number of hours of daily sunlight and the local government which offers generous incentives and tax credits.² The New Venture will focus on the sale of solar panel systems and assist with financing the upfront costs of the installation. Further the Company will provide advisory services to navigate through various federal, state and local incentive financial programs. The New Venture will have three key sources of revenue: sales of solar panel systems, financing fees and advisory service fees.

The Company will build an experienced and entrepreneurial sales force that will establish and grow a network of customers through a variety of community and political

¹ Energy Information Administration: Official Energy Statistics from the US Government (www.eia.doe.gov)

² Maryland Energy Administration (<http://energy.maryland.gov>)

sourcing channels. To assist in the solar installation process, the New Venture will employ several engineers to oversee the design and manage a number of construction crews. Overall, the sales force will provide an initial consultation and feasibility assessment to a potential customer and follow-up with a customized financial and environmental analysis. The engineering department will procure the approximate solar system equipment from a top vendor and work in a timely manner to complete the installation. To ensure an alignment of interests between employees and the management, the business will be conducted on a commission basis. Management estimates that the target profit margins on the sale of solar systems will be approximately 30% to 35%.

Whether a customer is concerned about the environment or fearful of rising electricity costs, solar is the solution. The solar product can sell itself so the New Venture's sales force will be more of an educating and advisory force to potential customers. By "Going Solar" consumers can benefit in a multitude of ways beyond positive environmental contributions, including energy independence, energy saving, appreciation of property value and improved standing within the community. Abramson Solar will tailor solar solutions to meet the customer's needs and requirements while attempting to maximize their return on the investment.

This New Venture is being established at an advantageous time given the high level of government involvement in the development of solar power, as shown by the number of federal, state and local incentive and tax credit programs. These incentive and tax credit programs are aimed to alleviate the high up-front costs of the purchasing panels and installation.

Fundamentals of Solar Panels Systems

The process for capturing the energy produced by the sun is conducted by installing a photovoltaic solar panel which converts sunlight into a direct current (“DC”) power. Photovoltaic is the process by which the sun’s rays (light) are converted into electricity (voltage). The efficiency of the solar systems relies on the location of the sun and the positioning of the panels. The DC power produced is sent to a power converter device called an inverter which changes the power into 120-volt alternating current (“AC”) which is identical to typical power received from the utility grid.³

The power produced goes to the building’s electrical service panel to operate the facility while excess power is stored on a battery for future use. When the battery reaches capacity, the excess electricity can be exported back into the general utility grid. When excess power produced by the panels is pushed to the general utility grid, the power company essentially purchases the power by granting a credit through a net metering agreement.⁴ The property’s utility meter actually spins counterclockwise as credits are earned. The time-of-use meter monitors credits received by the utility company, which vary depending on time of day (i.e. peak or off-peak), day of week and month of the year.⁵ The credits can offset a portion of or an entire energy bill, directly lowering operating expenses and thereby driving up net operating income.

³ Sandia National Laboratories Photovoltaic Solar Research and Development (www.photovoltaics.sandia.gov/docs/faq.htm)

⁴ Borrego Solar Systems, Inc. 2008 (www.borregosolar.com/business/how-solar-power-works.php)

⁵ SunEdison Worldwide (www.sunedison.com/how--solar-electricity-works.php)

Benefits of Solar Panel Systems

The Abramson Solar sales force will educate potential customers on the number benefits of purchasing and installing solar panel systems. Solar panel systems are virtually maintenance free and will last for decades. Following the initial up-front costs, the systems do not require additional capital. As customer's needs evolve, panels easily can be added or removed from roof tops. Benefits range beyond the environmental aspects from energy cost reduction to increasing property valuation. Concurrently, the sales force will provide a financial analysis of each benefit to evaluate potential returns on the investment in a solar panel system.

Energy Costs and Independence

Solar panels can reduce a commercial building or residential property's electrical operating expense by a significant amount and protect owners against rising utility rates. According to the United States Department of Energy, Maryland's electricity rates have historically increased by 9% a year over the last 10 years.⁶ Rates fluctuation year-over-year and the volatility creates difficulty for property owners to accurately forecasting respective operating budgets. The installation of a solar system can reduce or eliminate exposure to the uncertainty of the energy rates and budgets can fix or predict long-term energy operating expenses.

Energy price increases are directly correlated with the quantity and availability of natural resources. As energy resources become scarcer and the environment deteriorates

⁶ US Department of Energy: Clean Energy Technology (www.eere.energy.gov)

energy costs will likely substantially increase.⁷ However, the portion of commercial and residential owner's electricity sourced from solar systems is immune to those changes because energy is produced at a fixed cost. Owners and operator likely will switch to adapt the solar panel system option of having one low, fixed electricity rate for the next 25 years instead of being subject the energy price movement Overall, the amount of operating expense saving is equal to the amount of kilowatt-hours generated internally through the solar paneling. Further, the lower energy operating expense will allow commercial property owners to show a higher net operating income which will directly increases valuation.

As the United State's sources of oil and gas decrease, more importance and pressure is being place on a defining an energy alternative solution. Through purchasing and installing a solar panel system aids in reducing the United State's reliance on foreign energy sources creating domestic independence. Further, the use of solar energy reduces the United States dependence on a centralized source of energy.

Lastly, solar panel systems well position the United States for a sustainable future with protection from natural disasters and negative international events such as political turmoil or terrorism. For instance, in the spring of 2010, the volcanic eruption in Iceland which halted air travel across the Atlantic Ocean and the collapse of a BP oil drilling rig off in the Gulf of Mexico will have direct pricing effects on energy commodities.

⁷ See footnote 6 (www.eia.gov/cneaf/solar.renewables/pages/solarphotv/solarpv.html)

Environmental and Social

Installing solar panel systems and by utilizing solar energy can help fight global warming. Reducing the electricity that we draw from the utility grid means reducing carbon emission which results in cleaner air, water and soil. According to the United States Environmental Protection Agency (“EPA”), generating solar energy limits the amount of production required from our nation’s fossil fuel burning utility companies which increases green house gases and carcinogens in the air and have effects that can last for decades.⁸

These environmental effects and impacts of reduced carbon emissions on the green house gas can be calculated. The EPA has created a greenhouse gas equivalencies calculator in order to quantify the environmental benefits for an average solar panel system of 5kW, over the lifespan of the panel (which is typically 30 years plus), the system will have the following environmental impact:⁹

- 2,610 trees planted (87 planted annually)
- 19 cars removed from the road for a year
- 0.5 railcars of coal not burned
- 35 tons of waste recycled rather than landfilled

⁸ United States Environmental Protection Agency (www.epa.gov)

⁹ United States Environmental Protection Agency Greenhouse Gas Equivalencies Calculator (www.epa.gov/cleanenergy/energy-resources/calculator.html)

Valuation Appreciation

Solar panels systems are one of the few commercial and residential improvements guaranteed to increase the value of the property. In the case of residential remodeling, renovation and finishing are subjective to the owner's tastes as well as current design trends. In commercial remodeling, most tenants will be granted an allowance for interior build out. However, the value-add of a solar system is objective. The system is proven to decrease electricity bills payable to a utility company, providing value to the property owner.

Commercial

In a June 2008 article entitled "Valuing Green Buildings," The Urban Land Institute stated that energy-efficient features, including solar panel systems, not only can generate additional net operating income, but can increase tenant retention and decrease lease turnover.¹⁰ New development of green buildings can lower risk by reducing carrying costs during the planning and construction phases. Further, the article states, "a number of municipalities recognize the benefits of having green buildings in their communities, and have expedited the permitting and approval process for energy-efficient buildings."¹¹ By shortening the construction process, the green developer can reduce paying interest on the loans which make a direct impact on the bottom line and the increase the overall return on investment.

¹⁰ Urban Land Institute, "Valuing Green Buildings": Dialogue Sustainability, June 2008, Constantine A. Valhouli

¹¹ See footnote 10

Beyond the financial and environmental benefits of the solar systems, there are intangible benefits from a public relations perspective. Being a green business not only can reduce operating costs, but can serve as great source of public relations as well as a good marketing tool. There are a growing number of consumers who make their buying decisions based on the perceived environmental responsibility of the vendor. Adopting a solar energy posture can aid the corporate message and sustain corporate initiatives.¹²

L.L. Bean and Lowe's both serve as examples of companies that have enacted green building standards and have achieved an improved public image.¹³ The "Green" company image has helped to attract a strong loyal customer base. The Urban Land Institutes highlighted these stores, in January 2008, for their Leadership in Energy and Environmental Design ("LEED") designation. LEED is a green building rating system developed in 2000 by the U.S. Green Building Council. The designation is a visible example of the company's commitment to being a responsible steward of the environment. With regard to new construction and lease-up of properties, The CoStar Group, a commercial real estate information company, published a study entitled "Does Green Pay Off?" which compares the lease-up rate of energy efficient buildings versus non-energy efficient buildings.¹⁴ The study analyzed not only spending of lease-up but rental rates as well. The study proves that tenants are willing to pay a rental premium for commercial space with energy features such as solar paneling.

¹² International Council of Shopping Centers, "Low-Emission Leasing", Curl Hazlett,, October 2009 (www.icsc.org)

¹³ Urban Land Institute, "Green Developments", Charles Lockwood, January 2008

¹⁴ Burnham-Moores Center for Real Estate, July 8, 2008 "Does Green Pay Off?" Norm Miller

As Abramson Solar establishes itself as a major solar panel installer in Maryland's residential market, the Company will expand its business line focus to include commercial properties in order to capitalize of the proven success and demand.

Residential

Solar panel systems have proven to be a good long-term investment for residential owners. According to The Appraisal Journal's article entitled "More Evidence of Rational Market Value for Home Energy Efficiency", a residential property value is increased by \$20,000 for every \$1,000 reduction in annual operating costs from energy efficiency.¹⁵ Further, a recent Business Week article entitled "Will Demand for Solar Homes Pick Up?" reports that homes with solar panels sell faster than non-solar homes and at a premium of up to 5%.¹⁶ The appeal of solar homes grows as the economic outlook worsens and as more households focus on reducing expenses including monthly utility bills. Homeowners are now viewing solar panels as long-term assets.

Further, a study by entitled "Comparative Analysis of Homebuyer Response to New Zero Energy Homes," conducted by the National Renewable Energy Laboratory (which is operated by the Department of Energy), proved that residential properties with solar panel systems appreciate faster and sell more easily than identical homes without solar panels in a neighborhood community.¹⁷ As turmoil is ubiquitous throughout the

¹⁵ The Appraisal Journal, October 1999, More Evidence of Rational Market Value for Home Energy Efficiency, Rick Nevin

¹⁶ Business Week, "Will Demand for Solar Homes Pick Up?: Builders find the saving from cheap power is making solar homes more attractive", October 23, 2008, Adam Aston

¹⁷ National Renewable Energy Laboratory, August 2004, Comparative Analysis of Homebuyer Response to New Zero Energy Homes, Barbara Farhar (www.eere.energy.gov)

residential marketplace, solar panel systems provide a solution for navigating the storm by enabling value creation and liquidity through ease of sale.

Financial Incentive Programs

High Up-Front Costs

The cost of solar electric systems can vary depending on asset type, size of roof and amount of power required. Industrial users require a system of different scale than a small retail business or a residential household which typically require smaller systems. In line with New Venture's mission statement, Abramson Solar will tailor solar panel system solutions to meet the specific customer's needs and requirements. According to SunEdison, North America's largest solar energy services provider, a commercial facility and residential properties may require an investment in varying levels of systems with up-front costs ranging from \$200,000 to over \$1,000,000 and \$20,000 to \$150,000, respectively.¹⁸

Government Incentives

In order to attract customers to invest in purchasing and installing solar panel systems a number of federal, state, local, and utility incentive are currently available. The programs have been established to assist in considerably lowering the up-front cost of "going solar" by reducing equipment and installation costs. These incentive programs

¹⁸ See footnote 5 (www.sunedison.com/commerical--solar-energy-power-investment.php)

were created to breakdown the financial barriers of entry of solar panel systems and incentive customer to act in a timely manner. These programs enacted on all levels of government have been designed to encourage real estate developers and owners to generate their own solar power. The programs include direct rebates, tax credits, loan programs and other financial incentives.

However, the series of government incentive programs are complex and may require cumbersome paperwork for customers to achieve or effectively monetize. As mentioned, Abramson Solar will provide advisory services and manage the process on behalf of its customers. Further, these government incentives on all levels increased dramatically in the last few years, which have created an increase in the demand for solar systems as potential customers seek to take advantage of the attractive rebate programs and incentives. Statistics showed that a peak in the incentive offered occurred in 2008, prior to the recent economic downturn and recession which has directly impacted average household incomes.¹⁹ For lack available financial resources, local and state governments have begun scaling back as money begins to run out and the federal government has shifted its incentive priorities to long-term investments like R&D, or into large scale projects like a smart grid or long distance transmission lines.²⁰ Therefore, the Abramson Solar sale force must act today to maximize the financial return on investment for Maryland clientele.

¹⁹ Maryland Energy Administration (<http://energy.maryland.gov/incentives/asp>) and DSIRE Solar: Maryland Incentives/Policies for Renewable & Efficiency (www.dsireusa.org)

²⁰ The Bay Net, "O'Malley Outlines Policy to Secure Maryland's Energy Future", August 2008

Federal Involvement

The recent political economic stimulus policy, known as the American Recovery and Reinvestment Act of 2009 (“ARRA”), which was crafted by the Obama Administration, and put into action by the United States Congress, has allocated approximately \$40 billion for energy efficiency and renewable energy programs including billions for research and development and subsidization of loans toward renewable energy projects. Additionally, the White House has announced a Property Assessed Clean Energy (“PACE”) program, a municipal financing program, which through bonds, allows for attractive financing of the up-front costs of commercial energy retrofit and installations by granting property owners the ability to repay borrowings over a 15 to 20 year period through an annual property tax surcharge, yielding immediate annual energy saving.²¹

With regard to residential solar installations, the federal Energy Policy Act of 2005 established a 30% treasury grant investment tax credit (“ITC”) on solar power systems for up to \$2,000 which helps to offset a large portion of the upfront system costs. The Tax Relief and Health Care Act of 2006 extended the tax credits through December 31, 2008. Further, in October 2008, the Energy Improvement and Extension Act of 2008 extended the credits once again until December 31, 2016. The ARRA in 2009 allowed tax-paying entities the option to receive the ITC as a grant from U.S. Treasury Department instead of taking it as a tax credit for projects which are starting in 2010 and

²¹ American Recovery and Reinvestment Act of 2009, Pub.L. 111-5, February 17, 2009 (www.gpo.gov)

placed into service on or before December 31, 2016, and removed the maximum credit amount.²²

Additionally, the federal government has adjusted the Modified Accelerated Cost Recovery System (“MACRS”). MACRS is the standard U.S. income tax code standard of accounting for accelerated asset depreciation.²³ The adjustment allows commercial businesses and residential owners the ability to accelerate the depreciation of their respective solar panel systems to be over a 6 year period.

²² See footnote 21

²³ Wikipedia (<http://en.wikipedia.org/wiki/MARCS>)

State

Many states offer rebates similar to the federal government in order to encourage the growth and adoption of renewable energy resources yet tend to vary from state to state.

The Maryland Energy Administration (“MEA”) offers Solar Energy Grants Program (the “Grant Program”) through funding made possible by the ARRA. The Grant Program offers rebates to solar panel system owners based on the size of the system installed. The current grant is for \$1.25 per watt for the first 2,000 watts capacity of the installation, \$0.75 per watt 2,001 to from 8,000 and \$0.25 per watt from 8,001 to 20,000 with a maximum grant of \$10,000.²⁴ Eligible systems are required to be less than 20 kilowatts. (The average residential solar panel system is 5 kW.) Further the Grant Program, which took effect in January 2005, replaced the state’s expired “Clean Energy Incentives” tax credit for solar-energy equipment. According to the Maryland Incentives/Policies for Renewable & Efficiency, the new Grant Program has provided funding support to more than 200 projects.²⁵

In Maryland, solar installation costs are exempt from sales tax and cannot increase a homeowner’s property taxes. Further, the MEA provides commercial real estate developers a tax credit for construction of green buildings by offering a credit for up to 8% of the total cost of the building.²⁶ The income tax credit was enacted in 2001 and applies to buildings at least 20,000 square feet that meet criteria established the U.S. Green Building Council. In particular, the tax credit amounts allow for 20% of the

²⁴ See footnote 2 (<http://energy.maryland.gov/incentives/residential/solargrants.asp>)

²⁵ See footnote 2

²⁶ See footnote 2

incremental cost for building's photovoltaic system. However, as of July 2009, all the available credits allocated to this program had been granted.

State Solar Renewable Energy Credits Program

Through the Maryland Solar Energy Grant Program and green tax credits, Maryland commercial and residential building owners that have installed photovoltaic systems also can earn and sell Solar Renewable Energy Credits ("SRECs") to further help offset the costs of the systems.²⁷ Maryland is one of 26 states that have passed a landmark legislation that stipulates a Renewable Portfolio Standard ("RPS") requirement for its utility company. A RPS requirement mandates that utility companies, such as Maryland's Baltimore Gas & Electric ("BG&E"), must produce some proportion of its electricity using renewable sources of energy or pay a statutory fine called an Alternative Compliance Payment ("ACP"). The RPS program with its defined solar "carve-out" was designed to encourage solar energy by mandating that a certain percentage of electricity sold by providers be generated by solar energy. In Maryland, the solar carve out was 0.005% in 2008 and is scheduled to increase each year with a maximum of 2.0% in 2022. As the solar carve out increases in Maryland, the ACP gradually decreases to reward early solar buyers. In 2008, the yearly ACP in Maryland per SREC was \$400.²⁸

However, the law does not require the utility company to install its own solar systems; instead, the utility company can purchase SRECs from homeowners and businesses. Utility companies can "save" money by purchasing SRECs at a discount to

²⁷ See footnote 2, Renewable Energy Portfolio Standards

²⁸ www.astrumsrecs.com

the statutory fine that they would otherwise pay. SRECs are credits which represent the environmental attributes associated with the generation of 1,000 kilowatt-hours of emissions-free solar energy. Generally, the approximate number of SRECs produced by a solar system can be determined by multiplying the size of the system measured in kilowatts by 1.2. The multiple is based on a number of factors including percentage of solar carve out under the RPS in a given year, the then current value of the ACP and the level of supply and demand for SRECs in Maryland. The creation and transfer of SRECs takes place through PJM-EIS Generation Attribute Tracking System (“PJM-GATS”) which monitors the generation and certifies monthly output.²⁹

The Maryland Public Service Commission oversees the state’s aggregators that have access to the system for buying and selling SRECs. An aggregator will purchase SRECs directly from property owners to compile the SRECs together to form large pools. Abramson Solar will assist customer is selling their SRECs. Even though the credit is sold, the property owner retains the full rights to all the electricity produced by the solar system. When building owners have the option of selling their SRECs and to receive either yearly scheduled payments (which are equal to a percentage of that year’s ACP) or one lump sum up-front payment (which present values the 15 to 20 year stream of SRECs produced). The up-front purchase price is based on the present value of the forecasted stream of cash payments from the utility companies at a determined discount rate.³⁰

As with any government program, there is a regulatory risk that the value of the SRECs will fluctuate or be eliminated over the next 15 to 20 years. The yearly payment

²⁹ See footnote 28

³⁰ DSIRE Solar: Maryland Incentives/Policies for Renewable & Efficiency (www.dsireusa.org)

option is financially superior to the up-front option but the solar system owner bears the full regulatory risk. The up-front payment option allows the solar system owner to “buy down” the high up-front costs of a solar installation

Local

Local incentives also are in place to further reward solar system owners and users. These incentive programs rapidly change but have traditionally focused on property taxes. The structure allows for tax credits to be carried forward if the solar system owner’s property taxes are lower than the credit amount. Anne Arundel and Harford County offer solar property tax credits to homeowners who install solar electric systems to receive up to \$2,500 off their respective tax bill. Likewise, Montgomery and Prince George’s Counties offer a property tax credit of \$5,000. Howard Country offers a property tax credit of 50% of the costs of the solar installation with a maximum of \$5,000.³¹

³¹ See footnote 30

Financing Options

Solar panel systems have several financing options to further decrease up-front costs associated with the purchasing the modules and completing the installation.

Solar Power Purchase Agreement

The Solar Power Purchase Agreement (“SPPA”) structure is typically only utilized by commercial property owners. The SPPA is a lease which includes a buy-out option. A SPPA is a financial arrangement between a third-party developer and a property owner who operates and maintains the solar panel system on a host customer building.

The solar equipment is installed on the owner’s roof top. The owner will purchase the system’s electrical output for a defined period of time. Further, the owner of the solar equipment will solely benefit from the tax credits and income generated from the sale of energy to the building owner as well as the utility company through net metering. This arrangement is referred to as the “solar service” model. This allows the solar system user a financing vehicle which requires no initial capital outlay, eliminates installation. Lastly, the agreement protects the property owner from performance risk and price volatility as the contract predefined a set purchase agreement.³²

According to the Rarus Institute’s “The Customer’s Guide to Solar Power Purchase Agreements,” the agreement can be formed between the third-party owner and either the building’s owner or a long-term tenant.³³ If the agreement is between the third-

³² United States Environmental Protection Agency (www.epa.gov/grnpower/buygp/solarpower.htm)

³³ Rarus Institute, “The Customer’s Guide to Solar Power Purchase Agreements”

party and long-term tenant, the lease may restrict the tenant's ability to make improvements to the building causing difficulty. In forming this agreement, the third-party owner will have to run due diligence to underwrite the credit of the tenant and the term of contract to ensure return on investment.

Traditional Lease Agreement

Another financing alternative for reducing the up-front costs of the solar panel systems is to structure a lease agreement with a buy-out option. This is accomplished by structuring a long-term lease typically 10 to 15 years, which would be transferrable to a potential new owner of the property. The lease agreement accounts for escalating utility payments with a pre-negotiated balloon payment purchase at the conclusion of the lease. Because of the 20 to 25 year manufacture's warranty on most solar panel systems, the anticipated operating life of the systems will deliver energy savings for an estimated 40 year period. In the structure, the building owner is not required to make an initial capital outlay but can choose to do so in order to lower the initial payment which will essentially amortize over the life of the lease.³⁴

Cash Payment

Owners who choose to finance up-front costs of solar panel system installation with cash seem to have higher debt service payments than annual energy savings. This would not be best financing solution given the difficulty of return on the investment and efficiency.

³⁴ SPG Solar (www.spgsolar.com/commerical/financing.html)

Sales and Operations

Marketing

Because Abramson Solar has no intellectual property to create a defensible barrier against competition, the Company has to focus its effects on creating a brand which will become its long-term differentiating factor. The Company has created a marketing tagline to assist its branding efforts. “*Abramson Solar: The NEW Sunny Day.*” The tagline is intended to recognize the emotional component of buying a solar panel system first followed by the financial component.

The sales force will deliver the highest level of customer service to customize solutions to meet potential customer’s requirements. The sales force will network through community, political and industry channels. Leads will be generated from a kick-off marketing campaign which would include mailings and a website. A focus also will be to maintain a solid relationship with historical customers to allow for positive referrals and free word of mouth marketing.

Sales Pitch

The sales force will be trained to understand the advantages and disadvantages of purchasing and installing a solar panel system. Further, the sales force will be knowledgeable about current events and political implications affecting the various financial incentives. As part of the advisory service provided, the sale force will assist customers in navigating through federal, state and local government incentive plans.

Addressing Risk Factors

The Abramson Solar team will be able to reduce concerns regarding potential risks and negative issues involved with the initial investment in solar panel systems. The sales force will address and educate potential customers on issues of technology risk, timing of the solar investment and maintenance.

Customers may perceive technology as continuing to advance in the near future which may lead to decreases in equipment expenses. Industry experts state that after 50 years of research and development activities, the solar industry feels that the technology involved with the photovoltaic design has been proven and perfected to be the most reliable.³⁵ During the 1950's, the first highly expensive crystalline silicon solar panels were developed and during the 70's and 80's the cost to install solar panels decreased more than 50% as a result of intensive efforts to streamline manufacturing and the installation processes. As the technology has become more mature, price decreases have slowed down.³⁶ Prices have continued to fall only about 5% per year over the past last 10 years and are unlikely to drop much further. Available government incentives to homeowners, not technology changes, will determine the cost of solar in the next 10 to 20 years.

Customers who wait to “go solar” and wait to invest the required up-front capital indeed will see some price decreases in the retail price, but those customers likely will pay higher out-of-pocket costs for systems as government incentives are scaled back. Maryland has dropped its rebate from \$2.50 per watt to \$1.25 per watt because of limited

³⁵ Wikipedia (<http://en.wikipedia.org/wiki/photovoltaics>)

³⁶ See footnote 3

funds and most local incentives have a waitlist for 2010. The utility incentive also is designed to be phased out over time. The incentives are designed to encourage investment in solar today. Therefore, while rebates have dropped and likely will continue to drop, the current recession also has plunged silicon prices to their lowest levels in years, so the cost of panels is as low as it is likely going to go until the economy recovers, offering an attractive entry point for new solar system users.³⁷

Lastly, once a solar panel system installation is complete, the property owner has no maintenance responsibility. The system typically comes with a long-term manufacture guarantee.

Operations

At the core of Abramson Solar is the ability to successfully install solar panel systems on customer's roof tops. The operating team led by engineers will evaluate different products on the market and establish wholesale relationships. Further, operations will oversee procurement, warehousing and installation of solar panel systems. In order to attract top talent in this specialized area of expertise, Abramson Solar will pay slightly higher than market wages.

The oversight of inventory is critical for a start-up business as a large amount of capital can be tied up in product. Therefore, the procurement of solar panel systems and products will be on a just in time basis.

³⁷ See footnote 30

Feasibility and Economic Analysis

Sales Force Check List

The following sales checklist will assist Abramson Solar's sales force in customizing the solar system to meet the customers' need. Further, the checklist will assist in creating a financial return analysis. In order to calculate the return on investment, the sales force will need to analyze the following four components: the solar system, electricity utility, real estate and taxes.

Solar System

- *Location:* Quality: Ideal roof positioning would be facing south and have absolutely no shading issues. The worst case roof position would be on roofs facing north and fully covered by large trees or neighboring structures.
- *Size of System:* The size of the solar panel system depends on the amount and availability of un-shaded roof surface. Further, the size is dependent on the customer's energy production requirements. As stated, the average solar panel system is 5 kW.

Electricity Utilities

- *Current Costs:* As a starting point, the sales force will ask to review historical monthly electric bills to estimate the average size of a monthly bill. At the conclusion of an installation, the sales force will compare historical utility bills and current utility bills with the customer to measure energy costs savings.

- *Electricity Rate Increase:* As a benchmark for energy cost saving, customers are asked to forecast an annual growth rate for electricity utility. Maryland utility rates have historically increased 9% annually. The Department of Energy predicts a national increase in utility costs of 10%.

Real Estate

- *Valuation Appreciation:* The sales force will ask the customer to forecast a home appraisal rate. This information is requested in order to determine a complete return on investment. As stated, solar panel systems have proven to appreciate residential values.
- *Estimated Time of Sale:* In order to model a present value dollar amount to forecast the disposition of the residential property, the sales force will ask for an estimate.

Taxes

- *Income Tax Rate:* As a further benchmark to evaluate cost of capital and opportunity cost, the sales force will request the customer's estimated tax rate.

In most cases, property owner will utilize Abramson Solar's advisory services to ensure that all standard federal and state credits are received. Further, in regard to the SRECs, the sale force will recommend that the customer selects the up-front payment option. As stated, SREC credits are purchased by an aggregator and then purchased by utility companies to comply with state laws or face an ACP. The up-front payment is

calculated by discounting the 15 year of cash flow generated by the SRECs to present value.

Client Financial Analysis

As a standard practice, the sales force will provide clients with a financial analysis in order to show the client their respective internal rate of return and net present value on the solar investment. Below is an illustrative analysis for a residential property in Baltimore County.

Specifications

State	MD
Number of Units	1
System Size (DC Watts)	4,914
Site Quality	Ideal
SRECs Produced in Year One	6

Project Costs

System Costs	\$24,786
Tax Rate	40%

Electricity Prices

Cost of Electricity	\$0.1030
Annual Price Escalator	8%

Year	Total System Costs	Federal Tax Credit	State Tax Credit	MACRS	Up-Front SREC Income	Electricity Savings	Cash flow
1	(\$24,078)	\$2,457	\$5,322	\$1,206	\$6,339	\$683	(\$8,071)
2				\$1,930		\$734	\$2,664
3				\$1,158		\$789	\$1,947
4				\$694		\$847	\$1,541
5				\$694		\$911	\$1,605
6				\$3,474		\$978	\$4,452

Internal Rate of Return	14.3%
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Net Present Value @ 4.0% Discount Rate	\$2,588
Net Present Value @ 6.0% Discount Rate	\$1,950
Net Present Value @ 8.0% Discount Rate	\$1,387

Financial Analysis Conclusion

The financial analysis shows a payback period of approximately 6 years yielding an internal rate of return of 14.3%. The federal grant was calculated by taking 30% multiplied by the cost of the system less the up-front SREC income. The state commercial solar grant was calculated by multiplying \$1.25/W for the first 2 kW of installed capacity, then \$0.75/W for the 6 kW and \$0.25/W thereafter. The MACRS depreciation was calculated based on a 40% tax rate and amortizing according to accounting standard over the accelerated 6-year period. The SREC income came from taking the up-front present value payment on the 6 credits. Finally, energy savings was calculated by multiplied the current average monthly cost of electricity per kWh by the assumed solar cost of electricity which increases at an escalator of 8%.

Management's Financial Projections

Abramson Solar's management has made the following assumption in order to forecast revenues and expenses for the next five years. Management will make an equity investment to ensure complete alignment of interest. Further, this contribution will be used to cover general corporate expenses before the Company begins to have cash flow. Management base salaries are moderate but the executives will be granted performance driven bonuses at the end of each calendar year. As an initial corporate headquarters, the Company will lease a flex warehouse/office space. This particular property type will enable the front office operations to closely monitor solar panel inventory.

Assumptions:

Start-up Investments

Management Equity Investment	\$150,000
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Management Compensation

Chief Executive Officer	\$65,000
Chief Marketing Officer	\$60,000
Chief Financial Officer	\$60,000
Head of Operations	\$55,000

General Expenses

Rent/Office Expenses	\$250,000
Marketing	\$250,000
Legal and Insurance	\$150,000

Growth Rates: Business Expenses

Year 1 to 2	20%
Year 2 to 3	30%
Year 3 to 4	40%
Year 4 to 5	50%

As stated, the New Venture will have three key sources of revenue: sales of solar panel systems, financing fees and advisory service fees. Management has set sales and margin projections in-line with national and local competitors. Given the customer service nature of this business, Abramson Solar will pay high commissions to the sale force in order to attract and retain the best talent. Note that the below projections have been calculated by assuming the sale of 300 average size solar systems in the first 12 months of operations.

Projections:

Number of Solar Sales	300
Average Size of System	\$25,000
Average Up-Front Cost Saving	\$15,000
Average Amount for Financing	\$10,000
Borrowing Costs	8%
% of Sales that utilize Financing	40%
Number of Financing	120
% of Sales that utilize Advisory	65%
Number of Advisory Assignments	195
% of Solar System Costs	2%

Growth Rates: Business Operations

Year 1 to 2	25%
Year 2 to 3	35%
Year 3 to 4	45%
Year 4 to 5	55%

Management has modeled out the first 12 month of operations. Sales and subsequent revenue will continually ramp-up as Abramson Solar's marketing efforts increase throughout each community in Maryland.

	First Year of Operations by Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Revenue												
<i>Sales of Solar Systems</i>	5	5	15	15	20	20	30	30	35	35	45	45
Margin	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
Sale Commission	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Solar System Revenue	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
 <i>Financing Fees</i>	 2	 2	 6	 6	 8	 8	 12	 12	 14	 14	 18	 18
Margin	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Sale Commission	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Financing Revenue	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
 <i>Advisory Service Fees</i>	 3	 3	 10	 10	 13	 13	 20	 20	 23	 23	 29	 29
Margin	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Sale Commission	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Advisory Revenue	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%

Below are the five year projections for Abramson Solar. The Company will expand beyond Maryland market to Pennsylvania and Virginia in Year 4 and 5.

	Financial Projection by Year			Expansion to PA and VA	
	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue					
Sales of Solar Systems	300	375	506	734	1138
Cost	\$7,500,000	\$9,375,000	\$12,656,250	\$18,351,563	\$28,444,923
Margin	\$2,625,000	\$3,281,250	\$4,429,688	\$6,423,047	\$9,955,723
Commission	\$1,125,000	\$1,406,250	\$1,898,438	\$2,752,734	\$4,266,738
Revenue	\$1,500,000	\$1,875,000	\$2,531,250	\$3,670,313	\$5,688,985
Financing Fees	120	150	203	294	456
Cost	\$96,000	\$120,000	\$162,000	\$234,900	\$364,095
Margin	\$19,200	\$24,000	\$32,400	\$46,980	\$72,819
Commission	\$4,800	\$6,000	\$8,100	\$35,235	\$54,614
Revenue	\$14,400	\$18,000	\$24,300	\$35,235	\$54,614
Advisory Service Fees	196	245	331	480	744
Cost	\$150,000	\$187,500	\$253,125	\$367,031	\$568,898
Margin	\$112,500	\$140,625	\$189,844	\$275,273	\$426,674
Commission	\$15,000	\$18,750	\$25,313	\$36,703	\$56,890
Revenue	\$97,500	\$121,875	\$164,531	\$238,570	\$369,784
Total Revenue	\$1,611,900	\$2,014,875	\$2,720,081	\$3,944,118	\$6,113,383
Expenses					
Management Salaries	\$240,000	\$288,000	\$374,400	\$524,160	\$786,240
Rent/Office Expenses	\$250,000	\$300,000	\$390,000	\$546,000	\$819,000
Marketing	\$250,000	\$300,000	\$390,000	\$546,000	\$819,000
Legal and Insurance	\$150,000	\$180,000	\$234,000	\$327,600	\$491,400
Total Expenses	\$890,000	\$1,068,000	\$1,388,400	\$1,943,760	\$2,915,640
Net Income	\$721,900	\$946,875	\$1,331,681	\$2,000,358	\$3,197,743

Summary

Abramson Solar will provide excellence in the solar panel system purchasing and installation marketplace. The Company will focus initially on the State of Maryland but has aspirations to expand its respective client base to the cover the Mid-Atlantic Region. Further, as the Company grows and becomes a household brand name, Abramson Solar will expand its property type focus from residential properties to include commercial projects. After preliminary discussion with the Maryland community, it appears that Abramson Solar has a bright future.

Appendix:

Future of Industry:

As a long-term growth plan, Abramson Solar can construct a business plan based on the current market needs.

Real Estate Investment Trusts (“REITs”)

An article entitled, “Solar on the Horizon for REITs,” in the National Real Estate Investor December issue, suggests that REITs and pension fund investors have made a major change in the solar landscape and are looking to rent rooftop space from building owners.³⁸ The rental revenue from the rooftop space will create an additional stream of cash flow for investors. A California startup company called Recurrent Energy Inc. will build, own and operate the solar power systems for institutional investors counteracting certain elements of the triple net lease. The ideal location for the installation would be on roofs of flat industrial park facilities. The building’s tenants will purchase the solar power produced by the panels which likely will decrease the tenant’s utility bill.

According to NuWire Investor, at the moment, ProLogis (NYSE: PLG) and Thomas Properties Group, Inc. (NASDAQ: TPGI) are leading the REIT solar way by installing solar panels on the tenants’ rooftops and distribution centers.³⁹ ProLogis entered into a transaction with Southern California Edison (“SCE”) in which the utility company will lease 607,000 square feet of bare industrial rooftop space to install and operate solar panel systems. SCE entered into a 20 year lease agreement with ProLogis

³⁸ National Real Estate Investor, December 18, 2007, “Solar on the Horizon for REITs” ,John Egan (www.nreionline.com/technology/solar_power_reit)

³⁹ NuWire Investor, June 5, 2008, “Utilities Leasing Rooftop for Solar Power Generation”, Trevor Winnie (www.nuwireinvestor.com/articles/utilities-leasing_rooftop)

for the space and ProLogis was not required to make capital contributions for build-out. Jeffery Schwartz, CEO of ProLogic, said on an interview with Fox Business Channel in April 2008 that “the return on investment is infinite.” He further stated, “We’re utilizing our roofs with other people’s capital.”⁴⁰ The concept of leasing rooftop space for solar panel systems would effectively have a high return by creating an additional income roll-in and allow for normal business operations to continue undisturbed.

⁴⁰ See footnote 39

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