Engineering Management
Field Project

Operating Plan for "Helios": A Builder and Manufacturer of Energy Efficient Homes.

By

Leonidas H. Cossyphas

Spring Semester, 2006

An EMGT Field Project report submitted to the Engineering Management Program
and the Faculty of the Graduate School of The University of Kansas
in partial fulfillment of the requirements for the degree of
Master's of Science.

_____
Herbert Tuttle
Committee Chairperson

_____
Robert Zerwekh
Committee Member

_____
Linda Miller
Committee Member

Date Accepted: _____

EMGT 835

Field Project

Operating Plan for "Helios": A Builder and Manufacturer of Energy Efficient Homes.

Date: April 24, 2006 Submitted By: Leonidas H. Cossyphas

Phone: 001 30 210 620 2279 Email: lcossyphas@yahoo.com

Committee Chairperson Professor Herbert Tuttle

Committee Members Professor Linda Miller

Dr. Robert Zerwekh

Acknowledgements

Special thanks are extended to the City of Kansas City and the States of Missouri and Kansas for their excellent job in making valuable information readily available. The wealth of information and references made available by the U.S. Small Business Administration concerning various aspects of starting and operating a business in the United States was of enormous help in the preparation of this report. In addition, thanks are extended to the U.S. Census Bureau and the Bureau of Economic Analysis for their extremely important work in maintaining vital statistics that help us develop business plans and reach sound business decisions. Information gathered through the U.S. Department of Energy concerning alternative energy uses and information on energy efficiency provided by the U.S. Environmental Protection Agency was vital to this project.

I would like to thank my parents for always encouraging advanced education and the rest of my family for patting me on the back as I went along. I would also like to thank Miss M.G-O for being the person she is. I learned and gained a lot from being around a brilliant, focused, overachieving and at the same time beautiful MBA graduate. Thanks to her I now know what “the soul of genius” is.

Finally, I would like to thank my professors for their suggestions, patience, support and encouragement in researching, compiling and revising this operating plan.

Abstract

The purpose of this project is to develop a comprehensive business operating plan for a home building company that emphasizes and promotes the use of passive solar energy systems and earth sheltering designs in its products. The Kansas City based firm will concentrate on building energy efficient homes and prefabricated modules that can be transported and erected quickly at a building site and become integral parts of the structural and energy system of the completed residences. The scope of this project includes the development of the financial analysis, market research, funding requirements, competition analysis, marketing plan, and operations plan. Implementation of the resulting business plan should produce a viable company that provides high quality dependable services and products to the Midwestern homebuyer.

Table of Contents

Executive Summary

The Company

"Helios Home Builders" is an energy efficient residential Home builder and manufacturer. Above all it aims to build Energy Star® certified energy efficient homes and modular solutions that utilize solar and earth sheltering construction techniques.

The Company's Mission

"Helios Home Builders" aims to consistently provide its customers with quality energy efficient homes that utilize passive solar energy solutions that reflect the company's commitment to responsible environmental policy. "Helios Home Builders" aims to do this while treating its employees, vendors and customers with respect and rewarding its shareholders at the same time.

Products and Services

"Helios Home Builders" aims to provide products and services for construction of residential properties that utilize energy efficient techniques for heating and cooling of the living spaces. Energy Star® homes are homes that are independently certified to be at least 30 percent more efficient than homes built to the 1993 national Model Energy Code. The efficiency improvements are typically achieved through a combination of improvements such as building envelope upgrades, high performance windows, upgraded heating, cooling and water heating equipment, controlled air infiltration and tight duct

systems. When combined with passive solar and earth sheltering, the effects on energy efficiency can be even more dramatic. The company's services will be provided as total solutions that include the entire process of construction of a residence, from location and lot selection to interior layout and landscaping. At the same time it is felt that the company can effectively and most efficiently provide a prefabricated solution that can be shipped to a construction site ready for use. The prefabricated solution is a modular unit for utility areas such as kitchens and lavatories as pre-assembly of sections of the buildings for quick erection and completion on the job site.

Marketing and Sales Strategy

"Helios Home Builders" aims to market and sell its product to all interested individual homebuyers. The advantages of "Helios's" homes will come from reductions in construction durations, financing savings, improvements in comfort for homebuyers, government tax credits, reduced life-cycle costs for the homes, increased property values and finally, improved severe weather security features. It is estimated that the company's marketing strategy will be able to generate sales of 4 homes in the first year and reach a level of 27 per year by the 5^{th} year of the plan.

The Competition

The Construction industry and the home building industry in particular have always been one of the easiest industries to enter into business in. Barriers to entry are low and the market is consequently highly competitive. Information on builders of energy efficient homes indicates that there are new builders and manufacturers entering the market in the

last twelve months and that the number of homes built to energy efficient standards by the previously established builders is increasing at a quicker pace. This confirms in a way the potential growth for this homebuilding trend. At the same time, market penetration in the Kansas and Missouri markets is not at the levels achieved in other states, a fact that presents an opportunity for "Helios" to act upon.

Target Market

The target market of individual homebuyers will be Kansas and Missouri residents between the ages of 30 and 60 with a household income above $65,000/year. These buyers will be technically adept, trend setting, socially responsible and environmentally conscious smart shoppers. The target home price will be $243,700 which was the 2005 Midwestern median home price.

Management

The management team includes talented, focused, ambitious and highly motivated individuals with a proven professional track record. They hold advanced academic degrees in management and engineering and they have demonstrated their commitment to success throughout their careers.

Operations

Company operations will begin at a leased production facility in Kansas City, Missouri. During the first year, operations will be carried out with 1 administrative support person, 1 manager, 1 engineer and 2 production workers. By the end of the fifth year it is

projected that operations will require 2 administrative support persons, 1 manager, 4 engineers and 4 production workers to meet its obligations.

The production facility for the modules will be 5,000 square feet with an additional need for 2 acres of land area for equipment and material storage, inventory storage and parking. Production of each module will last 27 days and the production line will be able to handle up to 4 modules indoors at any point in time. Under these parameters, the production capacity will be 31 modules per year.

During the first year 4 modules will be utilized on company projects. Sales projections indicate that by the 5th year of the planning period "Helios" will use 27 modules for its projects.

Stage of Development

"Helios Home Builders" is not in operation as of yet. Current Plans are for the firm to begin operations in January of 2007 and begin construction of homes during the 2007 construction season. Procedures and partnerships will be put in place that will allow for an aggressive marketing and sales strategy to begin in January of 2007.

Financials

The first two years of operation will be capital intensive. In fact, most of the money invested in the company will be used up in the first few months to finance production facility equipment construction, computer hardware and software purchasing, form construction, marketing and construction financing. Additional funding in the form of a

$25,000 loan from the Small Business Administration will help the company overcome a shortage of cash in June of 2007 and again in January of 2008. Following the completion and sale of the first home in July of 2007 the financial picture will begin improving. The company will turn a net profit from operations in the second quarter of 2009, after two and half years of operation. The initial investment will be recovered in the third quarter of 2010 after three and a half years of operation.

Funds Sought and Utilization

The partners of the company will invest $130,000 of their personal savings into “Helios Home Builders. Mr. L.C. will contribute $100,000 and the $10,000 individual equity investments will come in the form of equity investments from Miss M.G-O., Mr. C. C. and Mr. N.P. An additional $25,000 SBA loan will be required in June of 2007 and another $25,000 in January of 2008 in order to meet a short term cash flow shortage.

Introduction

The field of Engineering Management merges the technical and scientific challenges with the financial and operational challenges on a project basis. While engineers are typically charged with the technical tasks of designing, constructing and operating infrastructure improvements they are also an integral part of the financial and administrative portions of those endeavors.

While the technical work is extremely rewarding for engineers it is only part of the larger picture. The development of a successful engineer's career usually leads to a more managerial position. In fact two thirds of engineers spend more than half their professional career performing managerial rather than technical tasks. It is this natural evolution that is the realm of engineering management. A life long interest in conservation, renewable energy and construction has made the development of this operating plan a very personal experience. While personally fulfilling, the project has also provided the platform on which the knowledge acquired through the coursework of Engineering Management could come together into one single personally and professionally fulfilling project. At the same time the project has provided the opportunity to acquire a vast amount of essential technical knowledge and has greatly improved my understanding of the subject matter, the technologies it employs and the potential it holds.

This project began in late 2004 and because of personal and professional developments will finally be completed with much delay in the spring of 2006. Continuing increases in

energy prices were of concern in the years leading up to 2004 and have become an even greater concern now as it appears that regional volatility and ever increasing demand for energy by developing nations will not let up soon. The long term solution to the world's energy problems will have to be a combination of increased conservation, and technology deployment. Conservation can be accomplished by changing consumer's habits and attitudes. At the same time, deployment and development of technology will have a two-fold effect on energy demand. It will result in the production of more energy efficient appliances and energy consuming systems and also produce energy more efficiently and from new sources.

Events in the global energy markets have lent urgency and importance to the solutions proposed by this plan and give an even greater product appeal to the customers it targets. Use of solar energy and other energy efficient technologies for home heating and cooling is a long term contribution to the solution to the eternal global energy question. It should be noted that the use of passive solar energy technologies incorporated in this plan are neither new nor experimental. Most methods have been tried and tested with success for decades while some technologies were in use by ancient civilizations throughout the world. The contribution of solar energy to the larger energy requirements should not be expected to have a very significant effect on the total energy demands. It should rather be looked at as a mitigating factor that could possibly alleviate some price pressure in the energy markets in the long term.

Use of solar energy is by no means a panacea for eliminating energy bills, reducing reliance on foreign oil imports and so on. It can however be part of a larger comprehensive energy solution if promoted, marketed and implemented responsibly. Furthermore, any use of energy produced from a renewable source is a domestic production of energy. Since most industrialized nations are net importers of oil, any energy production with alternative sources will always displace imported oil or gas.

Unfortunately, homebuyers tend to focus on the purchase price more than anything when buying a home. They tend to look at certain amenities as number of rooms, total square footage and not consider the effect of energy efficiency on the life cycle costs of a home. Naturally, builders try to maximize their profits by minimizing the cost of materials, and since the energy efficiency component is not a visible one it is often the first to suffer cuts. The fact that energy efficient techniques are not used widely and that their implementation has not yet become an integral part of the home building process suggests that some institutional changes such as modification of building codes might be in order. In particular, it may be necessary to take additional steps in order to change the current standards of doing business in the housing industry. It would be helpful to effect changes in the way financial institutions lend money, the way consumers select a home, and the manner in which government agencies maintain and enforce building codes. Passive solar energy, earth sheltering and energy efficient building practices must be given more visibility in the future.

It is hoped that this project can be used as a template or outline for use in other regional or even international markets. Marketing and strategic plans should vary significantly with location. Heating energy needs vary significantly by location as do the financial incentives and building code restrictions and therefore a complete rework of the plan would be necessary to increase the chances of success elsewhere.

Company Description

Company Name:

The name chosen for the company is “Helios Home Builders”. “Helios” is the name of the ancient Greek god of the sun and it was felt that it would be quite appropriate to utilize considering the company objective and activities. At the same time, business literature suggests developing an incorporating business name that provides additional information about the company if at all possible. The idea is to be able to convey information concerning the company products and services through the company name and it was felt that that objective could not be achieved effectively with the use of the name “Helios” by itself.

Company Objectives and Mission Statement

“Helios Home Builders” aims to consistently provide its customers with quality energy efficient homes that utilize passive solar energy, earth sheltering and other energy efficient solutions that reflect the company’s commitment to responsible environmental policy. “Helios Home Builders” aims to do this at reduced cost while treating its employees, vendors and customers with respect and rewarding its shareholders at the same time.

The management team of “Helios Home Builders” has developed an admiration for the practices, policies and procedures followed by companies like Starbucks® and Costco®.

These companies provide superior quality to their customers. Quality is extremely important in business today and one cannot survive without conforming. What is most impressive about these companies however is that they provide their service while treating their employees with generous benefits packages that include healthcare among other things. "Helios Home Builders" believes that employee satisfaction is directly related to customer satisfaction and that the improvement of employee satisfaction in effect improves customer satisfaction.

Legal Issues

The company will commence business activities as a Limited Liability Corporation (LLC) in the State of Missouri. The LLC entity is chosen because it is the most flexible form of business organization currently available. It provides nearly the same flexibility as a sole proprietorship while affording the owners the same degree of liability protection as a corporation. For taxation purposes an LLC can be classified either as a sole proprietorship or a class C or S corporation. Business licenses will also be acquired for the State of Kansas so that the company can practice on both sides of the State line from the very beginning. Future expansion into neighboring States will require additional licenses and expenses and is not part of this operating plan.

Description of Products and Services

"Helios Home Builders" aims to provide products and services for residential properties that utilize passive solar energy, earth sheltering and other energy efficient techniques for heating and cooling of the living spaces. Energy Star® homes are homes that are

independently certified to be at least 30 percent more efficient than homes built to the 1993 national Model Energy Code. The efficiency improvements are typically achieved through a combination of improvements such as building envelope upgrades, high performance windows, upgraded heating, cooling and water heating equipment, controlled air infiltration and tight duct systems. When combined with passive solar and earth sheltering, the effects on energy efficiency can be even more dramatic. The company's services will be provided as total solutions that include the entire process of construction of a residence, from location and lot selection to interior layout and landscaping. At the same time it is felt that the company can effectively and most efficiently provide a limited selection of prefabricated solutions that can be shipped to a construction site ready for use. The prefabricated solutions include modular units for utility areas such as kitchens and lavatories as sections of the final building for quick erection and completion on the job site. The benefits of using prefabricated modules are: reduced construction time, increased thermal mass for heat storage in the residence, increased protection from extreme weather, better quality and finally reduced construction cost.

Management Team

The following individuals will be part of the company's management team. They are all talented, focused, ambitious and highly motivated individuals with a proven professional track record.

Mr. L.C., PE, will be the President and CEO (Chief Executive Officer) of the company will be responsible for all management-level decisions of the company. Additional duties include engineering duties, construction permitting procedures, research into industry trends, new technologies and products.

Miss. M. G-O will be the CFO (Chief Financial Officer) of the company and will be responsible for financial analysis and taxation matters. Miss M. G-O will also be responsible for the company's marketing efforts, research into current and future markets, public relations and human resource issues.

Location

The company will be located in Kansas City, Missouri. From this location the company will serve both the Kansas and Missouri market needs. If growth permits expansion into neighboring states such as Illinois and Iowa will be seriously considered although this is not in the company's immediate plans. It is expected that the close geographical proximity and overall demographic similarity of the above mentioned locations will allow use of some of the same assumptions made for the original plan. Some variation in the form of energy prices and financial incentives is expected.

Industry Analysis of Home Builders

"Helios Home Builders" will become part of a generally healthy construction industry. New home construction has been setting records for several years. Growth is stable and the industry has always been a significant contributing force for the rest of the economy as well.

Economic Sector and Industry

In constant year 2000 dollars, the US Gross Domestic Product has grown at an average rate of 2.75% since 2000. In the more recent past it has grown at rates of 4.2% in 2004, 3.5% in 2005.[1] At the same time Missouri Gross State Product grew 1.3% in the years 1997-2003 and 2.4% between 2003 and 2004. Kansas Gross State Product grew 2.2% in the years 1997-2003 and 3.6% between 2003 and 2004. At the same time the construction industry's contribution to the Gross State Products fell by 0.02% for Missouri and 0.06% for Kansas.[2] The reduction in the construction industry's contribution to the gross state product is a result of the rise in the contribution of other industries and the percentage decrease is not significant enough to cause concern. In general terms the industry is a stable and mature one. However, according to the Association of General Contractors 91% of the nearly 600,000 construction establishments had fewer than 20 employees, and in 2002 there were 79,000 new firms, while 81,000 had closed. In other words, there is an annual turnover of firms in the neighborhood of 12%.[3]

Sensitivity

New home construction is generally affected by many factors such as consumer confidence, mortgage rates, and the strength of the economy in general. Currently, interest rates are at reasonable levels even though they are up from multi-year lows that occurred just a few months ago. Federal regulators have indicated that interest rates will rise in the short-term and are expected to level off or decline in the months following such increases. This should have a cooling effect on overall home sales in the short-term and result in reducing the median price of a new home. Builders may need to reduce their prices in order to keep their homes affordable for the same group of buyers. Overall, indications are that the US economy is strong and consumer confidence is good.

Seasonality

The homebuilding construction industry exhibits some degree of weather related seasonality. In particular, more construction tends to occur in the warmer dry months than in the winter months. Because of the time lag between the purchasing of materials and the time a home is sold, builders are called to finance the project costs through the construction phase which lasts for several months. Weather delays can affect both new housing starts and the total duration of the construction phase activities adversely affecting cash flows. The housing market is subject to seasonal variations due to bad weather. The variations for the period between January 2004 and January 2006 are indicated in Figure 1 of Appendix C. The trend line of the chart shows significant

volatility, but also some consistency compared with historical fluctuations. Comparing the January of 2006 to January of 2004 and 2005 indicates an overall increasing trend.

Technology

The technological aspects of homebuilding are not considered to be challenging at this point. Technological innovations are constantly taking place, however the nature of the industry is that of a conservative one that uses tried, proven and readily available technology. It takes time to change the traditions and stereotypes that have developed in the industry. Change is always hard to implement, but it is even tougher within the construction industry. During the research phase for this project it was discovered that there are construction companies in other areas of the country such as California and Colorado that are attempting to establish a similar quick, modular construction model. The advantages of the systems they are attempting to promote are focused on trendy designs, efficiency and construction time savings. Their success remains to be seen, but there is no reason to doubt that this quick and modular model will be successful. In fact it may be the way of the future. What has changed over the past few years as far as technology is concerned is the visibility of smaller companies because of the internet. A small company now has access to new marketing tools and can make their materials readily available to interested parties at low cost.

Regulatory/Certifications

Area building codes must be fully adhered to. Implementation of passive solar designs and earth sheltering techniques as opposed to active solar systems will help avoid

potential conflict with local zoning regulations, subdivision ordinances and homeowner's association covenants. Active solar systems involve external wall, roof or ground mounted collection panels that are quite frequently considered unsightly and consequently not allowed. At any rate, full cooperation with the City of Kansas City Codes Enforcement Department, Unified Government of Kansas City, KS and Wyandotte County, KS, City of Overland Park, KS and other area regulatory bodies will be essential in ensuring product acceptance.

Target Market

Short-Term Target Markets: Market Size and Trends

Potential clients for “Helios Home Builder’s” products are individual homebuyers and homebuilders.

The target market for individual homebuyers will be Kansas and Missouri Residents between the ages of 30 and 60 with a household income above $65,000/year. This household income level is necessary to ensure that the targeted customers will be able to afford to buy a home at the median new home price of $243,700. The income was calculated based on the fact that lenders restrict the housing expense to income ratio to 28 percent. These buyers will be technically adept, trend setting, socially responsible and environmentally conscious smart shoppers. It is felt that buyers over 60 are less receptive to changes and are less likely to buy a new home. At the same time, buyers above the age of 30 are most likely second time homebuyers and are aware of the significance of operating expenses on the real cost of owning a home.

In the short-term, rising interest rates may limit the potential for robust industry growth, but the energy efficient home portion of the market is expected to grow by leaps and bounds according to the US Environmental Protection Agency projections. In the beginning the market may actually be best compared to a niche market and indications are that it is possible to operate a lucrative business by implementation of the prefabricated modules.

Long-Term Target Markets: Market Size and Trends

In the long term, interest rates should stabilize and possibly decline again. As noted previously and as supported by most industry analysts today, heating costs will continue to trend upwards in the long term. At the same time, environmental causes have been gaining acceptance over the years. This is expected to continue and it is hoped that it will translate into an increasingly favorable outlook for energy efficient and prefabricated products. The government Energy Star® program will lend visibility to energy efficiency and tax credits are helping tip the financial scales in a favorable direction. All of these trends will have a positive effect on product appeal and sales.

Finally, in the long term, it is hoped that the market will expand to include the segment below the age 30 that includes first time home buyers, and that expansion will bring the Iowa and Illinois markets within reach as well. Such analysis is not part of the current business plan.

Competition

Categories of Competitors

There are two categories of competitors with whom "Helios" will compete most directly. They are builders who participate in EPA's Energy Star® program and produce site-built energy efficient homes and those who build traditional homes without focusing on energy efficiency.

"Helios's" homes compete directly with site-built energy efficient homes rather than those built by traditional builders. The EPA also makes information regarding manufactured housing available and this information is presented in a more general sense to demonstrate the overall growth of the energy efficient home market. The EPA's Energy Star® program has 12 site-builders and 8 manufactured home builders listed for Missouri and Kansas. Out of the 8 manufactured home builders it is important to note that 3 of them are new partners in the program. That represents a 37.5 percent increase in the last twelve months. In terms of homes built, 18 of 85 homes were built in the last 12 months which is 21.1 percent of the total Energy Star® Homes built. For site-built home builders there are 5 new partners listed, an increase of 41.7 percent, while 15 of the 38 Energy Star® homes or 39.4 percent were built in the last twelve month period. These numbers indicate that there is a strong increasing market trend towards energy efficient construction in the past twelve months. During 2005 there were a total of 45,682 new privately owned housing units authorized in Kansas and Missouri.[4] Homes built under the Energy Star® branding program are still a negligible fraction of this total. In fact

according to the EPA's information, it is 0.04 percent of new homes.[5] Many existing structures are being converted by their respective owners to Energy Star® homes and it is believed that some homes are being built to high energy efficiency standards that have not utilized the EPA's program. As a result the market for energy efficient homes is much larger than it appears from the available information.

Description

These competitors are spread out geographically and offer their services throughout Missouri and Kansas. The low numbers for the majority of on-site builders of energy efficient homes indicate that these are smaller companies and that they have not built any large scale developments as of yet. Finally, traditional builders are more diverse in their characteristics. Their size varies from builders who build less than ten homes per year to very large builders who build hundreds of homes per year.

Market Share Distribution

Energy Star® program participants also vary in size from builders that have built one energy efficient home in the last twelve months to builders that have built ten. The clear leader in the Kansas and Missouri market has built seven of the fifteen Energy Star® homes constructed in the past 12 months, which represents a 46.7 percent share of the market. There are two firms with a 13.3 percent share and the remaining four maintain a 6.7 percent each. As noted earlier, the total number of Energy Star® homes built in Missouri and Kansas is very low according to the EPA and as a result market shares are of little significance at this point.

Barriers to Entry

The Construction industry and the home building industry in particular have always been one of the easiest industries to enter into business in. Barriers to entry are low and the market is consequently highly competitive. This highly competitive nature of the industry is partly responsible for the high turnover. At the same time, the absence of barriers allows under qualified and under financed poorly managed businesses to enter into the market. Construction of energy efficient homes requires a commitment to quality and additional knowledge that most of them lack.

Strategic Opportunities

The Midwestern suburban market is an exceptional location to apply the principles of passive solar heating, earth sheltering and higher energy efficiency in general. The availability of land at reasonable prices allows for use of the proposed energy efficient techniques without the implementation of higher cost and more complex active systems that also conflict with local building codes.

Information on builders of energy efficient homes indicates that there are many new builders and manufacturers entering the market in the last twelve months and that the number of homes built to energy efficient standards by the previously established builders is increasing at a much quicker pace than before. This increase in activity indicates that there is an increase in demand and that there are significant opportunities in the energy efficient housing market. Of course, it also means that the level of competition is also increasing and becoming more threatening.

Significant strategic opportunities have arisen from the fact that leaders in energy management also achieved superior market performance. According to studies, active Energy Star® partners outperformed non-partners by 12 percent over the same period. This is an indication that the market places a significant premium on such companies. There are many factors that influence a company's financial performance. However, due to large differentials and the significant benefits of improved energy performance it is likely that energy management increases investor returns.[6]

Also, if one considers that 30 to 35 percent of the total operating costs of a building are attributed to energy consumption while the energy intensity of Energy Star® labeled buildings is 44 percent lower than the market average, it is easy to see that there are significant financial benefits to be gained from increased energy efficiency. The financial benefits translate directly into enhanced property values as well. Research done by the EPA has found that for every dollar invested in energy efficiency there was a three dollar increase in asset value.[7]

The quantification and publication of such benefits for the end users of energy efficient homes will increase the attractiveness of "Helios's" products compared to those of the competition that do not offer energy efficiency as part of their products. At the same time, the use of prefabricated modules will help reduce overall construction time and construction costs.

Finally, “Helios Home Builders” plan of collaborating with other builders and Architects by making its modules available to them further differentiates it from the competition and strengthens its competitive position. According to a McKinsey & Company survey, leading business to business sellers with collaborative initiatives were able to increase revenues by 20 percent, on average. At the same time, this collaboration can enable “Helios” to fend off pricing pressures and strengthen the bonds with some important customers.[8]

Partners

Lenders

Mortgage Companies and banks listed on the Environmental Protection Agency's (EPA) Energy Star® website will serve as business partners. These companies use the EPA's program to differentiate themselves from the competition as well. In general, such lenders are more familiar with government energy efficiency guidelines and programs. At the same time, they are able to offer larger loans for energy efficient homes because they recognize that the reduction in energy costs has a positive effect on the disposable income available for mortgage payments.

Kansas lenders that service and promote Energy Star® certified homes include Energywise Mortgage and Indigo Financial Group Incorporated. Missouri lenders that participate in the program are, America One Finance, Energywise Mortgage and Indigo Financial Group Incorporated.

Government Assistance Programs

The U.S. Environmental Protection Agency is a partner through its promotion assistance programs and the administration of the Energy Star® branding program.[9]

On a national level, there are tax credits up to $2000 available for Energy Star® certified homes.[4]

The U.S. Department of Housing and Urban Development could use "Helios's" designs in order to offer real long term economic relief in the form of reduced energy costs.

Although there are no financial incentives available on a local basis, the Mid-America Regional Council (MARC) has established promotional programs for builders and interested parties that focus on energy efficiency and "Green" building in the Kansas City Bi-state region.

Environmental/Conservationist Organizations

These organizations always offer their support in the form of cooperative promotions at trade shows. In general, they are vocal, motivated and welcoming to new members. "Helios Home Builder's" goals have plenty of common ground with those of the environmental and conservationist community. Both parties have the opportunity to gain from partnerships and they could contribute in significant ways to the business plan.

Strategic Position and Risk

Branding

"Helios Home Builders" has a commitment to quality. It is believed to be a good strategy to guard and promote the company's products under a branding plan as this will allow "Helios Home Builders" to establish a solid reputation with high visibility and name recognition while building a good customer base. This can be done effectively by closely associating the company's products with the proven Energy Star® marketing program. According to a J.D. Power home builder study released in 2004, builders who are Energy Star® partners receive higher homebuyer satisfaction ratings than those who are not.[10] At the same time another study demonstrated that corporate social responsibility is a concern for 80 percent of the US population, and most consumers will either avoid or patronize a business based on its commitment to socially responsible business practices.[11]

While "Helios Home Builders" will make use of product branding, the development and manufacture of proprietary products is not part of the operating plan. In fact "Helios Home Builders" strongly believes in and intends to promote simplicity in design and construction for all of its products.

Sales Channels

“Helios” will use an array of sales techniques. Mailers will be sent to targeted customers, personal meetings will be held with customers, lenders and realtors. The company will also participate in regional home shows as well.

Internet and e-commerce sales are possible through a well designed website. Other modular housing manufacturers have implemented such schemes for their products. If the number of different designs is kept to a low number it is possible to pursue such a strategy without rendering a website cumbersome.

With buyers of traditional homes it is expected that a prefabricated module demonstration unit should work the best. This will be made available at the production facility and to the extent possible at the Greater Kansas City Home Shows. The Home Show takes place at the end of March each year. In 2007 “Helios will participate with a 20 ft by 30 ft booth. The complete cost for participating in the 4-day event during 2006 is estimated at $8,020. These expenses will incur in March of 2007, and repeat each year at an estimated increase of 5 percent per year. Thousands of people attend the show each year and the demographics of these attendees fit well with the requirements of “Helios”. According to the organizers, 77 percent of the attendees are between 30 and 55 years old, 31% of them have household income between $61,000 and $100,000 and another 24 percent of them have income above that level.

Finally, the established realtor network is the most significant sales channel that will be used. Realtors will promote sales of “Helios’s” homes during the construction phase and

it will be necessary to put forth a significant effort in educating realtors on the benefits of energy efficient homes with modular construction techniques. They will be provided with product catalogs including detailed explanations on the benefits, amenities and costs of "Helios's" products.

The use of these three channels is often referred to as "triple-play" and is utilized by retailers to maximize their share of customer spending. Catalogs bring in new customers, the internet offers convenience and fast access to information, while the physical location allows buyers to handle and test a product before proceeding to a purchase.[12] Such a tactic should work well for "Helios's" products as well.

SWOT Analysis

Strengths

One of the most important strengths of “Helios Home Builders” is the advanced level of education of its partners and staff. They have pursued many educational opportunities during their careers and are eager to apply their knowledge for the benefit of the company. Along with advanced education, the partners bring the rich and diverse work experience they have acquired at their previous employment engagements. This diversity of previous experience is an extremely valuable asset for the company and a definitive strength.

“Helios Home Builders” will have very distinct, significant, and valuable advantages built in to their products. In particular, strength will be drawn from prefabrication, superior quality control, energy efficiency, floor plan flexibility security and faster construction. Prefabrication will allow speedy erection at the construction site thereby reducing delivery times. Superior quality control will be achieved through production in the controlled environment of a production plant. Energy efficiency will reduce long term operating and maintenance costs for the final user. Floor plan flexibility and therefore architectural flexibility will allow customization that is not always available in prefabricated homes and large subdivision developments. The increased safety and security against natural disasters provided by the massive design of the energy modules is also not available in traditional housing. Finally, the reduced construction time that “Helios” will achieve will set them apart from what the industry has to offer.

At the same time, the company's commitment to delivering quality construction and service to each and every customer is a policy that will continually pay dividends and add to its strength. Finally, numerous personal contacts in the industry are a good solid base for launching this company.

Weaknesses

There is no reputation built yet. The company will be working with the personal reputation of its partners and goodwill.

Because of bad implementation and poor workmanship on solar projects in the past a perceived unreliability of solar energy and energy efficiency has developed in the minds of the public. At the same time, the term "efficiency" very often means inconvenient, unreliable and even ugly to the prospective homebuyer. In addition, prefabrication also has a negative public perception associated with it because of the unsafe image of mobile homes and trailer parks. This perception will be working against the company from the very beginning, but awareness will allow "Helios" to take the measures necessary to overcome it. Finally, prefabrication will require additional investment in production, transport equipment and logistics for proper implementation.

Opportunities

The housing market has been consistently vibrant in the past and indications are that this will continue to be the case in the long-term despite seasonal variations due to weather and short-term interest rate increases. At the same time, the energy market has shown

signs of extreme volatility and overall energy prices have been rising for many months. The experts point to explosive growth in several developing countries to show that this trend will continue and even accelerate in the future. Finally, environmental and conservation movements have significantly changed public opinion over the last few years. This trend is also seen as continuing and gathering steam. All of the above factors will contribute to accelerated growth in consumer demand for energy efficient homes in both the short-term and long-term.

Threats

The industry exhibits low barriers to entry which tends to result in a very competitive environment with many firms willing to do the work. The required technology is readily available to any interested party, so once the public becomes more accepting to the solutions, there are no patents to keep the competition from adopting and competing directly with “Helios”. The market could show signs of weakness mainly because interest rates have been on the rise.

Marketing

“Helios Home Builders” believes that the development of an effective marketing plan is an essential element in the creation of a viable business. The development of a cost-conscious effective strategy is central to success in convincing the homebuyers to choose the home designs and solutions proposed by “Helios” over those produced by traditional methods.

According to an industry study, 77 percent of homes are built by homebuilders. This implies that the builders are the ones making the decisions regarding energy systems and appliances instead of the homeowner. The problem is that the homebuilders are not so much concerned with the cost of the utility bills that the homeowners will be called to pay over the life of the structure. Builders are in general more concerned with maintaining a healthy profit margin on the final price of the finished structure. In order to maintain their competitiveness, while offering a home of a certain quality and size their sales price must agree with home prices of the general area as reported by real estate appraisers. This way of thinking presents an obstacle as it forces exclusion of the increased upfront investment of improved energy efficiency. “Helios Home Builders” believes that this is something that should be corrected as the long-term operating costs of a building are substantial and cannot be ignored.

“Helios Home Builders” believes that implementation of the earth sheltering, passive solar and efficient energy solutions in the homes it will produce have been around long

enough that they cannot be considered experimental at this point. Their effectiveness and reliability is not in doubt as they have performed well over the years. Further increases in fuel costs in the future should result in a positive increase in the rate of adoption of energy efficient technologies. Currently, many energy experts are forecasting gradual increases in fuel prices in the long term, so it is safe to assume that this will positively affect the implementation plan and increase its chances for success. In fact rising fuel prices will be a key point in the advertising strategy.

In the marketing plan, "Helios Home Builders" will define the following goals: 1) How will potential homebuyers be made aware of "Helios's" services and products; 2) What message to get through concerning "Helios's" products and services; 3) The methods to use to get the message out; and 4) How sales will be secured.

The company's marketing message will be one promoting a socially responsible lifestyle without making any sacrifices in style and convenience in the choice for a home. All this can be done at a lower cost than was possible in the past, with greater time efficiency and at a high quality. Marketing literature suggests that customers want five things.

The first one is function. How does the product meet the customer's needs? A home meets one of the most basic needs of human beings as it provides shelter and comfort. In this respect, "Helios" is does not offer anything different than what the competition has to offer.

The second is finances. How will the product affect their financial situation? Energy efficient homes have a positive effect on their owner's finances. They can allow homebuyers to qualify for larger homes by increasing the mortgage they qualify for. This is accomplished in two ways. First by taking advantage of the $2,000 Tax credit for Energy Star® homes the initial capital required to purchase a home is reduced. Also, in the long term they reduce the costs of owning a home. This is accomplished by lowering the monthly energy requirements for heating and cooling the home by 30 percent on average. The EPA estimates that the owner can save $35 per month. The present value of this payment over the full term of a 6.5 percent interest rate and a 30 year mortgage turns out to be $5,537. These savings can instead be applied to a larger mortgage payment. The lower heating and cooling loads for energy efficient homes also offer potential savings of an additional $400 can be achieved through the use of HVAC equipment with lower capacities. Furthermore, construction schedule savings result in a 22 day reduction in construction time compared to a conventional home. The savings are realized through the use of the prefabricated modules and amount to $1,282 of financing costs. Calculations were based on a 1 month financing of the $243,700 median home price and a 6.5% interest rate. Finally, according to independent research energy efficient homes enjoy increased value when compared to non-energy efficient homes and it should be noted that the savings calculations are conservative as they do not take into account any increases in energy costs that may occur in the future.

The third need is freedom. How convenient is the purchase and use of the product? For the types of energy efficient homes "Helios" is proposing to build there is no adverse

effect in the convenience they afford to their owners. On the contrary, homes built with the features and methods proposed by "Helios" provide the occupants with natural light, reduced noise and more comfortable living conditions.

A fourth consumer "want" that needs to be satisfied is their feelings. How does the product make the customers feel about themselves? The general public has developed increased awareness for two subjects that concern us. The first one is the U.S. dependence on energy imports and the second one is environmental responsibility. The ownership of an energy efficient home addresses both of those issues in a favorable manner. It reduces the energy requirements of a home and consequently contributes to the reduction of energy imports, while at the same time reducing emission of greenhouse gasses.

Finally, the fifth is the future. How will the product perform over time, how will that affect them and what kind of support can they expect later on? "Helios's" construction methods can provide a certain degree of reassurance as the use of concrete for thermal mass in the prefabricated modules adds substantial strength and durability to the final structure while providing increased security against extreme weather conditions. It should be noted that Kansas and Missouri are in an area determined to be at high-risk for extreme weather events and the cost of the modules is equivalent to that proposed by FEMA for construction of above ground reinforced concrete masonry shelters. [13]

"Helios Home Builders" will use a mix of affordable marketing vehicles to get the message out. Marketing vehicles will include brochures and product catalogs, a company website, print media, online advertising, trade-show participation and finally informal marketing/networking with organizations and realtors.

"Helios Home Builders" will use several tactics in its marketing efforts. Those include the use of the Energy Star® branding tools that are made available from the Environmental Protection Agency. The use of these tools will give a solid, recognizable branding icon that lends value to "Helios Home Builders" image. It is worth to note that some builders who utilize the Energy Star® program credit it with generating 30 percent faster growth than they had projected, increased profitability, faster home sales and environmental protection among other things.[14]

In order to assure that the marketing expenses are properly spent on ads that reach the right people and not the most people, efforts will be placed in focused publications. Sunday newspaper publications are traditional promotional vehicles for real estate. In "Helios's" target market, the Kansas City Star is selected as the regional print media to be used because of its wide coverage area in both the Missouri and Kansas markets. The Sunday Star's circulation is 382,540 with a readership of 888,700. "Helios" will place a one-quarter page horizontal ad for 50 weeks in the "House and Home" circular of the Sunday Kansas City Star. The annual cost of the four-color ad will be $3,282.56 beginning in January of 2007 and will be billed to "Helios" on a monthly basis. The costs of placing the ad are expected to increase at 5% per year.

Finally, informal marketing efforts will also concentrate on attending and participating with presentations in events promoting environmental and conservationist causes. Becoming a member of such local organizations will help attract business from the membership ranks. Marketing to individuals commands a high cost and a lot of advertising effort per sale generated, but "Helios" will be most successful by pursuing this strategy.

Website

The key to a professional, effective website is the overall simplicity and ease of navigation. The goal is not to overload the customer with information. It must download fast so that the customer does not loose interest. Music and videos will not be necessary as they increase download times. It will include basic information on the company and the products and adhere to the following structure:

The home page will contain general and background information about the company as well as information about the products and services it provides. It will contain a promotional section explaining why "Helios's" products set it apart from what the market has to offer in style, financial advantages, and delivery times. It will include a section with photos of finished designs, a section with drawings for customers to make choices from and a section with an information request form for customers to fill out and submit. Finally, it will include a section with useful links to the Environmental Protection Agency's Energy Star® program and the National Renewable Energy Laboratory.

The 4-page website will be developed in-house using available software. There is an annual reactivation fee of $200, a change fee of $100 per change and the listing and maintenance of the site will cost $100 per page per month. The total cost for the website is estimated at $5,355 per year beginning in January of 2007 and increasing at a rate of 5% per year.

A marketing budget for the first five years of operation that summarizes the planned activities and expenses has been established as Tables 1, 2 and 3 and included in Appendix C of this document.

Sales Projections

Based on information on the available nationwide sales figures and current sales of local competitors in the Energy Star® program, the future trends in the energy efficient home market and information on the home market in general it is possible to arrive at some reasonable assumptions regarding "Helios's" sales projections.

Government statistics indicate that the average price of a new single-family home sold in 2005 in the Midwest was $243,700.[15] Out of a total of 204,000 new homes built in 2005 there were 70,000 new homes priced between $200,000 and $300,000, a number that represents 34 percent of the total. It can be conservatively assumed that one quarter or 17,500 of those homes are within our price target. Affordability of such a home requires a household income level above $65,000 per year according to lending institution qualification requirements. Because the price distribution for new homes has a normal distribution shape, "Helios's" target is to maintain prices at a level close to the median

value so that it can have access to the widest possible customer base. Figure 2 in Appendix C provides a graphical representation of new home price distribution for the Midwest.

Also during 2005, there were 45,682 new privately owned housing units authorized in the target market area of Kansas and Missouri. Based on the same assumptions used for the regional information, 34 percent or 15,532 homes are priced between $200,000 and $300,000. It is assumed that one quarter of those, or 3,883 homes are within our price target and our market area.

If “Helios’s” advertising campaign reaches:

a) Worst case scenario:10 percent of the qualified target market, it has potential sales of 388 homes.

b) Middle-of-the-Road scenario: 30 percent of the qualified target market, it has potential sales of 1164 homes.

c) Optimistic scenario: 50 percent of the qualified target market, it has potential sales of 1940 homes.

If “Helios’s” sales techniques convince 10 percent of the interested buyers the worst case scenario for sales would be 39 homes. The optimistic sales scenario would yield sales of 194. Yet, “Helios” will begin conservatively, with sales of 4 homes in 2007, a figure that represents 10 percent of the worst-case scenario.

Under the Energy Star® program there were 15 new site-built homes built by partners in 2005 in Missouri and Kansas. On a national level the EPA lists Missouri and Kansas as potential new markets and indicates that there is no significant market penetration there. In contrast, many other areas of the country show 20 percent market penetration for Energy Star® homes. A 20 percent market penetration in Missouri and Kansas for our qualified target market would be nearly 800 homes, a figure well below "Helios's" worst-case scenario of 39 homes and the optimistic scenario of 194 for 2007.

Also on the national level, according to the EPA, the number of Energy Star® qualified homes has nearly doubled in each of the past five years since 2000 to reach a total 360,000 homes at the end of 2004. Out of that total 36 percent of them where built in 2004. [16]

These national trends will undoubtedly spread to Kansas and Missouri as well. In fact, 39.4 percent of Missouri and Kansas Energy Star® new site-built homes were built in the last 12 months. The overall number of homes is still a fraction of a percent of the total built which indicates that there is an enormous potential for growth. As indicated previously the Energy Star® program is a growth market within the housing market as a trend has developed on a national level. Figure 3 in Appendix C presents the projected growth for Energy Star ® homes in Kansas and Missouri based on national EPA data.

In growth markets it is difficult to make accurate assumptions, but in-line with the results achieved in other states, it is thought that a conservative estimate would be a 100 percent

increase in the number of energy efficient homes built under the Energy Star® program on a year-on-year basis for 2006 and 2007. Projections further into the future are harder to make, but a conservative estimate for 2008 through 2011 will be a 100 percent increase in the number of homes. These growth estimates are in line with what has been occurring on a national level and may actually be conservative.

"Helios's" aim is to capture just a fraction of that market through trade-show participation, Sunday newspaper advertising, and other less significant channels and build 4 homes during its first year of operation in 2007. In 2008 "Helios" plans on selling 8 homes and projecting a 50 percent growth from that point in time to the end of the 5 year planning period.

The projected sales figures are shown in Table 14 of Appendix C.

Operations Plan

Administrative

The company's administration will require the hiring of an office manager. Office manager tasks include phone answering, accounting duties, office administration, preparation of bid contract documents and invoicing. The office manager will also be responsible for renewal of business and professional licenses, payment of rent and utility bills, office filling system maintenance and payment receipts.

As a matter of company policy, response time to customer inquiries will be less than 24 hours. This policy will be strictly enforced and monitored as it is crucial in assuring customer satisfaction. The office manager will be responsible for coordinating the necessary actions by "Helios's" staff and assuring prompt action.

Staffing

During the first year, operations will be carried out with 1 administrative support person, 1 manager, 1 engineer and 2 production workers. By the end of the fifth year it is projected that operations will require 2 administrative support persons, 1 manager, 4 engineers and 4 production workers to meet production and construction obligations.

A staffing budget has been developed based on these needs and is included as Table 15 in Appendix C.

Professional Services

"Helios" will contract the services of a Certified Public Accountant for consultation on matters concerning taxation and record keeping. A contingency for legal expenses such as attorney fees has been estimated at $1,000 per year with a 5 percent annual increase. Accounting fees are estimated at $2,400 per year with a 5 percent increase per year. Finally, a $600 per year expense with a 5 percent annual increase for technology consultants has been budgeted for information systems maintenance and upgrade. A budget that summarizes the planned purchases and expenses for other services acquired as necessary for administrative operations has been established and included in Table 13 in Appendix C of this document.

Business and Professional Licenses and Registrations

The cost of securing business licenses is estimated at $250 per year. In addition to business licenses Kansas and Missouri require professional registration for persons and corporations engaged in the practice of engineering. The cost of renewing an individual professional engineering license in Kansas is $70 for a two-year period, while in Missouri the fee is $100 for two years. The costs of renewing professional corporate licenses are $110 biannually for Kansas and $200 for Missouri. In addition, they also require professional development in the form of continuing professional education. This may be in the form of approved educational seminars and college level coursework. The continuing education requirements are calculated on a biannual basis, and it is expected that they it will cost $500 per year for each engineer.

Payroll

The Social Security tax rate is currently set at 6.2 percent, while the Medicare tax rate is 1.45 percent of gross wages paid. However, employers must also pay state and federal unemployment taxes known as SUTA and FUTA. The current rate for FUTA is 6.2 percent, and the current starting SUTA rate for construction businesses in Missouri is 3.94 percent. A company can receive a credit for the rate paid as SUTA up to 5.4 percent so it follows that the total unemployment tax paid will still be 6.2 percent. The sum of Social Security, Medicare, state and federal unemployment taxes amounts to 13.85 percent of gross wages.

Benefits

Health insurance costs are estimated to cost $7,000 per employee for the first year. Because health insurance premiums have been increasing significantly in recent years, it is necessary to take the potential increases into account. This operating plan assumes a 12% annual rate of annual increase based on data available from the Kaiser Family Foundation that shows that healthcare premiums have increased at 14 percent in 2003, 11.2 percent in 2004 and 9.2 percent in 2005.[16]

Office Supplies and Miscellaneous Expenses

Furniture for the office will be purchased with a maximum budget of $2000 at the beginning of the first year. An allowance of $300 per month will be made for office supplies such as printing paper, plotting paper, printing ink. An additional $75 per month

will be allocated for mail and document shipping and $100 per month for maintenance expenses. Finally, $100 per month is allocated for traveling expenses and a contingency of $150 per month will be budgeted for unforeseen expenses.

Rent

Rent for the land production facility and office space will be $6.00 per square foot per year. That translates into $3,000 per month. The lease rate for the 2.4 acre site includes 14 parking spaces, 348 sq. ft. of office space, 4,652 sq. ft of manufacturing and warehousing space. The utilities are not included in the lease rate and are estimated separately.

Utilities

The electric bill for the manufacturing facility and offices is estimated at $450 per month. The telecommunications budget includes a cost of $400 for a telephone system and cellular phones, and an additional $200 for a fax machine. Local, long distance and internet service is estimated at $150 per month, while and cellular telephone cost are estimated at $150 per month. Finally, water costs are estimated at $550 per month.

Technology Plan

Hardware

“Helios Home Builders” will begin operations with three laptop computers. For the purposes of this business plan “Helios Home Builders” will invest in near top-of-the-line equipment in order to postpone the problem of obsolete equipment as long as possible.

The firm will also use a central server for file storage and security. The use of a security enabled wireless network will be required as well. The current technology utilizing the 802.11g standard for wireless networking is fast and inexpensive while at the same time it is user friendly. The use of wireless networking will eliminate the costs of installing the necessary cabling and Ethernet outlets in the company's facility while providing management and personnel greater mobility at the same time. Also, essential equipment will be a photocopy machine, a scanner, a laser printer, overhead projector, and finally plotting and printing equipment.

Software

Microsoft® Windows XP® Professional Edition will be used as the operating system and it comes preinstalled as a package with the notebook computers. Furthermore, "Helios" will use the following software packages and will need three licenses to cover its basic operating needs. Microsoft® Office® Professional Edition which includes: MS Word® for word processing, MS Excel® for spreadsheet calculations, MS PowerPoint® for product marketing and sales presentations, and MS Access® for database management. Microsoft® FrontPage® will be used for the company's website development while Microsoft® Publisher® will be used for brochures, product catalogues and marketing circulars.

The need for Computer Aided Design (CAD) software is essential for the design and production of construction drawings. "Helios Home Builders" will use AutoCAD® LT because it is a powerful and flexible software package that provides all the necessary

design tools needed at a very reasonable price. Only one license is required for this type of software.

Finally, "Helios" will use Peachtree® Complete Accounting 2006 for small businesses. A single-user license will be acquired in the beginning and upgrading to multiple users will be possible if needed in the future.

A technology budget that summarizes the planned purchases and expenses necessary for unhindered and competitive operations has been established and included in Table 16 of Appendix C.

Information Systems

The setup and operation of company information systems will be done on a contract basis. An initial setup charge and monthly maintenance fee will be allocated for this purpose. It is felt that it is not necessary to keep a person on the payroll for information systems due to the small initial size of the firm. If the firm's size warrants it in the future, this decision can be reevaluated.

Engineering

Site Design will be handled by Mr. L.C. as he will be the licensed Engineer in charge of design tasks. Site design will include permit applications to City, County, State and Federal agencies. These permits include building permits, land disturbance permits,

USDA Farmland Conversion permits, Department of Conservation permits, and Corps of Engineers Floodplain Development permits when required.

Design tasks include earthwork calculations, foundation design, driveway design, electrical, plumbing, structural, site orientation, material quantities and site drainage design. Utility connections for Sewer, Water, Telephone, Internet, and Cable will be incorporated in the site design for projects.

Module Cost and Production Time Calculations

According to the production plan, it will take 27 days to produce a Type 1 module at a cost of production estimated at $2,192.64. Estimated production costs for labor and materials are included in detail in Table 6 of Appendix C.

The design dimensions will be 8ft x 14ft x 8ft (W x L x H) for a Type 1 prefabricated module. The module will weigh 27,000 lbs as shown in Table 4 of Appendix C. A drawing of the proposed module is included as Figure 4 in Appendix C. The final product will be stored outdoors when finished.

Manufacturing Facilities

The manufacturing site will be centrally located within 30 miles of Kansas City, Missouri. Convenient Interstate highway access is a requirement for quick and reliable jobsite delivery of the modules and other construction materials.

The land area required is estimated at 2 acres and the size of the production facility is estimated at 5,000 sq.ft. including 348 sq.ft. of office space. The 100 ft long module production line requires 1,728 sq.ft of area. The remaining 2,924 sq.ft. will be used as storage area and for future expansion. Rough calculations for space requirements are shown in Table 9, a cost estimate is shown in Table 10 and a conceptual drawing of the production facility is included as Figure 5 of Appendix C.

Manufacturing activities include construction of modular concrete forms. The forms can be reused 10 times before they will need to be replaced with no salvage value. Other production activities are form assembly and removal and concrete pouring. During assembly of the modular forms, workers will also place tubing for plumbing and electrical systems. All materials and labor required for such activities are shown in Tables 5 and 6 of Appendix C.

Utilization of a rail line is desirable in order to move the modules through the production facility and out to the yard for storage and transportation to job sites. The cost of the rail line is estimated at $6,105.60. The production facility can accommodate 2 production lines, although only one is needed for our planned production. Based on the project plan developed for module production, it is estimated that maximum annual production on one production line will be 31 modules. A Microsoft Project® plan was been developed for the production of an individual module. Based on that another plan for the annual production was developed taking into account variations due to non-working weekend days, national holidays and movement in the production line. Based on the estimate the

projected demand for the planning period of this operating plan will be met without difficulty. The initial plan is to use ready-mix concrete for module production. This will eliminate the need for "Helios" to maintain inventories of most materials.

Inventory

Inventories of various raw materials necessary for production of the modules will not be maintained at any significant level. Items listed as inventory in the financial statements of this report represent land acquisition and construction costs invested in homes under construction.

Site Work/Field Operations

Construction Schedules

It is estimated that a conventional home could be built in 145 days. The use of "Helios's" prefabricated module and earth sheltering designs will allow a 22 day reduction in the time it takes to finish a home. The construction schedule for a "Helios" home will take 123 days. This is accomplished through elimination of the need for framing exterior first floor walls, elimination of first floor sheathing and elimination of additional masonry work. Furthermore, time savings come from reduction in the amount of time required to install first floor joists, frame first floor walls, rough-in plumbing, rough-in electrical and basement floor construction. Construction schedules take into account non-working national holidays.

Subcontract work

"Helios" Home Builders will construct homes based on predetermined energy efficient designs as indicated previously in this plan. Site work and field operations will be carried out through extensive use of subcontractors.

Transportation and job site delivery

Transportation of the modules to the job site will be done by truck and truck-mounted lifting cranes. Diesel fuel costs are variable and the cost will be reevaluated as necessary. For the purposes of this operating plan the average cost for transportation of the modules is estimated at $490.00 per module. The cost is based on an estimated average delivery distance and a crane rental fee. Calculations are shown in Table 7 of Appendix C.

Financials

The first two years of operation will be capital intensive. In fact, most of the money invested in the company will be used up in the first few months to finance production facility equipment construction, computer and software and purchasing, form construction, marketing and construction financing. Additional funding in the form of a $25,000 loan from the Small Business Administration will help the company overcome a shortage of cash in June of 2007 and again in January of 2008. Following the completion and sale of the first home in July of 2007 the financial picture will begin improving. First and second year cash flows are shown in Figures 6 and 7 of Appendix C. Balance sheets,

Cash Flow Statements and Income Statements are included for years 1 through 5 in Appendix B.

The company will turn a net profit from operations in the second quarter of 2009, after two and half years of operation. The initial investment will be recovered in the third quarter of 2010 after three and a half years of operation. Sales and Profit Projections for years 1 through 5 are shown in Figure 8 of Appendix C.

Exit Plan and Future Plans

When the company reaches a healthy and sustainable operating level the owners will make an attempt to mitigate some of the risk they are carrying. This could be achieved in many different ways, such as taking on additional partners, selling a portion of the business to institutional investors or with the implementation of an employee stock option program better known as ESOP. The company's preference at this stage is the ESOP option. "Helios" believes that while it is true that employees assume a much lower risk than the owners of the company, they are nevertheless always shouldering some form and portion of risk as well. It is important that the company recognizes this as a contribution and at least offers a fractional ownership program to its employees.

Funding

Sources of Funding

To purchase necessary equipment, secure a production facility and begin operations, an initial amount of $130,000 will be required. This initial funding will come from a combination of available sources. The most significant source is of course will be the contribution of $130,000 from the personal savings of the participating partners. In particular $100,000 will be contributed by Mr. L.C., and equity investments will be made in the amounts of $10,000 by Miss G.-O, $10,000 by Mr. C. C. and $10,000 by Mr. N. P.

A loan through the Small Business Administration 7(a) program will provide an additional $25,000 in June of 2007 and $25,000 in January of 2008. The terms of these loans are: borrowing term is 5 years, the interest rate is negotiable, but the maximum is pegged at the Prime Rate plus 2.25 percent for loans with a maturity less than 7 years. The current prime rate is at 7.5 percent so the SBA 7(a) loan's rate will be capped at 9.75 percent. This rate will be used for the purposes of this operating plan.

Bibliography

1. Designing & building a solar house: Your place in the sun by Donald Watson
2. The Passive Solar House (Real Goods Independent Living Books) by James Kachadorian
3. The Solar House: Passive Heating and Cooling by Daniel D., Ph.D. Chiras
4. The Successful Business Plan: Secrets and Strategies 4th Edition by Rhonda Abrams, Eugene Kleiner
5. Project Management: A Systems Approach to Planning, Scheduling, and Controlling by Harold Kerzner
6. Energy Alternatives; Renewable Energy Buyers Guide and Product Catalogue, 12th Edition
7. Start-up companies : planning, financing, and operating the successful business / planned and edited by Richard D. Harroch., New York, N.Y. : Law Journal Seminars-Press, 1985
8. Innovations at the cutting edge, new ideas in manufactured housing. GPO, 1999.
9. Manufactured housing**:** regulation, design innovations, and development options / Welford Sanders**,** Chicago, IL: American Planning Association, c1998.
10. Affordable passive solar homes: low-cost, compact designs / by Richard L. Crowther, Denver, Colo.: SciTech Pub. Co., c1984
11. Convincing the home builder to build solar homes: evaluation of the passive solar workshop for builders / Susan Klein; prepared for the U.S. Department of Energy. Golden, Colo.: Solar Energy Research Institute; Springfield, VA: Available from National Technical Information Service, 1981.

12. EPA's energy star homes marketing toolkit, GPO, 2000.

13. Marketing solar energy innovations / edited by Avraham Shama, New York, N.Y. : Praeger, 1981

14. The solar decision book of homes: a guide to designing and remodeling for solar heating / Richard H. Montgomery, with Walter F. Miles, New York: Wiley, c1982.

15. Successful solar energy solutions by Spruille Braden, III and Kathleen Steiner, with Alvin R. O'Konski, New York: Van Nostrand Reinhold, c1980.

16. Earth sheltered homes: plans and designs, D Ahrens, T Ellison, R Sterling - 1981 - New York: Van Nostrand Reinhold Co.

17. Estimating Construction Costs, 4th ed., Garold D. Oberlender, R. L. Peurifoy. McGraw-Hill.

18. Photovoltaic and Solar-Thermal Technologies in Residential Building Codes, Tackling Building Code Requirements to Overcome the Impediments to Applying New Technologies David Wortman and Linda Echo-Hawk, National Renewable Energy Laboratory.

References

1. http://www.bea.gov/bea/dn/gdpchg.xls as viewed on February 28, 2006
2. http://www.bea.gov/bea/newsrelarchive/2005/gsp1005.xls tables, 1 and 2a, as viewed on February 28, 2006
3. http://www.agc.org/galleries/economics/QuickFacts021006.doc as viewed on February 28, 2006
4. http://www.census.gov/const/www/C40/table2.html#monthly as viewed on March 1, 2006
5. http://www.energystar.gov/index.cfm?fuseaction=NEW_HOMES_PARTNERS.showHomesResults&partner_type_id=SHB&s_code=ALL, as viewed on March 1, 2006
6. Energy Management ant Investor Returns: The Real Estate Sector. Leaders in Energy Management Achieve Superior Stock Market Returns in the Real Estate Sector, Innovest Strategic Value Advisors, October 2002.
7. Hicks, W. Thomas and von Neida, Bill, (2000), An Evaluation of America's First Energy Star Buildings: The Class of 1999, Environmental Protection Agency.
8. "Better B2B selling," The McKinsey Quarterly, 2005, Number 3
9. http://www.irs.gov/pub/irs-drop/n-06-27.pdf, as viewed on March 2, 2006
10. **11. 15.** 1995-2005: A Decade of Change Home Building with Energy Star®, Market Transformation through Effective Public-Private Partnerships, Environmental Protection Agency, 430-R-05-002 January 2005.

12. "Retailing: What's working online," The McKinsey Quarterly, 2005, Number 3

13. Taking Shelter from the Storm.: Building a Safe Room Inside your House. FEMA Mitigation Directorate, Fist Edition, 1998.

13. http://www.energystar.gov/ia/partners/manuf_res/CasaHomeMarketingLeverages.pdf, as viewed on March 2, 2006

14. http://www.census.gov/const/price_sold.pdf, as viewed on March 6, 2006

16. http://www.kff.org/insurance/7315/sections/upload/7316.pdf, as viewed on March 16, 2006

Appendix A – Glossary

active solar system – a solar system or cooling system that relies on external mechanical power to move collected heat

building envelope – the exterior components of construction that enclose interior, conditioned spaces through which thermal energy can be transferred.

convection – heat transfer by movement of a fluid (liquid, gas or vapor) between the fluid and a surface or within the fluid itself.

direct gain – solar radiation directly intercepting or entering a building.

earth sheltering - the architectural practice of using earth for external thermal mass against building walls.

envelope – an additional, thermal shell around the architecture that protects from heat losses or gains and acts as a thermal intervener.

life-cycle costing (life cycle cost analysis) – the total cost of a system over its economically useful life. Includes the appropriate summation of all costs expected to be incurred as a result of choosing and implementing any particular plan and design over the life of the building.

natural ventilation – supplying and removing air by natural means (such as by winds or by natural convection) to or from any space.

passive solar system – a solar heating or cooling system that does not rely on external mechanical power to move the collected solar heat through the building.

thermal mass – a substance (liquid or solid) in which heat energy is stored. Also, it is the amount of potential heat storage capacity available in a given assembly or system.

Appendix B – Financial Statements

Income Statements

Income Statements	2007	2008	2009	2010	2011
	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
INCOME					
Gross Sales	**$1,085,184**	**$2,289,952**	**$3,624,192**	**$5,735,826**	**$9,077,805**
(Commissions)	**$43,407**	**$91,598**	**$144,968**	**$229,433**	**$363,112**
(Returns and allowances)	**$21,704**	**$45,799**	**$72,484**	**$114,717**	**$181,556**
Net Sales	**$1,020,073**	**$2,152,555**	**$3,406,740**	**$5,391,676**	**$8,533,137**
(Cost of Goods)	$868,147	$1,831,962	$2,899,354	$4,588,661	$7,262,244
GROSS PROFIT	**$151,926**	**$320,593**	**$507,387**	**$803,016**	**$1,270,893**
EXPENSES - General and Administrative					
Salaries and wages	$140,400	$187,740	$239,463	$327,839	$390,907
Employee benefits	$35,000	$47,040	$61,466	$98,345	$121,161
Payroll taxes	$19,445	$26,002	$33,166	$45,406	$54,141
Professional services	$4,000	$4,200	$4,413	$4,641	$4,862
Marketing and advertising	$16,657	$17,490	$18,365	$19,283	$20,247
Rent	$36,000	$36,000	$36,000	$36,000	$36,000
Equipment rental	$0	$0	$0	$0	$0
Maintenance	$1,200	$1,200	$1,200	$1,200	$1,200
Depreciation	$3,303	$3,303	$3,303	$3,303	$3,303
Insurance	$2,400	$2,400	$2,400	$2,400	$2,400
Telephone service	$3,600	$3,600	$3,600	$3,600	$3,600
Utilities	$12,000	$12,000	$12,000	$12,000	$12,000
Office supplies	$3,600	$3,600	$3,600	$3,600	$3,600
Postage and shipping	$900	$900	$900	$900	$900
Travel	$1,200	$1,200	$1,200	$1,200	$1,200
Entertainment	$0	$0	$0	$0	$0
Interest on loans	$1,366	$2,021	$1,581	$1,095	$561
Business and Professional Licenses	$990	$0	$990	$0	$990
Contingency	$1,800	$1,800	$1,800	$1,800	$1,800
TOTAL EXPENSES	**$283,861**	**$350,495**	**$425,445**	**$562,612**	**$658,871**
Net income before taxes	-$131,935	-$29,902	$81,942	$240,404	$612,022
Provision for taxes on income	$0	$0	$20,486	$60,101	$153,006
NET PROFIT	**-$131,935**	**-$29,902**	**$61,457**	**$180,303**	**$459,017**

Cash Flow Statements

Cash Flow	2007	2008	2009	2010	2011
	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
CASH RECEIPTS					
Income from Sales					
Cash Sales	$1,085,184	$2,289,952	$3,624,192	$5,735,826	$9,077,805
Collections	$0	$0	$0	$0	$0
Total Cash from Sales	**$1,085,184**	**$2,289,952**	**$3,624,192**	**$5,735,826**	**$9,077,805**
Income from Financing					
Interest Income	$678	$1,376	$3,405	$11,539	$37,237
Loan Proceeds	$25,000	$25,000	$0	$0	$0
Equity Capital Investments	$30,000	$0	$0	$0	$0
Total Cash from Financing	$55,678	$26,376	$3,405	$11,539	$37,237
Other Cash Receipts	$8,000	$16,000	$24,000	$36,000	$54,000
TOTAL CASH RECEIPTS	**$1,148,862**	**$2,332,328**	**$3,651,597**	**$5,783,365**	$9,169,042
CASH DISBURSEMENTS					
Inventory	$868,371	$1,793,880	$2,779,324	$4,306,438	$6,672,612
Operating Expenses	$279,192	$345,172	$420,561	$558,213	$655,007
Commissions/Returns & Allowances	$65,111	$137,397	$217,452	$344,150	$544,668
Capital Purchases	$22,267	$0	$0	$0	$0
Loan Payments	$3,697	$12,675	$12,675	$12,675	$12,675
Income Tax Payments	$0	$0	$25,796	$63,336	$152,786
Investor Dividend Payments	$0	$0	$0	$0	$0
Owner's Draw	$0	$0	$0	$0	$0
TOTAL CASH DISBURSEMENTS	**$1,238,638**	**$2,289,124**	**$3,455,807**	**$5,284,812**	$8,037,748
NET CASH FLOW	**-$89,776**	**$43,204**	**$195,789**	**$498,554**	$1,131,294
Opening Cash Balance	$120,000	$30,224	$73,428	$269,217	$767,771
Cash Receipts	$1,148,862	$2,332,328	$3,651,597	$5,783,365	$9,169,042
Cash Disbursements	$1,238,638	$2,289,124	$3,455,807	$5,284,812	$8,037,748
ENDING CASH BALANCE	**$30,224**	**$73,428**	**$269,217**	**$767,771**	**$1,899,065**

Balance Sheets

Helios Home Builders
First Quarter
2007

ASSETS			
Current Assets			
Cash	$57,545		
Accounts Receivable	$0		
Inventory	$0		
Other Current Assets	$0		
Total Current Assets		$57,545	
Fixed Assets			
Land	$0		
Facilities	$0		
Equipment	$9,105		
Computers & Telecommunications	$13,162		
(Less Accumulated Depreciation)	$826		
Total Fixed Assets		$21,441	
Other Assets		$0	
TOTAL ASSETS			**$78,986**
LIABILITIES			
Current Liabilities			
Short-Term Notes Payable	$0		
Income Taxes Due	$0		
Other Current Liabilities	$0		
Total Current Liabilities		$0	
Long-Term Liabilities			
Long-Term Notes Payable	$0		
Other Long-Term Liabilities	$0		
Total Long-Term Liabilities		$0	
NET WORTH			
Paid-In Capital	$150,000		
Retained Earnings	-$71,014		
Total Net Worth		$78,986	
TOTAL LIABILITIES AND NET WORTH			**$78,986**

Helios Home Builders
Second Quarter
2007

ASSETS			
Current Assets			
Cash	$12,563		
Accounts Receivable	$0		
Inventory	$0		
Other Current Assets	$0		
Total Current Assets		$12,563	
Fixed Assets			
Land	$0		
Facilities	$0		
Equipment	$9,105		
Computers & Telecommunications	$13,162		
(Less Accumlated Depreciation)	$1,651		
Total Fixed Assets		$20,616	
Other Assets		$0	
TOTAL ASSETS			**$33,179**
LIABILITIES			
Current Liabilities			
Short-Term Notes Payable	$4,112		
Income Taxes Due	$0		
Other Current Liabilities	$0		
Total Current Liabilities		$4,112	
Long-Term Liabilities			
Long-Term Notes Payable	$20,563		
Other Long-Term Liabilities	$0		
Total Long-Term Liabilities		$20,563	
NET WORTH			
Paid-In Capital	$150,000		
Retained Earnings	-$141,496		
Total Net Worth		$8,504	
TOTAL LIABILITIES AND NET WORTH			**$33,179**

Helios Home Builders
Third Quarter
2007

ASSETS			
Current Assets			
Cash	$21,371		
Accounts Receivable	$0		
Inventory	$112		
Other Current Assets	$0		
Total Current Assets		$21,483	
Fixed Assets			
Land	$0		
Facilities	$0		
Equipment	$9,105		
Computers & Telecommunications	$13,162		
(Less Accumlated Depreciation)	$2,477		
Total Fixed Assets		$19,790	
Other Assets		$0	
TOTAL ASSETS			**$41,273**
LIABILITIES			
Current Liabilities			
Short-Term Notes Payable	$4,213		
Income Taxes Due	$7,162		
Other Current Liabilities	$0		
Total Current Liabilities		$11,375	
Long-Term Liabilities			
Long-Term Notes Payable	$19,471		
Other Long-Term Liabilities	$0		
Total Long-Term Liabilities		$19,471	
NET WORTH			
Paid-In Capital	$150,000		
Retained Earnings	-$139,574		
Total Net Worth		$10,426	
TOTAL LIABILITIES AND NET WORTH			**$41,273**

Helios Home Builders
Fourth Quarter
2007

ASSETS			
Current Assets			
Cash	$30,224		
Accounts Receivable	$0		
Inventory	$223		
Other Current Assets	$0		
Total Current Assets		$30,447	
Fixed Assets			
Land	$0		
Facilities	$0		
Equipment	$9,105		
Computers & Telecommunications	$13,162		
(Less Accumlated Depreciation)	$3,303		
Total Fixed Assets		$18,964	
Other Assets		$0	
TOTAL ASSETS			**$49,411**
LIABILITIES			
Current Liabilities			
Short-Term Notes Payable	$4,317		
Income Taxes Due	$14,329		
Other Current Liabilities	$0		
Total Current Liabilities		$18,645	
Long-Term Liabilities			
Long-Term Notes Payable	$18,352		
Other Long-Term Liabilities	$0		
Total Long-Term Liabilities		$18,352	
NET WORTH			
Paid-In Capital	$150,000		
Retained Earnings	-$137,587		
Total Net Worth		$12,413	
TOTAL LIABILITIES AND NET WORTH			**$49,411**

Helios Home Builders

2008

ASSETS			
Current Assets			
Cash	$73,428		
Accounts Receivable	$0		
Inventory	-$37,858		
Other Current Assets	$0		
Total Current Assets		$35,570	
Fixed Assets			
Land	$0		
Facilities	$0		
Equipment	$9,105		
Computers & Telecommunications	$13,162		
(Less Accumulated Depreciation)	$6,606		
Total Fixed Assets		$15,661	
Other Assets		$0	
TOTAL ASSETS			**$51,231**
LIABILITIES			
Current Liabilities			
Short-Term Notes Payable	$9,252		
Income Taxes Due	$14,329		
Other Current Liabilities	$0		
Total Current Liabilities		$23,580	
Long-Term Liabilities			
Long-Term Notes Payable	$30,022		
Other Long-Term Liabilities	$0		
Total Long-Term Liabilities		$30,022	
NET WORTH			
Paid-In Capital	$150,000		
Retained Earnings	-$152,372		
Total Net Worth		-$2,372	
TOTAL LIABILITIES AND NET WORTH			**$51,231**

Helios Home Builders

2009

ASSETS			
Current Assets			
Cash	$269,217		
Accounts Receivable	$0		
Inventory	-$157,888		
Other Current Assets	$0		
Total Current Assets		$111,329	
Fixed Assets			
Land	$0		
Facilities	$0		
Equipment	$9,105		
Computers & Telecommunications	$13,162		
(Less Accumulated Depreciation)	$9,909		
Total Fixed Assets		$12,358	
Other Assets		$0	
TOTAL ASSETS			**$123,688**
LIABILITIES			
Current Liabilities			
Short-Term Notes Payable	$10,195		
Income Taxes Due	$8,558		
Other Current Liabilities	$0		
Total Current Liabilities		$18,753	
Long-Term Liabilities			
Long-Term Notes Payable	$19,827		
Other Long-Term Liabilities	$0		
Total Long-Term Liabilities		$19,827	
NET WORTH			
Paid-In Capital	$150,000		
Retained Earnings	-$64,892		
Total Net Worth		$85,108	
TOTAL LIABILITIES AND NET WORTH			**$123,688**

Helios Home Builders
2010

ASSETS			
Current Assets			
Cash	$767,771		
Accounts Receivable	$0		
Inventory	-$440,111		
Other Current Assets	$0		
Total Current Assets		$327,660	
Fixed Assets			
Land	$0		
Facilities	$0		
Equipment	$9,105		
Computers & Telecommunications	$13,162		
(Less Accumlated Depreciation)	$13,212		
Total Fixed Assets		$9,055	
Other Assets		$0	
TOTAL ASSETS			**$336,716**
LIABILITIES			
Current Liabilities			
Short-Term Notes Payable	$11,235		
Income Taxes Due	$4,977		
Other Current Liabilities	$0		
Total Current Liabilities		$16,211	
Long-Term Liabilities			
Long-Term Notes Payable	$8,592		
Other Long-Term Liabilities	$0		
Total Long-Term Liabilities		$8,592	
NET WORTH			
Paid-In Capital	$150,000		
Retained Earnings	$161,912		
Total Net Worth		$311,912	
TOTAL LIABILITIES AND NET WORTH			**$336,716**

Helios Home Builders

2011

ASSETS			
Current Assets			
Cash	$1,899,065		
Accounts Receivable	$0		
Inventory	-$1,029,743		
Other Current Assets	$0		
Total Current Assets		$869,322	
Fixed Assets			
Land	$0		
Facilities	$0		
Equipment	$9,105		
Computers & Telecommunications	$13,162		
(Less Accumlated Depreciation)	$16,515		
Total Fixed Assets		$5,753	
Other Assets		$0	
TOTAL ASSETS			**$875,075**
LIABILITIES			
Current Liabilities			
Short-Term Notes Payable	$8,592		
Income Taxes Due	$4,977		
Other Current Liabilities	$0		
Total Current Liabilities		$13,569	
Long-Term Liabilities			
Long-Term Notes Payable	$0		
Other Long-Term Liabilities	$0		
Total Long-Term Liabilities		$0	
NET WORTH			
Paid-In Capital	$150,000		
Retained Earnings	$711,506		
Total Net Worth		$861,506	
TOTAL LIABILITIES AND NET WORTH			**$875,075**

Appendix C - Figures and Tables

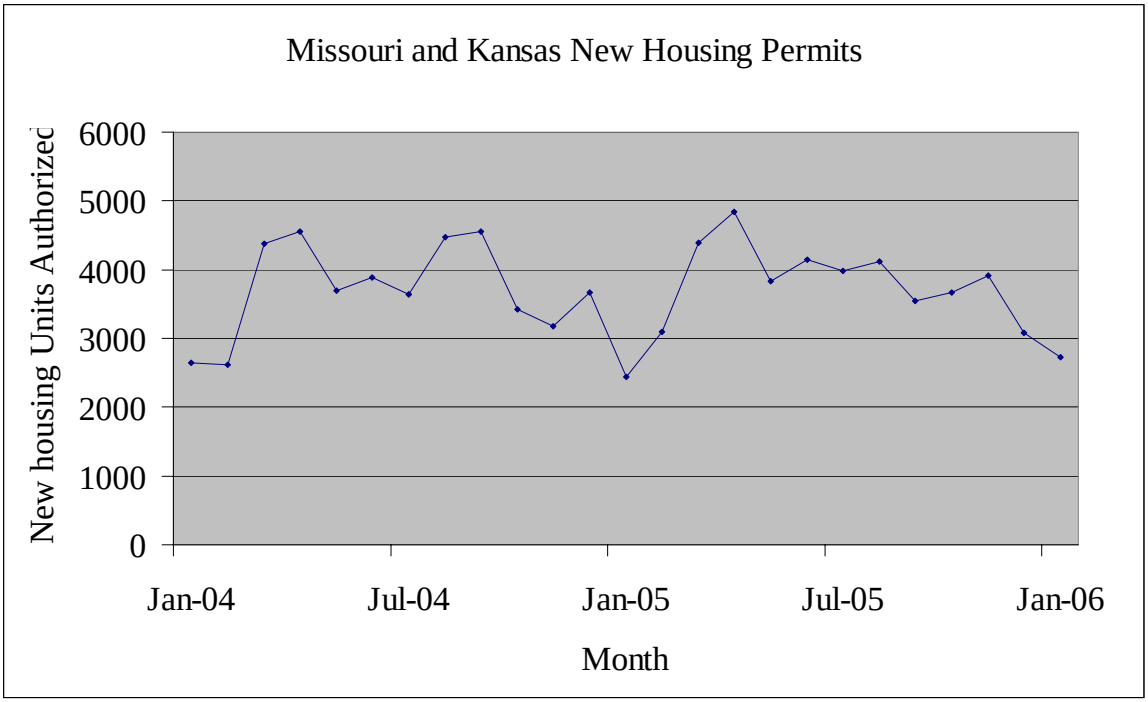

Figure 1. Missouri & Kansas New Housing Permits. Source: Census Bureau.

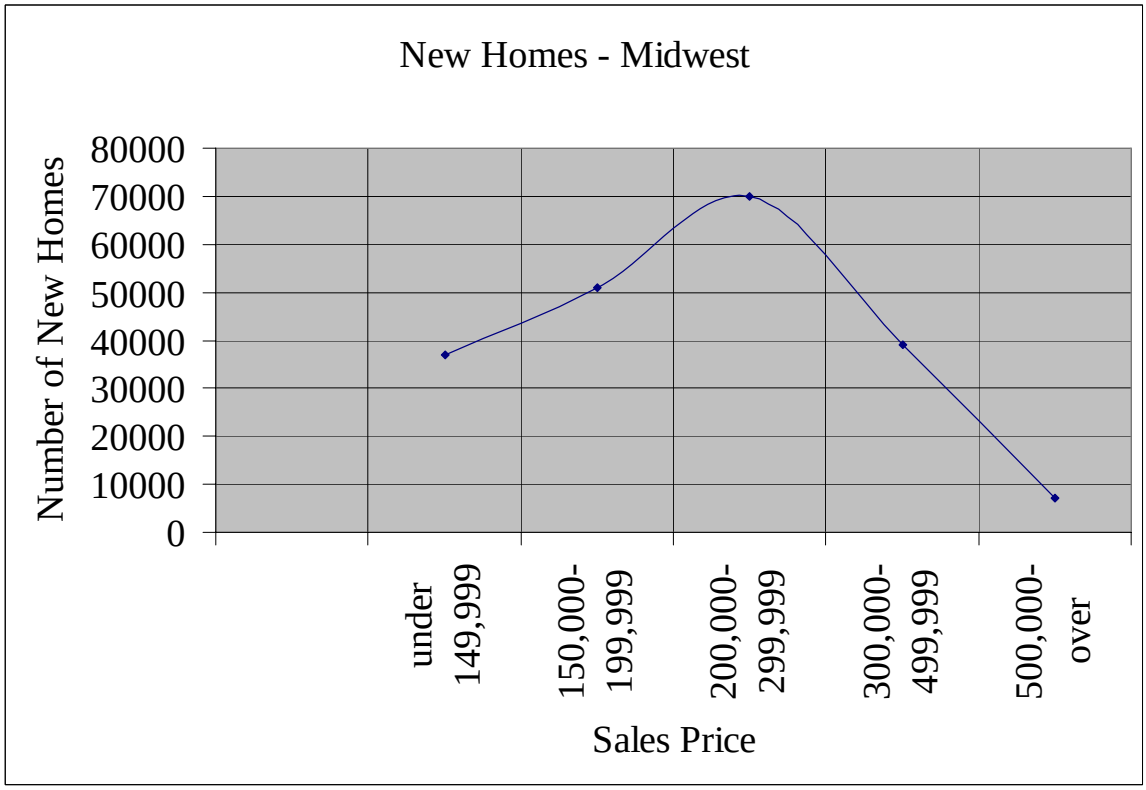

Figure 2. Midwest Region New Housing Prices. Source: Census Bureau.

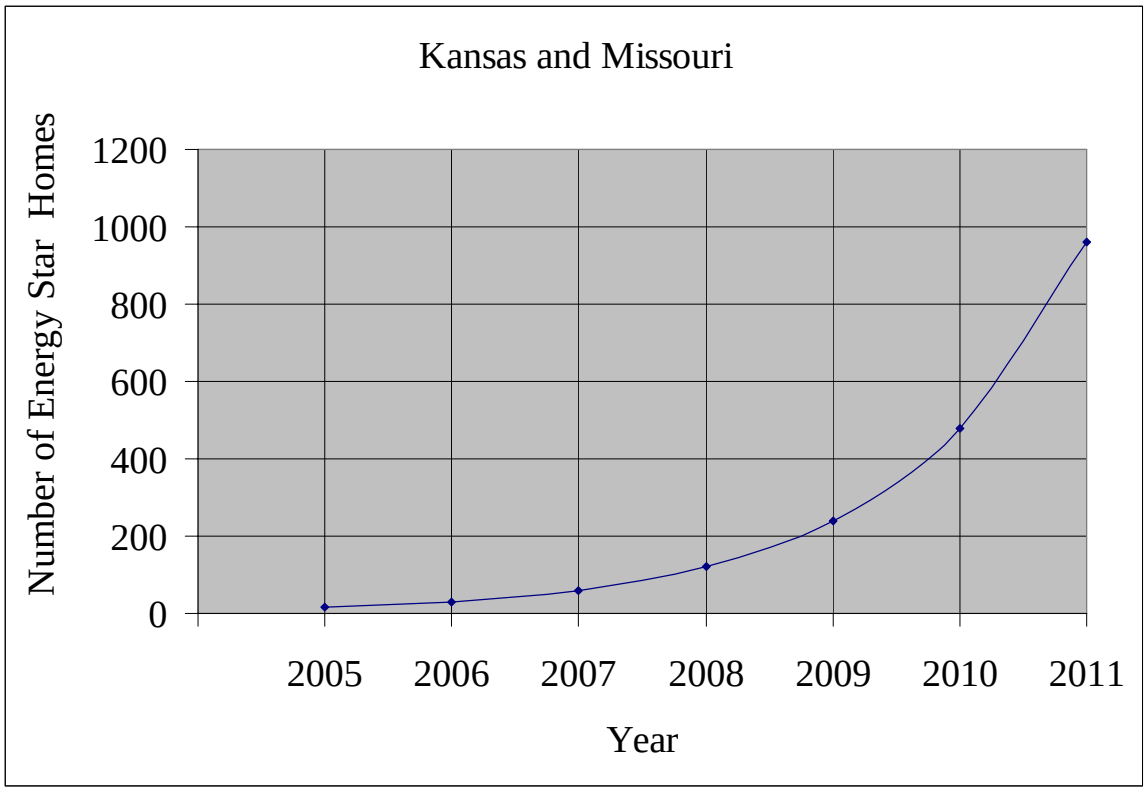

Figure 3. Projected Missouri & Kansas Energy Star® New Construction.

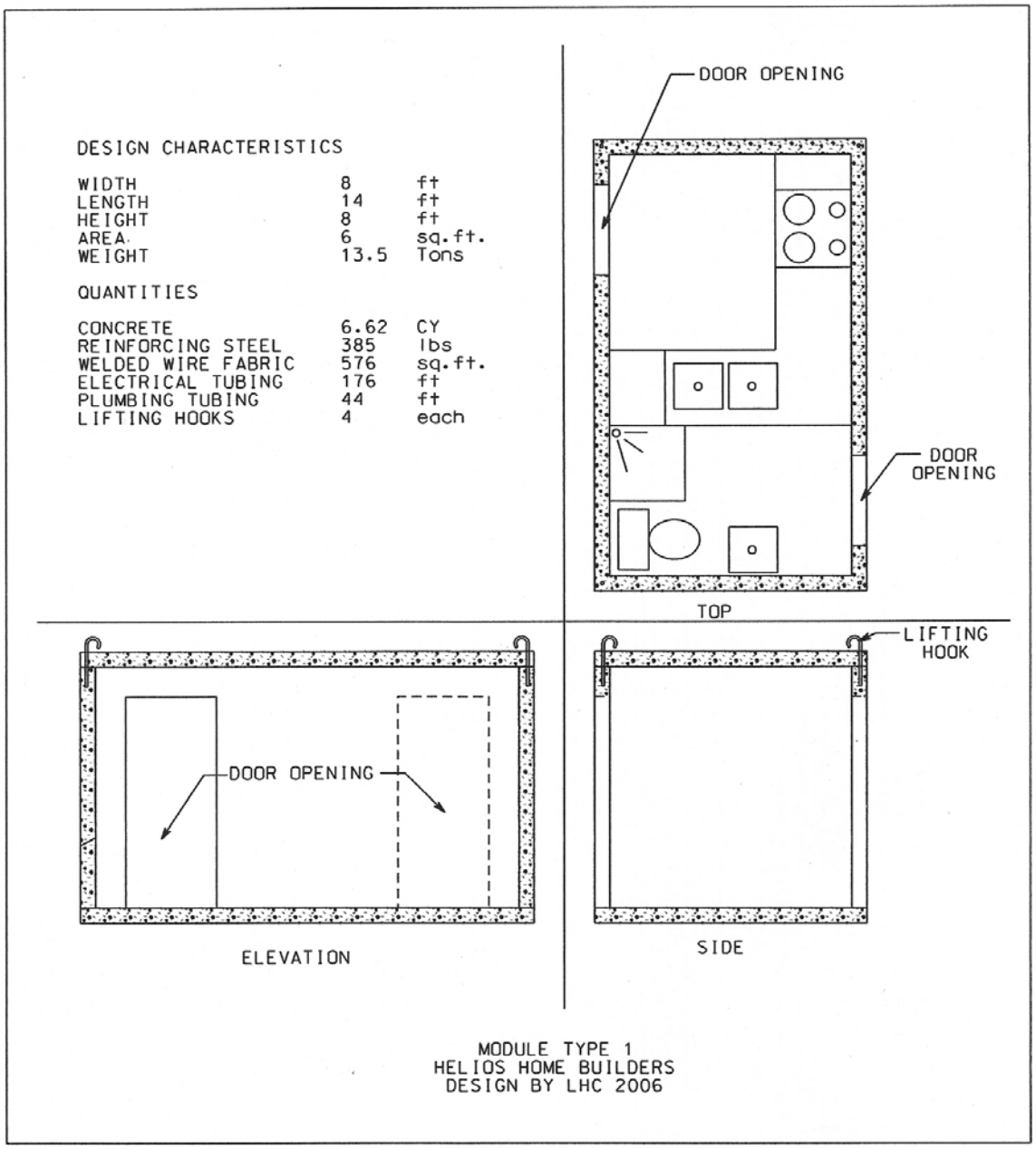

Figure 4. Drawing of Type 1 Module.

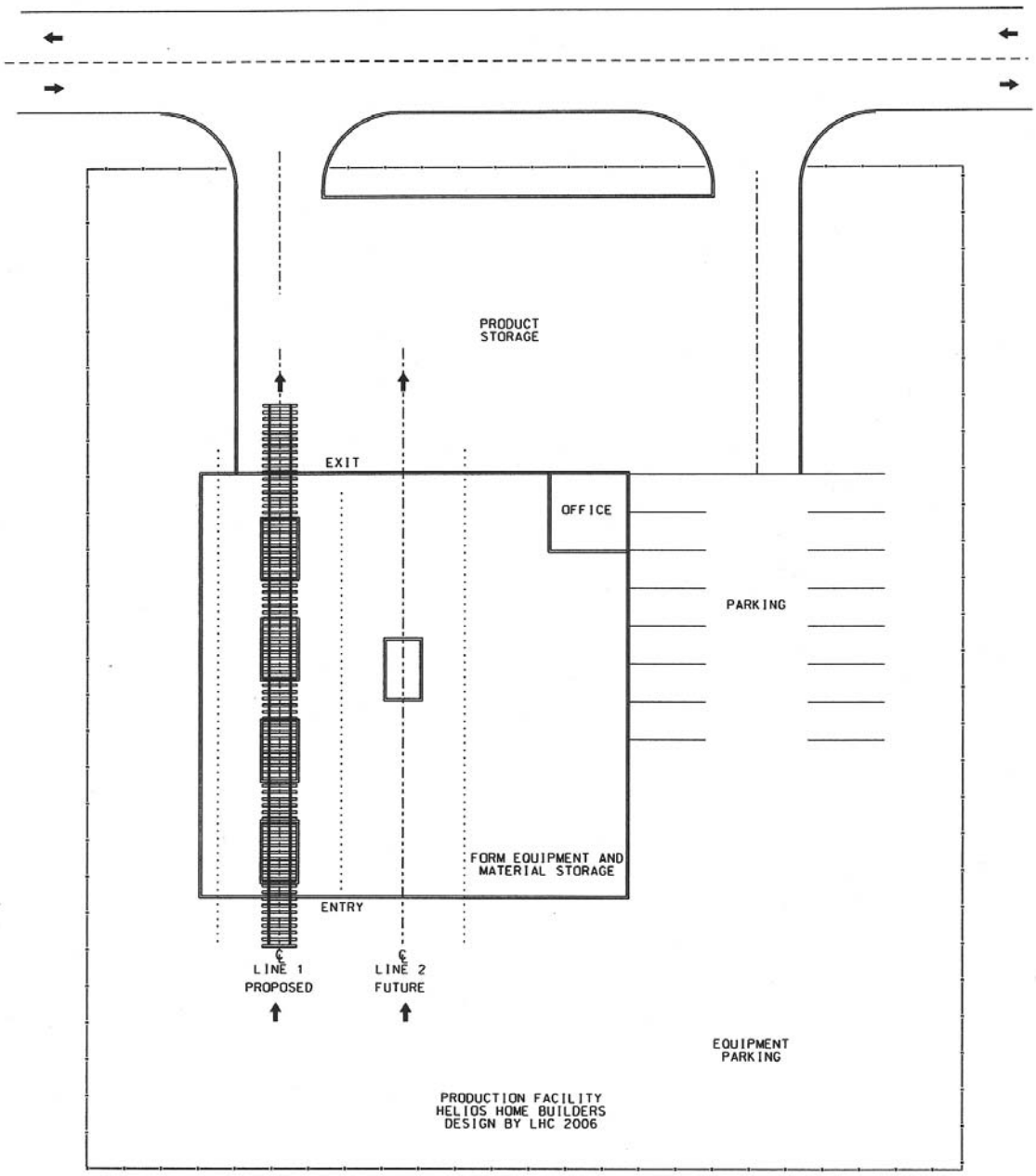

Figure 5. Drawing of Production Facility.

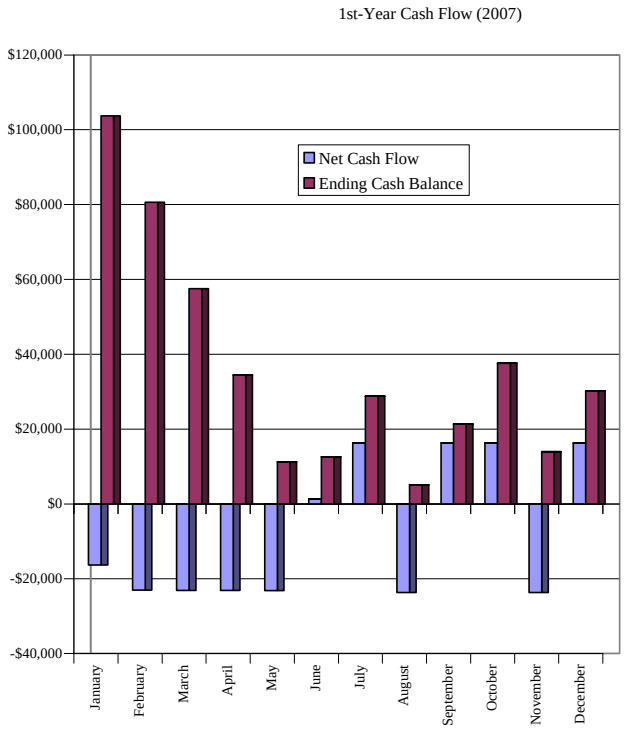

Figure 6. First Year Cash Flows.

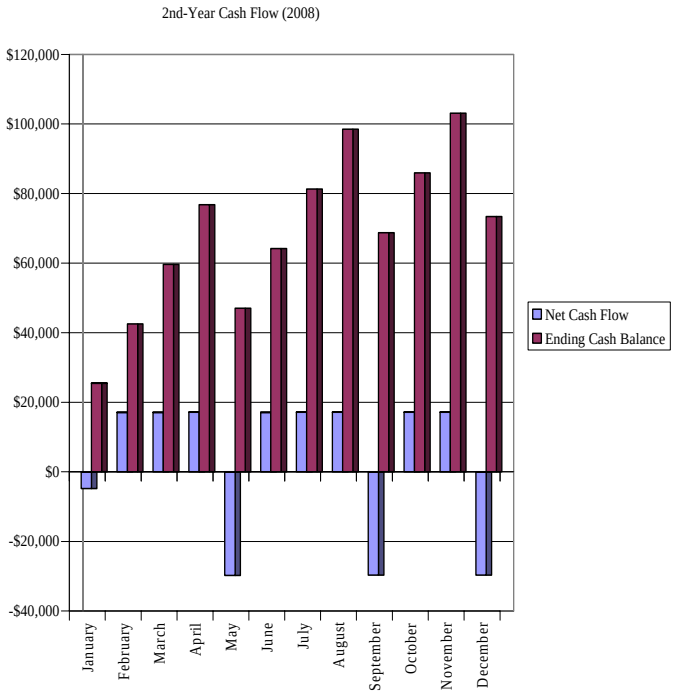

Figure 7. Second Year Cash Flows.

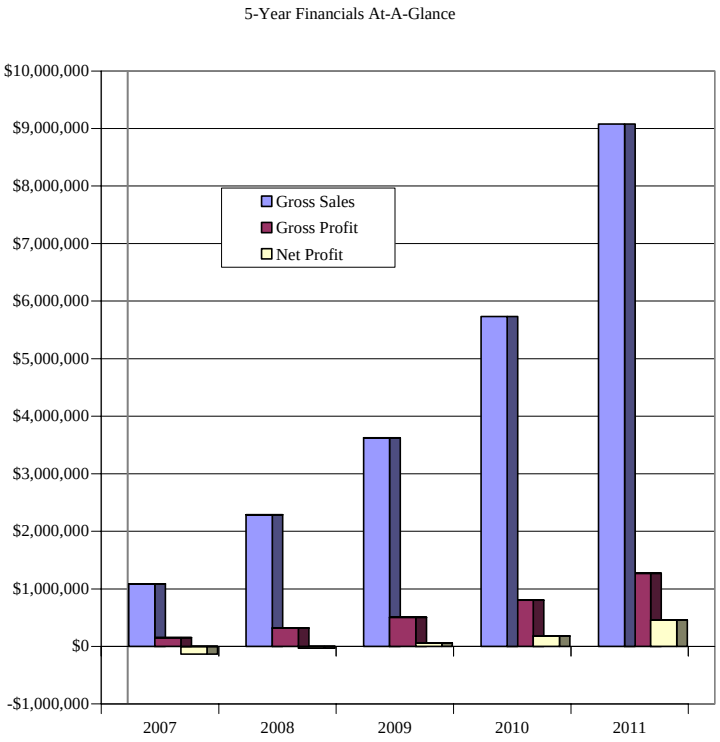

Figure 8. Five Year Sales and Profit Projections.

Cost of Participating in the 2006 Greater Kansas City Home Show

Items	Cost	Quantity	Discount (%)	Total
Booth Rental (20x30)	$4,725.00	1	10	$ 4,252.50
Corner charges	$100.00	2	0	$ 200.00
Phone Line	$50.00	1	0	$ 50.00
Furniture Rental	$200.00	5	0	$ 1,000.00
Module Model Construction	$2,000.00	1	0	$ 2,000.00
Meals	$8.00	8	0	$ 64.00
Transportation Costs	$0.45	160	0	$ 71.20
Totals				$ 7,637.70

Annual Price Percent Increase	5	%

2007 Participation Cost	$ 8,019.59
2008 Participation Cost	$ 8,420.56
2009 Participation Cost	$ 8,841.59
2010 Participation Cost	$ 9,283.67
2011 Participation Cost	$ 9,747.86

Table 1. Cost of Participating in the Greater KC Area Home Show.

Cost of Placing advertisement in the Kansas City Star's "House and Home"

Items	Cost	Quantity	Discount (%)	Total
Ad for 1/4 Page Horizontal, 12" x 5"	$2,861.25	1	0	$ 2,861.25
4-Color	$265.00	1	0	$ 265.00
Totals				$ 3,126.25

Annual Price Percent Increase	5	%

	Annual	Monthly
2007 Ad Cost	$ 3,282.56	$ 273.55
2008 Ad Cost	$ 3,446.69	$ 287.22
2009 Ad Cost	$ 3,619.03	$ 301.59
2010 Ad Cost	$ 3,799.98	$ 316.66
2011 Ad Cost	$ 3,989.98	$ 332.50

Table 2. Cost of Placing Advertisement in KC Star's "House and Home".

Cost of Website

Items	Cost	Quantity	Discount (%)	Total
Website Listing and Maintenance	$1,200.00	4	0	$ 4,800.00
Renewal Fee	$200.00	1	0	$ 200.00
Change Fee	$100.00	1	0	$ 100.00
Totals				$ 5,100.00

Annual Price Percent Increase	5	%

	Annual	Monthly
2007 Website Cost	$ 5,355.00	$ 446.25
2008 Website Cost	$ 5,622.75	$ 468.56
2009 Website Cost	$ 5,903.89	$ 491.99
2010 Website Cost	$ 6,199.08	$ 516.59
2011 Website Cost	$ 6,509.04	$ 542.42

Table 3. Cost of listing and maintaining a company website.

Module Weight Calculation

Unit Density of Concrete =	4050	**pounds/cubic yard**

	Width	**Length**	**Height**	**Wall Thickness**
	(feet)	**(feet)**	**(feet)**	**(inches)**
Dimensions	8	14	8	6

	Volume	**Weight**
	Cubic Yards	Pounds
Long Walls (2)	2.07	8383.5
Short Walls (2)	1.19	4819.5
Floor Slab	2.07	8383.5
Roof Slab	2.07	8383.5
Door Openings (2)	0.78	-3159
Total	6.62	26811

Table 4. Module Weight Calculations

Form Construction

Material

	Quantity	Unit	Unit Cost	Total
Plywood	576	sq.ft.	0.44	$ 253.44
nails	576	each	0.05	$ 28.80
form ties	92	each	0.39	$ 35.88
Total				$ 318.12

Labor

	Production Rate	Unit	Quantity	Unit	Labor (hrs)	Cost	Total
Carpenter	0.02	hrs/sq.ft.	576	sq.ft.	11.52	$ 30.00	$ 345.60
Helper	0.015	hrs/sq.ft.	576	sq.ft.	8.64	$ 22.45	$ 193.97
Total							$ 539.57

Salvage Value	0
Number of Uses	10

Cost	85.77	$/module

Table 5. Form Production Cost Calculations**.**

Module Production Costs

Material

	Quantity	Unit	Unit Cost	Total
Concrete	6.62	C.Y.	70.00	$ 463.40
Reinforcing Steel	385	lbs	0.40	$ 154.00
Welded Wire	576	sq.ft.	0.10	$ 57.60
Electrical Items				
Tubing	176	feet	1.34	$ 235.84
Box	10	each	0.19	$ 1.90
Lifting anchors	4	each	16.42	$ 65.68
Plumbing Items	44	feet	0.37	$ 16.28
Subtotal				$ 994.70

Labor

	Production Rate	Unit	Quantity	Unit	Labor(hrs)	Cost	Total
Form A&R							
Helper	0.035	hrs/sq.ft.	20.16	sq.ft.	0.7056	$ 20.00	$ 14.11
Carpenter	0.03	hrs/sq.ft.	17.28	sq.ft.	0.5184	$ 30.00	$ 15.55
Electrical	20	feet/hr	100	ft	5	$ 30.73	$ 153.65
Plumbing	10	feet/hr	40	ft	4	$ 30.04	$ 120.16
Reinforcement							
Laborer	18	hrs/Ton	0.193	Tons	3.465	$ 20.00	$ 69.30
Steel Setter	14	hrs/Ton	0.193	Tons	2.695	$ 25.60	$ 68.99
Welded Wire	0.0025	hrs/sq.ft.	576	sq.ft.	1.44	$ 20.00	$ 28.80
Concrete pour							
Foreman	0.07	hrs/C.Y.	6.62	C.Y.	0.4634	$ 30.00	$ 13.90
Carpenter	0.07	hrs/C.Y.	6.62	C.Y.	0.4634	$ 30.00	$ 13.90
Laborer	0.5	hrs/C.Y.	6.62	C.Y.	3.31	$ 20.00	$ 66.20
Finishing	0.01	hrs/sq.ft.	576	sq.ft.	5.76	$ 10.00	$ 57.60
Subtotal							$ 622.17

Table 6. Module Production Cost Calculations.

Shipping and Handling Costs	
Cost Per Mile	$ 0.75
Average Delivery Distance (miles)	120
Transportation Cost	$ 90.00
Crane rental	$ 400.00
Subtotal	$ 490.00

Table 7. Module Transportation Cost Calculations**.**

Module Costs	
Form Cost	$ 85.77
Material Cost	$ 994.70
Labor Cost	$ 622.17
Shipping and Handling	$ 490.00
Total	$ 2,192.64

Table 8. Module Total Production Cost Calculations**.**

Production Area Calculations

Available Area =	5000	sq.ft.
Width Requirements		
Width =	8	feet
Additional Width Requirements =	2 x 5	feet
Total width of Production area =	18	feet
Length Requirements		
Length =	14	feet
Additional Length Requirements =	2 x 5	feet
Total Length of Production area =	24	feet
Single Module Area =	112	sq.ft.
Production Area per module =	432	sq.ft.
Production Line (Maximum 100 feet Long)		
Width =	18	feet
Length =	24	feet
Modules per Line =	4	
Number of Lines =	1	
Total Production Area Required =	1728	sq.ft.
Office Area =	348	sq.ft.
Storage =	2924	sq.ft.

Table 9. Production Area Calculations

Production Line Cost Calculation

Linear Density of 112 lb Rail =	37.3	**lbs/ft**

	Width	**Length**
	(feet)	**(feet)**
Dimensions	4.708	120

	Quantity	**Unit**	**Unit Cost**	**Cost**
Ties	60	each	30.00	$ 1,800.00
Spikes	240	each	0.50	$ 120.00
Rail	8952	lbs	0.30	$ 2,685.60
Labor	50	hrs	30.00	$ 1,500.00
Total				$ 6,105.60

Table 10. Production Rail Line Cost Calculations

		Kansas		Missouri	
Year	**Quarter**	**Annualized % Increase**	**Average Annual**	**Annualized % Increase**	**Average Annual**
2002	1	4.67		5.91	
2002	2	4.44		5.79	
2002	3	4.44		5.55	
2002	4	4.30	4.46	5.76	5.75
2003	1	3.77		5.00	
2003	2	3.34		4.34	
2003	3	2.96		4.13	
2003	4	4.34	3.61	6.02	4.87
2004	1	4.57		6.16	
2004	2	5.02		6.87	
2004	3	6.11		8.97	
2004	4	5.36	5.26	7.26	7.32
2005	1	5.16		7.94	
2005	2	5.85		8.27	
2005	3	5.29		6.87	
2005	4	4.77	5.27	7.20	7.57
02-05 Average Annual Value Increase =				5.51	%

Table 11. Average Historic Home Value Increases for Kansas and Missouri.

Year	**Projected Midwest Home Values**	
2005	$	243,700
2006	$	257,128
2007	$	271,296
2008	$	286,244
2009	$	302,016
2010	$	318,657
2011	$	336,215

Table 12. Projected Midwest Home Values.

Professional Services	2007	2008	2009	2010	2011
General					
Attorneys	$1,000	$1,050	$1,106	$1,158	$1,216
Accountants	$2,400	$2,520	$2,646	$2,788	$2,917
Management consultants	$0	$0	$0	$0	$0
Industry specialists	$0	$0	$0	$0	$0
Technology consultants	$600	$630	$661	$695	$729
Total Costs	**$4,000**	**$4,200**	**$4,413**	**$4,641**	**$4,862**
GRAND TOTAL COSTS	**$4,000**	**$4,200**	**$4,413**	**$4,641**	**$4,862**

Table 13. Annual Professional Services Budget.

Sales Projections	2007 TOTAL	2008 TOTAL	2009 TOTAL	2010 TOTAL	2011 TOTAL
Finished Energy Efficient Home					
Unit Volume	4	8	12	18	27
Unit Price	$271,296	$286,244	$302,016	$318,657	$336,215
Gross Sales	$1,085,184	$2,289,952	$3,624,192	$5,735,826	$9,077,805
(Commissions)	$43,407	$91,598	$144,968	$229,433	$363,112
(Returns and Allowances)	$21,704	$45,799	$72,484	$114,717	$181,556
Net Sales	$1,020,073	$2,152,555	$3,406,740	$5,391,676	$8,533,137
(Cost of Goods Sold)	$868,147	$1,831,962	$2,899,354	$4,588,661	$7,262,244
GROSS PROFIT	$151,926	$320,593	$507,387	$803,016	$1,270,893
Totals for All Product Lines					
Total Unit Volume	4	8	12	18	27
Total Gross Sales	$1,085,184	$2,289,952	$3,624,192	$5,735,826	$9,077,805
(Total Commissions)	$43,407	$91,598	$144,968	$229,433	$363,112
(Total Return & Allowances)	$21,704	$45,799	$72,484	$114,717	$181,556
Total Net Sales	$1,020,073	$2,152,555	$3,406,740	$5,391,677	$8,533,137
(Total Cost of Goods Sold)	$868,147	$1,831,962	$2,899,354	$4,588,661	$7,262,244
TOTAL GROSS PROFIT	$151,926	$320,593	$507,387	$803,016	$1,270,893

Table 14. Annual Sales Projections.

Staffing Budget	2007 TOTAL	2008 TOTAL	2009 TOTAL	2010 TOTAL	2011 TOTAL
Management					
# Employees	1.00	1.00	1.00	1.00	1.00
Salary/Wages	$36,000	$37,800	$39,690	$41,675	$43,758
Benefits	$7,000	$7,840	$8,781	$9,834	$11,015
Payroll Taxes	$4,986	$5,235	$5,497	$5,772	$6,061
Total Costs	$47,986	$50,875	$53,968	$57,281	$60,833
Administrative/Support					
# Employees	1.00	1.00	1.00	2.00	2.00
Salary/Wages	$18,000	$18,900	$19,845	$41,675	$21,879
Benefits	$7,000	$7,840	$8,781	$19,669	$22,029
Payroll Taxes	$2,493	$2,618	$2,749	$5,772	$6,061
Total Costs	$27,493	$29,358	$31,374	$67,115	$71,848
Production					
# Employees	2.00	2.00	2.00	4.00	4.00
Salary/Wages	$48,000	$50,400	$52,920	$111,132	$29,172
Benefits	$14,000	$15,680	$17,562	$39,338	$44,059
Payroll Taxes	$6,648	$6,980	$7,329	$15,392	$16,161
Total Costs	$68,648	$73,060	$77,811	$165,862	$176,909
Engineers					
# Employees	1.00	2.00	3.00	3.00	4.00
Salary/Wages	$38,400	$80,640	$127,008	$133,358	$46,675
Benefits	$7,000	$15,680	$26,342	$29,503	$44,059
Payroll Taxes	$5,318	$11,169	$17,591	$18,470	$25,858
Total Costs	$50,718	$107,489	$170,941	$181,332	$256,618
TOTAL					
# Employees	5	6	7	10	11
Salary/Wages	$140,400	$187,740	$239,463	$327,839	$390,907
Benefits	$35,000	$47,040	$61,466	$98,345	$121,161
Payroll Taxes	$19,445	$26,002	$33,166	$45,406	$54,141
GRAND TOTAL COSTS	**$194,845**	**$260,782**	**$334,094**	**$471,590**	**$566,208**

Table 15. Annual Staffing Budget.

Computer Hardware/Software	Price	Month	Year	Life	Salvage
Dell Inspiron Notebooks (3)	$3,807	Jan	2007	5	$450
CybertronPC Tower Server (1)	$906	Jan	2007	5	$200
Sanyo (964x544) projector (1)	$500	Jan	2007	5	$100
D-Link Super G Wireless Router (1)	$80	Jan	2007	5	$10
HP Lasejet 1320 Laser Printer (1)	$287	Jan	2007	5	$50
Canon 13 ppm Copier (1)	$730	Jan	2007	5	$200
HP Scanjet 5590 Scanner (1)	$254	Jan	2007	5	$50
HP Design Jet 800 Lg Format Plotter (1)	$3,299	Jan	2007	5	$600
AutoCAD LT (1)	$879	Jan	2007	5	$0
Microsoft Office 2003 Professional (3)	$1,500	Jan	2007	5	$0
Peachtree Complete Accounting 2006	$320	Jan	2007	5	$0
Telecommunications					
Telephone system	$400	Jan	2007	5	$10
Fax Machine	$200	Jan	2007	5	$30
Total	$13,162				$1,700

Table 16. Technology Budget.

Assumptions

Key financial assumptions include earning 2.00 percent on the corporate interest bearing account, a 25 percent tax rate on net income, and a 13.85 percent withholding for payroll taxes.

As far as personnel goes, it is assumed that an annual salary increase of 5 percent is sufficient for planning purposes. The initial cost of health insurance and other benefits is estimated at $7,000 for each employee per year with an allowance for an annual percentage increase of 12 percent.

In housing affordability and utility cost savings calculations a 6.50 percent, 30-year fixed rate mortgage was used. This rate was the average for the US on March 21, 2006. Other assumptions made in affordability calculations include that the down payment will cover and offset the closing costs.

It is assumed that home values for Missouri and Kansas will continue to increase for the duration of the planning period. This plan uses an average value of 5.51 percent which was the calculated average for the period 2002-2005. It is also assumed that the $2,000 IRS Tax credit for Energy Star® homes will be renewed past its 2008 expiration date.

All home sales will be made through Real Estate agents. It is assumed that their commission cost will be 4 percent of the sale price.

Miscellaneous Expense Assumptions

It is assumed that Business and Professional license fees will remain constant for the duration of the plan.

A 5 percent annual increase is assumed for the costs of participating in the Greater Kansas City Area Home Show, placing ads in the Kansas City Star, and website listing and maintenance. Client Entertainment expenses are estimated at $500 per year.

A 2 percent of sale price loss due to theft, damage and unforeseen repair work is included in the plan.

A mileage rate of 44.5 cents per mile for 2006 according to IRS guidelines.