



BP: Going Beyond Petroleum

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Executive Summary

BP is an energy company that focuses primarily on petroleum, with a minor interest in alternative energy. However, due to recent accidents in the petroleum sector, the BP name has been blemished. With the finite supply of crude oil, it is also becoming necessary for an oil company to consider other investments. Because it has been successful in improving BP's reputation before, it may be strategic to reposition BP and place greater emphasis on alternative energy development. Although oil remains profitable, increasing public concerns of the negative environmental impacts and of the dependence on oil have changed the energy market. The alternative energy market is not as profitable as the oil industry, but an increasing need to invest in alternative energy makes it a potential market in the future.¹ Recognizing this, BP entered the solar market in 1973.² BP, however, does not gain a competitive advantage from its expertise in oil to help them succeed in the solar industry. It is important for BP, therefore, to consider whether it would be in their best interest to exit the solar industry, or whether BP has any competitive advantage to stay. This plan will show that BP can become the leader of the solar industry. It needs to, however, exit other alternative energy markets, educate the public and aggressively advertise, lobby the government, and invest in improving the technology of solar cells.

Background

The Anglo-Persian Oil Company, formed in 1908, was renamed The British Petroleum Company, shorten to BP, in 1954. In 1998, British Petroleum merged with Amoco and dropped the name British Petroleum to become known as simply BP.³ One of the world's largest integrated oil concern, BP would adopt a surprising re-positioning strategy in 1997 when Lord John Browne, group chief executive, acknowledged that BP needed to address the threat of global warming. Distinguishing itself from other oil companies, BP's reputation benefited from this new position and had been able to sustain this difference ever since. Although the oil industry is usually considered the "bad guy," BP lead the list of *Fortune* magazine's Global 100 companies on corporate responsibility.⁴ With the tagline "Beyond Petroleum," BP created the subsidiary BP Solar International that focused on solar energy. Due to the recent success of BP Solar, in 2005 BP invested \$1.8 billion in BP Alternative Energy, which focused on hydrogen, solar, and wind power generation.⁵

Current Problems

BP Solar remains a small subsidiary while oil remains as the dominate source of profit for BP, with BP Solar accounting for only 1% of group turnover.⁶ For many environmentalists, BP Solar sounded and looked good to "greenwash" the public. BP has also suffered a string of blows to its reputation, the most recent being the release of an independent report in January 2007 that placed the blame of the fatal Texas explosion on BP's failure to emphasize safety (see Weaknesses in SWOT, Page 13). Developing a poorer reputation countered the positive effects that BP Solar had initially brought to the company. In 2006, BP shares on the London Stock Exchange had underperformed by 17%, one of its worst performances in years. In response to BP's recent struggles, chief executive John Browne will be stepping down by the end of July 2007, a year earlier than expected.⁷ A change in chief executive and a change in strategy will

place any company's direction and future in question, and the uncertainty would most likely continue to be reflected as poorer company performance.

Repositioning BP and the Current Solar Market

To recover from its increasingly negative reputation, it may be strategic for BP to reuse an old strategy and place renewed emphasis on alternative energy development. BP had actually entered the solar industry in 1973 as Solarex Corporation,⁸ but it was not until the vigorous advertising and the formation of BP Solar in 2000 that BP marketed itself as an environmentally conscious oil company. Although receiving minor investments, BP Solar has been profitable to BP since 2004. In particular, BP Solar has been focusing on the development of crystalline photovoltaic cells.

The current market in the solar industry is divided into two types of solar cells, with crystalline silicon solar chips making up 93% and thin film solar cells making up 7% of the market share.⁹ Crystalline chips are the more effective, but also more costly of the two. Although solar remains to be a very small percentage of the energy market (see Figure 1), the year 2004 saw many solar companies achieve profitability, including BP Solar. Publicly traded solar companies saw their shares as a whole rise over 100% (see Figure 2). Experts predict that by the year 2010 the solar PV market will quadruple with annual growth rates exceeding 30% and growing profit margins.¹⁰ It is a slow growing market that is not expected to become competitive until 2020, although solar will compete well in a growing number of markets.¹¹

As one of the major solar companies (see Figure 3), BP Solar still has the opportunity to become the leader in the solar industry. Because of its years in the solar industry and because of the profitability of the market (see Strengths in SWOT, Page 13), BP should consider repositioning its company image from an oil giant to an innovative leader in the solar industry and investing heavily in the solar market. If BP can regain its reputation as an environmentally friendly company and become the leader in the solar industry, BP's reputation and profits will recover.

Opportunity Analysis

Entry

As of now, the solar cell industry outlook is very different across geographical market sectors (see Figure 4). Since the incentive to enter depends on the profitability of the venture in the sector, we will discuss each sector individually.

The U.S. Market- The solar industry has not been promoted heavily in the United States due to the lack of enthusiasm of the national government. Efforts for solar panel installations, such as giving tax credits and property tax exemptions, are concentrated at the state level in selected states such as California and Arizona.¹² Overall, the U.S. market is scattered so it is difficult to get a national business thriving. There are many small independent companies, but few major domestic players. Consequently, the U.S. does not have a large market share in PV cells production (see Figure 5). Currently the market is unprofitable and does not encourage many new entrants. Even foreign companies that have experienced success in Japan and Germany are

hesitant to break into the U.S. market; lack of familiarity in U.S. operations and uncertainty in demands dissuade them from devoting money for the high shipping costs and tariffs. However, BP already has a familiar base in the U.S. due to its expanding petroleum market; it has the potential to penetrate and develop a localized monopoly over the solar industry. In addition, the Bush administration has just recently recognized the need to devote research and development into renewable energy; this provides hope that U.S. will be more receptive to solar energy in the future.¹³

The Germany Market- The market in Germany is more active and rapidly evolving. The photovoltaic solar cell industry is a very new and growing industry and is one that has the potential to encourage entrants readily. The government is in full support of this technology, especially with the Renewable Energy Act (EEG), which guarantees large payback rates to operators of photovoltaic installations. As the location for the largest trade fair for Europe's solar technology, Germany can be assured to keep up with the innovations.¹⁴ As a result, there are many opportunities for entrants to come in with better innovation and win over the market. The potential for product differentiation is great because the technology has many far-reaching consequences: the products can target a variety of consumers, from designing large-scale solar panel systems used to generate electric power for firms focusing on the everyday consumer that can buy small solar appliances to use for the home. The major players in the market are just starting to emerge, but no one has yet a large enough corporation and production capacity to drive out smaller competitions by economies of scale. BP Solar has its base in the European market and can use its position as a large corporation to prevent entry.

The Japan Market- The Japanese market is nearing its saturation point and that discourages entrants to the market. The demand for the product has increasing every year, with installations of PV panels in residential homes becoming more and more prevalent; so many companies have been attracted by the profitability. This led to a decrease in governmental rebates for these installations. Major players have developed in this market, mainly Sharp and Kyocera Solar, with Sharp controlling the market share.¹⁵

A more general barrier to entry in all three market sectors is the scarcity of silicon. There is a global shortage of ultrapure polysilicon (the raw material for silicon wafers), which is a major component in the making of PV cells.¹⁶

Buyer and Supplier Bargaining Power

The photovoltaic technology is not very well understood so there is a low concentration of consumer base. Nonetheless, due to the slow and limited production of the technology, consumer demand still outpaced the supply. In 2005, 24 publicly traded solar companies sold out.¹⁷ As of now, buyers do not have much bargaining power due to the rarity of the product, but this will change as companies expand their manufacturing facilities and work towards mass production to bring down costs. On the other hand, the suppliers for the solar companies have a lot of bargaining power. The number of firms entering the solar industry business is increasing rapidly while the availability of supply is scarce. Even large firms have to wait up to 6 months for modules. As the firms frantically try to expand the product to meet the demand, they are faced with a shortage of silicon chips and modules, which leads to doubling of prices.

Companies such as BP should devote research into using the silicon resources more efficiently to counter supplier bargaining power and lower manufacturing costs.

Substitutes

The major substitute for PV technology right now is the standard electricity produced by coal and natural gas. The threat from this substitute is great because it has been the main source of energy for household devices. The standard electricity is still much lower in cost than the PV cells so there is very little incentive for consumers to switch to solar technology. However, with development and research, firms are cutting the cost per watt of the PV cells by 5% a year and can continue to improve the cost to watt ratio significantly until it is comparable to that of standard electricity.¹⁸ Since natural gas and coal are limited in supply, their prices will eventually increase, causing demands for alternative energy sources such as solar cells to increase.

However, solar cells are not the only alternative source for generating electricity. According to Energy Information Administration, solar only accounts for 0.2% of the renewable electricity produced in the United States. The biggest sector in the renewable energy area belongs to hydropower (75.2%).¹⁹ Hydropower plants, although more prevalent and cheap, have its shortcomings, including decreased water quality and negative effects upon natural wildlife habitats. Solar cells can play upon that weakness as one of the cleanest renewable energies currently known.

Rivalry

The current major players in this industry are Sharp, Kyocera Solar, Shell Solar and BP (see Figure 3). Price rivalry is not significant amongst the firms because solar energy is already an expensive technology to produce. It will harm the industry to undercut prices, as the technology is not cheap and well understood enough that an increasing but small consumer demand will not compensate a reduction in price. In addition, the major players in the industry have separate geographical markets and not much oversea establishments. The high cost and the segregated consumer base minimize competition. Only with mass-production and increased popularity can price rivalry happen.

Synergies

A major problem with PV technology is the lack of electronic device compatible with the cells. Synergies can include selling adapters that allow the use of PV cells with household appliances. The solar company can also team up with other electronic corporations such as Sony to produce appliances that operate with PV cells. Other possible synergies are to integrate service with the product. Access to technical assistance is often a key for PV cell installations. Since it is a new technology, consumers will need a lot of guidance in installation and maintenance. BP has already incorporated service by providing installation and free check-ups with each purchase of its solar panels.

Competitors

There are many competitors in the solar market. Four Companies account for over 50% of solar cell production: Sharp, Kyocera, BP Solar, and Shell Solar (Solar World).²⁰

Kyocera

Kyocera Corporation, founded in Japan, is one of the world's largest vertically integrated producers and suppliers of solar energy products. Kyocera Solar, Inc. (KSI) is the North American solar products subsidiary.²¹

KSI fulfills wide-ranging needs for distributed solar electricity through two major market channels. First, it directly supplies fully integrated systems to industrial customers. Second, it has a global network of more than 1,500 authorized distributors and dealers. KSI has also opened many new solar product assembly operations. For example, the Tijuana plant is expected to reach an annual production capacity of 36 megawatts of PV modules - enough to provide a 3.5-kilowatt PV system for more than 10,000 homes each year.²²

One specialty of KSI is its Building Integrated Photovoltaics (BIPV). It combines renewable power generating technology and traditional building practices so that its solar panels are planned and built along with the buildings.²³

Advantages:

- Vertical-integration
- Economy of scale in electronics
- Market in industry and home-owners
- Technical edge – BIPV

Sharp Solar

Sharp Solar manufactures solar modules with a range of power output levels, as well as unique triangular modules that give angled rooflines for more customized looks. Sharp Solar also has the greatest number of design options.²⁴ A Sharp certified installer will help determine the ideal system based on various power needs and design a rooftop configuration that provides clear, unobstructed access to the sun while ensuring a clean, stylish appearance. Sharp also assembles both the modules and inverters, which are used to convert DC power generated by the cells to AC, ensuring that the electrical components are ideally matched.

At the Solar Power 2006 Conference and Expo, Sharp showed off several prototypes of newly developed solar panels. One prototype solar panel combines a tiny solar cell measuring about a quarter of an inch per side that sits beneath a Fresnel lens (a ridged lens originally used in lighthouses), which radically concentrates sunlight. Overall, the panel can convert 36% of the sunlight that strikes it into electricity, far higher than the 13% to 22% conversion rates of commercial silicon solar cells.

Sharp has also developed prototype solar cells that combine a layer of amorphous silicon and a layer of conventional, crystalline silicon. These solar cells are nearly transparent, so they could potentially be used in windows.²⁵

Advantages

- More design options to target home-owner market
- Provide a full electrical/solar installation
- Technological advances

Shell Solar (SolarWorld)

Shell Solar's silicon activities have been divested to SolarWorld.²⁶ The SolarWorld Group is a company dedicated to research and development, production and sales of photovoltaic products.

SolarWorld aims to optimize the development of PV cell technology at all production stages. A crucial element of this strategy is for each stage to work profitably. For example, the wafer business plays an important strategic role to the group. The solar market consists of various individual markets: from the wafer to the cell and module market. In the wafer market, potential new market entrants face high market access barriers since the establishment of this core sector is capital and knowledge intensive. Consequently, its wafer business is profitable to SolarWorld.²⁷

Advantages

- Vertical-integration
- Synergies within the company
- Focus on solar business, i.e. no diversification

Analysis

SolarWorld will be more competitive with BP because of their similar attachments to petroleum. Any action that BP will take to produce synergy between solar and petroleum can be copied by SolarWorld. KSI and Sharp Solar will be more competitive with each other because both have electrical department attached. KSI and Sharp Solar have another advantage over SolarWorld and BP due to their electronics department. If customers want to install solar systems from Sharp, they would also be encouraged to buy electronics from Sharp in order to get the "fully integrated" discount. In addition, if a family were already using Sharp electronics, it would be cheaper to get a solar system from Sharp Solar than from any other companies. Getting a whole set from one company is always cheaper than getting the individual components from different companies.

KSI and Sharp try to attack different markets. KSI has a special technological advantage because its Building Integrated Photovoltaic incorporates PV modules into the building architecture, which creates a unique architectural market for KSI. On the other hand, Sharp Solar is developing transparent PV that can serve as windows, providing more options for customers. Sharp Solar focuses on design options to give the families the freedom to choose, thus putting major emphasis in the market of homes instead of the market of industries. Generally, industry would care more about cost and performance than the artistic beauty of the

solar modules. Because of this market distinction, the competition between KSI and Sharp is reduced.

There is not a clear market separation between BP and SolarWorld. Both produce modules for residential and commercial use; therefore, the competition will be fierce. One possible way to reduce competition is to create a separated market.

The solar PV market has both technology and quality competition. Any major technological advances will give a company a competitive advantage. BP's competitors are strong companies that place pressure on BP to find its own comfortable market.

Strategy

Focusing on Solar

BP and the solar industry is an odd combination. If the initial move to solar was to boost its reputation and differentiate itself from other oil companies, the move was not a strategic one. There are so little similarities between the petroleum industry and the solar industry that BP would be unable to apply its experience, expertise, and resources in petroleum to solar. Further, the rest of BP is unable to form synergies with BP Solar. However, regardless of whether it was a strategic move, BP entered the solar market in 1973 and formed BP Solar in 2000.

One option available to BP is to pull out from the solar industry; withdrawing from the solar market will not affect the rest of BP's operations significantly. Although BP has introduced an initiative called "Plug in the Sun" that plans to equip its gas stations around the world with solar systems, this is not crucial to its petroleum business.²⁸ There are, however, several factors to consider before exiting the solar market. If BP chooses to sell BP Solar, it will need to find someone to buy the company. Furthermore, BP Solar will need to be worth more to the buyer than its operating costs. Large companies such as Kyocera and Sharp, however, will not be interested because they operate primarily in a different market, have a large market share, and are not threatened by BP Solar. Shell Solar, a petroleum company similar to BP, most likely entered the solar market in response to BP, but later sold its solar operation to SolarWorld and is not likely to be interested in BP Solar.²⁹ Other companies that focus solely on solar energy are too small and lack the financial capabilities to purchase BP Solar.

BP Solar is profitable to BP that BP would not need to sell BP Solar for less than its worth, nor does BP need the money from selling BP Solar to invest elsewhere. Given thirty years in the industry, although different from its petroleum operations, BP has gained experience and expertise in the solar market. BP, however, should not continue expanding operations into areas that it does not have expertise in and stretch its assets and resources. In 2005, BP created BP Alternative Energy, which included developing wind, hydrogen power, and natural gas. BP should exit alternative energy markets because those are not its strength. In regards to the solar industry, BP should stay in the market only if it is planning to actively invest and compete in the solar market. Given the potential of the solar market, BP should consider focusing solely on the solar industry and withdraw from other forms of alternative energy.

Increased Investment and Funding

One of the key reasons that solar energy has not yet become a competitive source for electricity is the price. Each time the production capacity is doubled, the cost of producing PV cells drops by approximately 20% (see Figure 6).³⁰ With a large financial asset, however, BP is able to upscale its solar cell production and fund extensive research into developing solar cell technologies. A possible investment is in developing thin film solar cells, which mixes silicon with other metals. A major component of solar cells is silicon. With the increased demand for PV cells in 2005, for the first time the demand for PV cells and silicon began to outpace the semiconductor industry. As a result, a silicon shortage leads to price increases. Thin film solar cells mix silicon with cheaper materials and minimizes the amount of silicon needed. It is currently not suitable for large-scale production, but advancing thin film technology can help drive down the cost of solar cells.³¹ Another way to lower the cost of producing solar cells is to increase the efficiency of the cells. This will increase the efficiency of silicon, meaning that less silicon would need to be used, lowering costs and increasing revenue margins. Research should be directed in finding silicon alternatives and alternative fabrication methods.³²

Another possible area of investment is to focus on everyday applications of solar energy, such as a type of solar battery that can be used in household appliances. However, this is an area of research that is not as well developed. While a potential future market, funding should be directed primarily to PV panels for the homes and in capturing that market. The market for solar cells is a real potential market that is expected to grow, but the market for other usages of solar energy is still tentative and may depend on the success of solar cells. This will give customers familiarity with solar energy and encourage usage of future application of solar energy.

BP is also capable of purchasing other smaller solar companies. These smaller companies do not have the assets that a large petroleum and alternative energy company like BP would have. Some of these companies have been developing innovative technology that increases the efficiency of the solar cell. BP can offer the funding and the name to smaller companies, which in turn can provide new and different research prospective and results.

Reaching the Public

An important step that BP will need to take is in reaching the public. Currently solar energy accounts for a very small share of the energy market. In order to promote its usage, BP will need to invest in educating the consumers of the benefits of solar cells. Although this will benefit other solar companies as well, the overall benefit to the solar industry is an increased consumer market that will be interested to see what the different solar companies have to offer. Because standard electricity is convenient and cheaper, the public needs to be convinced to make the switch to solar. The public will need to be convinced that solar energy is a practical and better form of alternative energy with environmental benefits outweighing the added cost of using solar energy. With the growing public concern in alternative energy, it should not be difficult to arrange for interviews on popular TV programs or for a newspaper or magazine coverage on the current solar industry.

Once a larger portion of the public is interested in using solar cells, BP will need to continue to aggressively advertise and market its brand, similar to how it advertised itself with the tagline “Beyond Petroleum.” One benefit of taking the initiative to educate the public is an association in the public’s mind of BP with the environmental cause. This is an excellent way to counter BP’s developing negative reputation.

Along with advertising, BP will need to increase the availability of its product in the market. BP is currently doing this by offering BP Solar Home Solutions in certain states. (See Opportunities in SWOT, Page 14) The service and installations that BP offers is a valuable complement to its solar systems. By continuing to provide high quality services and installations, BP can also develop consumer loyalty. BP should continue to expand this program to more states and stores ahead of other companies in order to get the first mover advantage in the new markets. The convenience that BP’s services offer a consumer will make it a more attractive solar panel provider than other companies and maintain the advantage it has gained.

Lobbying Governments

Another group that BP will need to appeal to is the government. Although efforts are made to reduce the price of electricity generated by PV cells, solar cells are still costly and will depend on initial governmental financial support in order to become popular with the public. The government is a key proponent in promoting solar energy use by passing bills, offering rebates and other incentives. In the United States, most policies that impact the solar industry are made at the state level, instead of the national level.³³ A member of the Solar Energy Industries Association, a national lobbying group, the SEIA aims to obtain more rebates and incentives for regular consumers purchasing solar panels at a national level.³⁴ However, BP should also try to secure governmental contracts for developing grid networks rather than developing individual solar systems. Not only would it promote the BP brand, but it will also help shield the effects of the development of a better alternative energy source. By developing significant grid networks, the turnover costs will be higher to switch to a newer source of energy.

Expansions

The US market is an important market to capture because of the amount of energy consumed and because of the lack of major players. Currently, the PV products are mostly imported, with 43% market share from Sharp.³⁵ United States needs a large domestic player because the solar panels are large products that are expensive to ship so it makes sense to manufacture them as close as possible to the end user. One area of the United States that should be of the primary focus is the “sunbelt region,” located in the southern parts. BP can use its familiarity with the U.S. market from petroleum to help them establish a domestic market for solar and hopefully prevent companies such as Sharp from taking the market share. One market to avoid is the Japanese market; Japan already has two major solar cells companies and risks becoming oversaturated quickly. Other Asian markets to consider, however, include China and South Korea. South Korea is similar to Japan in the sense that it is a technologically advanced nation that relies on importing oil and can understand the importance of developing alternative energy sources. China is another potential market. In 2004, according to officials, the government is ready to invest \$1.2 billion in solar energy development over the next five years for power generation in remote areas of West China.³⁶ Outside of Asia, the European market can also be expanded.

With Germany leading the way, other European nations, such as France, Italy, and Spain are beginning to consider the solar alternative.³⁷ Regardless of the market, BP will need to cultivate the national governments' support in order for the market to grow.

Concluding Remarks

With flagging profits and an increasingly negative reputation, it would be a strategic move for BP to reposition itself in the alternative energy industry, namely focus on solar and exit other alternative industries. With the potential profits and with previous experience in the solar market, BP can become the leader of the industry. Some key strategies that BP can take include advertising, increasing funding and investment in PV cell technology, educating the public, expanding into other geographical markets, and lobbying the governments. If BP wants to sustain its market share in the solar industry, it will need to devote more of its investments and resources to BP Solar.

Appendix I: SWOT Analysis

Strengths

One of BP's major strengths is that it is a major corporation with plenty of financial assets to back up its alternative energy research. In 2005, BP had profits of \$22.341 billion.³⁸ BP, relative to the small specialized alternative energy companies, has a great advantage as far as financial backing. BP has the capability to invest a great deal in research to improve alternative energy technology. BP recently signed a strategic joint venture to access China's expanding solar market and provide local manufacturing capacity.³⁹ Since BP has been in the solar industry business for thirty years, it has the experience and is acquiring the technology it needs to be a major player in the solar industry. In 2004, the BP Solar business first became profitable.⁴⁰

BP, with its EnergyMaxTM solar electric ground systems technology, which follows the path of the sun from east to west, maximizing the performance of the cells, provides for a good solar option to its customers. BP has provided a number of different companies and groups solar cells. In 2004, BP Solar provided the solar panels to a Whole Foods Inc. store in Edgewater, NJ, which became the first major retailer in the Northeast to use solar energy as a power source. BP provided the solar panels to the United States Marine Corps Air-Ground Combat center. Some other projects included the Lufthansa Terminal in the Munich, Germany airport and the Tennessee Valley Authority in Chattanooga, TN.⁴¹

BP has created a number of programs to increase public awareness of the need for solar energy. BP created the BP Solar Neighbors Program, where every time a celebrity has BP solar panels installed into their home, BP will donate a solar system to a low-income family living in South Central Los Angeles. BP has the opportunity to combine with celebrities to promote the use of solar cells. It also has the BP Solar Connection Program, which is designed to raise awareness in schools the immense benefits of clean alternative energy. Through programs like these, BP is increasing the awareness and therefore the demand of solar energy. BP Solar even donated panels to ABC's Emmy award-winning reality series "Extreme-Makeover: Home Edition".

Weaknesses

Compared to alternative energy companies not in the oil industry, BP is at a disadvantage by its negative "dirty oil" image. In March of 2006, a major BP pipeline ruptured on the North Slope of Alaska spilling thousands of liters of crude oil into the Arctic Ocean. Accidents like these are negatively impacting the companies' attempts to re-brand its image to a more environmentally friendly oil company. Environmentalists are calling BP out on the re-branding as just a way to greenwash—giving a positive public image to unsound environmental practices—their public image. The BP brand is extremely strong for oil, but not nearly as much as it is for its alternative energy sector. The average person does not necessarily know that BP has entered into the solar energy market.

Another major weakness of BP Solar is that the photovoltaic industry has very little in common with the petroleum industry. BP has perfected the ability to refine liquids, store and transport fuels in tanks, mine and drill, etc. while for photovoltaic cells, it is much more important to be

able to make chips, store energy in batteries and such. In entering the solar energy market, BP had no competitive advantage over other companies to be able to use its vast knowledge in petroleum. Thus, it is extremely difficult for BP to create synergies between the oil side of the company and the solar side.

Opportunities

With its profits from oil, BP has a number of opportunities to invest and acquire more in the solar energy sector. BP has also begun to sell its photovoltaic cells and modules that provide power for homes at Home Depot. Currently, BP Solar has teamed up with Home Depot in offering a BP Solar Home Solutions in California, New Jersey, and Long Island, New York. The BP Solar Home Solution offers free in-home consultation, professional installation, and a free six-month checkup. BP also offers a variety of services, such as someone who would help handle the paperwork, permitting application process, and rebates. The solar systems purchased include a five year full service warranty and a twenty five year limited warranty on the panels, which helps to reassure consumers on switching over to solar energy.⁴² BP can also sell to other home improvement stores such as Lowe's and Ace.

BP has a number of opportunities through the government to increase its profits. One such thing includes passing legislature that provides tax breaks to individuals and corporations that opt for alternative energy as a means of electricity. It can also encourage states like California, Arizona and Florida to pass a mandate that homes built after a certain year should be required to have some solar energy device. Though this would also be helping its rivals, it would still benefit BP Solar as well.

BP has some opportunities to create synergies between the petroleum side of the business and the solar side. It can very well use solar energy to power its operations such as its business offices, plants, and even gas stations. If BP Solar improves the technology to make photovoltaic cells more cost efficient, it can very well create connections between the two sides of the company.

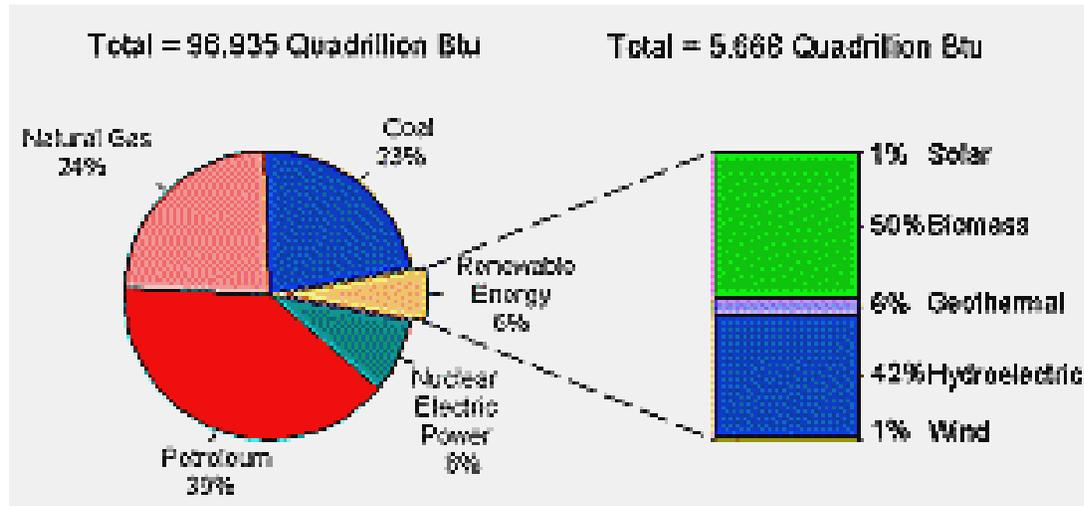
Threats

With many people realizing the need for alternative energy sources in the near future, there are a number of companies specializing in specific alternative energies, including specifically photovoltaic solar cells. BP, however, is extremely diversified and has its assets in a number of different products, with the obvious being oil, but in other alternative energies as well. The extreme diversification could possibly pose problems to BP in the future. Shell, another successful oil company has entered into the solar energy market, and it is currently one of the four major solar energy leaders along with BP Solar, Sharp, and Kyocera.

Appendix 2: Figures

Figure 1

Renewable Energy in Proportion to Total United States Energy Supply: 2001



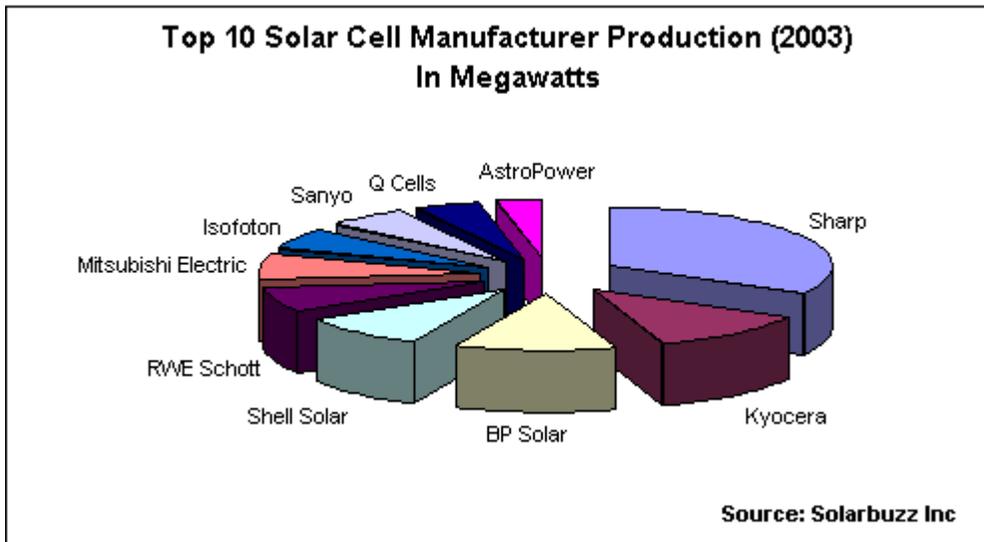
From <http://www.solarbuzz.com/StatsMarketShare.htm>

Figure 2



From "Power Investing," <http://www.in3inc.com/SolarPowerInvesting.pdf>

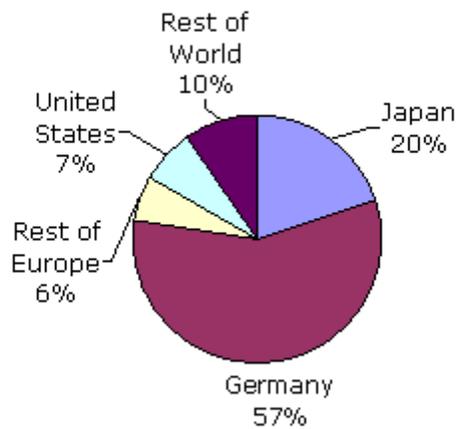
Figure 3



From <http://www.solarbuzz.com/StatsGrowth.htm>

Figure 4

**PV Installations in 2005
Regional Megawatt Breakdown**

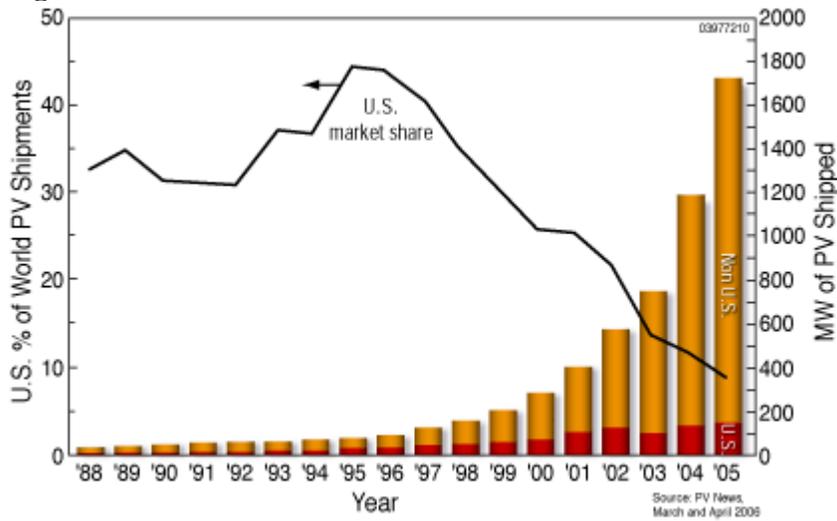


TOTAL: 1,460 MW

Source: Solarbuzz LLC

<http://www.dommelvalley.ca/world-solar-energy.htm>

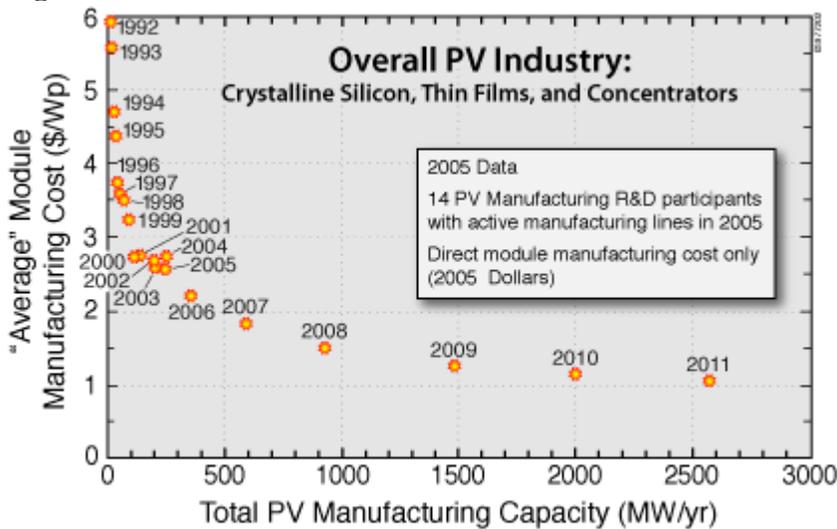
Figure 5



U.S. Market Share and World PV Cells Production (in MW)

From http://www.nrel.gov/pv/pv_manufacturing/market_share.html

Figure 6



Through 2005, the graph shows that total production capacity grew from 14 MW at the start of 1992 to 251 MW at the close of 2005. These results represent a 19-fold increase or about 26% average annual growth in production capacity among the participants. From the perspective of technology learning curves, these data reflect an average 17% drop in direct costs of manufacturing for every doubling of production capacity.

From http://www.nrel.gov/pv/pv_manufacturing/cost_capacity.html

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