Derek Hartlauer

Professor Bown

English 2010

25 April 2011

Final Portfolio Reflection Essay

The teacher did a fantastic job of structuring the class. A detailed class schedule was given, with announcements of what needs to be done and by when. The class has gone through a variety of genres. Each genre covered a wide arrange of argumentative angles, style of the writing, and design of the document. Each different genre that was completed I felt like my strategies of argumentation adapted well to the situation. Reading each chapter assigned was very vital for my learning in this class. I read the more important chapters many times to make sure I was performing the task properly. The teacher made sure to inform the class when to start researching, inventing, drafting, and revising each document. I believe this structure of the class was my biggest asset and success in managing these processes independently. These are the reasons why I believe I have achieved the course objectives.

When choosing our issue I attempted to make sure I didn't have the same angle as the other group members. Since we were the business group I wanted to make sure I gave the business side of any issue we decided. Our originally topic in our group was about business outsourcing. After writing our first essay, which was the report, we had all decided that outsourcing was not the best and most informational issue. I believe the group leader asked the teacher if it was okay that we change our topic. The teacher agreed, so the group agreed on the topic of renewable energy in business. This decision was tough to overcome, but we all work together so well that it did not affect our group performance. Changing our topic is one of the

reasons why I cut the report out of my final portfolio, but another reason was I felt like it was my weakest essay. My final factor was that the teacher only gave comments on that piece for the mid-term, which told me the teacher probably thought it also was my weakest.

I knew that my final portfolio would contain my position/proposal essay, memoir, and pamphlet. These essays are all on the same topic, which is the best choice for the final portfolio. In my opinion my greatest strengths are researching and design. At work I am a graphic designer so I tried to create my documents to be top notch. Certain documents cannot be too lavish in design. These documents should be more on the academic side of design. But my final document, the pamphlet, I felt like I was able to display my design abilities. Researching is my other strength. I know how to dive into a topic and research many different angles. I researched every essay extensively. At times I felt like this got me into trouble though. Because I would have a certain angle on our topic, but my style of writing is to mold my essay around my research. So I felt like I would get off track of my original angle. I tried to control this better in the last two essays. If I could go back I would change this part of my writings for this semester.

Having the peer reviews to revise all the documents was a great advantage. In the position/proposal essay Christa Peterson suggested that I add more graphs or visual data to backup my statistical information. This was when I add the graph showing renewable energy's role in nation energy supply. The memoir is where I got the most help from my peers. Not only in peer reviews, but when deciding which genre to use and during invention work. During peer reviews in the memoir Greg Sergaskis had some great advice for me. I knew what I was going to say in the paper. I just could not figure out where to incorporate the issue of concern in to my story. Greg helped me figure out a good place to do this. Christa Peterson gave me fantastic

advice in the memoir also. She told me to describe an important aspect of the paper in specific detail. She gave me an example to describing the solar panels on the roof in more detail.

I have also given many peer reviews. I believe I have helped my fellow group members. I gave Lindsey Lockhart a review on the position/proposal paper. I told Lindsey that she had a great angle and a strong start. I suggested that she continue to draft this document the same way she started out, also to lengthen her position. In Kramer Walker's review peer review I recommended that he has more examples of the drawbacks and advantages of solar energy. For example compare the difference in the batteries and grid inter-tie systems that he mentions. Also to make sure he has enough sources and that the sources are cited properly, in-text and on a separate works cited page. In Gregory Sergaskis's memoir I advised him to clarify his angle in the paper. He had a great story. He just needed to incorporate more about renewable energy into the document. My greatest strength as a peer reviewer is that I like to always give some form of constructive criticism. I do not just say, "I have no suggestions" throughout the whole peer review. Even if the piece was awesome, I always tried to give some advice. So the writer has something to improve on. The peer reviews I gave helped me improve my essays by making me look at my own writing after reading someone else's writing. I would get ideas and concepts from reading these essays, then think about the feedback I gave. I would think about how to include that feedback into my own essays.

I had lots of revising to do in my position/proposal essay and lots in my memoir essay. A few students in my group recommended to me that I carefully read my documents. Of course to revised my structure and grammar. In the position/proposal paper I had lots of little structure and grammar issues I caught after a month of not looking at the document. In the group final

portfolio the teacher gave me a great comment. It said that the last half of my memoir read more like a report. I could not agree more. I was having a difficult time integrating the significance of my experience to the development of insight into the broader issue of concern. To attempt to offset this concern without having to re-structure the whole essay I added in more of my personal experience when discussing the topic in more depth. Like remember parts of our trip that relates to the in depth sub-topics. Also I had to re-arrange a few paragraphs to make sure I didn't wonder off the topic of renewable energy too badly. I did not want to focus on the story too much, yet let the topic of renewable energy take away from the personal experience. There was a fine balance here. I re-arranged about five different paragraphs about five or six different times. Peer reviews helped me realize I had to have more details in how our solar power system worked. I added details and also I added an easy diagram to give more visual appeal to the details of the system.

I had also changed both titles to my position/proposal paper and my memoir. I needed something catchy, yet something that would work with the topic and genre. I felt like the new titles really worked out well. In the comments in the mid-term portfolio the teacher told me that I do not need to have a comma in-between my in-text citations. So I went through every document to make sure to fix that problem. Sure enough in every document I did it the wrong way. I believe in English 1010 they teach you that MLA in-text citations are suppose to have a comma between the author and the page or paragraph number. So I have revised all my documents the way the professor instructed me to do so. Last revision I made was on my pamphlet. Originally I had my work cited on a separate page, like the other documents. But after reading the instructions I figured that the best way was to downsize my text and insert the works cited on the end of the pamphlet. Please enjoy the following documents of my Final Portfolio.

Derek Hartlauer

Professor Bown

English 2010

24 February 2011

Renewable is Plausible

Renewable energy is full of new industries that will grow with America. The demands to eliminate foreign oil have fueled many different industries to birth up and expand rapidly. The goal for America's future has been to become self-dependent in energy consumption in the United States. Two industries that have a major role in energy self-dependency are wind and solar power. Both of these industries have bloomed in the past decade. The need for investment and funding in these industries could help boost America to reach a common goal on energy. Investing into a wind or solar power company is a smart move in this time of a downsized economy. From a business side growth is apparent in these industries. Growth means profits have been made previously. Profits are being made currently, and will be made in the future. With the belief of mass development in the future of these renewable energy industries, investing would be a wise choice now while the industries are smaller and investments are at best advantage.

Sandy Huffaker for The New York Times

Renewable energy is the most ideal concept for energy use because it can be replenished, unlike petroleum, coal, natural gas, or methane gas. Once these natural resources are gone, they are gone forever. Opposition might say that renewable energy industries haven't advanced enough to make it worth America's effort. That the manufacturing

and installation process is too expensive and it makes the short-term costs outweigh the long-term savings. This may be slightly true now, but the longer-term future will generate superior technology to make renewable energy a smart investment. These business decisions should be tackled by upper management of the company doing these operations. Even though the initial setup costs are high, these companies are able to create profit and growth.

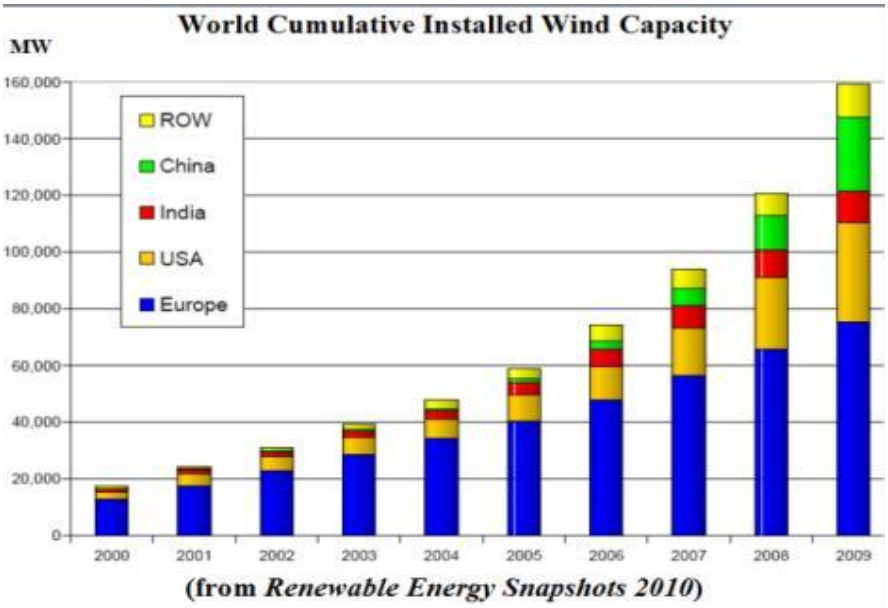
The need for oil and coal companies will always be there. The point here is not to criticize the fossil fuels industries. Oil and coal has been modern society's largest asset builder over the past 150 years. These technologies and industries will continue to thrive for decades and even centuries. They will help the near future generations of America to get over the hump to become self efficient and dependent on energy. The help of the government will be a factor if this common goal is going to be achieved. So maybe for now most people do not want to investment money into these renewable energy companies. My belief is that if investment is made now while the technology is still in the development stage and before the industry reaches the dominate phase. One could find themselves in a great amount of wealth.

In 1992 the United States congress passed the first renewable energy tax credits called program 1603. These tax credits started a revelation of new alternative energy consumption and brought new businesses into the economy with so called, "green collared jobs" (AWEA par. 3). Tax credits are a great way to get industries and programs off their

Solar Millenniums Blythe solar energy farm. Public Domain/Wikimedia.

feet for those first rough years in business. In the years 1999, 2001, and 2003 congress let the innovative program 1603 expire, leaving these industries stagnant for growth. In 2009 president Obama's push for the Recovery Act puts tax credits back into effect with program 1603. The year 2009 was a record breaking year for the wind energy industry, producing 10,000 MW (mega watts), compared to 4,000 MW in the year prior to the recovery act (AWEA par. 2). When the U.S. government does not endorse in the investing or interest in alternative energy, the American public will not show interest in investing either. Politics plays a major role in renewable and alternative energy. With the help from congress the American government can influence the public to get investing into renewable energy.

T. Boone Pickens who is an oil investing giant has stated his plan called, "The Pickens Plan", for investing into domestic renewable energy like wind and solar power for electricity (CNN par.3). Pickens got his start in oil while owning a company in capital management, which primarily invests into traditional energy companies such as oil, natural gas, and nuclear power corporations (Wikipedia 1). When you have one of the largest oil investor in the world trying to change the world's energy consumption from oil to renewable energy sources this should tell you something about what to invest your future into.

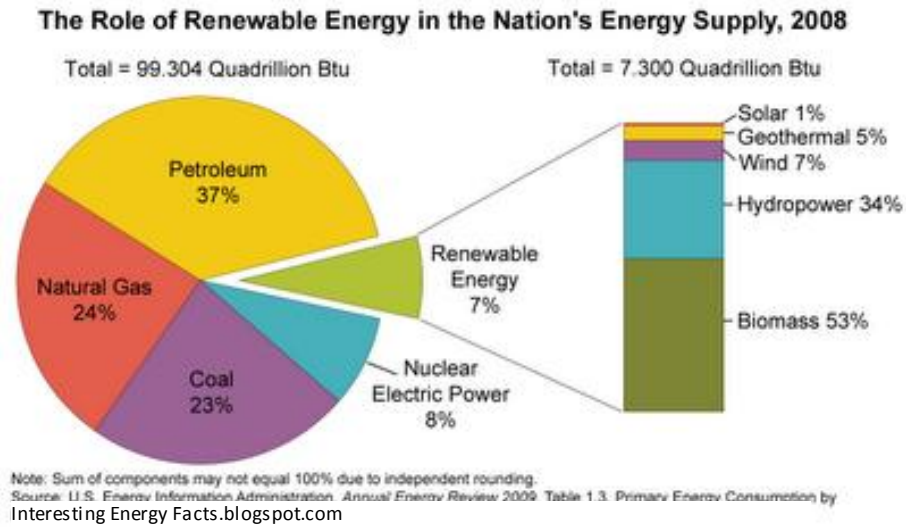


(from *Renewable Energy Snapshots 2010*)

Look at the graph to the left, provided by Renewable Energy Snapshots 2010. This graph represents

the world cumulative installed wind capacity from the year 2000 to the year 2009 (Trabish par. 1). This type of growth is something to recognize as personal or business investment opportunity. Like when the public invested into computer companies, like Microsoft, in the early 1980's or investing into Ford Motor Company in the early 20th century. These long-term investments made lots of Americans millionaires.

Not only are the wind and solar energy industries a great business investment and they have the potential to eliminate our dependency on foreign oil, but it is also great for our environment. America emits 99.304 quadrillion Btu's of energy each year (Davor par. 8). America contributes roughly 1,200 million metric tons of carbon dioxide released into the atmosphere in 2005, which is 20 percent of the worlds total carbon dioxide released each year (Energy Star 1). Renewable energy consumes 7 percent of the total Btu emitted each year. With the expected future growth this percentage will increase considerably.



My proposal in the renewable energy topic is to get the federal government more involved with the expansion and growth of these promising industries. The federal government should not take over and operate these industries. Then potentially run them into debt and into the ground like many other programs and industries. The federal government needs to help the

American public recognize that this is our future for energy consumption and that these industries would be a smart long-term investment. It would be best to privately fund the expansion and growth of windmill and solar panel farms across the country. This would allow the opportunity of the American dream to another generation. Taxes are playing a major role in renewable energy investment.

With program 1603 back into effect in 2000, 2001, and 2009 these industries blossomed. The federal government does give great tax credits to windmill developers. There is a three year extension on the Production Tax Credit, which is part of program 1603. This extension will run out on December 31st 2012. If developers do not like the Production Tax Credit, then they have the option to use the Investment Tax Credit, which can be a thirty percent tax credit (AWEA Web). There are good tax credit programs out there, but only for major developers or major investors. There are a few minor tax credits for small personal investors looking to put a windmill into their home or barn. But there are no tax credits or incentives for the public wanting to invest into renewable energy companies.

It is obvious that our country has an energy consumption problem that needs to be addressed within the next half century. Our government has been on the right track to get the public informed about the rapid increase in the world's carbon dioxide level. The government has done well in creating renewable energy industries to build a good structured base for our new energy methods. But it is time for an energy revelation to happen in our country. Major changes are going to happen in this aspect, no matter what. The question is how long it will take our government to step in and take action to transform our countries energy needs? We do not need the government to give stimulus packages or release bonds to create funding for our future needs.

We need the government to inform the public that investing into renewable energies could be the best investment of the 21st century. People are always looking for safe and reliable places to invest their hard earned money. What investment will be the next Ford Motor Company of the early 20th century or Microsoft of the late 20th century? I cannot tell you what renewable energy company will be the best to invest into. What I can tell you is that renewable energy industries will be the next big investment with the help of the federal government.

The overall conclusion is, with expansion and growth certain in renewable energy industries, the necessity for funding will be great. An investment in these industries will have three major motives. The first is the business and profit potential. Second the demand to become independent in energy consumption in America. And finally the fact that renewable energy is good for our planet. We as a society cannot keep increasing our atmosphere's carbon dioxide level. The technology and demand has been created to use renewable energies as our main source of energy. Washington just needs to step in to create better tax credits for small time investors and to get the public excited about renewable energy. So the public can give the renewable energy industries that next boost into an economic blossom.

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Derek Hartlauer

Professor Bown

English 2010

26 March 2011

Twenty-one Hours of Daylight

Fishing in Northern Canada is so remote that the nearest village is over three hundred miles away. Being rescued is not an option unless the situation is life or death. We were fishing an outpost camp for some of the largest fresh water fish in North America. An outpost camp means that you survive on your own. No guides, no food supplied, or anyone to help if something goes wrong, except the people who are on the trip. One problem we face is weight in the float plane. This aspect is the most important part of the trip. The more weight you can lose in unnecessary items the more weight in survival supplies you can bring. We are constantly trying to figure out ways to save weight in the float plane flight out to the lake. One way the camp owners figured out to drop weight in the planes was to provide solar powered electricity at the camp so that less gasoline was needed for the generators. The solar panel system was brought up the winter before on the ice roads.

18 pound Northern Pike I caught

Usually we spend over two week in this outpost camp and we have to be very selective in choosing what we bring. Survival supplies are the most important items when preparing for the trip, then fishing and personal supplies. Gasoline is also one of the most critical supplies to have on the trip. Gasoline is used in the generator for electricity for a freezer, refrigerator, small amounts of light, and a

water pump for running water. Most importantly gasoline is used in the boats to fish. Fishing is the whole purpose of why we go to Canada. So using gas in the boats is more important than in the generator. My father has visited this exact camp for over twenty five year now. This trip was my fourth trip there and it was during my twenty first birthday. This was also the first trip we had been on with the new solar panel energy system.

Once we all learned how the new system worked, we were all fascinated by how much electricity it put out. We thought that we would have to run the generator as a secondary source of power. We were all sure that at night or during cloudy days we would need the generator. But the battery storage supplied with the system would store plenty of electricity for the few hours we needed it. The solar powered camp was the best upgrade the camp owners could have done.

The solar energy system looked very advanced, but it was actually every simple. The solar panel is full of the solar cells that absorb the energy. The panel was installed on the south side of the roof. It measured at about four foot by six foot. The energy is absorbed then sent inside the cabin to the charge controller. The controller is where the power can be used directly or the energy will be stored in the battery packs. The battery packs are constantly recharging and holding power for reserve. This energy recharging and storage system is what allows us to have full use of electricity anytime during the trip. The picture above is a diagram of how this type of system works.

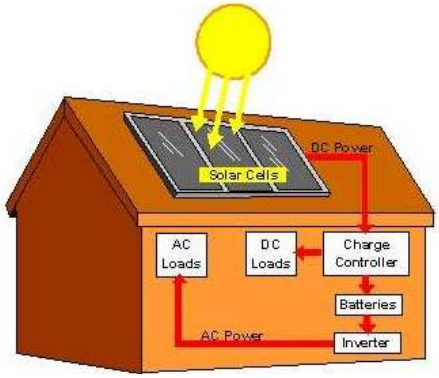
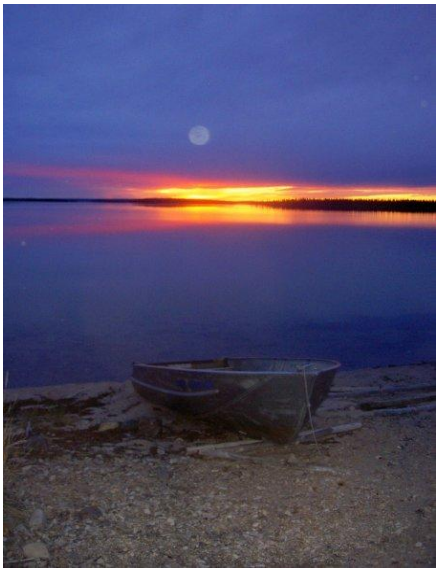


Diagram of Solar Power system

This system was ideal because it allowed cutting out weight in the float plane by not bringing as much gas. There was plenty of light to power everything we needed. We were in Northern Canada in the middle of June. There is twenty one hours of light each day. The sun would rise at four in the morning and set at one in the morning. Look at the picture to the left. This picture was taken at one fifteen in the morning. The moon was following the sun down. Even during cloudy or stormy days plenty of sunlight made it through the atmosphere to power at least the freezer and refrigerator. Last we did not have to rely on gasoline for the generators. Generators usually fail or not work properly at least once a trip.



The **Sunset at 1:15 am**

After learning our new power system and finally getting out fishing for the first day. Like always all the guys, who mostly were businessmen, started joking about how we could solve all the world's problems. We talked about politics, business, the economy, small petty problems, and energy. Of course with the new solar energy system we were just introduced to, we all collaborated how similar systems could be used commercially or in other applications.

On the boat we discussed how these systems could be put on commercial vessels to power operating systems and refrigerating systems while the ship is in port. This would allow the crew to turn the engines off while not in motion. If the engines fail and the ship is stranded in the middle of the ocean the crew will still have power and clean running water. Having power to keep food fresh and clean running water is very crucial. These systems could be used on cruise

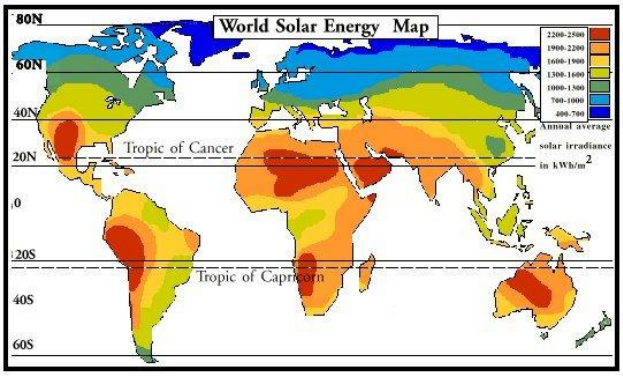
ships, oil tankers, cargo ships, war ships, or many other ships. During this discussion on the boat some of the guys joked about how it would be nice to have a miniature solar panel on our boat to run our iPod dock to play music with needing batteries.

While researching the topic further I discovered that Toyota Motor Company uses the world's first "solar-power-assisted" car carrier. The sixty thousand ton cargo ship is equipped with three hundred and twenty eight solar panels that can produce forty kilowatts of power (Toyota par. 1). The ships solar power system assists the engines to operate at maximum efficiency. Toyota incorporated the idea of their hybrid cars to their cargo carrier.

The use of other systems could power small villages that are located in remote areas, like where we were in Northern Canada or areas of Alaska. These types of villages are constantly in dire need of some form of fossil fuels to operate an electrical system. The only time supplies can be delivered is on ice roads in the winter. Solar energy could supply these towns with a reliable source of energy during the grim summer seasons.

Solar energy is being used in many remote areas. For example there is a village named Gudda that uses solar energy for all the light in the village. The system was installed in the year 2005. Before that the village had never seen light after dark (Damon par. 8-9). I have also found another Canadian outpost fishing company that has equipped camps on three different lakes with solar power systems just like our camp. The company is named Dogleg. They offer "modern" solar powered camps at Mannifrank, Noname or Black lakes (Dogleg par. 2). Maybe one day we will travel to one of these camps because everyone loved the idea of another solar powered camp. It gives us fishermen reliable and renewable source of energy.

In Australia solar powered water pumps are used on farms and outback stations to water livestock and irrigate crops. In fact over ten thousand solar powered water pumps are in use in the world. The water will be put into storage tanks above ground to provide a "gravity feed" (Micro-hydro-power par. 2). There is no energy needed to operate this water storage system, which makes it ideal for the conditions. In the areas that these water systems are used the water is usually needed most during sunny days. Obviously this is perfect with solar energy. Essentially this is what we were doing in our fishing camp. We used solar energy to power our water pumps. The figure to the left shows how the world distributes solar energy. This diagram is called the, "World Solar Energy Map" (Micro-Hydro-Power par. 2). This proves that if a system located in Northern Canada can produce a good amount of electricity. Image how systems would perform in areas with high amounts of solar energy.



Some of my father business friends were talking about how solar energy will become a major player in the energy industry. Energy is one of the largest industries, and solar energy is only going to grow with the demand for renewable clean energy. The fact of renewable energy taking over the commercial industry is likely not to happen anytime in the near future. But many of these smaller applications can use solar powered system. All the guys had considered possible future investments into solar energy companies, of course with optimism. Although none of the guys have invested into these renewable energies. The fact is that this subject was the main topic of discussion during the whole trip tells me that the older generations are starting to see the potential of renewable energy. New technological applications have advanced enough to start to

amaze potential investors. If there is more involvement and recognition into renewable clean energy it is possible that renewable energy could play a major role in the future.

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Solar Energy Technologies and Investments

Companies and interest groups are putting lots of money into new more efficient renewable energy technologies, especially solar energy technology.

Concentrated Solar Power, also known as CSP, is exactly what is describes. It uses a parabola shape to concentrate the radiant energy from the sun into one focal point. There are three main types of CSP, linear concentrator, dish/engine, and power tower systems (NREL par. 1). Linear concentrator systems use long rectangular, U-shaped mirrors. The mirrors are a long half pipe shape. Look at the picture to the right. This is Acciona solar thermal power plant. Each panel has its own thermal receiver. The mirrors are tilt toward the sun. A dish/engine system uses a mirror shaped like a large satellite dish. The light is directed and concentrated into one thermal receiver. A power tower system uses a large field of flat, sun-tracking mirrors direct, focus, and concentrate sunlight to a receiver on top of a tower. In all three systems the heat in the receiver is transferred by fluid to generate steam to power a conventional turbine generator (NREL par. 2-4).

Acciona Solar thermal power plant located south of Las vegas

With the advancements of these technologies large businesses are looking to invest a major chunk of change to research and development companies. Solar energy will become more of a reality to the next generations with the investments of the technological progression.

The largest setback renewable energy has is the large setup costs. Most people believe that the short-term fixed costs do not out weight the long-term cost savings. Recent technological advances have lots of companies investing in the research and development of advancement solar energy. More efficiency will be more cost-effective. Improvements in the amounts of energy a solar power system can convert to electricity is the key factor. With progression of Concentrated Solar Power and Concentrating Photovoltaic technologies the amount of energy that is converted to electricity is at above acceptable amounts.

Solar Energy Technology

Concentrated Photovoltaic technology is similar to Concentrated Solar Power. It will concentrate radiant energy from the sun using parabola shapes to focus the energy into one spot. The difference is Concentrated Photovoltaic technology will focus large amounts of energy using optical devises. Look at figure 1 & 2 on the next page. These systems are more efficient and can concentrate more energy in a smaller area, which creates more heat in the receiver. These systems have three main advantages. First requires less photovoltaic material to capture the same amount of light as any other system. High-efficient multi-junction cells are more economically viable due to smaller space requirements. Optical materials and technologies are advanced enough to support commercial systems (GRE par. 2).

The Department of Energy, widely known as DOE, is investing 50 million dollars to the development of “cost-competitive” solar technologies. The DOE said, “The program will be a critical link between DOE’s advanced technology development programs and full-scale commercialized efforts” (Tucker par.4).

ENVIORMENTAL SOLUTIONS

Solar Energy
Technology

Ernest Tucker from the U.S. Department of Energy says, “The Nevada National Security Site will provide a "solar demonstration zone" that will serve as a proving ground for cutting-edge solar technologies, such as concentrating solar thermal power and concentrating photovoltaic energy” (Tucker par. 2). This project is expected to reach utility scale, which will consist of grid-connected projects bringing in more than 20 megawatts (Tucker par. 4).

Figure 1: Concentrated Photovoltaic solar panels

With governmental agencies investing into the technologies the private sector couldn’t help but notice. Investing into the technology to improve the efficiency and cost of solar power is one aspect needed to make solar energy more commercialized, but investing into putting these technologies into applicable use. Like a large scale plant that will produce enough electricity to power communities. One of the largest companies in the world, Google, has made the company’s largest investment in history. The 168 million dollar investment will go towards a solar power plant to be located in the Mojave Desert in California (IB Times par. 2). The system will generate 392 gross megawatts of clean renewable energy. That is equal to taking 90,000 cars off the road while the plant is operating. The plant is estimated to be operating for 25 plus years. The plant is scheduled for completion in 2013 and is expected to practically double the solar energy that produces electricity in America (IB Times par. 2-3).

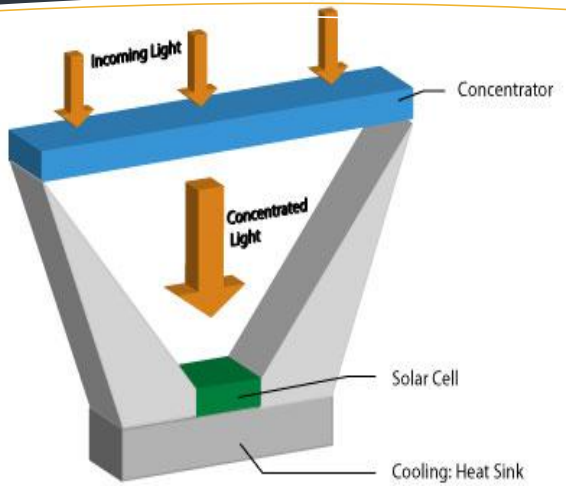

Figure 2: Concentrated Photovoltaic diagram

Some of the largest companies and governmental group are investing lot of money into turning renewable energy into a full-scale commercialized operation. With more advancement in these technologies more private and public businesses are going to be investing into more full-scale commercial operations of renewable energies. Google and the DOE are starting the trend of investing, and essentially believing into the technologies of renewable energies.

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John Cottongim. “*Solar Series – The Two Paths (Part 1 of 3)*”. Published by The Future Is This. 28 March 2011. Web. 10 April 2011. Picture of Acciona Solar thermal power plant located south of Las vegas.

INVESTMENTS INTO SOLAR ENERGY TECHNOLOGIES