Green Power

To: Oil Company CEO
Cc: Dr. Susan Codone, TCO Associate Professor of Technical Communication
From:
Subject: Feasibility Report to Replace Fossil Fuel System with Green Alternative System
Date: June 27, 2011

Introduction

Currently fossil fuels govern the industry of electricity effectively; however, the cost and pollution from these resources have radically increased within the past decade. Specifically, I researched green power alternatives systems that will solve both of these major problems. The following study will present and explain how three green alternative systems to fossil fuels, specifically crude oil, will create a more efficient, cost-effective, and cleaner world. These Water, Wind, and Sunlight, or WWS, technologies can be implemented with little additional cost and will end up making the amount of money spent today with using limited non-renewable resources. Good

In my report I compare three green electricity alternatives: wind, solar, and hydroelectric systems. All three alternatives are viable and reliable options for the replacement of fossil fuel systems. I compare their qualities in order to come to a conclusion on my recommendation. These systems are the most widely used when oil and coal technologies have downtimes and are the greenest options around. Good

Conclusion

After comparing fossil fuel plants and green energy plants based on three criterions, I ~~believe~~ recommend oil companies should replace their resources with hydroelectric systems. Hydroelectric Power is expensive at first, but it is the most reliable, cost-efficient, and renewable option in all locations suited for its utilization. Be assertive in your recommendation

Criterion

When considering a green technology plant compared to a fossil fuel plant, there are three main criteria to evaluate:

- Cost of Resources
- Geographically Dispersible
- System Efficiency

Relevance of Criterion

Before an educated conclusion can be reached concerning fossil fuel plants and green energy plants, each criterion is explained in relevance to the future preservation of important resources. Virtually no emissions are detected using green technology; they are not included as a criterion to compare fossil fuel emissions. The criteria were chosen based on the need for new resources in order to make-up for the higher power demands the industry faces every day.

Cost of Resources

Cost is a major factor of whether or not a system can be implemented and can be sustained for a lifetime without extra costs for maintenance. This criterion is necessary to consider due to the current financial depths we are faced with today. While oil and other fossil fuel companies struggle to maintain resources, unlimited renewable resources could be substituted instead, with much less maintenance required.

Geographically Dispersible

This criterion refers to the system's ability to be placed in many different locations. Although many resources can be transported and used in many places, green resources depend mainly on location and the resources available there. It is in the best interest of your particular company to choose the option that will function in your location at its most optimal performance.

System Efficiency

The importance of a sustainable, time-conscience system is paramount in choosing a system to supply power to the world. The less maintenance needed the better, when it comes to efficiency and less amount of downtime to continually provide people with power. The lifetime of the system is also a big factor, even though these technologies have great potential to increase their own lifetimes with the great engineers of our time. Very good analyses and comparisons of criteria

Comparisons

The following comparisons are made based upon the three criteria, to determine which type of green energy will benefit the world financially and environmentally in the future.

Solar Power

Today, solar photovoltaics (PVs) are used in a wide range of applications, from home power generation to medium-scale utility-level power generation. Since these products come in a wide variety, such as mirrors or reflective surfaces, they can be used for many different reasons. Though the initial cost of solar products is higher than the other options, ranging up to 30 cents per kW-h, but the future costs prove to be minimal. Since high-quality materials must be used to capture the sun's rays efficiently and contain the energy throughout the night, it may not be the best option compared to systems that are not affected in the dark.

Wind Power

Wind turbines are used to convert the energy of the wind into electricity. These turbines can be either vertically or horizontally based. The newest innovations of this technology are successfully integrating high-altitude and energy capture into the systems as well. Wind has proven to be the most financially valuable investment available as a natural resource as compared to the other two options I have presented. There are still improvements to be made to wind turbines that will increase the lifetime, but have proven to be a very successful technology when implemented correctly.

Hydroelectric Power

Water generates electricity when it drops gravitationally, driving a turbine and generator. While most hydroelectricity is produced by water falling from dams, some is produced by run-of-the-

river electricity. This source is the most widely used today of all the systems already evaluated in this report. Being that at least 22 percent of the world has these systems already in place, and water being a plentiful resource on our planet, it is the most economical option of the three. Ranging from five to 11 cents per kW-h, it is very close to today's crude oil prices and is the most efficient system because of its ability to generate power at all times of the day with little maintenance. Very good analyses and comparisons of potential solutions

Matrix Analysis

The matrix below has values assigned to each type of technology in comparison to each criterion. The analysis is based on a scale of 0-5, with 5 being the highest score possible for one category. According to the chart, the hydroelectric system, scoring 14 out of 15 possible points, is the best choice. Wind power comes in second with 11 out of 15 points. The solar system comes in third due to its high cost rate according to the chart. Nice intro to the matrix; this makes a big difference.

	Solar	**Wind**	**Hydroelectric**
Cost of Resources	1	5	4
Geographically Dispersible	4	3	5
System Efficiency	4	3	5
Total	**9**	**11**	**14**

Research Obtained Good, helpful info

	Solar	**Wind**	**Hydroelectric**
Cost of Resources (per kW-h)	15-30 cents	4-6 cents	5-11 cents
Geographically Dispersible	Sort of	Yes	Yes
System Efficiency	30-yr lifetime, only dirt to clean usually	15-yr lifetime, not much maintenance	>50-yr lifetime, little maintenance

Conclusions and Recommendations

Based on the need to replace fossil fuels with natural energy, due the increasing need of electricity in the world, the possibility of life not outliving the enormous emissions issues if continued in the fossil fuel direction, as well as, the evaluative criteria discussed in this report:

- I recommend the Oil Company replace their systems with hydroelectric products to create a more promising and financially stable future for themselves, as well as our world.
- The hydroelectric-powered system had the highest score in two most important categories for widespread use and exceeds expectations of current systems being implemented. Excellent