



California State University San Marcos Senior Experience

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Dear Mr. President,

This is an invitation that was initiated from an organization called 350 - Global warming. Global Action. Global Future. We the people are in dire need of your help with the climate crisis. You and only you can be the one to initiate any type of substantial change. We need your leadership and your willingness to stop global warming and end this climate crisis. America needs you to read this invitation. We cannot keep going on this same path; America's livelihoods depend on you.

So in regards to the climate crisis we are writing with a simple request: attend the UN Climate Meetings this December and rejoin the world's fight against the climate crisis.

The need for an international deal has never been greater. NASA's top climate scientists have said that to avoid disaster the planet needs a plan both to cut carbon emissions sharply and immediately, and to steer a long term path back below 350 parts per million Carbon Dioxide.

Time is running out. The UN Climate Meetings mark a one year countdown to finish crafting an international climate deal.

We call on you, as President-elect, to commit to going to the UN meeting in Poland in December 2008 to:

*Commit the US to mandatory reductions of Greenhouse gas emissions that meet the urgency science calls for and transition the US to a clean energy economy.

*Commit to help developing countries reduce their emissions and adapt to the impacts of climate change, and to transfer the technology that will help bring the world to more sustainable economies.

Sending this strong signal to the world will help spur the negotiations so that a genuine global agreement meets the seriousness of the problem. The world is ready for action.

Sincerely,

The California State University San Marcos Senior Experience Team

Acknowledgements

We would like to acknowledge Peter Meisen and Patricia Stevens for being a sponsor of Senior Experience and allowing us to work with the Global Energy Network Institute (GENI). Without them we would not be working on this project. We thank them for their time that they have spent with us and the valuable information that they have given us. We also thank them for their knowledge and expertise that they have shared. They have been nothing but inspirational to us. We were very happy and honored to have worked with them and feel very proud to have finished the project with them as our company sponsor.

We would also like to thank Ofer Meilich our faculty advisor. Each week he was there to guide us and to answer questions we may have had. He kept us on track and made us feel that anything was possible when doing this project. We were happy to have him as our faculty advisor.

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Executive Summary

This report, started in September 2008, is to determine which presidential candidate's energy policies make the most sense for securing a sustainable energy future. This was done by comparing and contrasting the energy policies of John McCain and Barack Obama.

In helping to decide which energy policy is the best, additional research was needed. Research was collected from four experts, two foreign countries, one foreign region and a non profit, GENI (Global Energy Network Institute). The experts that were researched were Al Gore, T. Boone Pickens, James Hansen and the organization World Watch Institute. These four experts were researched because each has views on creating a sustainable energy future. Each expert is not alike. They provided well-rounded ideas of how the energy future could be changed.

The two foreign countries examined were Brazil and Japan and the foreign region was the European Union. Researching these foreign countries and region gave us an idea on how other parts of the world are working to create a sustainable energy future. We researched these specific countries and region because they have shown the most progress in developing a more advanced energy future in regards to using renewable energy. GENI is the company sponsor who is also an advocate of the creation of a sustainable energy policy.

We examined the energy policies of the presidential candidates, experts, two foreign countries, one foreign region and GENI. We then graded each of these energy policies to evaluate if they were viable, feasible and sustainable. After seeing which policies made the most sense and would substantially help Americans, we then wrote a persuasive position to influence now president-elect Obama's energy advisors on the policies we believe make the most sense for securing a sustainable energy future.

The information was obtained mostly through internet research. Both John McCain and Barack Obama have websites that include their entire energy policy. The experts were researched through an array of websites. Each expert has their own website, so most of the information was acquired from articles that the experts themselves have written. Additional articles were also used with commentary from outside sources. The two foreign countries and foreign region were researched through the use of websites

as well. For GENI, we were able to use their website as well as interviews with the founder and President, Mr. Peter Meisen.

The key recommendations that we suggest to president-elect Obama could help him create a sustainable energy future. We found that Obama averaged a low score in all but one of the grading criteria categories. He averaged a low score in the social impact domestically and globally, environmental impact, and flipping the switch. He averaged a high score in the feasibility of implementation category. These high and low scores show what Obama's strengths and weaknesses are in regards to his energy policy.

Based on the comparison of Obama versus the experts, foreign countries, and foreign region, we came up with a few recommendations. The comparison showed the top scorers within each of the five grading criteria categories. We then evaluated the top scorers to understand why their policy rated high, and if they rated exceptionally high, we would then suggest to President Obama to consider understanding that policy and perhaps implementing it in his own plan.

Our recommendations to President Obama regarding renewable resources are the following:

- Have 20% of electricity coming from wind.
- Incorporate more solar, geothermal and hydro energy use.
- Update the energy grid so that it has higher voltage capacity to meet future energy needs globally.
- Set mandatory limits to keep further global warming below 2 degrees Fahrenheit.
- Invest in creating new green jobs to curve the economic downfall our country is currently facing.

These are a few of our recommendations we feel that could be helpful in creating a sustainable energy future. These recommendations would also help reduce global warming and help end our dependence on foreign oil.

Introduction

This report was prepared by a group of Senior Experience students at California State University San Marcos (September – December, 2008). The report was written to determine which presidential candidate in the 2008 race has the best energy policy and one that makes the most sense for securing a sustainable energy future. The focus was on how the president-elect addressed the generation and distribution of energy.

Three research objectives were examined:

- 1) to compare and contrast the energy policies of John McCain and Barack Obama.
- 2) to indicate what we see as possible for the next president over the next eight years in creating a sustainable energy future.
- 3) to persuade and influence the next president-elect's energy advisors to consider and implement our recommendations that we believe make the most sense for securing a sustainable energy future.

The energy policies of Barack Obama and John McCain were researched. The research was done mostly using the internet. Additional research was done on four experts, two foreign countries, one foreign region and the non profit organization GENI to help evaluate each of the candidates' policies.

The first part of the report establishes the background. This background provides readers information about how energy has been generated in both the past and present in regards to renewable resources and non-renewable resources. The next part of the background includes information on what it means to secure a sustainable energy future, why it is important, and the complexities and challenges involved in determining which policies make the most sense for securing a sustainable energy future.

The methodology section explains the policy spreadsheets that were used for collecting information on the candidates, experts, foreign countries and foreign region. Grading criteria were also created to determine how each of the policies compares with one another. The why and how each grading criteria was created are also explained. This section also gives background information on the experts and the foreign countries and foreign region.

In the analysis and results section the completed grading sheet for each policy is shown and explained. It tells why certain grades were given to each policy and the strengths and weaknesses of each policy. Charts are also be shown for a comparative analysis. The analysis and results section includes a subsection that compares and contrasts the energy policies of Obama and McCain.

In the implications and discussions section a comparison is done between the presidential candidates versus the experts, foreign countries or foreign region that averaged the highest on the grading sheet. The comparison was divided into the five categories that are associated with the grading criteria: social impact – domestic, social impact – global, environmental impact, feasibility of implementation, and does the policy flip the switch. The comparison shows where in their energy policies Obama's and McCain's strengths and weaknesses lie. These top scores then helped us determine which polices could be recommended to president-elect Obama's energy advisor, since the top scorer had the policy in a certain grading criteria category that made the most sense for a sustainable energy future.

In the recommendation section we address our second and third research objectives. The second research objective indicates what we see as possible for president-elect Obama over the next eight years so that he can create a sustainable energy future. This objective allowed us to create our recommendations from the research that was done on the experts, foreign countries, foreign region, and GENI. We then toke these recommendations and used them in our third research objective. The objective here is to create a persuasive position that would influence Obama's energy advisor to use our recommendations in his energy policy. The persuasive position allowed us to explain why and how Obama's energy advisor should take our advice and consider implementing our recommendations.

The limitations section provides information that limited the group from researching each policy to the fullest potential. One of the main limitations is that we had to become experts on the policies of the 2008 presidential candidates, known experts, and foreign countries, and foreign region. It was a time consuming process with only three months to evaluate all of the policies. The time allotted was not sufficient for us to gain all the specific knowledge on each policy.

The conclusion section ties all of our research and findings together so that we would be able to persuade president-elect Obama to consider implementing our recommendations. The conclusion also explains the process in getting to the recommendation stage.

The future research section tells what additional research can be done to further expand on our findings. It explains certain topics and areas that other Senior Experience students may want to research to better further to understand policies and our findings.

Background

Context of Study

In the past, petroleum oil has been the main source of energy production for most of the world. Today, oil continues to be the world's main source of energy, regardless of alternative fuels that have become available. As a result of the world's dependence on oil, the effects of peak oil are beginning to arise. Peak oil is "the point in time when the maximum rate of global petroleum extraction is reached, after which the rate of production enters terminal decline" (Wikipedia). The demand rate becomes greater than the earth's supply. "Optimistic estimations of peak production forecast the global decline will begin by 2020" (Wikipedia). The world must transition to alternative fuels to reduce dependency on oil and other non renewable fossil fuels that can not be replenished.

In recent years, global warming has been magnified as a problem that exists due to our non renewable energy sources. Oil, coal, and natural gas release high levels of contaminants into the air. The contaminants affect the quality of air that we breathe, create the green house gas effect and destroy the ozone layer. An increase in global temperature has caused unusual temperatures in different terrains. Melting ice caps have caused sea levels to rise, and the pollutants have been found to destroy the rain forests. Overall, the pollutants being released into the air are having a tremendous negative impact that can destroy humanity if proper precautions are not taken.

The problems that exist because of non-renewable fuels raised the question "How do we make the world work for 100% of humanity in the shortest possible time through spontaneous cooperation without ecological damage or disadvantage to anyone?" (R. Buckminster Fuller) "This question was raised by Buckminster Fuller in light of global warming, population growth, and current and future projected energy demands." (GENI) Fuller is a scientist who proposed the "World Game™." "The use of 'world' in the title obviously refers to Fuller's global perspective and his contention that we now need a systems approach that deals with the world as a whole." (Buckminster Fuller Institute) The World Game™ could be used as a tool to scientifically approach the world's problems and the current energy crisis from one system that would be accessible to everyone. The Global Energy Network Institute's Initiative (The GENI Initiative) focuses on linking renewable energy resources around the world by using international electricity transmission, taking into account Fuller's question posed 40 years ago.

How the Problem of Oil Dependency Has Evolved

Peak oil and the hazardous effects to humanity, such as air pollution and contaminated water, have called for intensive investment in research and development in search of alternative fuel solutions that could be renewable and sustainable for the future of humanity. Non-renewable sources such as coal, natural gas, and nuclear power have been researched and used as alternatives. Compared to petroleum, they are a temporary solution due to the continuous release of lower levels of pollutants into the air. These forms of energy usually come from the ground and can not be replenished. They are environmentally hazardous and, in the long run, become expensive sources of energy, because they can not be renewed fast enough to keep up with the demand.

Renewable sources, on the other hand, are sources of energy that can be naturally replenished. They can be replenished through sunlight, wind, rain, geothermal heat, and tidal power. These sources of energy reduce pollutants tremendously, because they produce little if any pollutants in the production of energy. Research has shown that renewable sources are sustainable in the long run, because they have minimal effects on the environment and can be supplied continuously. Creating a renewable environment is costly and requires land and creation of an infrastructure to support renewable energy resources.

The United States has a highly decentralized energy system mostly run and operated by the private sector. The non renewable sources of energy are mostly owned by private corporations. There are government agencies who regulate the sector to keep the private industries aligned with federal guidelines. The main agencies are the Federal Energy Regulatory Commission (FERC), the Department of Energy (DOE), the Nuclear Regulatory Commission (NRC), and individual state public utilities commissions that set electric and natural gas rates.

Energy Generation in the Past and Present

Electricity is generated in the United States through the use of electric power plants. According to NBC, there are about 5000 power plants in the United States, and this number is expected to increase because of the growing demand for energy. The plants produce energy by a generator, a rotating machine that is located at the center of the plant. It creates relative motion between a magnetic field and a conductor. “The plants vary on which fuels are easily available and on the types of technology that the power company has access to.” (Electricity Distribution)

In the past, electricity was generated through electromechanical generators fueled by chemical combustion or nuclear fusion. Chemical combustion from non renewable sources comes from oil, coal, and natural gas. Currently with the growing demand of renewable sources of energy, there are many power plants that convert energy from sources such as wind, solar and geothermal heat to usable energy.

Wind power requires the use of wind turbines that capture the force of energy from wind by spinning the wind turbine to generate electricity. The wind that is captured is referred to as kinetic energy. Wind energy requires large wind farms with a sufficient capacity to accommodate turbines. These wind farms typically connect to the electric power transmission network to carry electricity to the load area.

Solar power generation operates differently. It requires the use of panels that absorb energy from the light of the sun or radiant heat to convert into energy. Photovoltaic or solar cells are used in this method and immediately transform sunlight into electricity. Photovoltaic methods do not connect to the power grid. They are used for powering homes, watches, and road signs. Electricity is generated more for personal use rather than commercial utility use through these methods of energy production.

Solar power can also be generated through utility scale solar power plants which use the sun's rays to generate electricity. Plants use solar thermal collectors to heat a fluid that generates steam (Energy Information Administration). The steam is used to power generators that create electricity. This type of solar power is connected to the electrical grid and can be used for commercial purposes, because energy is produced on a massive scale compared to photovoltaic or solar cells.

Geothermal uses heat from within the earth. This process requires the digging of deep wells that go far into the earth. Pumps are needed to pump the heated underground water or steam to the surface (EIA). Geothermal heat is used for utility scale generation of electricity as well as for cooling or heating of buildings.

There are other ways to generate energy which will not be covered in this analysis. The types of renewables are just a few examples of how renewable sources are contributing to the energy grid as innovation and technology advance. Figure 1 illustrates the generation of renewable sources today.

Energy Transportation in the Past

After discussing the different methods of energy generation, it is now important for one to understand the functions of an electric grid. The electric grid is the process of transporting energy from the power plant to the user (www.howstuffworks.com).

Power plants are interconnected through transmission power lines. There are two main methods of distribution. The first is a radial network. “The radial leaves the station and passes through the network with no normal connection to any other supply; the second network is an interconnection network that has multiple connections to other supplies” (Wikipedia). Radial networks are used in rural areas because there are not many connections. It is a long connection that goes from the plant directly to the user with minimal interference. The interconnection network is used in urban areas. There are many connection points of supply. Utility poles and wires usually assist in the transportation of energy into homes. To understand the significance of an energy grid, one must understand the way electricity is transported. The transmission power lines and utility poles allow the voltage to travel from the power plant to the residential area.

Why Focus on a Sustainable Energy Future?

The issue has now become of greater concern because of the effects of peak oil. The world is searching to discover and develop new technologies hoping to find alternative sustainable solutions. There is a misunderstanding regarding energy supply among many people according to GENI. What the world has not yet realized is that energy is not a scarce resource: “The renewable resources are abundant far beyond our needs, and we have the technology and capabilities to move the energy via high voltage transmission lines connecting nations and continents.” (GENI) The implementation of such a system has now become cost competitive. It's just a matter of when it will be implemented and who will be the first to implement it.

There are many benefits to creating a sustainable energy future that can be available to all humanity. Creating a sufficient energy solution can reduce pollutants that are released into the atmosphere from fossil fuels and nuclear waste. Each individual could have a better quality of life. Poverty and hunger could be reduced with access to energy. Electrical infrastructure is necessary for adequate food, water, healthcare, and education. Research has also shown that birthrates fall when energy use increases. (GENI) Population growth can become more stable. In addition to the benefits gained in the United States, there are world benefits as well. Providing each nation with electricity can minimize tension and increase cooperation among nations and create peace.

Methodology

As graduating seniors from California State University San Marcos, our four-member team worked as consultants for the Global Energy Network Institute (GENI) during the 2008 fall semester. At GENI's request, we compared and contrasted the energy policies of U.S. Presidential candidates Barack Obama and John McCain in light of the demand for a sustainable energy future. Out of this analysis, our team determined what we saw as possible for the next president over the next eight years in creating a sustainable energy future. This also resulted in a Persuasive Position that could be used by our team to influence the next president-elect's energy advisor on the policies we believed to make the most sense moving forward. To accomplish these key objectives, our team:

1. Researched GENI to help define a more narrow focus and deeper understanding for the project.
2. Learned as much about the generation and transportation of electricity as possible within our short time frame. This included becoming more familiar with the types of renewable and non-renewable resources that are used to generate electricity as well as the ways in which electricity (after being generated) is transported to consumers for use.
3. Studied the energy policies of Obama and McCain and selected eight other energy policies to be examined to compare, contrast, and analyze.
4. Collected data on the eight other selected energy policies.
5. Created a spreadsheet to store all collected research.
6. Developed grading criteria and a scoring system to evaluate the data.
7. Interpreted the results and provided recommendations based on our team's findings.

Researched GENI to Develop a Narrower Focus for the Project

The data compiled from GENI's website (www.geni.org) and through on-site personal visits provided the framework and scope for the type of information that would be required for our analysis. For example, GENI asked that only information related directly to the generation and transportation of electricity be included in our team's research and analysis of all energy policies to be examined. Our team agreed this would be a good strategy after further researching GENI and obtaining a better understanding for its mission and strategy. We learned that GENI's founder, contributors and followers are committed to the GENI Initiative: "Conducting research and educating world leaders and the public about the critical

viability of the interconnection of electric power networks between nations and continents, with an emphasis on tapping abundant renewable energy resources.” (National Energy, 2001) Discussion with GENI founder Peter Meisen indicated to our team that GENI and its Initiative are heavily influenced by the late Dr. R. Buckminster Fuller, a scientist and engineering pioneer who developed the World Game™ simulation, posing the question:

“How do we make the world work for 100% of humanity in the shortest possible time through spontaneous cooperation without ecological damage or disadvantage to anyone?” (Market Wire, 2008)

Once our team understood GENI’s objectives, including its mission and purpose, we were able to move to the next step in our research process.

Learned about Electricity

Prior to this research project, our team had very limited knowledge of electricity in general with no in-depth understanding for how electricity is generated and transported. After learning from GENI the key objectives of this project, our team read on-line articles, journals, policies and documents, viewed hundreds of various websites, studied multiple handouts, and watched television, web casts, and other on-line videos to become as familiar with the generation and transportation of electricity as possible. Our team decided to divide our research into electricity generation into two different areas: *non-renewable resources* and *renewable resources* used to generate electricity. The non-renewable resources chosen for research included oil, coal, nuclear, and natural gas because together they account for 90% of the United State’s current national fuel mix. (Get Energy Active, n.d.) The renewable energy resources of solar, wind, geothermal, biomass, hydro, and tidal were chosen because they are the most abundant types of renewable energies currently available for the generation of electricity. Finally, for the purpose of this project, our team defined the transportation of electricity as “how electricity is transported (after being generated from a renewable or non-renewable resource) and becomes available to consumers for end-use.” This required gaining an understanding for electrical power lines and grid systems, the more common ways of transporting electricity today.

Collected Data on the Energy Policies of Obama, McCain, and Eight Others

Next, our team compiled research on the energy policies of Obama and McCain by reading each of their respective policies (both printed and on-line documents available for public viewing), by watching all nationally televised Presidential Debates and by reading other articles, journals, publications and interviews that were specific to each candidate and their respective positions on the generation and

transportation of electricity. Doing so informed the team of the values and priorities present in the energy policies of each of the candidates as well as their respective positions on issues relating to the generation and transportation of electricity. However, in order for our team to better determine what we saw as possible for the next president in securing a sustainable energy future, we decided to also analyze eight other energy policies. The policies we chose to include in our research were from three different individuals we considered to be experts in sustainable energy, two organizations specializing in the promotion of a sustainable energy future, two different foreign countries, and one foreign region. The inclusion of these eight other policies informed our group as to what we should consider when creating a policy geared toward securing a sustainable energy future. It also informed us about what has already been done in other countries and governments around the world to meet this same objective. In all, the ten energy policies examined were those represented in the following way:

Presidential Candidate: Barrack Obama – At the time, Democratic Party candidate whose energy policy includes “working to bring auto companies, unions, farmers, businesses and politicians of both parties together to promote the greater use of alternative fuels and higher fuel standards in our cars.” (ABS Alaska, 2008)

Presidential Candidate: John McCain – At the time, Republican Party candidate for the U.S. Presidency who said he would “invest in all energy alternatives nuclear, wind, solar and tide.” (Baker, n.d.)

Sustainable Energy Expert: Al Gore – Former Vice-President of the United States and recipient of the Nobel Peace Prize for his efforts to educate the world on global warming and climate change.

Sustainable Energy Expert: T. Boone Pickens - A wealthy American businessman and former oil-typhoon who now advocates using wind to generate energy and shifting use of natural gas to replace fossil fuel based petroleum.

Sustainable Energy Expert: James Hansen - NASA employee and professor at Columbia University in the Department of Earth and Environmental Sciences whose policy includes reducing CO₂ levels to slow global warming.

Organization: GENI – A group that believes “the premier global strategy is the interconnection of electric power networks between regions and continents into a global energy grid, with an emphasis on tapping abundant renewable energy resources — a world wide web of electricity.” (GENI, n.d. a)

Organization: World Watch Institute - An independent research organization respected by opinion leaders around the globe for its fact-based analysis of critical global issues. (Science Daily, 2008)

Foreign Country: Japan - A large contributor to the global economy and “one of the world's leaders in the development of new environment-friendly technologies.” (Japan, n.d.a)

Foreign Country: Brazil - The fifth largest country in the world whose “booming economy is shifting into overdrive, with biofuels and deep-water oil providing energy independence.” (Robertson, 2005)

Foreign Region: European Union - Home to the largest economy in the world by nominal GDP whose energy policy aims to “boost interconnections between electricity grids, establish a new treaty framework for energy co-operation and use existing energy supplies more efficiently while increasing use of renewable energy.” (European Union, 2008)

Collection and Storage of the Data

Next, all data gathered from our research on the ten policies was typed and stored in an on-line database created by our team. This master spreadsheet comprising the database could be viewed, referenced, updated, and shared anytime by each of our team members and was used to organize all data found for each policy. Our spreadsheet was labeled: Coal, Natural Gas, Oil, Nuclear, Solar, Wind, Geothermal, Biomass, Hydro, Tidal, and Electricity Transportation on the x-axis and Obama, McCain, Gore, Pickens, Hansen, GENI, World Watch, Japan, Brazil, and the European Union on the y-axis. During the research process, our team “cut and pasted” collected data and references into the appropriate and corresponding cells in the spreadsheet; this content became the foundation for our subsequent analysis. After completion, the data collected in the master spreadsheet was used by our team to determine which policies were possible and which policies made the most sense moving forward in creating a secure energy future.

The example diagram on the following page illustrates our team's concept for gathering and storing research data on each policy and its relevance to the generation and transportation of electricity. Not visible in the example diagram is the substantial amount of data for each corresponding cell that was collected and entered by our team.

Developed Team Values and Formed Our Grading Criteria

Once the research gathering stage was completed, our team then created an additional spreadsheet to evaluate and grade the data. This grading instrument represented our team's core values and allowed for comparison and analysis of the policies we examined. After compiling extensive research on all ten energy policies, our team decided on thirty-seven criteria that we would use to determine whether an energy policy was possible or not for the next U.S. President and to decide which policies made the most sense toward securing a sustainable energy future. The thirty-seven criteria fell within five major values developed by our team and were used to analyze all policies. Our major values and corresponding sub-values used in the analysis are shown below:

Major Value 1, Social Impact: Domestic - Our team believed the future Energy Policy of all countries around the world should benefit the lives of those people living within their respective borders. This major value included seven sub-values to evaluate each policy's domestic social impact.

Value 1.1 This policy would help increase the standard of living for Americans.*

Value 1.2 This policy would contribute toward the creation of a substantial amount of new jobs for Americans.

Value 1.3 This policy would significantly lower the price Americans pay for gas "at the pump" (automobile).

Value 1.4 This policy would positively impact those employed in the U.S Agriculture Industry.

Value 1.5 This policy would help get energy to people living in the U.S. who currently do not have it.

Value 1.6 This policy would make standard "Home Energy-Use" more affordable for Americans (monthly).

Value 1.7 This policy provides new alternatives for Americans to power their homes and businesses.

* When evaluating Main Values 1-3, the policies represented by Obama, McCain, Gore, Pickens, Hansen, GENI, and World Watch were graded on their impact on Americans, while policies represented by Japan, Brazil, and the European Union were graded on their impact on the people living with each of their respective borders.

Major Value 2, Social Impact: Global – Our team believed the future U.S. Energy Policy should also have a positive impact on everyone around the globe. This core value included six sub-values to evaluate each policy's global social impact.

Value 2.1 This policy would help to provide energy for people in other countries.

Value 2.2 This policy would promote international cooperation and peace with other countries.

Value 2.3 This policy would open up international markets and enhance world trade.

Value 2.4 This policy contributes toward substantial growth in the global economy.

Value 2.5 This policy would help to reduce world poverty and hunger.

Value 2.6 This policy would help to stabilize global population growth.

Major Value 3, Environmental Impact - Our team believed the future U.S. Energy Policy should acknowledge and address the declining health of our planet. This core value included eight sub-values to evaluate each policy's environmental impact.

Value 3.1 Activities associated with this policy appear viable; they seem capable of continuing effectiveness.

Value 3.2 Activities associated with this policy appear sustainable with minimal long-term effect on the environment.

Value 3.3 This policy would contribute toward the promotion of renewable energies on a massive (global) scale.

Value 3.4 This policy would decrease the global demand for fossil fuels and other non-renewable resources.

Value 3.5 Activities associated with this policy relate directly to minimizing or eliminating carbon emissions.

Value 3.6 Activities associated with this policy would help to decrease global hazardous waste production levels.

Value 3.7 Implementation of this policy would contribute to a decrease in "Anthropogenic" greenhouse emissions.

Value 3.8 This policy directly addresses the idea of (and has a specific plan for) "solving global climate change."

Major Value 4, Feasibility of Implementation - Our group believed that no matter how good a future U.S. Energy Policy appeared for people and their environment, a policy made no sense moving forward if it had little or no chance of being implemented. This major value included seven sub-values to evaluate each policy's feasibility of implementation.

Value 4.1 This policy involves ideas and strategies previously "unattempted" in the past U.S. Energy Policy

Value 4.2 This policy builds on past progress at the government implementation level.

Value 4.3 The technologies and capabilities associated with implementing this policy exist on a commercial level.

Value 4.4 This policy requires the U.S. Government to direct a substantial amount of public funding to new R&D activities.

Value 4.5 This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law).

Value 4.6 This policy is likely to receive both moral and voter support from most Americans.

Value 4.7 This policy uses tax incentives to encourage energy conservation and use of alternative fuels.

Major Value 5, Does the Policy “Flip the Switch?” – Our team's findings indicated that there is enough potential capacity on each of our world's continents to meet the world's entire power generation requirements without any use of fossil fuels or other non-renewable resources used to generate electricity. However, our research also showed that currently more than 1.7 billion people around the planet still have no access to electricity (GENI n.d. c). As a result of this type of data, our team decided the current U.S. Energy Policy was not effective enough and that changes could be made if the “switch” (priorities of U.S. Energy Policy) were “flipped.” This major value included nine sub-values to evaluate each policy's ability to “flip the switch.”

- Value 5.1** This policy would help to establish Americans as global leaders in energy efficiency.
- Value 5.2** This policy will help to open electric markets to alternate power producers.
- Value 5.3** This policy represents a true American investment in renewable energy.
- Value 5.4** This policy represents a bold direction toward energy independence at the government level.
- Value 5.5** This policy would promote American awareness for the conservation of energy.
- Value 5.6** This policy encourages an aggressive shift toward developing cleaner technologies.
- Value 5.7** This policy incorporates increased requirements and standards for fuel quality and efficiency.
- Value 5.8** This policy contributes toward a positive transformation in the transportation sector.
- Value 5.9** This policy puts the world closer to the implementation of a global energy grid.

Created a Scoring System and Evaluated the Data

After organizing our research and deciding on the criteria to be used for analysis, our team created a scoring system to evaluate the data. All ten policies represented by the presidential candidates, experts, organizations, countries and foreign region were assigned numerical scores coinciding with the thirty-seven values we used to grade them.

- If our team determined a value displayed within a policy had “absolutely no chance of being possible” for the next president over the next eight years, the coinciding value was given a numerical score of 0.
- If our team determined a value displayed within a policy was “most likely not possible” for the next president over the next eight years, the coinciding value was given a numerical score of 1.

- If our team determined a value displayed within a policy was “possible” for the next president over the next eight years, the coinciding value was given a numerical score of 2.
- If our team determined a value displayed within a policy was “absolutely possible” for the next president over the next eight years, the coinciding value was given a numerical score of 3.
- If our team determined a value displayed within a policy had “absolutely a chance of being possible” for the next president over the next eight years, the coinciding value was given a numerical score of 4.

Additional notes about the Scoring System

- The few values that could not be scored because of a lack of adequate information were shaded in blue on our scorecard and were not assigned a numerical value.
- None of the five major values or thirty-seven sub-values used to grade each policy was “weighted” in the scoring because our team believed the values used to score the policies were all of equal importance.

Interpreted the Results and Provided Recommendations

The basic quantitative analysis that followed resulted in a third and final spreadsheet; a Raw Scorecard Comparison that indicated the differences and similarities between policies as well as each policy’s total and sub-total scores as determined by our grading. This numerical analysis became the foundation for our team’s compare and contrasts of the U.S. candidates and was ultimately used to determine our recommendations for what we believed to be possible and to make the most sense for the next U.S. President in securing a sustainable energy future.

The example spreadsheet on the following page illustrates our team’s concept for grading each policy.

Scorecard: EXAMPLE

Score Legend

- 0 No Information Available
- 1 Absolutely not Possible
- 2 Most Likely not Possible
- 3 Possible
- 4 Most Likely Possible
- 5 Absolutely Possible

5 Value Categories
37 Total Value Criteria

Item	Value	Score	Comments
1	Social Impact - Domestic		
1.1	This policy would help increase the standard of living for Americans.		
1.2	This policy would contribute toward the creation of a substantial amount of new jobs for Americans.		
1.3	This policy would significantly lower the price Americans pay for gas "at the pump" (automobile).		
1.4	This policy would positively impact those employed in the U.S. Agriculture Industry		
1.5	This policy would help get energy to people living the U.S. who currently do not have it.		
1.6	This policy would make standard "Home Energy-Use" more affordable for Americans (monthly).		
1.7	This policy provides new alternatives for Americans to power their homes and businesses.		
	Category Average Score		
2	Social Impact - Global		
2.1	This policy would help to provide energy for people in other countries.		
2.2	This policy would promote international cooperation and peace with other countries.		
2.3	This policy would open up international markets and enhance world trade.		
2.4	This policy contributes toward substantial growth in the global economy.		
2.5	This policy would help to reduce world poverty and hunger.		
2.6	This policy would help to stabilize global population growth.		
	Category Average Score		
3	Environmental Impact		

3.1	Activities associated with this policy appear viable; they seem capable of continuing effectiveness.		
3.2	Activities associated with this policy appear sustainable with minimal long-term effect on the environment.		
3.3	This policy would contribute toward the promotion of renewable energies on a massive (global) scale.		
3.4	This policy would decrease the global demand for fossil fuels and other non-renewable resources.		
3.5	Activities associated with this policy relate directly to the minimizing or eliminating of carbon emissions.		
3.6	Activities associated with this policy would help to decrease global hazardous waste production levels.		
3.7	Implementation of this policy would contribute to a decrease in "Anthropogenic" greenhouse emissions.		
3.8	This policy directly addresses the idea of (and has a specific plan for) "solving global climate change."		
	Category Average Score		
4	Feasibility of Implementation		
4.1	This policy involves ideas and strategies previously "unattempted" in past U.S. Energy Policy		
4.2	This policy builds on past progress at the government implementation level.		
4.3	The technologies and capabilities associated with implementing this policy exist on a commercial level.		
4.4	This policy requires the U.S. Govt to direct a substantial amount of public funding to new R&D activities.		
4.5	This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law)		
4.6	This policy is likely to receive both moral and voter support from most Americans.		
4.7	This policy uses tax incentives to encourage energy conservation and use of alternative fuels.		
	Category Average Score		
5	Does the Policy "Flip the Switch?"		
5.1	This policy would help to establish Americans as global leaders in energy efficiency.		
5.2	This policy will help to open electric markets to alternate power producers.		
5.3	This policy represents a true American investment in renewable energy.		
5.4	This policy represents a bold direction toward energy independence at the government level.		
5.5	This policy would promote American awareness for the		

	conservation of energy.		
5.6	This policy encourages an aggressive shift toward developing cleaner technologies.		
5.7	This policy incorporates increased requirements and standards for fuel quality and efficiency.		
5.8	This policy contributes toward a positive transformation in the transportation sector.		
5.9	This policy puts the world closer to the implementation of a global energy grid.		
	Category Average Score		
	Grand Total Average Score		

Analysis and Results

The grading criteria and scoring system developed by our team allowed us to use numerical analysis to interpret the data, including the creation of a Raw Scorecard Comparison. This use of numbers helped us to determine the strengths and weaknesses of each individual policy as well as to see how each policy compared to the others in terms of being possible and possessing the values we believed to make the most sense moving forward. The following analysis and results were critical to shaping our Recommendations (and Persuasive Letter) to the next U.S. President's Energy Advisor for securing a sustainable energy future:

Policy Results and Analysis (Comprehensive)

- Tables showing:
 - The scoring summaries of all policies for each of the major value categories.
 - The Grand Total Average scores and corresponding rankings for all policies.
- Key Findings of the comprehensive policy analysis.
- Raw Comparison Sheet(s)

Policy Results and Analysis (Individual)

- Overview of each Energy Policy and/or Policy Representative
- Tables showing the Category Average scores and corresponding rankings for each policy.
- Key Findings of each individual policy analysis.
- Individual scoring sheets. *

* Data shown in the "Comments" section of each individual policy scoring sheet helps to explain why each corresponding value received the score it did. Please refer to the appendix for more detailed analysis of the grading.

Policy Scoring Summaries for each of the Major Value Categories:

Rank = Highest score in the category down to lowest score in the category

Major Value 1 Social Impact – Domestic

Rank	Policy Representative	Category Average Score
1.	Pickens Plan	4
2.	Brazil	3.86
3.	Japan	3.43
4.	World Watch	3.29
5.	Al Gore	3.17
6.	EU	3.00
7.	GENI	2.71
8.	James Hansen	2.50
9. / 10.	Barrack Obama	2.43
9. / 10.	John McCain	2.43

Major Value 2 Social Impact - Global

Rank	Policy Representative	Category Average Score
1.	EU	3.33
2. / 3.	GENI	3.0
2. / 3.	Japan	3.0
4.	Brazil	2.83
5.	John McCain	1.50
6.	Barrack Obama	1.33
	World Watch	n/a
	James Hansen	n/a
	Pickens Plan	n/a
	Al Gore	n/a

Major Value 3 Environmental

Rank	Policy Representative	Category Average Score
1.	GENI	4
2.	EU	3.63
3.	Japan	3.38
4.	James Hansen	3.25
5.	World Watch	3.17
6.	Brazil	3.13
7.	Al Gore	2.83
8.	T. Boone Pickens	2.38
9.	Barrack Obama	2.13
10.	John McCain	1.25

Major Value 4 Feasibility

Rank	Policy Representative	Category Average Score
1.	EU	3.0
2.	Barrack Obama	2.86
3.	Brazil	2.71
4. / 5.	World Watch	2.60
4. / 5.	Pickens Plan	2.60
6.	Japan	2.43
7.	GENI	2.29
8.	James Hansen	2.17
9.	John McCain	2.0
10.	Al Gore	1.67

Major Value 5 “Flip the Switch”

Rank	Policy Representative	Category Average Score
1.	GENI	4
2.	Brazil	3.67
3.	EU	3.44
4.	Japan	3.33
5.	World Watch	3.13
6.	Pickens Plan	2.86
7.	Barrack Obama	2.67
8.	James Hansen	2.57
9.	Al Gore	2.00
10.	John McCain	1.78

Grand Total Average Policy Scoring Summary

The Grand Total Average Score represents the overall average score for the thirty-seven grading criteria used to evaluate each policy. For example, referring to the table below, Japan's grand total average score of 3.14 shows that Japan's energy policy earned (on average) higher scores from our team than did the policies of Obama or McCain. Analysis of the grand total average scores allowed our team to rank all policies in terms of their ability to secure a sustainable energy future. Policies with higher grand total average scores were ranked above policies with lower grand total average scores.

Rank	Policy Representative	Grand Total Average Score
1.	European Union	3.3
Tie 2. / 3.	Brazil	3.27
Tie 2. / 3.	GENI	3.27
4.	Japan	3.14
5.	World Watch	3.08
6.	Pickens Plan	2.88
7.	James Hansen	2.68
8.	Al Gore	2.38
9.	Barrack Obama	2.32
10.	John McCain	1.78

Key Findings: Comprehensive Policy Analysis

- We believe T. Boone Pickens' energy plan may have a more positive impact on American society than any of the other policies we examined.
- Our team feels that John McCain's energy policy may have the least positive impact on American society.
- We consider the energy policies of World Watch, Hansen, Pickens, and Gore to be extremely weak in terms of their ability to directly help people living around the world.
- The energy policies of the EU, Japan, and Brazil show a strong possibility for helping people around the world, not just for the people living within their respective borders.
- It is most likely possible that all policies examined will have a positive impact on the environment. However, some policies, like those belonging to GENI and the EU, received much higher scores than the others because they placed a higher importance on the health of the environment (one of our main values).
- Feasibility of implementation received more low scores from the policies than any other main value. Al Gore's policy was considered by our group to be the most difficult policy to implement.
- Three of the highest four scores for the main value Does it "Flip the Switch?" came from a country or political region. GENI's perfect score of 4 in this main value was almost one full point higher than the other organization (World Watch) and was substantially higher than any of the policies represented by sustainable energy experts.
- Of the ten energy policies examined, only the one represented by John McCain had a grand total average score of less than 2.
- All eight policies represented by the countries, EU, sustainable energy experts, and sustainable energy promoting organizations earned higher grand total average scores than the energy policies represented by U.S. Presidential Candidates Obama and McCain.

Comparative Analysis

The comparative analysis illustrates a graphical representation for each set of criteria and the score it received. The grading criteria analysis illustrates the different experts, foreign regions, and presidential candidates on policies. There are five sets of grading criteria listed on the chart along with the sub categories (questions used for grading) that justify the relevance of criteria. Each line item represents a question that was asked. All questions asked were evaluated and assigned a value ranging 1 through 4. The numbers represent the possibility of occurrence for the questions asked. Read through the rest of the scorecards attached behind this chart to view the evaluations and specific questions used as sets of criteria to gain a better understanding. The chart follow.

Raw Scorecard Comparison

Score Legend		Column Legend										5 Value Categories							
		OB	Obama	GE	GENI						37 Total Value Criteria								
0	No Information Available	MC	McCain	WW	World Watch														
1	Absolutely not Possible	GO	Gore	JA	Japan														
2	Most Likely not Possible	PI	Pickens	BR	Brazil														
3	Possible	HA	Hansen	EU	European Union														
4	Most Likely Possible																		
4	Absolutely Possible																		
Score																			
Item	Value	OB	MC	GO	PI	HA	GE	WW	JA	BR	EU	AVG							
Social Impact - Domestic																			
1	This policy would help increase the standard of living for Americans.	3	3	4	4	2	4	3	4	4	3	3.40							
1.1	This policy would contribute toward the creation of a substantial amount of new jobs for Americans.	4	3	4	4	4	4	3	3	4	4	3.70							
1.2	This policy would significantly lower the price Americans pay for gas "at the pump" (automobile).	1	3	3	4	3	2	4	4	4	2	3.00							
1.3	This policy would positively impact those employed in the U.S. Agriculture Industry	2	2				3	4	2	3	2	2.57							
1.4	This policy would help get energy to people living in the U.S. who currently do not have it.	1	2	2	4		2	3	3	4	3	2.67							
1.5	This policy would make standard "Home Energy-Use" more affordable for Americans (monthly).	3	2	3			2	3	4	4	3	3.00							
1.6	This policy provides new alternatives for Americans to power their homes and businesses.	3	2	3	4	1	2	3	4	4	4	3.00							
1.7	This policy provides new alternatives for Americans to power their homes and businesses.	3	2	3	4	1	2	3	4	4	4	3.00							
Category Average Score		2.43	2.43	3.17	4.00	2.50	2.71	3.29	3.43	3.86	3.00	X							
Social Impact - Global		OB	MC	GO	PI	HA	GE	WW	JA	BR	EU	AVG							
2.1	This policy would help to provide energy for people in other countries.	1	2				2		4	4	3	2.67							
2.2	This policy would promote international cooperation and peace with other countries.	2	2				3		2	2	4	2.50							

2.3	This policy would open up international markets and enhance world trade.	1	1						3		3	3	4	2.50
2.4	This policy contributes toward substantial growth in the global economy.	2	1						4		3	4	3	2.83
2.5	This policy would help to reduce world poverty and hunger.	1	1						2		3	2	3	2.00
2.6	This policy would help to stabilize global population growth.	1	2						4		3	2	3	2.50
	Category Average Score	1.33	1.50	n/a	n/a	n/a	n/a	3.00	n/a	3.00	3.00	2.83	3.33	X
3	Environmental Impact	OB	MC	GO	PI	HA	GE	WW	JA	BR	EU	AVG		
3.1	Activities associated with this policy appear viable; they seem capable of continuing effectiveness.	1	2	2	3	2	4	3	4	4	3	2.80		
3.2	Activities associated with this policy appear sustainable with minimal long-term effect on the environment.	2	1	3	4	3	4	3	3	2	4	2.90		
3.3	This policy would contribute toward the promotion of renewable energies on a massive (global) scale.	2	1		0	1	4		4	3	3	2.25		
3.4	This policy would decrease the global demand for fossil fuels and other non-renewable resources.	2	1	3	4	4	4	3	3	4	4	3.20		
3.5	Activities associated with this policy relate directly to the minimizing or eliminating of carbon emissions.	3	2	3	2	4	4	4	4	2	4	3.00		
3.6	Activities associated with this policy would help to decrease global hazardous waste production levels.	1	1	3	2	4	4	3	4	3	3	2.80		
3.7	Implementation of this policy would contribute to a decrease in "Anthropogenic" greenhouse emissions.	3	1		2	4	4		4	4	4	3.25		
3.8	This policy directly addresses the idea of (and has a specific plan for) "solving global climate change."	3	1	3	2	4	4	3	3	3	4	3.00		
	Category Average Score	2.13	1.25	2.83	2.38	3.25	4.00	3.17	3.38	3.13	3.63	X		
4	Feasibility of Implementation	OB	MC	GO	PI	HA	GE	WW	JA	BR	EU	AVG		
4.1	This policy involves ideas and strategies previously "unattempted" in past U.S. Energy Policy	3	2	2	2	2	2	2	2	2	2	2.10		
4.2	This policy builds on past progress at the government implementation level.	3	3	1		3	2	3	3	4	2	2.67		
4.3	The technologies and capabilities associated with implementing this policy exist on a commercial level.	3	3		3		2		2	2	4	2.71		
4.4	This policy requires the U.S. Govt to direct a substantial amount of public funding to new R&D activities.	4	2	2	4	2	4	2	1	2	3	2.60		
4.5	This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law)	2	0	2	2	2	1	3	2	2	3	1.90		

4.6	This policy is likely to receive both moral and voter support from most Americans.	1	1	1	2	2	2	2	3	3	3	3	4	2.20
4.7	This policy uses tax incentives to encourage energy conservation and use of alternative fuels.	4	3	2		2	3		4	4	4	4	3	3.13
	Category Average Score	2.86	2.00	1.67	2.60	2.17	2.29	2.60	2.43	2.71	3.00	X		
5	Does the Policy "Flip the Switch?"	OB	MC	GO	PI	HA	GE	WW	JA	BR	EU	AVG		
5.1	This policy would help to establish Americans as global leaders in energy efficiency.	2	1	3	4	3	4	3	4	4	4	4	4	3.20
5.2	This policy will help to open electric markets to alternate power producers.	3	2				4		3	4	4	4	4	3.33
5.3	This policy represents a true American investment in renewable energy.	3	1	2	4	2	4	3	4	4	4	4	4	3.10
5.4	This policy represents a bold direction toward energy independence at the government level.	3	3	1		2	4	3	4	3	4	3	4	3.00
5.5	This policy would promote American awareness for the conservation of energy.	3	1	2	2	3	4	3	3	3	3	3	3	2.70
5.6	This policy encourages an aggressive shift toward developing cleaner technologies.	2	1	2	3	4	4	4	4	3	4	3	3	3.00
5.7	This policy incorporates increased requirements and standards for fuel quality and efficiency.	3	3	2	3	2	4	3	3	3	3	3	3	2.90
5.8	This policy contributes toward a positive transformation in the transportation sector.	3	3	2	4	2	4	3	3	4	3	3	3	3.10
5.9	This policy puts the world closer to the implementation of a global energy grid.	2	1	2	0		4	3	3	4	3	3	3	2.44
	Category Average Score	2.67	1.78	2.00	2.86	2.57	4.00	3.13	3.33	3.67	3.44	X		
	Grand Total Average Score	2.32	1.78	2.38	2.88	2.68	3.27	3.08	3.14	3.27	3.30	X		

Barack Obama

Policy / Policy Representative Overview

In Obama's New Plan for America, he focuses mostly on the financial impact of energy on the United States. It is clear that his policies are to benefit the citizens of America. Obama plans to provide short term relief to families facing pain at the pump due to the rise in fuel prices. The implementation of new policies focus on creating a sustainable environment that will create new jobs in the United States. He is committed to creating a cleaner environment through the use of renewable energy. He wants the amount of plug-in hybrids to increase in the United States, part of his plan to reduce greenhouse emissions. According to Obama, more plug-in vehicles will also be manufactured in the United States creating more employment opportunities. In 2012, 10% of the country's energy will be produced from renewable sources, and by 2025, it will increase to 25%. A cap-and-trade system will also be implemented as a method reducing greenhouse gas emissions.

Category Average Scores and Corresponding Rankings

Major Value Category	Category Average Score	Ranking (out of 10 policies)
Social Impact - Domestic	2.43	Tie for 9/10
Social Impact - Global	1.33	6
Environmental Impact	2.13	9
Feasibility of Implementation	2.86	2
Does it "Flip the Switch?"	2.67	7

Key Findings

- By the numbers shown here the only category that Obama was strong in was the Feasibility of Implementation.
- He tied with McCain for the ninth lowest score in Social Impact - Domestic and Environmental Impact.

Scorecard: Obama

Score Legend

- 0 No Information Available
- 1 Absolutely not Possible
- 2 Most Likely not Possible
- 3 Possible
- 4 Most Likely Possible
- 5 Absolutely Possible

5 Value Categories

37 Total Value Criteria

Item Value	Score	Comments
Social Impact - Domestic		
1	3	Because of the strong possibility for substantial job creation resulting from Obama's energy policy, it is most likely possible that Americans may achieve higher standards of living as green collar job creation should promote a healthier U.S. economy.
1.1	3	This policy would help increase the standard of living for Americans.
1.2	4	This policy would contribute toward the creation of a substantial amount of new jobs for Americans.
1.3	1	This policy would significantly lower the price Americans pay for gas "at the pump" (automobile).
1.4	2	This policy would positively impact those employed in the U.S. Agriculture Industry
1.5	1	This policy would help get energy to people living in the U.S. who currently do not have it.
1.6	3	This policy would make standard "Home Energy-Use" more affordable for Americans (monthly).
1.7	3	This policy provides new alternatives for Americans to power their homes and businesses.
Category Average Score		2.43

2	Social Impact - Global		
2.1	This policy would help to provide energy for people in other countries.	1	Our analysis of Obama's energy policy also suggests there would not be a significant impact on those around the globe (people living outside of U.S. borders) during the next eight years if this policy were put into place. Obama's 'New Energy Plan for America' is just and only that: a plan for "America."
2.2	This policy would promote international cooperation and peace with other countries.	2	Our analysis does show that it will be possible for this policy to promote international cooperation because America will continue to engage in the import and export of resources to other countries and needs to remain peaceful with them to do so. For example, the United States in 2007 both exported more than 18.3 million short tons of coal to Canada and imported another 26.8 million tons from Columbia (Obama, n.d. a).
2.3	This policy would open up international markets and enhance world trade.	1	Nowhere in Obama's energy policy is there evidence that suggests his plan will help to open up new international markets and enhance world trade. In contrast, his policy aims to build a clean energy future that benefits "all Americans", not "all people around the globe" (Obama, n.d. a).
2.4	This policy contributes toward substantial growth in the global economy.	2	Because Obama's energy policy is committed to the development of the next generation of sustainable biofuels and infrastructure, new technologies may be developed and sold to other countries which would generate growth in the global economy.
2.5	This policy would help to reduce world poverty and hunger.	1	Nowhere in Obama's energy policy is there evidence that suggests his plan will help to reduce world poverty and hunger, nor how new energy policy could help to stabilize rapid global population growth, nor how it could open up new international markets and enhance world trade (Obama, n.d. a). In contrast, his policy aims to build a clean energy future that benefits "all Americans" not all people around the globe.
2.6	This policy would help to stabilize global population growth.	1	Nowhere in Obama's energy policy is there evidence that suggests his plan will directly help to stabilize rapid global population growth.
	Category Average Score	1.33	

<p>3 Environmental Impact</p>	
<p>3.1 Activities associated with this policy appear viable; they seem capable of continuing effectiveness.</p>	<p>1 The policy does contain some attributes that lean towards continued effectiveness with programs such as “Mandate All New Vehicles are Flexible Fuel Vehicles” and that we diversify our energy sources but these will take time to develop and within two terms we will still be quite a distance away from a definitive impact. Much of the current policy also still requires the use of non-renewable resources such as oil and natural gas during the next 8 years. For example, Obama is promoting the continued dependence on fossil fuels by asking oil companies to use a “use it or lose it” approach to 68 million acres of previously untapped U.S. land in places like Bakken Shale in Montana and North Dakota while also developing unconventional natural gas supplies in the Barnett Shale formation in Texas and the Fayetteville Shale in Arkansas (Obama, n.d. a).</p>
<p>3.2 Activities associated with this policy appear sustainable with minimal long-term effect on the environment.</p>	<p>2 Obama’s policy will promote energy generation and energy transportation that will have minimal long-term effect on the environment due to the plan utilizing renewable resources such as biofuels. A key component to Obama’s Energy Plan, Develop the Next Generation of Sustainable Biofuels and Infrastructure, calls for advances in biofuels, including cellulosic ethanol, biobutanol and other new technologies that produce synthetic petroleum from sustainable feedstock offer tremendous potential to break our addiction to oil. Barack Obama and Joe Biden will require the U.S. develop at least 60 billion gallons of advanced biofuels by 2030 (Obama, n.d. a).</p>
<p>3.3 This policy would contribute toward the promotion of renewable energies on a massive (global) scale.</p>	<p>2 Obama has not “pledged to spend money specifically on renewable-power generation” and in turn this may not lead toward the promotion of renewable energies on a global scale but rather an isolated change for the United States. However, he has said he would “set aside \$15 billion per year for clean energy, but the spending would be spread over a wide range of areas, including plug-in hybrid cars, biofuels, “low-emission coal plants.”</p>
<p>3.4 This policy would decrease the global demand for fossil fuels and other non-renewable resources.</p>	<p>2 This policy could decrease the global demand for fossil fuels during the next 8 years if the percentage of global energy used by Americans was generated from a larger percentage of renewables. Currently “with less than 5 % of the world’s total population, the U. S. consumes about 25 % of the world’s total energy output” (Bruce, n.d.). Only 10% of the energy used by Americans is generated from renewable resources.</p>
<p>3.5 Activities associated with this policy relate directly to the minimizing or eliminating of carbon emissions.</p>	<p>3 Barack Obama and Joe Biden support implementation of an economy wide cap-and-trade system to reduce carbon emissions by the amount scientists say is necessary: 80% below 1990 levels by 2050.</p>
<p>3.6 Activities associated with this policy would help to decrease global hazardous waste production levels.</p>	<p>1 Obama has said that “nuclear power is a very important component of the overall energy mix” and “therefore nuclear will continue to receive support from his administration and from the new Congress” (Device Daily, 2008). Although Obama continues to support the production of nuclear power, in the New Energy Plan for America, Obama and Biden state they will lead federal efforts to look for safe, long-term disposal solutions based on objective, scientific analysis (Obama, n.d. a).</p>
<p>3.7 Implementation of this policy would contribute to a decrease in “Anthropogenic” greenhouse emissions.</p>	<p>3 Besides moving towards decreasing the global demand for fossil fuels and other non-renewable resources, the activities associated with the Obama’s energy policy will move towards minimizing carbon emissions and decrease “Anthropogenic” greenhouse emissions because a shift toward renewable resources will decrease the amount of toxins released into the atmosphere by humans (i.e. more efficient automobiles).</p>
<p>3.8 This policy directly addresses the idea of (and has a specific plan for) “solving global climate change.”</p>	<p>3 Obama does describe a plan for solving global climate change including “requiring all major emitting nations (i.e. China and Brazil) to join in the solution by “developing effective emissions reduction efforts.” In addition, his policy explains he will develop an “effective global program” by “reengaging the U.N. Framework Convention on Climate Change (UNFCCC) – the main international forum dedicated to addressing the climate problem” (Obama, n.d. a).</p>
<p>Category Average Score</p>	<p>2.13</p>
<p>4 Feasibility of Implementation</p>	

4.1	This policy involves ideas and strategies previously "unattempted" in past U.S. Energy Policy	3	Obama's policy includes strategies new to U.S. Energy Policy such as "building a new economy that is powered by clean and secure energy" and instructing the U.S. Department of Energy "to enter into public private partnerships to develop 5 'first-of-a-kind' commercial scale coal-fired plants with carbon capture and sequestration" (Obama, n.d. a).
4.2	This policy builds on past progress at the government implementation level.	3	Obama's policy includes not only innovation but also builds on past progress at the governmental implementation level such as: The Energy Policies of 1992 and 2005 that required alternative fuel vehicles in some government fleets and provided tax incentives for conservation and use of alternative fuels (respectively) and the Energy Independence and Security Act of 2007 that increased fuel economy requirement and encouraged biofuel development (Energy Policy U.S., 2008).
4.3	The technologies and capabilities associated with implementing this policy exist on a commercial level.	3	The ethanol industry already expects that more than 2.2 billion gallons of new production capacity will be in operation in the next 18 months. The Geothermal Energy Association indicates that at least 45 geothermal power projects are already under development in over ten American states (EIA, 2008).
4.4	This policy requires the U.S. Govt to direct a substantial amount of public funding to new R&D activities.	4	Obama's policy includes "investing \$150 billion over the next ten years to catalyze private efforts to build a clean energy future." This includes: establishing a federal investment program to help manufacturing centers modernize and to help Americans learn new skills to produce green products, investing in advanced vehicle technology with a specific focus on R&D in advanced battery technology, providing the critical up-front capital needed by small and mid-size manufacturers to produce these innovative new technologies, and beginning transition to a new digital electricity grid (Obama, n.d. a).
4.5	This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law)	2	The implementation of this policy will not be without its challenges. Historically, legislative energy policy has been extremely difficult to implement; partly because of its complexity and partly because of conflicting regional environmental, producer, and consumer objectives (Petroleum Industry Research Foundation, 2005).
4.6	This policy is likely to receive both moral and voter support from most Americans.	1	One poll done by the Big Ten Battleground in September of 2008 suggested that only 5% of Americans (those polled in its survey) felt that energy policy is the most important problem facing the country today (Big Ten Battleground Poll, 2008).
4.7	This policy uses tax incentives to encourage energy conservation and use of alternative fuels.	4	Obama's policy will also provide a \$7,000 tax credit for the purchase of advanced technology vehicles as well as conversion Tax Credits (PTC) for 5 years to encourage the production of renewable energy (Obama, n.d. a).
Category Average Score		2.86	

5	Does the Policy "Flip the Switch?"		
5.1	This policy would help to establish Americans as global leaders in energy efficiency.	2	The Obama policy begins "flipping the switch" in the right direction. Although this policy would make advances, the U.S. is currently behind compared to other countries in attempts to be energy efficient so this policy may help America only to catch up to other nations.
5.2	This policy will help to open electric markets to alternate power producers.	3	Obama's policy will try to ensure 10 percent of our electricity comes from renewable sources by 2012, and 25 percent by 2025 thus opening up electric markets to alternate power producers (Wang, 2008).
5.3	This policy represents a true American investment in renewable energy.	3	Obama's policy will make a true American investment in renewable energy. \$15 billion per year will be used to support the development of clean energy, invest in energy efficiency improvements and help develop the next generation of biofuels and clean energy vehicles (Obama, n.d. a).
5.4	This policy represents a bold direction toward energy independence at the government level.	3	The Obama plan will put forward the resources necessary to achieve a 15% reduction in federal energy consumption by 2015 (Obama, n.d. a).
5.5	This policy would promote American awareness for the conservation of energy.	3	Obama's energy policy requires a sustained and shared effort by government, businesses, and the American people.
5.6	This policy encourages an aggressive shift toward developing cleaner technologies.	2	Obama's policy encourages an aggressive shift in developing cleaner technologies through financing basic training and education
5.7	This policy incorporates increased requirements and standards for fuel quality and efficiency.	3	Obama wants to "Deploy the Cheapest, Cleanest, and Fastest Energy Source – Energy Efficiency" (Kennedy, 2008).
5.8	This policy contributes toward a positive transformation in the transportation sector.	3	This policy promotes the shift to plug-in hybrids and places strict parameters around the required percentage of renewable resources the US must begin to use by the years 2012, 2025 and 2050.
5.9	This policy puts the world closer to the implementation of a global energy grid.	2	Obama's proposal of innovative technology such as the Smart Grid proposal brings the world one step closer to a global energy grid.
	Category Average Score	2.67	
	Grand Total Average Score	2.32	

John McCain

Policy / Policy Representative Overview

McCain's Lexington Project outlines the energy policies he would like to execute during his presidency. Non renewable sources of energy are a main issue in his campaign. He wants to expand exploration of non-renewables such as natural gas. The plan also discusses expanding domestic oil supply by using more of the U.S.'s oil reserves. McCain proposes allocating funding to the exploration of renewable sources that can be implemented in the future. His policy mostly consists of what our citizens can do to promote the efficiency of a cleaner environment. Climate change is addressed to justify his plan for policy. He also addresses the speculation of oil pricing. He would penalize those companies who speculate oil prices by reforming laws so that oil prices do not rise.

Category Average Scores and Corresponding Rankings

Major Value Category	Category Average Score	Ranking (out of 10 policies)
Social Impact - Domestic	2.43	Tie for 9/10
Social Impact - Global	1.5	5
Environmental Impact	1.25	10
Feasibility of Implementation	2.0	9
Does it "Flip the Switch?"	1.78	10

Key Findings

- Based on McCain's grading sheet average scores, he scored the lowest in four categories. The four categories are Social Impact - Domestic, Environmental Impact, Feasibility of Implementation and Does it "Flip the Switch?"
- His highest score was in the Social Impact - Global.

Scorecard: McCain

Score Legend

- 0 No Information Available
- 1 Absolutely not Possible
- 2 Most Likely not Possible
- 3 Possible
- 4 Most Likely Possible
- 5 Absolutely Possible

5 Value Categories

37 Total Value Criteria

Item	Value	Score	Comments
1	Social Impact - Domestic		
1.1	This policy would help increase the standard of living for Americans.	3	McCain's policy would most likely increase the standard of living for American by creating a greater supply of resources of such as natural gas to stabilize the price for electricity.
1.2	This policy would contribute toward the creation of a substantial amount of new jobs for Americans.	3	Because McCain would open up more areas to mine for non renewable resources, jobs will be created in the process. McCain also wants to invest in clean coal technology which will stimulate job growth.
1.3	This policy would significantly lower the price Americans pay for gas "at the pump" (automobile).	3	The main objective of McCain is to open up the untapped areas to drill for oil which should lower the price at the pump.
1.4	This policy would positively impact those employed in the U.S. Agriculture Industry	2	There is a possibility that McCain's policy would make a positive impact on agriculture because he does have an interest in using more bio-fuels such as ethanol.
1.5	This policy would help get energy to people living in the U.S. who currently do not have it.	2	McCain wants to update the nation's energy grid which may possibly get energy to Americans that currently have none.
1.6	This policy would make standard "Home Energy-Use" more affordable for Americans (monthly).	2	The energy grid may help the affordability of energy for many Americans by using smart meter technologies. This will show consumers how much energy they are using.
1.7	This policy provides new alternatives for Americans to power their homes and businesses.	2	With McCain's policy, it is possible that there may be some new alternatives for Americans to power their homes and businesses. This may potentially include wind, solar, and geothermal energy.
Category Average Score		2.43	

2 Social Impact - Global

- 2.1 This policy would help to provide energy for people in other countries.
- 2 With our technologies and our resources, the United State may be able to help the rest of the world gain access to energy. McCain feels this could come in the form of sharing technology

and selling our own energy resources.

2.2	This policy would promote international cooperation and peace with other countries.	2	On a global scale, these policies would have an effect international peace between countries. The United States would not have such a large stake in regions that have strong anti-American sentiment.
2.3	This policy would open up international markets and enhance world trade.	1	It is probably not likely that the policies would open up international markets and world trade because it is more focused on having enough resources for the use of the United States.
2.4	This policy contributes toward substantial growth in the global economy.	1	With the policies that are put forth by McCain there is a small likelihood that it would contribute to substantial growth in the world economy along with reducing world poverty and hunger.
2.5	This policy would help to reduce world poverty and hunger.	1	If we become less dependent on oil from foreign countries than that could effect economic strength of a nation. This may have a negative impact on its citizens.
2.6	This policy would help to stabilize global population growth.	2	Only if we transfer our knowledge and supplies to other countries which we would have to invest in doing so.

1.50

Category Average Score

3 Environmental Impact

3.1	Activities associated with this policy appear viable; they seem capable of continuing effectiveness.	2	The policy is one that has some potential to be viable and capable of continuing its effectiveness for the short term. Because McCain's policy is strongly based on using our untapped non renewable sources, there is a limit to how long that can be sustainable.
3.2	Activities associated with this policy appear sustainable with minimal long-term effect on the environment.	1	Unfortunately, the policy would have a more negative effect on the environment than a good one. Once again, non renewables are at the forefront of the overall policy.
3.3	This policy would contribute toward the promotion of renewable energies on a massive (global) scale.	1	Because this policy does not primarily focus on renewable energies in the United States, it is highly unlikely that it will promote these energies on a global scale.
3.4	This policy would decrease the global demand for fossil fuels and other non-renewable resources.	1	The policy will still make the U.S. dependent on non renewable resources on both a domestic and global scale.
3.5	Activities associated with this policy relate directly to the minimizing or eliminating of carbon emissions.	2	McCain wants to put funding and research into clean coal technology which may help reduce carbon emissions from using coal to generate electricity.
3.6	Activities associated with this policy would help to decrease global hazardous waste production levels.	1	Since using mostly non renewable resources, it would not prevent or decrease hazardous waste.
3.7	Implementation of this policy would contribute to a decrease in "Anthropogenic" greenhouse emissions.	1	If clean coal is viable on a commercial level, it may help lower current carbon emissions but there would still be pollution from other sources as well. Clean coal will still give out carbon.
3.8	This policy directly addresses the idea of 1 (and has a specific plan for) "solving global climate change."	1	McCain does not have a specific plan for solving the global climate change. He would have to put a much greater emphasis on renewable resources rather than non renewable resources.

Category Average Score		1.25
4	Feasibility of Implementation	
4.1	This policy involves ideas and strategies previously "unattempted" in past U.S. Energy Policy	2
4.2	This policy builds on past progress at the government implementation level.	3
4.3	The technologies and capabilities associated with implementing this policy exist on a commercial level.	3
4.4	This policy requires the U.S. Govt to direct a substantial amount of public funding to new R&D activities.	2
4.5	This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law)	0
4.6	This policy is likely to receive both moral and voter support from most Americans.	1
4.7	This policy uses tax incentives to encourage energy conservation and use of alternative fuels.	3

Category Average Score		2.00
5	Does the Policy "Flip the Switch?"	
5.1	This policy would help to establish Americans as global leaders in energy efficiency.	1
5.2	This policy will help to open electric markets to alternate power producers.	2
5.3	This policy represents a true American investment in renewable energy.	1
5.4	This policy represents a bold direction toward energy independence at the government level.	3
5.5	This policy would promote American awareness for the conservation of energy.	1
5.6	This policy encourages an aggressive shift toward developing cleaner	1

There are signs of some new strategies that the United States has not attempted in the past; however overall there are many of the same strategies.

Since the United States has done drilling in the past, the government has knowledge on how to implement these policies.

On a commercial level, the United States is capable of implementing legislation to make the policy possible. The need for more energy makes it quite possible.

The United States will have to put some monies in to the research and development of some policies in order for them to be successful on a commercial level.

The policy has a very strong likelihood of facing challenges for the policy to become law. There will be environmentalist that will have a strong disagreement on the policy brought forth by McCain. There will also be challenges from the standpoint of the American citizens.

There is a great divide between people who want to keep using the same old technologies and others who want us to invest in creating renewable resources that are sustainable in the long run.

McCain wants to give tax credits to individuals and businesses that use alternative fuels.

With McCain's policy, it would most likely not establish America as a global leader in energy efficiency. There is a possibility that we would not change many of the habits we now hold.

There is some hope that the policy will open up electric markets to alternative power producers. This may come in the form of new hydro plants and new wind turbines.

McCain wants to fund research and development in alternative energy such as clean coal and nuclear. However, this does not necessarily mean that it is clean renewable energy.

McCain is interested in producing more energy in coal, natural gas, and nuclear energy. This is not a clean approach to solving the problem but it will guide us towards energy independence.

With this policy, the United States may be able to be energy independent if they take advantage of unused resources. However, it does not show signs of the awareness or importance to conserve energy.

If the United States implemented this policy, they would not take an aggressive shift towards developing cleaner technologies.

5.7	technologies. This policy incorporates increased requirements and standards for fuel quality and efficiency.	3	McCain feels strongly about supporting the C A F E standards for fuel efficiency
5.8	This policy contributes toward a positive transformation in the transportation sector.	3	McCain wants to commit a \$5,000 tax credit for each and every customer who buys a zero carbon emission car, encouraging automakers to be first on the market with these cars in order to capitalize on the consumer incentives.
5.9	This policy puts the world closer to the implementation of a global energy grid.	1	In McCain's policy, it does not give much indication to uniting the world with a universal energy grid.
Category Average Score		1.78	
Grand Total Average Score		1.78	

Policy / Policy Representative Overview

Al Gore, for the past 30 years has been interested in learning about the threats and solutions to global warming. He knows that the world cannot keep going on the path that it is on. He wants to address these global warming issues and in the process help the economy become more sustainable. In his speech, A Generational Challenge to Repower America, he states that his goal is to “challenge our nation to commit to producing 100 percent of our electricity from renewable energy and truly clean carbon-free sources within 10 years” (Gore n.d.). He knows that this statement may be unrealistic to some people so his goal is make everyone aware that 100 percent of our electricity can come from renewable energy within the 10 years. His policy goes into detail how this can become a reality.

Category Average Scores and Corresponding rankings

Major Value Category	Category Average Score	Ranking (out of 10 policies)
Social Impact - Domestic	3.17	5
Social Impact - Global	n/a	n/a
Environmental Impact	2.83	10
Feasibility of Implementation	1.67	9
Does it “Flip the Switch?”	2.0	10

Key Findings

Al Gore scored the lowest in Environmental Impact and Does it “Flip the Switch?”

- **He also had one of the lowest scores in the Feasibility of Implementation.**
- **He was in the middle between the other nine in the Social Impact - Domestic.**

Scorecard: Al Gore

Score Legend

- 0 No Information Available
- 1 Absolutely not Possible
- 2 Most Likely not Possible
- 3 Possible
- 4 Most Likely Possible
- 5 Absolutely Possible

5 Value Categories

37 Total Value Criteria

Item	Value	Score	Comments
1	Social Impact - Domestic		
1.1	This policy would help increase the standard of living for Americans.	4	Gore plans to help with this by using alternative fuels that come right from the U.S. and that don't cause pollutants of any kind. This would lead to cleaner air and healthier environment which would hopefully lead to healthier Americans. Americans can have a better life if both the people and the environment are healthy and stable.
1.2	This policy would contribute toward the creation of a substantial amount of new jobs for Americans.	4	This alternative fuel would come from renewable energy sources. A part of increasing the standard of living means that there will be substantial number of jobs created for Americans. Renewable energy will increase the number of jobs in America, because this means construction and re-construction of the new facilities and workers to keep it running.
1.3	This policy would significantly lower the price Americans pay for gas "at the pump" (automobile).	3	Due to renewable energy sources being used as opposed to foreign oil, this would significantly lower price Americans pay for "gas at the pump". This would help the standard of living in that Americans would no longer have to pay more than a \$1 for "gas." Gore wants the auto giants to start manufacturing plug-in cars.
1.4	This policy would positively impact those employed in the U.S. Agriculture Industry		
1.5	This policy would help get energy to people living in the U.S. who currently do not have it.	2	Renewable energy sources are what Gore sees at the best possible way for the generation and distribution of energy so that more people can receive it and to get it to people who currently do not have it. But this plan involves having 100% of this energy coming from renewable resources. Using 100% of renewable resources may be unattainable.
1.6	This policy would make standard "Home Energy-Use" more affordable for Americans (monthly).	3	Energy use would be more affordable to Americans and would provide new alternatives for Americans to power their homes and businesses
1.7	This policy provides new alternatives for Americans to power their homes and businesses.	3	Energy use would be more affordable to Americans and would provide new alternatives for Americans to power their homes and businesses

Category Average Score		3.17
2	Social Impact - Global	
2.1	This policy would help to provide energy for people in other countries.	
2.2	This policy would promote international cooperation and peace with other countries.	
2.3	This policy would open up international markets and enhance world trade.	
2.4	This policy contributes toward substantial growth in the global economy.	
2.5	This policy would help to reduce world poverty and hunger.	
2.6	This policy would help to stabilize global population growth.	
Category Average Score		N/A
3	Environmental Impact	
3.1	Activities associated with this policy appear viable; they seem capable of continuing effectiveness.	2
3.2	Activities associated with this policy appear sustainable with minimal long-term effect on the environment.	3
3.3	This policy would contribute toward the promotion of renewable energies on a massive (global) scale.	
3.4	This policy would decrease the global demand for fossil fuels and other non-renewable resources.	3
3.5	Activities associated with this policy relate directly to the minimizing or eliminating of carbon emissions.	3
3.6	Activities associated with this policy would help to decrease global hazardous waste production levels.	3
3.7	Implementation of this policy would contribute to a decrease in "Anthropogenic" greenhouse emissions.	

His plan appears viable in that the idea of energy coming from 100% of renewable resources sounds like the perfect problem solver to pollution, but once again 100% is a big number which means that everyone would have to agree that this plan would work. It may not be viable because it would mean that a lot of money would have to be invested in the new technology and construction of the new renewable energy facilities. The government may not either have the money or want to fund the money for such a project.

All carbon emissions will be gone, so there will not be any negative impact on the environment

Gore states that the answer to all problems is to end our reliance on carbon based fuels.

Yes, all of the activities Gore want to concentrate on, such as, electric cars, efficiency and conservations, and a unified national grid would all be produced through renewable resources.

The renewable resources will be used in place of the current energy producers like coal power plants and electricity coming from renewables would power vehicles instead of fossil fuel. So renewables would take over power plants and oil.

3.8 This policy directly addresses the idea of (and has a specific plan for) "solving global climate change."

Category Average Score 2.83

4 Feasibility of Implementation

- 4.1 This policy involves ideas and strategies previously "unattempted" in past U.S. Energy Policy 2
- 4.2 This policy builds on past progress at the government implementation level. 1
- 4.3 The technologies and capabilities associated with implementing this policy exist on a commercial level.
- 4.4 This policy requires the U.S. Govt to direct a substantial amount of public funding to new R&D activities. 2
- 4.5 This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law) 2
- 4.6 This policy is likely to receive both moral and voter support from most Americans. 1
- 4.7 This policy uses tax incentives to encourage energy conservation and use of alternative fuels. 2

Category Average Score 1.67

5 Does the Policy "Flip the Switch?"

- 5.1 This policy would help to establish Americans as global leaders in energy efficiency. 3
- 5.2 This policy will help to open electric markets to alternate power producers.
- 5.3 This policy represents a true American investment in renewable energy. 2
- 5.4 This policy represents a bold direction toward energy independence at the government level. 1

His plan is also focused on reducing global warming with the use of renewable energy. Global warming would be reduced because the pollution that causes global warming would be eliminated. Everything would be powered by carbon free resources.

To date, this policy has not been attempted in the past U.S. energy policy. Gore wants to "produce 100 percent of our electricity from renewable energy and truly free carbon sources within 10 years" (Gore, 2008). Renewable energy has been attempted but not with this criteria. This plan may or may not work due to the lack of people agreeing with this strategy. People may see it as not viable.

The feasibility and implementation was rated as most likely not possible. This is due to that 100 percent is very hard to accomplish. For 100 percent of renewable energy to be used in 10 years means everyone in America is on board with this idea.

A lot of convincing would have to be done, especially to people who worry about their pocket books more than America's livelihood

The government may see this plan as unrealistic so implementation may be hard.

Support by 100 percent of Americans will be very hard. It will be hard to convince everyone to make this change.

He supports a sharp reduction in payroll taxes with the difference made up in C02 taxes. Gores says that "we should tax what we burn, not what we earn. This is the single most important policy change we can make" (Gore, 2008).

Gore's policy would establish the American's as global leaders in energy efficiency. It would be possible for this to happen because with his policy, America would be using all their energy from renewables.

Gore believes we must invest and implement his plan because "the survival of the United States as we know it is at risk. And even more - if more should be required - the future of human civilization is at stake" (Gore, 2008). Gore suggests that we cannot keep using non-renewable resources because it is hurting the environment and the people living in it.

The government may see this plan as unrealistic so implementation may be hard.

5.5	This policy would promote American awareness for the conservation of energy.	2	The policy is a challenge to all Americans. Every person would have to know about it for the policy to work
5.6	This policy encourages an aggressive shift toward developing cleaner technologies.	2	Yes, he wants to invest in technology that produces all carbon free energy. He wants to utilize solar, wind and geothermal power. He also wants to use electric cars.
5.7	This policy incorporates increased requirements and standards for fuel quality and efficiency.	2	In this plan, fuel will not come from fossil fuels any longer. Cars will be electric and be plug-in. Electricity will be fuel for these cars.
5.8	This policy contributes toward a positive transformation in the transportation sector.	2	In this plan, fuel will not come from fossil fuels any longer. Cars will be electric and be plug-in. Electricity will be fuel for these cars.
5.9	This policy puts the world closer to the implementation of a global energy grid.	2	He wants a "unified national energy grid that is sufficiently advanced to link the areas where the sun shines and the wind blows to the cities in the East and West that need electricity. Our national electric grid is critical infrastructure, as vital to the health and security of our economy as our highways and telecommunications networks" (Gore, 2008)

Category Average Score	2.00
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Grand Total Average Score	2.38
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T. Boone Pickens

Policy / Policy Representative Overview

Pickens is the founder and chairman of BP Capital Management which manages one of the nation's most successful energy oriented investment funds. He is "responsible for the formulation for the energy futures investment strategy of the BP Capital Fund and BP Capital Equity Fund" (About n.d.). Pickens is a wealthy man with a net worth of approximately \$4 billion and is knowledgeable about oil and gas (he is the founder and chairman of BP Capital Management). He uses both his wealth and knowledge to address the issue that the United States has too much dependence on foreign oil. Pickens has a plan that calls for building new wind generation facilities that will produce 20 percent of the nation's electricity and allow us to use natural gas as a transportation fuel. He believes that the "combination of these domestic energies can replace more than one-third of our foreign oil imports. And we can do it in 10 years" (About n.d.). He believes that renewable energy will be able to reduce our dependence on foreign oil and, in turn, help our economy, environment, and national security. His main focus is using wind to produce energy and shifting the use of natural gas to replace fossil fuel use in transportation.

Category Average Scores and Corresponding rankings

Major Value Category	Category Average Score	Ranking (out of 10 policies)
Social Impact - Domestic	4	1
Social Impact - Global	n/a	n/a
Environmental Impact	2.38	8
Feasibility of Implementation	2.6	Tie for 4-5
Does it "Flip the Switch?"	2.86	6

Key Findings

- Pickens scored the highest in the Social Impact - Domestic.

Scorecard: Pickens Plan

Score Legend

-  No Information Available
- 0** Absolutely not Possible
- 1** Most Likely not Possible
- 2** Possible
- 3** Most Likely Possible
- 4** Absolutely Possible

5 Value Categories

37 Total Value Criteria

Item	Value	Score	Comments
1	Social Impact - Domestic		
1.1	This policy would help increase the standard of living for Americans.	4	His plan of wind power and natural gas will increase the standard of living for Americans. In fact, it already has. In one example, wind power has been a major investment in a town called Sweetwater, Texas. This town had a population of 10,000 people, but after a wind facility was built and more jobs were needed, the town once again climbed back to 12,000 people. This declining town was again able to prosper.
1.2	This policy would contribute toward the creation of a substantial amount of new jobs for Americans.	4	"In addition to creating new construction and maintenance jobs, thousand of Americans will be employed to manufacture the turbines and blades". (Pickens Plan, 2008).
1.3	This policy would significantly lower the price Americans pay for gas "at the pump" (automobile).	4	This policy would also absolutely help with lowering the price for gas at the pump. This policy emphasizes natural gas as fuel. It is the cleanest transportation that we have available at this time. It is also much cheaper than gasoline. Pickens' says that "in places like Utah and Oklahoma prices are less than \$1 a gallon.
1.4	This policy would positively impact those employed in the U.S. Agriculture Industry		
1.5	This policy would help get energy to people living in the U.S. who currently do not have it.	4	These turbines could have the potential to produce 20 percent of the electricity of the U.S. This would help get electricity to people who currently do not have it. It would be transmitted to cities and towns all over the country.
1.6	This policy would make standard "Home Energy-Use" more affordable for Americans (monthly).		
1.7	This policy provides new alternatives for Americans to power their homes and businesses.	4	These turbines could have the potential to produce 20 percent of the electricity of the U.S. Wind would be able to power peoples homes and business.
Category Average Score			4.00

2	Social Impact - Global		
2.1	This policy would help to provide energy for people in other countries.		
2.2	This policy would promote international cooperation and peace with other countries.		
2.3	This policy would open up international markets and enhance world trade.		
2.4	This policy contributes toward substantial growth in the global economy.		
2.5	This policy would help to reduce world poverty and hunger.		
2.6	This policy would help to stabilize global population growth.		
	Category Average Score	N/A	
3	Environmental Impact		
3.1	Activities associated with this policy appear viable; they seem capable of continuing effectiveness.	3	His main focus is on wind facilities and these can be built anytime and for a one time cost. It is said that it would take "\$1 trillion dollars to build wind facilities in the corridor that stretches from the Texas panhandle to North Dakota. It would take another \$200 billion to build the capacity to transmit that energy to cities and towns". (Pickens, 2008) This would only be a one time cost as opposed to the \$700 billion we spend on foreign oil annually.
3.2	Activities associated with this policy appear sustainable with minimal long-term effect on the environment.	4	There would not be any negative effect on the environment since wind is a renewable resource and does not emit any pollution.
3.3	This policy would contribute toward the promotion of renewable energies on a massive (global) scale.	0	Pickens only focuses on the United States. He doesn't say anything in his plan about getting electricity to people in other countries.
3.4	This policy would decrease the global demand for fossil fuels and other non-renewable resources.	4	This would also help us to rid our dependence on foreign oil. If wind and natural gas can be used, foreign oil wouldn't be the only way to generate electricity and run motor vehicles.
3.5	Activities associated with this policy relate directly to the minimizing or eliminating of carbon emissions.	2	This policy also would reduce the pollutants being put into the atmosphere. Wind and natural gas are two of the cleanest forms of generating energy. The planet would also be helped. Pollutants would be reduced because "Greenhouse gas emissions from natural gas are 23 percent lower than diesel and 30 percent lower than gasoline". Natural gas does still emit pollution so some waste will still be emitted. So this plan still helps reduce pollution but not eliminate it. It will help minimize emissions only.
3.7	Implementation of this policy would contribute to a decrease in "Anthropogenic" greenhouse emissions.	2	
3.8	This policy directly addresses the idea of (and has a specific plan for) "solving global climate	2	

change."

Category Average Score		2.38
4 Feasibility of Implementation		
4.1 This policy involves ideas and strategies previously "unattempted" in past U.S. Energy Policy	2	Wind generation has been attempted by the U.S. energy policy but Pickens is taking it to the next level. He wants more wind facilities built with more power. He feels that the "83 megawatt wind farms being stamped all over the country will not do". (Pickens Plan, 2008)
4.2 This policy builds on past progress at the government implementation level.		
4.3 The technologies and capabilities associated with implementing this policy exist on a commercial level.	3	Pickens wants to build 2,700 turbines in the next 4 years across 200,000 acres of the Texas panhandle. Building 2,700 turbines would mean a lot more jobs for Americans in the manufacturing of turbines and the blades, the technologies for which all exist at the commercial level.
4.4 This policy requires the U.S. Govt to direct a substantial amount of public funding to new R&D activities.	4	This plan would require a lot of funding but this would only be a one time cost.
4.5 This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law)	2	The main problem with the feasibility of this plan is that in order for this to work, the government needs to take leadership. Pickens' says that "there needs to be a huge plan from someone in leadership."
4.6 This policy is likely to receive both moral and voter support from most Americans.	2	The American voters would possibly want cleaner and cheaper energy, but the government will have to be the one to step up and take leadership for this plan to work.
4.7 This policy uses tax incentives to encourage energy conservation and use of alternative fuels.		

Category Average Score		2.60
5 Does the Policy "Flip the Switch?"		
5.1 This policy would help to establish Americans as global leaders in energy efficiency.	4	This policy has the potential to end our dependence on foreign oil and for the U.S. to produce 20% of electricity by wind. America would be a leader in that no other country would have 20% of electricity to come directly from wind.
5.2 This policy will help to open electric markets to alternate power producers.		
5.3 This policy represents a true American investment in renewable energy.	4	This would be a true and one time investment for Americans. We now spend \$700 billion annually on foreign oil. If wind facilities are built for their one time cost, we would no longer need \$700 billion worth on oil annually. This would save money in the end.
5.4 This policy represents a bold direction toward energy independence at the government level.		
5.5 This policy would promote American awareness for the conservation of energy.	2	All people would be getting their electricity from wind so awareness would be known to many Americans.
5.6 This policy encourages an aggressive shift toward developing cleaner technologies.	3	Wind generation is one the cleanest forms of energy. Advanced technology would be focused on wind, so that we can get the most out of this resource.

5.7	This policy incorporates increased requirements and standards for fuel quality and efficiency.	3	The main idea for fuel would be to use natural gas. Natural gas would replace fossil fuel in regards to power vehicles.
5.8	This policy contributes toward a positive transformation in the transportation sector.	4	Natural gas would be used. It is also much cheaper than gasoline. Pickens' says that "in places like Utah and Oklahoma prices are less than \$1 a gallon.
5.9	This policy puts the world closer to the implementation of a global energy grid.	0	The Pickens Plan does not have a plan for a global energy grid. The generation of electricity through wind would only be for Americans, but it does require the expansion of the grid to connect to wind sources.
Category Average Score		2.86	
Grand Total Average Score		2.88	

James Hansen

Policy / Policy Representative Overview

James Hansen feels that in order for the world to avoid the devastating effects of global warming, a few major things need to happen. One thing is reducing the amount of fossil fuels that is burned, in particular coal, oil and gas (Wikipedia, Hansen). These three are the main culprits that are increasing most of the carbon dioxide into the atmosphere. Hansen feels that we need to stop building coal power plants until CO2 can be captured and sequestered. Secondly, he wants the public to be aware of the correct information about global warming. He feels that the government misleads the public and describes global warming as “a great hoax” (Wikipedia, Hansen). Hansen’s main focus is reducing CO2 levels to 350ppm, so that global warming can be reduced. Reducing CO2 emissions would mean using less coal, oil, and gas. This leads to using more renewable sources to generate energy.

Category Average cores and Corresponding Rankings

Major Value Category	Category Average Score	Ranking (out of 10 policies)
Social Impact - Domestic	2.5	8
Social Impact - Global	n/a	n/a
Environmental Impact	3.25	4
Feasibility of Implementation	2.17	8
Does it “Flip the Switch?”	2.57	8

Key Findings

- Hansen scored low on Social Impact - Domestic, Feasibility of Implementation, and Does it “Flip the Switch?”
- He scored relatively high in Environmental Impact.

Scorecard: James Hansen

Score Legend

- 0 No Information Available
- 1 Absolutely not Possible
- 2 Most Likely not Possible
- 3 Possible
- 4 Most Likely Possible
- 5 Absolutely Possible

5 Value Categories

37 Total Value Criteria

Item	Value	Score	Comments
1	Social Impact - Domestic		
1.1	This policy would help increase the standard of living for Americans.	2	Hansen believes that carbon dioxide emissions are the culprits of our low standard of living. He believes that if CO2 emissions are reduced, the standard of living will go up. He wants to end our dependence on foreign oil, implement carbon prices and efficiency standards, and capture and sequester CO2 emissions from coal fired power plants. All of these would help save money for Americans and, in turn, make their lives better.
1.2	This policy would contribute toward the creation of a substantial amount of new jobs for Americans.	4	American's can only breathe the clean air if new jobs are created to develop clean energy. These new jobs will also increase the standard of living by providing more work for Americans
1.3	This policy would significantly lower the price Americans pay for gas "at the pump" (automobile).	3	This is possible if people use "hybrid cars with larger batteries and the ability to plug into wall outlets." (Hansen, 2006) Also, cars with light-weight bodies would get better gas mileage. This new technology in building more energy efficient cars would also create more jobs and help American's pay less at the pump. These hybrid cars would mean that less money would have to be spent on gasoline.
1.4	This policy would positively impact those employed in the U.S. Agriculture Industry		
1.5	This policy would help get energy to people living in the U.S. who currently do not have it.		
1.6	This policy would make standard "Home Energy-Use" more affordable for Americans (monthly).		
1.7	This policy provides new alternatives for Americans to power their homes and businesses.	1	More of his focus is on reducing CO2 emissions from coal-fired power plants and having energy efficiency standards for vehicles, buildings and lighting. His main concern is not powering homes and businesses in particular.
Category Average Score		2.50	

2	Social Impact - Global		
2.1	This policy would help to provide energy for people in other countries.		
2.2	This policy would promote international cooperation and peace with other countries.		
2.3	This policy would open up international markets and enhance world trade.		
2.4	This policy contributes toward substantial growth in the global economy.		
2.5	This policy would help to reduce world poverty and hunger.		
2.6	This policy would help to stabilize global population growth.		
	Category Average Score	n/a	
3	Environmental Impact		
3.1	Activities associated with this policy appear viable; they seem capable of continuing effectiveness.	2	It is viable because Hansen wants to reduce global warming, and he knows exactly what needs to be done. He believes that CO2 emissions need to be reduced immediately, to 350ppm to be exact. He has several ideas in how to reduce these emissions, like energy efficiency and new technology to capture and sequester CO2. These ideas may not have continued effectiveness because new technology requires a lot of funding and the government may not help with this funding.
3.2	Activities associated with this policy appear sustainable with minimal long-term effect on the environment.	3	This would lead to nothing but a positive impact on the environment. It is necessary in fact if the planet is to survive.
3.3	This policy would contribute toward the promotion of renewable energies on a massive (global) scale.	1	All power plants around the world would have to use this technology of sequestering and capturing CO2. It is not a renewable resource but a new technology. In any case, this technology would have to be used globally to reduce CO2 emissions.
3.4	This policy would decrease the global demand for fossil fuels and other non-renewable resources.	4	He knows that our fossil fuel addiction must stop, not only because it is hurting our wallets but more importantly our planet cannot stand much more of CO2 emissions.
3.5	Activities associated with this policy relate directly to the minimizing or eliminating of carbon emissions.	4	He calls for a stop to building new coal-fired power plants and developing the new technology to capture CO2.
3.6	Activities associated with this policy would help to decrease global hazardous waste production levels.	4	He calls for a stop to building new coal-fired power plants and developing the new technology to capture CO2.
3.7	Implementation of this policy would contribute to a decrease in "Anthropogenic" greenhouse emissions.	4	He calls for a stop to building new coal-fired power plants and developing the new technology to capture CO2.
3.8	This policy directly addresses the idea of (and has a specific plan for) "solving global climate	4	The policy is directly related to solving global climate change, because he knows that all coal-fired power plants need to be eliminated or learn how to capture the CO2.

change."

Category Average Score		3.25
4	Feasibility of Implementation	
4.1	This policy involves ideas and strategies previously "unattempted" in past U.S. Energy Policy.	2
4.2	This policy builds on past progress at the government implementation level.	3
4.3	The technologies and capabilities associated with implementing this policy exist on a commercial level.	
4.4	This policy requires the U.S. Govt to direct a substantial amount of public funding to new R&D activities.	2
4.5	This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law)	2
4.6	This policy is likely to receive both moral and voter support from most Americans.	2
4.7	This policy uses tax incentives to encourage energy conservation and use of alternative fuels.	2
Category Average Score		2.17
5	Does the Policy "Flip the Switch?"	
5.1	This policy would help to establish Americans as global leaders in energy efficiency.	3
5.2	This policy will help to open electric markets to alternate power producers.	
5.3	This policy represents a true American investment in renewable energy.	2
5.4	This policy represents a bold direction toward energy independence at the government level.	2

This plan may have been attempted but it has not been implemented yet as a policy. The advanced technology to capture and sequester CO2 is years away.

The government at this time has not made it a top priority in implementation for advancing this new technology. It does not build on any past attempts.

The government would be the one to fund this new technology. The government would have to see this funding as absolutely necessary since the funding would be a considerable amount. It may be possible that the government would approve this funding.

It may be possible that this plan would face implementation challenges due to the high cost of the new technology. Also Hansen's idea of capturing and sequestering CO2 emissions is unique in that other experts focus on renewable energy. Hansen wants to implement a new technology that hasn't been tried before.

This plan may receive voter support due to Hansen's carbon tax on coal, oil, and gas. "The tax would be applied on coal, oil, and gas as the first point of sale or port of entry. This tax would then be returned to the public." (Hansen, 2008) But the public is still taxed in the beginning, and they may not be willing to pay these taxes even though it would go back to them. Americans may be skeptical that they would see that money again.

Yes, Hansen's idea on the carbon tax would help Americans, because this tax would go back to the public. The idea behind this tax is that carbon emissions will go down and renewable energy will grow rapidly.

We would be the first to stop coal-fired power plants until the new technology is made available.

The true investment would be that global warming would be reduced. To reduce this global warming one of things he wants to do is use renewable resources. This would be an investment for people because electricity would be less expensive and more people would be able to have it.

Yes, in that renewable energy should be implemented and fossil fuel needs to be used less and less.

5.5	This policy would promote American awareness for the conservation of energy.	3	This plan will only be possible if American's are told the facts. Hansen believes that the public has been misinformed. There is a lot of persuasion by special interest groups that distort the facts. So until the public is told the truth, the plan will not garner support. But once the public is told the truth without any sugar coating, Hansen feels that the public would be on board with his policy.
5.6	This policy encourages an aggressive shift toward developing cleaner technologies.	4	His main goal is to reduce CO2 by developing cleaner technologies. The main technology is of capturing and sequestering CO2. This is a large shift since this technology is fairly new and has not been attempted by many.
5.7	This policy incorporates increased requirements and standards for fuel quality and efficiency.	2	Hansen believes in "improving the standards of fuel efficiency in buildings, lighting, and appliances"
5.8	This policy contributes toward a positive transformation in the transportation sector.	2	A positive transformation in the transportation sector is also possible, especially in vehicle efficiency. Improvements have not been made in the automobile industry for about 30 years. He stands by the notion that there needs to a 30 percent improvement in vehicle efficiency"
5.9	This policy puts the world closer to the implementation of a global energy grid.		
Category Average Score		2.57	
Grand Total Average Score		2.68	

GENI

Policy / Policy Representative Overview

GENI focuses on the electrical interconnection of power networks between countries and continents, with an emphasis on tapping remote renewable energy resources. Decades ago, visionary engineer Dr. R. Buckminster Fuller developed the World Game™ simulation, posing the question: “*How do we make the world work for 100% of humanity in the shortest possible time through spontaneous cooperation without ecological damage or disadvantage to anyone?*” GENI’s research shows that the premier global strategy is the interconnection of electric power networks between regions and continents into a global energy grid, with an emphasis on tapping abundant renewable energy resources — a world wide web of electricity. The benefits of this sustainable development, world power solution are proven and include: decreased pollution from fossil and nuclear fuels, reduced hunger and poverty in developing nations, increased trade, cooperation, and world peace and stabilized population growth.

Category Average Scores and Corresponding Rankings

Major Value Category	Category Average Score	Ranking (out of 10 policies)
Social Impact - Domestic	2.71	7
Social Impact - Global	3.0	Tie for 2/3
Environmental Impact	4.0	1
Feasibility of Implementation	2.29	7
Does it “Flip the Switch?”	3.13	1

Key Findings

- GENI scored the highest compared to the other nine in Environmental Impact and Does it “Flip the Switch?”
- They also tied for second place with Japan in the Social Impact - Global.
- They were rated third from the last in Social Impact - Global and Feasibility of Implementation

Scorecard: GENI

Score Legend

- 0 No Information Available
- 1 Absolutely not Possible
- 2 Most Likely not Possible
- 3 Possible
- 4 Most Likely Possible
- 5 Absolutely Possible

5 Value Categories

37 Total Value Criteria

Item	Value	Score	Comments
1	Social Impact - Domestic		
1.1	This policy would help increase the standard of living for Americans.	4	Their policy addresses energy-access challenges facing Americans today such as “energy conservation, repairing and modernizing our infrastructure and increasing our energy supplies in ways that protect and improve the environment” all of which have been directly correlated to improving the standard of living for humans (National Energy Policy Dev Group, 2001).
1.2	This policy would contribute toward the creation of a substantial amount of new jobs for Americans.	4	It is also absolutely possible that the GENI Initiative would contribute toward the creation of a substantial amount of new jobs because of the tremendous manpower required to build and support the interconnection of electric power networks between nations and continents.
1.3	This policy would significantly lower the price Americans pay for gas "at the pump" (automobile).	2	Our research indicates it is possible GENI's plan could significantly lower the price Americans pay for gas "at the pump" because of their support for plug-in hybrids and other types of vehicles that can be powered 100% from electricity.
1.4	This policy would positively impact those employed in the U.S. Agriculture Industry	3	Because the GENI Initiative requires an emphasis on tapping abundant renewable energy resources, farmers and others involved in the U.S. Agriculture may find substantial profits through production of high demand biofuels such as switch grass-based ethanol (Science Daily, 2008).
1.5	This policy would help get energy to people living in the U.S. who currently do not have it.	2	Not only would the GENI Initiative encourage rural economics, but it would also help get energy to people living in the U.S. who currently do not have it as reliability and efficiency would be improved throughout not only the U.S. but the rest of the world.
1.6	This policy would make standard "Home Energy-Use" more affordable for Americans (monthly).	2	The implementation of the global grid may make standard home energy-use more affordable for Americans because the grid utilizes resources such as solar, wind and bio-fuels that are far more abundant than the non-renewable electricity-generating-resources predominantly used today. These resources are still expensive to develop.
1.7	This policy provides new alternatives for Americans to power their homes and businesses.	2	In their policy, GENI values the ability for more homes and businesses to be powered by renewable resources but most Americans may not have the financial resources to afford such new and expensive alternatives.
Category Average Score			2.71

2 Social Impact - Global

2.1	This policy would help to provide energy for people in other countries.	2	GENI's grid represents an electrical interconnection of power networks between countries and continents that would help provide power worldwide for "the more than 1.6 billion people that have no access to electricity" (Baker Institute, n.d.). However, this may take decades to achieve.
2.2	This policy would promote international cooperation and peace with other countries.	3	The electrical energy bridges created by GENI's global grid would promote international cooperation and peace with other countries because of the economic and social benefits that can be experienced by all countries that get involved. Our research shows a global grid would "connect neighboring nations into a continuous trading relationship, helping to minimize reasons for local/regional conflict. It also would connect old enemies and developing world economies." (Baker Institute, n.d.) However, the potential for war and conflict could present itself if countries began abusing their relationship to the global electric grid.
2.3	This policy would open up international markets and enhance world trade.	3	New markets for electricity sales would be created when electricity is able to be generated and transported more freely from areas with excess capacity to those with little supply. This excess capacity may come via the development of renewable resources and most likely could enhance world trade by "bringing needed income to developing nations and creating new ways for countries to repay debts through the export of excess renewable energy." (Baker Institute, n.d.)
2.4	This policy contributes toward substantial growth in the global economy.	4	Our team agrees that a true global grid would provide instantaneous electricity to all connected nations - benefiting the economies of first world nations and supporting the economies of developing countries.
2.5	This policy would help to reduce world poverty and hunger.	2	World poverty and hunger would most likely decrease as infrastructure is developed, allowing dependable clean water and food supplies and a decrease in disease, famine and childhood diseases. (Baker Institute, n.d.) Although GENI's policy increases the potential to reduce world poverty and hunger, there is no guarantee it would happen.
2.6	This policy would help to stabilize global population growth.	4	GENI reports that adequate energy and electricity "creates a proportionate reduction in infant mortality rates and, subsequently, in birth rates. Large families are no longer needed as a means of social security." (Baker Institute, n.d.) "This suggests that the most effective way to stabilize population growth, apart from war, plague and holocaust, is to improve living standards. . ." (GENI, n.d. a).

Category Average Score 3.00

3 Environmental Impact

3.1	Activities associated with this policy appear viable; they seem capable of continuing effectiveness.	4	It is absolutely possible that activities associated with this policy appear viable, because "there is enough potential capacity on each continent to meet the world's entire power generation requirements without the use of fossil fuels." (GENI, n.d. b)
3.2	Activities associated with this policy appear sustainable with minimal long-term effect on the environment.	4	Although electricity is expected to remain the fastest-growing form of end-use energy worldwide through 2030, the use of renewables for generating electricity will provide new ways of achieving continuing effectiveness moving forward. (EIA, 2008) For example, enough sunlight hits the United States in one day to power the entire country for one year. (Ecotrust, 2002)
3.3	This policy would contribute toward the promotion of renewable energies on a massive (global) scale.	4	Renewable energies (wind, solar, hydro, geothermal, tidal and biomass) are abundant far beyond our needs -- and several are now cost competitive. So, tapping renewable resources in remote sites (where they are usually found), and moving the power via high-voltage transmission lines would lead to use of renewables on a massive scale.

3.4	This policy would decrease the global demand for fossil fuels and other non-renewable resources.	4	Renewable energy sources mitigate the need for fossil fuel use.
3.5	Activities associated with this policy relate directly to the minimizing or eliminating of carbon emissions.	4	It is absolutely possible activities associated with this policy relate directly to the minimizing and eliminating of carbon emissions. The benefits of creating this sustainable power solution are proven to decrease pollution from fossil and nuclear fuels. (GENI, n.d.c)
3.6	Activities associated with this policy would help to decrease global hazardous waste production levels.	4	Nuclear fuel may not produce CO2, but it does provide its share of problems. On average, a nuclear power plant annually generates 20 metric tons of used nuclear fuel, classified as high-level radioactive waste. When you take into account every nuclear plant on Earth, the combined total climbs to roughly 2,000 metric tons yearly. All of this waste emits radiation and heat, meaning that it will eventually corrode any container and can prove lethal to nearby life forms. (Nuclear Energy Institute, 2008)
3.7	Implementation of this policy would contribute to a decrease in "Anthropogenic" greenhouse emissions.	4	If GENI's policy were implemented as they would like, renewable power would be moved via high-voltage transmission lines, connecting nations and continents. This would reduce the "Anthropogenic" greenhouse pollution and toxic wastes from fossil and nuclear power generation. (Brain, 2000) "Conventional sources of energy pose significant threats to our current and future global security, environmental quality, health and social well being." (GENI, n.d. b)
3.8	This policy directly addresses the idea of (and has a specific plan for) "solving global climate change."	4	GENI believes "Conventional sources of energy pose significant threats to our current and future global security, environmental quality, health and social well being." Scientists from the Intergovernmental Panel on Climate Change (IPCC) have projected a warmer world, rising sea levels, stronger storms, species extinction and spreading topical diseases. Minimizing these effects would clearly benefit all humanity. Renewable energy sources mitigate the negative effects of fossil fuel use. Solar, wind and geothermal power, for example, do not contribute to global climate change, will not run-out and are available to everyone around the globe. (GENI, n.d. b)

Category Average Score **4.00**

4	Feasibility of Implementation		
4.1	This policy involves ideas and strategies previously "unattempted" in past U.S. Energy Policy	2	GENI's policy will build on State renewable portfolio standard (RPS) programs, which require that specific and generally increasing shares of electricity sales be supplied by renewable resources and energy-independence packages such as a federal RES for at least 15 percent renewable electricity and efficiency improvements before 202.0 (EIA, 2008).
4.2	This policy builds on past progress at the government implementation level.	2	GENI's policy will build on past progress at the government implementation level. GENI's policy will build on State renewable portfolio standard (RPS) programs, which require that specific and generally increasing shares of electricity sales be supplied by renewable resources and energy-independence packages such as a federal RES for at least 15 percent renewable electricity and efficiency improvements before 2020. (EIA, 2008).
4.3	The technologies and capabilities associated with implementing this policy exist on a commercial level.	2	The technologies and capabilities of the GENI policy may take some time but they are possible. GENI acknowledges that "While this global vision is still years away, technological advances over the past two decades have made the linking of international and inter-regional networks practicable today." Specific to the distribution of energy, research shows "the efficient distance of ultra-high voltage (UHV) transmission to be 7000 kilometers for direct current and 4000 kilometers for alternating current. This would allow for power interchange between North and South hemispheres, as well as East and West." (GENI, n.d. b).

4.4	This policy requires the U.S. Govt to direct a substantial amount of public funding to new R&D activities.	4	GENI's policy would require the U.S. Government to direct a substantial amount of public funding to new R&D activities.
4.5	This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law)	1	Governments have the option to create policy that affects the price of both fossil and renewable fuels through subsidy reform and taxes. (GENI, n.d. b).
4.6	This policy is likely to receive both moral and voter support from most Americans.	2	Depends on where the money is coming from and what type of trade-offs are involved.
4.7	This policy uses tax incentives to encourage energy conservation and use of alternative fuels.	3	Funding would be supported by the government giving tax incentives and subsidies to companies that come into compliance with improving the availability of renewable energy. Most states and some foreign governments have successfully established incentives for renewables to move away from fossil fuel sources. Forty-five of the 50 U.S. states already offer tax credits, grants or loans to deploy renewables.
Category Average Score		2.29	
5	Does the Policy "Flip the Switch?"		
5.1	This policy would help to establish Americans as global leaders in energy efficiency.	4	Energy efficiency and the electrical grid go hand in hand. The global grid may only be possible if America emerges as the global leader in clean energy technology.
5.2	This policy will help to open electric markets to alternate power producers.	4	The electricity that flows through the grid will come from various electric markets and alternative power producers around the globe.
5.3	This policy represents a true American investment in renewable energy.	4	Yes, 100%.
5.4	This policy represents a bold direction toward energy independence at the government level.	4	The global grid represents a bold direction toward energy independence at the social and governmental level.
5.5	This policy would promote American awareness for the conservation of energy.	4	Yes, 100%.
5.6	This policy encourages an aggressive shift toward developing cleaner technologies.	4	Yes, 100%.
5.7	This policy incorporates increased requirements and standards for fuel quality and efficiency.	4	Identifying energy waste is a key step toward elevating fuel efficiency.
5.8	This policy contributes toward a positive transformation in the transportation sector.	4	A global grid would contribute toward the promotion of more all-electricity cars and other vehicles that run on energy produced by renewables, not fossil fuels.
5.9	This policy puts the world closer to the implementation of a global energy grid.	4	Intercontinental electricity grids are the only way to harness the planet's great sources of renewable energy and link them to centers of population, according to Peter Meisen of Global Energy Network International in San Diego. This policy <i>is</i> the implementation of a global energy grid. (Meisen, 2008)
Category Average Score		4.00	
Grand Total Average Score		3.27	

World Watch Policy / Policy Representative Overview

World Watch “aims to accelerate the transition to a low-carbon energy system based on sustainable use of renewable sources of energy, including wind, solar, geothermal, and biomass, together with major improvements in energy efficiency.” (Energy and Climate) World Watch knows that this needs to happen in part because of the climate crisis. Reduction in fossil fuels needs to happen immediately, and World Watch realizes this but also realizes that many people will feel that this transition will be expensive and extremely difficult. World Watch looks at this on the positive side and says that making this transition to low-carbon energy would “open up vast economic opportunities, spur innovations, and job creation, and assist in efforts to reduce poverty.” (Energy and Climate) We liked that World Watch looks to all sides and doesn’t just disregard what the others have to say. World Watch wants to communicate with decision makers and inform them that a low-carbon future is possible. World Watch is about telling people the facts, and all they want to do is communicate the facts to the right people - these people being the government and decision makers that who can actually make renewable energy a reality.

Category Average Scores and Corresponding Rankings

Major Value Category	Category Average Score	Ranking (out of 10 policies)
Social Impact - Domestic	3.29	4
Social Impact - Global	n/a	n/a
Environmental Impact	3.17	5
Feasibility of Implementation	2.6	Tie for 4/5
Does it “Flip the Switch?”	3.13	5

Key Findings

- **World Watch scored in the middle for Environmental Impact and Does it “Flip the Switch?”**
- **World Watch tied with the Pickens plan in the Feasibility of Implementation.**
- **They then scored a bit above average in the Social Impact - Domestic**

Scorecard: World Watch

Score Legend

- 0 No Information Available
- 0 Absolutely not Possible
- 1 Most Likely not Possible
- 2 Possible
- 3 Most Likely Possible
- 4 Absolutely Possible

5 Value Categories
37 Total Value Criteria

Item Value	Score	Comments
1 Social Impact - Domestic		
1.1 This policy would help increase the standard of living for Americans.	3	It will increase the standard of living, because their goal is to reduce global warming and end our dependence on foreign oil. This would reduce the cost that Americans would have to spend on electricity. This would also reduce pollutants in the air which would allow for cleaner air that Americans breath.
1.2 This policy would contribute toward the creation of a substantial amount of new jobs for Americans.	3	This policy involves the creation of many new jobs due to these renewable resources. It is said that "Renewable energy creates more jobs per unit of energy produced and per dollar spent than fossil fuel technologies do." (World Watch, 2008) Renewable energy would create jobs, such as building wind turbines and the blades.
1.3 This policy would significantly lower the price Americans pay for gas "at the pump" (automobile).	4	Yes, in that fossil fuel would not be needed any longer. Electric cars could be used that runs off of electricity.
1.4 This policy would positively impact those employed in the U.S. Agriculture Industry	4	This renewable energy could also positively impact those employed in the U.S. Agriculture Industry because renewable energy such as wind power "could provide a new source of revenue for thousands of farmers and agriculture processors, creating economic opportunities in rural areas that have suffered from decades of falling crop prices."
1.5 This policy would help get energy to people living in the U.S. who currently do not have it.	3	The renewable resources would be able to generate energy to the people living in the U.S. Using renewable resources such as solar and wind would allow electricity to be distributed to more people in the United States. It is cheaper so more people would be able to afford who currently electricity do not have it.
1.6 This policy would make standard "Home Energy-Use" more affordable for Americans (monthly).	3	Energy efficiency is also most likely possible because World Watch feels that with cost effective technologies, the \$200 billion Americans spend annually on electricity could be halved once renewable resources are used.
1.7 This policy provides new alternatives for Americans to power their homes and	3	By renewable energy such as wind, solar, and geothermal.

businesses.

Category Average Score		3.29
2	Social Impact - Global	
2.1	This policy would help to provide energy for people in other countries.	
2.2	This policy would promote international cooperation and peace with other countries.	
2.3	This policy would open up international markets and enhance world trade.	
2.4	This policy contributes toward substantial growth in the global economy.	
2.5	This policy would help to reduce world poverty and hunger.	
2.6	This policy would help to stabilize global population growth.	
Category Average Score		N/A
3	Environmental Impact	
3.1	Activities associated with this policy appear viable; they seem capable of continuing effectiveness.	3
3.2	Activities associated with this policy appear sustainable with minimal long-term effect on the environment.	3
3.3	This policy would contribute toward the promotion of renewable energies on a massive (global) scale.	
3.4	This policy would decrease the global demand for fossil fuels and other non-renewable resources.	3
3.5	Activities associated with this policy relate directly to the minimizing or eliminating of carbon emissions.	4
3.6	Activities associated with this policy would help to decrease global hazardous waste production levels.	3
3.7	Implementation of this policy would contribute to a decrease in "Anthropogenic" greenhouse emissions.	

Their policy may be possible because they don't make the goal to use renewable resources unattainable. They say what needs to be done and how.

The environment would be cleaner with this policy. They want to use renewable energy which would directly help the environment. Renewable resources will not produce pollutants, so the air would be clean, and this would help the environment.

World Watch wants more than just 2 percent of renewables that are being used today.

World Watch feels that global emissions must be reduced dramatically, and this can be done by using renewable energy as opposed to fossil fuel.

Renewable resources would help eliminate pollution caused by "power plants, motor vehicles, and industries that burn fossil fuels. They emit a host of pollutants that imperil human health, and degrade the natural environment." (World Watch, 2008)

3.8	This policy directly addresses the idea of (and has a specific plan for) "solving global climate change."	3	Their goal is to help solve the global climate change through the reduction of these emissions. The environment is the underlying factor as to why renewable energy needs to become a reality and soon.
Category Average Score		3.17	
4	Feasibility of Implementation		
4.1	This policy involves ideas and strategies previously "unattempted" in past U.S. Energy Policy	2	These renewable energy policies have been attempted before, but World Watch is expanding on the ideas to give more information on what we can do to make renewable energy possible in the near future.
4.2	This policy builds on past progress at the government implementation level.	3	These renewable energy policies have been attempted before, but World Watch is expanding on the ideas to give more information on what we can do to make renewable energy possible in the near future.
4.3	The technologies and capabilities associated with implementing this policy exist on a commercial level.		
4.4	This policy requires the U.S. Govt to direct a substantial amount of public funding to new R&D activities.	2	The government would have to fund everything.
4.5	This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law)	3	It may face challenges in that renewable energy would be costly to implement. The government may find that giving more money to the development of renewable resources is the more logical than fossil fuel development.
4.6	This policy is likely to receive both moral and voter support from most Americans.	3	This is only possible if they get the correct information to Americans and by being persistent in what the world needs to survive.
4.7	This policy uses tax incentives to encourage energy conservation and use of alternative fuels.		
Category Average Score		2.60	
5	Does the Policy "Flip the Switch?"		
5.1	This policy would help to establish Americans as global leaders in energy efficiency.	3	They want to get away from coal and fossil fuel and use the wind, sun, and water to generate our electricity. "Improving energy efficiency represents the most immediate and often the most cost effective way to reduce oil dependence, improve energy security, and reduce the health and environmental impact of our energy system." (World Watch, 2008)
5.2	This policy will help to open electric markets to alternate power producers.		
5.3	This policy represents a true American investment in renewable energy.	3	It would help reduce global warming and reduce our dependence on foreign oil. We could use our own resources that are cleaner and that would provide more jobs to Americans.
5.4	This policy represents a bold direction toward energy independence at the government level.	3	Yes, they want to stay away from foreign oil. "America's dependence on imported oil is undermining the country's national security by tying the U.S. economy to unstable and undemocratic nations, thus increasing the risk of military conflict in political hotspots around the globe." (World Watch, 2008) World Watch wants to reduce national reliance on oil and improve efficiency and diversify fuel choices.
5.5	This policy would promote American awareness for the conservation of energy.	3	Yes, because the reason to use this renewable energy is to first and foremost reduce global warming. It would allow Americans to realize the danger that the planet is in.

- 5.6 This policy encourages an aggressive shift toward developing cleaner technologies. 4 Yes, they want all renewable sources to be used and not to use fossil fuels. "Today renewable resources provide just over 6% of the total U.S. energy, but that figure could increase. Many of the new technologies that harness renewables are, or soon will be, economically competitive with the fossil fuels that meet 85% of U.S. energy needs." (World Watch, 2008) World Watch would like to developed cleaner technologies like global wind generation, solar cells, and fuel ethanol from crops.
- 5.7 This policy incorporates increased requirements and standards for fuel quality and efficiency. 3 They want to revamp the transportation sector and use biofuels instead of fossil fuel. They also feel that plug-in cars should be manufactured more extensively.
- 5.8 This policy contributes toward a positive transformation in the transportation sector. 3 "Currently, transportation accounts for two-thirds of U.S. oil consumption and the predominant source of domestic air pollution." (World Watch, 2008) The goal is to develop cleaner technologies in the transportation sector like biofuels, hybrid cars, electric cars, running cars on solar energy and wind power, and in the distant future, running cars on hydrogen.
- 5.9 This policy puts the world closer to the implementation of a global energy grid. 3 They want to use these renewables resources to generate electricity that way all the people in the U.S. can get it and have it be cheaper and cleaner.

Category Average Score 3.13

Grand Total Average Score 3.08

Japan

Policy / Policy Representative Overview

Japan is one of the leading countries in the world for its advancements in technology. Just like other countries Japan wants to break its dependence on fossil fuels and reduce green house gases for a safer cleaner environment. Japan plans to increase the use of solar power in the future. There are combinations of other renewable and non renewable sources that are planned implementation in the future to move away from oil. This country has started issuing government subsidies to assist people to change sources of energy. Japan also plans to use cleaner coal technologies as a way of reducing its dependence on oil. Japan plans to aggressively implement clean coal to a larger percentage of its energy usage.

Category Average Scores and Corresponding Rankings

Major Value Category	Category Average Score	Ranking (out of 10 policies)
Social Impact - Domestic	3.43	3
Social Impact - Global	3.0	Tie for 2/3
Environmental Impact	3.38	3
Feasibility of Implementation	2.43	6
Does it “Flip the Switch?”	3.33	4

Key Findings

- Japan tied with GENI for second highest in the Social Impact - Global.
- Japan score relatively high with the third highest in Social Impact - Domestic and Environmental Impact.
- Japan also scored with the fourth highest score in Does it “Flip the Switch?”
- The score then dips down to the sixth highest score in Feasibility of Implementation.

Scorecard: Japan

Score Legend

- 0 No Information Available
- 0 Absolutely not Possible
- 1 Most Likely not Possible
- 2 Possible
- 3 Most Likely Possible
- 4 Absolutely Possible

5 Value Categories
37 Total Value Criteria

Item	Value	Score	Comments
1	Social Impact - Domestic		
1.1	This policy would help increase the standard of living for Japanese.	4	Overall, the new energy policies will raise the standard of living for all Japanese. Cheaper cleaner solutions will make energy more affordable. Those who could not afford it in the past will now be able to have energy. As more people have access to electricity the standard of living rises. Americans can benefit through trade as well.
1.2	This policy would contribute toward the creation of a substantial amount of new jobs for Japanese.	3	Many policies will demand more human capital that will be required to fill more job positions.
1.3	This policy would significantly lower the price Japanese pay for gas "at the pump" (automobile).	4	An increase in different energy sources will reduce the need for foreign imports lowering the price at the pump. When demand is low, the prices will fall. Alternative sources will reduce the demand for oil.
1.4	This policy would positively impact those employed in the Japanese Agriculture Industry	2	There will be somewhat of a change in the agriculture industry if Japan decides to expand its investment in biofuels. Japans agriculture industry is small, and there is little room to expand. They might have to import from other countries.
1.5	This policy would help get energy to people living in Japan who currently do not have it.	3	An increase of energy production and its sources will help others who do not have energy by making it more affordable and provide new alternatives for people to power their homes and businesses.
1.6	This policy would make standard "Home Energy-Use" more affordable for Japanese (monthly).	4	The many different sources of energy will create more competition in the energy market. Prices may drop due to renewable solutions.
1.7	This policy provides new alternatives for Japanese to power their homes and businesses.	4	It is most likely possible because companies can use renewable solutions such as solar power to power their businesses.
Category Average Score		3.43	

2 Social Impact - Global

2.1	This policy would help to provide energy for people in other countries.	4	It is absolutely possible for Japan to provide energy to other countries if there is excess energy available. Energy is continuously generated and should reach more people to achieve efficiency in the transportation. It would be wise to sell off the excess supply.
2.2	This policy would promote international cooperation and peace with other countries.	2	It is somewhat possible for energy policy to promote international cooperation and peace but not absolutely possible. If there is enough supply to meet the demand, there can be an agreement negotiated among countries. Energy will not be a prime factor in maintaining peace.
2.3	This policy would open up international markets and enhance world trade.	3	There are many benefits such as a growing economy and world trade. Excess energy can be traded for other commodities around the world.
2.4	This policy contributes toward substantial growth in the global economy.	3	It is most likely possible because Japan can sell-off energy and trade for other commodities.
2.5	This policy would help to reduce world poverty and hunger.	3	Cheaper energy rates will reduce world hunger and poverty because energy will be more abundant in supply. Non-renewable sources make energy expensive because the shortage in supply. Renewables can be replenished. More people will be able to have access to energy. More money will allow people to purchase more food.
2.6	This policy would help to stabilize global population growth.	3	Cheaper energy rates stabilize population because there will be more money to go around. Research also shows that more energy reduces population growth rates.

Category Average Score 3.00

3 Environmental Impact

3.1	Activities associated with this policy appear viable; they seem capable of continuing effectiveness.	4	Many of the policies do seem viable and effective, because they reduce foreign dependency and promote renewable sources.
3.2	Activities associated with this policy appear sustainable with minimal long-term effect on the environment.	3	There are fewer effects on the environment, because the newer policies release fewer pollutants into the atmosphere. They also reduce dependency.
3.3	This policy would contribute toward the promotion of renewable energies on a massive (global) scale.	4	If these policies prove to be effective, other countries will start to adopt such a policy to reduce fossil fuels and other non-renewable sources. There will be more of a demand for renewable sources.
3.4	This policy would decrease the global demand for fossil fuels and other non-renewable resources.	3	Renewable solutions will shift society away from fossil fuels. The public will become interested in renewables because they are supposed to be cheaper and cleaner solutions.
3.5	Activities associated with this policy relate directly to the minimizing or eliminating of carbon emissions.	2	It is most possible because renewable sources do not release any pollutants into the air. It will be a long time until emissions are removed.
3.6	Activities associated with this policy would help to decrease global hazardous waste production levels.	4	Part of the push for implementation is to create renewables that will decrease global hazard waste, and decrease greenhouse gas emissions. It is most likely possible because there will be less reliance on fossil fuels.
3.7	Implementation of this policy would contribute to a decrease in "Anthropogenic" greenhouse emissions.	4	Renewable sources do not release pollutants. The other non renewables release lower levels of pollutants. These policies will reduce greenhouse gases.

3.8 This policy directly addresses the idea of (and has a specific plan for) "solving global climate change." 3 It is possible because all policies discuss how they impact the environment.

Category Average Score 3.38

4 Feasibility of Implementation

- 4.1 This policy involves ideas and strategies previously "unattempted" in past Japanese Energy Policy 2 The policies involved have been started in the U.S. Japan is starting to do different things with the technologies that the U.S. is not.
- 4.2 This policy builds on past progress at the government implementation level. 3 The policies involve ideas that have been trying to become policy for several years building on past government implementations.
- 4.3 The technologies and capabilities associated with implementing this policy exist on a commercial level. 2 It is possible for the technologies to be available on a commercial level; however, they have not yet been brought down to an affordable price for most consumers.
- 4.4 This policy requires the Japanese Govt to direct a substantial amount of public funding to new R&D activities. 1 It is not likely possible for any R&D funding, because many others are already trying out the policies.
- 4.5 This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law) 2 The policy is likely to become a law if it proves to be effective. Energy companies will be required to use renewable sources and standards will be raised.
- 4.6 This policy is likely to receive both moral and voter support from most Japanese. 3 If the policies are cheap and effective they will most likely gain support. Voters tend to favor whatever will save them money.
- 4.7 This policy uses tax incentives to encourage energy conservation and use of alternative fuels. 4 There are already tax incentives to change the source of energy. Japan is giving consumers back money to change their sources of energy.

Category Average Score 2.43

5 Does the Policy "Flip the Switch?"

- 5.1 This policy would help to establish Japan as global leaders in energy efficiency. 4 Japan is already becoming a leader in many of their policies. They are known for their use in solar power and wind.
- 5.2 This policy will help to open electric markets to alternate power producers. 3 There will definitely be a need to open new markets once new technologies become commercialized. Global trade will increase due to energy consumption.
- 5.3 This policy represents a true Japanese investment in renewable energy. 4 If prices are cheap and revenues are good it can be considered a good investment. Cleaning up the earth and having access to cheaper energy will be worth it.
- 5.4 This policy represents a bold direction toward energy independence at the government level. 4 The policy represents a bold direction because few nations are investing money aggressively to find alternative solutions.
- 5.5 This policy would promote Japanese awareness for the conservation of energy. 3 The new policies promote awareness on conservation because everyone is being affected. Conservation is taught to reduce power outages. Energy is transported more efficiently if consumers learn to conserve energy.
- 5.6 This policy encourages an aggressive shift toward developing cleaner technologies. 3 There will be an aggressive shift towards developing cleaner technologies. Once renewable sources prove to be effective others will adopt similar policies.
- 5.7 This policy incorporates increased requirements 3 It is most likely possible because as more technologies are developed, standards and efficiency will

and standards for fuel quality and efficiency.	increase in the future.	
5.8 This policy contributes toward a positive transformation in the transportation sector.	3	The transportation sector will benefit greatly from alternative fuels. Plug-in vehicles and biofuels will decrease pollution.
5.9 This policy puts the world closer to the implementation of a global energy grid.	3	Change in the energy sector is a good thing. The world will be closer to an energy grid when renewable policies prove to be effective. Geographic locations will play a role in the global energy grid.
Category Average Score	3.33	
Grand Total Average Score	3.14	

Brazil

Policy / Policy Representative Overview

Brazil is one of the biggest supporters of wind power. This country is dedicated to changing their energy policies to become less dependent on fossil fuels and to reduce carbon emissions. They are researching and implementing different renewable and non renewable sources of energy. Brazil is in the spotlight of the rest of the world because of their biofuel conversion in the transportation sector. Brazil is a country that has started to use natural gas as a replacement for gasoline in their automobiles. The government has also implemented rebate programs for those who choose to convert their vehicles to cleaner sources of energy. Brazil is a large country that will someday reach its goal by breaking its dependency on fossil fuels.

Category Average scores and corresponding rankings

Major Value Category	Category Average Score	Ranking (out of 10 policies)
Social Impact - Domestic	3.86	2
Social Impact - Global	2.83	4
Environmental Impact	3.13	6
Feasibility of Implementation	2.71	3
Does it “Flip the Switch?”	3.67	2

Key Findings

- Brazil score high in both Social Impact - Domestic and Does it “Flip the Switch?”.
- Brazil also scored the third highest score in the Feasibility and Implementation.
- They scored the sixth highest score in Environmental Impact.

Scorecard: Brazil

Score Legend

- 0 No Information Available
- 1 Absolutely not Possible
- 2 Most Likely not Possible
- 3 Possible
- 4 Most Likely Possible
- 5 Absolutely Possible

5 Value Categories

37 Total Value Criteria

Item	Value	Score	Comments
1	Social Impact - Domestic		
1.1	This policy would help increase the standard of living for Brazilians.	4	New energy policies will increase the standard of living because there will be cheaper alternatives to save citizens money. Money saved can be used for other things.
1.2	This policy would contribute toward the creation of a substantial amount of new jobs for Brazilians.	4	There will also be more jobs created due to the labor demanded in order to put strategies into effect.
1.3	This policy would significantly lower the price Brazilians pay for gas "at the pump" (automobile).	4	Alternative sources will create a lower demand for fossil fuels resulting with a reduction in cost. People will start purchasing cheaper alternatives reducing the demand for fossil fuels. There will be a less of a demand for fossil fuels resulting in a drop in price.
1.4	This policy would positively impact those employed in the Brazilian Agriculture Industry	3	Policies involving ethanol and other renewable energy will increase the agriculture industry. Ethanol uses sugarcane and other agricultural products. Brazil has a large agricultural economy. The use of ethanol will increase the demand for agricultural products in Brazil.
1.5	This policy would help get energy to people living in Brazil who currently do not have it.	4	Those who do not currently have energy will be more likely to receive it if prices are reduced.
1.6	This policy would make standard "Home Energy-Use" more affordable for Brazilians (monthly).	4	Brazilians will break away from oil dependency and be able to purchase cheaper and cleaner alternatives.
1.7	This policy provides new alternatives for Brazilians to power their homes and businesses.	4	Overall the drop in price of energy will allow individuals to afford it at a personal level and a commercial level.
Category Average Score		3.86	
2	Social Impact - Global		
2.1	This policy would help to provide energy for people in other countries.	4	Brazil would most likely sell excess untapped energy to foreign countries to profit from their energy policy due to the privatization of the energy sector.
2.2	This policy would promote international cooperation and peace with other countries.	2	International cooperation and peace is possible in the short term, however, other countries have different ways of generating energy. This will not be a prime factor in cooperation. It will, however, increase international relations.
2.3	This policy would open up international markets and enhance world trade.	3	It is possible that the policy could open up markets and world trade, because Brazil can sell to other countries or trade for other commodities with excess energy.

- 2.4 This policy contributes toward substantial growth in the global economy. 4 They will become a leader in the international economy, because of all their investments in renewable sources. They can reap the benefits of the first mover advantage.
- 2.5 This policy would help to reduce world poverty and hunger. 2 Their success will help reduce poverty and hunger for some individuals. More energy can decrease hunger and poverty. It received a 2 because it will not completely reduce poverty and hunger.
- 2.6 This policy would help to stabilize global population growth. 2 Research shows that more energy can reduce population growth making it more stable.

Category Average Score 2.83

- 3 Environmental Impact**
- 3.1 Activities associated with this policy appear viable; they seem capable of continuing effectiveness. 4 The policies being implemented seem viable in the sense that they can maintain their effectiveness. Renewable sources are especially viable sources that seem to be effective so far.
- 3.2 Activities associated with this policy appear sustainable with minimal long-term effect on the environment. 2 Most renewable sources appear to have minimal long term effects because they are cleaner and more efficient. The non renewable sources are cleaner and more effective than traditional sources.
- 3.3 This policy would contribute toward the promotion of renewable energies on a massive (global) scale. 3 On a massive scale, Brazil's policies will gain world popularity if they become effective. If other nations view Brazil's success, they will also adopt similar policies.
- 3.4 This policy would decrease the global demand for fossil fuels and other non-renewable resources. 4 The main purpose for all of the exploration is to decrease dependence on fossil fuels. Much of Brazil's policies involve energy generation from renewable sources.
- 3.5 Activities associated with this policy relate directly to the minimizing or eliminating of carbon emissions. 2 The renewable policies will contribute significantly to reducing greenhouse gases, climate change, and hazardous waste because there is a reduction in pollutants being released. Non-renewable sources will also play a role in providing a cleaner environment.
- 3.6 Activities associated with this policy would help to decrease global hazardous waste production levels. 3 Policies will reduce hazardous waste because renewable sources are cleaner alternatives. Other technologies from non-renewables reduce hazardous waste also.
- 3.7 Implementation of this policy would contribute to a decrease in "Anthropogenic" greenhouse emissions. 4 The renewable policies will contribute significantly to reducing greenhouse gases, climate change, and hazardous waste. Non-renewable sources will also play a role in providing a cleaner environment. Newer technologies release fewer pollutants.
- 3.8 This policy directly addresses the idea of (and has a specific plan for) "solving global climate change." 3 It addresses it because the alternative fuels are to help reduce the rate of climate change. It will not solve it completely because there are forces out of the human control such as natural disasters and wild fires that will still release pollutants into the air.

Category Average Score 3.13

- 4 Feasibility of Implementation**
- 4.1 This policy involves ideas and strategies previously "unattempted" in past Brazilian Energy Policy 2 The implementation involves strategies and ideas from U.S. policies. Many policies were developed in the U.S. and other countries adopted similar policies.
- 4.2 This policy builds on past progress at the government implementation level. 4 The government has been trying to reduce their dependency on oil since 1970. They have been trying to develop new systems since then.
- 4.3 The technologies and capabilities associated with implementing this policy exist on a commercial level. 2 The technologies are capable of being implemented at a commercial level. However, even commercially, the prices are not affordable to where they can reach a larger scale of consumers. Not all countries can afford to implement such a policy

4.4	This policy requires the Brazilian Govt to direct a substantial amount of public funding to new R&D activities.	2	The policy can use R&D funding; however, it is already starting to be implemented. It is possible for newer technologies to require R&D funding.
4.5	This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law)	2	New policies can become law if they prove to be effective. Fuel emissions and the percentage of energy consumption from renewable sources can become law.
4.6	This policy is likely to receive both moral and voter support from most Brazilians.	3	This has also gained moral and voter support. Voters can determine if the new policies will benefit them. They will support the policies to save money and live in a cleaner environment.
4.7	This policy uses tax incentives to encourage energy conservation and use of alternative fuels.	4	Brazil has issued tax incentives for those who are willing to convert vehicles to natural gas.
Category Average Score		2.71	
5	Does the Policy "Flip the Switch?"		
5.1	This policy would help to establish Brazilians as global leaders in energy efficiency.	4	Brazil has already started establishing itself as a global leader in different energy policies. They are known for their large use of wind energy and ethanol.
5.2	This policy will help to open electric markets to alternate power producers.	4	Mass production of energy will open up markets to new producers. Policy will require power producers to use renewable sources.
5.3	This policy represents a true Brazilian investment in renewable energy.	4	It's a good investment for Brazilians who wish to capitalize. Clean air and cheaper fuel prices should be seen as a good investment.
5.4	This policy represents a bold direction toward energy independence at the government level.	3	This policy is a bold movement to achieve energy dependence. Brazil is close to unshackling itself from oil imports because of the use of renewable sources.
5.5	This policy would promote Brazilian awareness for the conservation of energy.	3	Implementing new policies will make citizens aware of energy conservation. They will realize the importance of clean energy production.
5.6	This policy encourages an aggressive shift toward developing cleaner technologies.	4	The newer technologies are to reduce emissions and provide a cleaner way to generate electricity. It will encourage producers to use more renewable sources in the future.
5.7	This policy incorporates increased requirements and standards for fuel quality and efficiency.	3	It is most likely possible because as more technologies are developed, standards and efficiency will increase in the future.
5.8	This policy contributes toward a positive transformation in the transportation sector.	4	Natural gas in Brazil is already transforming the energy sector. It is a cleaner source and costs less.
5.9	This policy puts the world closer to the implementation of a global energy grid.	4	Overall most renewable sources will be able to be implemented into the energy grid. Some sources need different types of weather conditions. Disbursing different systems around the world can put the world closer to an energy grid.
Category Average Score		3.67	
Grand Total Average Score		3.27	

European Union

Policy / Policy Representative Overview

We chose the European Union for this research project because it has proven to come together as twenty seven separate nations to curb the damage that man has created. The European Union's policy is the one that the rest of the world can follow. They are taking aggressive steps to have 20% of all energy come from renewable resources by the year 2020. The EU's policy shows the importance and the urgency of reversing the effects of carbon emissions into the atmosphere better than most other countries. Each country within the EU implements a strategy that best fits their nation. Some nations will focus more on wind power, while others may find more success in using geothermal or hydro power. Besides the fact that it is legislative policy, Europeans as a whole support the use of renewable energy that will not cause irreversible damage like oil or coal do. Germany is the leader in Europe when it comes to investing in alternative energies. Depending on what percentage of energy is renewable at this time, nations must get to a certain percentage of total energy from renewables by the year 2020.

Category Average scores and corresponding rankings

Major Value Category	Category Average Score	Ranking (out of 10 policies)
Social Impact - Domestic	3.0	6
Social Impact - Global	3.33	1
Environmental Impact	3.63	2
Feasibility of Implementation	3.0	1
Does it "Flip the Switch?"	3.44	3

Key Findings

- The EU had the highest score in Social Impact - Global and Feasibility of Implementation.
- The EU also scored high in Environmental Impact, and Does it "Flip the Switch?".
- They scored relatively low in social impact for domestic.

Scorecard: European Union

Score Legend

- 0 No Information Available
- 1 Absolutely not Possible
- 2 Most Likely not Possible
- 3 Possible
- 4 Most Likely Possible
- 5 Absolutely Possible

5 Value Categories
37 Total Value Criteria

Item	Value	Score	Comments
1	Social Impact - Domestic		
1.1	This policy would help increase the standard of living for those living in the EU.	3	The European Union's (EU) energy policy will increase the standard of living for all nations within the EU by providing new alternative options for energy.
1.2	This policy would contribute toward the creation of a substantial amount of new jobs for those living in the EU.	4	So far, the EU's policy has created over 25,000 new jobs in the energy sector.
1.3	This policy would significantly lower the price those living in the EU pay for gas "at the pump" (automobile).	2	There is some proof to suggest that there may be a positive impact when citizens are paying at the pump.
1.4	This policy would positively impact those employed in the European Agriculture Industry	2	Through the use of bio-fuels, there is a possibility that it would have a positive impact on the agriculture industry.
1.5	This policy would help get energy to people living in the EU who currently do not have it.	3	In countries that don't have as great of an infrastructure as other nations, there will be a positive impact on getting energy to individuals that do not currently have access. The EU's policy forces all countries to have a standard of energy by 2020.
1.6	This policy would make standard "Home Energy-Use" more affordable for those living in the EU. (Monthly).	3	By using a number of different sources of energy on a regional level, there is a possibility that it would be more affordable for citizens.
1.7	This policy provides new alternatives for those living in the EU to power their homes and businesses.	4	In a number of countries in the EU, citizens can produce their own solar power for their own use or sell it to the national energy grid. This has given way for new alternatives for individuals to power their homes and businesses.
Category Average Score		3.00	

2 Social Impact - Global

- 2.1 This policy would help to provide energy for people in other countries.
- With the EU's policy, there is an opportunity to provide energy to people in many different countries including those in Africa. The EU has a plan to work with large solar farms in the Sahara Desert to provide energy via sub Mediterranean cables to the EU and parts of North Africa.

- 2.2 This policy would promote international cooperation and peace with other countries. 4
- 2.3 This policy would open up international markets and enhance world trade. 4
- 2.4 This policy contributes toward substantial growth in the global economy. 3
- 2.5 This policy would help to reduce world poverty and hunger. 3
- 2.6 This policy would help to stabilize global population growth. 3

Category Average Score 3.33

3 Environmental Impact

- 3.1 Activities associated with this policy appear viable; they seem capable of continuing effectiveness. 3
- 3.2 Activities associated with this policy appear sustainable with minimal long-term effect on the environment. 4
- 3.3 This policy would contribute toward the promotion of renewable energies on a massive (global) scale. 3
- 3.4 This policy would decrease the global demand for fossil fuels and other non-renewable resources. 4
- 3.5 Activities associated with this policy relate directly to the minimizing or eliminating of carbon emissions. 4
- 3.6 Activities associated with this policy would help to decrease global hazardous waste production levels. 3
- 3.7 Implementation of this policy would contribute to a decrease in "Anthropogenic" greenhouse emissions. 4
- 3.8 This policy directly addresses the idea of (and has a specific plan for) "solving global climate change." 4

Category Average Score 3.63

4 Feasibility of Implementation

- 4.1 This policy involves ideas and strategies previously "unattempted" in past EU Energy Policy. 2
- 4.2 This policy builds on past progress at the government implementation level. 2
- 4.3 The technologies and capabilities associated with implementing this policy exist on a commercial level. 4
- 4.4 This policy requires the EU to direct a substantial 3

Because the EU is working together to have a clean energy policy, countries are coming together for a common good.

The EU has a policy to have large solar panel installations in the Sahara desert. This will enhance world trade with economies that will benefit from international cooperation.

As stated in the previous statement, this policy will benefit the global economy as a whole.

Overall the policy will have a positive effect on world hunger and the stabilization of populations that have a weaker economy.

If you are able to provide more people with electricity, the standard of living will be greater than if they had none at all.

The policy is a viable one, because each country will create renewable energy the way each country finds fit. This means that Germany may use more wind energy than Greece or France.

This policy is a sustainable one with small long term effects on the environment.

Most of the countries are investing in clean renewable resources such as wind, thermal, and hydro power. Because of the aggressive policy of the EU, it has pressured other developed countries to do the same.

By using more renewable resources, it will decrease the demand for non renewable resources such as fossil fuels.

The EU is dedicated to having 20% of their energy from clean renewable resources by 2020.

The EU is on a path to lower carbon emissions that create hazardous waste.

By setting the goal of using renewable energy, the EU will help decrease greenhouse emissions.

The EU is at this moment solving the climate crisis head on.

The policy uses both new and old strategies from the European Union.

The EU is coming together as twenty seven nations to implement a new policy.

The policy that is being implemented is capable on a commercial level. As stated, each country uses a number of different renewable sources.

This policy requires direct contact between government and business to make sure they reach there

	amount of public funding to new R&D activities.		goal by the year 2020.
4.5	This policy is not likely to face implementation challenges at the government/bureaucracy level (becoming law)	3	There has not been a big challenge from the different governments to prevent forward progress of this policy. The EU understands that global warming is an issue that needs to be solved now.
4.6	This policy is likely to receive both moral and voter support from most of those living in the EU.	4	This policy has received the moral and voter support from most of the citizens within the EU. The European countries have, for many years, been a driving force in creating new and renewable resources
4.7	This policy uses tax incentives to encourage energy conservation and use of alternative fuels.	3	The EU has given tax incentives to both individuals and businesses for using renewable energy.
Category Average Score		3.00	
5	Does the Policy "Flip the Switch?"		
5.1	This policy would help to establish those living in the EU as global leaders in energy efficiency.	4	The aggressive nature of the EU's policy has labeled them a global leader in energy efficiency.
5.2	This policy will help to open electric markets to alternate power producers.	4	It has been proven that the policy has opened up electric markets to new alternative power producers; even individuals are involved in the electric markets.
5.3	This policy represents a true EU investment in renewable energy.	4	Because of what has already been done by the EU, the policy represents a true investment in renewables.
5.4	This policy represents a bold direction toward energy independence at the government level.	4	The policy absolutely is a bold direction toward energy independence. Each country is using resources that work best for them.
5.5	This policy would promote awareness for the conservation of energy for those living in the EU.	3	The EU has policies that will help promote the conservation of energy. Because Europe has to get much of their energy from outside sources, they realize the importance of conserving energy.
5.6	This policy encourages an aggressive shift toward developing cleaner technologies.	3	For the most part, this policy encourages the development of cleaner technologies by using clean alternative resources.
5.7	This policy incorporates increased requirements and standards for fuel quality and efficiency.	3	Because of the price of gasoline, the EU has standards for fuel quality and efficiency. By making smaller and more compact cars, Europe is able to have higher fuel efficiency.
5.8	This policy contributes toward a positive transformation in the transportation sector.	3	By investing in new fuels, there can be a smooth transition in transportation.
5.9	This policy puts the world closer to the implementation of a global energy grid.	3	The EU does bring the world closer to having global energy grid. They have proven that countries can work together for the common good of all their citizens.
Category Average Score		3.44	
Grand Total Average Score		3.30	

Obama's and McCain's Energy Policies

Our first research objective was to compare and contrast the energy policies of Barack Obama and John McCain. We will first exam in detail each of their policies. We will then be able to compare and contrast the policies together.

When looking at both energy policies of McCain and Obama, there are similarities in greenhouse gas emission targets and timetables. In the long run, they both want to be below the 1990 emissions levels.

McCain's Energy Policy

The biggest difference for McCain is his desire to be energy independent by using more non renewable sources. This means taking advantage of our own resources here in the United States rather than importing oil into the market from other countries. McCain wants to invest our money into resources here in the United States instead of sending billions of dollars to foreign countries. John McCain is looking more at a short-term solution than a long-term one. McCain prefers to focus on needs that need to be met now and that we have the resources to do so. McCain also prefers that we can solve our energy and environmental problems by using both renewable and non-renewable sources.

McCain believes that we can become energy independent by using the same technologies that we have been using since the start of the industrial age. A few of the main sources he would tap into are coal, natural gas, and oil.

McCain believes that we cannot stop using coal as one of the main ways we produce electricity. He would like to “commit \$2 billion annually to the advancement of clean coal technology.” (McCain) If the United States invests heavily in research and development of clean coal technology over the next fifteen years, there is a possibility that clean coal will be viable on a commercial level. Once we have made it successful on a free market level, we will be able to export the technologies to countries like China, who is now the leading nation in carbon emissions. If China is committed to using coal as a way of generating electricity, then we will be able to make it less harmful to the environment. By investing in this safer technology, we will be able to generate more jobs here in the United States.

McCain finds it necessary to use our oil reserves of at least 21 billion barrels to ease the immediate problems we are facing. Currently, the United States government has a federal

moratorium on drilling in places like the Outer Continental Shelf which prevents the oil companies from tapping into those sources. McCain believes “it is time for the federal government to lift these restrictions and to put our own reserves to use.” (McCain) By doing so, we will be able to explore new energy sources and create more jobs in the U.S. from production. McCain thinks that we will be more economically secure because of our increased domestic supply. He feels that “We should keep more of our dollars here in the U.S., lessen our foreign dependency, increase our domestic supplies, and reduce our trade deficit – 41 percent of which is due to oil imports.” (McCain) Once again, McCain’s energy policy primarily revolves around moving away from foreign dependence on oil and tapping more domestic sources.

McCain has the same vision for natural gas as he does for tapping into our own reserves here in the United States. “Within the United States we have tremendous reserves of natural gas. The Outer Continental Shelf alone contains 77 trillion cubic feet of recoverable natural gas. It is time that we capitalize on these significant resources and build the infrastructure needed to transport this important component of electricity generation and transportation fuel around the country.” (McCain)

McCain shows interest in using nuclear power to create more energy; McCain wants to take a more aggressive step in producing nuclear power. His plan is to build 45 new nuclear power plants by 2030 and ultimately having 100 new power plants in total. Nuclear power does produce hazardous material that needs to be disposed of properly, but it is a zero-emission source of energy. “Currently, nuclear power produces 20 percent of our power, but the U.S. has not started construction on a new nuclear power plant in over 30 years.” (McCain) McCain finds it important that the “United States be able to build the components for these plants and reactors within our country so that we will not be dependent on foreign suppliers with long wait times to move forward with our nuclear plans.” (McCain)

Besides the use of old technologies such as oil and natural gas, McCain also supports the use of low carbon alternative fuels. Some of the alternative energies he proposes we use are wind, hydro, and solar power. Besides the fact that McCain wants to invest in the research and development of clean coal over the next fifteen years, he does not want the government to invest heavily in cleaner alternative fuels. McCain believes that is the responsibility of the free market to make drastic changes in the way we produce energy. McCain is also against passing a law that requires utility companies to buy a certain percentage of their energy from renewable sources. A bill was

introduced earlier in 2008 to require 15 percent of energy to come from renewable resources by the year 2020.

McCain wants to secure our energy future by “establishing a permanent tax credit that will equal 10 percent of wages that are spent on research and development” of new technologies. (McCain) By doing so, McCain hopes to encourage companies with these permanent tax credits and push the United States in a direction that will be more competitive with other countries in producing cleaner energy. This is a time when American “companies need to be more competitive, we need to provide a permanent incentive to innovate, and remove the uncertainty now hanging over businesses as they make R&D investment decisions.” (McCain) Besides the tax incentives, McCain does not feel it important for the government to spend money to move forward with alternative energy. It is in the hands of the market to decide what steps will be taken.

McCain’s energy policy also includes updating the nation’s energy grid so that it will become more efficient and less costly in the long run. McCain wants to be able to reduce the bureaucracy to allow new investment to meet the demands we have in the 21st century. This will “include a capacity to charge electric cars that will one day fill the roads and highways of America. And to save both money and electrical power for our people and businesses, we will also need to deploy Smart Meter technologies.” (McCain) The meters are a more accurate reading of the energy consumption that a customer is using which will “encourage a more cost-efficient use of power.” (McCain)

Analysis

The big question is whether or not McCain’s energy policy is going to move the country in the direction of becoming a leader in renewable energy. We can make the argument that in some ways it can be effective and in other ways it stays on the same path we have been on for over 100 years. The area that some may argue in favor of McCain’s policy is the quickness in which McCain wants to be independent from foreign countries.

On social impact, his policy may be effective in the short-term but may be difficult to sustain in the long run. McCain plans to use the resources we have here within our borders to unlock us from the hold that outside influences have on us. This will promote a greater opportunity for energy companies and availability in new jobs that will need to be filled. It will also be likely that more energy will get to parts of the country that do not have sufficient power for homes and businesses. By using more natural resources here in the United States, we will be more secure financially and in

our political decisions. There may be some negative turn of events down the line if there is not enough funding or pressure from the government to invest in clean alternative energies. Through McCain's policy, we may find ourselves in the same position we have been in recently. The price stability of non-renewable energies may fluctuate once the resources become less abundant. This may show signs of job loss caused by less production by energy companies.

On the basis of environmental impact, McCain's policy gets a less impressive grade. Because McCain wants to invest more in non-renewable energies such as coal, oil, and natural gas, this will have the impact of our becoming a less energy efficient nation. If at the moment we have enough electricity to power our homes and businesses, people may not find the urgency to conserve power and use it efficiently. The McCain policy does not show strong signs of making big enough changes when it comes to global warming. In order for renewable energy to become a viable choice on a greater national level, the government must act to speed up the process to ensure a stable future for both the environment and the United States. McCain does plan to put efforts into producing clean coal. However, it is still hard to say how effective it will be in trapping carbon emissions. It has also yet to be proven viable on a commercial level.

When it comes to the feasibility of his policy becoming law, there will be many challenges he would have to face. Just from an environmental stand point alone, there will be numerous groups protesting the decision to drill in certain areas of the country. As a whole, there is a possibility that it can be accomplished besides the fact that there may be some obstacles on the political level. Drilling is not an issue once the source is found; the same thing goes for mining for coal. We have a good idea where most of the coal is located here in the United States. McCain is also willing to give tax incentives to companies that invest in clean alternative energies. For the McCain policy, the hardest part is getting the policy into legislation, which will be a tough sell.

Obama's Energy Policy

President Obama has an energy plan that is going to address both reducing global warming and ending the dependence on foreign oil. He will do this by reducing greenhouse emissions, using renewable energy, stressing energy efficiency, and strengthening our oil security. These four items will also go hand in hand with the way energy is generated and distributed.

Obama intends to address reducing global greenhouse emissions in several ways. He will implement a market-based cap-and-trade program, invest in a clean energy economy and create American jobs, advance the use of biofuels, develop clean coal technology, and establish a national

low carbon fuel standard. The market cap-and-trade program consists of giving an allowance to corporations. Obama wants to “reduce carbon emission 80% by 2050,” (Obama, 2008) so these allowances restrict how much carbon is emitted into the air from these companies. This allowance will give these corporations no choice but to limit the pollutants that go into the atmosphere so they have no choice but to realize that cleaner technology will have to be used in their company. A 100% allowance auction will also be implemented. This auction will ensure that “polluters pay for every ton of emissions they release, rather than giving these emission rights away for free to coal and oil companies.” (Obama, 2008) So if polluters go over their limit, they have to pay. This cap-and-trade program sounds ideal in that companies have to reduce their pollutants or they have to pay. What is not good about this plan is that companies may not care that they have to pay and keep polluting as much as they need to. These companies may make enough profit that those paying for their emissions may not even matter.

Obama will also invest in a clean energy economy that will create American jobs. He will do this by “investing \$150 billion over 10 years to advance the next generation of biofuels and fuel infrastructure, accelerate the commercialization of plug-in hybrids, promote development of commercial scale renewable energy, invest in low emissions coal plants and begin transition to a new digital grid.” (Obama, 2008) Obama’s goal is to make sure that the new technology that it will take to do all the things listed above will generate and give American’s jobs in the U.S. first. This is a great goal. Obama is on the right track with the idea that these new jobs be originated in America.

Part of Obama’s \$150 billion investment includes the advancement of biofuels. These biofuels will also help reduce greenhouse gas emissions in that biofuels are made out of corn. As of today, only five billion gallons of corn-based ethanol is produced per year, as compared to about the 140 billion of gasoline we use every year. So “Obama will invest federal resources, including tax incentives, cash prizes and government contracts into developing the most promising technologies with the goal of getting the first two billion gallons of cellulosic ethanol into the system by 2013.” (Obama, 2008) Two billion gallons seems like nothing in comparison to 140 billion gallons, but it is a start.

Obama’s next goal is to develop clean coal technology. He believes that coal is the most critical source that is crippling our climate. “Obama believes that the imperative to confront climate change requires that we prevent a new wave of traditional coal facilities in the U.S. and work aggressively to transfer low-carbon coal technologies around the world.” (Obama, 2008) He will also invest in new technology that will capture and sequester the carbon emissions from existing coal power

plants. In addition to developing this new technology he will also prevent any new coal-power plants from being built unless they use low-carbon technologies. Making these coal-fired power plants obsolete, ensuring that they use low-carbon technology and developing new technology to capture and sequester carbon emissions should be one of Obama's first priorities. It is necessary that this part of the plan be implemented because of the dire need of our climate. All three are ideas that Obama has said are exactly what can be done to reduce the bulk of carbon emissions.

The last major idea that Obama has in regards to reducing greenhouse gas emissions to "establish a national low carbon fuel standard." (Obama, 2008) This policy "requires fuel suppliers to reduce the carbon their fuel emits by 10% by 2020." (Obama, 2008) He will also try to provide more incentives to the private sectors so that they can begin using the advanced biofuels as opposed to fossil fuel. Obama's goal with establishing this low carbon fuel standard is that it will reduce the greenhouse gas emissions and slowly but surely reduce our dependence on foreign oil. The problem that can be seen with this plan is that these private sectors will have to be given some very worthy incentives for them to start using these biofuels. Companies are about making money and if they see in any way that using biofuels will reduce their profits, then they will not use the biofuels. If Obama mandates it though, then these companies may have no choice, which should be the case if the climate crisis is to be solved.

The next item that Obama addresses is the use of renewable energy. He will "require 25% of electricity to come from renewable sources by 2025." (Obama, 2008) He would like these renewable sources to be solar, wind, and geothermal. His main objective for renewables is to focus on the federal government. Since the federal government is the nation's largest consumer of energy, he feels that "at least 30% of the federal government's electricity should come from renewable sources by 2020." (Obama, 2008) Obama is on the right track with renewables but should go further with it. According to the four experts that were researched, much more than 25% of electricity can come from renewables and definitely before 2025. It is said by James Hansen that we barely have 10 years before the climate crisis cannot be reversed. Obama needs to focus more on the renewable aspect of generating electricity.

Obama will also invest in energy efficiency. He believes that is the "fastest, cheapest way to reduce emissions." He "will set a bold national goal of reducing the energy intensity of our economy 50% by 2030." (Obama, 2008) In a sense Obama wants to "flip the switch." This means that it is as easy as turning off the lights when not at home. Obama first wants to make the "federal government the leader in saving electricity." He wants to make federal buildings more efficient.

His goal is to have zero emissions coming from federal buildings by 2025. He will also “overhaul federal efficiency code.” “The current Department of Energy has missed 34 deadlines for setting updated appliance efficiency standards.” (Obama, 2008) Accordingly, Obama will revamp the current system so the Department of Energy will be mandated to implement regular updates.

Obama will also invest in “measures to improve efficiency.” He says that “buildings account for nearly 40% of carbon emissions in the United States today, and carbon emissions from buildings are expected to grow faster than emissions from other major parts of the economy.” (Obama, 2008) To help counteract this, he will set building efficiency codes. He will “establish a goal of making all new buildings carbon neutral or produce zero emissions by 2030. He will also establish a national goal of improving new building efficiency by 50% and existing building efficiency by 25% over the next decade to help meet the 2030 goal.” (Obama, 2008) He will make sure that the companies who do implement this new energy efficient idea will get “increased profits rather than higher energy consumption.” (Obama, 2008) He will also provide grants from the federal government to “help states and localities build more efficient buildings, including libraries, schools, and police stations.”

One of the easiest plans is to “phase out traditional inefficient light bulbs.” Obama wants all incandescent lights phased out by 2014. He says that American “consumers will save \$6 billion per year on monthly electricity bills and will save 88 billion kilowatt hours of electricity per year.” (Obama, 2008) This small implementation will by 2030 result in a reduction of 28 million tons of carbon. (Obama, 2008)

The last piece to creating energy efficiency is revamping our current energy grid. Our current grid is outdated and creates a \$50-100 billion loss each year. So Obama “will pursue a major investment in our national utility grid to enable an increase in renewable generation and accommodate 21st century energy requirements.” (Obama, 2008) He wants to invest in a new digital smart grid so that Americans can get their electricity through the use of solar panels and wind turbines. This digital grid will allow Americans to receive their electricity by the cleanest way possible, through renewable energy.

The last area Obama will concentrate on is “strengthening our oil security and energy independence.” (Obama, 2008) He will try to reduce our dependence on oil by 35% by 2030. He will do this by increasing fuel economy standards. He has “developed an approach to double fuel economy standards within 18 years while still protecting the financial future of domestic automakers.” (Obama, 2008) He wants vehicles to be more fuel efficient, and he will do this by

investing in the development of advanced vehicles. Advanced vehicles are plug-in cars that run off electricity and vehicles that use flexible fuel. Other technologies will consist of using lightweight materials and new engines so that the cars are not as heavy thus improving gas mileage. Obama also wants to build up the biofuels sector. He is an advocate for using home grown materials so that ethanol and biodiesel can be used to power vehicles. He believes that all vehicles should be running on flex fuel, E85. E85 could consist of running a vehicle on 85% ethanol and 15% gasoline. This would most definitely help reduce our dependence on fossil fuel. By 2030, he wants to be producing 60 billion gallons of biofuels. Take that away from the 140 billion gallons we get can foreign countries every year and that can be about a 42% reduction in foreign oil.

Comparison of Obama's and McCain's energy policies

When looking at both Obama's and McCain's energy policies, many differences are seen with very few similarities. Obama and McCain both want to reduce greenhouse emissions, but they are different in what they see as a solution. McCain feels that America can use the same technologies that we have been using such as coal, natural gas, and oil to generate energy. McCain feels that we cannot stop using these resources. Obama feels that we can use less and less of these resources. Obama feels that renewable resources can be used to generate energy. They both want to invest in clean coal technology, but McCain feels that coal-fired power plants are here to stay. Obama feels that new coal-fired power plants should be stopped from being built and that technology to sequester and capture the carbon emissions should get heavy investment. Obama wants to stop the use of these power plants eventually and McCain feels that making their emissions cleaner will be sufficient.

On the issue on ending our dependence on foreign oil, McCain feels that we should tap into our own resources so that we don't have to rely so heavily on foreign oil. Obama wants to start using biofuels and flex fuel. He wants to produce 60 billion gallons of biofuels by 2030. Obama only wants to be getting a third of our oil from foreign countries and feels that alternative fuel like biofuels is the only other option to oil.

Obama and McCain do have similar concepts on renewable energy. They both want to start using alternative energy sources like wind and solar. The difference is that McCain feels that it is up to the market to decide what steps should be taken in regards to using renewable resources. Obama, on the other hand, will require that 25% of renewable to be used by 2025. His main focus first is on the federal government since they are the largest consumer of energy. Using renewable resources is part of Obama's plan and eventually will be required to be used.

Obama and McCain both want to update the nation's energy grid. They both realize that right now the energy grid is outdated and is wasting money due to its inefficiencies. They both want to do this so that Americans can receive electricity that is less expensive. They want to get electricity to everyone. This is including all the people who currently do not have it.

One thing Obama and McCain both have stressed is improving energy efficiency. Obama wants to make buildings more efficient and even just phasing out traditional inefficient light bulbs. Obama says that energy efficiency is the fastest, cheapest way to reduce emissions. McCain says that "by applying a higher efficiency standard to new buildings leased or purchased or retrofitting existing

buildings, we can save taxpayers substantial money in energy costs and move the construction market in the direction of green technology." (McCain, 2008) Both agree that the federal government is the largest consumer of energy. They both want to start putting energy efficiency standards on buildings first.

In conclusion, Obama and McCain want to reduce greenhouse emissions, but McCain wants to stay on the current path and Obama wants to look to the future in regards to new technological advances to help reduce carbon emissions. McCain believes that the current policies don't need to change very much, while Obama realizes that our current path is broken. Obama wants to invest in the future and revamp our way of thinking about non-renewable resources and renewable sources. Renewable resources are one of Obama's main objectives and in McCain's plan, non-renewable resources are his main objective. Below is a comparison chart of Obama's and McCain's energy policy.

Comparison Table of Energy Policies

Obama vs. McCain

Policy	Obama	McCain
1) Reduce Green House Emissions	<ul style="list-style-type: none"> •Wants to use renewable resources such as solar, wind, and geothermal. •Obama suggests that non-renewable resources can be used less and less. •Will use a cap-and-trade program 	<ul style="list-style-type: none"> •Use coal, natural gas, and oil to generate electricity. •McCain suggests that that these resources must always be used. •Will use a cap-and-trade program.
2) Clean Coal Technology	<ul style="list-style-type: none"> •Wants coal-fired power plants to be stopped from being built. •Wants to invest in technology that could capture and sequester CO2 that is emitted from these power plants. 	<ul style="list-style-type: none"> •Believes coal fired power plants are needed and more should be built. •Feels that making the power plant’s emissions cleaner is sufficient.
3) Oil Security	<ul style="list-style-type: none"> •Feels that we should starts using more biofuels and flex fuel. •Wants to produce 60 billion gallons of biofuels by 2030. 	<ul style="list-style-type: none"> •We should tap into our own resources. Wants to use 21 billion barrels of our own oil. •Believes the federal government should lift the restrictions on drilling in the Outer Continental Shelf.
4) Renewable energy	<ul style="list-style-type: none"> •Wants to start using more of alternative energy sources such as solar, wind, and geothermal. •Will REQUIRE 25% of renewable energy to be used by 2025. 	<ul style="list-style-type: none"> •Wants to start using more of alternative energy sources such as solar, wind, and geothermal. •BUT feels that it is up to the market to decide what steps should be taken in using renewable resources.
5) Energy Grid	<ul style="list-style-type: none"> •Wants to update it. •Wants to invest in a digital smart grid. This will allow electricity to get to Americans by the use of wind and solar. 	<ul style="list-style-type: none"> •Wants to update it. •He wants to be able to reduce the bureaucracy to allow for new investments to meet the demands for the 21st century. •Will do this by making more electric vehicles and using Smart Meter technologies.
6) Energy efficiency	<ul style="list-style-type: none"> •Feels that this is the fastest, cheapest way to reduce emissions. •Wants to make building more efficient. •Will establish a goal of making all new buildings carbon neutral or produce zero emissions by 2030. •Will start with the federal government buildings. Also wants to phase out traditional light bulbs. 	<ul style="list-style-type: none"> •Wants higher efficiency standard to new buildings leased or purchased or retrofitting existing buildings. •Wants to starts with the federal government buildings first.

Implications and Discussions

Based on the research that was done and the completed grading sheets, we can now compare Obama's and McCain's energy policy with the top scorers from the experts, foreign countries, and foreign region. This will be done through the five categories on the grading criteria sheet.

Social Impact - Domestic

Obama was rated the lowest in this section. His average was 2.43. He rated low because his plan does not address enough getting electricity to people who currently do not have it. Also Obama's solution for a reduction at the gas pump is short-term. He calls for rebates to offset the high prices but this would be a one-time rebate.

McCain also scored a 2.43 on this section. He rated low because of his policy's focus is on non-renewable energy. His policy does attempt to increase the standard of living for Americans, but it is for the short-term. He would like to tap into our domestic oil reserves so that gas prices will be lowered. This may sound like a good plan now but the domestic oil reserve will one day be gone. So, again his plan is only for the short-term.

The top scorer in this section was expert T. Boone Pickens with a 4. The Pickens plan rated more highly in that his plan increased the standard of living for Americans based on that his policy creates jobs, lowers prices on electricity and would help get electricity to people who currently do not have it. Pickens suggests that both electricity and "gas" can be cheaper. This savings for Americans would help dramatically. Americans could have more money on hand to buy what is necessary for their well-being.

The country that rated high was Brazil. Their score was a 3.86. They rated high because they proved that their policy increased the standard of living for the people who live in Brazil. New energy policies increase the standard of living because there will be cheaper alternatives to save citizens money. There will also be more jobs created due to the labor demanded to implement strategies. Brazilians will break away from oil dependency and be able to purchase cheaper and cleaner alternatives. Policies involving ethanol and other renewable energy will increase the agriculture industry. Those who do not currently have energy will be more likely to receive it if prices are reduced.

Social Impact - Global

Obama rated 5th in this section with a 1.33. He received this rating because his policy is concerned with providing energy for Americans the best ways possible; there is no apparent concern for others around the globe. There isn't evidence in Obama's energy policy that suggests his plan will provide the ability to better provide energy for those in other countries, how it could help to reduce world poverty and hunger, how new energy policy could help to stabilize rapid global population growth, or how it could open up international markets and enhance world trade.

McCain rated only a little above Obama with a 1.50. He rated lower than the foreign countries and region because McCain wants to tap into our own resources as opposed to getting it from other countries. Also it is probably not likely that the policies would open up international markets and world trade, because it is more focused on having enough resources for the use of the United States.

The top scorer in this section was the EU. The average for this country was a 3.33. They scored highest because with the EU's policy, there is an opportunity to provide energy to people in many different countries including those in Africa. Because the EU is working together to have a clean energy policy, countries are coming together for a common good. One country's success is another country's success. The EU has a policy to have large solar panel installations in the Sahara desert. This will open up enhanced world trade with economies that will benefit from international cooperation.

The next top scorer is GENI. They were rated a 3. They rated high because of their focus on an electricity grid. GENI's grid represents an electrical interconnection of power networks between countries and continents that would help provide power worldwide for "the more than 1.6 billion people that have no access to electricity." (The Baker Institute Energy Forum, n.d.) The GENI Initiatives global grid would promote international cooperation and peace with other countries because of the economic and social benefits that can be experienced by all countries that get involved.

Environmental Impact

Both Obama and McCain rate low in this section. Obama has an average of a 2.13 and McCain's average was a 1.25. Obama rated low because his plan still involves non-renewable resources which emit pollution. These pollutants would not decrease hazardous waste or reduce global warming. He does though have a plan for setting aside \$15 billion per year for clean energy. So this is why he rates a little higher than McCain.

McCain was rated 1.25 because his plan revolves around the use of non-renewable fossil fuel resources. His plan does call for the use of renewable energy, but the core of his policy entails using coal and oil, both of which cause pollution and do not reduce global warming.

The top scorer for this section is GENI. Their average was a 4. They rated high because GENI says "there is enough potential capacity on each continent to meet the world's entire power generation requirements without the use of fossil fuels" (GENI, n.d. b). GENI's plan focuses on renewable resources. Their goal is to use wind, solar, tidal, hydro, and geothermal to generate electricity. All of these sources help aid in reducing global warming and reducing the hazardous waste that is emitted into the atmosphere.

The other policy that was rated the next highest was the EU. Their average was a 3.63. They are one of the top scorers because the EU is dedicated to producing at least 20% of electricity from renewable resources by 2020. Because of the aggressive policy of the EU, it has pressured other developing countries to do the same. The EU is setting an example for other countries to follow. Their specific plan for using 20% of electricity will help reduce global warming and reduce hazardous waste from going into the air.

Feasibility of Implementation

Obama rated second to the highest in this section with a 2.86. McCain is second to last with a score of a 2. Obama rated high in this section because his plan has the focus of building a newer and stronger economy with the use of clean and secure energy. He also wants to invest in new technology that will help capture and sequester CO₂ emissions from coal fired power plants. Obama's policy also scores high because it is probable that it will receive both moral and voter support from most Americans as the country drives closer toward energy independence. His goal to build a clean energy future will be supported and will face fewer implementation challenges

because his plan will help reduce global warming and help end American's dependence on foreign oil.

McCain scored low because his policy doesn't look to the future with advancement in technology for renewable resources. He looks to use non-renewable resources. These resources will continue to pollute the atmosphere. Implementation of his policy will also face resistance because of environmentalists who feel that he is not doing enough to reduce global warming.

The top scorer for this section was the EU with an average score of 3. The EU scored the highest because their policy requires direct contact between government and business to make sure they reach their goal by the year 2020. There has not been a big challenge from the different governments to prevent forward progress of this policy. This policy has received the moral and voter support from most of the citizens within the EU. The European countries have, for many years, been a driving force in creating new and renewable resources. The EU has given tax incentives to both individuals and businesses for using renewable energy.

“Flip the Switch”

Obama rated 4th to last in this section with a score of 2.67. McCain had the lowest score with a 1.78. Obama scored higher than McCain due to Obama's policy focus more on technological advances on energy efficiency. Obama has a specific plan in that he wants 25% of electricity to come from renewable resources by the year 2025. He also wants to make the transportation sector more fuel efficient. With these plans, he wants to focus on making federal buildings more energy efficient. He plans to spend \$15 billion a year on energy efficiency. These plans will help Obama establish Americans as global leaders in energy efficiency.

McCain rated last because he does not concentrate as much on energy efficiency. His plan also doesn't help Americans become energy independent. He also does not have a strong policy in developing cleaner technology due to his focus on non-renewable resources. McCain's does want to improve energy efficiency when it comes to federal buildings just as Obama does; but McCain does not have a specific amount of money that he will invest for making these energy efficient standards.

The top scorer in the flip the switch category is GENI with a score of 4. They received such a high score due to the plan for the energy grid. This energy grid will allow people all over the world to receive electricity. The energy grid will also allow electricity to be less expensive. It is a

bold move into the right direction for ending America's dependence on foreign oil. The electricity from this grid is powered by renewable resources so this is a true investment in renewable resources.

Recommendations

Our recommendations are based on what the average scores were on the grading criteria. We looked at all the averages and found who the top scorers were in each of the five categories. We can then base our recommendations on the ideas of the policies that scored the highest.

Social Impact - Domestic

The first recommendation Obama should consider is T. Boone Pickens ideas on wind energy. Pickens states that 20% of our electricity can come from wind if the proper facilities are built. It would be a one time cost, and electricity from wind would be a major cost saving for Americans. The policy would help get electricity to more people and those who currently do not have it, because it would be transmitted through the energy grid to cities and towns all over the country.

Implementing such a policy on wind energy will contribute significantly to the social impact of the United States. The policy would increase the standard of living for most Americans by producing more jobs. Pickens mentions examples of the success of wind energy in the U.S. A town in Sweetwater, Texas had a population of 10,000 people and rose to 12,000 people because more jobs were created after the wind farm was built. Construction and maintenance jobs will be essential to the manufacturing of wind turbines and blades (Pickens Plan, 2008).

This policy would also assist with lowering of the price for gas at the pump. The policy emphasizes natural gas as fuel. It is the cleanest transportation that we have available at this time. It is also cheaper than gasoline. Pickens' says that "in places like Utah and Oklahoma prices are less than \$1 a gallon. In addition to natural gas, increasing the generation of wind energy to 20% will also reduce our reliance on petroleum based fuels. This policy would significantly lower the price Americans pay for gas at the pump because the demand will be reduced and there will be more

supply for everyone. This effect usually results with a drop in fuel prices because the scarce resources are not being consumed as rapidly.

Pursuing wind energy could have the potential to produce 20% of the electricity used in the U.S. Alternative sources of energy will reduce the reliance on single sources of energy and give consumers more options to choose from. The generation of electricity from renewable resources, will do two things; provide clean electricity and reduce the amount of oil we get from foreign countries.

Global

In order to make a positive impact on a global scale, the President must implement policies that will affect people outside of our borders. This means that we not only have to make decision for our own people but for the good of all across the globe. The President should consider policies that will provide energy to people in any country, not just ours. The European Union is planning to create large solar farms in North Africa to supply the many countries in Europe. This will also make a positive impact on some regions in Africa. They will be able to supply electricity to people who previously had none. The United States can look to the European Union for guidance in understanding how countries can work together on a global scale to solve the climate crisis. We need to form a coalition of separate entities to make serious progress in the years to come. In doing so, this will create international cooperation between countries and will have a greater positive impact both socially and environmentally. By understanding each other's needs we will have a better understanding and acceptance of those countries we have differences with.

Environmental Impact

The next recommendation Obama should consider is the GENI initiative. The GENI Initiative focuses on linking renewable energy resources around the world using international electricity transmission. The initiative evolved from Buckminster Fuller's proposal of interconnecting regional power systems into a single, continuous world electric energy grid. GENI's vision of a global energy grid requires the use of renewable energy that can be geographically disbursed throughout the world to maintain the efficiency in the distribution and conservation of energy. Renewable energy systems can be implemented in different geographic segments according to the climate and terrain. For example, solar panels can be used in the deserts and wind farms can be implemented in the valleys. The initiative will have a tremendous positive impact on the environment if it can be implemented.

Obama should consider the GENI Initiative because activities associated with this policy appear to be viable for sustainable development. “There is enough potential capacity on each continent to meet the world's entire power generation requirements without the use of fossil fuels.” For example, enough sunlight hits the United States in one day to power the entire country for one year. This policy would contribute to the promotion of renewable energies on a massive (global) scale, because renewable energies (wind, solar, hydro, geothermal, tidal and biomass) are abundant far beyond our needs and several are now cost competitive.

The benefits of creating this sustainable power solution are proven to decrease pollution from fossil and nuclear fuels. Nuclear fuel may not produce CO₂, but it does provide its share of problems. On average, a nuclear power plant annually generates 20 metric tons of used nuclear fuel, classified as high-level radioactive waste. When you take into account every nuclear plant on Earth, the combined total climbs to roughly 2,000 metric tons yearly. All of this waste emits radiation and heat, meaning that it will eventually corrode any container and can prove lethal to nearby life forms. If GENI's policy were implemented as they would like, power would be transported via high-voltage transmission lines, connecting nations and continents. This would reduce the “anthropogenic” greenhouse pollution and toxic wastes from fossil and nuclear power generation.

Feasibility of Implementation

The President should consider setting an aggressive and realistic timetable for the use of renewable energy. The European Union has done just that. They have set goal of 20% renewable energy by the year 2020. The United States should do the same by implementing new laws that will push the government and the private sector to reach these minimum goals. If we do not make strong guidelines in creating clean energy, our chances of success will be very slim. In order for a policy to be viable, it will take the forward movement of government to make it happen. This is the time when the government needs to be involved to ensure the success of new energy standards. This means that government should consider giving tax credits and incentives to both individuals and businesses. If there is no incentive to move in a different direction for business then it is more than likely a business will willingly do so. Until renewable becomes cost effective, the government will need to invest heavily in our future.

Flip the Switch

By flipping the switch, the President of the United States must spearhead a new forward thinking movement that will make us the global leader in renewable energy. The way we must

pursue this is by implementing the electricity plan brought forth by GENI. By having a full functioning electricity grid, it will open up new markets across regions to use alternative energy. This plan must not only work here in the United States, but also be capable on a global level. By creating the electricity grid, the United States will be an example for the rest of the world in creating clean energy technology and promoting our awareness of the conservation of energy. The energy grid will be proof of the United States moving in a bold direction towards energy independence on both a social and government level. In the years to come, there will be a greater number of all electric cars on the road. In order for these vehicles to be fully charged and fully functional, we must have the proper infrastructure to sustain the needed energy supply. When that time comes, it is going to be extremely important that we have an electricity grid capable of meeting our needs. There are endless amounts of renewable resources to fulfill all the world's energy needs. We now need to come together and create the global electricity grid to not just meet the United States' needs, but also the needs of everyone around the world.

Other Recommendations

There are other recommendations that should be considered in addition to the policies we have discussed. According to the Union of Concerned Scientists, the president should work with Congress to pass legislation in 2009 that revitalizes our economy and delivers energy and climate security. Like James Hansen has stated, the next presidential should "set mandatory limits that reduce U.S. global warming pollution consistent with keeping further warming below 2° F, including ambitious domestic reductions targets for 2020 and 2050"(Union of Concerned Scientists). A cap-and-trade system will be necessary to speed the process.

Another expert, Al Gore has mentioned that the next election should move America towards a 100% clean electricity future. This can be done by "maximizing energy efficiency, modernizing the grid and greatly expanding power generation from renewable energy resources." (U of CS) Non-renewable sources must be excluded from the generation of energy, because they are not 100% clean. In becoming a global leader in energy policy, the U.S. must shift away from non-renewable sources and use 100% renewable sources or as much as possible.

Obama can restore America's global leadership on global warming by "demonstrating US action by setting mandatory limits on our own global warming pollution through new legislation and implementation of existing laws." (U of CS) The transportation sector needs to comply with fuel efficiency standards. Industries and organizations must comply with their own sets of standards and should be required to go green.

After researching experts and international countries, we have concluded that renewable energy is the best solution to a sustainable energy future. Slowing the pace of global warming is an effort that requires the cooperation of the world. As a world leader, we must lead by example to get others to follow. We need to correct our policies and get the country on a path to reduce our dependence on non-renewable sources. Implementation of policies and systems we have discussed could lead not only the U.S. but the entire world to a sustainable energy future by getting other nations to join us in reducing global warming.

Dear Mr. Grumet:

Based on our research contained in this report, we offer some recommendations for your close evaluation for possible implementation into Obama's energy policy.

Our main recommendation is that America should move towards a 100% clean electricity future.

This can be done in the following way:

- Having 20% of electricity come from wind using wind turbines.
- Incorporating more solar, geothermal and hydro energy use.
- Updating the energy grid so that it has higher voltage capacity to meet the future energy needs globally.
- Set mandatory limits to keep further global warming below 2 degrees Fahrenheit.
- Invest in creating new green jobs to curve the economic downfall our country is currently facing.

These are a few of our recommendations we feel that could be helpful in creating a sustainable energy future. These recommendations would also help reduce global warming and help end our dependence on foreign oil.

Sincerely,

California State University San Marcos

Limitations

We were asked to become experts on several policies from various political candidates, experts, organizations and countries. This was extremely time-consuming in itself. What made it even more difficult was the effort of becoming an expert on each of the various topics discussed by each candidate, expert, organization, and country. Lack of some specific scientific knowledge was also a limitation of our research. A background on electricity in general, including the technology used to both generate and transport it would have been valuable prior to conducting research (We had to "research the research" on most of what we read).

There were a few limitations when the experts were researched. The first limitation was the time allotted for the project in comparison to the number of experts that could have been researched. A total of four experts were researched. We wanted to research two more, but there wouldn't have been enough time to thoroughly research and write about six experts. We had to narrow it down to a number that was feasible to be able to research them and write the paper in the allotted amount of time.

The second limitation in researching these experts was that they did not address some of the items on our grading criteria. The four experts that were researched had a main focus of America. In the grading criteria though there was a section based on a global perspective. We had to leave that one section blank when the experts did not talk about other countries. Their focus was on what America could do to reduce global warming and end our dependence on foreign oil. Their plans only addressed people living in the United States.

Some of the limitations we had in reference to the European Union were the number of countries that had to be researched. Overall, there are a total of twenty seven different countries that make up the EU which means there is a large amount of information for each country. What we tried to do was find the countries that were using a specific renewable resource on a higher level than the other nations and discussing their plan. The EU set up the policy of having 20% of their energy come from renewable sources by the year 2020. Not every country in the EU used the same energies. Some countries were using more solar while another country had the resources to use geothermal. There was a wide range of information in a short period of time to do the research.

Other limitations we experienced in conducting research were in researching policy. We found it difficult to find actual government policy for some of the renewable and non renewable policies. We had to do further research to determine what the country is doing about certain sources of energy. We also found it difficult to find information on the past policies, for example 15 -50 years ago. Finally, the distribution of energy was a bit difficult because there are many different means of transporting it.

Conclusion

Throughout the paper we have discussed the many different ideas behind the use of energy from experts, politicians and international countries. Our research has shown a wide range of strategies that are suggested by these sources. We wanted to make sure that we had enough substantial information to give educated recommendations that will be effective on a social and environmental level.

There is more than just one solution to the question at hand. We must know whether or not it is effective and viable. After all the research was conducted on the experts, politicians, and international countries, that information was transferred onto a spreadsheet. We then used grading criteria to score each politician, expert, and country or countries to have a clear understanding of the most effective plan for the future of the planet. Within this grading criterion, we looked at the social impact, environmental impact, and the feasibility of each policy.

We could then conclude that it is extremely important for the United States to take major steps in using renewable resources in producing the nation's electricity. It will become an even greater issue in the future on both an economic and environmental level. We must learn from our mistakes by changing what we have done wrong. We can change this by using renewable energy. We have now learned that renewable energy will not only help get electricity to more people, but it will reduce global warming and end our dependence on foreign oil. If we do not change our current path and turn to renewable resources it will be too late for our planet. The damage will be done and our lives will never be the same again.

Future Research

If we were to have more time to do future research, we would look into more countries and experts to see what policies and plans they have for reversing global warming. Even though we did have a good variety of both countries and experts, there is always something that can be learned outside of the knowledge we now have. We may even want to look at countries that aren't taking steps to change the damages they are causing to the environment. This would give us the opportunity to come up with viable solutions that certain countries can follow.

Now that we have done our research on the candidates, especially Obama, we will need to see what policies are implemented during his time as President. It is also important to know if these policies had a positive or negative impact on our economy and the well being of the environment. The same research will be needed for the countries that we researched. We need to know whether or not the policies became a success for more aggressive policies in the future. Especially for the European Union who has the 20 percent target by 2020. Were they able to reach their goals? These are some of the important questions that need to be addressed.

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Appendix – Grading Analysis

2009 Presidential Candidates

OBAMA GRADING

Domestic

Barack Obama's proposed energy policy shows both strengths and weaknesses when analyzing its overall impact on those potentially living in the United States during the next eight years. Domestically speaking, a major strength of Obama's energy plan is that it includes a "\$150 billion investment over the next ten years to build a secure energy future" (Obama, n.d. a). This should translate into over 5 million new jobs for Americans through investment in "the generation of biofuels, the development of commercial scale renewable energy, and transition to a new digital electric grid" (Obama, n.d. a). Because of the strong possibility for substantial job creation resulting from Obama's energy policy, it is possible that Americans may achieve higher standards of living as green collar job creation should promote a healthier U.S. economy. One negative social impact of Obama's plan includes the unlikelihood of significantly lowered prices for what Americans "pay at the pump." The Obama plan calls for energy rebates to "offset the entire increase in gas prices" by sending out \$1000 emergency rebate checks, but the solution is short-term. In 2006, Obama "supported legislation that would have reversed \$2 billion in cuts for U.S. Department of Agriculture programs including conservation, rural development, nutrition, and forestry programs that are vitally important to our rural communities. In addition, he supported legislation providing full funding for agricultural programs that were authorized by Congress in the 2002 Farm Bill." (Obama, n.d. b). Another weakness in the domestic social aspect of the policy is the unlikelihood of helping to get energy to people living in the United States who currently do not have it; Obama's plan appears to address the "affordability" of energy and focuses less on the "generation and transportation" of energy to those in need. It is absolutely possible his policy would not only increase energy availability but it would also make it more affordable. In respect to analysis of the social impact of Obama's energy policy, our findings indicate Obama may be able to set the foundation for improving the lives of Americans but may not be able to make an immediate impact during his term(s) in office.

Global

Our analysis of Obama's energy policy also suggests there would not be a significant impact on those around the globe (people living outside of U.S. borders) during the next eight years if this policy were put into place. Obama's 'New Energy Plan for America' is just that; a plan for "America." His policy is concerned with providing energy for Americans the best ways possible; there is no apparent concern for others around the globe. Nowhere in Obama's energy policy is there evidence that suggests his plan will provide: the ability to better provide energy for those in other countries, how it could help to reduce world poverty and hunger, how new energy policy could help to stabilize rapid global population growth, or how it could open up international markets and enhance world trade (Obama, n.d. a). In contrast, his policy aims to build a clean energy future that benefits "all Americans", not all people around the globe. However, our analysis does show that it will be possible for this policy to promote international cooperation because America will continue to engage in the import and export of resources to other countries and needs to remain peaceful with them to do so. For example, the United States in 2007 both exported more than 18.3 million short tons of coal to Canada and imported another 26.8 million tons from Columbia (Obama, n.d.). Relationships like these are likely to continue being possible moving forward.

Environmental

The Obama Energy Plan takes many of the needed steps to allow the US to be environmentally responsible and although this plan may lead the American people in the right direction there will still be significant challenges for a full transition to energy independence. In terms of what can be accomplished in the next eight years, under Obama's policy it should be possible or most likely possible to have a minimal long-term effect on the environment, decrease global demand for fossil fuels and other non-renewables, minimizing carbon emissions, decrease "Anthropogenic" greenhouse emissions and move towards "solving global climate change" but, it will not be possible or most likely not possible to accomplish things such as continued effectiveness, the promotion of renewable energies on a global scale or reduce global hazardous waste production.

Obama's policy will promote energy generation and energy transportation that will have minimal long-term effect on the environment due to the plan utilizing renewable resources such as biofuels. A key component to Obama's Energy Plan, Develop the Next Generation of Sustainable Biofuels and Infrastructure, calls for advances in biofuels, including cellulosic ethanol, biobutenol and other new technologies that produce synthetic petroleum from sustainable feed stocks offer

tremendous potential to break our addiction to oil. Barack Obama and Joe Biden will require at least 60 billion gallons of advanced biofuels by 2030 (Obama, n.d. a). They will invest federal resources, including tax incentives and government contracts into developing the most promising technologies and building the infrastructure to support them.

This policy could decrease the global demand for fossil fuels during the next 8 years if the percentage of global energy used by Americans was generated from a larger percentage of renewables. Currently “with less than 5 % of the world's total population, the U. S. consumes about 25 % of the world's total energy output” (Bruce, n.d.). Only 10% of the energy used by Americans is generated from non-renewable resources (Get Energy Active, n.d.). Obama’s policy includes trying to generate more electricity from non-renewables such as solar, wind, and biofuels.

Besides moving towards decreasing the global demand for fossil fuels and other non-renewable resources, the activities associated with the Obama’s energy policy will move towards minimizing carbon emissions and decrease “Anthropogenic” greenhouse emissions. Barack Obama and Joe Biden support implementation of an economy wide cap and trade system to reduce carbon emissions by the amount scientists say is necessary: 80 percent below 1990 levels by 2050. Obama and Biden will increase fuel economy standards 4 percent per each year while protecting the financial future of domestic automakers. The plan, which will save nearly a half trillion gallons of gasoline and 6 billion metric tons of greenhouse gases, will establish concrete targets for annual fuel efficiency increases while giving industry the flexibility to meet those targets (Obama, n.d.). They will also invigorate the Major Economies (MEM) effort and bring all the major emitting nations together to develop effective emissions reduction efforts (Obama, n.d.).

Considering the specific parameters set forth by the new energy plan it is likely the plan can also have an effect on “solving global climate change”. Obama acknowledges global climate change as a major energy challenge saying that it stems from “our current dependence on fossil fuels for energy.” Obama describes a plan for solving global climate change including “requiring all major emitting nations (i.e. China and Brazil) to join in the solution by “developing effective emissions reduction efforts.” In addition, his policy explains he will develop an “effective global program” by “reengaging the U.N. Framework Convention on Climate Change (UNFCCC) – the main international forum dedicated to addressing the climate problem”.

The policy does contain some attributes that lean towards continued effectiveness with programs such as “Mandate All New Vehicles are Flexible Fuel Vehicles” and that we diversify our energy sources but these will take time to develop and within two terms we will be quite a distance away from a definitive impact. Much of the current policy also still requires the use of non-renewable resources such as oil and natural gas during the next 8 years. For example, Obama is promoting the continued dependence on fossil fuels by asking oil companies to use a “use it or lose it” approach to 68 million acres of previously untapped U.S. land in places like Bakken Shale in Montana and North Dakota while also developing unconventional natural gas supplies in the Barnett Shale formation in Texas and the Fayetteville Shale in Arkansas.

In referencing Obama’s energy policy, it is also most likely not possible that global hazardous waste production would decrease. Obama has said that “nuclear power is a very important component of the overall energy mix” and “therefore nuclear will continue to receive support from his administration, and from the new Congress” (Device Daily, 2008). Although Obama continues to support the production of nuclear power, in the New Energy Plan for America Barack and Biden state they will lead federal efforts to look for safe, long-term disposal solutions based on objective, scientific analysis (Obama, n.d.). Obama has not “pledged to spend money specifically on renewable-power generation” and in turn this may not lead toward the promotion of renewable energies on a global scale but rather an isolated change for the United States. However, he has said he would “set aside \$15 billion per year for clean energy, but the spending would be spread over a wide range of areas, including plug-in hybrid cars, biofuels, “low-emission coal plants.” This policy may promote renewable energies on a global scale down the line if renewable energies within the U.S. borders are successfully promoted first within the U.S.

Feasibility and Implementation

Obama’s policy includes strategies new to U.S. Energy Policy such as “building a new economy that is powered by clean and secure energy” and instructing the U.S. Department of Energy “to enter into public private partnerships to develop 5 ‘first-of-a-kind’ commercial scale coal-fired plants with carbon capture and sequestration.” His policy in addition describes the “creation of an Energy Security Council inside the White House” that would be “headed by a National Energy Advisor who would manage the country's energy transformation to a low-carbon economy” (Bailey, 2008). Obama’s policy includes not only innovation but also builds on past progress at the governmental implementation level such as: The Energy Policies of 1992 and 2005 that required alternative fuel vehicles in some government fleets and provided tax incentives for conservation and

use of alternative fuels (respectively) and the Energy Independence and Security Act of 2007 that increased fuel economy requirement and encouraged biofuel development (Energy Policy of the United States, 2008) Not only does the Obama policy build on past progress but the technologies and capabilities associated with implementing this policy also exist on a commercial level. The ethanol industry already expects that more than 2.2 billion gallons of new production capacity will be in operation in the next 18 months. The Geothermal Energy Association indicates that at least 45 geothermal power projects are already under development in over ten American states. And advanced solar electric technologies including photovoltaics and the concentration solar power systems should become cost-competitive with other forms of renewable electricity by 2015 (Obama, n.d.). Obama's policy includes "investing \$150 billion over the next ten years to catalyze private efforts to build a clean energy future." This includes:

establishing a federal investment program to help manufacturing centers modernize and help Americans learn new skills to produce green products investing in advanced vehicle technology with a specific focus on R&D in advanced battery technology, providing the critical up-front capital needed by small and mid-size manufacturers to produce these innovative new technologies, and beginning transition to a new digital electricity grid (Obama, n.d.). The implementation of this policy will not be without its challenges. Historically, legislative energy policy has been extremely difficult to implement; partly because of its complexity and partly because of conflicting regional environmental, producer, and consumer objective (EIA, 2008). One poll done by the Big Ten Battleground in September of 2008 suggested that only 5% of Americans (those polled in its survey) felt that energy policy is the most important problem facing the country today. It is possible Obama's policy will receive both moral and voter support from most Americans as the country drives closer toward energy independence but terrorism, national security, the war in Iraq, and the current status of the U.S. economy appear to be a priority over energy policy for now (Big Ten, 2008). Increased federal funding will leverage private sector funds and support our domestic automakers to bring plug-in hybrids and other fuel efficient vehicles to American consumers. Obama's policy will also provide a \$7,000 tax credit for the purchase of advanced technology vehicles as well as conversion Tax Credits (PTC) for 5 years to encourage the production of renewable energy (Obama, n.d.).

Does the policy “flip the switch”?

The Obama policy begins “flipping the switch” in the right direction. Although this policy would make advances the U.S. is currently behind compared to other countries in attempts to be energy efficient so this policy may help America only to catch up to other nations. Obama’s policy will try to ensure 10 percent of our electricity comes from renewable sources by 2012, and 25 percent by 2025 thus opening up electric markets to alternate power producers (Wang, 2008). Obama’s policy will make a true American investment in renewable energy, \$15 billion per year will be used to support the development of clean energy, invest in energy efficiency improvements, and help develop the next generation of biofuels and clean energy vehicles. In addition, the plan establishes a 10 percent federal Renewable Portfolio Standard (RPS) to require that 10 percent of electricity consumed in the U.S. is derived from clean, sustainable energy sources, like solar, wind and geothermal by 2012. The plan will also invest in America's highly-skilled manufacturing workforce and manufacturing centers to ensure that American workers have the skills and tools they need to pioneer the green technologies that will be in high demand throughout the world. To help create a market and show government leadership Barack Obama and Joe Biden will commit to: Within one year of becoming President, the entire White House fleet will be converted to plug-in as security permits; and half of all cars purchased by the federal government will be plug-in hybrids or all electric by 2012 (Obama, n.d.). Currently, the federal government is the world’s largest single consumer of energy in the world, spending approximately \$14.5 billion on energy consumption in FY 2008. Barack Obama and Joe Biden believe in the importance of leading by example. They will make the federal government a leader in the green building market, achieving a 40 percent increase in efficiency in all new federal buildings within five years and ensuring that all new federal buildings are zero-emissions by 2025. They will invest in cost-effective retrofits to achieve a 25 percent increase in efficiency of existing federal buildings within 5 years. The Obama-Biden plan will put forward the resources necessary to achieve a 15 percent reduction in federal energy consumption by 2015 (Obama, n.d.). Obama’s energy policy requires “a sustained and shared effort by our government, our businesses, and the American people.” While not only leading by example but also promoting awareness the Obama-Biden plan will increase funding for federal workforce training programs and direct these programs to incorporate green technologies training, such as advanced manufacturing and weatherization training, into their efforts to help Americans find and retain stable, high-paying jobs. Barack Obama and Joe Biden will also create an energy-focused youth jobs program to invest in disconnected and disadvantaged youth while ensuring awareness in future generations. This program will provide youth participants with energy efficiency and

environmental service opportunities to improve the energy efficiency of homes and buildings in their communities, while also providing them with practical skills and experience in important career fields of expected high-growth employment. Obama's policy encourages an aggressive shift in developing cleaner technologies through financing basic training and education, promoting the shift to plug-in hybrids and placing strict parameters around the required percentage of renewable resources the US must begin to use by the years 2012, 2025 and 2050. Obama's proposal of innovative technology such as the Smart Grid proposal brings the world one step closer to a global energy grid. Although this is currently only a national plan it is an encouraging step to change the way we, and maybe eventually the world, transmit electricity and the way it is ultimately used.

MCCAIN GRADING

Domestic

McCain's policy would most likely increase the standard of living for American by creating a greater supply of resources of such as natural gas to stabilize the price for electricity. Because McCain would open up more areas to mine for non renewable resources, jobs will be created in the process. The main objective of McCain is to open up the untapped areas to drill for oil which should lower the price at the pump. There is a possibility that McCain's policy would make a positive impact on agriculture because he does have an interest in using more bio-fuels such as ethanol. John McCain wants to update the nation's energy grid which may possibly get energy to Americans that currently have none. The energy grid may help the affordability of energy for many Americans. With McCain's policy, it is possible that there may be some new alternatives for Americans to power their homes and businesses.

Global

With our technologies and our resources, the United States may be able to help the rest of the world gain access to energy. This may come in the form of sharing technology and selling our own energy resources. On a global scale, these policies would have an effect international peace between countries. The United States would not have such a large stake in regions that have strong anti-American sentiment. It is probably not likely that the policies would open up international markets and world trade because it is more focused on having enough resources for the use of the United States. With the policies that are put forth by McCain there is a small likelihood that it would contribute to substantial growth in the world economy along with reducing world poverty and hunger. If the United States is no longer buying huge quantities of oil from outside countries, there will be less money for struggling economies.

Environmental

The policy is one that has some potential to be viable and capable of continuing its effectiveness for the short term. Because McCain's policy is strongly based on using our untapped non renewable sources, there is a limit to how long that can be sustainable. When looking at it the long term it is not very viable but for the foreseeable future, it is. Unfortunately, the policy would have a more negative effect on the environment than a good one. Once again, non renewables are at the forefront of the overall policy. There isn't much promise in the sense of promoting renewable energies on a global scale. The policy will still make us dependent on non renewable resources on both a domestic and global scale. McCain wants to put funding and research into clean coal technology which may help reduce carbon emissions from using coal to generate electricity. Since using mostly non renewable resources, it would not prevent or decrease hazardous waste. If clean coal is viable on a commercial level, it may help lower current carbon emissions but there would still be pollution from other sources as well. McCain does not have a specific plan for solving the global climate change. He would have to put a much greater emphasis on renewable resources rather than non renewable resources.

Feasibility/Implementation

There are signs of some new strategies that the United States has not attempted in the past; however overall there are many of the same strategies. Since the United States has done drilling in the past, the government has knowledge on how to implement these policies. On a commercial level, the United States is very capable of implementing legislation to make the policy possible. The United States will have to put some monies in to the research and development of some policies in order for them to be successful on a commercial level. The policy has a very strong likelihood of facing challenges for the policy to become law. There will be environmentalist that will have a strong disagreement on the policy brought forth by McCain. There will also be challenges from the standpoint of the American citizens. There is a great divide between people who want to keep using the same old technologies and others who want us to invest in creating renewable resources that are sustainable in the long run. McCain wants to give tax credits to individuals and businesses that use alternative fuels.

Flipping the Switch

With McCain's policy, it would most likely not establish America as a global leader in energy efficiency. There is a possibility that we would not change many of the habits we now hold. There is hope that the policy will open up electric markets to alternative power producers. McCain wants to fund research and development in alternative energy. However, this does not necessarily mean that it is clean renewable energy. McCain is interested in producing more energy in coal, natural gas, and nuclear energy. Because of the reason just stated, the United States will not full heartedly engage in a move to renewable energy. With this policy, the United States may be able to be energy independent if they take advantage of unused resources. If the United States implemented this policy, they would not take an aggressive shift towards developing cleaner technologies. In McCain's policy, it does not give much indication to uniting the world with a universal energy grid.

Overall Grading

McCain's overall policy is a much different one compared to that of Obama. McCain concentrates more on making the United States independent from foreign producers. This means that he would like to use untapped resources that are unfortunately non renewable. This may be effective in the short term but it does not solve the major issues in the long run. This is where there are many weaknesses in his policy. By investing more in coal, natural gas, and nuclear, we would not be tackling the environmental issues head on.

EXPERTS GRADING

Al Gore

Al Gore's policy has a positive social impact to individuals living in the United States. We graded the policy as being absolutely possible due to that it would help increase the standard of living for Americans. Gore plans to help with this by using alternative fuels that come right from the U.S. and that don't cause pollutants of any kind. This alternative fuel would come from renewable energy sources. A part of increasing the standard of living means that there will be substantial amount of jobs created for Americans. Renewable energy will increase the number of jobs in America because this renewable energy means the construction of the new facilities and workers to keep it running. Gore himself says it best when he said, "when we send money to foreign countries to buy nearly 70 percent of the oil we use every day, they build new skyscrapers and we lose jobs. When we spend that money build solar arrays and windmills, we build competitive industries and gain jobs here at home". (Gore n.d.) Due to renewable energy sources being used as opposed to foreign oil, this would significantly lower price Americans pay for "gas at the pump". This would help the standard of living in that American's would no longer have to pay more than a \$1 for "gas". Gore wants the big auto giants to start manufacturing plug in cars. This plug in car would not release any pollutants into the air, and would reduce the cost of driving vehicles. Cars would no longer need fossil fuel or any type of fuel except for renewable energy. This policy is graded as possible due to that the auto giants will need to be one board with this idea. They may or may not want to make plug in cars due to that they may not make the money they are now. Overall this part of the policy is possible if not absolutely possible. Energy use would be more affordable to Americans and would provide new alternatives for Americans to power their homes and businesses. Renewable energy is more affordable and more importantly will provide clean air. Renewable energy sources are what Gore sees at the best possible way for the generation and distribution of energy so that more people can receive it and to get it to people who currently do not have it.

This policy also rates positively in the environmental section. When renewable resources are used, this means that pollution is reduced. Gore says that "the answer to all problems is to end our reliance on carbon based fuels". It is most likely possible to eliminate carbon emissions and decrease global hazardous waste production levels with the use of renewable energy. His plan is also focused on reducing global warming with the use of renewable energy. Gore also says that "the real solutions to the climate crisis are the very same measures needed to renew our economy and

escape the trap of ever rising energy prices". Gore believes that renewable energy will not only save money for Americans but save the planet. His plan appears viable in that it will have nothing but positive effects on the environment and will have continued effectiveness once everyone is on board.

As to date, this policy has not been attempted in the past U.S. energy policy. Gore wants to "produce 100 percent of our electricity from renewable energy and truly free carbon free sources within 10 years." Renewable energy has been attempted but not with this criteria. The feasibility and implementation was rated as most likely not possible. This is due to that 100 percent is very hard to accomplish. For 100 percent of renewable energy to be used in 10 years means everyone in America is on board with this idea. There will be strong opposition from the government and automobile manufactures because the politicians and the auto manufacturers will lose money. Support by 100 percent of Americans will be very hard. It will be hard to convince everyone to make this change. A lot of convincing would have to be done, done to people who worry about their pocket books more than America's livelihood.

This policy would definitely "flip the switch". Gore's policy would establish American as the global leader in energy efficiency. It would be possible for this to happen because with his policy, America would be using all their energy from renewables. American's would become more aware in the conservation of energy because the policy would need to be known to everyone. The policy is a challenge to all Americans. Every person would have to know about it for the policy to work. It is also possible for this policy to shift toward developing cleaner technologies. When working with renewable energy wind facilities would have to be built and solar panels would have to be installed. Using wind and solar would not pollute the atmosphere in any way. These new technologies would not harm the environment. This policy would also increase the requirements and standards for fuel quality and efficiency. In this plan fuel will not come from fossil fuels any longer. Cars will be electric and be plugged in. Electricity will be fuel for these cars.

Al Gore's plan is strong due to the fact that wants renewable energy to generate and distribute energy to all American's. It is weak in that he has a goal that is a bit unrealistic. He will have try and fight very hard to have 100 percent of renewable energy used in 10 years. It is a good idea but perhaps 100 percent is a bit much. Many people may see the feasibility as unrealistic.

T. Boone Pickens

T. Boone Pickens' plan appears to be absolutely possible and have a positive social impact on Americans. His plan of wind power and natural gas will increase the standard of living for Americans. In fact, it already has. In one example wind power has been a major investment in a town called Sweetwater Texas. This town had a population of 10,000 people, but after a wind facility was built and more jobs were needed the town once again climbed back to 12,000 people. This declining town was again able to prosper. So as can be seen his plan would also create a substantial amount of new jobs. According to Pickens he wants to build 2,700 turbines in the next 4 years across 200,000 acres of the Texas panhandle. (Pilkington, 2008) Building 2,700 turbines would mean the creation of a substantial amount of jobs for Americans in the manufacturing of turbines and the blades. Under this plan Pickens' wants to use mainly wind power to generate electricity. These turbines could have the potential to produce 20 percent of the electricity of the U.S. This would help get electricity to people who currently do not have it. It would be transmitted to cities and towns all over the country. This policy would also absolutely help with lowering the price for gas at the pump. This policy emphasizes natural gas as fuel. It is the cleanest transportation that we have available at this time. It is also much cheaper than gasoline. Pickens' says that "in places like Utah and Oklahoma prices are less than \$1 a gallon. Natural gas is not a renewable resource but it still can provide cleaner fuel than that of fossil fuel. It is also abundant domestically in the U.S.

The environmental impact would also be positive. This policy absolutely seems viable and would have the feasibility for continuing effectiveness. His main focus is on wind facilities and these can built anytime and for a one time cost. It is said that is would take "\$1 trillion dollars to build wind facilities in the corridor that stretches from the Texas panhandle to North Dakota. It would take another \$200 billion to build the capacity to transmit that energy to cities and towns". (Pickens n.d.) This would only be a one time cost as opposed to the \$700 billion we spend on foreign oil annually. Building these wind facilities would be worth it since building them would only require the one time cost. This would also help us to rid our dependence on foreign oil. If wind and natural gas can be used foreign oil wouldn't be necessary. This policy also would reduce the pollutants being put into the atmosphere. Wind and natural gas are two of the cleanest forms of generating energy. The planet would also be helped. Pollutants would be reduced because "Greenhouse gas emissions from natural gas are 23 percent lower than diesel and 30 percent lower than gasoline". (Pickens n.d.)

The feasibility and implementation would be possible. Wind generation has been attempted by the U.S. energy policy but Pickens is taking it to the next level. He wants more wind facilities built with more power. He feels that the “83 megawatt wind farms being stamped all over the country will not do”. (Pilkington, 2008) This plan would require a lot funding but to recall, it would only be a one time cost. The main problem with the feasibility of this plan is that in order for this to work the government needs to take leadership. Pickens’ says that “there needs to be a huge plan from someone in leadership”. (Pilkington, 2008) This form of leadership could be our new President elect. If the President approved this plan and saw it through then wind facilities would start to be built. The American voters would want cleaner and cheaper energy, but the government will have to be the one to step up and take leadership for this plan to work.

This plan would “flip the switch”. This policy has the potential to end our dependence on foreign oil and for the U.S. to produce 20 percent of electricity by wind. This would help the U.S. to become a global leader in energy efficiency. This 20 percent of electricity is a large amount and would show that America is trying to be energy efficient. This policy would be a true and one time investment in renewable energy. Overall this policy is possible. The Pickens’ Plan is realistic and wind facilities can start being built, but only after someone with the leadership qualities step up and convince the government that this is viable and feasible plan and would help all Americans.

James Hansen

James Hansen's policy would have a positive impact on individuals living in the U.S. because it would increase the standard of living for Americans. The two main polluters that Hansen has identified are coal powered plants and automobiles. This increase in standard of living is done by letting America breathe air without carbon-dioxide emissions. American's can only breathe this clean air if new jobs are created to develop clean energy. These new jobs will also increase the standard of living by providing more work for Americans. Hansen wants a "moratorium on building more coal-fired power plants until we have the technology to capture and sequester the CO₂". (Hansen, 2007) This new technology of sequestering CO₂ could bring in new jobs as well. Hansen also believes that if the California legislature that requires a 30 percent reduction in automobile greenhouse gas emission by 2016 is adopted nationwide it could save more than \$150 billion annually in oil important. (James Hansen, 2006) This is possible if people use "hybrid cars with larger batteries and the ability to plug into wall outlets". (Hansen, 2006) Also cars with light weight bodies would get better gas mileage. This new technology in building more energy efficient cars would also create more jobs and help American's pay less at the pump. If hybrid cars with batteries that could be plugged were the only cars built by all auto manufacturers than the amount of fossil fuel needed would almost be eliminated. If people can use electricity as opposed to fossil fuel than American's would have a significant change in the amount they would pay to fill up their "gas" tanks.

It is possible that this plan would be viable and have continued success. It is viable because Hansen wants to reduce global warming and he knows exactly what needs to be done. He knows that CO₂ emissions need to be reduced immediately, to 350ppm to be exact. This would lead to nothing but a positive impact on the environment. It is necessary in fact if the planet is to survive. The policy is directly related to solving global climate change because he knows that all coal-fired power plants need to be eliminated or learn how to capture the CO₂. He knows that our fossil fuel addiction must stop, not only because it is hurting our wallets but more importantly our planet cannot with stand much more of CO₂ emissions.

The feasibility and implementation is possible but not for 5 or 10 years. Creating the technology to capture and sequester CO₂ is not readily apparent and won't be for some time. Until that time comes to where the technology is available for that, he feels that renewable energy can be used. He says that "new electricity requirements should be met by the use of renewable energies such as wind power as well as by nuclear power and other sources that do not produce CO₂". (Hansen, 2006) He

also thinks that a tax on carbon should be established. This may be possible only if the politicians take a leadership role and can persuade the public that this tax is necessary.

This plan will “flip the switch’ but it is not its sole purpose. The moratorium on building coal-fired power plants comes first but then a close second is “improving the standards of fuel efficiency in buildings, lighting, and appliances”. (Hansen, 2006) Hansen feels that America needs energy efficiency standards. This is possible in that “engineers and architects have said that they can readily reduce the energy requirement of new buildings by 50 percent”. (Hansen, 2007) It is said that buildings use the most energy. A positive transformation in the transportation sector is also possible, especially in vehicle efficiency. Improvements have not been made in the automobile industry for about 30 years. He stands by the notion that there needs to a 30 percent improvement in vehicle efficiency”. (Hansen, 2007) This plan will only be possible if America is told the facts. Hansen believes that the public has been misinformed. There is a lot of persuasion by special interest groups that distort the facts. So until the public is told the truth the plan will not work. But once the public is told the truth and without the sugar coating, Hansen feels that the public would be on board with his policy.

World Watch Institute

This organization’s policy regarding renewable resources will have a positive impact on America. It will increase the standard of living because their goal is to reduce global warming and end our dependence on foreign oil. This policy will be most likely possible due to the use of renewable resources. This policy involves the creation of many new jobs due to these renewable resources. It is said that “Renewable energy creates more jobs per unit of energy produced and per dollar spent than fossil fuel technologies do”. (World Watch, 2008) This renewable energy could also positively impact those employed in the U.S. Agriculture Industry because renewable energy such as wind power “could provide a new source of revenue for thousands of farmers and agriculture processors, creating economic opportunities in rural areas that have suffered from decades of falling crop prices”. (World Watch, 2008) Energy efficiency is also most likely possible because World Watch feels that with cost effective technologies the \$200 billion Americans spend annually on electricity could be halved once renewable resources are used.

This policy will have a positive impact on the environment. It is most likely possible because the use of renewable technology. World Watch wants more than just 2 percent of renewables that are being used today. They say the potential for renewable energy could be a reality but it will take the help of everyone at all levels including the local, state and national. World Watch feels that global emissions must be reduced dramatically and this can be done by using renewable energy as opposed to fossil fuel. Their goal is to help solve the global climate change through the reduction of these emissions. The environment is the underlying factor as to why renewable energy needs to become a reality and soon.

The feasibility and implementation may be possible. It takes action by governments, businesses and citizens across the nation. (World Watch, 2008) These renewable energy policies have been attempted before but World Watch is expanding on the ideas to give more information on what we can do to make renewable energy possible in the near future. This is only possible if they get the correct information to Americans and by being persistent in what the world needs to survive.

World Watch wants to “flip the switch” and have the United States be the leader in energy efficiency. They want to get away from coal and fossil fuel and use the wind, sun, and water to generate our electricity. They want to revamp the transportation sector and use biofuels instead of fossil fuel. They also feel that plug in cars should be manufactured more frequently. World Watch feels that wind farms should be built immediately and this is possible due to that it can take as little as 3 to 6 months to have a wind farm installed.

World Watch takes the idea renewable energy and tries to make it a reality. Their policy may be possible because they don't make the goal to use renewable resources unattainable. They say what needs to be done and how. It is critical that renewable energy needs to start to be implemented but World Watch doesn't say it needs to happen in an unrealistic amount of time.

GENI GRADING

Social Impact: Domestic

The GENI Initiative would make it absolutely possible to increase the standard of living for Americans. Their policy addresses energy-accessing challenges facing Americans today such as “energy conservation, repairing and modernizing our infrastructure, and increasing our energy supplies in ways that protect and improve the environment” all of which have been directly correlated to improving the standard of living for humans (National Energy Policy Development Group, 2001).

It is also absolutely possible that the GENI Initiative would contribute toward the creation of a substantial amount of new jobs because of the tremendous manpower required to build and support the interconnection of electric power networks between nations and continents. GENI’s plan would substantially add to the nearly 8.5 million people already expected to be working in the renewable energy sector by 2030 (Voice of America News/ContentWorks, 2008).

Our research indicates it is possible GENI’s plan could significantly lower the price Americans pay for gas “at the pump” because of their support for plug-in hybrids and other types of vehicles that can be powered 100% from electricity. A recent comparison study conducted by San Diego Gas & Electric found that “plug-in hybrids had a monthly fuel cost of \$94, an 18-percent reduction from the fuel costs of a standard hybrid (\$115) and a 57-percent reduction when compared with a gasoline-powered car with a monthly fuel cost of \$219 at \$3.85 per gallon” (Market Wire, 2008). Because the GENI Initiative requires an emphasis on tapping abundant renewable energy resources, farmers and others involved in the U.S. Agriculture may find substantial profits through production of high demand biofuels such as switch grass-based ethanol. Our research suggests this policy would most likely impact those employed in the U.S. Agriculture Industry as one major study found “the development of switch grass alone would significantly enhance rural economies” (Science Daily, 2008). Not only would the GENI Initiative encourage rural economies but it would also help get energy to people living in the U.S. who currently do not have it as reliability and efficiency would be improved throughout not only the U.S. but the rest of the world. The policy would not only increase energy availability but it would also make it more affordable. The implementation of the global grid would make standard home energy-use more affordable for Americans because the grid utilizes resources such as solar, wind and bio-fuels that are far more abundant than the non-renewable electricity-generating-resources predominantly used today. GENI’s policy would

encourage Americans to power their homes and businesses by electricity that is generated from renewable resources such as wind and solar. Whether or not this happens will be dependent on the fiscal capabilities of the individual or group, “the initial cost of a large residential alternative energy system can run in excess of \$10,000” (ABS Alaskan, 2008). So while the “new” sources of electricity are available they will also have to be affordable to be placed into practice and into daily American life.

Social Impact: Global

In terms of its social impact on those around the globe, it is absolutely possible that GENI’s proposed interconnection of electric power networks between nations and continents (with an emphasis on tapping abundant renewable energy resources) would accomplish the following: 1) help to provide energy for people in other countries 2) promote international cooperation and peace with other countries 3) open up international markets and enhance world trade 4) contribute toward substantial growth in the global economy 5) help to reduce world poverty and hunger and 6) help to stabilize global population growth. GENI’s grid represents an electrical interconnection of power networks between countries and continents that would help provide power worldwide for “the more than 1.6 billion people that have no access to electricity” (The Baker Institute Energy Forum, n.d.). The electrical energy bridges created by GENI’s global grid would promote international cooperation and peace with other countries because of the economic and social benefits that can be experienced by all countries that get involved. Our research shows a global grid would “connect neighboring nations into a continuous trading relationship, helping to minimize reasons for local/regional conflict. It also would connect old enemies and developing world economies” (The Baker Institute Energy Forum, n.d.) New markets for electricity sales would be created when electricity is able to be generated and transported more freely from areas with excess capacity to those with little supply. This excess capacity will come via the development of renewable resources and may enhance world trade by “bringing needed income to developing nations and creating new ways for countries to repay debts through the export of excess renewable energy” (The Baker Institute Energy Forum, n.d.) A true global grid would “provide instantaneous electricity to all connected nations - benefiting the economies of first world nations and supporting the economies of developing countries” (The Baker Institute Energy Forum, n.d.) With the access to electricity and support for developing countries established, in turn, comes the stabilization of an entire population. World poverty and hunger would decrease as infrastructure is developed allowing dependable clean water and food supplies, and a decrease in disease, famine and childhood diseases (The Baker Institute Energy Forum, n.d.) GENI reports that adequate energy and electricity, “creates a

proportionate reduction in infant mortality rates and, subsequently, in birth rates. Large families are no longer needed as a means of social security” (GENI, n.d. a). “This suggests that the most effective way to stabilize population growth, apart from war, plague and holocaust, is to improve living standards. . .”(Robertson, 2005) not to mention a much more humanitarian way to balance population growth.

Environmental

It is absolutely possible activities associated with this policy appear both viable and sustainable because “there is enough potential capacity on each continent to meet the world's entire power generation requirements without the use of fossil fuels” (GENI, n.d. b). Although electricity is expected to remain the fastest-growing form of end-use energy worldwide through 2030, the use of renewables for generating electricity will provide new ways of achieving continuing effectiveness moving forward (Energy Information Administration, 2008). For example, enough sunlight hits the United States in one day to power the entire country for one year (A Conservation Economy © Ecotrust, 2002). Our research found that using today’s technology, interconnection of large scale renewable resource energy is an economic and environmentally sustainable solution because “solar, wind and geothermal power, for example, do not contribute to global climate change, will not run-out and are available to everyone around the globe” (GENI, n.d. b). It is also absolutely possible that such an innovative idea such as the GENI Initiative could become a contributor to the ideas of a reputable global organization such as IRENA - the International Renewable Energy Agency. Mandated by governments worldwide, IRENA aims at becoming the main driving force in promoting a rapid transition towards the widespread and sustainable use of renewable energy on a global scale (IRENA, n.d.). If GENI was able to implement the global grid that was solely based on generating energy from renewable resources, the global necessity for fossil fuels and other non-renewable resources would become obsolete. GENI agrees with energy experts such as Ralph Nader who claims “We need to invest in a diversified energy policy including renewable energy like wind and other forms of solar power, more efficient automobiles, homes and businesses that would break our addiction to oil, coal, and atomic power” (Nader, 2008). It is absolutely possible activities associated with this policy relate directly to the minimizing and eliminating of carbon emissions. The benefits of creating this sustainable power solution are proven to decrease pollution from fossil and nuclear fuels (GENI, n.d. c). We also know that nations that “de-carbonize” their economies reap immediate rewards. In 1991 the Swedes enacted a carbon tax—now up to \$150 a ton—and as a result thousands of entrepreneurs rushed to develop new ways of generating energy from wind, the sun, and the tides, and from woodchips, agricultural waste, and garbage. Growth rates climbed to

upwards of three times those of the U.S. (Kennedy, 2008). Nuclear fuel may not produce CO₂, but it does provide its share of problems. On average, a nuclear power plant annually generates 20 metric tons of used nuclear fuel, classified as high-level radioactive waste. When you take into account every nuclear plant on Earth, the combined total climbs to roughly 2,000 metric tons yearly (Nuclear Energy Institute, n.d.). All of this waste emits radiation and heat, meaning that it will eventually corrode any container and can prove lethal to nearby life forms. If GENI's policy was implemented as they would like, power would be moved via high-voltage transmission lines, connecting nations and continents. This would reduce the "Anthropogenic" greenhouse pollution and toxic wastes from fossil and nuclear power generation (Brain and Lamb, 2000). "Conventional sources of energy pose significant threats to our current and future global security, environmental quality, health and social well being" (GENI, n.d. d). Leading scientists from the Intergovernmental Panel on Climate Change (IPCC) have projected a warmer world, rising sea levels, stronger storms, species extinction and spreading topical diseases. Minimizing these effects would clearly benefit all humanity (Meisen, 2008). Renewable energy sources mitigate the negative effects of fossil fuel use. Solar, wind and geothermal power, for example, do not contribute to global climate change, will not run-out and are available to everyone around the globe (GENI, n.d. d).

Feasibility/Implementation

A global energy grid has not been considered previously in past Energy Policy. The US has mainly look at the US resources for energy as a sole entity. As our world become smaller due to increase in technology our potential and our need to accomplish something globally becomes greater. GENI's policy will build on past progress at the government implementation level. GENI's policy will build on State renewable portfolio standard (RPS) programs, which require that specific and generally increasing shares of electricity sales be supplied by renewable resources and energy-independence packages such as a federal RES for at least 15 percent renewable electricity and efficiency improvements before 2020 (GENI, n.d. d) (Energy Information Administration, 2008). The technologies and capabilities of the GENI policy may take some time but they are absolutely possible. GENI acknowledges that "While this global vision is still years away, technological advances over the past two decades have made the linking of international and inter-regional networks practicable today." Specific to the transportation of energy, research shows "the efficient distance of ultra-high voltage (UHV) transmission to be 7000 kilometers for direct current, and 4000 kilometers for alternating current. This would allow for power interchange between North and South hemispheres, as well as East and West" (Media Release, 2007). And there is no energy scarcity. The renewable energies (wind, solar, hydro, geothermal, tidal and biomass) are abundant

far beyond our needs -- and several are now cost competitive (GENI, n.d. e). GENI's policy would require the U.S Government to direct a substantial amount of public funding to new R&D activities. Governments have the option to create policy that affects the price of both fossil and renewable fuels through subsidy reform and taxes (GENI, n.d. b). Funding would be supported by the government giving tax incentives and subsidies to companies that come into compliance with improving the availability of renewable energy.

Foreign Countries and Foreign Region

BRAZIL GRADING

Brazil's overall policy received a total grade of 161 points out of 185, receiving a grade of an 87%. Evaluating domestic issues in Brazil, it is legitimate to state that all energy policies being implemented in Brazil are absolutely possible in creating a better domestic environment.

Social

New energy policies will increase the standard of living because there will be cheaper alternatives to save citizens money. There will also be more jobs created due to the labor demanded to implement strategies. Brazilians will break away from oil dependency and be able to purchase cheaper and cleaner alternatives. Policies involving ethanol and other renewable energy will increase the agriculture industry. Those who do not currently have energy will be more likely to receive it if prices are reduced. Overall the drop in price of energy will allow individuals to afford it at a personal level and a commercial level.

Global

Brazil would most likely sell excessive untapped energy to foreign countries to profit from their energy policy. International cooperation and peace is possible in the short run, however other countries have different ways of generating energy. This will not be a prime factor in cooperation. It will however increase international relations. Overall Brazil is doing things with energy that others are not. They will become a leader in the international economy. Their success will help reduce poverty and hunger to some individuals and assist in stabilizing population growth.

Environmental

The policies being implemented seem viable in the sense that they can maintain their effectiveness. Renewable sources are especially viable sources that seem to be effective so far. Most renewable sources appear to have minimal long term effects. The non renewable sources are cleaner and effective than traditional sources. On a massive scale Brazils policies will gain world popularity if they become effective. The main purpose for all of the exploration is to decrease dependence on fossil fuels. The renewable policies will contribute significantly to reducing green house gases, climate change, and hazardous waste. Non renewable sources will also play a role in providing a cleaner environment.

Feasibility/Implementation

The implementation involves strategies and ideas that have been ongoing for many decades and builds on past progress. The technologies are capable at being implemented at a commercial level however; they have not been commercially reduced to sale at an affordable price to where they can reach a larger scale of consumers. The policy can use R&D funding however; it is already starting to be implemented. Brazil has issued tax incentives that are willing to convert vehicles to natural gas. This has also gained moral and voter support.

Does the policy flip the switch?

Brazil has already started establishing itself as global leaders in different energy policies. Mass production of energy will open up markets to new producers. It's a good investment for Brazilians who wish to capitalize. This policy is a bold movement to achieve energy dependence. Many of the policies require energy conservation. The newer technologies are to reduce emissions and provide a cleaner way to generate electricity. Natural gas in Brazil is already transforming the energy sector. Overall most renewable sources will be able to be implemented into the energy grid.

COAL-Thermal Coal is the largest source of non renewable in the country. It represents about 50% of Brazil's fossil fuel energy. Coal imports will increase by 32% in upcoming years. Steam coal is used for electric generation. Coal is not the cleanest source of energy. There are some environmental effects that will contribute to global warming. Sulfur oxide impurities can reach 7%. Thermal power plants also increase pollution through organic compounds. It is a safer and cleaner technology compared to other renewable sources of energy.

NATURAL GAS- Brazil wants to guarantee gas supply to power plants to ensure that they can generate power at peak times. Brazil is granting tax incentives to people who convert their vehicles to natural gas. Natural gas is a cleaner, cheaper, and more efficient type of non renewable however; the country does not plan to be self sufficient on natural gas. It is the cleanest of all fossil fuels. “The combustion of natural gas, on the other hand, releases very small amounts of sulfur dioxide and nitrogen oxides, virtually no ash or particulate matter, and lower levels of carbon dioxide, carbon monoxide, and other reactive hydrocarbons”(naturalgas.org).

Oil-Brazil is trying to become less dependent on oil and move towards other types of energy. Importing oil has also become far too expensive. Self sufficiency is not guaranteed in the long term. Oil has by far worse impacts on the environment than any other renewable. It is also a time consuming and expensive process to produce more refineries.

Nuclear- accounts for about 4% of energy in Brazil. The country plans to build 7 more reactors by 2025. The problem with nuclear are the safety concerns. The waste might get into the wrong hands. It is a clean non renewable, however the waste byproduct of the substance is harmful to the environment.

Renewable Energy- Brazil strengthened its energy policies after implementing privatization programs and energy reforms to meet its growing energy needs. It introduced the renewable energy policy in 2001, which is encouraging the purchase of more than 3,000 Mega Watt (MW) of renewable energy by 2016.

Solar energy – despite being the seventh in the world in terms of area covered by solar panels (3.1 million m²), the industry's growth is small (17% annually). This policy is a pricy type of energy that doesn't cause any harm to the environment.

Wind Energy- Brazil is destined to become a leader in wind energy by providing 150 mega watts to its energy matrix. It represents 5% percent of energy consumed and will be sufficient enough to meet the needs of 600,000 people. It is a costly yet effective way to provide non polluting energy that is renewable

Biomass Bio fuel- Brazil is one country that has almost unshackled itself from foreign oil. Bio fuels contribute to a large portion of the energy sector. Bio diesel causes less pollution. The government has launched a program to increase the use of biodiesel. Ethanol mixtures have also contributed to

40% of the energy sector reducing co2 emissions. Bio fuels have been a cleaner more efficient part of Brazil's energy sector.

Hydropower- Brazil is the third largest hydropower producer in the world and operates one of the largest hydropower plants in the world.

JAPAN GRADING

Domestic

Overall new energy policies will raise the standard of living for all Japanese. Many policies will demand more human capital that will be required to fill more job positions. An increase in different energy sources will reduce the need for foreign imports lowering the price at the pump. There will be somewhat of a change in the agriculture industry if Japan decides to expand its investment in biofuels. Other sources of renewable energy may also impact that industry. An increase of energy production and its sources will help others who do not have energy by making it more affordable and provide new alternatives for people to power their homes and businesses.

Global

It is absolutely possible for Japan to provide energy to other countries if there is excess energy available. It is somewhat possible for energy policy to promote international cooperation and peace but not absolutely possible. Newer sources of energy allow countries to break them selves from dependency from other countries. There are many benefits such as a growing economy and world trade. Cheaper energy rates will reduce world hunger and stabilize population because there will be more money to go around.

Environmental

Many of the policies do seem viable and effective because they reduce foreign dependency and promote renewable sources. There are minimal effects on the environment because the newer policies release fewer pollutants into the atmosphere. They also reduce dependency. If these policies prove to be effective, other countries will start to adopt such a policy to reduce fossil fuels and other non renewable sources. The peak oil crisis and global warming have caught the attention of the world. Most are looking for cleaner alternative solutions to reduce green house gases.

Feasibility/Implementation

The policies involve ideas that have been trying to become policy for several years building on past government implementations. It is possible for the technologies to be available on a commercial level; however because these new technologies are barely being implemented they have not yet been brought down to an affordable price for most consumers. It is not likely possible for any R&D funding because many others are already trying out the policies. The Policy is likely to

become a law if it proves to be effective. If the policies are cheap and effective they will most likely gain support. There are already tax incentives to change the source of energy.

Does the Policy Flip the Switch?

Japan is already becoming a leader in many of their policies There will definitely be a need to open new markets once new technologies become commercialized.

The new policies promote awareness on conservation because everyone is being affected. There will be an aggressive shift in towards developing cleaner technologies once renewable sources prove to be effective. If prices are cheap and revenues are good it can be considered a good investment. Certain policies will be required to meet fuel efficiency standards once implemented. The transportation sector will benefit greatly from alternative fuels. The world will be closer to an energy grid when renewable policies prove to be effective.

Coal-Japan depends on coal for 16% of its primary energy supply. The supply and demand for coal is expected to become more sustained in the future. Ensuring a stable supply of coal on an international scale remains a top priority for Japan. Japan continues to focus on creating technologies to make coal a cleaner way to produce energy. Coal contains many organic compounds such as sulfur that can be hazardous to the environment at when released at high concentrated levels.

Natural Gas- Natural gas is expected to account for 14% of Japan's energy supply by 2010. The number will continue to rise over the years. Natural gas production is expected to rise further more than demand. It is also expected to increase as a way to produce energy more than any other non renewable source. Global warming issues have caused Japan to cut emissions by 6%. It is the cleanest of all fossil fuels. "The combustion of natural gas, on the other hand, releases very small amounts of sulfur dioxide and nitrogen oxides, virtually no ash or particulate matter, and lower levels of carbon dioxide, carbon monoxide, and other reactive hydrocarbons"(naturalgas.org).

Oil- Oil currently remains Japan's main source of energy. Since the increasing prices in oil, Japan is planning on shifting away from energy. The harmful effects on the environment oil produces will also contribute to searching to alternative sources.

Nuclear- Dependence on foreign imports has caused Japan to look further into Nuclear energy. Nuclear energy is also expected to help in the reduction of green house gas emissions by 2010. There are many plans for new reactors. They will also account for a portion of electricity generation in the future.

Renewable- The Japanese government enacted a Renewable Portfolio Standard law in April 2003 with the aim of stimulating renewable energy to provide 1.35 percent of the country's total electricity supply by 2010. Renewable energy has a bright future in Japan's largest city. Tokyo Metropolitan Government issued its Renewable Energy Strategy in an attempt to go beyond the level of pilot projects and increase renewable energy use in the city to 20 percent of all energy supplies by the year 2020.

Solar- Japan will cut green house gas emissions by 60-80% from current levels by 2050 and install solar panels in 70% of newly built houses by 2020. The government will provide subsidies as incentives to customers.

Wind- Japan plans to aim for 3000 megawatts by 2010.

Geothermal- has been used as a way of heating homes.

Hydrogen- Japan is developing new ways to synthesize hydrogen from city gas.

EUROPEAN UNION GRADING

Domestic

The European Union's (EU) energy policy will increase the standard of living for all nations within the EU. So far the EU's policy has created over 125,000 new jobs in the energy sector. There is some proof to suggest that there may be a positive impact when citizens are paying at the pump. In countries that don't have as great of an infrastructure as other nations, there will be a positive impact on getting energy to individuals that do not currently have access. In a number of countries in the EU, citizens can produce their own solar power for their own use or sell it to the national energy grid. This has given way for new alternatives for individuals to power their homes and businesses.

Global

With the EU's policy, there is an opportunity to provide energy to people in many different countries including those in Africa. Because the EU is working together to have a clean energy policy, countries are coming together for a common good. One country's success is another country's success. The EU has a policy to have large solar panel installations in the Sahara desert. This will open up enhance world trade with economies that will benefit from international cooperation. As stated in the previous sentence, this policy will benefit the global economy as a whole. Overall the policy will have a positive effect on world hunger and the stabilization of populations. If you are able to provide more people with electricity, the standard of living will be greater than if they had none at all.

Environmental

The policy is a viable one because each country will create renewable energy the way each country finds fit. This means that Germany may use more wind energy than Greece or France. This policy is a sustainable one with small long term effects on the environment. Most of the countries are investing in clean renewable resources such as wind, thermal, and hydro power. Because of the aggressive policy of the EU, it has pressured other developing countries to do the same. By using more renewable resources, it will decrease the demand for non renewable resources such as fossil fuels. The EU is dedicated to having 20% of their energy from clean renewable resources by 2020. The EU is on a path to lower carbon emissions that create hazardous waste.

Feasibility/Implementation

The policy that is being implemented is capable on a commercial level. As stated, each country uses a number of different renewable sources. This policy requires direct contact between government and business to make sure they reach their goal by the year 2020. There has not been a big challenge from the different governments to prevent forward progress of this policy. This policy has received the moral and voter support from most of the citizens within the EU. The European countries have, for many years, been a driving force in create new and renewable resources. The EU has given tax incentives to both individuals and businesses for using renewable energy.

Flipping the Switch

The aggressive nature of the EU's policy has labeled them a global leader in energy efficiency. It has been proven that the policy has opened up electric markets to new alternative power producers; even individuals are involved in the electric markets. Because of what has already been done by the EU, the policy represents a true investment in renewables. For the most part, this policy encourages the development of cleaner technologies. The EU does bring the world closer to having global energy grid. They have proven that countries can work together for the common good of all their citizens. This gives the rest of the world hope that maybe someday we can have free flowing energy through all countries.

Overall Grading

For the most, the European Union has been working hard to stick to the goal that they have set for themselves. Their high grading score shows the dedication they have to an issue they think is a priority, global warming. The strengths within the overall policy are in their numbers. There are over 20 nations in the EU that are coming together to fight the climate change that is plaguing our earth. The European Union is a great example for the United States to follow because of the fact that they have been successful on a large scale.