

Abstract

The United States is dependent on fossil fuels to maintain the status quo, but this is threatened by energy-related economic turmoil and unreliable relationships abroad. Unless the U.S. takes the initiative to transition to renewable energy, dependence on foreign fossil fuel will only increase, and economic and political consequences will follow. We show that a shift to renewable energy has the potential to revitalize the economy and change the balance of power in the international community. Most importantly, this transition will provide the U.S. with energy security because all needed energy resources will be contained within the country's borders.

Introduction

To meet the energy demand of the U.S., there are many possible sources including:

- Fossil Fuels (Coal, Natural Gas, Petroleum)
- Nuclear Energy
- Renewable Energies (Photovoltaics and Wind Power)

For this project, we will disregard nuclear energy because of the of bad public stigma around it. Below are the drawbacks of the other energies.

Fossil Fuels

- Environmental Damage
- Reliance on Foreign Nations for Energy



Renewable Energy (Solar and Wind Power)

- Inefficient Technology
- Intermittency
- High Costs

Despite the negatives associated with renewable energy, it's the best alternative with the future in mind. Besides the positive environmental impact, the U.S. economy and foreign relations will also improve as a result of a diversified energy portfolio.

Findings

Currently, 85% of U.S. energy comes from fossil fuels, and only 10% comes from a renewable source [EIA 2]. This is largely because of the relatively cheap costs and abundance of fossil fuels. These costs can be portrayed easily in terms of electricity. Coal costs around 3.23¢ per kWh [IER], solar energy costs 12.2¢ per kWh [Rh 16], and wind power costs 9.6¢ per kWh [EIA 1].

With regards to solar energy, there is a 30% tax credit on any residential installation that will run through 2021 [DOE]. Individuals also gain Solar Renewable Energy Credits (SRECs) for every MWh of energy produced and sell them at a profit to utility companies. The most notable state for this is New Jersey, where the SRECs sell for over \$200 [SR].



With regards to fossil fuels, the United States imports 3.3 billion barrels per year for industrial use [CIA]. This amounts to \$165 billion spent annually with oil prices at \$50 per barrel. Of this, over a third of our oil comes from Russia or countries that belong to OPEC.

Discussion

Although it is clear that solar and wind technologies are still developing, they can still become a large part of the U.S. energy economy.

On the residential front, solar energy can place energy control into the hands of homeowners and provide them with a long-term source of income.

On the industrial front, solar energy can be an option for companies to become energy self-sufficient and remove potential CO₂ waste from the atmosphere. Companies, such as Google and Apple, have spent \$2 billion and \$850 million respectively for exactly these reasons.

Wind energy will help to counter the intermittency of solar energy, and the growth in both industries will provide the U.S. with needed jobs.



With respect to the country as a whole, renewables will offset the need for fossil fuels and bring energy security back to the United States.

Conclusion

Renewable energy presents the U.S. with an opportunity.

Both solar and wind power do have higher startup costs compared to fossil fuels, but they both benefit the country much more than fossil fuels ever could.

If the U.S. continues to support renewable energy or even increase its support, photovoltaics and wind energy can and will become a significant part of the U.S. energy economy.

Although these energies couldn't replace all fossil fuel needs, it will severely reduce them, and it will benefit the U.S. positively regarding the economy and foreign relations in the near and far future.

References

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