

THE USE OF ENERGY IN THE UNITED STATES: A HISTORY

Development in the United States has been greatly influenced by energy. The use of energy in the United States has helped to mold American society and life as we know it. When the nation was founded in 1776 technology for harnessing energy was still rather primitive, but the discovery of new energy sources such as coal and petroleum caused the an explosion of productivity, industrialization, and modernization. Industrialization revolutionized the United States and within the span of 50 years turned it into a super-power. The development of energy resources in the United States has molded the American society and government into the entity it is today.

Energy use in the United States began in the early 1600s when European settlers began founding colonies in North America (e.g., the Plymouth, Chesapeake Bay, and Jamestown colonies). The predominate source of energy was fuel-wood. Since there were very few settlers in the relatively uninhabited land, trees were an expendable resource. The use of fuel-wood in colonial America expanded at a similar rate as the economy. Even in this century many unindustrialized nations rely on fuel-wood to sustain their energy needs. In addition to fuel-wood, pre-modern America relied on muscle-power provided by draft animals for transportation. Fuel-wood and muscle-power prevailed in the largely agrarian, pre-industrialized America. Before 1850 most American comprised of farmers who lived in the countryside and consumed very little energy per-capita (EIA report).

Technology in the U.S. remained primitive until the Industrial Revolution fully took hold of North America in the late 1800s. As the United States' economy continued to expand in the 19th century, the supply fuel-wood began to dwindle and it was finally replaced by coal in 1885 as the leading source of energy (EIA report). During the first half of the 19th century the United States explored the western half of the continent and found considerable resources there. Coal was cheap and relatively easy to mine, so the industry burgeoned. The advent of the steam engine in America also had a significant impact on the use of coal in the United States. The railroad allowed rapid westward expansion and provided an easy and efficient means for the transportation of people as well as transporting coal (EIA report). The use of railroads fed the growth of coal use and vice-versa. The use of coal helped fuel industrialization in the United States in the late 1800s.

As America became industrialized in the latter half of the 19th century, fewer Americans lived in the country and more moved to the job-rich larger cities. The railroads helped transport people from the countryside to bigger cities. As people moved to the city the dependence on muscle power significantly decreased. Since technology had increased so efficiently fewer farmers were needed to tend to the land and more jobs were available in large urban areas. This migration to larger cities ultimately destroyed American's self-sufficient nature. However, new opportunities and freedoms were created by this resettlement.

Electricity began to make huge strides as a provider of energy to Americans in October of 1879 when Thomas Edison developed the first successful incandescent light bulb. This invention had the ability to provide light to any home with electricity at any

time, and in September of 1882 Thomas Edison opened the first plant that generated electricity in New York City (EIA report). This plant spurred the larger as textile, steel, printing and mining industries to electrify between the years of 1890 and 1910. The electricity market competed with the petroleum market during the 1890s over which one would power the residential sector, but within ten years there were 25 million electric incandescent lamps and basic electrical appliances in most city households. By the year 1900 most households in larger cities had electricity.

With Edison's invention of the incandescent bulb, new forms of producing electricity were explored. Hydroelectricity became to Americans available in the 1880s and many plant designs were experimented with until the beginning of World War I, when a standard design came into existence (History of Hydroelectricity). Although hydroelectric plants did not match the amount of electricity produced by coal, they helped remove some dependence from the energy source. Hydroelectric plants were America's first renewable energy.

In the 20th century petroleum would replace coal as the fuel most used by Americans. Oil drilling has existed in the United States since the 1850s, when Edwin Drake struck oil in Titusville, Pennsylvania on August 27, 1859 (Wikipedia). Other oilfields in the Ohio-Pennsylvania region were soon found afterwards and oil barons such as John D. Rockefeller of the Standard Oil Company of Ohio came to dominate the petroleum market, which was in its infancy. This created an oil boom that was fed by a significant demand for lubricants and lighting fuel (EIA report). Oil fields in other parts of the nation were also discovered early in the 20th century. An example of this is the Spindletop Oil Field in Texas which was discovered in January of 1901 and in that year

produced about 100,000 barrels of oil a day (U.S. Energy Chronology). The United States was able to feed its petroleum consumption for the first half of the 20th century.

The use of energy in the United States quadrupled between 1880 and 1918. Seventy-five percent of the energy consumed during this tremendous growth was produced by coal. Pre-World War I America was largely powered by coal plants. However, the use of petroleum increased exponentially after the end of World War I in 1918. This increased dependency on petroleum and decreased use of coal was caused by the mass production of the automobile. As automobiles became affordable and available, petroleum was needed to power them. The economy of the United States in the post-World War I era roared which led to an increase in electricity and petroleum consuming goods.

The 1920s were a booming time for America. The Allies had just won the war, and the United States achieved world-power status with its involvement in World War I. The economy kept increasing, as did energy demands and consumption. During the 1920s the use of petroleum and natural gas took off, and the use of draft animals dwindled in the countryside as new technologies became available to farmers. In the larger cities, the end of the war meant a new social and economic freedom that Americans had not yet experienced. The energy trends of the 1920s were a good indicator of things to come in the nation.

When the depression hit in the 1930s, energy use was momentarily hampered. Coal use actually decreased for a number of years, allowing the growing petroleum market to catch up. During the depression President Franklin Delano Roosevelt created the Works Progress Administration (WPA) to construct government projects for the good

of the economically ailing nation. The WPA began the construction of numerous hydroelectric plants around the nation. The most notable of these efforts were the Hoover Dam in the Nevada-Arizona region and the Tennessee Valley Project (Public Works Projects). In addition to an increase in hydroelectric plants during the 1930s, the consumption of petroleum and natural gas continued to increase exponentially.

The outbreak of World War II increased America's demand for fossil fuels as many of the nation's energy resources were being expended overseas in the costly war. Energy was at a premium, and supplies were rationed. The nation was involved in a total war again, like World War I, and put forth all of its resources (e.g., capital, energy, intellect) into the war effort. Although resources such as a gas and rubber were rationed domestically in the United States, the country's demand for energy was still sharply rising. During the 1940s the U.S. was still producing as much energy as it consumed (EIA report).

During the 1950s the United State's self-supported energy consumption came to an end. Automobiles were being built faster and larger, and President Eisenhower's System of Interstate and Defense Highways created a new freedom for Americans with automobiles. The interstate highway system allowed Americans to freely roam the nation wherever the road led them (Interstate System). It was also in the 1950s that the U.S. began importing fossil fuels from other nations. The new, larger vehicles of the time were tremendous energy consumers and were horribly inefficient. This led to the use of even more petroleum than was previously consumed. In 1951 petroleum surpassed coal as the most consumed fuel in the United States, and the U.S. began to produce more coal than it consumed (EIA report). Nuclear power plants began to appear in the U.S. in

December of 1957. The world's first large-scale nuclear power plant began operation in Shippingport, Pennsylvania near Pittsburgh (U.S. Energy Chronology). Nuclear power would continue to develop throughout the 1950s, and the full-scale production of plants would flourish in the 1960s.

The 1960s mainly followed the trends of energy consumption of the 1950s in a similar fashion. Petroleum and natural gas usage continued to increase exponentially, whereas total consumption only increased linearly. The success of test nuclear power plants before 1966 sent the demand for new nuclear power plants soaring. The construction of these plants in the 1960s further cut into the coal industry and caused it to momentarily stagnate. However, coal production began to rise again the early 1970s.

The decade of the 1970s brought great instability to the energy industry in the United States. The oil crisis of 1973 caused by the Arab Oil Embargo shocked many Americans and momentarily hurt the petroleum and natural gas industry. The consumption of petroleum and natural gas momentarily dipped in the early and mid 1970s while nuclear power and alternative energy sources such as hydroelectricity and photovoltaics were on the rise. Various conservation movements were also started in the 1970s and endorsed by President Jimmy Carter which led to a momentary decrease in energy consumption. However, after the second energy crisis in 1979 the consumption of petroleum and natural gas began to increase again (EIA report).

During the 1980s improvements on existing technologies such as renewable energies led to a further increase in their usage. However, nuclear energy faced a few setbacks. The meltdown at Three Mile Island on March 28, 1979 near Harrisburg, Pennsylvania caused great skepticism among the American public about the safety of

nuclear power. No new nuclear power plants have been built in the United States since 1979. There are currently 102 nuclear power plants in the United States producing approximated 20 percent of the nation's electricity (U.S. Energy Chronology).

The oil glut caused by OPEC in the 1980s led to cheap oil and natural gas. This led again to a steady consumption of fossil fuels as the rate of consumption of coal equaled that of natural gas. The conservation movement of the late 1970s and early 1980s lost its effect as the nation began consuming more energy at higher rates again (EIA report). The decade of the 1990s followed a trend similar to the 1980s. With more automobiles on the road, and relatively cheap oil, petroleum products were quickly consumed. SUVs and other gas guzzlers gained popularity during the late 80s and early 90s which helped proliferate the consumption of fossil fuels. Towards the end of the decade prices began to fluctuate with current events and world strife-this continues today.

Since the United States has become industrialized its consumption of fossil fuels has skyrocketed. Although there have been various efforts to combat this large consumption of nonrenewable resources, very few of them have been successful at significantly reducing the use of petroleum and other fossil fuels. Future trends for the United States predict an increase in renewable energies, but nothing compared to the consumption of petroleum and natural gas. If the United States is going to continue to have super-power status and consume energy at its current rate a new solution must be found.

Well written, and there's nothing to argue about because it's all factual except for the last sentence. You might include more of your own analysis and opinions in your final paper. For example, in this paper you could have expanded on what you think the "new solution" will, or should, be.

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