

America and the world in the years to come

[History](#)



Alternate fuels refer to energy sources, which are not based on the burning of fossil fuels or nuclear fusion. Sustainable energy strategies are essential at this point if there has to be a security in energy supply for America and the world in the years to come. This is compounded by the fact that every effort is being made to reduce the greenhouse effect. Fossil fuels are becoming and will continue to be less favourable as advance in the 21st century (Wells 2005) Growing technology in alternate fuels includes alternate fuel vehicles, fuel cells.

Much of the efforts in “ clean energy” have focused on hydrogen applications in the transportation sector. Stationary power and electricity has attracted little focus, or even a combination of the two (Lipman and Brooks 2006) United States is ready for the use of alternate fuels as energy sources. The call for America now is working towards an energy security ensuring a sustainable future in energy needs. The needs for energy and power in the time come forecasted to keep growing (Holilian and Mayes 2003)

America and all developed and developing nations need now more than ever before to ensure and secure their freedom from overseas oil dependence. Measures to get there should take an all-out, no bounds approach as the faster we get there the better for the country. Millions of US dollars will be saved by reducing petroleum imports to the country. The economy will also be strengthened (Jim Wells 2005). Countries like Brazil are already able to fuel nearly seventy percent (70%) of their vehicles in the country with ethanol, replacing oil as the primary fuel.

That means that it is indeed possible to achieve freedom from foreign oil dependence. Nations all over the world are running for the same energy

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resources. With tensions in Iraq, Iran and Venezuela growing, accelerated by the equally growing demand for fossil oils, the strain cannot be trusted. Oil prices have been too unstable, hitting records highs per barrel in the recent past. Due to this factor, America can not help but be ready for alternate fuel sources or else it might have a hard time fuelling its economy in the near future.

America is also ready for alternate fuel because the technology for utilization of alternate sources already exists. Whether it is fuel cells, or ethanol production plants or solar panels in different specifications, or wind mills of various sizes or even cars meeting specifications for use of alternate fuels, all these and various other technologies beg to be exploited maximally in order to achieve energy efficiently general motors alone has built more than 1.5 million ethanol compliant vehicles (Giney Lee, Holilian and Mayes 2003)

America is ready because, use of alternate sources means a better economy and employment opportunities for the American people. Exploiting use of alternate energy sources means the products produced locally gain added value. Businesses in the energy sector get to do more business. Expatriates in renewable energy get to do more. Research and development efforts by the department of energy get more engaged and provide more energy solutions. The rural America gets cheaper energy sources. In essence it is a plus for the economy. Finally, America is ready because, the world trend is moving towards a cleaner, greener environment.

Insisting on use of fossil fuels provide no opportunities for the reduction of the green-house effort (Gordon 2001). Use of alternate fuel sources means a cleaner environment, reduced carbon emissions and less toxic waste in our

environment. A look at the various options available for the US economy is in order. Petrol, diesel and natural gas engines can be replaced by hydrogen-fuel cells. Hydrogen energy stations or power parks are becoming a consistent development within the United States. These energy stations would use fuel cells for electricity. Production by a stream of pure hydrogen (Lipman and Brooks 2006)

Normally hydrogen is simply delivered or produced at a station using a fuel “reformer”, then compressed and supplied. Energy stations have the advantage that they can combine integrated systems for electricity production such that there is some for use within the precincts or supplies to the local grid, it can use any “waste-heat” for warming or cooling the building and use the purified hydrogen to fuel cars. There is potential for the growth of hydrogen as an alternative source. Various states are developing and others already finished their plans for the hydrogen revolution.

State plans have completed in California, Ohio, New York, Florida, Massachusetts and Connecticut are in their planning stages. Incorporating hydrogen stations into these plans would help to get there faster. Opportunities exist too for fleet based agreements with the state authorities such that hydrogen stations become feasible projects. There is potential in both private and public investment in hydrogen energy. Ethanol can be blended directly in petrol. Blends of up to 20% can be done without engine modifications. Dependent on the ethanol quality, ethanol blended diesel fuels need the use of emulsifiers and stabilizers.

Ethanol is easily guaranteed from corn or even other grains like sorghum or other biomass like corn cobs, cornstalks, wheat, straw, rice straw, switch

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grass, vegetable and forestry waste. It is very ideal as a gasoline mixture for its ability to increase the near-complete combustion of gasoline, which means it is environmentally friendly. It can be produced in large quantities and of course its capital outlay is quite reasonable, it ends up benefiting the corn and other grain farmers by giving them right value for their product.

Especially in rural America, ethanol is fast becoming highly demanded fuel. With a higher demand, has come also a high production. More plants are coming up and existing ones expanding capacity. Some farmers have together to put up ethanol production plants too. Ethanol has attracted investment from quarters like Bill Gates of Microsoft, Sir Richard Branson of the virgin Atlantic group, Vinold Khosla of the Silicon Valley wal-mart stores and also Shell and Exxon Mobil. This is bound to have a positive impact on the ethanol industry in the US.

Wind energy is another available alternate energy source. It is clean and hence very attractive as an environmental friendly source of energy. The department of energy has increasingly invested in wind-generated power. In 2005, America improved its wind capacity more any other single nation in the world, bringing its overall national wind energy capacity to 9, 149 megawatts. In the year that followed 2, 454 megawatts of power were added totaling to a capacity of 11, 603 megawatts. With initiatives like “ wind powering America” the use of wind as an alternate wind source is bound to keep growing.

Solar energy is another alternative and renewable source of energy. Also clean and it can be defined as heat or electricity from the sun when it hits a solar cell, when it hits an absorber surface and gives heat energy, when it

hits a solar sail in a space craft, causing motion, when it hits a light causing it to rotate or when carried through fibre optic cables to give lighting in a building. Wave and tidal power are also used at the ocean fronts. Waves yield more energy than tides.

America is yet to seriously experiment with this kind of energy source. Another biofuel that is available is the use of biogas that uses biomass from cows. It is still relatively used in small areas in America unlike countries like Sweden and Finland which 17% and 19% of their demand with biofuels. Looking at the various alternatives available to us, it appears like hydrogen would be the best for the reasons that it offers a unique combination of electricity generation, thermal energy and hydrogen production within an energy station (Lipman and Brooks).

This co-generation ability means a much higher efficiency in energy conversion. Eventually that means lowered fuel costs, improved economics and increased energy security. The energy stations, due to ability in different designs have various functional and economic trade-offs. Low and medium temperature fuel cell designs come in three varieties. The proton exchange membrane alkaline (PEM), and the phosphoric acid one. Current estimates for all three range from two thousand five hundred (\$2,500) dollars to four thousand dollars (\$4,000) per kilowatt of energy.

The high temperature fuel cell design comes in two varieties namely molten carbon and solid oxide. Current estimates for the same are three thousand dollars (\$3,000) to four thousand dollars (\$4,000) per kilowatt. The hydrogen engine generation set which features a generator estimates currently at about three thousand dollars (\$3,000) per kilowatt. Future

estimates for the low and medium temperature fuel cell design oscillate between two thousand and fifty dollars to one thousand five hundred dollars (\$250-\$ 1, 5000) per kilowatt of energy.

The high temperature fuel cell design future estimates for molten carbon and solid oxide averages two hundred and fifty dollars to one thousand dollars (\$250-1, 000) per kilowatt. The hydrogen engine generator set's estimate for the future is five hundred dollars (\$500) per kilowatt (Lipman and Brooks 2006). The costs refer to the initial capital costs to enable an energy station to start operations. The costs associated will of course vary in solve areas depending on availability of facilities and the operating and maintenance costs.

Economically the stations end up as more attractive options than sets that are dedicated entirely as hydrogen refueling systems. The transportation department seems to have a critical role in all this. It is by default, that the transport sector consumes the bulk of the fuel. Transport has a critical role to play in fictionalizing all sectors. Due to this factor, it is possible to use the transport department in organizations, government agencies and commercial fleets as change agents in introducing the new fuels.

The use of hydrogen cells for example, require a considerably big fleet to make it commercially viable (Lipman and Brooks 2006) State projects could enter into memorandum of understanding with shuttle fleets and pools of cars owned jointly to have, them as stakeholders in implementation of energy blue prints. Beginning from here, the change can then spread to other people within the society. It is imperative for the federal government and individual state government to focus on the introduction of sustainace

and development use of alternate energy source if America has to remain able to supply its energy needs in the long run.

Hydrogen and ethanol are all attractive options for the America economy and further research and development efforts need to be initiated. Funding is also necessary as well as building cooperation between public and private sectors. The states should be ready to offer funding, information and other incentives to take stakeholders to attract investment. In the face of all this, regulatory mechanisms are crucial to ensure that the public actually benefit from the emerging technologies. References Jeffrey M Gordon 2001 solar energy: issues position papers

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