Imported Oil and Gas - Seeds of Our Own Destruction
How many more signals do we need?

Want Peace In The Middle East? Make Oil Worthless!

The latest escalation in hostilities precipitated by Hamas and Hezbollah in the Middle East should be a wake up call to every US citizen about the folly of our dependency on foreign oil and natural gas. Recent events in Nigeria, Saudi Arabia, and Venezuela should have jolted us out of our complacency, but they didn't.

There is an American drug cartel. The drug is oil and we are hooked on the habit to the detriment of our own individual and national interests. It is draining our nation's wealth as the single largest component of our trade deficit, and drives both our domestic and foreign policies in directions contrary to our basic tenets. It pollutes our environment and it is a major contributor to instability in the world. Our growing dependence on $75 a barrel oil and imported natural gas fuels the fundamentalist terror attacks on our nation, our values, and our allies.

The United States uses about 22 million barrels of oil each day -- almost a third of the world daily usage -- but produces less than 9 million barrels of oil per day. We are importing more than 60% of the oil we use and before the end of this decade it will be almost 70%. While the price of oil on the so called free market is $75 per barrel, the actual cost to pump and deliver oil to the US from the middle east is between six and eight dollars per barrel. The rest is pure profit to producers, energy companies, and other speculators. Increasing world demand exacerbates this profiteering. And the worst part is that none of this need be. *With a national commitment, in 5 years, we can and should make imported oil nearly worthless. Within 10 years we can also eliminate the need for all imported natural gas.*

The two major components of our energy consumption are electric power generation -- dominantly from coal, natural gas, and nuclear fueled power plants; and transportation, which is almost all petroleum based. We now import about 30% of our natural gas and this is increasing as electrical generating plants move more to natural gas fuel. We will require continued growth in electric power, and objective assessments show that renewable solar and wind systems as well as conservation can only contribute marginally to our electrical energy usage. The much hyped hydrogen economy is a diversionary fiction. It takes much more energy to produce hydrogen than it provides. That energy even when renewable is better used more efficiently for other purposes. Today most hydrogen is reformed from natural gas. Moreover

the storage methods for mobile use of hydrogen are cumbersome, complex, and inefficient.

Transportation alone accounts for about 15 million barrels per day --two thirds of our total oil consumption. Of that total of transportation, automotive gasoline represents about 11 million barrels/day -- half of the US total oil usage. The Department of Energy's own data shows that drilling in the Alaskan National Wildlife Reserve would literally add little more than a drop in the bucket. The DOE projects transportation to be the major component of increasing oil consumption, growing to 22 million barrels by the end of the forecast in 2025. Disruption of even a fraction of the flow of oil from the Middle East could drive our economy into chaos at any time. Still we are complacent.

Taken together, oil and gas imports make up a whopping one third of our record trade deficit, mortgaging the nation to the very entities who are reaping huge profits at US citizens' expense – not only in daily out of pocket costs for fuel and goods, but also in tax dollars for the carrying costs of the burgeoning national debt. In short, our dependence on imported oil and gas is a major and imminent national security crisis. The stark reality is that we have only one real choice. We can continue on our current path toward almost certain catastrophic decline as a nation, with wishful thinking about how hydrogen, wind and solar energy along with conservation will somehow solve the problem. Or, we can take immediate measures to become energy independent as suggested in the following recommendations.

<u>Eliminating The Need For All Foreign Oil</u>

A crash program is required to reduce oil consumption to a level that domestic production supports. This program is readily achievable and would have four components:

1) Immediately mandating that all new cars and light trucks sold in the US after 2007 be flex fuel (capable of using gasoline or ethanol) or bio-diesel fuel capable.
2) Requiring all service stations on the same schedule to begin pumping at least 85% ethanol fuel in addition to gasoline.
3) Providing incentives for the production of ethanol and bio-diesel Instead of subsidizing farmers to grow or not grow crops,
4) Requiring all new cars and light trucks sold after 2010 to be flex-fueled or bio-diesel fueled battery-rich hybrids with plug in capability. Because it only takes 28 hp to maintain a full-size car or light truck at 65 mph against rolling friction and aerodynamic drag, these hybrids with 35 hp engines burning ethanol or bio-diesel fuel would have more than double the fuel mileage of existing vehicles even for long trips at highway speeds.

The saving from these steps will save 12-14 million barrels of oil per day.

Where will the ethanol come from?

Simply tripling the current corn crop, processing and distilling that additional corn in plants co-located with and using the waste heat from existing power plants, will provide enough ethanol to fuel all the light gasoline fueled vehicles in the US.

Contrary to the mythology from the drug cartel about negative energy balances, that waste heat which today must be dissipated in power plant cooling towers is ideally suited to the relatively low temperature process for producing ethanol. Such plants could be authorized and built in three years. Simultaneously Increasing the sugar cane, sugar beet, and other feed stock crops would reduce the amount of corn needed, and later, cellulosic ethanol from agricultural wastes would reduce the demand on corn even further. In the meantime, simply eliminating the tariff on Brazilian ethanol would augment our domestic supply.

Similarly, crops of soybeans, animal fats and waste vegetable oil can be used to create bio-diesel fuels for large commercial vehicles. Corn subsidies should be eliminated, instead using those funds to provide incentives for production of ethanol and other bio-fuels creating a strategic reserve to provide price stability. Growing and refining bio-fuels coupled with properly designed hybrid vehicles will reduce greenhouse gases dramatically, and can eliminate all dependence on imported oil within 5 years.

Eliminating The Need For All Imports of Natural Gas

It must be recognized that demand for electrical energy will continue to increase. Among other reasons, the introduction of plug-in hybrid vehicles and population growth will increase electricity demand. *We must therefore begin construction of modern nuclear power plants coupled with the immediate start of spent fuel reprocessing.*

This is the *only* way to meet the growing electrical energy requirements while reducing the generation of greenhouse gases and our need for imported natural gas. Nuclear plants currently generate 20% of US electrical power cleanly and safely. High level radioactive waste consisting mainly of spent fuel is the major issue for nuclear power generation,

Reprocessing Spent Fuel is Essential

In the mid1970's the Carter administration edicted that the US would not reprocess its spent fuel rods to avoid creating highly enriched fuel that could be also used for weapons. These spent fuel rods currently are piling up at every power plant while politicians and environmentalists bicker over what to do with it. Spent fuel reprocessing

using 40 year old methods can reduce the high level waste by 90% and provide fuel that can be burned in next generation fast spectrum reactors. Those reactors can be on line in 10-15 years. More advanced reprocessing has been shown to further reduce both the amount and half life of the remaining waste by a factor of 10. The result would be a reduction of high level waste by 98% and a reduction in decay time to safe temperatures from 10,000 years to 300 years – a lifetime that repositories can be engineered to meet with much higher confidence.

The Bottom Line

The constitution declares the role of the federal government is to protect the security and wellbeing of the nation and its citizens. The way I see it, our elected officials Republicans and Democrats alike are flunking the course on both counts. The so-called energy policy legislation passed last fall so proudly by congress is pitifully inadequate -- far too little and far too late. Moreover it gives the energy companies billions in incentives at a time they are raking in record profits at our expense. If our representatives are unwilling to take on the American drug cartel with a real energy policy, we should vote them all out this November, whatever their stripes.

-- Dave Montague

The detailed data, analysis and references supporting this opinion piece may be found in a presentation made at Stanford's Center for International Security and Cooperation earlier this year. It can be downloaded at: http://cisac.stanford.edu/events/4372
Or http://www.ldmassociates.com

Dave Montague, retired president of Lockheed Missile Systems Division in Sunnyvale California is a member of the National Academy of Engineering and an Engineering and Management Consultant.