

## Program to Mitigate the Consumption of Oil

I share the president's concern about our "addiction" to oil. It is my belief that the price of oil is, with some temporary dips and valleys, going to continue to be increasingly more expensive largely independent of U.S. demand. As the Department of Energy funded Hirsch Report, *Peaking of World Oil Production: Impacts, Mitigation, & Risk Management*, laid out, the consequences of not taking steps to transition away from oil could be dramatic to our economic system, taking 10 to 20 years to implement a meaningful program. Giving tax credits to any but the most needy is counterproductive in that it encourages the use of oil at a time when we need to conserve oil.

The center of a program to reduce petroleum consumption should be to implement a policy to develop new methods to more efficiently power our vehicles. Unfortunately, the fuel cell is not going to be available for widespread use for 15-20 years and is not particularly energy efficient. The risk of a severe economic downturn is increased by not urgently pursuing alternative methods that could be available sooner. Many of the items that I propose could be construed as being included in the proposed Gas Price Relief and Rebate Act of 2006, but under rather undefined terms and without the sufficient urgency requirements. Some items of the proposed program are not included in the act and require cooperation of other departments. I believe that these six specific and rather inexpensive proposals, should be implemented to decrease our dependency on petroleum.

1. The most important thing we can do is to encourage the production of plug-in vehicles, using advanced batteries, as soon as possible.

The technologies to produce both advanced batteries and plug-in vehicles is known, but we have not reached the point where these items are commercially available due to lack of large-scale production of inexpensive advanced batteries. I define advanced batteries as being those of lithium-ion construction or advanced lead-acid batteries that are under development to compete with lithium-ion batteries. Very limited production of these batteries has begun, but adoption is slowed by the high costs of initial output. Incentive programs exist for purchase of hybrid vehicles, but not to develop plug-in vehicles. The differences are not trivial, but are within the scope of reasonable engineering design. To create an immediate market for advanced batteries the government needs to establish a policy of purchasing as many plug-in vehicles using advanced batteries as possible. Three areas where government purchasing could be helpful are:

- Have the Postal Service issue an RFP for all of its normally purchased replacement delivery vans, stating that they must be plug-in vehicles using advanced batteries and guarantee the purchase of a quantity of vehicles over a three year period. The USPS has started a modest initiative in this area which should be accelerated, with an incentive or subsidy for the use of advanced batteries.
- Several commercial users of delivery vans, such as UPS, FedEx and Purolator, are also in the process of developing larger hybrid or plug-in delivery vans. A program to promote the use of advanced batteries in these vehicles would encourage developing production capacity of advanced batteries, while taking early adopter risk out of using these batteries and/or reducing the cost for purchasers of these vehicles.
- Several agencies/departments of the government are large purchasers of passenger cars. These agencies should be required to purchase as many plug-in vehicles using advanced batteries as possible. There are some smaller companies in the US that could produce a few thousand of these on relatively short notice.

2. Eliminate tax rebates for hybrid vehicles that do not accrue a savings in 75,000 miles.

There are too many hybrid vehicles that cannot justify a higher price than a conventional vehicle, of the same performance, based on fuel savings in 75,000 miles. (See *Consumer Reports*)

3. Increase CAFE standards by 1 mpg/yr for 10 years beginning in 2009. This would encourage the building of efficient hybrids and plug-in vehicles.
4. Increase the production of ethanol to about double of the present goals.

Ramping up the production of ethanol is a more difficult process than some of the other proposals. It is dependent on demonstration of processes for production of **cellulosic ethanol**. Two companies (Abengoa Bioenergy, and Xethanol) are currently building commercial plants of this type, but are doing so using feedstocks that are relatively easy to process, not switchgrass or similar materials, which would be necessary for high volume production of ethanol. Processing of switchgrass is, at this time, too risky of a venture for a private company.

My research has identified nine approaches to producing cellulosic ethanol. A widely publicized program to build several pilot/demonstration plants to produce cellulosic ethanol was announced by Secretary Bodman and publicized by the president. As important as these plants are, I don't understand why an RFP cannot be issued, **this year** for three of these plants, each using a different technology, and contracts awarded this year for plants using the best currently available technology, with provisions for incorporating new technologies as they are developed. This program is so important to the nations economy that the risks involved by using this approach are justified. I understand this program is being held up because the money for the program has not been appropriated. I also understand that the program plan calls for them to be built over a period of years, not all at once. DOE has huge amounts of funding for other projects which could be reallocated with little impact on the other programs. The amount of money required for these plants is small, compared to the \$23 billion budget for DOE. I was involved with DOI, DOE and DOD in R&D contracting for most of my career and I know from personal experience that, lacking a timely appropriation, funding could be found for projects given a strong enough will by the agency, lacking an appropriation for FY2007.

5. Initiate programs aimed at making more aerodynamic vehicles from lightweight composites which would reduce fuel consumption significantly.

An incentive program to decrease the weight and reduce the aerodynamic drag of passenger vehicles should compliment the plug-in vehicle program. Prototype vehicles of this type have achieved over 200 mpg. This might be done by giving a more significant incentive for making vehicles getting above 150 mpg

6. Increased research aimed at producing larger quantities of less costly biodiesel.

Production of large quantities of biodiesel are of secondary importance to ethanol. However basic research such as is being led by Dr James A. Dumesic at the University of Wisconsin needs greater funding as well as some other worthy projects in this area. Production of biodiesel from algae is being pursued by two start-up companies and their work could be accelerated by partial funding of demonstration plants.