

Mrs. Cooper and Shore,

Because your responses essentially address the same issues and were CC to each other I'll respond to you jointly.

(From Ms. Cooper)

Dear Mr. Wine:

Thank you for your letter to Energy Secretary Bodman, dated February 16, 2005, expressing your concern over the lack of response from various offices in the U.S. Department of Energy (DOE). This email addresses issues related to the Office of Energy Efficiency and Renewable Energy's (EERE's) Hydrogen, Fuel Cells, and Infrastructure Technologies Program, the Hydrogen Legisbrief, and the need to implement high-efficiency vehicles. You will receive a separate response from Joanne Shore regarding your concerns with the Energy Information Administration.

I assure you that we take public and stakeholder inquiries quite seriously. Unfortunately, when you sent your email regarding the Hydrogen Legisbrief developed by the National Conference of State Legislatures (NCSL), I was out of the office on an extended maternity leave and unable to respond as quickly as I normally would have responded. (I returned to the office just one week before you sent your letter to the Secretary). Also, please note that the Legisbrief was developed and written by NCSL; my name is included only as a contact for information about the DOE/EERE Hydrogen, Fuel Cells, and Infrastructure Technologies Program.

I understood that you were on maternity leave and contacted Urvi Parekh as your "out of the office" emailing suggested. Your name, as well as the authors of the NCSL report, is listed under "Contacts for More Information." A rational person would think you contributed to the report. FYI, the authors of the NCSL report have not responded to my email of last November or follow-up email this January.

The best way to reduce our Nation's dependence on imported oil in the short-term -- over the next 10 to 20 years -- is through the increased use of gasoline hybrid-electric vehicles, which are available in limited supply to consumers today. Hybrid technologies, however, are still too costly for the majority of Americans. Through the FreedomCAR and Vehicle Technologies Program, DOE/EERE is pursuing hybrid-electric and other advanced combustion technologies to improve the efficiency of our vehicles and transportation fuels. You can learn more about these efforts on the web, at www.eere.energy.gov/vehiclesandfuels. In the long-term, however, increases in fuel efficiency alone will not be enough -- only fuel substitution will significantly reduce or end our dependence on imported oil.

The technology to reduce our dependence on imported oil has existed for many decades. My CD has many examples such as the 1929 prediction by the president of General Motors "80 mile/gal by 1939". Tom Ogle's work demonstrated, per a reporter who was in the vehicle, a 200-mpg V-8 in the 70's. In 1983 Peugeot advertised a 72-mpg Diesel. We don't have any vehicles, including hybrids, available in this country achieving the advertised Peugeot mpg. However, there are vehicles available in Europe that exceeds 100-mpg. Implementing some of the technology used in these vehicles would certainly reduce oil consumption. If fuel substitution is a consideration, why not implement the late 20's work of Tom Moray and the recent work of Tom Bearden (Patent 6,362,718). Both those processes extract electrical energy from a previously "unknown" source. Years ago, I was one of about 200 people to witness the invention of Joe Newman that, while doing work, returned electrical power to the grid.

For more than fifteen years, DOE has supported high-risk, pre-competitive hydrogen fuel cell research and development. The progress made led to President Bush's announcement of the Hydrogen Fuel Initiative in January 2003. As you note in your letter, industry has also supported hydrogen fuel cell research for decades and many companies have patented their technology. DOE works in partnership with industry and has facilitated unique collaborations among automobile and energy companies and the government. Despite the progress, however, hydrogen fuel cell vehicles are not available on the mass consumer market today. This is because several critical technical challenges remain. For example, today's fuel cells do not meet customer requirements for cost and durability, and none of the current hydrogen storage technologies for vehicles will achieve the 300-mile range that drivers expect today. In addition, estimates of the delivered cost of hydrogen using currently-available technology for all production feedstocks -- including natural gas, as well as water -- are considerably higher than that required for hydrogen to be a cost-effective energy carrier. Other challenges include delivery (the high cost of investment in a new infrastructure), the lack of hydrogen-specific codes and standards, and widespread public acceptance of hydrogen as an energy carrier.

DoE could perhaps have saved considerable time, and money, if "UTC Fuel Cells" 1960 work on NASA's Apollo mission was consulted. I can't understand why additional research is need for fuel cells. Hasn't NASA used fuel cells in the space shuttle for years? Why are we trying to "reinvent the wheel"? There is a \$25 million contract

(<http://www.fuelcelltoday.com/FuelCellToday/IndustryInformation/IndustryInformationExternal/NewsDisplayArticle/0,1602,5171,00.html>}firm (link was broken when last tried.) to develop a fuel cell to power a navy destroyer. This fuel cell will run on hydrogen extracted from Diesel oil. The article states "The system converts diesel fuel into a 30 percent hydrogen mixture. By using the diesel to run a fuel cell instead of burning it, the system produces twice the energy output, without sulfur or nitrous oxide pollution." This makes absolutely no sense at all, unless you own oil wells, to use Diesel fuel as a source of hydrogen when the destroyer is floating in a 66% hydrogen mixture. Why not just drop a hose into the water? There are other ways of extracting hydrogen for use as a fuel. (<http://jlnlabs.imars.com/bingofuel/html/aquagen.htm>) has

an analysis of Aquafuel, extracted from water, that shows this gas to have hydrogen content of 46.4%. I can't think of any rational reason for a navy vessel to carry Diesel fuel to produce 30% hydrogen when a process using seawater will produce 46.4% hydrogen. I may still have videotape sent by the Aquafuel inventor showing four people in a closed room breathing the exhaust from an engine fueled by Aquafuel. A process similar to Aquafuel was patented, US #603,058, almost 107 years ago. My CD list several patents for engine mounted devices that separate the components of water for use as fuel; one patent, #1,380,183, was granted 84 years ago. Use of these devices requires no hydrogen distribution infrastructure. In President Carter's inaugural parade there was a dual fuel gasoline/hydrogen Cadillac. Years ago the Washington Star newspaper had an article about 6 vehicles driven from California, on hydrogen, to the U.S. Capitol building. Popular Science, about 1978,9(?), published an article "Hydrogen bus-could also heat its own garage". This article is about the work of Dr. Helmut Buchner of Mercedes-Benz. He is quoted "We are ready now. We could save our city of Stuttgart over one million gallons of petroleum fuel a year by converting its fleet of 300 urban busses to run on hydrogen. Heating--and air conditioning--would be free spin-offs, consuming no extra energy." I wonder why DoE is not implementing any of this technology.

DOE's commitment to developing hydrogen technologies is founded on the firm belief that hydrogen, as a substitute for gasoline, has the best potential to reduce long-term dependence on petroleum. The President's Hydrogen Fuel Initiative seeks to overcome the challenges to achieving the hydrogen vision and enable industry to make a positive commercialization decision in 2015, which would allow hydrogen fuel cell vehicles to reach dealer showrooms by 2020. DOE has structured its hydrogen and fuel cell effort to achieve this goal, and it has created a Multi-Year Research, Development, and Demonstration Plan that describes in detail the challenges to hydrogen fuel cell commercialization. The technical plan includes sections on production, delivery, storage, fuel cells, technology validation, safety, codes and standards, education, systems analysis, and systems integration. Each section identifies technical targets, tasks, and milestones. Although the plan provides a detailed and comprehensive view of DOE's program and activities, per the comments in your letter, you may be most interested in the following sections:

- > Technical targets for hydrogen production via water electrolysis (page 3-12, Table 3.1.4);**
- > Technical plan for hydrogen delivery (pages 3-37 -- 3-53); and**
- > Technical plan for fuel cells (pages 3-69 -- 3-100; note technical target for hydrogen fuel quality on page 3-89).**

In 1998, Nasa's Lunar Prospector looked for water on the moon for uses as fuel, why not use water on earth for fuel?

If you have additional questions about the President's Hydrogen Fuel Initiative or DOE's hydrogen and fuel cell efforts, you may wish to visit the following web site: www.eere.energy.gov/hydrogenandfuelcells, reply via

email, or call me at your convenience. I am in the office Monday -- Wednesday, from 7:00 a.m. to 5:00 p.m.

Sincerely,
Christy Cooper

(From Ms. Shore)

Dear Mr. Wine: You have sent a number of informative emails to DOE and the Energy Information Administration. I understand you did not receive adequate responses to your information, which is unfortunate. I work with the Energy Information Administration, which is an independent organization that collects energy data and provides energy forecasts. We do not do technology research or propose policies, but our organization does take results from such research at the request of policymakers for analysis and forecasting to help in policy decision making.

Usually no response is received from DoE that is why I wrote to Dr. Bodman. I read statements attributed to you in the 5/29/04 Winchester Star article "Relief In Sight?" (http://www.winchesterstar.com/TheWinchesterStar/040529/Business_Gas.asp.) Your statements seemed to be of the doom and gloom nature and that was the reason for my email. When no response was received it appeared to be another example of "I don't want to know."

It was not clear from your email if you are aware of the degree to which the DOE outside of the Energy Information Administration is strongly involved in hydrogen fuel applications for transportation as well as other uses. The mission of DOE's Hydrogen Program is to research, develop, and validate fuel cell and hydrogen production, delivery, and storage technologies. Integrating related activities in the Offices of Energy Efficiency and Renewable Energy; Fossil Energy; Nuclear Energy, Science, and Technology; and Science, the Program is making progress toward the goal of a 2015 commercialization decision on hydrogen-powered fuel cell vehicles and the infrastructure to fuel them. Its aggressive research program seeks to accelerate the timeline for resolving technical and economic barriers to hydrogen commercialization and enable a positive decision that will yield the beginning of mass market penetration in 2020. As transportation accounts for over two-thirds of the oil consumed daily, the DOE's Hydrogen Program is primarily focused on developing hydrogen technology for the transportation sector. DOE is not pursuing this mission alone. For example, you can see from the DOE website describing some of these activities that the Department is heavily involved not only with automobile manufacturers and hydrogen suppliers, but with many other business and academic organizations as well. Christy Cooper from the Office of Energy Efficiency and Renewable Energy is sending you a more detailed response on their activities. Please see the URL below for more details. I hope this helps ease some of your concerns.

Here are 5 patents for engine mounted devices that separate the components of water for use as fuel: May 31, 1921 Boisen 1,380,183 ; July 2, 1935, Garrett, # 2,006,676; April 3, 1945, Klein, # 2,373,032; February 25, 1975, Chambrin, French Patent Request # 75 06619; 1976, Horvath, # 3,980,053. I am certain further research will disclose other patents for devices of this nature. If DoE has an “aggressive research program”, why haven’t the ideas in patents of this type been implemented? One of these patents is over 83-years old. In the mid 50’s I met a retired Florida college professor who informed me that he had a patent for an engine mounted device that separated the components of water for fuel. He further stated that our government had classified his patent and he was prevented from developing his idea. No, my concerns are not eased by further “plans” to reduce our dependence on oil, we citizens have been reading and hearing about these “plans” for decades. The time has long passed for politics to be removed from the energy issue and let energy issues be driven by necessity.

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