

**David Garman's Remarks to the U.S. Fuel Cell Council
June 11, 2008**

Forgive me if I begin by sounding like something of a curmudgeon.

I am an optimist by nature, but often I do not feel very optimistic about energy and the environment, mainly due to the unwillingness or the inability, of much of our political leadership and Americans in general to take on the really tough issues which, in my book, include entitlement reform, health care, energy, and the environment.

On the subject of energy:

I am increasingly dismayed that most of America's leaders lack the ability or the will to talk about the true nature of our problems—problems that are really more serious than higher prices at the pump.

On the subject of climate, which I view as a serious global challenge:

The political tendency is to blame "big oil" or "the polluting utilities."

In the climate debate last week we heard this again and again, despite the fact that the real issue is the fact that there are simply more of us, and many of us make choices that increase our carbon footprint... bigger houses, more powerful cars, far flung vacations, exotic foods brought to our supermarket from around the globe.

In other words, the polluters are not the oil companies and utilities that are providing the services we demand. The polluters are us.

Now I recognize that these are not winning political messages. I have been involved in political campaigns for my entire professional life. Over the past year two different Presidential campaigns have sought my input and advice on energy and environmental matters.

Since I am not angling for a job in the next Administration, having been there and done that, I have suggested that the next President really ought to strive to tell Americans the truth about energy and the environment.

And I will confess that neither campaign really liked that idea.

And here is that truth as I see it:

First, we have a serious liquid fuels problem. Despite the fact that the U.S. Energy Information Administration estimates that global oil use will reach 113 million barrels per day by 2030, many analysts believe it will be difficult to produce much more than 100 million barrels per day. Not by 2030, but ever.

The problem is not so much a lack of hydrocarbons, because the geological endowment of hydrocarbons is tremendous. Not all can be easily produced, however, and there are a variety of “above ground” constraints to production.

So if you think \$4/gallon gasoline is bad, brace yourselves.

Second, the threat of climate change is real, and it will be tremendously difficult, and perhaps impossible, to get the world to seriously react to the problem.

Washington’s general reaction to both the energy and climate challenge is a desperately myopic quest for technological “silver bullets” that can address both in a single shot; in a manner that protects consumers and voters from escalating prices.

This desperation and myopia has afflicted Democrats and Republicans alike, including key leaders in the Executive and Legislative branches.

Biofuels, plug-in hybrid vehicles, nuclear power, renewable energy and hydrogen have all been touted as “the” answer to America’s energy security problems.

While all these technologies are worthy of our best efforts to develop and deploy, the time frames needed for significant market impacts are generally longer than acknowledged or understood.

Many of our policymakers, like most Americans, have little understanding of the scale, the complexity, or the amount of capital investment needed to power and fuel the economy.

Many of our leaders are also prone to think that Washington alone can change the energy and environmental picture. Lacking an appreciation of the amount of capital invested in existing technologies, the time required for capital stock turnover, the sheer size of the market, they believe that change can happen quickly.

Indeed, in Washington it is often said—incorrectly in my view—that only a Manhattan Project or an Apollo “moonshot” approach stands between us and energy independence.

Putting aside the question as to whether or not “energy independence” is even the right goal, our political leaders fail to realize that shifting the nature and direction of global energy use—what is arguably the largest human enterprise on the planet—is far more difficult than building

an atomic bomb in 1945 or landing a man on the moon in 1969, if only for the simple reason that the technological “products” of the Manhattan Project and the Apollo program had only one customer, the Federal Government, which was willing to pay virtually any cost.

Conversely, any effort to transform energy and the environment on a mass scale must deploy technology into mass markets, at prices that consumers are willing to pay, and at levels of operational risk more suitable for teenage girls than war fighters and astronauts.

Atomic bombs and lunar excursion modules are not consumer products. So the “moonshot” analogies really don’t fit.

So...

We have both an electorate and elected leadership that often don’t appear to want to face up to the truth about energy and the environment.

We are plagued by misunderstanding, myths and mischaracterization.

Persistent dogma held at both ends of the political spectrum has thus far kept us from making the tough calls.

That all adds up to bad news. (I warned you that I’d start this out as a curmudgeon.)

When I was at the Department of Energy I always asked for the bad news first. That is a sound approach for any manager, particularly at DOE, which, you may have noticed, is often filled with bad news that could involve leaking radioactive waste tanks one day and security breaches at the weapons labs the next.

I have given you, in the form of this rant you have just endured, some of the bad news. Now let me give you some of the good news.

I sense that things are starting to change.

Lawmakers are no longer satisfied to let a decade or more pass before refreshing the energy statutes on the books. Thirteen years transpired between the Energy Policy Act of 1992 and the Energy Policy Act of 2005... but less than two years transpired until the next major energy bill in 2007.

So our leaders are trying to legislate, and since that requires coming together, working tough issues, and seeking compromise, this is a good sign.

And there are others from the left and the right starting to come together to offer solutions. The Bipartisan Policy Center is one example. The effort between the Center for Strategic and International Studies and the World Resources Institute is another.

These are thoughtful people, coming together, hashing the issues out.

Through efforts such as these, there is growing bipartisan, view in Washington, that a combination of education, innovation, new technology and new policy aimed at being relevant in the marketplace can change the energy game. Maybe not with a silver bullet... but with something more akin to silver buckshot.

I hope the policymakers can be patient, because this effort will be a marathon rather than a sprint, but it can happen.

If you asked me to pick the ten things that we ought to do, right now, to enhance prospects for change, it would be these.

- First, we must price greenhouse gas emissions. Whether we do so with a direct, transparent tax or through the variable tax of cap and trade, those emissions must be priced or valued, on an economy wide basis, to spur innovation, efficiency, and rationality. And let's not kid ourselves; this is going to impact consumers. There will be pain. And yes, there's the rub.
- Second, we have to come to terms with the liquid fuels problem. In other words, the oil problem. There may be disagreements about the speed and timing with which a transition to new fuels will have to occur, but the world faces a massive challenge in responsibly addressing the "liquid fuels problem," particularly in light of the need to stabilize greenhouse gas emissions. The transition to new fuels is inevitable. *We must manage this transition, or the transition will manage us.*
- Third, we have to start with energy efficiency, and take it to a whole new level, thinking about it in a whole new way. The old language of "conservation" brings to mind Jimmy Carter sitting by the fire in a cardigan sweater... sacrificing comfort in response to the call for the "moral equivalent of war." It didn't sell as a political message, and it didn't sell as a lifestyle message. As an alternative to energy conservation or even energy efficiency, I prefer the term "energy productivity."

How productive can we be with each unit of energy? How might we exploit energy productivity across the value chain in a way that delivers more value for customers, and more value for shareholders, without sacrificing comfort? Why not allow electric

utilities, who today are only paid for the energy they sell, to also capture value for the energy they save? There are ways to do this.

- Fourth, we must invest much more than we are currently investing in energy research, development, demonstration and deployment. Much more.
- Fifth, we should have a diverse RD&D portfolio, and manage it as a long term investment, avoiding the temptation to shift the money from year to year toward the technology “flavor of the day.” Yes, changes are made in long term investment portfolios, and new opportunities are taken into the portfolio as approaches that didn’t pan out are discarded, but the emphasis on the long term is there.
- Sixth, we have to ensure an intense focus on some key areas where we know we absolutely must succeed if we expect to one day stabilize greenhouse gas concentrations. Under almost any scenario, carbon capture and storage is critically important to successfully stabilizing atmospheric greenhouse gasses. Under the most optimistic assumptions, market-ready carbon capture technologies are at least a decade away. This is an area that needs more effort than is currently being allowed. And it will probably take an RD&D effort managed outside of the government, ultimately funded through a wires charge levied against ratepayers, to make it happen. And that is very difficult to accomplish.
- Seventh, we have to reopen the door to nuclear power, and get serious about fixing the fuel cycle issues, including waste and proliferation. I don’t see other energy technologies that are *deployable right now* that give comparable amounts of emissions-free baseload power.
- Eighth, we need to give our labs and program managers the greater freedom to take risks... and the freedom to fail. Our typical government energy technology program manager is sometimes so focused on Performance Assessment Rating exercises, their GPRA number, their “Joule” score, the efficiency measure component of their PMA scorecard, and the pay bonus that hinges on all those things, that they often lowball their R&D goal for fear of missing a target or attracting adverse attention from the Deputy Secretary or, God help them, a Committee of the Congress.

We have, perhaps with the best of intentions, created a system where we inhibit risk-taking and encourage federal energy R&D managers to hide in their offices and make as few decisions as possible, and that must change.

- Ninth, we have to tune up the nation's innovation engine. If U.S. industry is really finding it easier to partner with foreign universities than U.S. schools, as I have heard, then we need to step up and help fix that. And as I alluded to before, we need new models to promote technology demonstrations, free of the vagaries of the appropriations process or the straightjacket of the Federal Acquisition Regulations.
- And finally, number ten, let's tell Americans the truth as we see it... and ask others to do the same. Only then can we work from the center to marginalize the myths coming from the extreme ends of the political spectrum.

In spite of what probably sounded like a cynical rant, I am still optimistic. I have not lost all faith in the American people, or their spirit of enterprise.

If we do our part to foster an atmosphere of innovation, in both the scientific and the policy realms, I am *hopeful*. I believe we will rise to meet these challenges.

With apologies to the gifted cynic Evan Esar, I believe that *hope* is something more than tomorrow's veneer over today's disappointments. I am more of a fan of William Shakespeare, who wrote that True hope is swift, and flies with swallow's wings; Kings it makes gods, and meaner creatures kings.

Thanks for your attention. I look forward to your challenges and discussion.