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President Barack Obama
1600 Pennsylvania Ave NW
Washington, DC 20500

Re: Addressing Climate Change

Dear President Obama,

I think that solar and wind energy will produce far too little energy to solve the climate change problem or allow the US to become energy independent. Here's why:

SOLAR – A large utility owned solar plant costs about \$5 per watt (Austin Energy) and a new nuclear plant also costs \$5 per watt (Austin Energy). However, solar runs less than 25% of the time and nuclear runs more than 90% of the time. The long term centralized solar plant with solar tracking panels produces energy at 4 times the cost of nuclear.

Roof-top solar with fixed panels appears to be a short term solution; however, it produces half the energy of the centralized plant tracking panels. Centralized solar can take advantage of an economy of scale. This results in roof-top solar producing its energy at about 2.5 times the cost of centralized solar. Combining the 2.5 and 4 shows that the short term roof-top solar has 10 times the energy cost of that from a new nuclear plant.

Roof-top solar is affordable only to people and businesses that are already doing well financially. Since everyone pays their electric bills, I think we will hear an outcry from low income people that they are subsidizing home solar systems for the rich. There is a good chance that roof-top solar will fail to develop as you have envisioned.

WIND – I perform transmission studies across the US for independent wind developers and banks (primarily JP Morgan). The good wind locations east of the Rockies are highly transmission deficient. If the lines were there, you would see tens of thousands of megawatts of new wind power installed and running in less than a year. However, the addition of new transmission lines is a slow process. Even in Texas, with its aggressive CREZ program, the new lines needed to expand West Texas wind are not expected to be completed until 2013. Developing the national superhighway grid will take at least a decade to complete. Even then, the amount of wind is expected to be no greater than about 20% of the nation's peak demand. Considering that wind only blows some of the time, the maximum energy that wind can deliver is probably less than 10%. This is far too small an amount, even with the best of plans, to have much impact on either climate change or supplying enough power to make the US energy independent.

COAL – A 1000 megawatt coal plant produces 3 million lbs of CO₂ every hour. The current sequestration plan is to pump the CO₂ underground more than 2500 feet deep to keep the CO₂ as a liquid. However, the suitable sites for containment do not align with the locations of existing coal plants. Therefore, only a few existing coal plants will be able to use this technology. Pumping large amounts of CO₂ into the ground here in Texas is expected to cause a displacement of fresh well water and make them brackish. Sequestration could create a nightmare of litigation here in Texas if it is ever applied. Water is more important here than electricity. In talking privately with power company representatives, I am told they are quite concerned with the legal problems of sequestration. I doubt that sequestration will ever be realized on a large scale as you envision. Either the economics or the legal liabilities will kill the best of sequestration plans. This leaves us with a huge problem. What can we do about the CO₂ problem?

BIO – Dr Chu says that Bio energy is applicable to areas of the world with poor soils where nitrogen fixing plants can be grown. Bio is not expected to be a major source of energy for the US. His Helios project is looking for suitable sites for Bio fuel production.

NUCLEAR – The waste problem must be solved by eliminating nuclear waste altogether, not burying it. There are at least two new technologies for eliminating all high level nuclear waste. One is the fission-fusion reactor designed and patented by The University of Texas. Another is the IFR that was being developed in the 1980's and then cancelled. The problems with nuclear are not technical, but rather fear. As the planet burns up from an accelerating CO₂ problem, we will see a renewed interest in some form of nuclear power. We are going to need huge amounts of energy for: 1) coal plant replacement, 2) transportation, 3) removal of existing CO₂, 4) the military-industrial complexes, 5) space travel, 6) relocating coastal cities, and 7) making fresh water from ocean water. I think the best long term energy solution for the US and for the world for dealing with climate change would be a successful demonstration of either the ITER fusion power project in France or the US National Ignition Facility's laser fusion project, which is expected to show significant results in 2010. There is enough deuterium in the oceans to power the planet for 4 billion years at 10,000 times the energy consumption of today.

Sincerely,

Eugene G. Preston

Eugene G. Preston, PhD, PE

<http://egpreston.com> professional

<http://egpreston.com/resume.doc> resume



cc:

Dr Steven Chu,

Dr John Holdren,

Representative Lloyd Doggett

Senator Kay Bailey Hutchison

Senator John Cornyn