

# Political problems of the Department of Energy, and suggested solutions

by Michael Jennings

● **Problem — Political conflict over the choice of the excellent scientific leader, Dr. Steven Chu, as Secretary:** Statements Dr. Chu has made, such as “*Coal is my worst nightmare*”, it is “*greater than 90% probable*” that climate change is caused by humans, and “*Corn is not the right crop...*” are causing intense controversy now that he has the important political role of Secretary.

**Explanation:** Scientists have an abbreviated manner of talking about their interests. Considered in the way intended, Dr. Chu’s statements make sense. However, the verbal shorthand of scientists often ignores social issues and is easily misunderstood by those with no technical experience.

● **Problem — It is not wise to sell energy supply improvements as answers to global warming.** As Dr. Chu has said, no one knows with certainty that the present global warming is caused by human activity.

**Explanation:** There are plenty of reasons why improvements in energy supply are crucial to continued prosperity. Relying on global warming as a reason creates difficulties in educating the voters, especially with the record cold of winter 2008.

If it is “*90% probable*” that climate change is caused by humans, there is a 10% chance that it isn’t. Since those odds are educated guesses, not calculations, someone else could guess differently, a choice that must be treated as legitimate, even if it is not a fully reasoned choice.

**Solutions:** The confusion about energy supply is so pervasive that only a thorough campaign to educate the voters can solve the many problems created by vague or incorrect public perceptions. After decades of neglecting to educate the voters, there are numerous misunderstandings and foolish ideas. For example, in the absence of sufficient

leadership many people developed their impressions of nuclear energy from the 1979 nuclear power plant disaster movie, *The China Syndrome*.

Considering past experience, it seems obvious that serious progress in improving the energy supply will require full public support. It is the American people who must live with their choices. Anyone can propose ideas about energy, but only the American people, with the help of the Obama administration, will choose U.S. energy policy.

The Obama administration must have someone who can explain the tough realities of energy issues to the public in an honest manner that is easily accepted.

● **Problem — Dr. Chu will be distracted from important research:** Being Secretary of the DOE will distract Dr. Chu from his valuable leadership of energy research.

**Explanation:** The entire world, not just the U.S., is facing severe challenges concerning energy. As head of Berkeley Labs, Dr. Chu was in a perfect position to answer those challenges. Now he will have the additional political, administrative, and engineering duties of being Secretary.

Some DOE programs are strictly political. Many require extreme skill at administration of contracts. Contract administration at the DOE requires thorough knowledge of electronics design, computer programming, and mechanical engineering. Many DOE programs have little or no connection with research in physics or chemistry, Dr. Chu’s core areas of interest.

**Solution:** Dr. Chu needs a deputy who can perform the tasks that are not appropriate for him. That person needs communication, engineering, and contract administration skills.

● **Problem — The Department of Energy suffers from years of inadequate management.** DOE contractors have been taking advantage of the lack of effective technical oversight to make unearned profit.

**Explanation:** Bringing the DOE back under government control means rapidly determining whether people are not being honest or just need help, a series of many very complicated contract administration improvements.

An April 6, 2006 report, *Hanford Waste Treatment Plant: Contractor and DOE Management Problems Have Led to Higher Costs, Construction Delays, and Safety Concerns* indicates that the disorganization of the U.S. government's Department of Energy extends over the huge amount of radioactive waste at Hanford in Washington state. The earlier July 12, 2000 report, *Department Of Energy: Uncertainties and Management Problems Have Hindered Cleanup at Two Nuclear Waste Sites*, shows that the problems have existed for years.

A June 1999 report, *Nuclear Weapons: DOE Needs to Improve Oversight of the \$5 Billion Strategic Computing Initiative*, gives the same impression.

The disorganization of the DOE's department, the Energy Information Administration (EIA), is fairly characterized by a graph on page 56 of the *Annual Energy Outlook 2008* publication. That graph shows that in the future oil prices may go up, stay the same, or go down.

**Links online:** There are links to a video of Dr. Chu and each of those reports on our web site. Choose DOE on the menu at [www.futurepower.net](http://www.futurepower.net)

**Solution:** Find someone who has the technical background, the business management skills, and the interest to administer DOE contracts in a way that is fully advantageous to the country.

● **Problem — The Obama Administration needs an energy adviser who is truly on the team.** It has been reported that the transition team is considering appointing an energy council.

**Explanation:** Appointing well-known people as advisers will get a few good stories in the media. But soon each person will be examined for biases. If each of those people was well-known before being appointed, each will have his or her pre-existing constituencies, and each will want to continue being respected by those constituencies.

If there hasn't been sufficient education of the public before the members of an energy council are appointed, the perception of the council will be politically complicated.

**Solution:** Find someone who:

- 1) has the capacity to understand the technology: the physics, chemistry, electronics, computer programming, and mechanical engineering, and
- 2) understands the very complicated politics of energy supply, requiring social sophistication not usually found in scientists, and
- 3) is a professional communicator, someone who knows how to present complicated technical subjects to those with no technical experience, without compromising the quality of the information, and
- 4) loves the United States, feels grief over the past eight years of mismanagement by the previous administration, and therefore focuses on wanting to make the U.S. government healthy, rather than focusing on personal issues such as building a career or being well-known.

Not all parts of the DOE are badly managed. See the next problem for a description of excellent work, badly communicated.

● **Problem — Misunderstanding of the science makes energy policy politically risky.**

The often huge cultural distance between scientists and the average person causes difficulty in communicating policy choices.

**Explanation:** The August 2008 DOE publication, *A Sustainable Energy Future: The Essential Role of Nuclear Energy* is a perfect example. The first page features the signatures of the directors of the 10 Department of Energy national laboratories, including Dr. Steven Chu's signature.

(A link to the report is available at the DOE menu choice on our web site at [www.futurepower.net](http://www.futurepower.net))

Someone who already knows all of the underlying science will understand the report in the manner intended, and it is satisfying that 10 heads of laboratories agree about what needs to be done. But there is no explanation for readers who don't know as much as the report's authors. Everything technical the report says is the best scientific understanding at present, but it is the issues that are not discussed that are by far the most important to the public.

The report says on page 2, "*We believe that nuclear energy must play a significant role in our nation's — and the world's — electricity portfolio for the next 100+ years.*"

What? How can it be that nuclear energy is an answer? What about proliferation of equipment that can be used to make atomic bombs? What about the risk of killing people because of an accident in a nuclear power plant?

What about alternative energy? Won't we get all our energy from sunlight and wind and growing plants to make fuel? Dr. Chu and the scientific leaders who wrote the report are strong supporters of alternative energy. Why are they now saying that nuclear energy is necessary?

Scientists who are enthusiastic about doing new research almost always fail to mention two characteristics of scientific investigation: a) how little is actually known, and b) the high chance of failure to get results that can be used. If those characteristics of any proposed scientific effort were known, most people would not support the effort. Yet almost all advancements have come from scientists, who accept those limitations.

That's what has happened with alternative energy. The likelihood of success and expected speed of success has not been clearly explained to the public. Alternative energy is very attractive and quite possibly will become the main supply of energy in the future. But that future is decades away, and may never happen, something that scientists focusing on research usually don't mention clearly enough.

For example, at present there is no cheap way to store sun and wind energy for use when it isn't sunny or windy. At present, solar and wind energy are far more expensive than energy from coal. Maybe methods of converting vegetation to fuel can be made efficient, but maybe not; some of the ideas about how to do that involve genetic engineering, which in the worst case could have more disastrous effects than a nuclear accident. Electric cars are major polluters if they charge their batteries from polluting electric plants.

The only sufficient, inexpensive source of energy available at present that doesn't pollute air and cause financial crisis is nuclear energy. Possibly the only way to make a substantial difference in energy availability in the next 8 years, during the Obama administration, is to support nuclear power.

There are now apparently 103 operating nuclear power plants in the United States at 65 locations. The plants have an excellent safety record, and newer plants are engineered to be even safer.

Uppermost in the minds of most people when considering nuclear power is the risk of accidental pollution and the risk of nuclear bomb proliferation. The report avoids discussing those issues; those are apparently problems that the scientists ignore or think should be solved by someone else.

The report says on page 1, *“Pursue partnering with other countries and implementation of an international regime that discourages the spread of enrichment and reprocessing capabilities...”*

The report says on page 2, *“... to maximize the benefits of nuclear energy domestically, advanced fuel cycles that cost-effectively optimize energy utilization and waste management are needed...”*

The phrase “advanced fuel cycles” in the report refers to the fact that there are nuclear plants operating in the world today that are 60 times more efficient in fuel use than the nuclear power plants in the United States. Since nuclear reactors with advanced processing use most of the energy in the fuel, there is far less radioactive waste. Advanced processing can even take nuclear waste produced by the present nuclear plants in the U.S. and remove most of the radioactivity. Advanced processing minimizes one of the objections to nuclear power, that the present nuclear power plants generate waste that will be radioactive for tens of thousands of years.

But there is a problem with “advanced fuel cycles”. They produce material that could be used to make nuclear bombs. The words “discourages” and “domestically” in the quotes mean that the United States should have nuclear bombs, but not other countries. Unfortunately for that policy, other countries did gain the capability of making nuclear bombs, so the policy has been modified to mean that the number of countries with the capability to make nuclear bombs should be minimized, and all those who have the capability should be politically aligned with the U.S., or at least aligned with some

political factions in the United States.

In every country there are people who want to act out their anger and make trouble for other people. Certainly the world cannot allow those people to have nuclear bomb-making material. So, while it is necessary to have advanced nuclear power plants, there must be strict supervision. That’s not as big a problem as it would otherwise be because nuclear plants are already strictly supervised due to the potential danger of mistakes during operation. Industrial supervision is very effective. A more well-known example is that every airline is supervised carefully to assure aircraft safety.

The leaders of most countries are not interested in making bombs, they are interested in the economic health and survival of their countries. That survival depends partly on energy supply, and the estimate of the scientists is that the only proven and sufficient way of supplying non-polluting energy in the future is through modern nuclear energy plant design.

So the “advanced fuel cycles” of nuclear energy will become necessary for economic survival. It is likely that a country’s products will not be priced cheaply enough to compete in the world market if that country pays more for energy. Every country will need to have the newer, more efficient nuclear power plants that unfortunately also happen to produce material that can be used to make nuclear bombs. Countries must oppose restrictions on those far more efficient methods of generating nuclear energy, not because they want to make bombs, but because they want to prosper.

The abbreviated language of the Department of Energy’s report indicates three especially important ideas:

- 1) There must be an international effort to make nuclear energy even safer than it is now.

2) There must be an international effort to supervise the construction and operation of efficient nuclear energy plants.

3) There must be some method of preventing the radioactive material that is generated from being available to those who want to make bombs.

The first two ideas can be aided enormously with the help of the vigorous U.S. scientific and engineering communities. Scientists and engineers see in those ideas many useful, fascinating projects.

**Two basic options:** Restricting the availability of radioactive material is the most difficult challenge. Basically, there seem to be two options.

(Remember that the author of this explanation has no interest in making nuclear policy, has no policy-making power, and doesn't want any. Others will decide which option is chosen, or will design other options. The author is serving only as a communicator, and if advised of errors and shortcomings, will be glad to make corrections and additions.)

**1)** The first option is already being tried. The “*international regime*” says that the U.S. and a few other countries can have nuclear weapons, nuclear bomb-making material, and nuclear bomb delivery missiles and submarines, but other countries can't. Since other countries need to buy or build the latest nuclear power plant designs to remain competitive, that language hides meaning very different than what appears on the surface.

A complicating factor is the tendency to mix policies to prevent misuse of nuclear materials with policies that promote profit. Those who are concerned about misuse may be very well-intentioned in designing initial policy, but when the policy is actually delivered it tends to include modifications for the concerns of industrial interests about their profit. Such mixing may be seen as aggressive

behavior by other countries.

The “*international regime*” could prevent countries from buying modern nuclear power plants from anyone but the regime, and could demand that the companies of the regime be paid for operating the plants they build. That would be extremely profitable, since the companies that were part of the regime could set their own prices. That monopoly would be enforced by U.S. government threats of war, or actual war. Under other conditions, such a monopoly is seen as illegal restraint of trade.

What is important is not what someone in the U.S. thinks is likely, but what people in other countries think is possible, especially those who feel politically distant from the United States. For nuclear policy to be successful, the thinking of people in other countries must be represented. There is a tendency to dismiss the concerns of countries that are small or economically weak, but in fact those concerns have a strong effect on the success or failure of any policy.

The present policy of trying to restrict the availability of nuclear energy technology that might possibly be diverted to making nuclear bombs has caused political instability. There are people, and entire governments, who believe that no country should be able to dictate to another what it can and can't do. They see their countries as sovereign entities that must be able to make economic decisions freely. They may resist being forced or even influenced by an “*international regime*”. Some of those people believe in engaging in violence to defend what they see as their freedom.

So, behind those words “discourages” and “domestically” in the DOE labs report is the issue of nuclear energy that is most likely to be divisive. The “... *implementation of an international regime that discourages...*” would result in violent conflict, or threats of violence, because such a “regime” can only be controlled with military force.

In actual practice, one of the results of the first option has been violence and threats of violence. During the George W. Bush administration, the U.S. government threatened war against Iran and North Korea. There were those in the U.S. government who, apparently with official encouragement, spoke of using the “nuclear option”, meaning that the U.S. government would consider dropping nuclear bombs on countries whose policies it opposed. That idea of “leaving all options open” and mentioning that publicly is strongly defended in the United States. However, to those who feel politically distant from the U.S. it is extremely threatening, and equivalent to a declaration of war that may be intended in the future.

There are healthy supporters of this first option for restricting the availability of material that could be used to make bombs. There are also three main kinds of unhealthy supporters: a) those in the U.S. who want to act out their anger with international violence, b) those who want war because it is profitable for them, and c) those whose real allegiance is not to the U.S., but to some other country, and want the U.S. taxpayer to pay some of the costs of making that other country more secure.

**2)** The second option for restricting nuclear material is to require that any rules about the generation and use of nuclear material apply to everyone in the world. That would mean that *no country* would be allowed to have nuclear bombs. This option would require more intense international supervision than the first option, and would require that *all countries* have the same supervision.

An advantage of the second option is that there would be far less political support for violence against the United States. Another advantage is that there would be vigorous international competition in designing the safest, most efficient, and most easily supervised nuclear power plants.

In the U.S., this second option would require

converting the huge U.S. nuclear bomb and nuclear bomb delivery industries to nuclear energy and alternative energy efforts, for many citizens a difficult choice. Many people depend for their income on the maintenance of the 5,400 nuclear bombs presently in the U.S. arsenal, and on the maintenance and operation of the missiles and submarines that were built to deliver those bombs.

How did we get ourselves into this mess? Partly because of the tendency of people to think that when they don't know something, there is nothing to know. Successful scientists have respect for what they don't know. Everyone needs that respect.

Resolving the purely technical issues of making fully efficient and sensible use of nuclear energy requires enormously skilled engineering and some brilliant research breakthroughs by extremely intelligent people, but there is general agreement that everything needed can be achieved.

The assessment of possibility is much less optimistic when considering the potential of alternative energy. Many scientifically attractive methods of producing alternative energy require research breakthroughs so advanced that scientists guess that there is a possibility that the breakthroughs may not happen. Of course that is a guess; there could be a major breakthrough tomorrow.

However, as difficult as it is to make truly important scientific advances, accepting that difficulty is how we got the advances we already have.

Research into methods of generating energy that don't involve burning something must be vigorous; power demands may increase 60% in the next 20 years as people all over the world demand a higher standard of living. At present, most of the increase will come from new coal plants, of which there are already more than 50,000. Each coal plant pollutes the air of the entire planet, and, of course, the coal will eventually be gone.

Scientists are generally successful at communicating with each other verbally, but generally poor at writing clearly; anyone who has not heard that observation before should know that it is common.

**Solution:** There are some tough choices to be made, and experience has shown that the U.S. public will not allow anyone but themselves to make them. It seems reasonable to guess, even if only as a way of promoting conversation, that 1) the world must have complete nuclear power plant supervision, and 2) that will be allowed to happen only if no country keeps a nuclear arsenal.

One way to make progress is to have someone supervise the writing of exceptionally clear reports about energy problems and solutions that can support news stories. The reports would be the basis for entertaining videos about energy shown on public TV. That person must have technical and communications skills, and the ability to deal creatively with conflicts of ideas and people.

The writers must do everything they can to make understanding what they write easier, and not make every reader or viewer do extra work.

### **We would like to help.**

**We can produce reports and videos.** We have the necessary qualities mentioned earlier. We'd like to help, possibly as DOE contractors or advisers to the Obama administration. We're interested in exploring any opportunities.

Probably the best way we can help is to produce reports and videos that explain energy issues to those with no technical experience. We are fast, sure and responsive to special needs. Carefully explained, the information is fascinating.

We have no interest in choosing energy policy. Any reports or videos we produce are only for the purpose of making energy choices more clear.

### **About us**

**From the author, Michael Jennings:** My uncle was the head of a research lab of about 30 people for many years until he "retired"; he still works there. My brother is the head of a research lab. I worked in a physics lab myself. The research culture is part of our family conversation. In 1995 my brother and I talked extensively about the generally poor communication of scientists, and in response I wrote the article on page 9, expressing the idea that scientists should adopt the techniques of professional writers.

**Adriana Pereira** is technically knowledgeable also, as are some of our associates. Adriana is especially skilled at guiding where necessary while at the same time giving the other person the focus of attention, so that the person gains confidence. Adriana has had such good workbench skills that even people with years of experience ask her to supervise if there is some especially delicate or tricky task. Adriana and Michael are married.

There are two main roles in organizational interaction. A leader coordinates activity, takes responsibility for things that would not otherwise be done, and deals with conflicts that others would rather avoid. The other role emphasizes being friendly and sympathetic. People who favor that role tend to be inhibited around leaders; they tend to tell leaders whatever they think leaders want to hear. So tasks often require at least two people; Adriana and Michael work together well.

The next three pages provide some resume material. For more information and the latest version of this article, choose DOE: [www.futurepower.net](http://www.futurepower.net)

**"Futurepower":** Our registered trademark, the invented word "Futurepower", was chosen in 1982 to signify the power of scientific thinking, long before energy was on everyone's mind.

Copyright ©2008. Exact copies may be made for any purpose.

**About us, continued...**

**Ad below:** Beginning in 1980, Michael used the ad below to sell his services as an advertising copywriter to technologically-oriented advertising agencies.

**Next page:** Advice to scientists, 1995.

**Story on the last page:** How can personality be communicated in a resume? Maybe the last page will provide something about Michael that is useful to the reader. The photos and story tell about Michael's friendship with Larissa, a Brazilian girl who chose him as a friend.

**Web site:** Choose DOE at [www.futurepower.net](http://www.futurepower.net)

## **Ad Writing is More Than Just Writing.**<sup>SM</sup>

### **It's interviewing,**

Many of the facts in an ad come from talking to people.

### **researching,**

The writer must be an independent investigator.

### **learning,**

There's always something new to be learned.

### **relating,**

Advertising is a people business; relationships are important.

### **knowing,**

The writer must know not only the craft of writing but also graphic arts because what he writes and how it will look are inter-related.

### **thinking,**

Most of what the writer does is some form of mental activity.

### **creating,**

Creativity is necessary, and no one can define it in advance.

### **communicating,**

An advertisement cannot be just an expression of ideas; it must transfer a mental experience.

### **checking,**

Ad writing requires meticulous attention to detail.

### **managing,**

The writer must complete the ad on time and within budget.

### **editing,**

Ad writing is a cooperative effort. It's usual to benefit from several opinions.

### **and writing.**

The mechanical act of putting words on paper is actually the smallest task. © 1980, '90, '99, '03, '08 Michael Jennings

# Communicate scientific research using professional methods.

by Michael Jennings, using ideas taken from the famous book,  
*Confessions of an Advertising Man* by David Ogilvy

## Communicating well is part of being a scientist.

Your work can't benefit others if they don't know about it.

Many of the people who could use your work or who make decisions about supporting your work are not as technically knowledgeable about your field as you. They need your help to understand.

Communicating your work requires a long-term creative effort, similar to an advertising campaign. Here's how professional communicators do it:

### Select a basic idea.

Make a strong promise to the reader. Samples:

Weak: "Our microbiology research helped us understand a disease with an obscure name." (typical presentation)

Good: "We have corrected fundamental errors in previous cancer research."

Good: "We have new understanding of the chemical pathways of leukemia." (page 93, item 1)

### Find a great presentation.

Perhaps: "We will show step-by-step the mistakes made in previous research, and how our methods will influence drug design." (page 95, item 2)

### Give the facts.

People love to have facts handed to them. It's marvelous to hear the work that was done and what was discovered without having to do the work oneself. (page 95, item 3)

### Be sure you have plenty to say.

Don't ask for attention unless you have something worth the audience's time. The reader or viewer or listener must feel after experiencing your communication that the effort was worthwhile. (page 97, item 4)

### Be respectful.

The reader doesn't have your knowledge, but has a human brain, and therefore has the potential to make valuable discoveries also. (page 97, item 5)

## Relate your work to the reader's interest.

Show how your work is relevant to what's happening now. Perhaps: "We can use our work to design a new cancer drug." (page 98, item 6)

### Your message must be your own.

Your campaign to communicate your work must reflect your personal approach, and only that personal approach.

If your message reflected the manner of other people also, it would be fragmented and confusing to the reader. For that reason you're alone when designing your communication.

Once you've chosen a direction, other people may be able to give you helpful criticism. But, more likely they may not be able. It's best not to expect that anyone else will help you creatively, or even fully understand your effort to communicate. However, every writer needs an editor. (page 98, item 7)

### Stay with what works.

If you design good communication, use it until it is no longer helpful. (page 98, item 8)

### Be honest.

You shouldn't be embarrassed to show your communication to your co-workers or anyone in your field. If there's a part of your effort about which you don't feel completely satisfied, it needs more work. (page 99, item 9)

### Create a coherent understanding.

Each element of each communication must contribute toward an overall whole. If there is an element which doesn't contribute, delete it.

The impression you create should be one with which you will be happy for years, or until you grow into something else, or for the rest of your life.

Be yourself. Don't try to be something you're not. Don't present yourself in a way that you can't sustain. (page 99, item 10)

by Michael Jennings, *Futurepower*® ©1995, 2008 (503) 820-3550  
P.O. Box 14491, Portland, OR 97293-0491 USA [tdd@futurepower.net](mailto:tdd@futurepower.net)



**Larissa and friends, Brazil, 2005**

**Above:** Larissa and I met while walking in a Carnival celebration. Larissa asked my wife, Adriana, if I was speaking English. She decided she wanted to meet me and walked in front of me and we started talking. I asked her if I could take a photo.

At that time, Larissa would soon be 9 years old. She was far more mature than her friends in the photo, who are just normal girls.

The spot in the photo at the left is foam on the lens. People spray the foam as part of the festivities. Larissa's friend on the right is holding a spray can.

Larissa took my hand and led me into the celebration and introduced me to several people who were making it happen. The king of the Carnival that year and I continue to be friends.

Brazilians normally don't notice differences in skin color.

**Right top:** Everyone says that Larissa is exceptionally intelligent. Larissa is amazingly successful at making friends with adults. She chose me as one of her friends.

Larissa's single mother and Adriana were supportive: "Oh, those two like each other; let's do what's necessary so they can be together." Larissa's mother was there when this photo was taken, but died of a brain tumor 5 months later. Now Larissa lives with her aunt.

**Right bottom:** Larissa sometimes gets bored talking with adults, so I suggest she bring a friend when we do things together. A few days ago she chose her friend Kelly, on the left.



**Larissa and I, Brazil, 2007. Photo: Adriana**

Larissa's aunt Maria is in the front.

There are surprising similarities between Larissa and myself. We both like to be leaders. We like responsibility. We always know what we want, but don't expect to always get it. We're interested in how things work. We like to talk with family, friends, or anyone we meet.



**Kelly, Aunt Maria, Larissa, Brazil, 2008. Photo: Adriana.**