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## New Nuclear Generation and U.S. Fuel Cycle Policy

Good morning. I want to thank you for the opportunity to speak with you today. You are important opinion leaders and decision makers in our nuclear transportation infrastructure, and I value your thoughts and opinions.

I'd like to start by taking a trip back in time about 25 years, to the early 1980s. We are still in the shadow of the accident at Three Mile Island Unit 2 and the Nuclear Waste Policy Act is under consideration. The first operating licenses since the accident are being issued, and construction of a number of new plants, fewer than originally planned, is underway. Conventional wisdom says that for units successfully placed in commercial operation, they will be operated for their licensed lifetime of 40 years, and then retired.

Under these assumptions, the defacto fuel cycle policy of direct disposal enacted with the Nuclear Waste Policy Act in 1982 would, even today, seem most appropriate. In 1987, in the shadow of the Chernobyl accident when the unilateral decision was made to develop the repository at Yucca Mountain, Nevada, there were no apparent reasons to challenge these premises.

Yucca Mountain was, and is, well suited for the mission of providing an engineered, very long-term storage and monitoring facility for used nuclear fuel. No scientific evidence has since surfaced that leads to any other conclusion. The public interest is well served by using this facility in this manner.

Now, let's jump forward to the late 1990s. Nuclear plant operational safety and reliability around the globe has dramatically improved. Plant life extension to 60 years has become a very real option, and many utilities are preparing license extension applications. Natural uranium prices are below \$10 per pound. But when asked about the potential for building new nuclear plants, most utility CEOs are saying "not on my watch." Natural gas is the fuel of the day. There is no real basis to re-evaluate our country's direct disposal fuel cycle policy.

Now, here we are today. Safety and reliability are at record levels. New base load electric capacity is needed, natural gas prices are excessive and there is a new level of concern about greenhouse gas emissions. So, we are embarking on a "nuclear renaissance." As many as 30 new units are under consideration at 20 different sites across the country. The recently published EPRI model for regaining control of our carbon emissions by 2030 calls for the addition of 60 gigawatts of new nuclear capacity during this period. Times have changed. And, I guess I should mention that the spot market price of natural uranium last week was \$113 per pound.

Now is the time to re-think our nuclear fuel cycle policy in this country. If we are going to have a nuclear renaissance with light water power reactors contributing a major part of our country's energy supply well into the latter half of this century, if not longer, then it is time to reconsider fuel recycling in this country.

Recycling of spent fuel at the same rate it is generated can replace the need for 25 percent of the natural uranium fuel requirements. Recycling fissile materials in used commercial fuel currently in storage pools and dry storage canisters around the country today could displace the natural uranium requirements of the entire U.S. nuclear power fleet for seven years.

Recycling can also reduce the overall stockpile of used fuel rods by a factor of eight. That is one-eighth the stockpile of commercial fuel at risk of theft, diversion and any other acts that could be planned by individuals with malicious intentions.

There is a misinformed belief in this country that recycling should not be pursued for weapons nonproliferation reasons. The facts are that recycling actually advances nonproliferation objectives by safely and securely reducing the amount of special nuclear material requiring safeguards.

Spent fuel can be safely transported to a recycling complex in its current theft- and diversion-resistant state. Using existing technologies, a dilute stream of plutonium containing material—not a pure plutonium stream—would be produced and fabricated into

MOX fuel assemblies, which can be safely and securely returned to reactor sites and irradiated to the same nonproliferation standard as the spent fuel it replaced. These technologies and approaches already exist and are being used elsewhere today, and can be effectively and securely used to reduce the stockpile of spent fuel rods containing plutonium.

As we consider recycling, a few questions may come to mind such as, “What about waste disposal for the vitrified glass wastes that come from recycling operations? Don’t we need Yucca Mountain for disposal of these wastes?” Simply put, the answer is no.

As I stated earlier, as a hard rock site, Yucca Mountain is well suited for the direct disposal of used fuel. In fact, it should be reserved for the potential disposal of used MOX fuel, or other fuel materials that may not be suitable for recycling – such as some defense related materials. For vitrified glass wastes from recycling, a salt bed repository, located below potential drinking water sources, could in fact prove to be a better choice – technically, economically and politically – for the permanent isolation of these wastes. This type of geologic location was considered in the early 1980s before the decision to solely develop the Yucca Mountain site was made. It is time to reconsider one or more of those sites – not as a replacement for Yucca Mountain, but as a site dedicated only to vitrified glass wastes from recycling.

The licensing process for Yucca Mountain needs to proceed forward as planned. Obtaining a license for this facility is going to be a challenging, and likely, an extended effort. Litigation

is almost assured. But, making that final determination regarding the suitability of this location for the construction of the facility is an important part of future decision making regarding plans to proceed with construction of the facility. A decision to construct the facility should be delayed not only until that license been issued, but also until we see whether the nuclear renaissance actually occurs as we are currently envisioning it, and after the potential benefits of recycling have been thoroughly and rationally explored.

But, if we are truly going to make informed decisions regarding our nuclear fuel cycle, and effectively implement those decisions even if the only decision is to pursue the direct disposal of fuel in Yucca Mountain, fundamental changes are needed in the program structure and governance. U.S. NRC Commissioner Ed McGaffigan recently editorialized on the difficulties the Department of Energy has faced and failed to overcome, and I must agree with him completely. Successful implementation of *any* high-level waste management strategy will require fundamental changes to the governance structure of the program. That includes the current Yucca Mountain-only strategy.

Responsibility for execution of the waste program, and accountability for performing the technical and economic analyses, should be transferred to a newly created, government-chartered corporation. The program should **not** be “privatized,” but rather run by applying private sector governance principles in a government corporation. There are several successful models to consider. In today’s structure, for example, the Tennessee Valley Authority has a governing board of part-time directors, who have the authority to recruit

and select the leadership of the organization, as well as provide appropriate governance over critical decisions.

A similar approach for management of the U.S. high-level waste program can create accountability for results that has been lacking, by avoiding the revolving door of management and direction the waste program experiences today with each change in administration and corresponding change in energy secretary. My personal opinion is that current program director, Ward Sproat, is doing an excellent job in carrying out his mission as it is defined today. However, we all must recognize the probability of sustaining that effort as presidents, energy secretaries and program directors change in the next election cycle is very, very low.

Governance and leadership continuity is not the only obstacle to successful development and execution of a nuclear waste management program. The funding process is broken as well. Funding must be provided based on program requirements and obligations, not on politics. Understandably, members of the U.S. Congress today have conflicting objectives and priorities; the responsible appropriation of the waste fees should not be subjected to these conflicts.

To isolate the fund from conflicts, I propose the creation of a Nuclear Waste Fund Commission, consisting of five full-time members, whose sole function is the management of access to the nuclear waste fees and the interest earned from the existing corpus. These monies are not general tax revenues, they are fees paid by regulated retail electric

customers and wholesale electric generators. To date, more than \$28 billion U.S. dollars has been committed to this fund through direct payments and accrued interests. The Nuclear Waste Fund Commission should be nominated by the governors of those states in which spent nuclear fuel is stored, and should exclusively represent the interests of those who have contributed and continue to contribute to the waste fund.

As I have discussed this concept with a number of stakeholders in this issue, I often get asked if it really needs to be this complex. Will that complexity get in the way of productivity? It is my belief this type of check and balance between the waste corporation and a waste fund commission is needed, and can represent good fiscal control. Management must be checked by the board, and the board checked by the shareholders, in this case represented by the waste fund commission. Decisions need to be tested, and accountability always demonstrated. In my opinion, while more difficult in execution, the separation of programmatic decision making from funding authority is needed to assure that “good government” is always practiced.

Let me conclude by saying we have important decisions to make. These are not just decisions regarding whether or not to construct a new fleet of commercial power plants. We also must revisit and either confirm or change our past decisions regarding the nuclear fuel cycle in this country. I’ve shared my views and I hope they make you think about some things you otherwise may not consider. But, most importantly, I hope they stimulate more open debate and discussion on this topic. I believe the worst decision we can make is to decide there is no decision to be made.



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Thank you very much for your time and attention this morning.