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## **The Nuclear Energy Industry's Unfinished Business**

Frank L. (Skip) Bowman

### **Introduction**

I want to tell you a story about two U.S. presidents, separated in time, but joined by a common purpose.

In 1953, President Dwight Eisenhower spoke to the United Nations about a new vision he called "Atoms for Peace".

The General Assembly was silent for the entire speech. Then, Eisenhower drew cheers with this celebrated last line: "The miraculous inventiveness of man shall not be dedicated to his death, but consecrated to his life."

3,500 delegates celebrated, and a wave of optimism about nuclear energy swept the assembly.

Today, we have an American president who shares President Eisenhower's vision. Like Eisenhower, President George W. Bush has demonstrated bold leadership and vision in articulating the promise — indeed the imperative — of nuclear energy.

In several speeches this year, in major policy forums such as the G8 discussions in Gleneagles, Scotland, earlier this summer, in taking time from his schedule to visit a U.S. nuclear plant, President Bush has signalled his conviction that the rebirth of nuclear energy in the United States and worldwide is imperative.

It is a new day, a new start. In the United States, we are re-launching the nuclear power industry to meet the baseload electricity needs that we know will exist after 2010.

We're back. We will succeed. We will meet the president's expectations.

Today I want to focus my remarks in three areas.

First, I want to talk about how the American nuclear industry is operating more reliably and efficiently than ever while making important contributions to our energy security and air quality.

Second, I'll turn to U.S. energy policy. The American electricity business faces major challenges: rising electricity demand, more demanding environmental regulations and an aging electrical infrastructure. Our Congress has demonstrated a bipartisan commitment to a long-delayed, much-needed energy policy that addresses many of these challenges. America's new energy policy also provides both investment stimulus and protection against regulatory delays to jump-start a new generation of nuclear plants.

And finally, I want to say a few words about unfinished business — specifically, the work still ahead of us if we hope to fulfill President Eisenhower's vision, and ensure that the world meets a growing appetite for power in a way that protects our environment.

We do not have to pick between the two. We can have more electricity to power future economic growth. We can have clean air. And with nuclear energy, we can have both.

### **Nuclear's Contribution to America's Electrical Grid**

Before we look into the future, I'd like to review nuclear energy's essential role in America's electricity supply today.

These are the facts.

America's reactors are operating at capacity factors in the 90 percent range—levels of efficiency once thought unachievable.

This sustained excellence has increased electricity production from nuclear power plants over the last decade by the equivalent of 181,000-megawatt power plants.

Nuclear energy generated 789 billion kilowatt hours of electricity last year in the United States. But America will need far more electricity to keep up with rising demand while acting as a responsible steward of the environment.

The U.S. government forecasts that the country will need approximately 280,000 megawatts of new generating capacity by 2025. We fully expect that new nuclear capacity will take its fair share of those 280,000 megawatts.

U.S. nuclear plants — indeed, nuclear plants around the world — have a well-documented value in meeting clean air requirements and reducing emissions of greenhouse gases. In 2004, the 103 U.S. reactors avoided 697 million metric tons of carbon dioxide, 3.4 million tons of sulfur dioxide and 1.1 million tons of nitrogen oxides.

Without nuclear power, carbon emissions from the U.S. electric sector would be about 30 percent higher. If we shut down all U.S. nuclear plants for a day and wanted to hold carbon emissions constant, we would have to forbid Americans to drive their cars that day.

I will leave to your imagination the American public's reaction to that idea.

The facts demonstrate that the world cannot have a plausible program to reduce greenhouse gas emissions without a growing contribution from nuclear power plants.

These are facts and, as John Quincy Adams once said, “facts are stubborn things.” You cannot wish them away or pretend they do not exist.

### **The Challenges of the Electricity Business Today**

America faces immense challenges in balancing its short-term energy needs and longer-term imperatives.

The U.S. economy is paying the price today for our inability to strike a balance between what was expedient and easy in the short-term and what was prudent but more difficult, for the long-term.

We are paying the price today for 10 to 15 years of neglect of longer-term imperatives.

Since 1992, when the U.S. last enacted major energy policy legislation, the electricity industry has built over 270,000 megawatts of new natural gas-fired generating capacity.

By contrast, we’ve added only 14,000 megawatts of new nuclear and coal-fired capacity.

Coal and nuclear energy together represent approximately 70 percent of U.S. electricity supply. They provide the highest degree of price stability, but investment in new nuclear and coal-fired power plants has virtually disappeared in the last 10 to 15 years.

Instead, we built gas plants to generate electricity and placed unsustainable demands on natural gas supply. This has exposed consumers of natural gas and electricity from natural gas to punishing price volatility, and has forced large industrial users of natural gas to move jobs and production offshore.

Why did we build such massive amounts of gas-fired generating capacity?

Partly because when that “build” cycle started, natural gas cost 2 dollars to 2 dollars and 50 cents per million Btu.

Partly because we entered the 1990s with plenty of base load capacity. What we needed was intermediate and peaking capacity, and gas-fired plants are well suited for that role.

But mostly, we built gas-fired power plants because they represented the lowest investment risk at a time when market restructuring—or liberalization—resulted in significant business risks and uncertainties.

As you well know, investment capital flows away from uncertainty.

The business uncertainties of the last decade inhibited capital investment in long-lead-time, capital-intensive technologies—notably advanced nuclear power plants and coal technologies that provide the highest degree of forward price stability.

Given the lead times involved in building new infrastructure, including new base load generating capacity, it will take years to recover from this myopic focus on short-term need.

### **Opportunity Knocks: Congress Passes the Energy Bill**

Fortunately, with natural gas prices now above 8 dollars per million BTUs and oil at record-high prices, America's political leadership has taken action.

The Energy Policy Act of 2005 signed into law on 8 August by President Bush provides broad-based stimulus for investment in new electric power infrastructure, including nuclear energy. That investment stimulus is essential to preserve the diversity of fuels and technologies that is the strength of the U.S. energy supply and delivery system.

The legislation provides two essential building blocks:

1. Investment stimulus for new nuclear power plants to offset the higher cost of the first new nuclear plants designs that we build.
2. Investment protection for the first six reactors to contain the potential for delay that is beyond the industry's control due to the Nuclear Regulatory Commission's new and untested licensing process.

The investment stimulus includes a combination of tax credits and federal loan guarantees for a limited number of plants for a limited time period.

The protection against delay in the licensing process is an innovative form of insurance coverage underwritten by the federal government. It will protect companies against delays and increased costs during construction and until commercial operation — delays that contributed to the spiraling costs of the last generation of reactors built in the United States.

We believe that our Nuclear Regulatory Commission's more efficient licensing process will work as intended. The industry would prefer that the insurance is never used. But the existence of the insurance will allow boards of directors to authorize multi-billion dollar investments in new nuclear plants, confident that there is a safety net under the investment.

The energy policy legislation includes several other elements that will help assure debt and equity investors that their investment in new nuclear plants is sound and secure, and that they stand a chance of realizing investment returns commensurate with the risk.

The policy initiatives in the energy legislation will ensure that programs and activities now underway will accelerate. We have two consortia developing applications to the Nuclear Regulatory Commission for combined construction and operating licenses. Several other companies are seriously considering them.

Three companies are seeking early site permits from the Nuclear Regulatory Commission, with others waiting in the wings. Three advanced reactor designs are in varying stages of the Nuclear Regulatory Commission's design certification process.

We expect to break ground on new nuclear plants in the United States around 2010, with commercial operation in 2014 and volume construction after 2015 to meet baseload electricity needs in a carbon-constrained world.

New nuclear plant construction in the United States is possible today partly because the performance of the operating plants is exemplary, partly because conditions in the energy markets demand it, but also because public attitudes about nuclear power are so supportive.

Here are a few results from recent public opinion research conducted for NEI:

- ▶ 83 percent of Americans believe nuclear power is important for our energy future;
- ▶ 58 percent of Americans agree that “we should definitely build more nuclear power plants;”
- ▶ And 69 percent said it would be acceptable to build new reactors at the closest nuclear power plant to where they live.

We're also encouraged by recent efforts by local and state government leaders in New York, Maryland, Mississippi, South Carolina and Louisiana to encourage new nuclear plant projects.

And we're pleasantly surprised to see new supporters in the environmental community—such as Greenpeace co-founder Patrick Moore; Stewart Brand, founder of the Whole Earth Catalog; and Jared Diamond, author of the mega-bestseller, *Guns, Germs and Steel*.

Some leading policy organizations, such as the Pew Center for Climate Change and the World Resources Institute, recognize that effective programs to manage greenhouse gas emissions must include nuclear energy. As I said before, facts are stubborn things, and responsible environmentalists now question how they can achieve their long-term goals *without* nuclear energy.

### **Unfinished Business**

Let me finish by going back to where I started, and posing a question: What if Mr. Eisenhower came back today and reviewed our progress?

There is a rule of thumb for advanced technologies that it takes about 30 years from proof-of-concept to full-scale commercial deployment. By that measure, I think we could tell Mr. Eisenhower that we've done rather well.

In the United States, within two years of his Atoms for Peace speech, we deployed our first nuclear-powered submarine. Within four years we reached full-power

operation at our Shippingport reactor in Pennsylvania—really the first commercial-scale power reactor. Since then, we've built 434 power reactors around the world, which produce approximately 17 percent of the world's electricity.

Not bad, Mr. Eisenhower.

But you know what he'd say? He'd say: "Nice start, but you're not keeping pace with the challenge."

He would remind us that 1.6 billion people—one-quarter of the world's 6 billion people—have no access to electricity. He would remind us that figure is expected to reach 9 billion or so by 2050, and that about 90 percent of that growth will occur in the areas where there is no access to electric power.

He would remind us that access to electricity creates economic opportunity, and frees up time for learning and education by substituting commercial energy for human labor.

He would tell us that the combination of education and economic opportunity is the most effective antidote to the ignorance that infects the world today under the name of terrorism.

Eisenhower would ask if we had determined how to provide universal access to a subsistence amount of electricity—say, 1,000 kilowatt-hours per year, or about 10 percent of what the average American uses.

We would quickly realize that level of electric service will require the construction of 10 million megawatts of new generating capacity by 2050—about triple today's installed capacity worldwide.

And then he might ask us how we'll do this without poisoning the environment. Stabilizing atmospheric carbon dioxide concentrations at twice pre-industrial levels requires cutting carbon emission rates from our cleanest coal plants by more than three-quarters and from our best gas-fired plants by one-half.

And since we know we cannot achieve those kinds of reductions quickly or easily, if at all, we would be forced to concede that the world cannot get to where it needs to be less than 50 years from now without massive deployment of nuclear power and other zero-carbon technologies.

And Mr. Eisenhower would smile, say that we've barely begun, and tell us to get back to work.

## **Conclusion**

The world is approaching a crossroads—two possible futures—in terms of energy supply.

Down one path lies a future I do not care to contemplate: A world in which we fail to supply the energy needed to ensure that most of the world's people are fed and sheltered, educated and employed—a world in which children yet unborn are condemned to a life of poverty and misery and sickness.

But down the second path lies a brighter world: A world in which energy development is managed in a sustainable way, a world in which we no longer fight wars with guns and bullets, a world instead in which we use science and technology—including nuclear energy technology—to fight poverty and sickness and environmental devastation.

Please remember those two possible pathways. And when you leave this place, please remember that you are more than nuclear industry professionals. You are much more than that.

Each one of you is an ambassador for a vision of a better world.

Thank you for inviting me, and my best wishes for a very successful conference.