

**Marvin S. Fertel  
Executive Vice President and Chief Nuclear Officer  
Nuclear Energy Institute**

**U.S. House of Representatives  
House Committee  
Committee on Energy and Commerce  
Subcommittee on Energy and Air Quality**

**Washington, D.C.  
July 15, 2008**

Chairman Boucher, Ranking Member Upton, Chairman Dingell and Ranking Member Barton, and members of the committee, I am Marvin Fertel, Executive Vice President and Chief Nuclear Officer at the Nuclear Energy Institute (NEI). I would like to thank you on behalf of the nuclear energy industry for the opportunity to testify before this committee on the Yucca Mountain project and the nation's used nuclear fuel management policy.

NEI is responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of nuclear power plant operation and the entire nuclear fuel cycle. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, companies engaged in the storage and transportation of reactor fuel, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

We thank the committee for its long-standing support for the Yucca Mountain project and for holding this hearing. This is a pivotal time for the project as the Department of Energy (DOE) recently submitted a license application to the Nuclear Regulatory Commission seeking approval to construct a repository for the disposal of used nuclear fuel and high-level radioactive material, including defense waste, at Yucca Mountain, Nevada.

Disposal of used nuclear fuel and high-level radioactive waste is a key component of integrated management of used fuel, which also includes centralized interim storage, and research development and demonstration of advanced fuel treatment technology to close the nuclear fuel cycle. It is vital to the national interest that Congress provides the appropriate oversight to ensure that the Yucca Mountain license application review is a fair and objective process that is based on sound science and engineering.

Today, my testimony will focus on the following issues:

- The vital role of nuclear energy in U.S. energy policy and the need for new nuclear power plants as part of a comprehensive, balanced energy plan that enhances U.S. energy security.
- Yucca Mountain as an important part of an integrated approach to managing used nuclear fuel that will support the long-term growth of nuclear energy.

- The Yucca Mountain licensing process.
- Improvements to the federal used fuel management program.

### **Nuclear Energy is a Vital Part of Any National Energy Plan**

The nation's 104 commercial nuclear power plants produce approximately 20 percent of U.S. electricity. In the last decade, the industry has improved operating efficiency and increased power output of nuclear plants as one way of using existing assets to help keep pace with growing electricity demand. Nuclear energy has consistently maintained its place as the nation's largest source of electricity (more than 70 percent) that does not produce greenhouse gases or controlled air pollutants.

There is a growing consensus that any credible program to reduce greenhouse gas emissions in the U.S. and worldwide will require a portfolio of technologies and approaches, and that nuclear energy is an indispensable part of that portfolio. Most recently, the U.S. National Academy of Sciences and similar scientific organizations from 14 other nations – including the remaining G8 nations – recognized the important role of nuclear energy in reducing greenhouse gases. Not surprisingly, public opinion polls indicate that a strong majority of the American public favors building new nuclear plants.

While it is important to note that new nuclear plants will be developed based on electricity market fundamentals, the industry recognizes that the issue of safe and secure used fuel management is important to all stakeholders as they look at the benefits of nuclear energy towards meeting our electricity supply requirements and its environmental goals. In this regard, consistent with satisfying the regulations imposed by the NRC and the oversight provided by the NRC, industry has achieved an excellent record of safety in the management of used nuclear fuel. At present, there are 58,000 metric tons of used reactor fuel rods currently in storage; most are located in steel and concrete vault-like pools at nuclear plant sites. As these on-site storage facilities reach capacity, the oldest fuel rods are moved to specially-designed steel and concrete dry containers. The industry has safely loaded 11,000 metric tons of fuel into 960 containers at 40 sites. As other nuclear plants reach capacity in their storage vaults, the number of dry containers used for storage is expected to nearly double by 2020.

Congress should have continued confidence that the industry's demonstrated ability to safely and securely manage these materials on-site provides a solid underpinning for the continued and expanded use of nuclear energy. NRC's existing "Waste Confidence Rule" provides a basis for addressing this issue in licensing proceeding. Absent the passage of legislation that codifies waste confidence from a national policy perspective, the basis for the existing NRC rule could be strengthened. Therefore, the industry believes that it is appropriate for the Nuclear Regulatory Commission to update its waste confidence finding through rulemaking. In this regard, we look forward to the NRC expediting a rulemaking on this issue beginning this year.

Several significant events have occurred since the last NRC rule on this issue in 1999, necessitating a rulemaking to update and modify the bases for the waste confidence

findings. These events include plans for more than 30 new reactors and license renewal for nearly half of the existing nuclear plants.

In addition, and of particular significance to the current bases for Waste Confidence, the Bush administration and Congress are considering a more integrated used fuel management policy that could include recycling and closing the nuclear fuel cycle. The implementation of such a strategy would not only impact the waste form(s) that will require disposal, but would also impact the timing for the disposal.

### **Geologic Repository is an Important Part of Integrated Used Fuel Management**

In 1982, Congress enacted the Nuclear Waste Policy Act (NWPA), mandating the federal government begin collecting and disposing of used nuclear fuel from U.S. nuclear power plants beginning no later than January 31, 1998. The law was consistent with the international consensus that deep geologic isolation is the preferred method for disposing used nuclear fuel and high-level radioactive waste. The 1998 deadline has long come and gone, forcing the industry to develop interim measures for safely and securely managing the growing inventory of used nuclear fuel at reactor sites. More than 60 lawsuits against the federal government have been brought in the Court of Claims by electric utilities to recover damages caused by DOE's failure to meet the 1998 deadline. Clearly, there is a legal obligation for DOE to begin removing used fuel from nuclear power plant sites. DOE is more than 20 years behind schedule in beginning to move used fuel from commercial nuclear plants for storage or disposal. The resulting liability from federal government inaction continues to grow into the billions of dollars, with no end in sight. Although used fuel storage at nuclear power plants is safe and secure, moving used fuel to central storage facilities will further enhance safety and security, and confidence in the government program by first consolidating this material from shut down reactors and by beginning the process of used fuel consolidation from operating reactors.

The renewed interest in nuclear energy growth has led to a dialogue and growing consensus that an integrated approach to managing used nuclear fuel is needed. This approach consists of the following elements:

- centralized interim storage;
- research, development, demonstration and ultimately deployment of advanced recycling technologies to derive additional energy from used nuclear fuel and reduce the volume, heat, and radiotoxicity of fuel cycle byproducts; and
- ultimate disposal of those byproducts in a repository.

The growing interest in central interim storage and nuclear fuel recycling does not eliminate the need for geologic disposal of the residual waste product(s) from recycling, though it certainly could significantly modify the waste forms, volumes, toxicity and repository designs associated with the final disposal of these products. Under any used nuclear fuel management scenario, a geologic repository will be necessary.

This is true world-wide. All nations that rely on nuclear energy – even those reprocessing used nuclear fuel – are in some stage of developing a repository.

However, no nation has come as far as the United States. The Department of Energy's license application to the NRC for the Yucca Mountain repository represents more progress than any other international project to build a geologic disposal facility. The United States must continue to exercise the leadership that we have displayed in getting to this point, as other nations look to follow our example.

### **Yucca Mountain Licensing**

The June 3, 2008, submittal of DOE's application to NRC to construct the Yucca Mountain repository represents a very significant step in a robust and rigorous scientific process toward development of a disposal facility. The Yucca Mountain license application is built upon more than 20 years of world-class scientific and engineering. Hundreds of highly qualified experts have collected and analyzed data from seven miles of experimental tunnels and laboratories carved into Yucca Mountain and hundreds of boreholes drilled into mountain and its surrounding terrain. Their work has undergone peer review by leading international experts and been subject to rigorous quality assurance reviews. Thus far, the nation has spent approximately \$10 billion on studying the suitability of Yucca Mountain as the nation's repository.

The nation deserves to have an objective determination on whether to build and subsequently operate the repository that is based on a thorough evaluation of the results of this massive scientific and engineering program. The Yucca Mountain licensing process will be fair, open, transparent and rigorous. DOE must demonstrate to the NRC (and potentially in subsequent judicial reviews) that the repository will protect public health, safety and the environment. Otherwise, the repository will not be licensed.

The NRC has been preparing its expert scientific and engineering team to review the DOE license application. The commission will use the same proven approach in reviewing the license application for the Yucca Mountain repository that it has used in determining the safety of the nation's 104 commercial nuclear power reactors.

The industry intends to participate as a party to the Yucca Mountain licensing process to help support a transparent, rigorous and timely licensing process and to protect industry and its customers' interests. We will bring highly qualified scientific and technical resources to this effort.

Once a repository and other elements of the integrated used fuel management are developed, the industry is confident in the nation's ability to safely and securely transport used nuclear fuel to central interim storage, recycling, and repository sites. This confidence is based on the exemplary record of transportation safety and security that has been established over the past four decades – including 3,000 U.S. shipments over 1.7 million miles, and more than 24,000 shipments internationally. All told, more than 73,000 metric tons of used nuclear fuel and high-level radioactive waste have been transported with no injuries, fatalities or environmental damage as a result of the radioactive nature of the cargo.

## **Federal Used Fuel Management Program Improvements**

The Yucca Mountain licensing process is only one part of a larger effort to safely and securely manage used nuclear fuel. The resurgence of interest in nuclear energy as a source of reliable, affordable and clean electricity to meet rising electricity demand and reduce greenhouse gases requires a fresh look at used fuel management policies to ensure they support an era of expansion for nuclear energy. Concurrent with the industry's development of new reactors, the government must take several actions related to used-fuel management.

First of all, the use of the Nuclear Waste Fund (fund) for its intended purpose must be addressed. Consumer commitments to the fund, plus interest, total \$30 billion since 1983. The fund is growing by about \$1 billion per year, and if used as intended, will pay for disposal of the nation's commercial used nuclear fuel. To date, only a fraction of this money has been allocated for its intended purpose. Persistent funding shortfalls are one reason why, 10 years after the date required by Nuclear Waste Policy Act for the nation to have an operating repository, we are just beginning the repository licensing process.

The courts consistently have affirmed that the federal government, and thus taxpayers, are liable for this delay. Already, the courts have awarded on the order of one-half billion dollars in judgments and settlements to electric utilities, and every additional year of delay adds another \$1 billion to this liability. While it may be possible to continue the Yucca Mountain licensing process with budgets that are constrained by the current funding mechanism, improved access to the fund will be needed if Yucca Mountain is to be built and operated.

Secondly, a more effective management structure is needed to assure that all three elements of integrated used fuel management are effectively and efficiently carried out. Simply making the fund available will not, by itself, lead to success. In order for these funds to be effectively deployed, an improved management structure must be put in place. Congress should consider alternative management structures for the Yucca Mountain Project that allow private sector principles and public-private partnership arrangements to be effectively applied for better program management and implementation.

Industry urges the committee to hold hearings to explore potential future funding and management options for the federal used nuclear fuel program. The committee should continue to exercise vigilant oversight of the existing program to ensure that it moves forward as intended by the Nuclear Waste Policy Act.

## **Conclusion**

The U.S. nuclear industry has demonstrated that it can safely and securely manage used nuclear fuel at nuclear power plant sites. However, it is important for enhancing confidence of the public and state and local policymakers that the federal government begin to remove used fuel from reactor sites as required by the Nuclear Waste Policy Act. Each additional year of delay exposes taxpayers to another \$1 billion in liabilities. The Yucca Mountain licensing process is an important step in this direction. But it is not

the only imperative. Interim storage, recycling, and reform of the federal used fuel program's financing and management structure must also be addressed.

Industry continues to be encouraged by this committee's diligent attention to these matters. Further, until the government is in a position to begin removing used fuel from reactor sites, the nation can remain confident that it will be safely and securely managed by industry.