

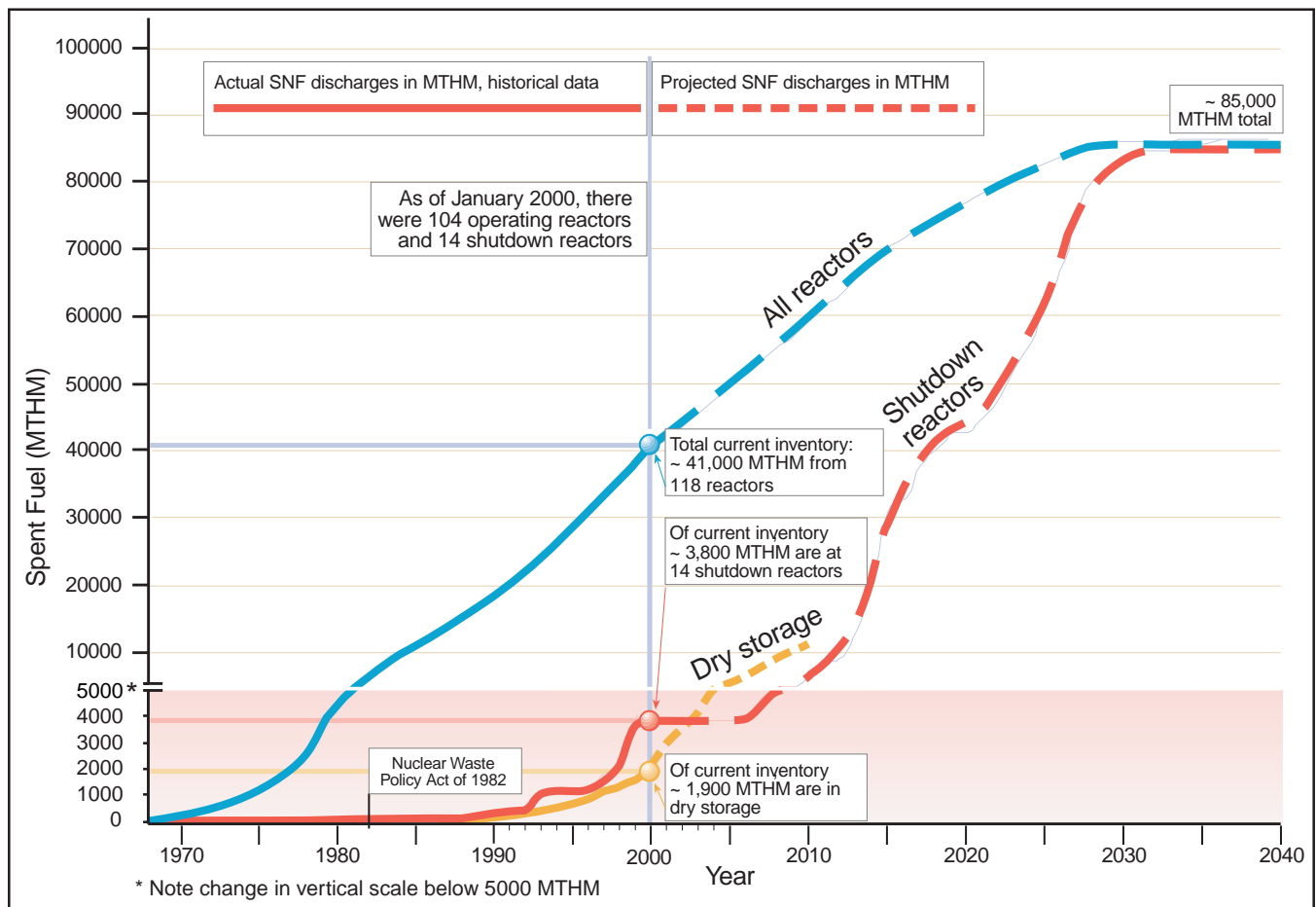
# Introduction

## Why This Program Matters

### What is the extent of “the nuclear waste problem”?

Decisions made many decades ago to pursue a nuclear weapons program and to develop nuclear energy for civilian use committed the Nation to perpetual custody of a large and growing inventory of radioactive materials, as described in Appendix C. Spent nuclear fuel from commercial power plants constitutes the largest portion of this inventory. The

balance consists of nuclear materials managed by the Department of Energy (DOE), which primarily result from defense activities. DOE-managed materials include spent nuclear fuel from weapons production, domestic research reactors, and foreign research reactors; high-level radioactive waste from reprocessing spent nuclear fuel; surplus weapons-usable plutonium waste forms; and naval spent nuclear fuel.



Historical and projected commercial spent fuel inventory

The Nuclear Waste Policy Act of 1982 (the Act) created the Office of Civilian Radioactive Waste Management (OCRWM) to develop a permanent, safe geologic repository for disposal of spent nuclear fuel and high-level radioactive waste. The Act gave the Nuclear Regulatory Commission (NRC), which was already regulating commercial nuclear power reactors, the authority to decide whether to authorize construction and operation of the repository. In its early years, OCRWM was concerned primarily with disposal of commercial spent nuclear fuel. In 1985, President Reagan determined that defense-related high-level radioactive wastes are to be disposed of in the civilian repository. Since then, disposal of DOE-managed nuclear materials has grown in importance.

The Program Profile in Appendix B provides basic information on the Civilian Radioactive Waste Management Program.

#### *What is at stake?*

The Administration continues to believe that permanent geologic disposal should remain the basic goal of the Nation's high-level radioactive waste management policy.

- Internationally, permanent geologic disposal is the consensus on management of commercial spent nuclear fuel. The U.S. remains committed to a once-through fuel cycle and to disposing of commercial spent nuclear fuel in geologic repositories. This policy assumes that fuel originating in the U.S. and used in foreign research reactors will be disposed of in a U.S. repository. It undergirds our Nation's advocacy of limiting international trade in weapons-usable nuclear materials and signals our commitment to a policy of non-proliferation of nuclear materials.
- A geologic repository is critical to the accelerated environmental cleanup of numerous DOE sites around the country. That cleanup serves not only an environmental, but a fiscal goal: reduction of the huge mortgage costs that are the legacy of the Cold War.
- The Navy is committed to ensuring uninterrupted operation of its nuclear-powered

fleet and the management of its spent nuclear fuel to facilitate ultimate safe disposal. Naval spent nuclear fuel is currently stored at the Idaho National Engineering and Environmental Laboratory, for which DOE is responsible. Under a consent agreement among the Navy, DOE, and the State of Idaho, DOE shall remove spent nuclear fuel from Idaho by January 1, 2035.

- Operation of the nuclear reactors that supply 20 percent of the Nation's electricity is contingent on NRC licensing, which in turn depends on periodic reviews that NRC conducts to assess prospects for timely disposal of commercial spent nuclear fuel. Without progress toward a repository, continued reactor operations and license renewals could be jeopardized.
- A repository is needed to facilitate the orderly and safe shutdown and decommissioning of older nuclear power plants. If economic conditions accelerate the shutdown of commercial nuclear power reactors, the utilities that own them will have to maintain custody of their spent nuclear fuel until the Federal Government can accept it.

#### *What have we achieved to date?*

The "nuclear waste problem" presents a daunting set of challenges: (1) the complexities of managing a large project in a Federal setting subject to multiple regulatory requirements; (2) the challenges of operating on a scientific frontier; (3) the need to integrate an unusually broad array of scientific, technical, and managerial disciplines; (4) the demands of a complex and lengthy NRC licensing proceeding; and (5) the political sensitivities associated with an inherently controversial mission.

Many Congresses, several Administrations, regulatory and oversight bodies, stakeholders, OCRWM staff and contractors, and DOE's National Laboratories have worked steadily toward the goal of geologic disposal. They have achieved significant results:

- Landmark legislation, the Nuclear Waste Policy Act of 1982, that codified the

commitment of the Federal Government to solving the “waste problem,” created a financial mechanism to pay for the solution, and defined an orderly, open process to develop a waste management system.

- A potential repository site at Yucca Mountain, Nevada, and an extensive underground laboratory there that gives scientists direct access to geologic formations within which a repository would be housed.
- An increasingly sophisticated body of scientific, engineering, and performance assessment expertise with which we can (1) design site investigations that yield needed data, (2) use the data to design a repository that is tailored to the site and would comply with NRC licensing requirements, and (3) develop models simulating the performance of the repository under a range of site conditions over thousands of years.
- The regulatory expertise needed to conduct a complex licensing proceeding that could take at least 3 years and entail thousands of supporting documents. A shared understanding of how to approach difficult technical issues has been achieved through years of consultation between OCRWM and NRC, and the regulatory framework that will govern the determination on site

recommendation and a possible licensing proceeding is moving closer to final form.

- Years of experience in safely transporting radioactive waste and the proven technology needed for safe shipments.
- A comprehensive viability assessment detailing what has been learned from years of site characterization.
- A draft environmental impact statement providing the background, data, and analyses to help decision-makers and the public understand the potential environmental impacts that could result from a repository at Yucca Mountain.
- Long-standing and productive working relationships have strengthened our work. Critical comments from oversight bodies, the larger technical and scientific communities, and a host of stakeholders provide the foundation of our efforts to earn public acceptance.

A measure of the U.S. achievement is the fact that other nations continue to look to our Program as a model for their own efforts. The discussion of international cooperation in Chapter 3 underscores the importance of the U.S. contribution to resolution of this problem.

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