



U.S. Department of Energy
Office of Civilian Radioactive Waste Management



Spent Nuclear Fuel and High-Level Radioactive Waste Management

Program Update

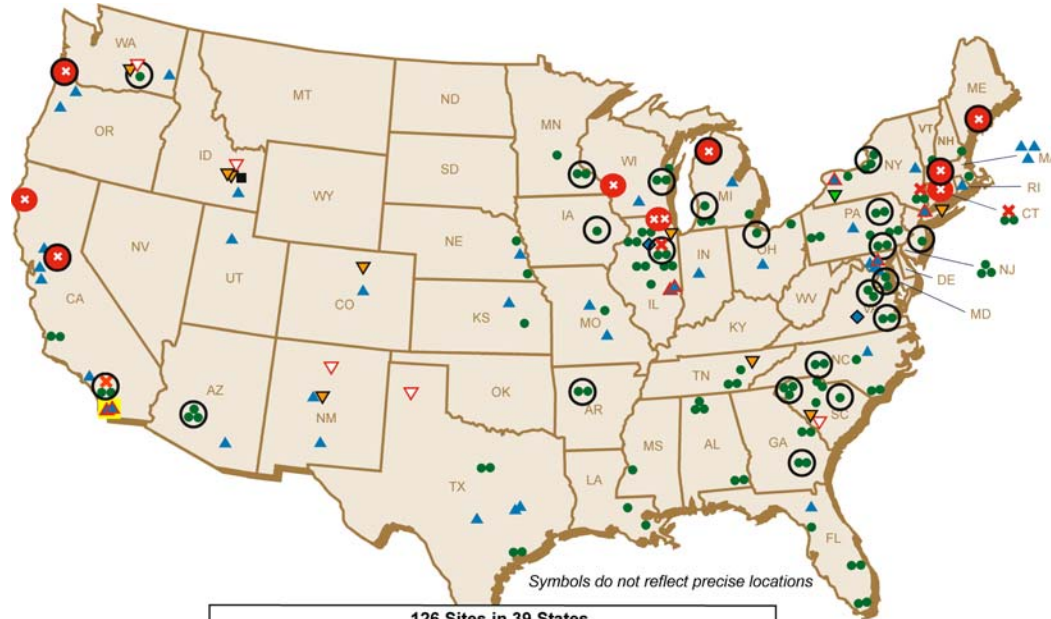
Presented to:
National Association of Regulatory Utility Commissioners

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Office of Systems Analysis and Strategy Development

July 12, 2004

Mission and Priorities

- **Mission:** Our mission is to **manage and dispose** of high-level radioactive waste and spent nuclear fuel in a manner that **protects health, safety, and the environment; enhances national and energy security; and merits public confidence.**
- **Priorities:**
 - After 20 years and \$7 billion of scientific study, Congress **passed a joint resolution** to designate the Yucca Mountain site for repository development and move ahead to submit a license application for repository construction authorization.
 - Protecting public health, safety, and the environment remain our top priorities.



126 Sites in 39 States	
● - operating reactors	▲ - operating reactors
✘ - shutdown reactors at operating reactor sites	▲ - shutdown reactors with SNF on site
✘ - shutdown reactors at shutdown reactor sites where SNF could be removed after repository opening	▼ DOE-Owned SNF and HLW
◆ Commercial SNF Pool Storage (Away-From-Reactor)	▼ Commercial HLW
○ Commercial Dry Storage Sites	▽ Surplus Plutonium
■ Highly Enriched Uranium at Shutdown Site	■ Naval Reactor Fuel

Current locations of spent nuclear fuel (SNF) and high-level radioactive waste (HLW) destined for geologic disposal:

126 sites in 39 states



Waste for Yucca Mountain



**Commercial Spent Nuclear Fuel:
63,000 MTHM**



**DOE & Naval Spent Nuclear Fuel:
2,333 MTHM**



**DOE & Commercial High-Level Waste:
4,667 MTHM**

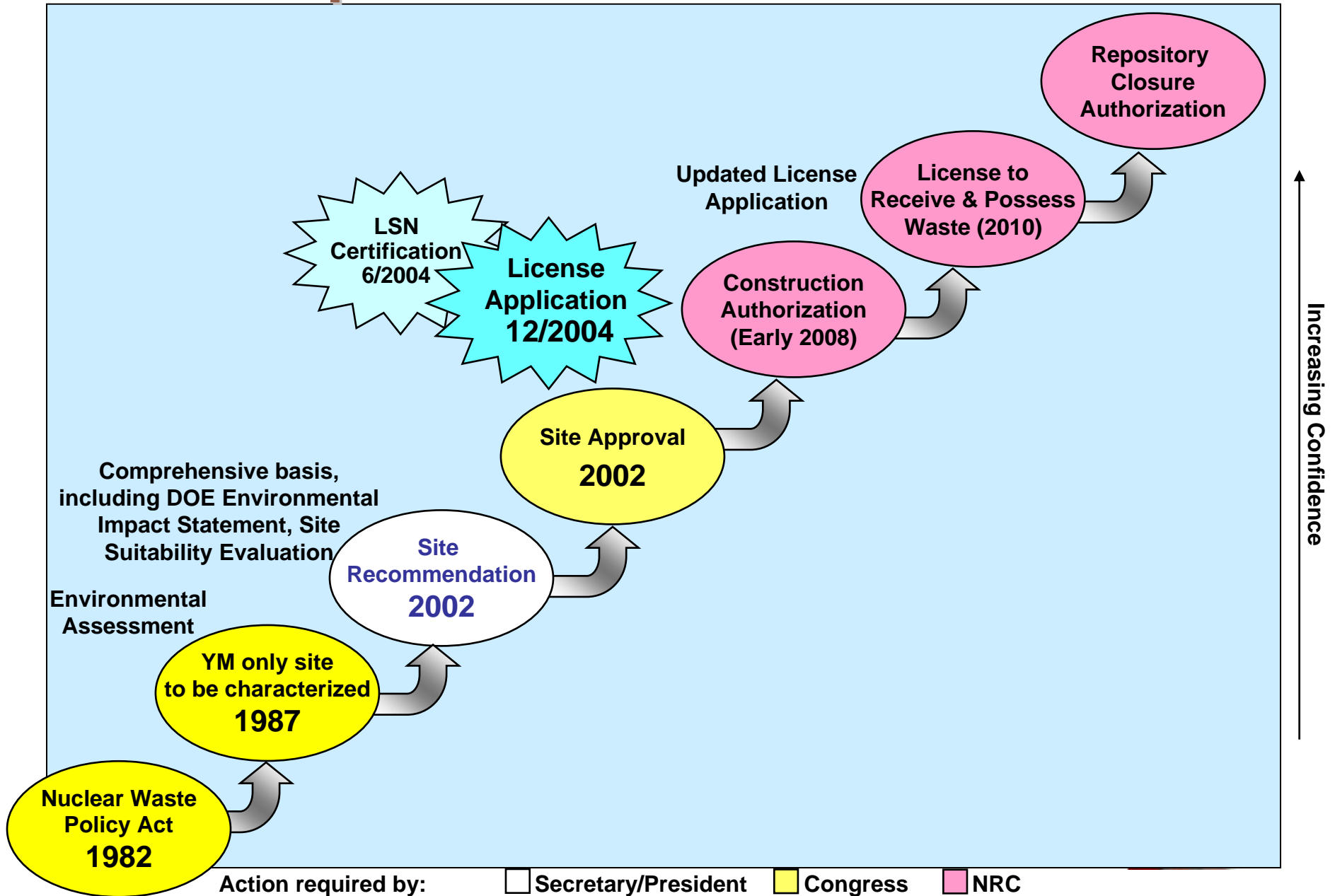


Near-Term Tasks

- We are preparing to **submit a license application** in December 2004
- Aside from licensing, we must address **three principal areas**:
 - **Build infrastructure**, including surface and subsurface elements, in preparation for repository construction
 - **Develop the transportation system**, including Nevada and National Transportation Projects for waste receipt in 2010
 - **Prepare for waste acceptance** through system integration, including realignment of DOE spent fuel management functions
- We must **secure sufficient funding** to achieve these objectives



Step-Wise Decision Process



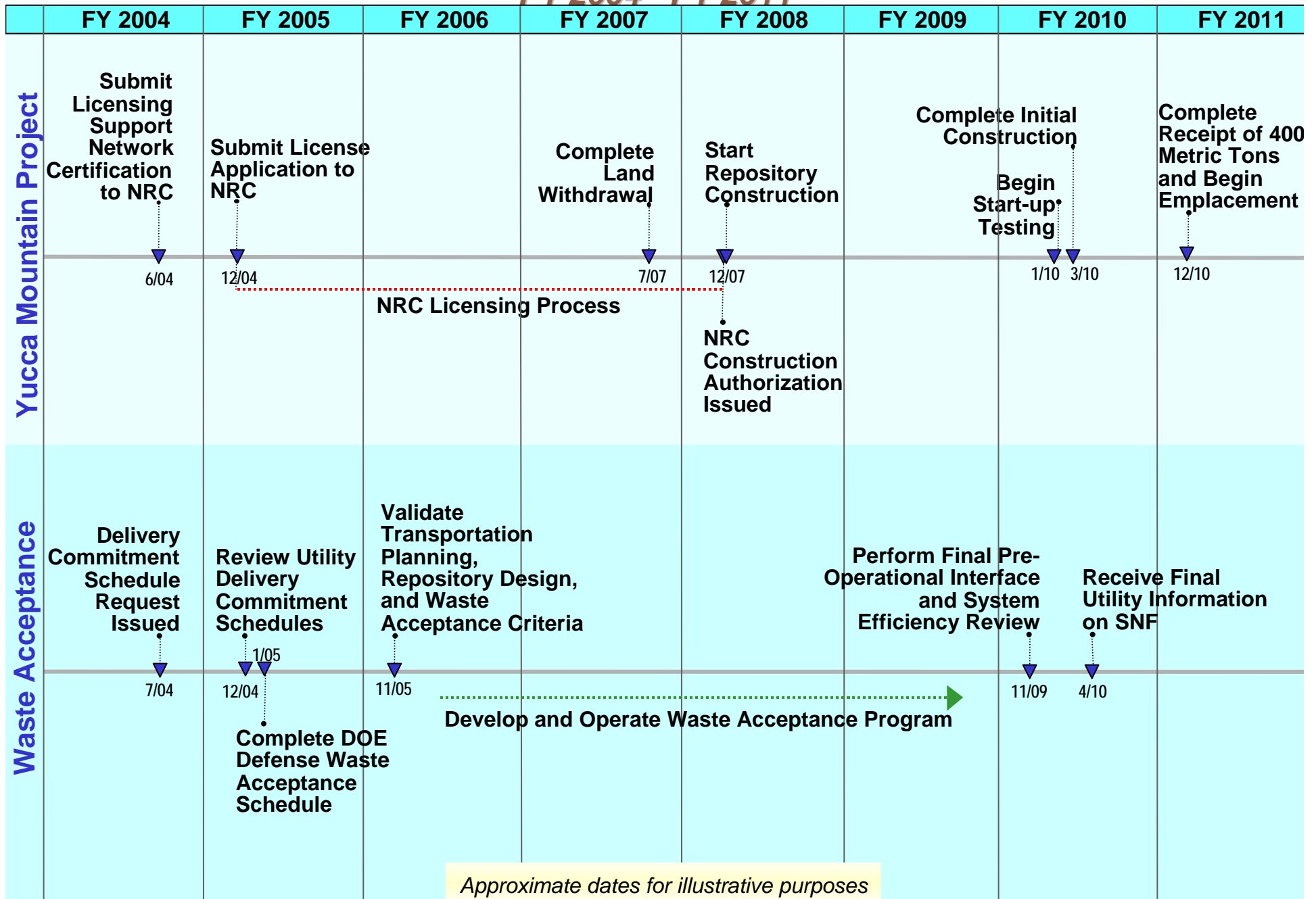
Licensing Schedule

- **June 2004:** LSN certification
- **December 2004:** License application submittal
- **2004-2007:** License application review by NRC
- **2007:** NRC could grant construction authorization
- **2007-2008:** Initial repository construction
- **2008:** License amendment filing to receive and possess waste
- **2010:** License amendment to receive and possess waste granted; repository operations begin



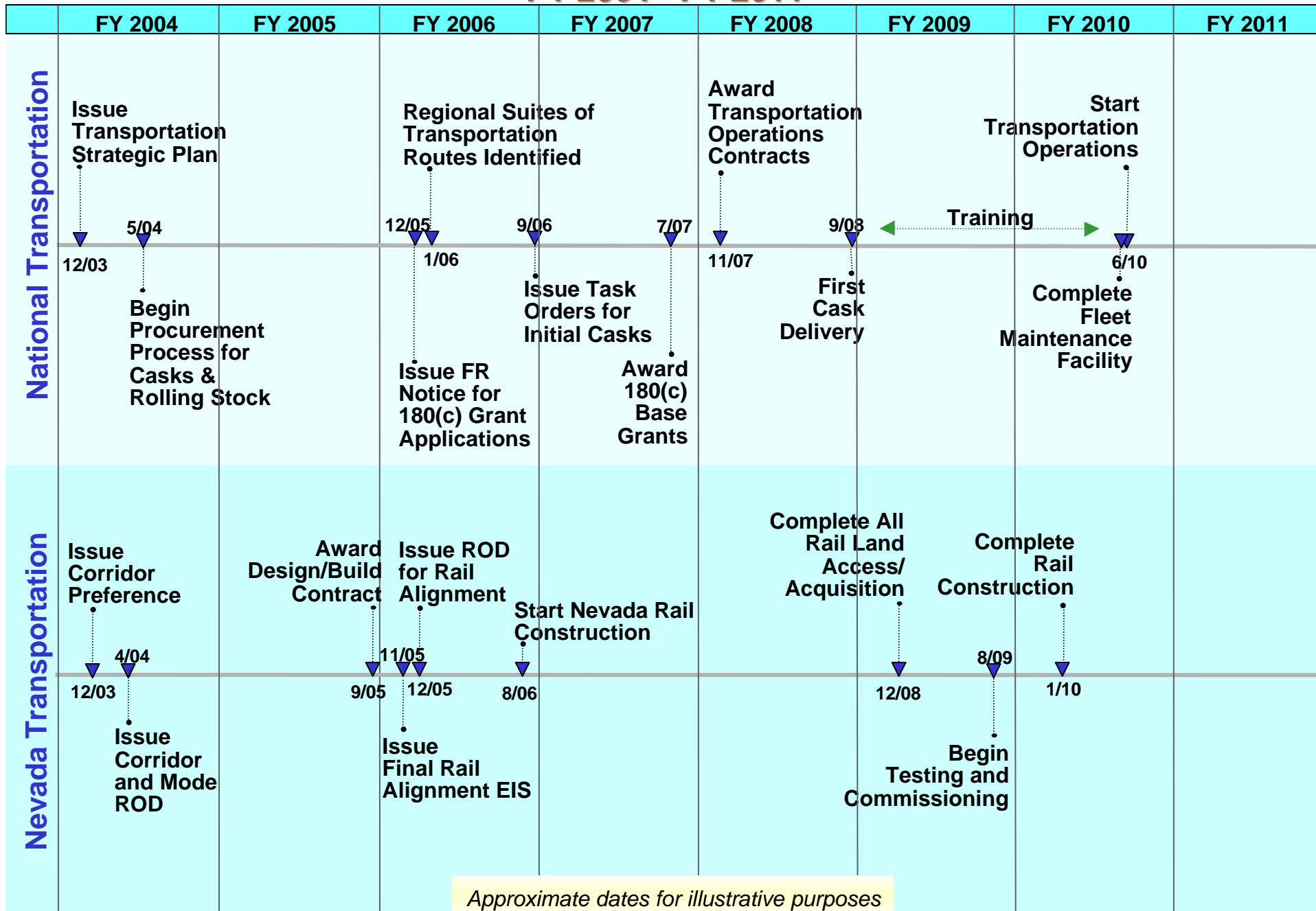
Program Schedule

FY 2004 - FY 2011



Program Schedule

FY 2004 - FY 2011



Repository Development: Progress Toward License Application

<u>COMPONENT</u>	<u>% COMPLETE</u>
Key Technical Issue Agreements Addressed	77%
License Application Document	41%
Preclosure Safety Assessment	87%
Total System Performance Assessment for the License Application	81%
<u>Design</u>	<u>83%</u>
TOTAL % COMPLETE (weighted average)	74%

Source: July 2004 Final Monthly Operating Review



Waste Acceptance Activities

- **The Department recently announced that it is beginning the contractual waste acceptance planning process for 2010:**
 - **Acceptance Priority Ranking/Annual Capacity Report (APR/ACR)**
 - **Delivery Commitment Schedule (DCS) Process**
 - **Facility Interface Data Sheets (FIDS)**
 - **Spent Fuel Inventory Information (RW-859s)**



Transportation Overview

- **After many years of deferral due to budget shortfalls, we are accelerating our planning**
- **We will build on the experience and proven safety record in the U.S. and Europe**
- **Over the next 6 years, we will develop a transportation system ready to ship SNF and HLW to the repository**
- **Ongoing activities:**
 - Consult with states and tribes to develop an approach for coordination of transportation planning and operational aspects
 - Initiate long-lead-time cask acquisition activities
 - Implement National Environmental Policy Act requirements for rail alignment



Transportation Organized to Focus on Project Management

- **Fleet Acquisition Project -- Define acquisition approach and needs for cask systems, rolling stock, and auxiliary equipment, and facilities to provide operations and maintenance support**
- **Operational Infrastructure Project -- Define, develop, implement and demonstrate the operational infrastructure needed to support waste transportation and fleet maintenance**
- **Institutional Project -- Work collaboratively with stakeholders to develop the transportation system**
- **Nevada Transportation Project -- Develop the rail infrastructure required in Nevada**



FY 2005 Budget Request Summary

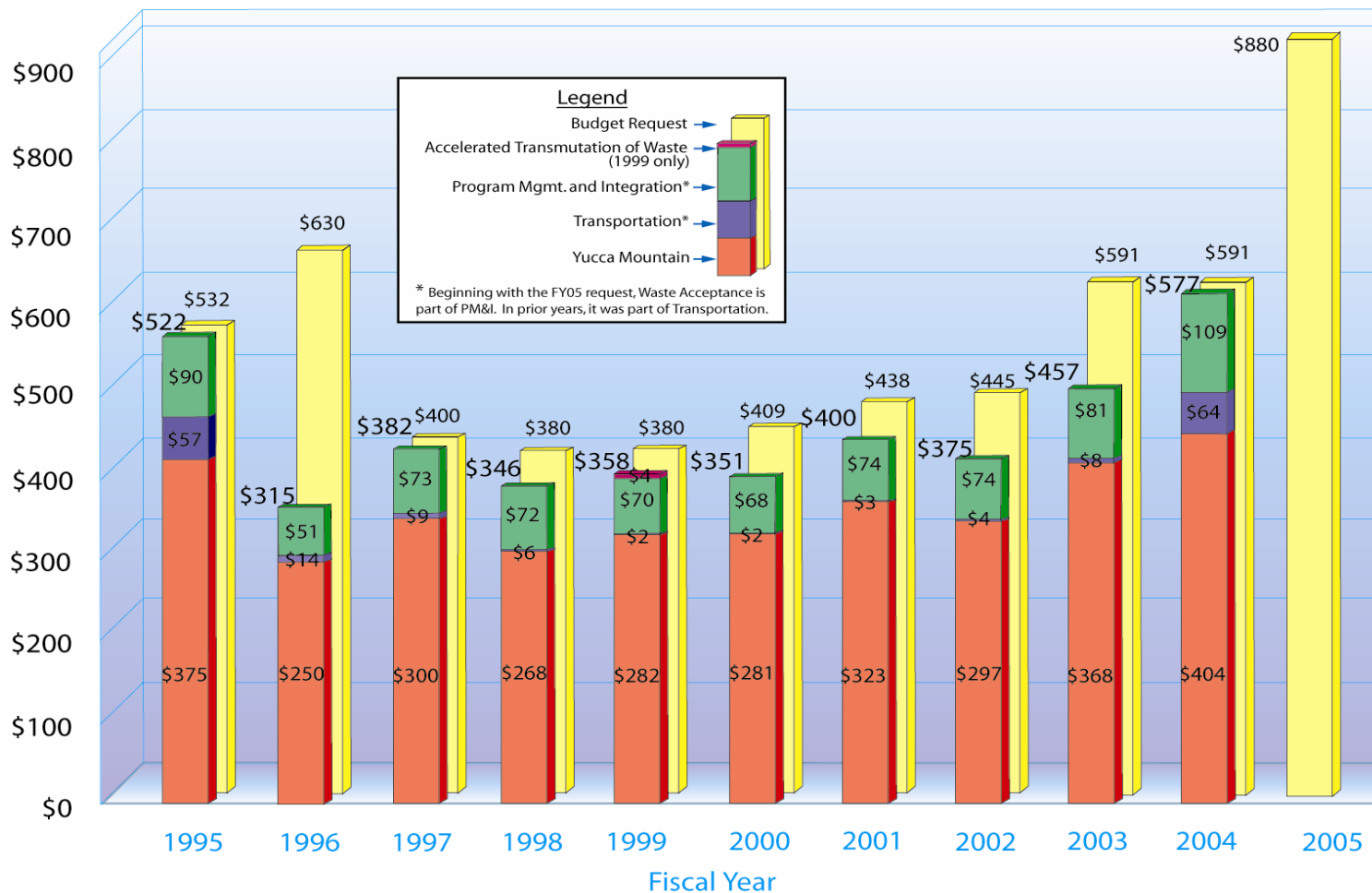
	<u>FY 2004 Approp.</u>	<u>FY 2005 Request</u>
Yucca Mountain Project	\$ 403.6M	\$ 558.9M
Transportation Project*	\$ 69.9M	\$ 186.0M
Program Mgmt. & Integration/Program Direction*	\$ 103.1M	\$ 135.1M
Total Program	\$ 576.6M	\$ 880.0M
Departmental Work Realignment	-	\$ 27.5M
TOTAL OCRWM		\$ 907.5M
From Nuclear Waste Fund	\$ 188.9M	\$ 749.0M
From Defense Nuclear Waste Disposal Fund	\$ 387.7M	\$ 131.0M
From Energy Supply Research & Development and Other Defense Activities accounts	-	\$ 27.5M

*In FY 2004, waste acceptance was included in the Transportation Project budget; in FY 2005, waste acceptance is included in the Program Management & Integration budget.



Budget History

Annual Appropriations and Administration's Budget Request



Annual

Shortfall: (\$10M) (\$315M) (\$18M) (\$34M) (\$22M) (\$58M) (\$38M) (\$70M) (\$134M) (\$14M)

Cumulative Shortfall FY 1995-FY 2004: \$713M



Funds Required to Meet Projected Needs

- Nuclear Waste Fund has collected approximately \$21 billion, including fee payments and interest
- \$15 billion remains in the Fund to cover the costs of disposal for commercial spent nuclear fuel
- Future funding needs:

FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
\$880,000	\$1,162,000	\$1,103,000	\$1,645,000	\$1,644,000	\$1,537,000

(all figures above in \$1,000s)



Consequences of a Funding Shortfall in FY 2005

- **Historical funding patterns will no longer work**
- **At less than full funding, beginning repository operations in 2010 would not be possible**
- **At \$131 million, the Program would shut down**
 - **Reductions in force would be required by early FY 2005**
 - **Loss of highly skilled personnel would complicate future efforts to restart Program**
 - **License application submittal would be at risk**



Funding Proposal

- **Legislative proposal** for long-term funding fix **submitted** to Congress in February 2004
- Proposal would allow **Nuclear Waste Fund revenues** to be **reclassified** from mandatory receipts to discretionary collections, **so they offset appropriations** from the Nuclear Waste Fund
- Program funding would still be **subject to** Congressional **appropriations**
- Sufficient funding could be appropriated without reducing the funding that would be available for other federal programs



In Summary...

- **FY 2005 is our critical year for license application submission and initiating license defense**
- **FY 2005 begins the transition to the engineering and construction phase**
- **Work planned for FY 2005 lays the foundation for operations in both the repository and transportation programs**



Near-Term Repository Program Objectives

- **Submit** in December 2004 a **high-quality license application** that is docketed by NRC
- **Focus on** design and site **infrastructure readiness** for repository construction
- **Ramp up National Transportation infrastructure** development and readiness for waste receipt in 2010
- **Ramp up waste acceptance readiness** through system integration, including realigned DOE spent fuel management functions from the Office of Environmental Management and the Office of Nuclear Energy
- **Secure sufficient funding** to achieve objectives



Back-up slides

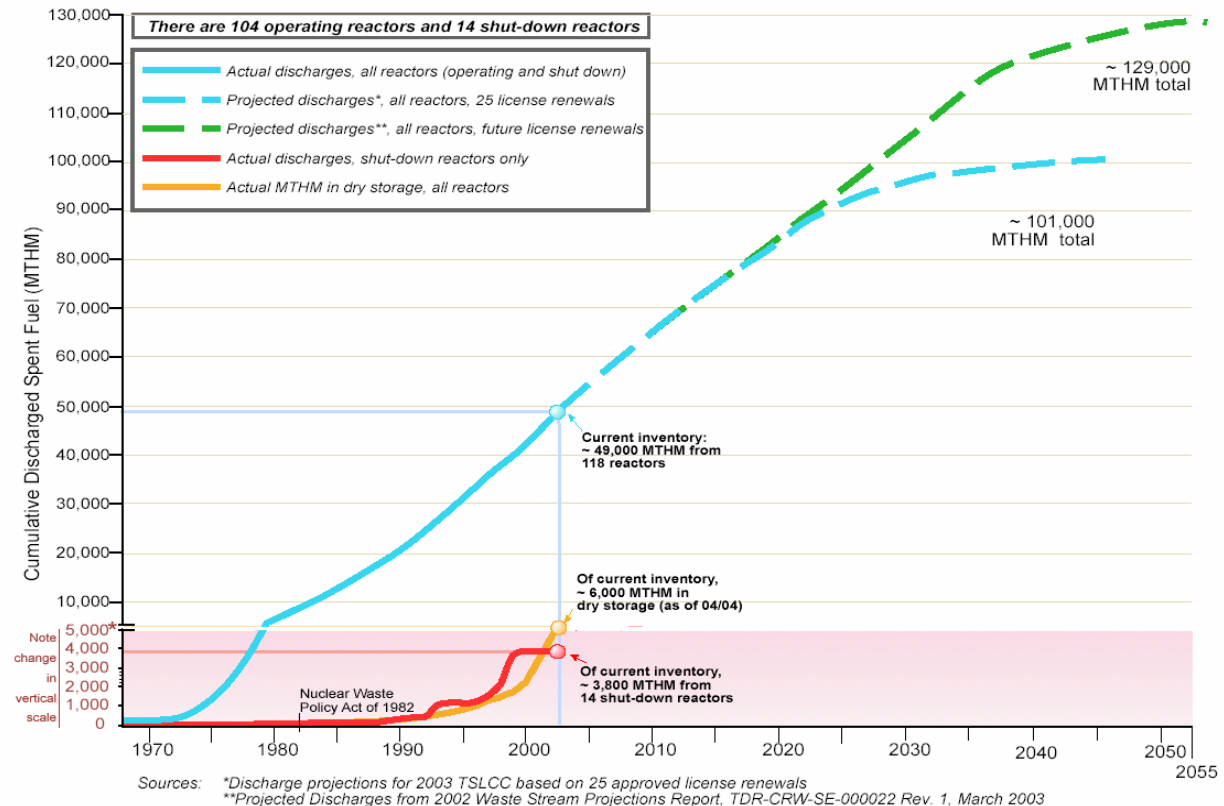


Why 2010?... Costs of Delay

- **Delays cost money:**

- Utilities would face extensions of storage at sites already full
- DOE sites such as Hanford, Savannah River, Idaho, and West Valley would require additional capital and operating costs to maintain government fuel
- Disposal plans support the timeline for meeting DOE site closure goals
- Damages through 2010 for the government's obligation to accept waste in 1998 are estimated in the billions of dollars -- more if repository availability is delayed

Historical and Projected Commercial Spent Nuclear Fuel Discharges, end-2003



As of April 2004

- **Return on Investment for 2010 Waste Acceptance:**

- Saves the government \$500 million per year in capital and operating costs at DOE sites.
- Limits government liability for damages to utilities.
- Each additional year of delay adds significantly to that amount.
- Making Yucca Mountain a priority supports a solution to the nuclear waste problem.



DOE-Managed Materials Destined for Repository Disposal

- **High-level radioactive waste: 3 sites in 3 states**
 - Idaho National Engineering and Environmental Laboratory (Idaho Falls, ID)
 - Savannah River (Aiken, SC)
 - Hanford (Richland, WA)

- **3 other sites with materials for repository disposal**
 - Los Alamos National Laboratory (Albuquerque, NM)
 - West Valley Demonstration Project (West Valley, NY)
 - Pantex Plant (Amarillo, TX)

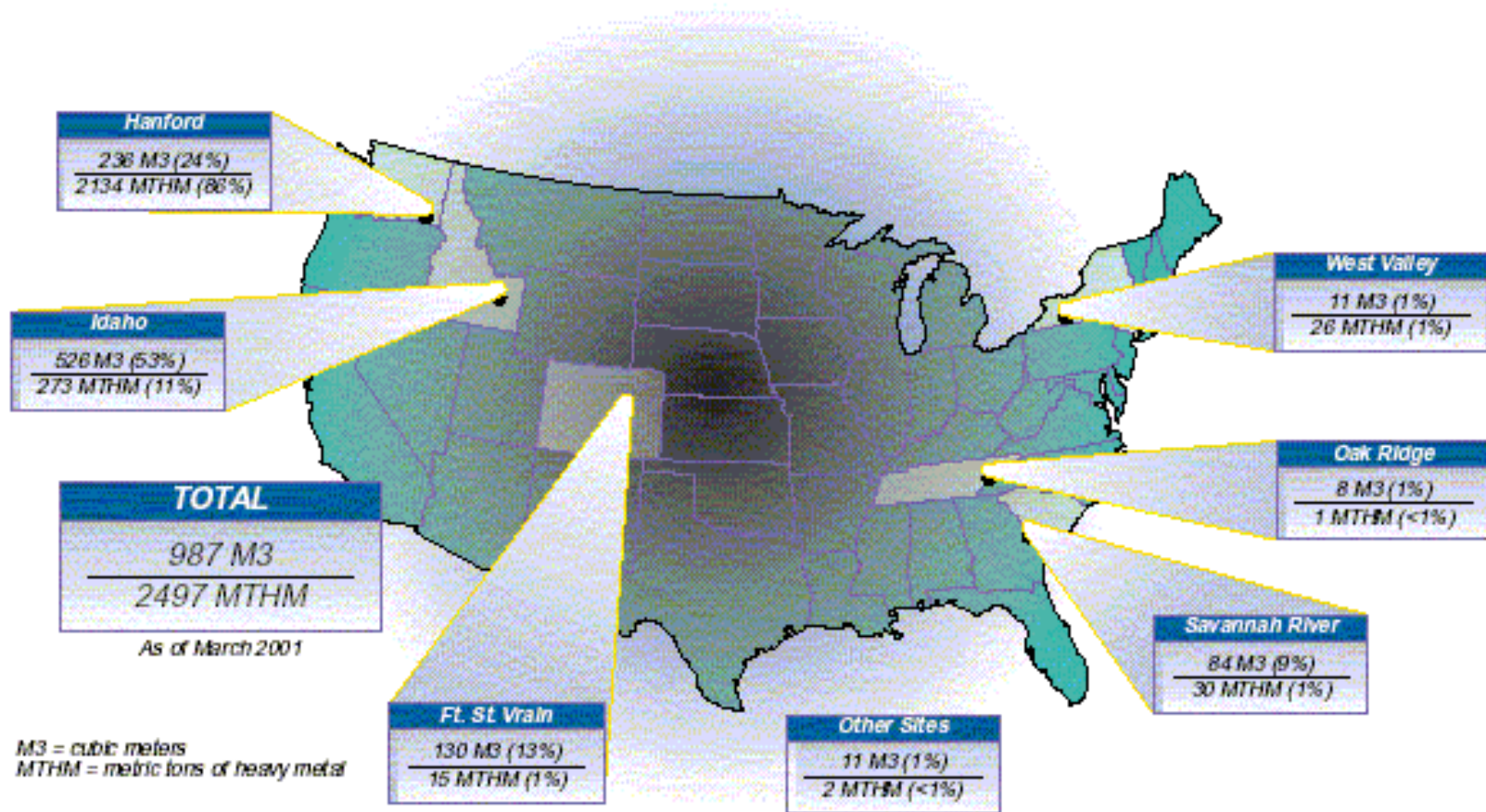


DOE-Managed Materials Destined for Repository Disposal

- **Spent nuclear fuel: 15 sites in 9 states**
 - Fort St. Vrain (Platteville, CO)
 - US Geological Survey (Denver, CO)
 - Idaho National Engineering and Environmental Laboratory (Idaho Falls, ID)
 - Naval Reactors Facility (Idaho Falls, ID)
 - Argonne National Laboratory-West (Idaho Falls, ID)
 - Argonne National Laboratory-East (Argonne, IL)
 - National Institute of Standards and Technology (Gaithersburg, MD)
 - Armed Forces Radiobiology Research Institute (Bethesda, MD)
 - U.S. Army Aberdeen Proving Grounds (Aberdeen, MD)
 - White Sands Missile Range (White Sands, NM)
 - Sandia National Laboratory (Albuquerque, NM)
 - Brookhaven National Laboratory (Upton, NY)
 - Savannah River (Aiken, SC)
 - Oak Ridge National Laboratory (Oak Ridge, TN)
 - Hanford (Richland, WA)



DOE-Managed Spent Nuclear Fuel



The map illustrates the most significant quantities of DOE-owned and managed spent nuclear fuel and its storage location at the Department of Energy sites.

