



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



# Department of Energy Views on Safety Case and Safety Strategy for Repository Licensing

Presented to:

**Nuclear Waste Technical Review Board**

Presented by:

**Joseph D. Ziegler**

**Office of Licensing and Regulatory Compliance**

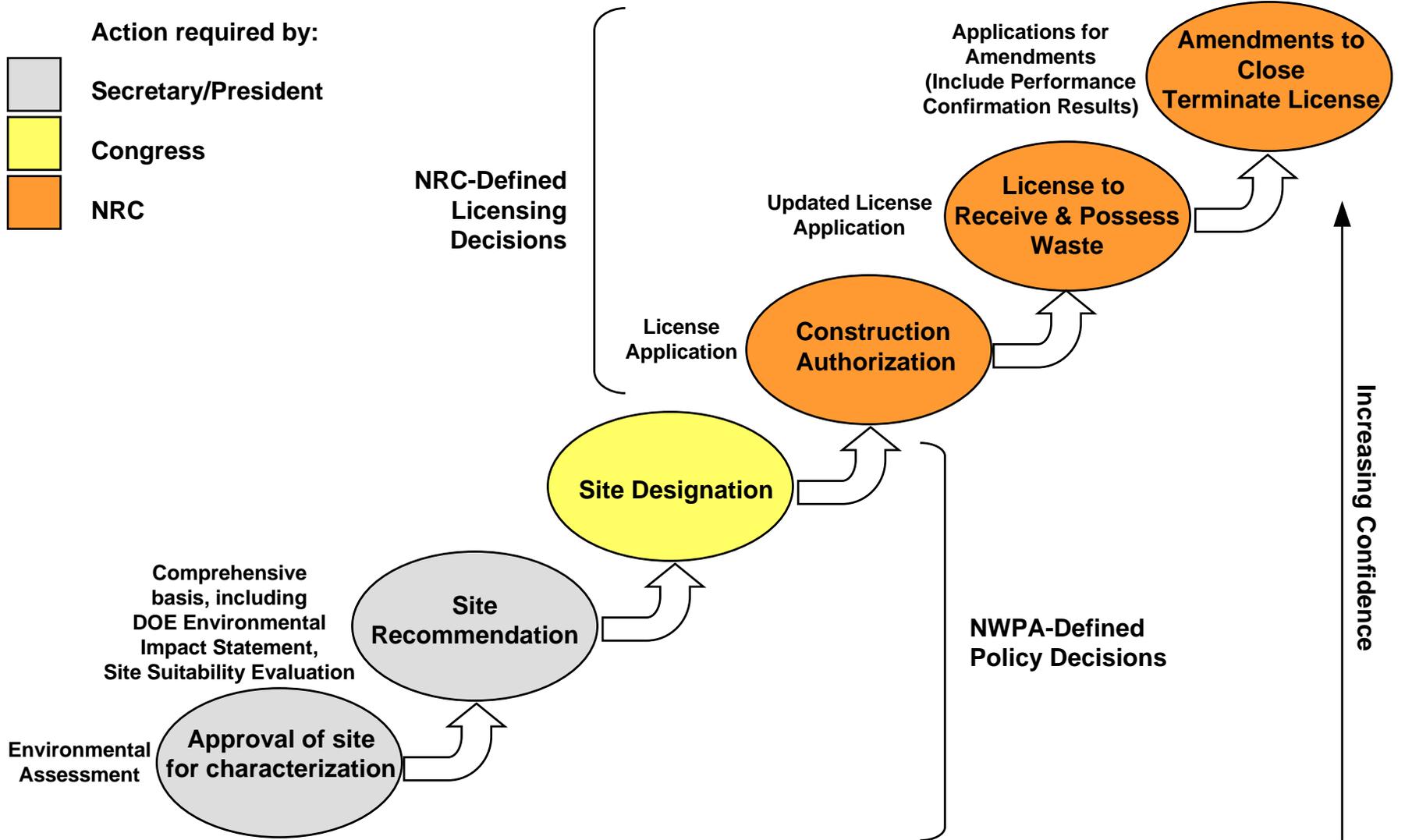
**May 7, 2002**

**Washington, D.C.**

# Step-Wise Development Process

- **The Nuclear Waste Policy Act (NWPA) and U.S. Nuclear Regulatory Commission (NRC) rules (10 CFR 63) define a step-wise decision process for development of a potential Yucca Mountain repository**
- **Decision making requires that a safety case has been compiled that gives adequate confidence to support the decision at hand**
- **General agreement in international community that repository development should proceed in stages**

# Step-Wise Decision Process



# Safety Case and NRC Licensing Decisions

- **NRC performance objectives and evaluation requirements**
  - Establish acceptable level of safety and environmental protection
  - Define requirements for evaluation methods and information to be presented
  - Require “reasonable assurance” of pre-closure safety and “reasonable expectation” of post-closure safety
- **DOE will present a safety case that:**
  - Demonstrates compliance and
  - Provides requisite degree of confidence for decision at hand

# U.S. Approach to Safety Case

- **NRC requirements are consistent with views of international community (IAEA, OECD/NEA) and others (ACNW, NWTRB) on concept for demonstrating repository safety**
  - **More is required than a quantitative performance assessment and comparing the result to a performance standard**
  - **A safety case is required to**
    - ◆ **Show adequate understanding of system and components**
    - ◆ **Show how understanding is factored into evaluation of performance**
    - ◆ **Provide requisite confidence in basis for evaluation and results**
  - **Multiple lines of evidence and argument that support the results of a quantitative safety assessment will enhance confidence in safety**

# U.S. Approach to Safety Case

(Continued)

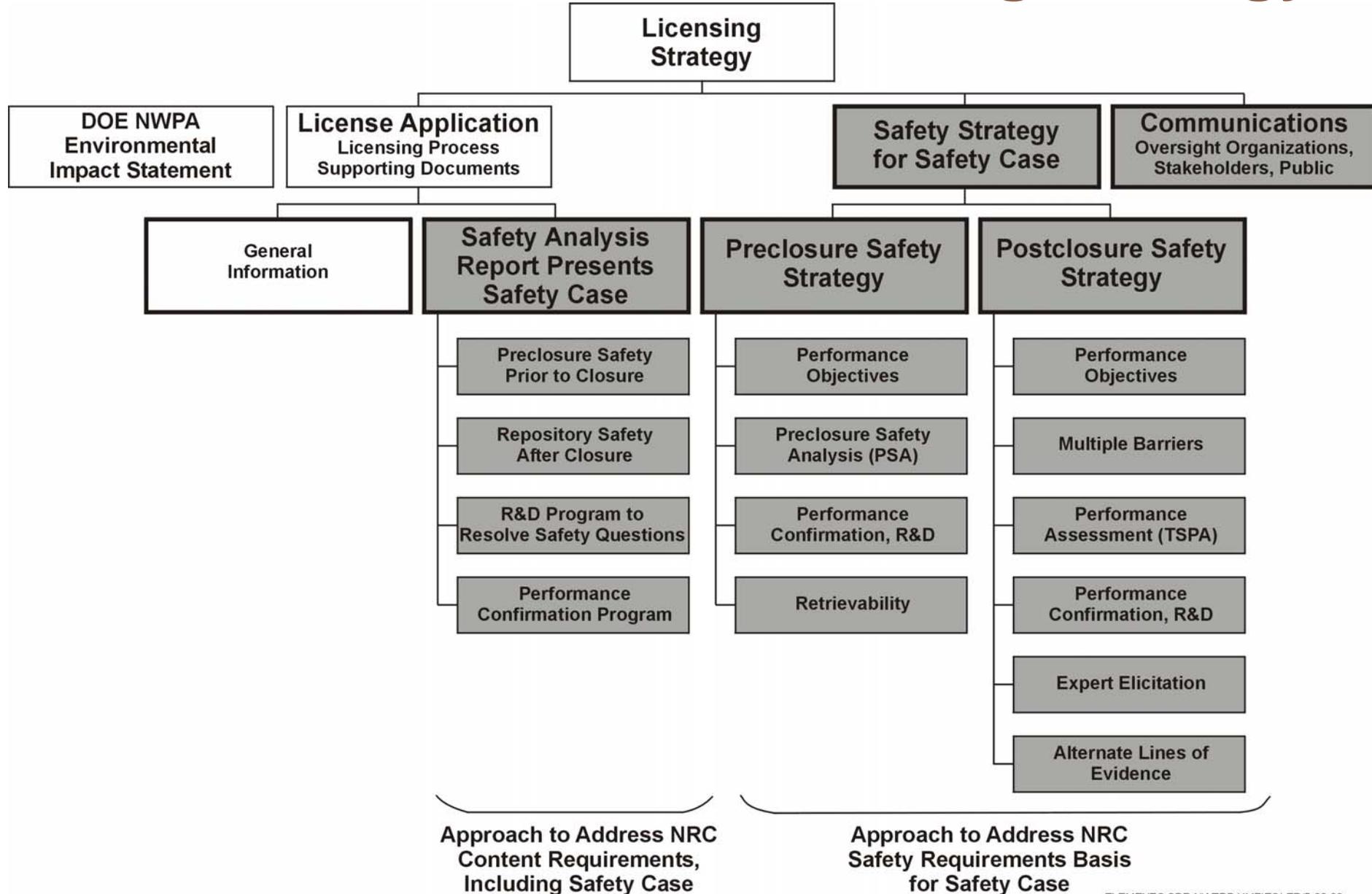
- **DOE safety case will be updated as appropriate**
  - Safety strategy defines approach to building a safety case
  - Flexibility required to accommodate new information to update the safety case at future decision points
  - New information may come from testing, design, analyses, and policy changes
- **DOE safety case will be made in the context of requirements for decision at hand**
- **Safety strategy is needed to define a safety case**
  - Approach should be separated from result
  - Safety case must be complete, transparent, and traceable



# Evolution of the Safety Case

- **Repository Safety Strategy** presented earlier iterations of safety strategy and safety case
- DOE evaluated the performance of the site in its **Site Suitability Evaluation** for site recommendation
  - Evaluated compliance with Site Suitability Guidelines, 10 CFR 963
- **Safety case for construction authorization will be presented in the License Application (Safety Analysis Report)**
  - Safety case will be made in context of NRC requirements (10 CFR 63) and guidance (Yucca Mountain Review Plan)
  - Safety strategy for development of licensing safety case will be part of **YMP Licensing Strategy** (in preparation)

# General Elements of Licensing Strategy



# Licensing Review/Communications

- **NRC will evaluate DOE's safety case in making licensing decisions**
  - **Safety case will be available to other parties to the licensing proceeding**
- **DOE will also consider need to provide information to help other audiences understand the safety case**
  - **One approach would be to develop a simplified, plain language description of the safety case developed for licensing**