



# **HI-STORE: A Consolidated Interim Storage Facility for Used Nuclear Fuel and HLW**

*NRC Public Meeting – December 6, 2016*

# Agenda

- Site Overview
- HI-STORE Project Status
- Site Specific License Application
- Environmental Report
- Conclusion

# Site Overview

- 1,000 acres: Geologically stable, dry, elevated land
- Developed infrastructure: electric, water, roads & rail
- Remote location:
  - ✓ 35 miles from nearest town
  - ✓ Midway between Carlsbad & Hobbs, NM
- Studied extensively during GNEP process
- Data for environmental report available
- Populace: Robust scientific & nuclear workforce
- Project enjoys strong support:
  - ✓ Local communities
  - ✓ State and Local government



# HI-STORE Project Status



- HI-STORE will employ the HI-STORM UMAX technology (NRC Docket No. 72-1040), widely considered to be the last word on public safety and security.
- HI-STORE will be a *universal* storage facility:
  - ✓ It will store any US-origin commercial nuclear fuel currently packaged in dry storage canisters, or stored in the nation's fuel pools.
  - ✓ No repackaging of fuel will be required.
- **License application to store NUHOMS 24PT1-DSC canister in HI-STORM UMAX submitted to U.S. NRC on August 30, 2016.**
  - Standard HI-TRAC (transfer cask) and HI-STORM UMAX designs will be utilized

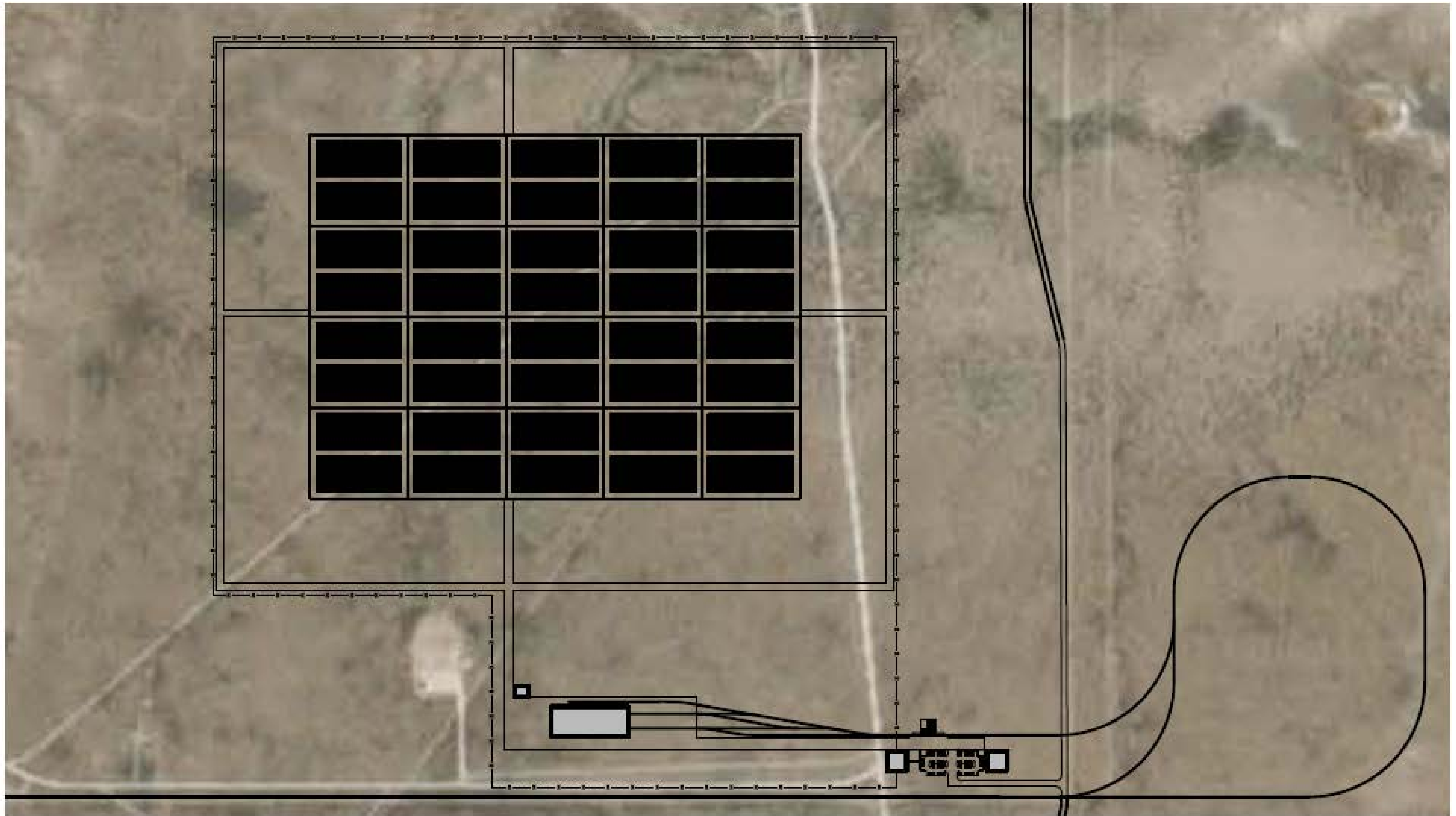
# Site Specific License Application

- March 2017: License HI-STORE under a 10 CFR 72 site-specific license
  - ✓ Initial application - 500 canisters
  - ✓ Future amendments for additional canisters up to 10,000
  - ✓ Reference the amended HI-STORM UMAX Certificate and FSAR for technical details
- Part 72 Site Specific License Contents
  - ✓ General / Financial Information about Holtec
  - ✓ Technical Information – Safety Analysis Report (SAR)
  - ✓ Site Environmental Report
  - ✓ QA and Training Programs
  - ✓ Security and Emergency Plans
  - ✓ Inventory and Records Requirements
  - ✓ Decommissioning Plan

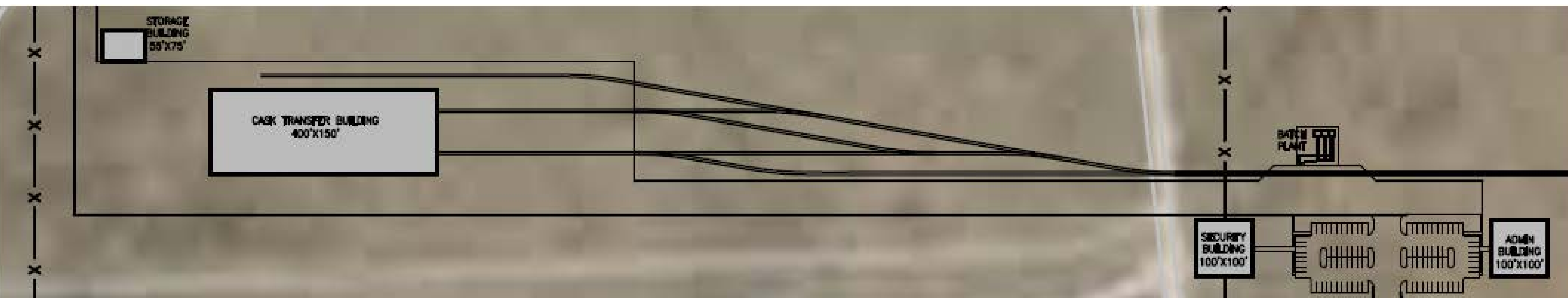
# Project Description

- Construct and operate HI-STORE in Lea County, New Mexico, 32 miles east of Carlsbad and 34 miles west of Hobbs
  - ✓ Initial metric tons of uranium (MTUs): 5,000.
  - ✓ Expansion: 95,000 MTUs (19 subsequent phases).
  - ✓ Total quantity to be evaluated in ER: 100,000 MTUs.
- Initial construction: 1.5 years; operations commence: 2022.
- Expansion: 19 phases; 1 year of construction for each.
- Overlap of phased construction and operations: 2022-2040.
- Operational period: continued storage for 40 year initial license and up to 120 years (with license extensions)

# Site Layout



# Building Layout





# ER Status

- Significant progress has been made on ER
  - ✓ ER preparation began September 2, 2016
  - ✓ First version of ER: completed November 1, 2016
  - ✓ Holtec reviewed ER and provided comments
- Second version of ER: January 5, 2017
- Third version of ER: February 17, 2017
- ER on track for submittal to NRC: March 2017

# ER Requirements

- ER supports License Application for review and approval by the NRC pursuant to the requirements in 10 CFR Part 72.34 and 10 CFR 51.61.
- ER prepared consistent with the guidance provided in two regulatory documents:
  - ✓ Regulatory Guide 3.50, Standard Format and Content for A Specific License Application for an Independent Spent Fuel Storage Installation or Monitored Retrievable Storage Facility;
  - ✓ NUREG-1748, Environmental Review Guidance for Licensing Actions Associated with Nuclear Material Safety and Safeguards (NMSS) Programs.
- ER will provide the basis for NRC's NEPA analysis.

# Outline for ER

## ■ Chapter 1 – Introduction

- ✓ Purpose and Need
- ✓ Proposed Action
- ✓ Applicable Regulatory Requirements, Permits (Federal, State, and local), and Required Consultations

## ■ Chapter 2 – Alternatives

- ✓ No Action Alternative
- ✓ Proposed Action
- ✓ Process for Identifying Potential HI-STORE Site Location
- ✓ Alternatives Considered but Eliminated
- ✓ Summary of the Impacts for Alternatives

# Outline for ER (con't)

- Chapter 3 – Affected Environment
  - ✔ Arranged by Resources
- Chapter 4 – Environmental Impacts
  - ✔ Arranged the same as Chapter 3
- Chapter 5 – Cumulative Impacts
- Chapter 6 – Mitigation Measures
- Chapter 7 – Environmental Measurements and Monitoring
- Chapter 8 – Unavoidable adverse impacts, irreversible/irretrievable, short-term versus long-term
- Chapter 9 – Cost Benefit Analysis

# ER Data

## ■ Data Sources

- ✓ As current as possible (any older sources justified)
- ✓ Reliable sources (Federal, State, regulatory agencies)
- ✓ Existing and newly-generated (e.g., surveys)

## ■ Affected Environment data

- ✓ Regional
- ✓ Site-specific

## ■ Environmental Impacts data

- ✓ Project-specific

# ER Data: Affected Environment

- GNEP Siting Study (2007): site-specific data related to land use, visual and scenic resources, geology and soils, ecological, water resources, wetlands, transportation, waste management
- Seismic: U.S. Geological Survey (2016 and 2009)
- Soils: U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) (2016); 2007 borehole data
- Ecological: U.S. Fish and Wildlife Service (USFWS); Biota Information System of New Mexico; site-specific ecological survey (2016)
- Floodplains: Federal Emergency Management Agency (FEMA) (2016)

# ER Data: Affected Environment

- Climatology, Air Quality, Noise: Western Regional Climate Center (2016), New Mexico Environmental Department's Air Quality Bureau (2016), U.S. Environmental Protection Agency (2016)
- Water Resources: New Mexico Office of the State Engineer; 2007 well drilling
- Cultural: site-specific pedestrian survey (2016)
- Socioeconomics and Environmental Justice: U.S. Census Bureau (2016 and 2010)
- Human Health: Bureau of Labor Statistics (BLS) for occupational (2014); NRC for radiological (2014, 2016); American Cancer Society (2016)

# ER Data: Environmental Impacts

## ■ Project data based on:

- ✓ Facility design information;
- ✓ FSAR for the HI-STORM UMAX storage system (NRC Docket # 72-1040); and
- ✓ SAR for the HI-STORE (in-process)

## ■ Project data developed for:

- ✓ Initial construction (Phase I)
- ✓ Overlap of construction (Phases 2-20) and operations
- ✓ Steady-state operations



# ER Methodologies

- ER assesses:
  - ✓ Initial construction
  - ✓ Concurrent construction (Phases 2-20) and operations
  - ✓ Operations only
- Decontamination and decommissioning (D&D).
- Direct and indirect impacts presented for Proposed Action and No-Action Alternative.
- Includes comparisons to comparable relevant NRC analyses (e.g., NUREG-2157 and others).
- Cumulative impacts presented.

# Methodologies (con't)

## ■ Land Use

- ✓ Amount of land disturbed; types of land disturbed; relationship to surrounding land uses (e.g., grazing), prime farmland, etc.

## ■ Visual Resources

- ✓ Impact on scenic resources in the project area. Determine if any change to BLM visual resource inventory class.

## ■ Geology and Soils

- ✓ Amount of land disturbed; potential for increased erosion; excavation and disposition of excavated materials; types of soils disturbed.

# Methodologies (con't)

## ■ Water Resources

- ✓ No notable water use; stormwater runoff and the potential for contamination to reach water resources; considers 100-year floodplain and wetlands.

## ■ Ecological Resources

- ✓ Impacts to ecological resources from land disturbance, noise, and human interference; considers sensitive species in project area based on survey results.

## ■ Air Quality

- ✓ Impacts from earthwork, concrete batch plant ops, and vehicular using emission factors and air dispersion modeling. Determine if standards exceeded and amount of greenhouse gas emissions.

# Methodologies (con't)

## ■ Noise

- ✓ Analysis of noise sources and noise levels at site boundary; identification of any sensitive receptors.

## ■ Historic and Cultural Resources

- ✓ Identification of any historic and cultural resources in project area based on survey results and impacts to those resources.

## ■ Socioeconomic Resources

- ✓ Impacts on local economy, including jobs, housing, community services.

## ■ Environmental Justice

- ✓ Analysis of the potential for significant disproportionate adverse impacts on minorities and low-income populations; note: block groups within a 50-mile radius and which met the criteria were identified as minority or low-income populations.

# Methodologies (con't)

## ■ Transportation

- ✓ Non-radiological: identify new roads and rail; analyze amount of transportation during construction and operation relative to current demands on transportation resources.
- ✓ Radiological: future slide to discuss

## ■ Waste Management

- ✓ Analysis of radiological and non-radiological wastes generated and disposal pathway for each waste category.

# Methodologies (con't)

## ■ Human Health

✓ Analysis of construction and operation on human health.

- Construction impacts: non-radiological occupational risks and radiological risks.
- Operation impacts (based on SAR) include analysis of direct radiation (gamma-rays and neutrons resulting from radioactive decay of irradiated fuel) on: (1) the maximally exposed individual (MEI) at the closest site boundary, (2) nearest resident, (3) population (qualitative), and (4) workers.

✓ Off-Normal Events and Accidents

- Based on SAR. Identifies potential accidents and potential impacts.

# Radiological Transportation Analysis

- Analyzes transportation of SNF along three representative routes:
  - ✓ From Maine Yankee Nuclear Power Plant
  - ✓ From San Onofre Nuclear Generating Station
  - ✓ From HI-STORE to repository at Yucca Mountain
- Assumes approximately 10,000 canisters of SNF transported to HI-STORE over the next 20 years.
- Doses and latent cancer fatalities (LCF) to public along transportation routes and workers for incident-free transportation.
- Accident analysis based on Yucca Mountain Supplemental EIS.
  - ✓ Probabilistic risk.
  - ✓ Consequences from maximum reasonably foreseeable accident.

# Summary of Initial Findings

- No notable environmental impacts.
- Land use and visual impacts compatible with surrounding area.
- Site is flat with relatively low seismic hazard.
- Surface drainage at Site contained within two local playa lakes that have no external drainage. Groundwater is approximately 300-400 feet deep. Site has no floodplains or jurisdictional wetlands.
- No habitats for threatened and endangered species on Site or area.
- Temporary increases in hydrocarbons, particulate matter, and fugitive dust during construction. No sensitive receptors within 10 miles of Site. Cultural resources being identified; potential impacts considered low.
- Positive socioeconomic benefits.
- Isolated Site (9 persons living within 5 miles). Human health impacts low and consistent with prior NRC analyses related to SNF storage.



# Conclusions

- HI-STORE Licensing effort well underway:
  - ✓ HI-STORM UMAX Certificate update – Completed August 2016
  - ✓ Site Specific License – March 2017
- Significant progress made on Environmental Report
  - ✓ Use of existing data about well studied site
  - ✓ Learning from NRC feedback on other applications