



HI-STORE CISF:

A Consolidated Interim Storage Facility for Spent Nuclear Fuel in Southeast New Mexico

November 2019

Consolidated Interim Storage

■ Topics

- ✓ National Imperative
- ✓ Project Brief:
 - Safety
 - Security
 - Transportation
- ✓ Nuclear Insurance & Financial Assurance
- ✓ Licensing & Regulating
- ✓ Why Not Status Quo?

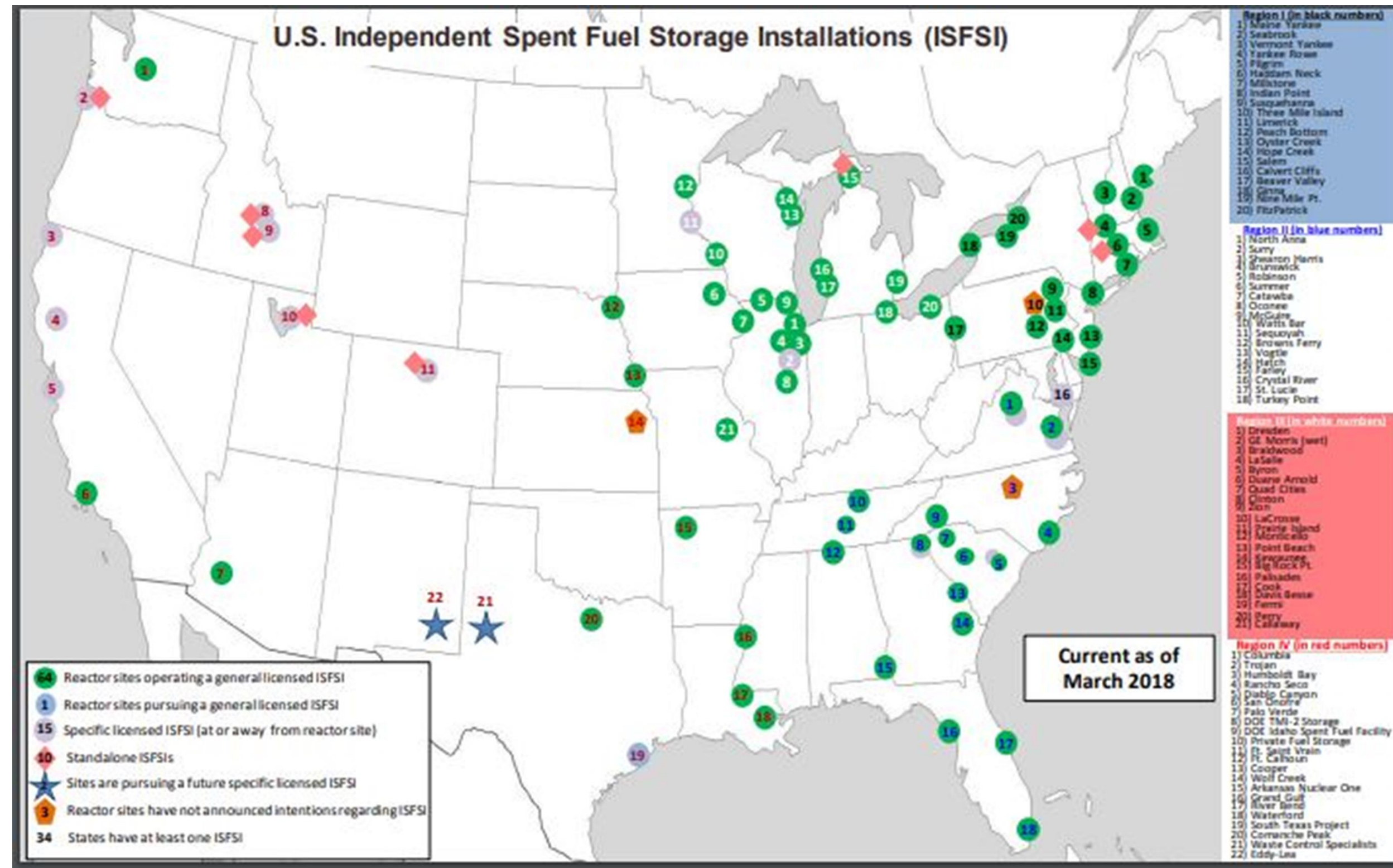
National Imperative

- **NWPA 1982**
 - ✓ Codified Repository as National Strategy
 - ✓ 1 mill/kWhr
 - ✓ \$12B Spent on Yucca
 - ✓ Yucca Never Opened
 - ✓ Jan 31, 1998: Contract Breach

- **On-Site Storage**
 - ✓ 121 Facilities/39 States
 - ✓ Each w/ security, operations, maintenance

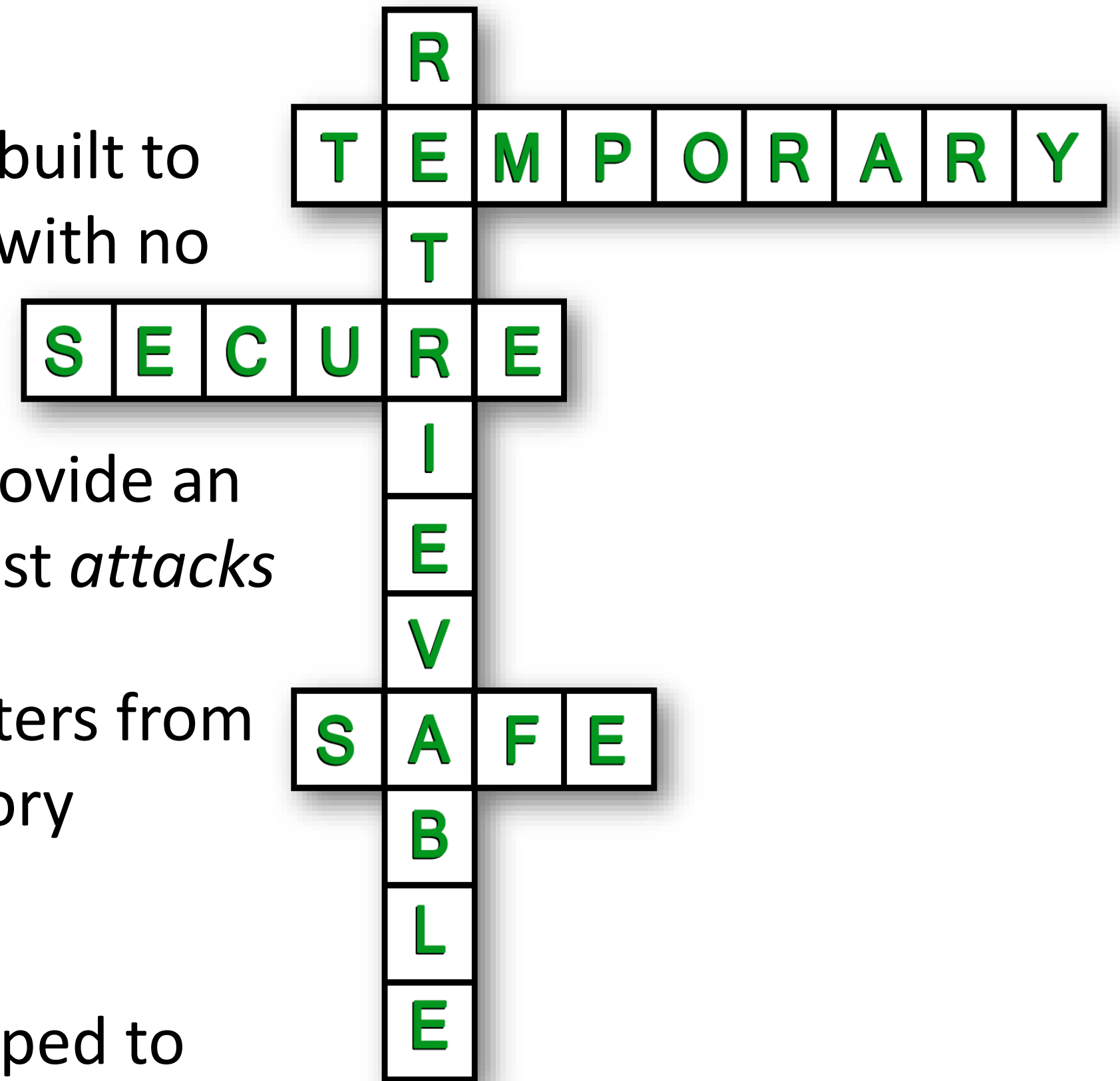
- **National Liability**
 - ✓ \$800M/yr
 - ✓ \$1.3B/yr beginning 2022
 - ✓ \$6.9B through 2017
 - ✓ \$34.1B Total
 - ✓ U.S. Treasury Judgement Fund

- **Blue Ribbon Commission - 2012**
 - ✓ Reaffirmed Repository as National Strategy
 - ✓ CISF Compliments Repository



Consolidated Interim Storage

- **Safe:** SNF storage system is designed and built to withstand *natural* and *man-made* events with no release of radioactivity
- **Secure:** SNF storage system and facility provide an impregnable fortress to protect SNF against *attacks*
- **Retrievable :** Allows removal of SNF canisters from facility in one shift for shipping to repository
- **Temporary:** *Compliments* repository, not *competition*. Canisters of SNF will be shipped to repository in the same manner they were shipped to site



CISF Utilizes HI-STORM UMAX Technology



■ HI-STORM UMAX:

- ✓ Seal welded canisters
- ✓ Below grade vertical silos
- ✓ Requires no water or electric
- ✓ Produces no pollution, emissions, or noise

■ Maximum Safety: Earthquakes, Oil & Gas Accidents, other postulated accidents

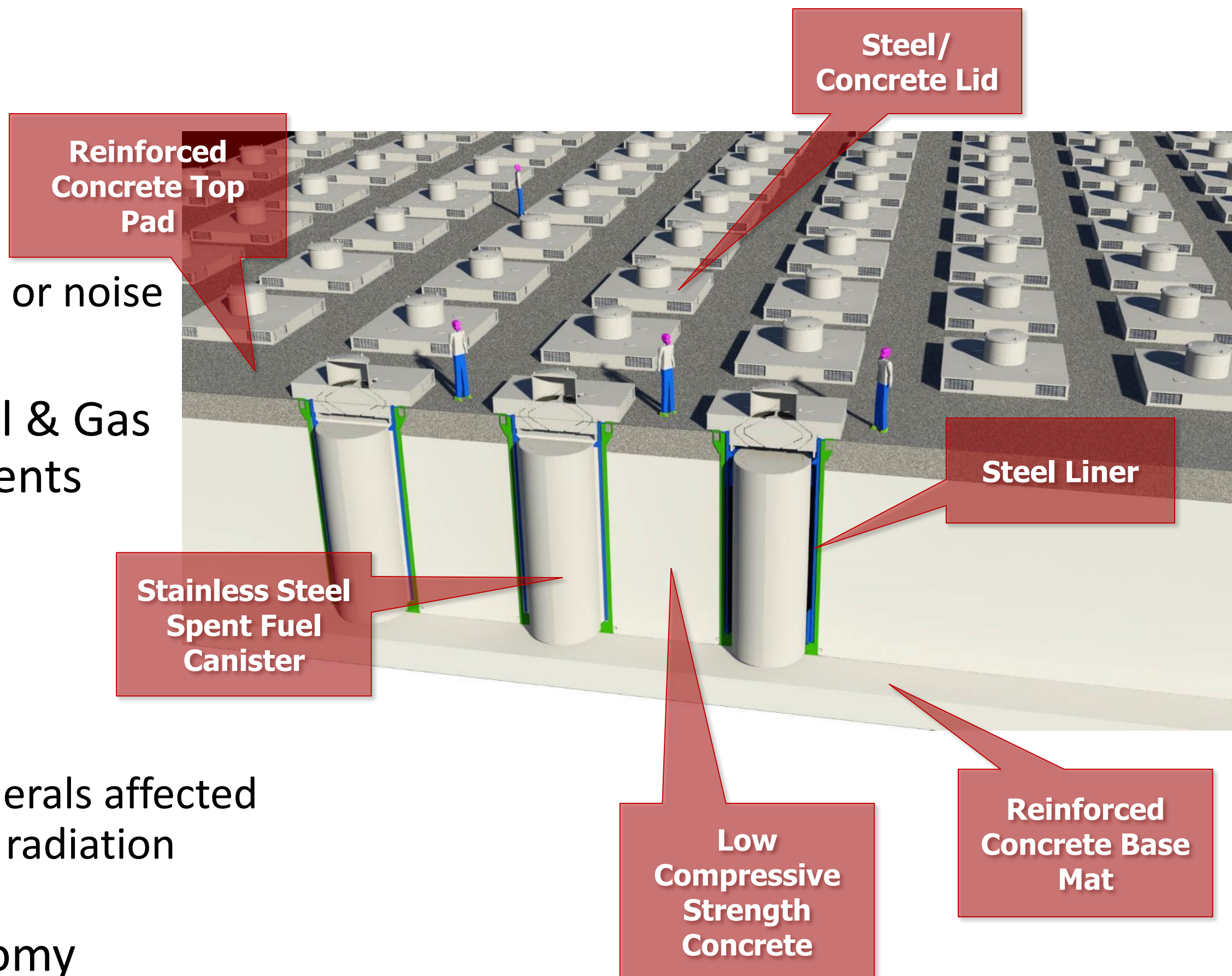
■ Maximum Security: NRC DBT

■ No Affect on Environment

- ✓ No aquifers, ground water, or minerals affected
- ✓ Radiation dose fraction of cosmic radiation

■ No Negative Affect on State Economy

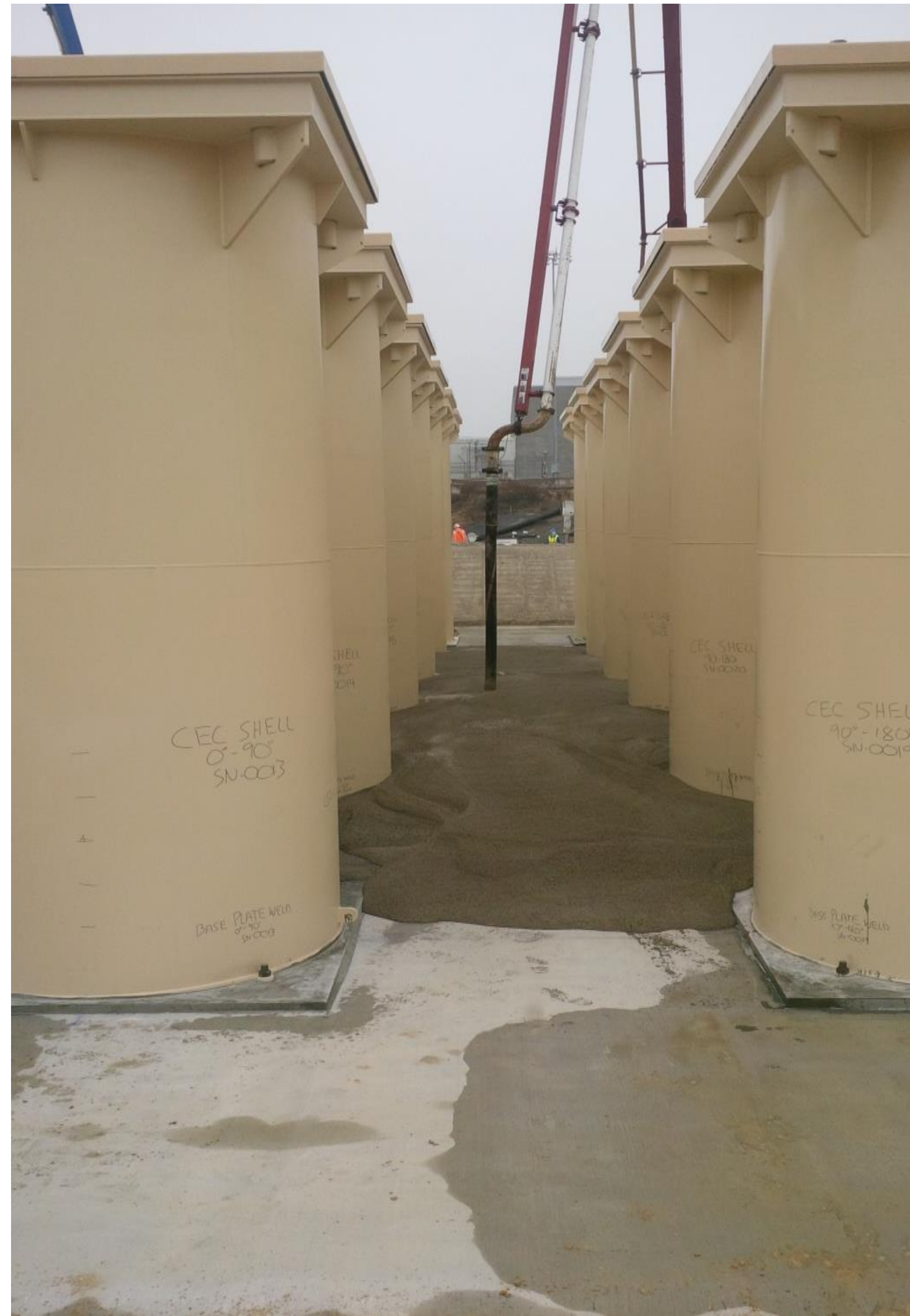
- ✓ Oil & Gas: Drilling, Fracking, Disposal Wells
- ✓ Ranchers & Farmers



HI-STORM UMAX Construction



Controlled Low-Strength Material



Pours Complete



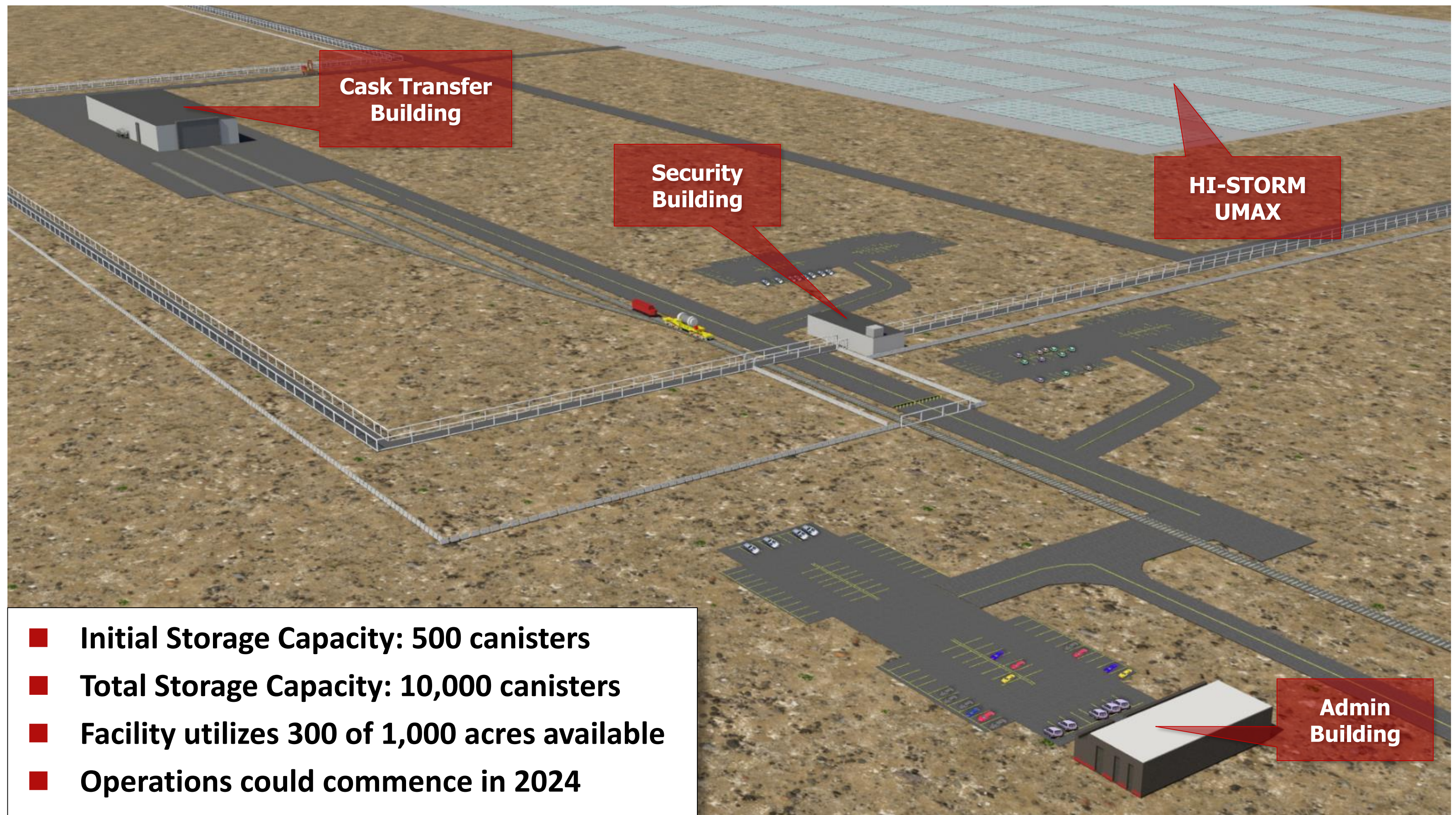
Rebar for Top Pad



HI-STORM UMAX Loaded



HI-STORE Site Layout



- Initial Storage Capacity: 500 canisters
- Total Storage Capacity: 10,000 canisters
- Facility utilizes 300 of 1,000 acres available
- Operations could commence in 2024

Transportation to HI-STORE

- Well-developed rail infrastructure
- HI-STORE 3.8 miles west of BNSF spur – Intrepid North
- Casks move by rail and remain on rail car until on HI-STORE facility



Transportation to HI-STORE

■ Transportation of Spent Nuclear Fuel Strictly Regulated

✓ Department of Transportation:

- Regulates shippers of hazardous material
- Oversees vehicle safety, shipper training, emergency response, routing, shipping documents

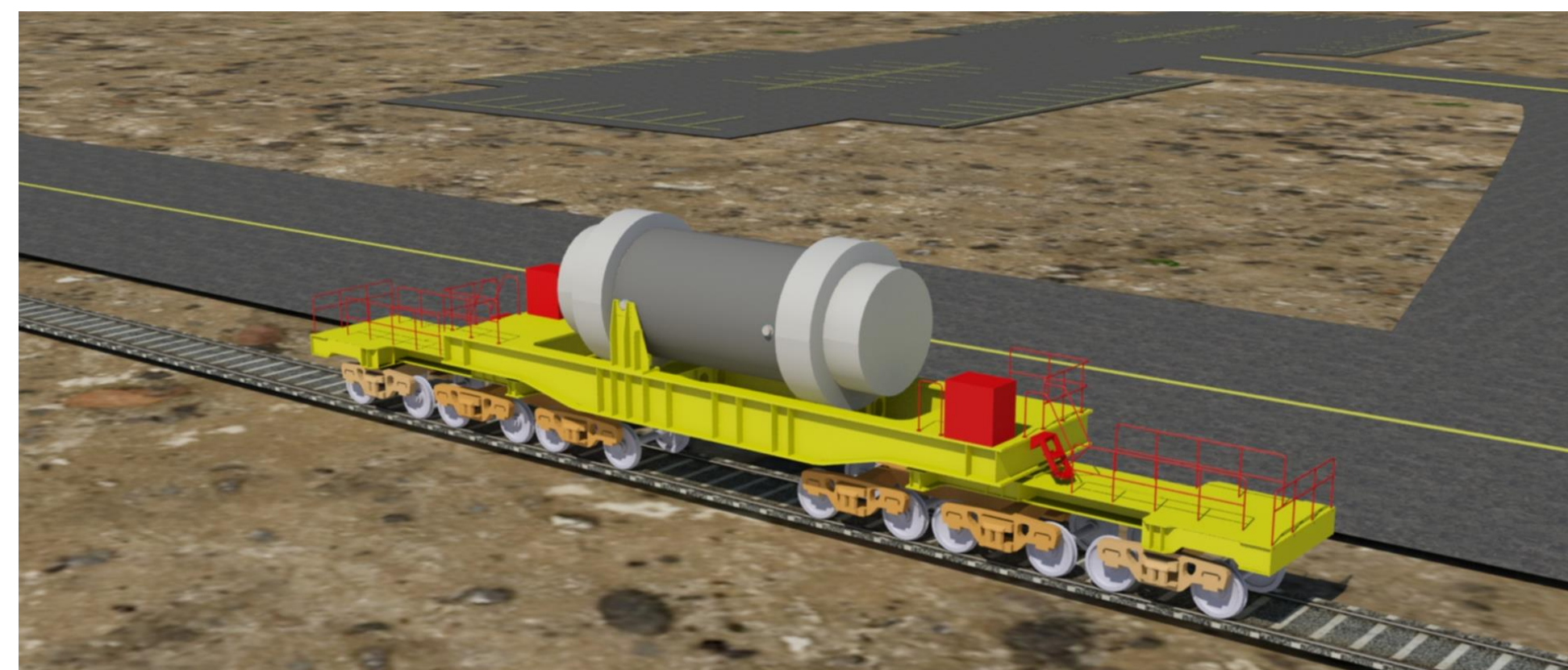
✓ Nuclear Regulatory Commission:

- Approves Shipping Containers: Design, fabrication, operation, and maintenance
- Regulates Physical Protection of shipments

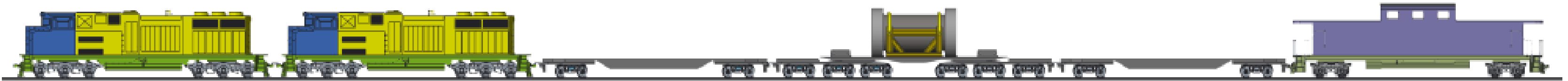
■ Transport Casks: Designed by Holtec / Licensed by NRC

✓ HI-STAR 190 primary means

✓ Other licensed variations based on canister to be shipped



Transportation: Unit Train Consist



- Two locomotives - Redundancy
- Buffer Railcar – Protect Security and Engineers
- One or More Cask Railcars – Expect 10 Cask Railcars
- Rail Escort Vehicle
 - ✓ Safety Monitoring System – Reduce Derailments from Equipment Failures
 - Wired and Wireless Sensors
 - Monitored in REV and at off-train monitoring center
 - ✓ Security (Classified)

Atlas Rail Car with HI-STAR 190XL

■ Railcar with Cask

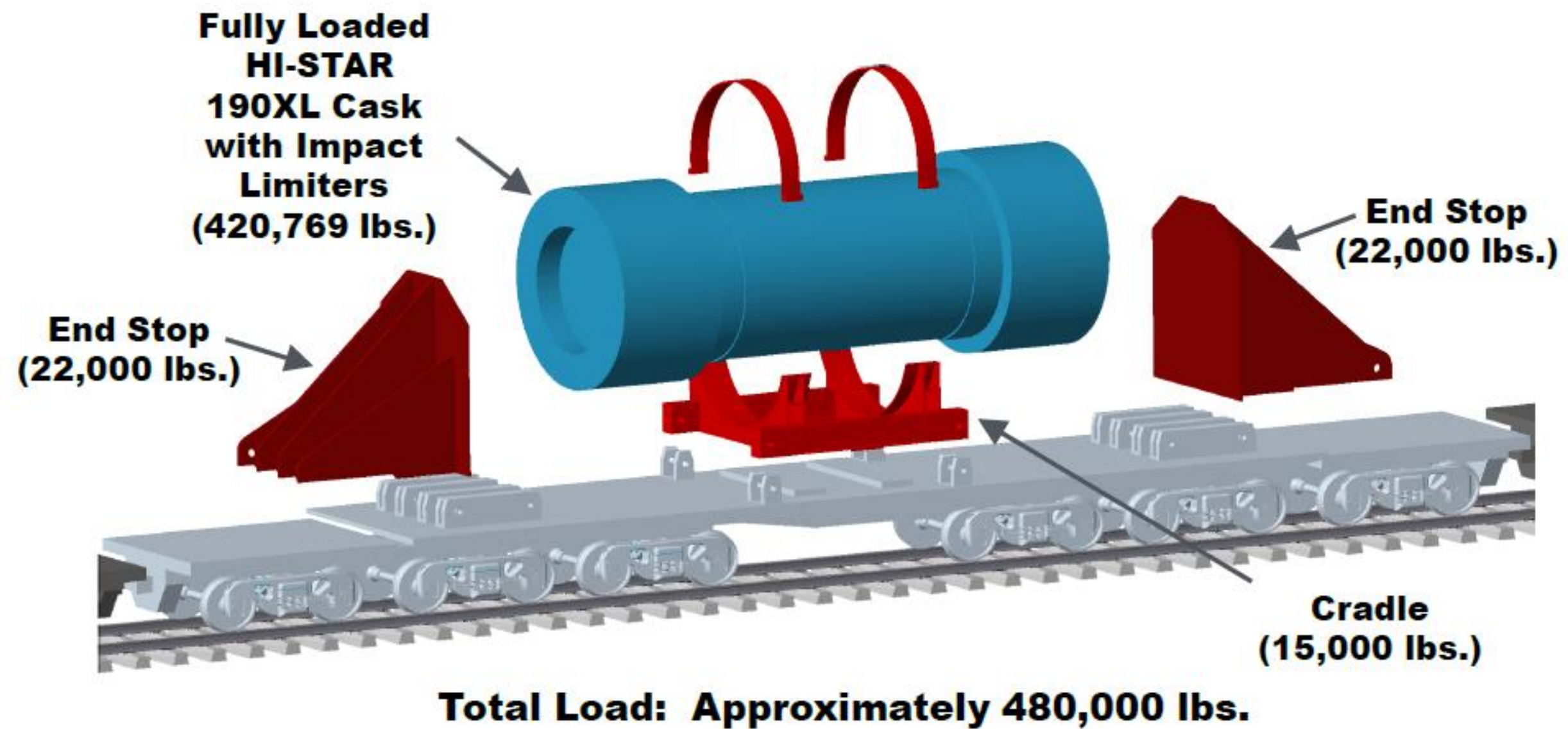
- ✓ Cask w/transport package: 240 tons
- ✓ Railcar: 97.5 tons
- ✓ Total: 337.5 tons
- ✓ 28 tons/axle

■ Dash 9 GE-C44-9W

- ✓ Total: 210 tons
- ✓ 35 tons/axle

■ E80 Rail Rating

- ✓ 40 tons/axle



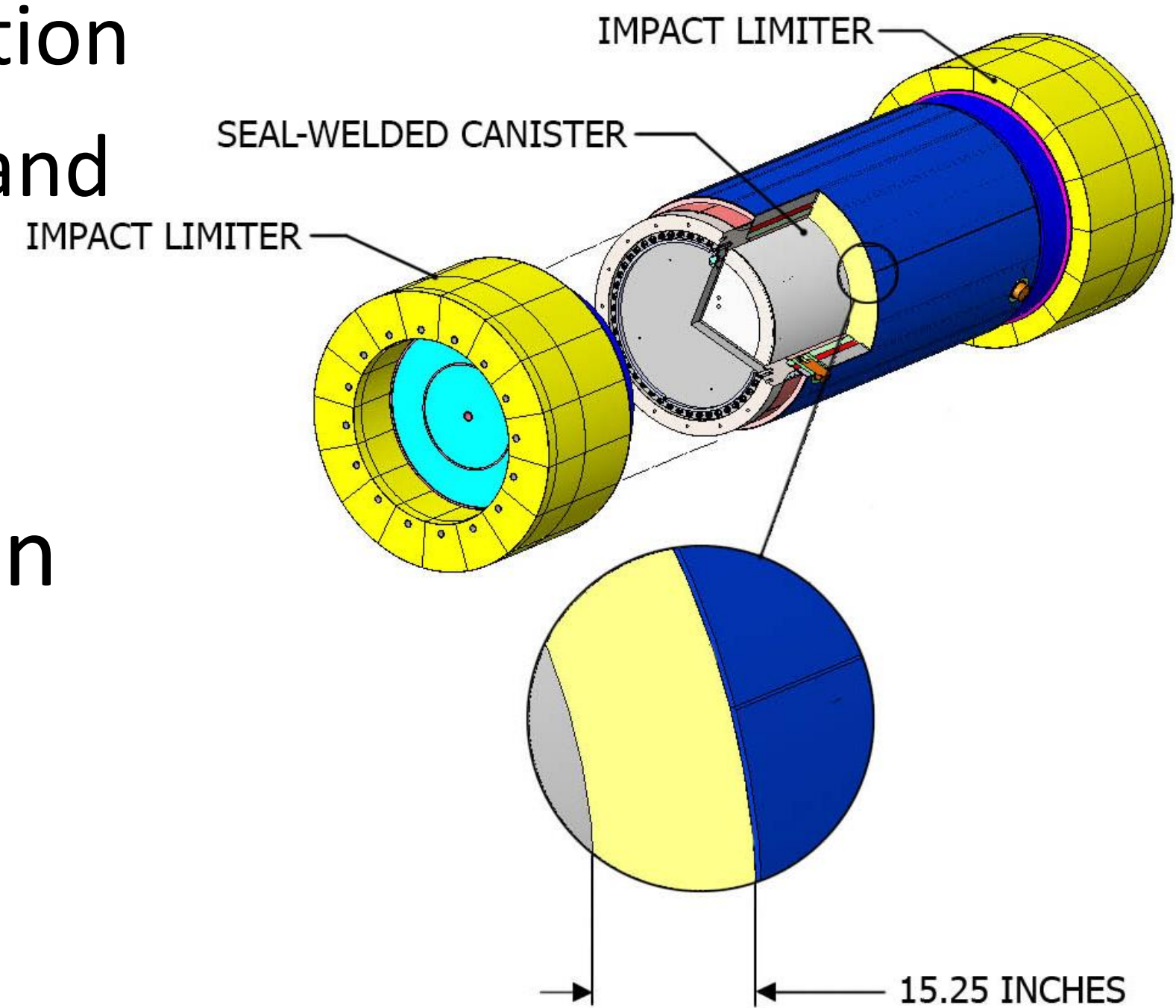
Transportation: HI-STAR Cask

■ Transport Casks

- ✓ Safely confine fuel and shield workers and public from radiation
- ✓ Multiple layers of steel, lead, and other materials

■ Inside cask SNF is contained in another sealed canister

■ Fully loaded casks can weigh 125-210 tons



Holtec Transport Cask

Cask Design Robust & Safe

- Designed to protect public from releases of radioactive material in the unlikely event of an accident
- Must survive four successive accident conditions:
 - ✓ free drop, puncture, fire, and submersion in water



Nuclear Insurance

■ Price Anderson Act

✓ General Public Personal Injury and Property Damage: \$13.436B

✓ Tiered Coverage

- Private - \$450M per site
- Industry Self-Insurance
 - \$12,368M (pool)
 - \$618.4M (pool)

✓ Applicability

- Transporting fuel to site
- Storing fuel or waste on site
- Transporting fuel or waste off site
- Reactor Operation
- Theft or Sabotage

■ Onsite Insurance - NRC Directed

✓ Onsite Property Insurance: \$1.06B

✓ Stabilize and decontaminate reactor and site



Total Pool: \$13.436 Billion

- Private Insurance (First Tier)
- Industry Self-Insurance (Second Tier)
- 5 Percent Surcharge

Holtec Financial Assurance



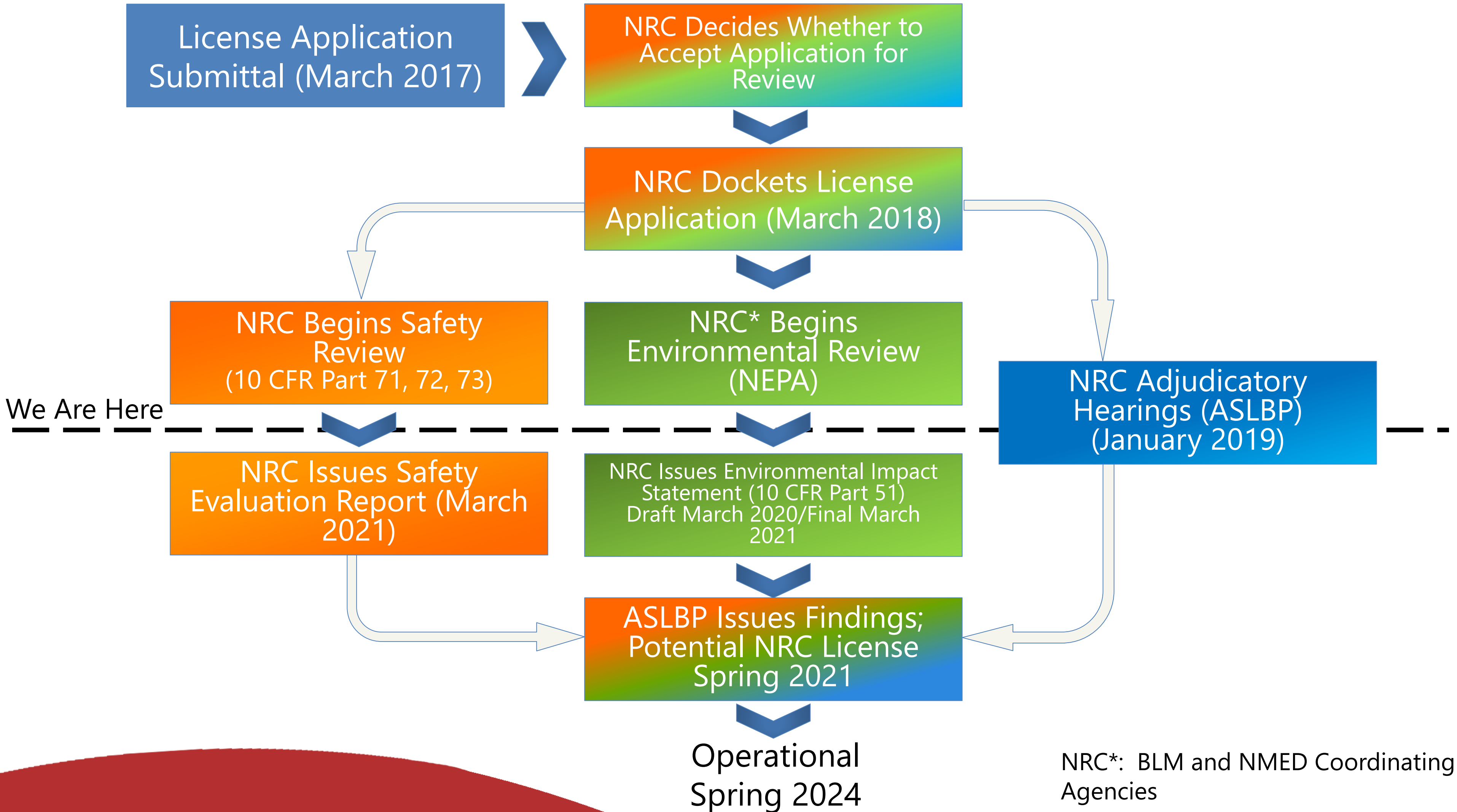
■ Decommissioning Fund

- ✓ \$24M for Phase 1 - 500 Canisters
- ✓ Regulated by U.S. NRC
- ✓ \$840/ton of spent nuclear fuel placed in fund
- ✓ Initial funds plus earnings over life of facility cover cost for complete decommissioning
- ✓ Cost estimate updated every three years
 - Reviewed by U.S. NRC
 - Adjusting for:
 - Current prices of services, inflation, and approach
 - Key assumptions as necessary

■ Financial Profile

- ✓ Profitable every year since founded, no long-term debt, large and diverse customer base, \$5B in backlog orders.
- ✓ Financial plan sets aside additional funds above decommissioning fund to allow ongoing facility operations

NRC Licensing Process



NRC*: BLM and NMED Coordinating Agencies

ASLBP: Atomic Safety and Licensing Board Panel

Regulation At All Levels of Government



■ Federal

- ✓ **US Nuclear Regulatory Commission:** License Application Submitted March 31, 2017.
 - Bureau of Land Management and NM Environmental Department Coordinating Agencies for EIS
- ✓ **Bureau of Land Management:** Land Use Permit (Rail Spur, Co Road 55) to be submitted October 2019.
- ✓ **US Fish and Wildlife Service:** Endangered Species Act Surveys complete. No threatened or endangered species present.

■ State

- ✓ **NM State Historic Preservation Office:** National Historic Preservation Act surveys complete. Avoidance primary mitigation tool.
- ✓ **NM Department of Transportation:** NM Road 243 / Railroad Spur ROW Crossing. Apply once project approved and before construction begins.
- ✓ **NM Environmental Department:**
 - Air Quality Permit: Apply once project is approved and before construction begins.
 - Groundwater Discharge Permit: Apply once project approved and before construction begins.
 - National Pollutant Discharge Elimination System Construction & Industrial Stormwater Permit: Apply once project approved and before construction begins.
 - Hazardous Waste Generation and Storage Permit: Apply once project is approved and before construction begins
 - EPA Notification of Hazardous Waste Activity: Apply for ID number prior to generation of waste during facility construction
 - Petroleum Storage Tank Registration: Register once project approved and before construction

■ Local

- ✓ **Lea County:** Permit to move Co Road 55. Permit October 2019

Why Not Status Quo?

■ National Imperative:

- ✓ Dispersed SNF across Nation
- ✓ Cost to Every Taxpayer

■ SE New Mexico Excellent Location

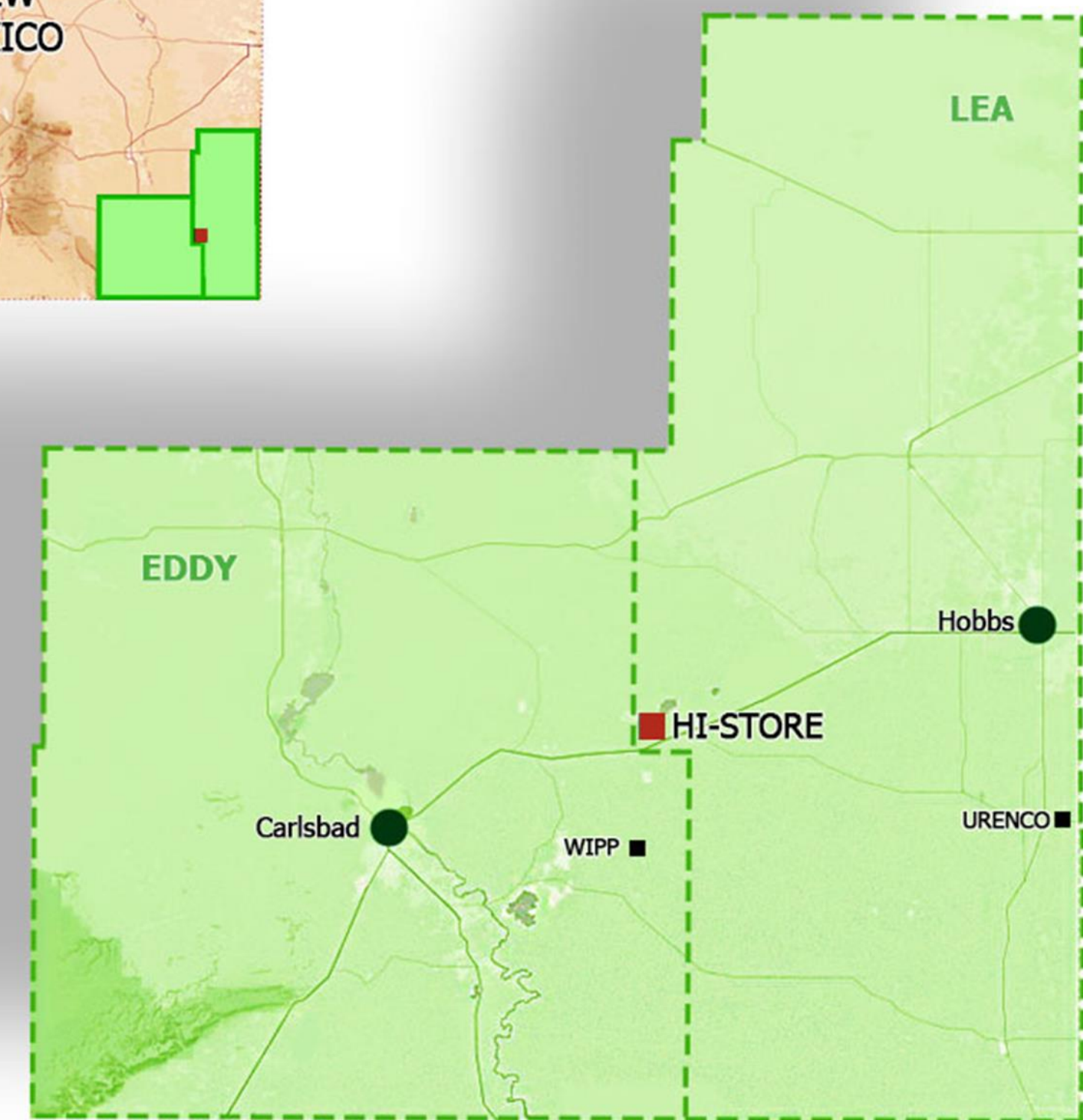
- ✓ Land Characterized for GNEP
- ✓ Geologically Stable, Arid, Remote
- ✓ Robust scientific & nuclear workforce

■ No Affect to General Public or State Economy:

- ✓ Ranchers, Farmers, Oil & Gas

■ Financial Benefits to New Mexico

- ✓ \$3B Capital Investment
- ✓ 100 Operations & 100 Construction Jobs
- ✓ \$25M/yr Operating Costs
- ✓ \$15M-\$25M/yr Revenue Sharing w/State
- ✓ Manufacturing Facility: 150 Jobs



Questions?



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