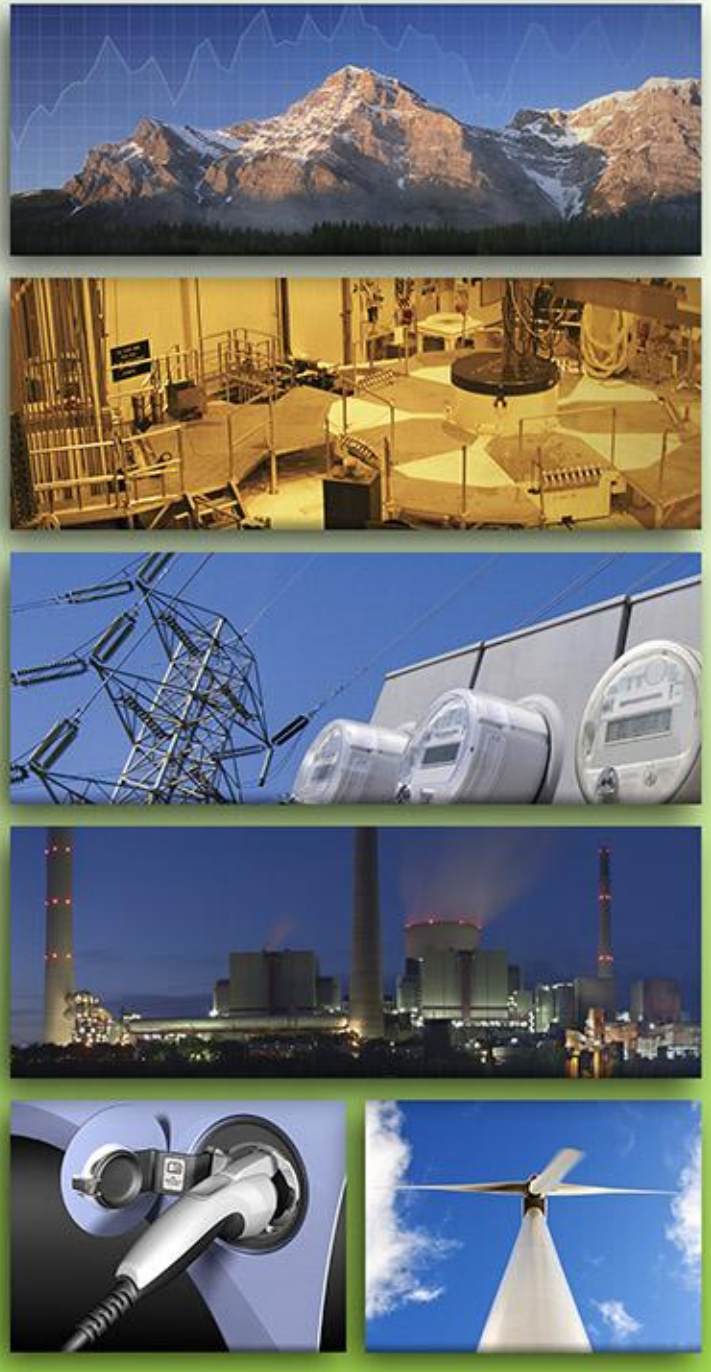

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Used Nuclear Fuel: Inventory Projections

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Blue Ribbon Commission

Storage and Disposal Subcommittee Mtg.
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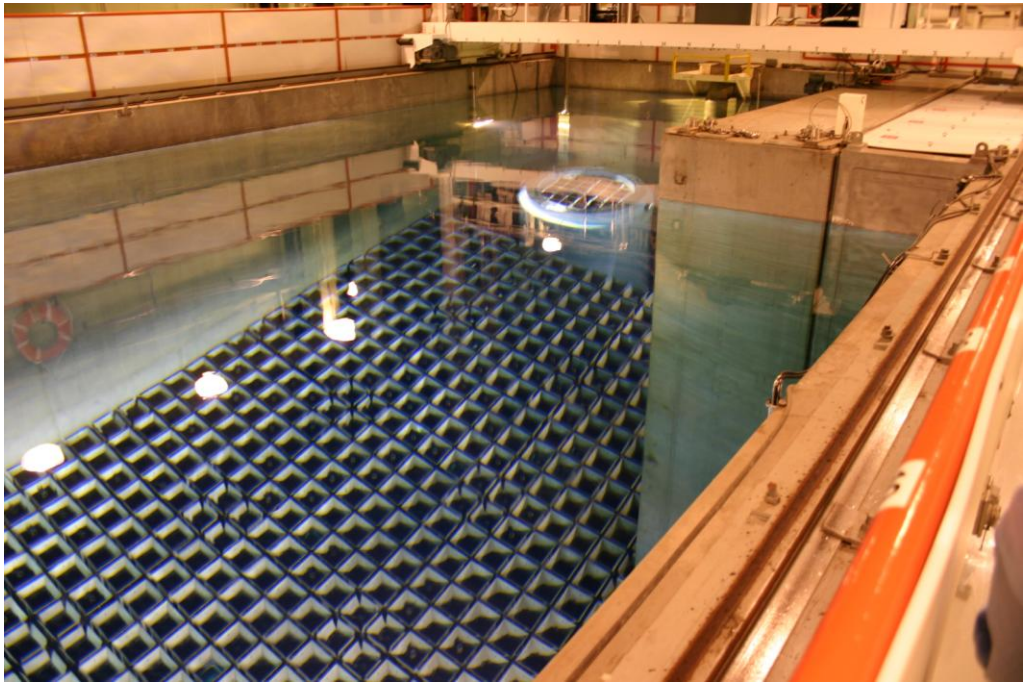
Outline

- How we got to where we are
- Commercial used fuel inventories: current and future projections
- Conclusions and recommendations



Current Situation

- No disposal
- No reprocessing
- No fast reactors
- Spent fuel pools filling up
- No centralized interim storage
- Transportation not available for all used fuel types

Nowhere for fuel to go

Prolonged On-Site Storage: Industry Options

- "Reracking": denser in-pool storage
  - Industry has reracked about as much as it can
- Move used fuel from pools into dry storage
- Extract more energy per assembly (higher "burnups")
- Build a centralized interim storage site
- Extend the life of existing dry storage systems

Even with options, inventories are building

Inventories Measured in Different Ways

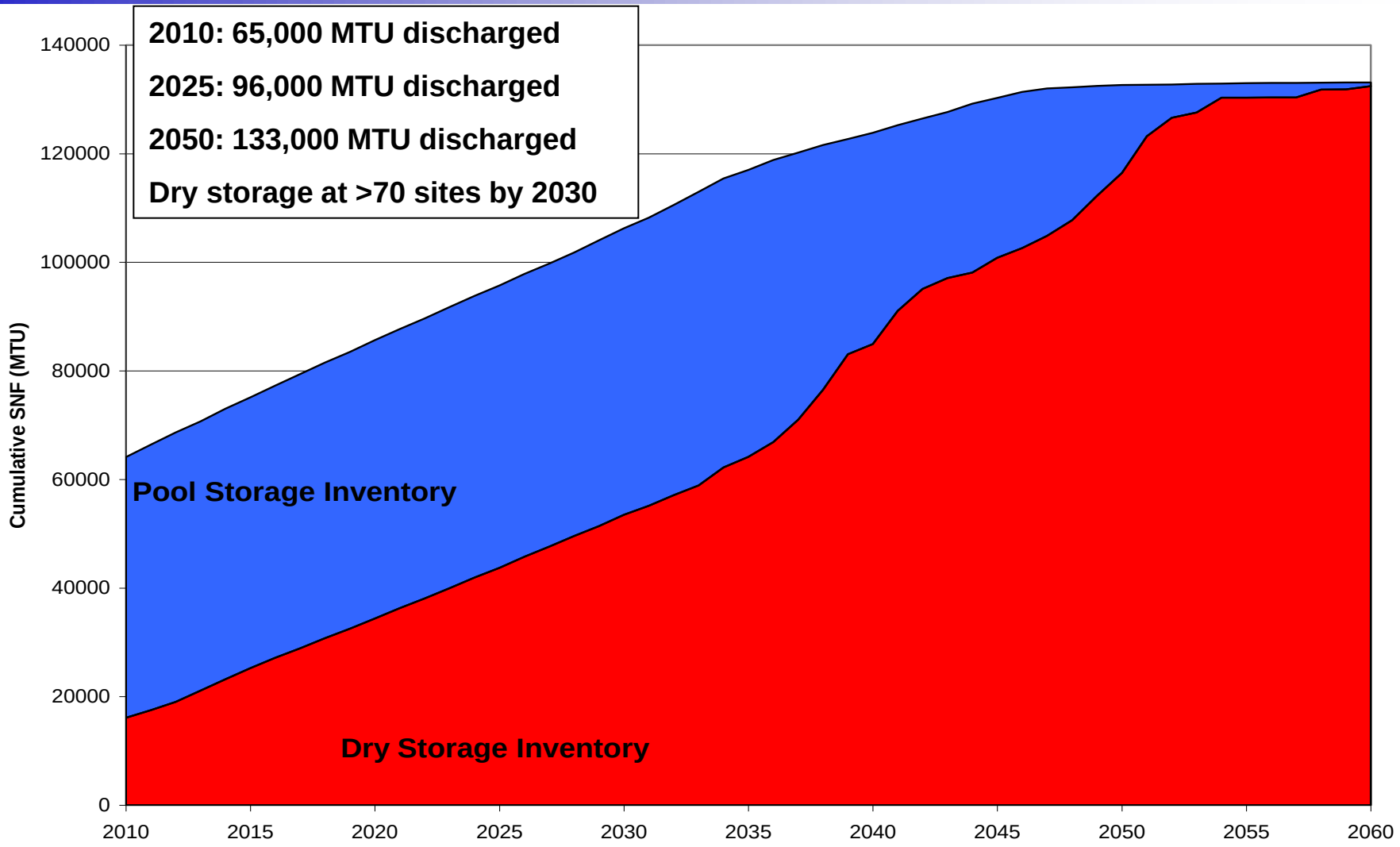
- Number of assemblies
  - More in BWRs than PWRs
- Number of dry storage casks
  - Larger capacity casks (cheaper per assembly)
    - As low as 7 assemblies per cask in the 1980s to >60 assemblies per cask today
  - Still transportable by rail
- Metric tons of uranium (MTU)
  - Similar MTUs in both BWRs and PWRs

Used Commercial Fuel Inventories (12/31/09)

- National totals:
  - Wet storage: 169,696 assemblies at >50 reactor sites
  - Dry storage: 1,232 casks (51,585 assemblies) of > 20 different designs in 32 states
    - Top six states (casks/assemblies in dry storage)
      - Illinois
      - Pennsylvania
      - South Carolina
      - Virginia
      - Georgia
      - California

Source: ACI Nuclear Energy Solutions

Cumulative U.S. Commercial Spent Nuclear Fuel Inventories – 2010 to 2060 (assumes no nuclear expansion, 60-year life)



Aug 2010, Energy Resources International, Inc.

Used Fuel Inventory Analysis - Existing Plants Only

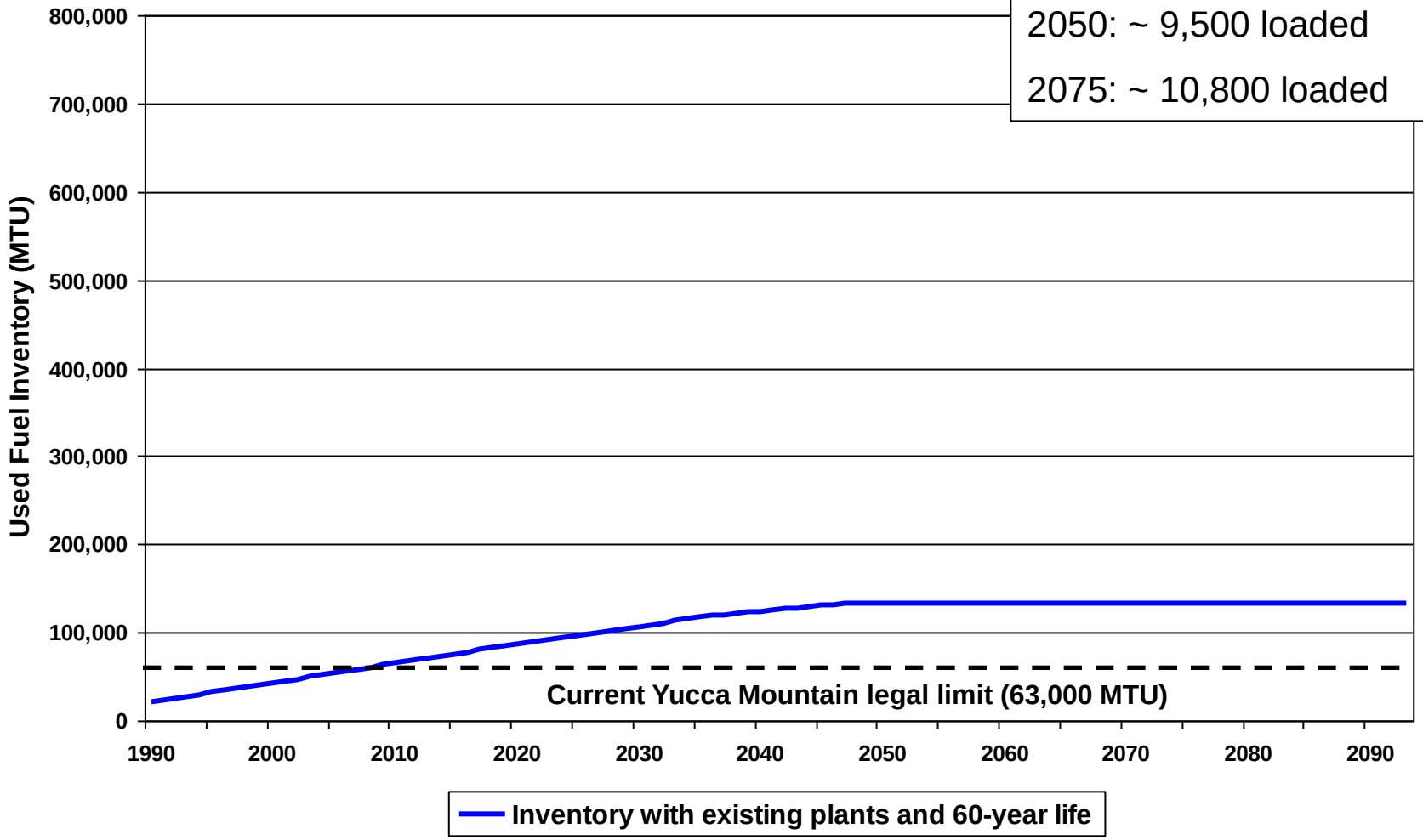
Estimated dry storage systems*:

2010: ~1,400 loaded

2025: ~ 3,700 loaded

2050: ~ 9,500 loaded

2075: ~ 10,800 loaded



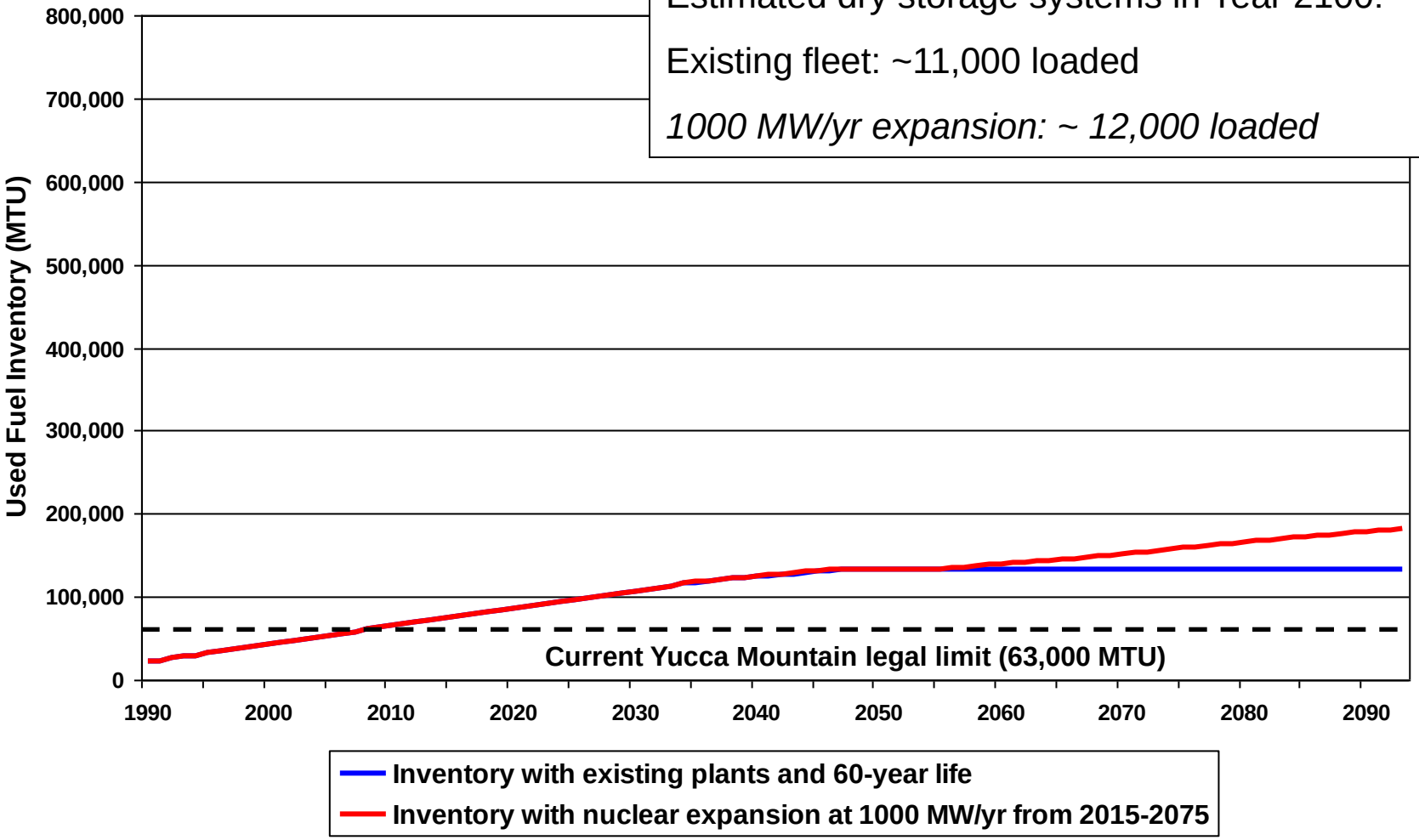
*Courtesy of Energy Resources International, Aug. 2010

Used Fuel Inventory Analysis – Limited Nuclear Power Expansion

Estimated dry storage systems in Year 2100:

Existing fleet: ~11,000 loaded

1000 MW/yr expansion: ~ 12,000 loaded



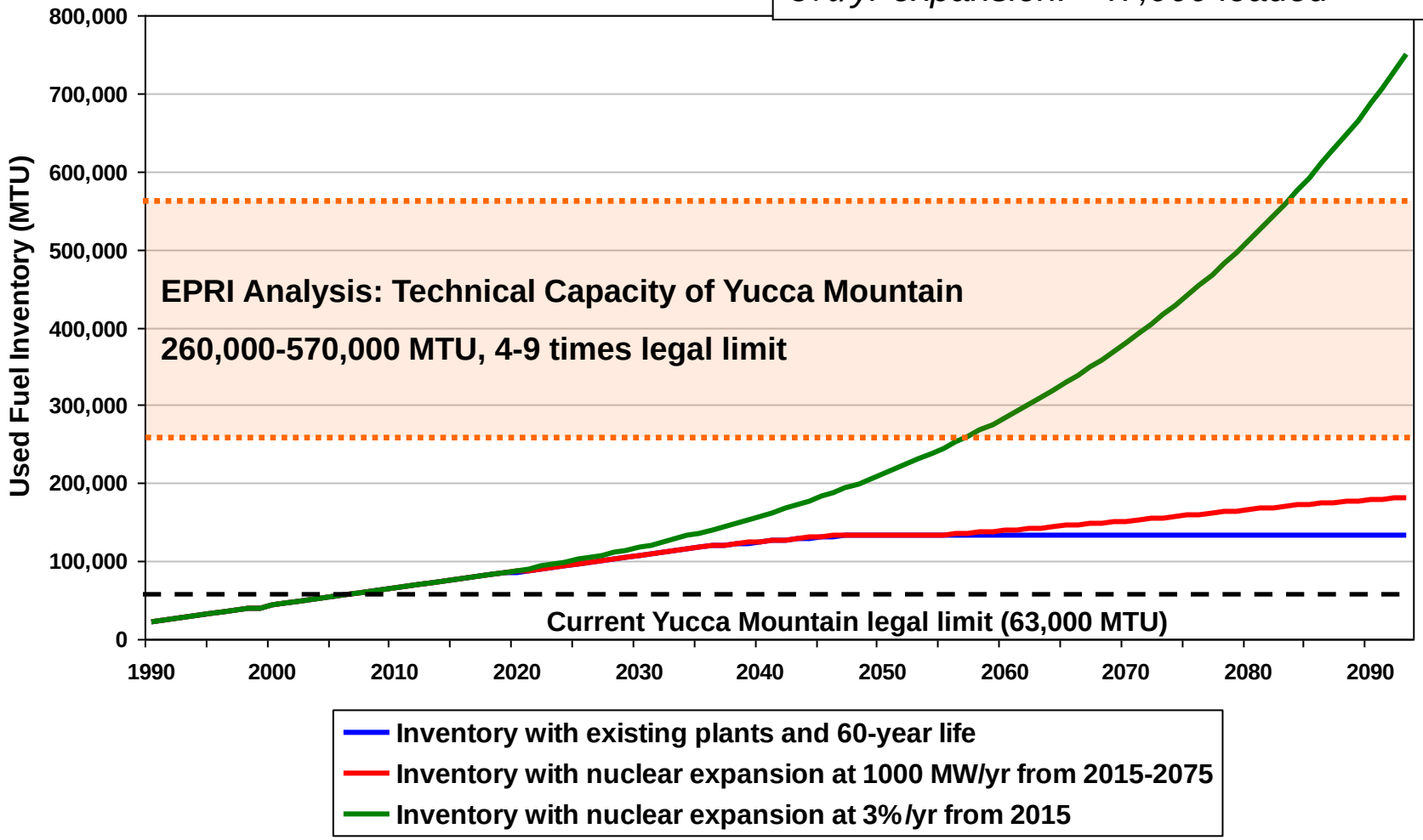
Used Fuel Inventory Analysis – Larger Expansion

Estimated dry storage systems in Year 2100:

Existing fleet: ~11,000 loaded

1000 MW/yr expansion: ~ 12,000 loaded

3%/yr expansion: ~47,000 loaded



Conclusions

- Used fuel being managed on a plant-by-plant basis
  - Continued use of on-site dry storage systems until:
    - Plant shutdown
    - Centralized storage is available
    - Disposal is available
- Increasingly difficult to add to on-site inventories
  - Space, dose, public concern limitations
  - New security requirements?
  - Shutdown plants: all that is left is the fuel

Used Fuel Storage Must be Integrated at the National Level

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