What to Do with Spent Nuclear Fuel
A Time for Action
Columbia Generating Station
NUCLEAR PLANTS CRITICAL INFRASTRUCTURE

20% Of America’s Electricity is Nuclear

Columbia Generating Station
Spent Fuel
All the used nuclear fuel generated, if stacked, would only cover one football field <10 yards high
SPENT FUEL SHUTDOWN SITES WITHOUT AN OPERATING REACTOR

• California
  – Humboldt Bay
  – Rancho Seco
  – San Onofre
• Colorado
  – Ft. St. Vrain
• Connecticut
  – Connecticut Yankee
• Florida
  – Crystal River
• Illinois
  – Zion
• Maine
  – Maine Yankee
• Massachusetts
  – Yankee Rowe
• Michigan
  – Big Rock Point
• Nebraska
  – Ft Calhoun
• Oregon
  – Trojan
• Vermont
  – Vermont Yankee
• Wisconsin
  – LaCrosse
  – Kewaunee

In addition 8 plants are planning shutdown in the next 8 years in California, New York, Michigan, Pennsylvania, Massachusetts, and New Jersey.
SPENT FUEL LEGISLATIVE HISTORY

- Assigned responsibility to the Department of Energy (DOE)
- Established process for evaluating and selecting a repository
- Created an Office of Civilian Radioactive Waste Management within DOE to carry out the program
- Required DOE to enter into contracts for the removal of used fuel from reactor sites in return for payment of a fee to fund the program (i.e., imposed reciprocal obligations)
- Assigned independent regulatory authority to the Nuclear Regulatory Commission (NRC)
- Tasked the Environmental Protection Agency (EPA) to set radiation protection standards
- Contained provisions to facilitate program implementation

- 1982 – Enacted
- 1987 – Amended to focus study on Yucca Mtn.
- 2002 – Repository decision enacted (Yucca Mountain Development Act)
SPENT FUEL WHERE ARE WE TODAY?

- DOE is not fulfilling its responsibility under the Nuclear Waste Policy Act
- Over $36 billion is in the Nuclear Waste Fund
- All used fuel is safely stored at commercial reactor sites
SPENT FUEL NOW IS THE TIME TO ACT

$40 Billion
Amount electricity customers have paid into the Nuclear Waste Fund

$36 Billion
Current balance of the Nuclear Waste Fund

$1.7 Billion/Year
Investment interest that the Fund accumulates annually

$2.2 Million/Day
Court-ordered damage payments from taxpayers (more than $800 million per year)

35 YEARS
How long electricity customers have paid the U.S. Government for a solution to used fuel disposal
YUCCA MOUNTAIN SCIENCE’S SOLUTION

- Over 30 years and $10 billion in studies
- NRC Safety and Environmental reviews Complete
- Next phase of licensing process will address opponents’ contentions
- Opponents have blocked completion by restricting and eventually (2011) eliminating funding
CONSOLIDATED INTERIM STORAGE (CIS) A NECESSARY RESPONSE TO YUCCA DELAY

- Consolidation provides efficient management away from reactor sites
- Private entities are moving forward
  - The Eddy-Lea Alliance (New Mexico) and Waste Control Specialists (Texas) have applied for NRC licenses to store used fuel
  - Both projects have local support
- DOE has yet to engage
  - Needs legislative authority
Over 30 years and $10 billion in studies

NRC Safety and Environmental reviews

Complete

Next phase of licensing process will address opponents' contentions

Opponents have blocked completion by restricting and eventually (2011) eliminating funding

2,400 metric tons of used nuclear fuel from commercial nuclear power reactors have been transported in the United States between 1979 and 2007

As a result of robust transportation container design and stringent safety measures, all of these shipments have been safely completed

There have been about 7,000 safe shipments of more than 80,000 metric tons of used nuclear fuel worldwide
SPENT FUEL SYNERGY BETWEEN CIS AND YUCCA MOUNTAIN

Target Date to Enact Comprehensive Used Fuel Legislation

Transport Timeline
- Transport Ready (supports both Yucca and CIS)
- DOE Develops Transportation Infrastructure

CIS Timeline
- Private entities seek license
- Construct
  - NRC License
  - CIS Opens
    - CIS helps prepare used fuel for disposal
    - CIS takes pressure off of Yucca licensing – bolstering prospects for successful negotiations with Nevada or DOE pursuit of disposal alternatives
- Operate

Yucca Timeline
- DOE Prepares to restart
- DOE Pursues License
- Construct
  - NRC License
- Operate
  - Yucca Opens

Funding Stream
- Land Withdrawal
- CIS Authority
- Supporting Reforms

CIS License Expires (could renew)

FY 2017 FY 2018 FY 2019 FY 2020 FY 2021 FY 2022 FY 2028 FY 2029 FY 2030 FY 2062
SPENT FUEL: RECOMMENDED LEGISLATIVE IMPROVEMENTS

- New management entity outside of DOE
- Access to the waste fund
- Consolidated interim storage for commercial used fuel and DOE high-level waste in a willing host community and state. Used fuel from shutdown sites without an operating reactor should have priority
- In parallel, complete the Yucca Mountain licensing process followed by construction and operation
SPENT FUEL THE OPPORTUNITY TO ACT

• House:
  o Authorization –
    • HR3053 “Nuclear Waste Policy Amendments Act of 2017”
  o Appropriations –
    • $120 million for used fuel management (primarily Yucca Mtn.)

• Senate:
  o Authorization –
    • TBD
  o Appropriations –
    • $35 million for used fuel management (primarily Consolidated Interim Storage)
HOUSE ENERGY AND COMMERCE COMMITTEE VOTE (JUNE 2017) IN FAVOR OF HR 3053
HR 3053 A STEP TOWARD A SOLUTION

- Assists in the resolution of the pending Yucca Mountain license
- Reforms broken financing mechanism
- Directs DOE to move forward with Consolidated Interim Storage in parallel with Yucca Mtn
- Provides the State of Nevada and local stakeholders the opportunity to beneficially engage
- Protects national security priorities by providing the most expeditious pathway for “defense-waste”
- Strengthens DOE program management and organization to more effectively implement its nuclear waste program.
SPENT FUEL NEXT STEPS

• Floor vote on HR 3053 in the House
  • Must overcome appropriators resistance to “Mandatory Spending”
• Appropriations to resume program functions in 2018
• Initiation of authorizing legislation in Senate
  • Will include differences from House proposal
• Final outcome will be determined in House/Senate Conference (late 2018)
SPENT FUEL  WHAT TO DO WITH IT

• Build on proven storage and transport capabilities
  • Consolidate the inventory
• Establish a geologic repository for disposal
  • Complete the Yucca Mountain licensing process
• Stay engaged
• Seize the near term opportunity – support ongoing legislative process