Update on Nuclear Waste

What It Is, Where It Is, Where it Should Be, Who Pays, and Why it Matters

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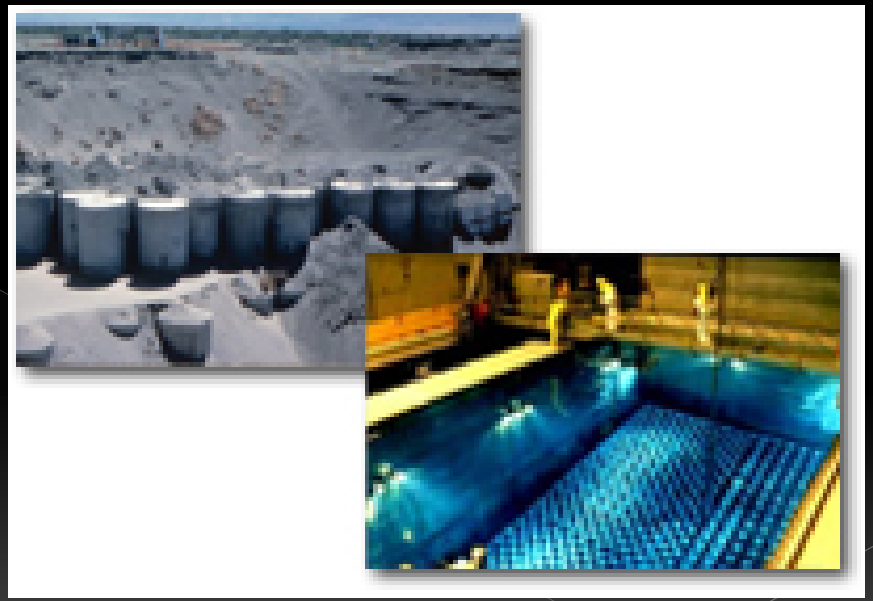
Katrina McMurrian

Nuclear Waste – What is It?

- Spent (used) nuclear fuel (SNF) – radioactive used fuel from a nuclear reactor that has not been reprocessed
- High-level waste (HLW) – radioactive byproduct of reactions inside nuclear reactors – also results from reprocessing SNF
- Low-level waste (LLW) – waste other than SNF, HLW, TRU waste, or mill tailings – most destined for disposal in near-surface facilities (Ex. radioactively contaminated protective clothing, tools, etc.)
- Other – Transuranic (TRU), Mill Tailings

Nuclear Waste – Where is it?

- Commercial: On-Site at both Operating & Shutdown Reactors
  - Spent Fuel Pools; or
  - Dry Cask Storage
- Government: On-Site where produced or transferred to INL or SRS for storage



Nuclear Waste Policy – History

- Defense Nuclear Waste – Weapons Production
- Commercial Nuclear Waste – Power Production
  - 1946 – Atomic Energy Act signed by Pres. Truman – created Atomic Energy Commission to foster and control peace time development of atomic science & technology
  - 1953 – Pres. Eisenhower proposed "Atoms for Peace," which set the course for US civil nuclear energy development
  - 1954 – revised Atomic Energy Act – AEC to encourage nuclear power & regulate its safety
  - 1957 – NAS Waste Disposal Study – recommended salt disposal
  - 1958 – 1st US commercial nuclear power plant, Shippingport in PA, opened by Pres. Eisenhower (started generating electricity for commercial use in Dec 1957)

Nuclear Waste Policy – History

- Commercial Nuclear Waste – Power Production *(continued)*
  - 1966 – 1st commercial reprocessing plant opens in NY
  - 1973 – OPEC oil embargo and record year for new nuclear plant orders
  - 1974 – Energy Reorganization Act – abolished AEC; created NRC (began operations Jan 1975) to focus on protecting health & safety; R&D to DOE predecessor
  - 1977 – Pres. Carter deferred commercial reprocessing indefinitely
  - 1979 – Three Mile Island Unit 2 accident

Nuclear Waste Policy – History

- Nuclear Waste Policy Act (1982)
  - Site search for repository to be technically driven
  - Envisioned repositories in East and West
  - 1st repository limited to 70,000 metric tons until 2nd repository licensed
  - OCRWM created in DOE to focus on waste
  - DOE to contract with utilities to accept waste starting in 1998 in return for fees
  - Waste facilities licensed by NRC using EPA standards

Nuclear Waste Policy – History

- NRC Waste Confidence Decision & Rule (1984)
  - 1979 – US Court of Appeals for DC Circuit directed NRC to determine whether a disposal solution for SNF would be available by reactor license expiration and, if not, to determine whether SNF could be safely stored after
  - NRC generic findings included that storing SNF for a for a certain period will not result in significant enviro impacts
  - NRC reviews waste confidence ever 5-10 years
  - NRC beginning generic evaluation of impacts of extended storage and transportation for an analysis period of approx 200 yrs, beginning mid-century

Nuclear Waste Policy – History

- NWPA Amendments (1987)
  - Named Yucca Mountain as sole repository site
  - Eliminated 2nd repository program
  - Rescinded MRS site selection and tied future operation to Yucca Mountain progress
  - Offered benefits to host states
  - Established Nuclear Waste Negotiator to find voluntary sites
  - Established Nuclear Waste Technical Review Board to increase confidence in DOE program

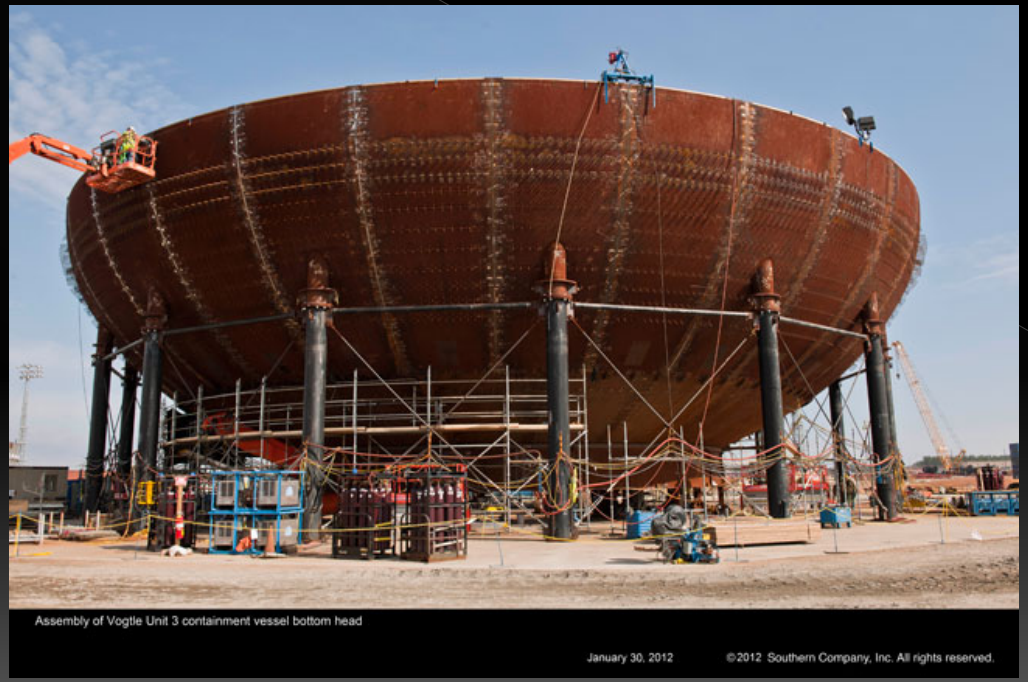
Nuclear Waste Strategy Coalition (NWSC)

- Formation & Purpose
  - 1993 – Formed by MN, MI, and FL
  - Jointly call for nuclear waste program reform on behalf of ratepayers
- Membership
  - State utility commissions
  - State attorneys general
  - Consumer advocates
  - Nuclear-generating utilities
  - Tribes and cities

Nuclear Waste Strategy Coalition (NWSC)

- Policy Positions
  - Release ratepayers' money for intended purpose and protect consumers from future liability
  - Establish permanent disposal facility
  - Begin waste removal now
    - Centralized interim storage
    - Transportation

Commercial Nuclear Today



- Approx. 20% of US Fuel Mix
- Georgia Power's Vogtle 3 & 4 COL issued by NRC Feb 9th
- Decision on proposed new SC units expected soon
- 10 more in the NRC queue for Duke Energy, FPL, Progress Energy, TVA, etc.
- Moratoria & State Initiatives
  - CA – mid-70s & present
  - CT, IL, KY, ME, NJ, OR, WV, WI

Nuclear Waste Policy Today

- Executive Branch Activities
  - Administration zeroed out Yucca Mountain funding (OCRWM closed Sept 2010)
  - DOE moved to withdraw Yucca Mountain license application March 2010
  - President created Blue Ribbon Commission on America's Nuclear Future (BRC) 2010
  - NRC discontinued its technical review of Yucca Mtn. license application Sept 2011

Nuclear Waste Policy Today

- Legislative Branch Activities
  - US Senate Majority Leader Reid (Nevada) on Yucca-related matters
  - Appropriations – Yucca Mountain project no longer receives federal funding
  - Congressional Hearings & Potential Legislation on BRC Recommendations

Nuclear Waste Policy Today

- Judicial Branch Activities
  - Claims suits against DOE by utilities for standard contract breach
  - Suit by NARUC, et. al. re fee suspension (US Court of Appeals – DC Circuit)
  - Mandamus suit by SC, WA, et. al. to require NRC to resume review of Yucca Mtn. license application (US Court of Appeals – DC Circuit)

Blue Ribbon Commission on America's Nuclear Future (BRC)

- 15-member Commission formed in March 2010 by DOE Secretary Chu at Pres. Obama's request to review policies for managing back end of fuel cycle and recommend a new strategy
- Directed not to serve as a siting body and not to consider Yucca Mtn.
- Issued final report on Jan. 26, 2012
- Emphasized need for action and urged designation of coordinator of all the DOE elements involved to implement recs
- Majority of recs require legislation but identified near-term actions possible under existing authority

BRC Report Recommendations

1. A new, consent-based approach to siting and development
2. A new organization dedicated solely to implementing the waste management program and empowered with the authority and resources to succeed
3. Access to the funds nuclear utility ratepayers are providing for the purpose of nuclear waste management
4. Prompt efforts to develop 1or more geologic disposal facilities

BRC Report Recommendations

5. Prompt efforts to develop 1 or more consolidated storage facilities
6. Prompt efforts to prepare for the eventual large-scale transport of spent nuclear fuel and high-level waste to consolidated storage and disposal facilities when such facilities become available
7. Support for continued U.S. innovation in nuclear energy technology and for workforce development
8. Active U.S. leadership in international efforts to address safety, waste management, nonproliferation, and security concerns

BRC Rec: "Fed Corp"

- New organization with focused mission on used fuel management (Move program out of DOE)
- TVA model referenced
- To remain accountable to government while better insulated from political interference
- Sustainable revenue stream if funding reform also implemented
- Requires legislation

BRC Rec: NWF Reform

- Assured access to the fees ratepayers are providing ($750 M/yr) critical to success of all other recs
- Federal budget rules & laws present obstacle
- Currently, fee receipts counted against federal budget deficit

BRC Rec: NWF Reform

- Short-term partial remedy:
  - Admin offer to amend standard contract with utilities so that they remit only the portion of annual fee that matches appropriations for program with rest escrowed
  - OMB to work with Congress budget committees and CBO to change budgetary treatment so that receipts directly offset appropriations for program
  - Note: Negative impact of approx. $750 M on annual budget calculations
- Long-term remedy:
  - Transfer unspent balance in NWF (approx. $26 B) to new waste management org
  - Note: Requires legislation

US State by State Commercial Used Fuel & NWF Payments

State	Metric Tons Uranium	NWF Contributions ($ M)
Florida	2,810	810.1
Total	65,200	17989.9

- Payments based on Nuclear Plant Generation
- Used Fuel Data rounded to nearest ten and is as of Dec 2010; NWF Contributions as of Dec 31, 2010.
- Source: ACI Nuclear Energy Solutions and DOE
- Updated: 4/11 by NEI

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BRC Recs: Geologic Disposal & Consolidated Storage

- Emphasized need for deep geologic disposal as scientifically preferred approach
- 2nd repository will be needed
- Consolidated storage will allow government to begin the orderly transfer of SNF from reactor sites, with "stranded" fuel from shutdown plants first in line

BRC Report Feedback & Next Steps

- Predominantly positive feedback
- NARUC, NWSC, NEI, EEI, APPA, NRECA statement
- Congressional statements
- FY 2012 Consolidated Appropriations Act requires DOE to develop a strategy for the management of SNF & other nuclear waste within 6 months of BRC Report issuance

Is There a Future for Nuclear?

- Nuclear has important role to play in nation's & FL's future.
  - Baseload power with high capacity factors
  - No CO_2 emissions
  - Low fuel costs
  - Fuel diversity benefits
- Despite nation's waste management obstacles, they haven't proven insurmountable to new nuclear for many parts of US.
  - Waste confidence determination by NRC likely a factor.
  - Trust in American ingenuity, if no trust in government.

Is There a Future for Nuclear?

- Regardless, nuclear waste policy reform is in the public interest.
  - Echoed by BRC.
  - NWSC policy positions urge needed reform on behalf of ratepayers.
  - Nuclear waste policy reform will aid in preserving (and in some cases, opening up) the nuclear option for future generations.

NWSC Information

- Website: *www.theNWSC.org*
- Twitter: *www.Twitter.com/NWSCoalition*