NUCLEAR WASTE POLICY
Defining the Problem, Searching for Solutions

Thursday, May 19, 2 p.m. EDT | Presented by CSG South/SLC and CSG Midwest/MLC
Spent Fuel Storage: Defining the Problem

Commissioner Tim Echols
Georgia Public Service Commission
The Politics of Nuclear Waste

- Recycling
- Yucca Mountain
- Blue Ribbon Commission
Power Reactors Decommissioning Status

As of July 2015

Source: United States Nuclear Regulatory Commission, July 2015
Current Storage Methods

• Spent Fuel Pools
• Dry Cask Storage
• No Permanent Storage Solution
What Consumers Have Paid into the Nuclear Waste Fund
(in millions, as of December 31, 2014)

Nuclear Waste Fund balance is in excess of $35 billion, including fees paid, interest, expenses, and one-time fees plus interest still outstanding.

Source: U.S. Department of Energy
Plant Vogtle and Beyond

• Vogtle Units 3&4 (under construction)

• Georgia Power recently purchased 7,000 acres near Columbus, Ga., to serve as the future site of a possible nuclear power facility.

• Without movement of used fuel into storage, plants cannot continue to operate
America’s Power Supply Challenge

• As much as one-third of today’s coal-fired capacity may be lost in next 5-10 years
• 342,000 megawatts of gas-fired generation built since 1995 (75% of new capacity)
• Renewables will expand, but they’re not baseload

Echols joined other nuclear leaders at the World Nuclear Exhibition in Paris in October 2014. Here they cut the ribbon on the US Pavilion in an event dominated by French and Chinese business leaders.

Photo with David Blee of NIC and Reg Joiner of the US Embassy in France, credit Bryan Wilkes of Chicago Bridge and Iron
Despite closures, U.S. nuclear capacity is scheduled to increase by 2020.
Other Concerns

• Lifespan of spent fuel
• Safety
• Using momentum to mobilize towards a solution
$4,500,000 \sim $8,000,000 \times 100 \text{ years} = \\
$450,000,000 \sim $800,000,000 \times 60 \text{ reactor sites} = \\
$27,000,000,000 \sim $48,000,000,000,000
Thank you!

For more information on nuclear’s new chance, visit:
http://bit.ly/1zoc4Oc
Nuclear Waste Policy: Defining the Problem, Searching for a Solution

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For The Council of State Governments

May 19, 2016
Nuclear Plant Shutdowns: The Situation

- Reactor shutdowns
  - Four in 2013
  - One at the end of 2014
  - Two in 2015
  - One in 2016
- Crystal River 3, San Onofre 2 and 3 were unique events (expensive repairs for containment & steam generators replacement)
  - Over 110 PWRs (57 in the U.S.) have replaced steam generators
- Kewaunee, Vermont Yankee shut down because of adverse market conditions and Pilgrim (2019), Oyster Creek (2019) FitzPatrick (2017) and Ft. Calhoun (2016) will

The carbon-free electricity lost when San Onofre closed down was greater than the carbon-free electricity from all California’s wind and solar generating capacity

- San Onofre 2 & 3 generation in last full year of operation (2011) 18,097 GWh
- California wind and solar generation full-year 2013 16,985 GWh
Market Issues … In Brief

- Low growth (in some cases, no growth) in electricity demand coming out of 2008 recession
- Continuing surge in supply of low-cost shale gas
- Transmission constraints
- Price signals inadequate to support operating capacity or investment in new capacity (except gas-fired)
- Prices suppressed by RTO policies and actions, and by state and federal mandates and subsidies
- Fuel/technology diversity is taken for granted and undervalued
Nuclear Provisions in Clean Power Plan

• Credit for new reactors under construction
• Credit for uprates at existing nuclear facilities
• Does not address factors contributing to “at-risk” plants
• Does not provide credit for license renewal at existing reactors
• Incentivizes mass-based system and carbon credit trading
All US nuclear plants were designed with a spent fuel pool – size and configuration vary between reactors (e.g. each reactor has its own pool or common pool for two reactors).

Spent fuel pools were originally configured to contain a limited quantity of fuel – pool capacity increased through reracking.

Dry cask storage used when pool capacity reached.
Quantities of Used Fuel Stored By State
(metric tons as of end 2014)

Data Source: Gutherman Technical Services
Shutdown Sites Without An Operating Reactor

- **California**
  - Humboldt Bay
  - Rancho Seco
  - San Onofre
- **Colorado**
  - Ft. St. Vrain (DOE Fuel)
- **Connecticut**
  - Connecticut Yankee
- **Florida**
  - Crystal River
- **Illinois**
  - Zion
- **Maine**
  - Maine Yankee
- **Massachusetts**
  - Yankee Rowe
- **Michigan**
  - Big Rock Point
- **Oregon**
  - Trojan
- **Vermont**
  - Vermont Yankee
- **Wisconsin**
  - La Crosse
  - Kewaunee
LACBWR Key Facts

- BWR (50MWe)
- AEC demonstration reactor
- Owned by Dairyland Power Cooperative (DPC)
- Operated from 1967 to 1987
- Licensed site shared with operational fossil plant
Blue Ribbon Commission (BRC) 2012 Report

• Develop consolidated interim storage (CIS)
• Start with shutdown plants
• Need legislative authority/action to amend NWPA
Whether Spent Fuel Policy?

- House Republicans insist Yucca proceed as “law of the land”
- Legislation introduced in the House by Rep. Conaway (R-TX) for CIS
- Bipartisan group of Senators promote BRC/CIS interim solution
- Appropriations Chair Rep. Mike Simpson (R-ID) interested in CIS and Yucca
- Compromise?
Why CIS?

• Easier to build than Yucca
• Technology exists, could lead to better location than scattered existing locations
• Save federal dollars under NWPA – up to $50 billion if no or greatly delayed Yucca
Why Yucca?

- Law of the land, but political opposition
- Final disposition requires a site, Yucca has met EPA and NRC staff requirements
- CIS could be an unnecessary expense (move fuel twice)
- Concern CIS would become the permanent repository
Dairyland’s View

- Our annual cost is $2 million plus
- We need CIS and we need Yucca
- Support all efforts to move forward either
- Need a greater sense of urgency
- Politics, not science or technology, has been the issue
- Failure to address spent fuel issue will hamper new nuclear development
Closing Thoughts

• In an era of climate concern, loss of operating plants makes no sense
• Nation needs a nuclear policy based on science and respect for technology
• Politicians need to develop a realistic strategy for spent fuel
• State legislators can support realistic interim site projects
Questions?

Please submit them in the question box of the GoToWebinar taskbar.