Industry Outlook for Used Fuel Recycling

Rod McCullum, Nuclear Energy Institute
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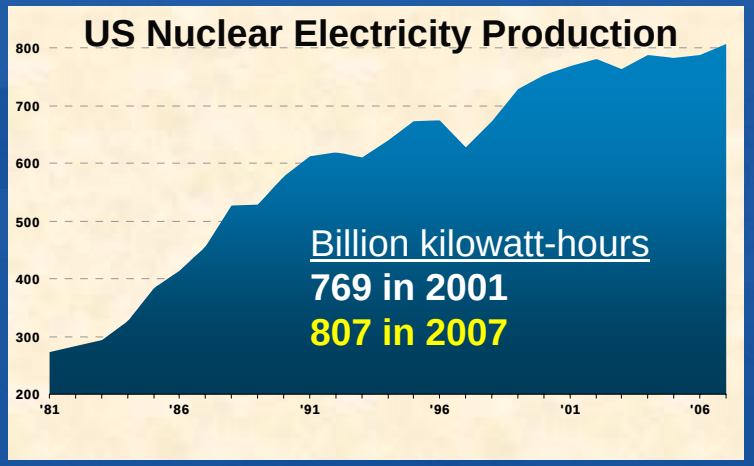
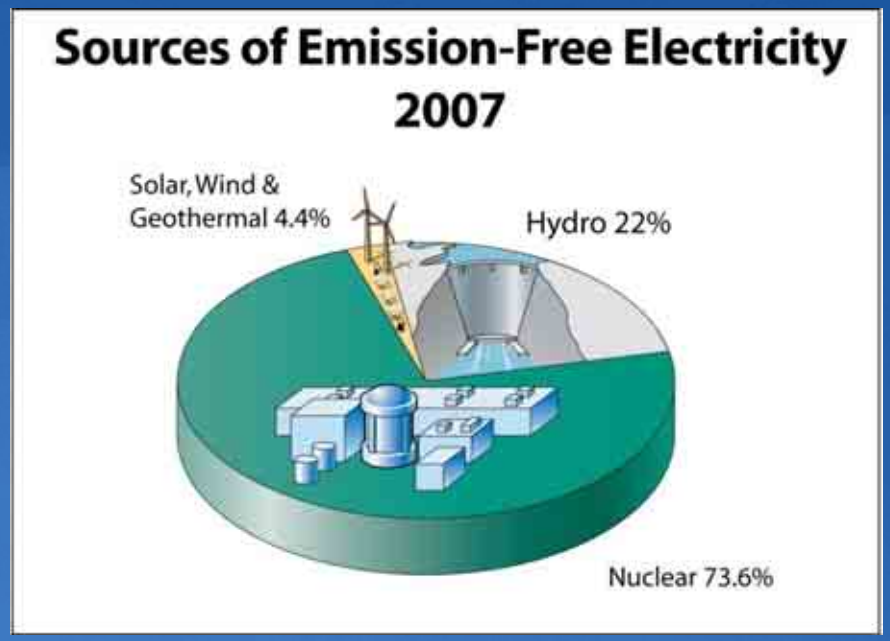
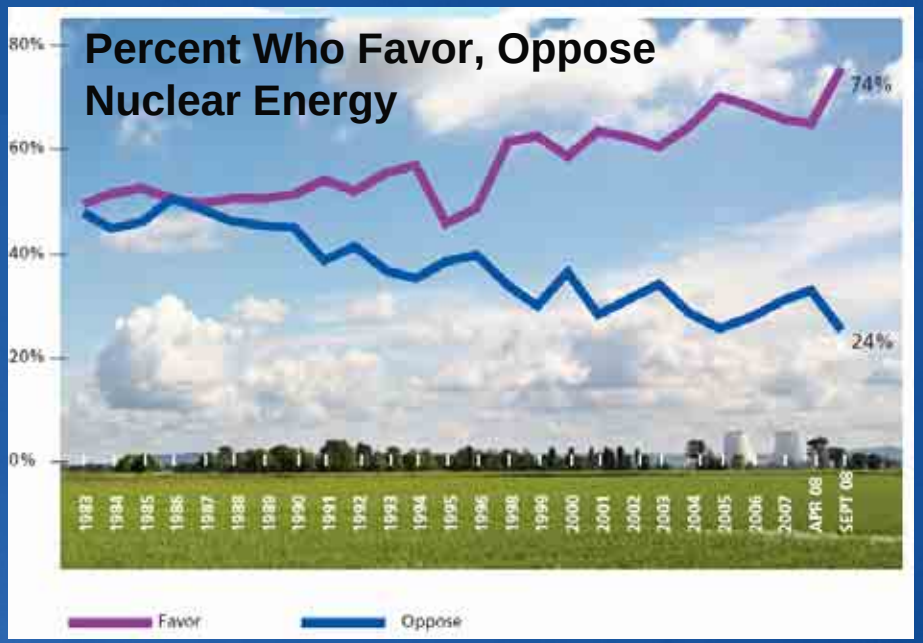
Nuclear Energy

- **Driven by strong public and policy-maker support, nuclear energy is poised for significant growth**







Potential New Nuclear Plants – 17 license applications submitted for 26 reactors, a total of 32 new reactors are under consideration

Used Nuclear Fuel Storage

- **Current used fuel inventory**
  - Approximately 60,000 MTU
  - ~2,000 additional MTU each year
- **Current dry storage inventory**
  - >13,000 MTU
  - >1100 casks/canisters loaded
  - At 47 sites
- **Future dry storage by 2020**
  - Estimating 25,300 MTU
  - 2,100 casks/canisters loaded
  - At 70 sites

Integrated Used Fuel Management

- **Three-pronged approach to used fuel management**
  - **Interim storage at reactors and in centralized location(s)**
  - **Research, development, demonstration, and commercial operation of recycling technologies**
    - **advanced used fuel reprocessing technologies**
    - **developing new type of fuel from reprocessed product**
    - **new reactor designs; waste reduction**
  - **Permanent disposal facility**
    - **Yucca Mountain site judged suitable by Congress in 2002**
    - **Yucca Mountain licensing process underway**
- **Current US Policy:**
    - **Secretary of Energy expressed support for recycling research and development during confirmation hearing**
    - **Specific "plan" to be developed**

Significant Progress in Used Fuel Management

- **DOE Standard Contracts for New Plants signed**
- **NRC Waste Confidence Rulemaking**
  - **Industry supports NRC's proposed rule**
    - **Comments submitted on 2/6 encouraged timely finalization as proposed**
  - **Proposal is soundly based on vast experience with dry cask storage and thorough consideration of future integrated used fuel management scenarios**
  - **Rule contemplates time to develop recycling technologies before disposal**

Interim Storage of Used Nuclear Fuel

- **Consolidate many sites into 1 or 2, easier to manage, provide security, and potentially lower costs**
- **Provide support for new nuclear plant construction**
- **Demonstrate centralization of used nuclear fuel**
- **Permit reactor operators to meet their obligation to local communities by completely decommissioning reactor sites at the end of their operating lifetimes**
- **Potential synergy with recycling technology development**

Used Nuclear Fuel Recycling

- **Technology choices must reduce proliferation risk**
- **Fuel Supply:**
  - **More fuel for a growing nuclear industry**
  - **Requires advanced reprocessing and fuel fabrication**
  - **Assures long-term sustainability of nuclear energy**
- **Waste Management:**
  - **Reduce volume, heat-load, and radiotoxicity associated with used nuclear fuel**
  - **Develop technologies in parallel with current practices and phase in when available on a production scale**

Questions Facing Recycling Technology Development

- **To what extent should present day technologies be used to form a bridge to advanced technology development?**
- **At what pace should research and development proceed and how should decision points be established?**
- **What is the most appropriate business model to assure technology deployment?**
- **What will the regulatory infrastructure look like?**
- **How can the program be best organized to assure long-term stability?**

Developing the Regulatory Infrastructure to Support Recycling

- **Current NRC regulations do not provide a clear path and process for licensing a recycling facility**
- **Industry's Closing the Fuel Cycle Task Force has submitted a White Paper to NRC outlining a proposed new regulation, Part 7x, to govern recycling facilities and has engaged NRC in a dialogue to encourage timely completion of rulemaking**
  - **Part 70 seen as best fit as recycling facilities are more analogous to fuel cycle facilities than Part 50 reactors**
  - **Risk-informed, performance based proposal addresses performance requirements, Integrated Safety Analysis (ISA), identification of Items Relied on for Safety (IROFs), assurance of IROF availability/reliability, change process, and reporting**
  - **Proposal designed to assure regulatory flexibility for a variety of facilities**
- **DOE's draft GNEP Programmatic Environmental Impact Statement provides a platform for completing the NEPA evaluation of recycling**
  - **Industry recommends DOE complete a Record of Decision opting to recycle**

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Disposal

- **Yucca Mountain licensing process under way**
  - **Staff technical review on schedule – for now**
  - **12 interveners have filed 321 contentions challenging the License Application**
  - **Industry is intervening in support of the project**
  - **Licensing progress is latest in two year track record of success – management improvements, contracts, milestones met, reports issued**
- **Significant cuts in the FY 09 and FY 10 Yucca funding likely**
  - **The specific impact of these cuts is not yet known**
  - **Under any scenario, repository development will be slowed considerably**
  - **Continuation of the licensing process can inform future decision-making**

Conclusion

- **Prospects for additional US Nuclear electricity generation are good**
- **Growing industry is pursuing an integrated approach to used fuel management**
- **The development of recycling technologies is an essential element of this approach**
  - **Key to long-term nuclear sustainability**
- **Now is a time of significant opportunity for forward looking planning on integrated used fuel management**