

Reactor and Fuel Cycle Technology  
Subcommittee -  
Addressing Comments on the Draft Reports

December 2, 2011



**BLUE RIBBON COMMISSION**  
ON AMERICA'S NUCLEAR FUTURE

## Process for Public Review and Comment

- Draft subcommittee report issued for public comment May 31, 2011; comments received from NGOs, industry associations, state regional groups, states and tribes, local governments and private citizens
- BRC draft report issued for public comment July 29; thousands of comments received
- Also received comments from the public meetings held in Denver, Atlanta, Boston, Washington and Minneapolis
- Many comments endorsed the overall strategy in the draft report; others offered specific changes or questioned specific findings and recommendations
- Comments reviewed and considered carefully

## Recurring Themes in Public Comments

- Fuel cycle recommendations ranged from immediate effort to “close” the fuel cycle; to avoiding reprocessing and maintaining the once-through fuel cycle; to shutting down reactors soon and stopping the production of spent fuel.
  - The U.S. should reprocess spent nuclear fuel “like France” does.
  - Operating plants should be shut down now, or as soon as their existing licenses expire.



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## Recurring Themes in Public Comments (cont.)

- Wide support for R&FCT RD&D
  - Additional reactor technologies should be considered.
  - Don't forget about existing U.S. RD&D facilities and their strategic importance.
- Additional comments
  - There are more fuel cycle activities occurring around the world than noted.
  - The nuclear industry should be more involved with government actions regarding nuclear.
  - Report should include actions taken since Fukushima to address reactor safety worldwide.



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## Proposed Changes

- **A recommendation to either “close” the fuel cycle or abandon reprocessing and maintain the once-through fuel cycle.**
- Many comments received on both sides of the argument reinforce the fact that no consensus exists in the United States on the desirability of closing the fuel cycle
- As our report notes, the Subcommittee could not reach consensus on this issue, and as a group we still conclude that it is premature at this point for the United States to commit irreversibly to any particular fuel cycle as a matter of government policy. Rather, there is a benefit to preserving and developing new options.



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## Proposed Changes (cont'd)

- **Report should include actions taken since Fukushima to address reactor safety worldwide**
  - Subcommittee report language changed to reflect support for actions taken by the international community since the accident, including:
    - IAEA's focus on enhanced international safety standards and expanded safety services;
    - WANO Commission tasked with recommending changes to both WANO programs and the organization as a result of the lessons from Fukushima;
    - Vendors adoption of additional and voluntary self-governance regimes and principles of conduct

# Proposed Changes (cont'd)

- **Operating plants should be shut down immediately or as soon as their existing licenses expire**
  - The Commission has not offered a judgment about the appropriate role of nuclear power in the nation's (or the world's) future energy supply mix
  - Wide support exists for RD&D to improve nuclear energy technology
    - The Subcommittee believes that judgments about the appropriate level of funding will ultimately depend on the overall resources available for energy innovation and must be made in the context of a broader assessment of energy policy goals



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## Proposed Changes (cont'd)

- **The U.S. should reprocess spent nuclear fuel “like France” does**
  - Subcommittee members travelled to France, Japan, and the United Kingdom to visit commercial reprocessing facilities
  - The Subcommittee believes that reprocessing “like France” does not fundamentally change the waste management challenge in the United States – i.e. regardless of the most aggressive implementation of current reprocessing technologies, the U.S. still needs an integrated waste management strategy that combines safe, interim storage of spent nuclear fuel with expeditious progress toward siting and licensing a permanent disposal facility or facilities.



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## Proposed Changes (cont'd)

- **Additional categories of reactor technologies should be considered**
- Report edited to reflect comment
  - Additional category of “game changing” reactor technology added
  - Example: A “minimized process” nuclear energy system is a system that does not utilize enrichment, reprocessing, or terrestrial uranium recovery. A system might be based on CANDU reactors (or possibly innovative graphite-based reactors) fueled with natural (as opposed to enriched) uranium. Uranium could be obtained from seawater to eliminate both mill tailings on the surface and subsurface contamination from *in situ* recovery. Waste management (at least for SNF) could involve high-irretrievability options to prevent future recovery and reprocessing.



## Proposed Changes (cont'd)

- **The nuclear industry should be more involved with government actions regarding the nuclear power enterprise**
- Report edited to reflect comment
  - Where appropriate, industry collaboration with government was recommended
- **There are more fuel cycle activities occurring around the world than noted in the subcommittee report**
- Report edited to reflect comments
  - Demonstration and licensing projects for high temperature reactors and fast reactors in China, Russia, and India added



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## Proposed Changes (cont'd)

- **Don't forget about existing U.S. facilities and their strategic importance**
- Report edited to reflect comments
  - Subcommittee recommends that DOE should leverage existing and nearly irreplaceable nuclear energy RD&D infrastructure and human capital to the greatest extent possible.
  - Subcommittee notes decommissioned facilities and loss of capabilities could significantly limit nuclear R&D efforts such as developing the technical basis for extended dry cask storage.



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