



U.S. DEPARTMENT OF
ENERGY

Nuclear Energy

Path Forward for Fuel Cycle Technologies

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TIO Approach

- **Objective:** Rapidly adapt program structures, priority, and content to new boundary conditions
- **Means:** “Leadership group” (Binder, Frazier, Herczeg, Marra, Peters) to work with NTD’s and Office Directors
- **Outcome:** To be completed internally by 11/18/2011

“Il nous faut de l’audace, encore de l’audace, toujours de l’audace”

- Danton, and others





Blue Ribbon Commission Draft Recommendations

- 1. A new, consent-based approach to siting future nuclear waste management facilities**
- 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 one or more geologic disposal facilities.**
- 5. Prompt efforts to develop one or more consolidated interim storage facilities**
- 6. Support for continued U.S. innovation in nuclear energy technology and for workforce development**
- 7. Active U.S. leadership in international efforts to address safety, waste management, nonproliferation, and security concerns**

* Areas where FCT can have a direct impact are shown in red



- It is likely that FCT will be significantly affected by Fukushima, even though the event is not yet fully understood (except by CNN...)
 - Development of accident tolerant fuels for LWRs
 - Movement of UNF out of “at risk” pools and away from certain reactors
 - Need for aggressive moves to demonstrate practical pathways for disposal

Fukushima Daiichi Nuclear Power Station





■ The Senate report calls for:

- Assessment of dry storage casks to establish a scientific basis for licensing
- Continued work on advanced fuel cycle options
- Research to assess disposal in different geological media
- Development of enhanced fuels and materials that are more resistant to damage in reactors and spent fuel pools



■ The report also calls for funding of:

- Expanding existing M&S capabilities to assess issues related to fuel storage in pools and dry casks
- Development and licensing of standardized canisters and casks
- Development of models for SNF management partnerships
- Characterization of geologic media.

Note: This language is not final, but it indicates possible future direction for the program

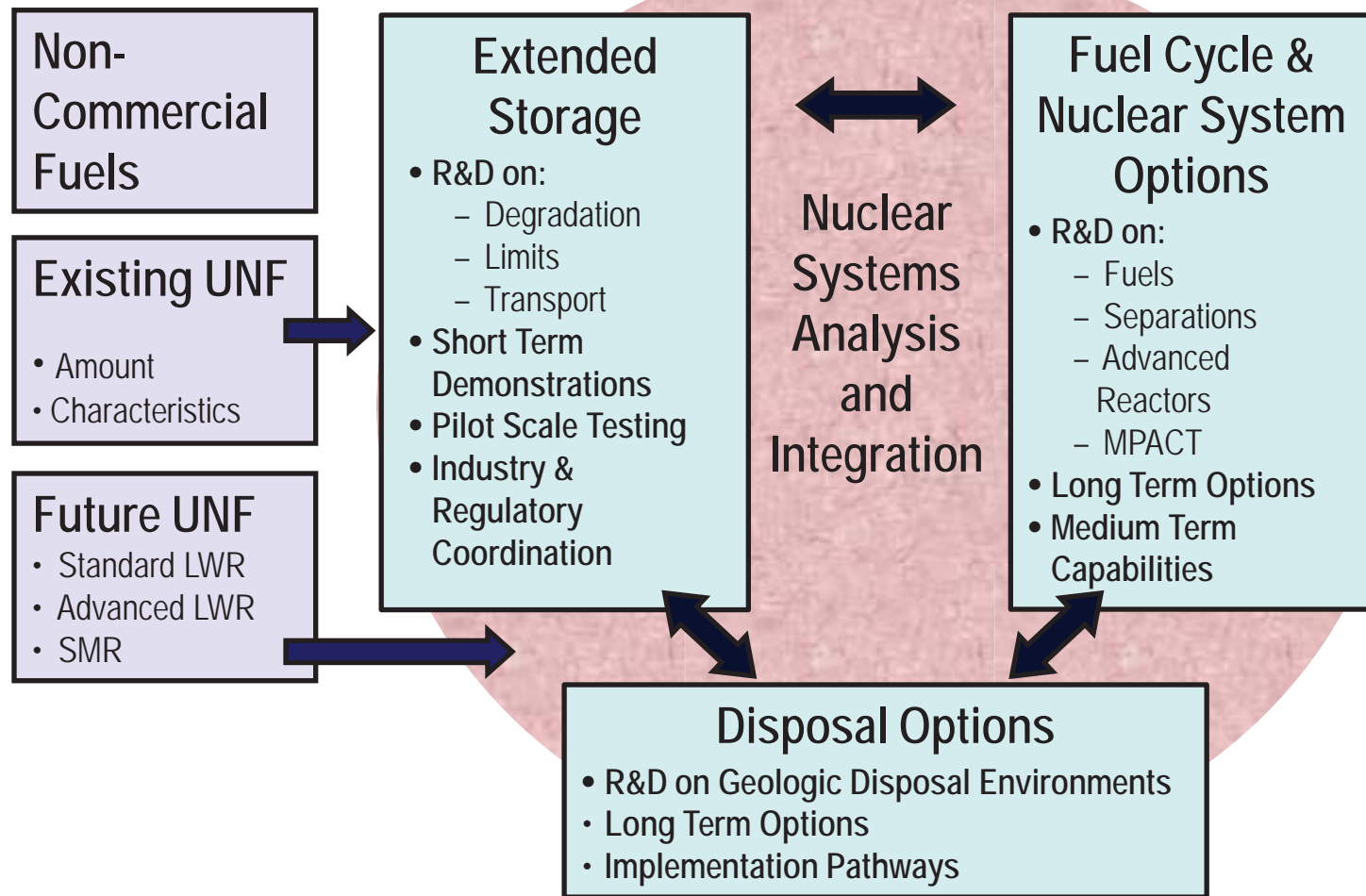


Consequences for FCT

- **Need for stronger integration between program components in order to:**
 - Develop and propose integrated solutions in the near-term
 - Understand integrated options in the long-term
- **Modify program structure to address these needs**
- **Modify technical scope when needed**
- **Establish new priorities**
- **We need to act, and act fast in order to demonstrate relevance and credibility**



FCT Program Organization





Program and Campaign Goals

■ Used Fuel Disposition

– Storage

- *R&D gap analysis tied to extended storage*
- *Integrate with industry*
- *Provide (or promote) leadership for implementing an effective path forward*

– Disposal

- *Create repository for technical information*
- *Provide (or promote) leadership for implementing an effective path forward*

■ Fuel Cycle Campaigns (Fuels, Separations/Waste Forms, MPACT)

- Provide long-term options
- Provide solutions to show-stopping issues
- Provide solutions to emerging issues

■ Systems Integration

- Integrate whole program
- Prepare for down selections
- Communications
- Help address non-technical issues

■ Technical Integration Office

- Integration with outside organizations (EM, etc)
- Focus and vision
- Establish priorities





- 1. Significant increase in focus on extended storage with clear path to implementation**
- 2. Possible earmarks for:**
 - Accident tolerant fuels
 - Modeling and simulation
- 3. Continue to look at a broad range of disposal options**
- 4. Fuel cycle work will mostly maintain its current focus**
- 5. Increased need for integration – both within the program, and with outside organizations**





Milestones and Path Forward

- **11/9: Meet with NTDs to finalize discussions**
- **11/17: NTDs and Feds to provide bulletized and prioritized list of actions**
 - Major changes expected with Systems group
 - Moderate changes expected with UFD, MPACT, and Fuels groups
 - Need to clearly state implementation objectives
 - TIO must develop a clear picture of external interactions (SC?, EM, NEAMS)
- **11/29: TIO to provide integrated plan (PowerPoint) to DOE**

- **12/13: Presentation to NEAC**
- **1/9: Presentation to Waste Board**
- **TBD: FY 2012 Budget**

