

Overview of the Draft Report of the Blue Ribbon Commission on America's Nuclear Future

August 2011



BLUE RIBBON COMMISSION
ON AMERICA'S NUCLEAR FUTURE

Origins and Charter

- The Blue Ribbon Commission on America's Nuclear Future was established in accordance with the provisions of the Federal Advisory Committee Act and as directed by the President's Memorandum for the Secretary of Energy dated January 29, 2010: Blue Ribbon Commission on America's Nuclear Future
- This Commission is chartered under the authority of the U.S. Department of Energy and will deliver its recommendations to the Secretary of Energy
- The purpose of the Commission is to conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle and recommend a new plan



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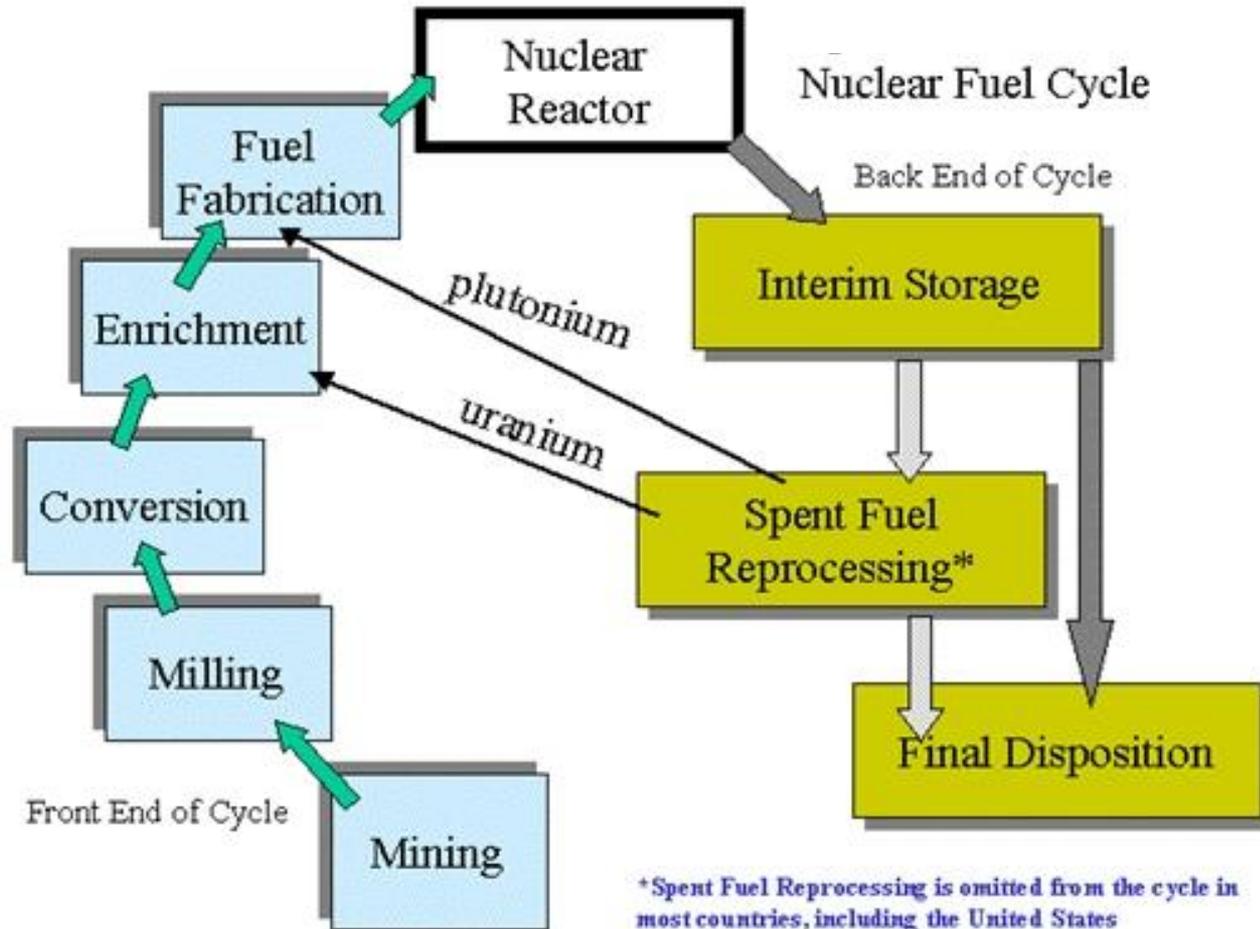
Members

- **Lee Hamilton**, Co-Chair - Director of The Center on Congress at Indiana University, former Member of Congress (D-IN)
- **Brent Scowcroft**, Co-Chair – President, The Scowcroft Group, and former National Security Advisor to Presidents Gerald Ford and George H. W. Bush
- **Mark Ayers**, President, Building and Construction Trades Department, AFL-CIO
- **Vicky Bailey**, Former Commissioner, Federal Energy Regulatory Commission; Former Indiana PUC Commissioner; Former DOE Assistant Secretary for Policy and International Affairs
- **Albert Carnesale**, Chancellor Emeritus and Professor, UCLA
- **Pete V. Domenici**, Senior Fellow, Bipartisan Policy Center; former U.S. Senator (R-NM)
- **Susan Eisenhower**, President, Eisenhower Group, Inc.
- **Chuck Hagel**, Distinguished Professor at Georgetown University, Former U.S. Senator (R-NE)
- **Jonathan Lash**, President, World Resources Institute
- **Allison Macfarlane**, Assoc. Professor of Environmental Science and Policy, George Mason Univ.
- **Richard A. Meserve**, President, Carnegie Institution for Science, and former Chairman, U.S. NRC
- **Ernie Moniz**, Professor of Physics and Cecil & Ida Green Distinguished Professor, MIT
- **Per Peterson**, Professor and Chair, Dept. of Nuclear Engineering, Univ. of California – Berkeley
- **John Rowe**, Chairman and Chief Executive Officer, Exelon Corporation
- **Phil Sharp**, President, Resources for the Future; former Member of Congress (D-IN)



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Background



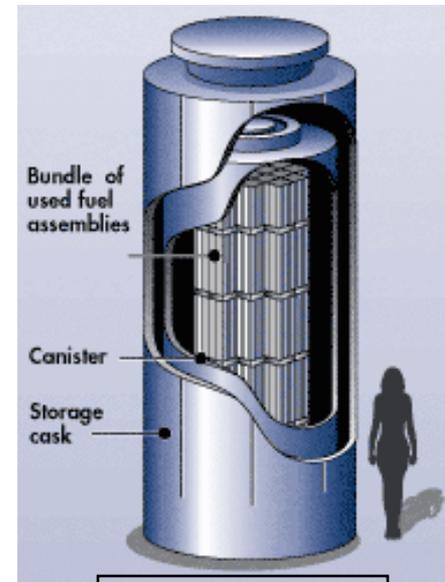
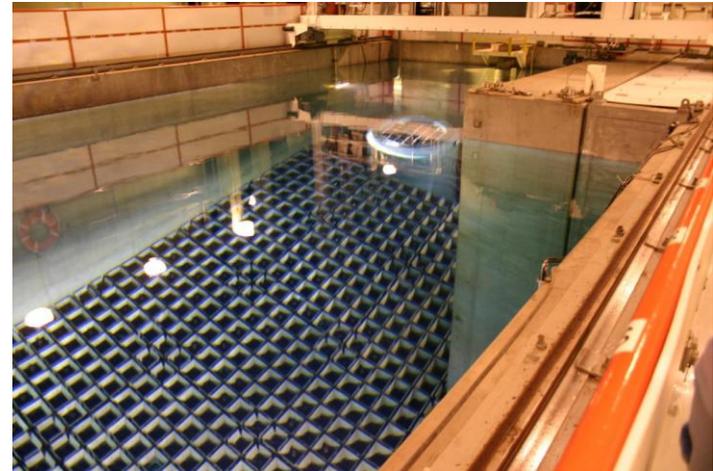
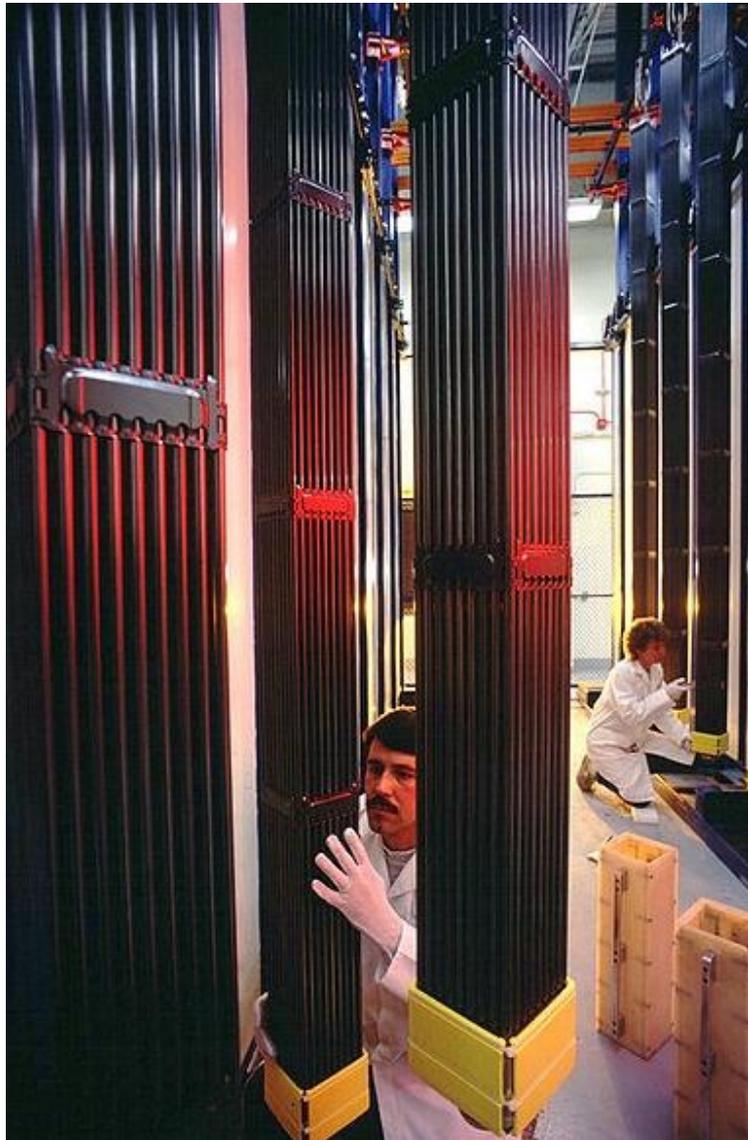


Image from NRC web site



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U.S. Commercial Nuclear Power Reactors—Years of Operation



Years of Commercial Operation

- △ 0-9
- ▲ 10-19
- ▲ 20-29
- ▲ 30-39

Number of Reactors

- 0
- 10
- 42
- 52

Source: U.S. Nuclear Regulatory Commission

Table 1. Status of Decommissioned Commercial Nuclear Power Reactor Sites in the U.S.

Plant	State	MTHM Stored at Site	MTHM in Pool Storage	MTHM in Dry Storage	Number of Casks	DOE Estimated Casks	Total Casks (Actual Plus Estimated)	Average MTHM/Cask
Big Rock Point	Michigan	68	0	68	7	—	7	8.3
Haddam Neck	Connecticut	412	0	412	41	—	41	10.1
Humboldt Bay ^a	California	29	0	29	5	—	5	5.8
LaCrosse ^b	Wisconsin	38	38	0	5	—	5	7.6
Maine Yankee	Maine	542	0	542	60	—	60	9.0
Rancho Seco	California	228	0	228	21	—	21	10.9
Trojan	Oregon	359	0	359	34	—	34	10.6
Yankee Rowe	Massachusetts	127	0	127	15	—	15	8.5
Zion 1 & 2 ^c	Illinois	1,019	1,019	0	—	106	106	9.6
TOTALS		2,813*	1,057	1,756*	188	106	294	—

NOTE: ^aDry storage underway in 2008. Holtec canister has capacity of 80 assemblies (five canisters for the 390 assemblies).

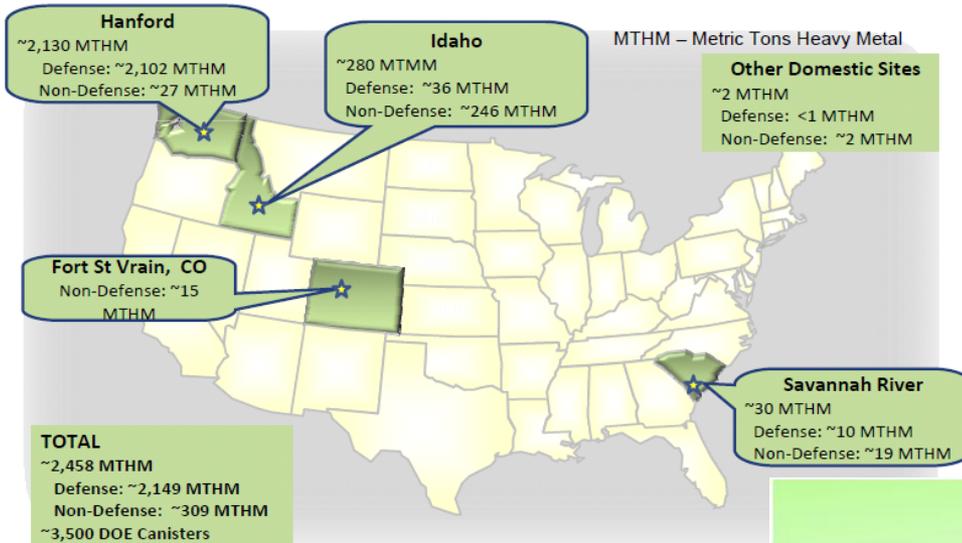
^bDry storage contract entered with NAC for five NAC-MPC canisters. Dry storage schedule indicates target completion by the end of 2010.

^cDecommissioning contract entered with EnergySolutions. Canisters estimated using FuelSolutions W21 capacity. Target schedule for completion is 2013.

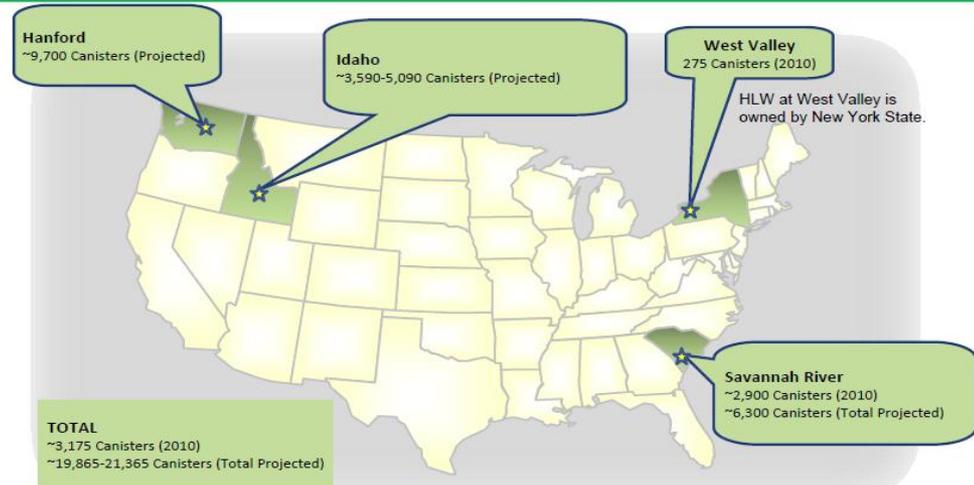
DOE = U.S. Department of Energy; MPC = multipurpose canister; NAC = Nuclear Assurance Corporation.

*Totals might differ from sums of values due to rounding.

Current SNF Inventory (2010)



2010 DOE HLW Inventory



Activities to Date

- Full Commission meetings/Commissioner site visits:
 - March 2010 – Where are we and how did we get here?
 - May – Getting the issues on the table; three subcommittees formed – Reactor & Fuel Cycle Technology; Transportation & Storage; Disposal
 - July – Hanford visit: a community’s perspective
 - September – Crosscutting issues: governance, siting, international implications, ethical & societal foundations
 - October – Visits to Sweden and Finland
 - November – International perspectives, working with the states, expert advice
 - January 2011 – Visits to SC/GA (Savannah River) and NM (WIPP)
 - February - Visits to Japan, Russia and France; meeting on crosscutting issues: organizational form and scope, siting, financial considerations
 - March – Issued staff-developed report on “What We’ve Heard”
 - May – NRC/DOE reviews post-Fukushima; discussion of draft subcommittee recommendations to the full Commission
 - July – Draft report submitted to Secretary of Energy; public comment period begins



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Draft Report – Overview of Key Recommendations

The strategy the Commission recommends has seven key elements:

1. An approach to siting and developing nuclear waste management and disposal facilities in the United States that is adaptive, staged, consent-based, transparent, and standards- and science-based.
2. A new, single-purpose organization to develop and implement a focused, integrated program for the transportation, storage, and disposal of nuclear waste in the United States.
3. Assured access by the nuclear waste management program to the balance in the Nuclear Waste Fund and to the revenues generated by annual nuclear waste fee payments.
4. Prompt efforts to develop, as expeditiously as possible, one or more permanent deep geological facilities for the safe disposal of spent fuel and high-level nuclear waste.



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Draft Report – Overview of Key Recommendations (cont'd)

The strategy the Commission recommends has seven key elements:

5. Prompt efforts to develop, as expeditiously as possible, one or more consolidated interim storage facilities as part of an integrated, comprehensive plan for managing the back end of the nuclear fuel cycle.
6. Stable, long-term support for research, development, and demonstration (RD&D) on advanced reactor and fuel cycle technologies that have the potential to offer substantial benefits relative to currently available technologies and for related workforce needs and skills development.
7. International leadership to address global non-proliferation concerns and improve the safety and security of nuclear facilities and materials worldwide.



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Draft Report – Additional Findings and Recommendations

- The current division of regulatory responsibilities for long-term repository performance between the NRC and the EPA is appropriate and should continue. The two agencies should develop new, site-independent safety standards in a formally coordinated joint process that actively engages and solicits input from all relevant constituencies.
- The jurisdictions of safety and health agencies should be clarified and aligned. New site-independent safety standards should be developed by the safety and health agencies responsible for protecting nuclear workers through a coordinated joint process that actively engages and solicits input from all relevant constituencies. Efforts to support uniform levels of safety and health in the nuclear industry should be undertaken with federal, industry, and joint labor–management leadership. Safety and health practices in the nuclear construction industry should provide a model for other activities in the nuclear industry.
- The roles, responsibilities, and authorities of local, state, and tribal governments with respect to facility siting and other aspects of nuclear waste disposal must be an element of the negotiation between the federal government and the other affected units of government in establishing a disposal facility. All affected levels of government (i.e., local, state, tribal, etc.) must have, at a minimum, a meaningful consultative role in important decisions; additionally, states and tribes should retain—or where appropriate, be delegated—direct authority over aspects of regulation, permitting, and operations where oversight below the federal level can be exercised effectively and in a way that is helpful in protecting the interests and gaining the confidence of affected communities and citizens. At the same time, local, state, and tribal governments have responsibilities to work productively with the federal government to help advance the national interest.



Draft Report – Additional Findings and Recommendations

- Recognizing the substantial lead-times that may be required in opening one or more consolidated storage facilities, dispersed interim storage of substantial quantities of spent fuel at existing reactor sites can be expected to continue for some time. The Commission sees no unmanageable safety or security risks associated with current methods of storage (dry or wet) at existing sites in the United States. However, to ensure that all near-term forms of storage meet high standards of safety and security for the multi-decade-long time periods that they are likely to be in use, active research should continue on issues such as degradation phenomena, vulnerability to sabotage and terrorism, full-scale cask testing, and other matters.
- The Commission recommends that the National Academy of Sciences (NAS) be tasked with carrying out an assessment of the lessons learned from Fukushima and their implications for conclusions reached in earlier NAS studies on the safety and security of spent fuel and high-level waste storage arrangements.
- Spent fuel currently being stored at shutdown reactor sites should be “first in line” for transfer to consolidated interim storage.



Draft Report – Additional Findings and Recommendations

- Although regulatory standards for different types of facilities will differ, the new organization should be responsible for developing consolidated interim storage and permanent disposal facilities and should apply the same principles of decision making to all aspects of the waste management program (i.e., science-based, consent-based, transparent, phased, and adaptive).
- Siting processes for future waste management facilities should include a flexible and substantial incentive program.
- The current system of standards and regulations governing the transport of spent fuel and other nuclear materials has functioned well, and the safety record for past shipments of these types of materials is excellent. However, planning and coordination for the transport of spent fuel and high-level waste is complex and should commence at the very start of a project to develop consolidated storage capacity.



Draft Report – Additional Findings and Recommendations

- The federal government should take steps to resolve ongoing litigation between the Department of Energy and the utilities regarding fuel acceptance as expeditiously as possible.
- A well-designed federal RD&D program will enable the United States to retain a global leadership position in nuclear technology innovation. Public and private RD&D efforts should focus on two distinct areas of opportunity:
 - Near-term improvements in the safety and performance of existing light-water reactor technology, as currently deployed in the United States and elsewhere as part of a once-through fuel cycle, and in the technologies available for storing and disposing of spent nuclear fuel and high-level waste.
 - Longer-term efforts to advance potential “game-changing” nuclear technologies and systems that could achieve very large benefits across multiple evaluation criteria compared to current technologies and systems.
- A portion of federal nuclear energy RD&D resources should be directed to the NRC to accelerate a regulatory framework and supporting anticipatory research for novel components of advanced nuclear energy systems. An increased degree of confidence that new systems can be successfully licensed is important for lowering barriers to commercial investment.



Schedule and Next Steps

- Charter requires final report by 1/29/12
- Outreach effort to solicit feedback on draft Commission report
 - Meetings co-hosted with regional state government groups
 - Invited talks to interested organizations
- Other visits and meetings as necessary



Contact Us

- We always welcome written input – submit to brc@nuclear.energy.gov
- Follow the work of the Commission – www.brc.gov
 - Meeting information
 - Webcasts/video archives
 - Comments
 - Commissioned papers



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Backup Slides

Summary of input to-date

- March 2011 – issued staff “What We’ve Heard” report
 - Summarizes major themes heard thus far in seven broad areas:
 - Program Governance and Execution
 - Nuclear Waste Fee and Fund
 - Approach to Siting
 - Reactor and Fuel Cycle Technologies
 - Transport of Spent Fuel and HLW
 - Storage of Spent Fuel and HLW
 - Disposal System
 - Available at www.brc.gov
 - Comments welcome
 - brc@nuclear.energy.gov

