Department of Health and Human Services
Maine People Living
Safe, Healthy and Productive Lives

Paul R. LePage, Governor Mary C. Mayhew, Commissioner

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April 22, 2013

MEMORANDUM

TO: Senator John Cleveland and Representative Barry Hobbins, Co-Chairs of the Joint Standing Committee on Utilities, Energy and Technology

FROM: Mary C. Mayhew, Commissioner
Department of Health and Human Services

SUBJECT: 2012 Report of Oversight Activities and Funding of the Interim Spent Fuel Storage Facility Oversight Fund

Legislation enacted in the spring of 2008 requires the Radiation Control Program in the Department of Health and Human Services to provide an annual summary review of activities conducted regarding the public health and safety of the interim spent fuel storage facility and timely performance of the US. Department of Energy regarding the removal of spent fuel. The report must be submitted annually to the Joint Standing Committee on Utilities, Energy and Technology by February 15th.

The enclosed report provides the information required under Title 22 of the Maine Revised Statutes §670, as enacted under Public Law, Chapter 539, in the second regular session of the 123rd Legislature.

Should you have questions about its content, please feel free to contact Mr. Jay Hyland, P.E., Program Manager, Radiation Control Program, at 287-5677.

MCM/klv

Enclosure

cc: Kathleen Newman, Deputy Chief of Staff, Governor's Office
Dr. Sheila Pinette, Director, Maine Center for Disease Control and Prevention
Patricia W. Aho, Commissioner, Department of Environmental Protection
Richard Davies, Maine Public Advocate, Office of the Public Advocate
Lt. Anna Love, Special Services Unit, Department of Public Safety
James Connell, VP, Maine Yankee Atomic Power

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2012 Report of Oversight Activities and Funding

of the

The Interim Spent Fuel Storage Facility Oversight Fund

prepared for

Joint Standing Committee on Energy, Utilities and Technology

Pursuant to 22 MRSA §670

2012 Report of Oversight Activities and Funding
of the
The Interim Spent Fuel Storage Facility Oversight Fund

EXECUTIVE SUMMARY

The Radiation Control Program, Maine CDC, DHHS (the Department) has prepared the following report which specifically details the costs and activities, conducted under the Interim Spent Fuel Storage Facility Oversight Fund (the Fund), for calendar year 2012. The reporting parties are the Department of Health and Human Services, the Department of Environmental Protection, the Office of Public Advocate, the Department of Public Safety, and Maine Yankee (the Oversight Group). Each of the organizations represented on the group has reported their specific activities over the year. The Oversight group proposes that the Oversight Fund only bill Maine Yankee for the necessary funding up to the statutory limit (22 MRSA §669) depending on agreement of the Oversight Group for the budget of that calendar year.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Radiation Control Program, Maine CDC

The Oversight Group is tasked with all state oversight of the Independent Spent Fuel Storage Installation (ISFSI) which is the facility in Wiscasset where all the spent nuclear fuel and greater than class C radioactive waste are stored. The Oversight fund is a non-lapsing state fund paid by Maine Yankee in quarterly installments as established by 22 MRSA §668.

The Maine CDC's Radiation Control Program (RCP) was charged with the financial oversight of the Fund and for holding regular meetings of the Oversight group as defined in 22 MRSA §670. The Oversight group met four times during 2012 (January 17, April 10, July 10, October 19).

The RCP involvement is primarily through the program manager and included the following activities that are budgeted to account for 18% of the manager's time:

- Review of State Nuclear Safety Inspector's monthly reports and annual report.
- Billing and disbursement of Fund monies in accordance with budget.
- Bi-weekly conference calls with Nuclear Waste Strategy Coalition.
- Quarterly conference calls regarding Federal Energy Regulatory Commission rate case settlements and interim spent fuel storage alternatives.
- Preparation and attendance at the annual meeting with Maine Yankee Citizen's Advisory Panel.
- Preparation of Annual Report to Legislature of Oversight group.
- Quarterly meetings of the Oversight group.
- Maintaining Website.
- Quarterly environmental radiation samples for monitoring of environmental contamination.

The RCP changed the 2012 budget sheet, from the one submitted with this report last year, to show some financial agreements made by the Oversight group during 2012. The issue was that the Department of Public Safety funding levels had been highly variable over the last few years making the budget process more challenging. The Oversight group agreed that a consistent amount should be budgeted to the Department of Public Safety every year. This amount is depicted on the budget sheet for 2013 at the end of this report. The changed 2012 budget sheet also attached to this report.

The State Nuclear Safety Inspector, whose salary is paid by the Oversight Fund, reimbursed the fund for time spent assisting the x-ray inspection program, as they were last year, and are included in the income column on the budget sheet referenced as "REIMBURSEMENT FROM OTHER PROGRAM". The State Nuclear Safety Inspector's vacation and sick time earned but not taken after 2012 will remain in the Oversight fund account up to the maximum limit of accrued time until it is used. Any new earned time for 2013 will be added to the account up to the maximum time allowed.

The RCP will continue to budget this account using these constructs in the future, adding in earned time, subtracting time taken, and subtracting time spent on other projects, with balancing monetary transfers happening once per year.

The Radiation Control Program expects a relatively stable budget for DHHS, Office of the Public Advocate, Department of Environmental Protection and the Department of Public Safety for the future based on the budget for the 2013 calendar year. The current financial assessment paid by Maine Yankee will be more than adequate for the next few years based on these expected needs. Currently, the surplus in this fund is rolled over to the next year which is the requirement of the State Nuclear Safety Program (22 MRSA 159-A). The Oversight group has discussed different alternatives to balance the income and expenditures of the Oversight Fund. The group has decided that rather than suggest legislative action to change the amount of funding that must be provided by Maine Yankee that it will bill Maine Yankee for only the quarterly amounts needed as projected in the annual budget. This flexibility provides the oversight group with the necessary resources to adjust the budget in the future while being financially responsible to the funding party.

Office of Nuclear Safety

The State Nuclear Safety Inspector (SNSI) was established by Title 22 Chapter 159-A. This chapter also required the SNSI to provide monthly reports, an annual report of activities, and an annual report regarding revenues and expenditures to the Legislature. The monthly reports and the annual activities reports can be found at: www.maineradiationcontrol.org and may help answer any questions.

Legislative Mandates

- Submitted monthly reports to the Legislature for the months of December 2011 and January through December of 2012 on SNSI activities at the Maine Yankee site.
- Participated in the quarterly meetings of the oversight group overseeing the Maine Yankee site.

Submitted the annual accounting report of all revenues received and disbursed from the Interim Spent Fuel Storage Facility Oversight Fund to the Joint Standing Committee of the Legislature having jurisdiction.

- Provided current and projected activities' reports for inclusion in the Radiation Control Program's Annual Oversight and Funding Report to the Joint Standing Committee of the Legislature.
- Submitted SNSI's 2010 and 2011 Annual Activities Reports.

Radiological Environmental Monitoring Program

- Performed quarterly thermo-luminescent dosimetry (TLD) field replacements around the ISFSI to measure ambient radiation levels.
- Maintained the consolidation of the Maine Yankee environs, ISFSI and Bailey Cove TLD programs into one TLD program monitoring the ISFSI.
- Maintained two year assessment program to better quantify the impact of transit and storage exposures associated with the State's TLDs used around the ISFSI.

Decommissioning

- Prepared external consultant's list for review of the Confirmatory Summary Report detailing the State's involvement and findings from the decommissioning.
- Contacted and confirmed external consultants willing to review the Confirmatory Summary Report.
- Disposed all of the decommissioning water samples and at least 30% of the decommissioning soil samples in storage.

Independent Spent Fuel Storage Installation (ISFSI)

- Reviewed shift status reports on the ISFSI's daily operations.
- Participated in the annual Emergency Plan training and exercise.
- Participated in periodic Maine Yankee communications drill with the State Police.
- Maintained training and background checks for site and security clearance access and safeguards qualifications for security sensitive information.
- Participated in the periodic inspection for security and ISFSI programs by the U.S. Nuclear Regulatory Commission.
- Reviewed and commented, when appropriate, on Maine Yankee submittals to the U.S. Nuclear Regulatory Commission on exemption requests to their regulations, Emergency Plan, Off-Site Dose Calculation Manual, Annual Radiological Environmental Operating Report, Annual Effluent Release Report, Annual Decommissioning Funding Assurance Status Report, Annual Special Nuclear Material Report and Annual Individual Monitoring Report on personnel exposure.

Other Noteworthy Activities

- Participated in quarterly Federal Energy Regulatory Commission rate case settlement briefings on the litigation status on the Maine Yankee, Connecticut Yankee and Yankee Rowe in Massachusetts lawsuits against the U.S. Department of Energy.

- Participated in periodic briefs as the State's representative to the Northeast High Level Radioactive Waste Transportation Task Force (NEHLRWTTF), an affiliate of the Council of State Governments, Eastern Regional Conference.
- Attended the Department of Energy's annual National Transportation Stakeholders Forum.
- Represented the northeast on the Department of Energy's national ad hoc working groups on "proposed shipping report improvements" and "communications" with states and tribes.
- Participated in bi-monthly Nuclear Waste Strategy Coalition conference calls on the national and congressional issues raised with the Obama Administration's opposition to the geologic repository at Yucca Mountain in Nevada and the de facto imposition of long term storage of spent nuclear fuel and high level waste at existing operating and decommissioned reactor sites.

State Nuclear Safety Inspector Projected Activities for 2013

1. Complete the annual oversight fund report to the Legislature.
2. Maintain tracking system on invoices to better reflect actual expenditures.
3. Provide annual activities summary to the Radiation Control Program for inclusion in the Program's annual report to the Legislature.
4. Submit monthly reports to the Legislature and other interested parties.
5. Provide an annual report to the Legislature on the State Nuclear Safety Inspector's activities for the previous calendar year.
6. Review daily operations reports from the Independent Spent Fuel Storage Installation (ISFSI) for trends, issues, condition reports, etc.
7. Review and comment, if appropriate, on Maine Yankee's five annual reports to the U.S. Nuclear Regulatory Commission (NRC) or any other correspondence with the NRC.
8. Participate in the annual NRC inspection of the ISFSI, or any other NRC inspection.
9. Participate in the annual Maine Yankee emergency plan training and exercise.
10. Provide an annual update to local representatives on the Maine Yankee Community Advisory Panel on the State's activities.
11. Advise senior state officials on any spent fuel storage issues that may impact public health and safety.
12. Maintain an appropriate independent environmental surveillance program of the Maine Yankee environs and assess public health impact from ISFSI operations.
13. Assess the appropriateness of maintaining or eliminating the State's two solar powered environmental radiation detectors on Bailey Point and the old west Forebay Dike.
14. Implement and perform a neutron survey of the ISFSI.
15. Act as the State's radiation expert to the Department of Environmental Protection's (DEP) on radiation issues.
16. State representative to the Council of State Governments Eastern Regional Conference's Northeast High Level Radioactive Waste Transportation Task Force on spent fuel and high level waste shipments.
17. Contract with consultants to perform an independent review of the State's Confirmatory Summary Report on the Maine Yankee decommissioning.
18. Finalize and issue the Confirmatory Summary Report.

19. Develop disposal criteria for disposing approximately at least 50% of the remaining decommissioning soil samples in storage.
20. Ensure all the data, analyses and reports issued by the State's decommissioning consultant are captured in a retrievable format for archiving.
21. Collaborate with State Archives in developing a storage and retrieval system for historical operating and decommissioning information on Maine Yankee.
22. Forward appropriate State Nuclear Safety Inspector's files (several hundred boxes) to State Archives.
23. Request from Maine Yankee gamma survey information on the ICI sump and surveyed buildings and appropriate ISOCS information for remediation or final status release.
24. Complete printing and binding of all photos of the Maine Yankee decommissioning.
25. Develop a list of state's lessons learned from the decommissioning.
26. Evaluate the distribution of radioactive environmental contaminants from the site characterization and marine sediment/tidal study samples.
27. Develop a timetable for issuing eleven special technical summary reports covering historical operational and decommissioning events at Maine Yankee.
28. Forward up to 30 selected soil samples to the Environmental Protection Agency (EPA) for in depth analysis of transuranics and hard-to-detect radioactive elements.
29. Develop and implement a review schedule for Maine Yankee's final status survey release reports and engineering calculations.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Resource Conservation Recovery Act Chemical Sampling of Groundwater

This monitoring program started in September 2005 and is scheduled to terminate 30 years from that date. Baseline monitoring was conducted from 23 wells (reduced to 21 wells after June 2008) on a quarterly basis during the months of September, December, March and June for a three year period that ended with the submittal of the *Third Annual Report of Groundwater Monitoring of Bailey Point, September 2007 – June 2008, With Three-Year Monitoring Overview and Trend Analysis, Wiscasset, Maine, December 16, 2008.* Additional chemical monitoring is to be conducted three times per year every fifth year until 2033, and three times per year for the final two years (2034 and 2035). The next RCRA groundwater monitoring event at Maine Yankee will occur in September, 2013.

Radiological Sampling of Groundwater

The last radiological sampling was conducted in March and June of 2010. Due to laboratory issues, some data were compromised. Maine Yankee agreed to resample and analyze in late 2010 in order to obtain complete and accurate data. The laboratory and compromised data issues were addressed to the satisfaction of Maine's State Nuclear Safety Inspector's in Maine Yankee's final radiological sampling report, *Annual Groundwater Monitoring of Bailey Point, September 2009 – October/November2010, Wiscasset, Maine, Rev. 1.* As stated in a December 5, 2011 letter from Harold Nilsson (Maine DEP) to James Connell (Maine Yankee), the State considers the report acceptable,

and all groundwater radiological monitoring tasks at Maine Yankee to be satisfactorily completed.

Natural Resource Damage Assessment
Montsweag Brook continues to recover various stream and riparian habitats resulting from the 2010 dam removal.

Anticipated Activities
Project Manager (Harold Nilsson): Project orientation, attend meetings, coordinate communications with Department staff, Maine Yankee personnel and DHS, coordinate review of technical data by Department staff, monitor financial accounts, prepare correspondence.

Project Geologist (Rob Peale): Review and comment on groundwater monitoring issues.

Project Chemist (Deb Stahler): Review and comment on technical issues. Monitor quality assurance for analytical data.

Database Manager (Diana McKenzie): Configure analytical data for the Department's EGAD database.

Environmental Supervisor (Stacy Ladner): Project orientation, assist Project Manager.

Division Director (Scott Whittier): Assist Environmental Supervisor and Project Manager.

Clerical Support (varied): Clerical personnel support for copying, mailing, phone communications.

DEPARTMENT OF PUBLIC SAFETY

In 2012 the State Police and Maine Yankee facility personnel continued to maintain and improve their relationship through intelligence sharing initiatives and specialized team response capability. The Tactical Team continued to drill and prepared to respond in the event that a hostile or violent incident occurs. The State Police Incident Management Assistance Team (IMAT) is prepared to respond to coordinate large scale responses and interface with the State and Federal agencies. Since last year, another IMAT Commander has been cleared at the secret level through the Department of Homeland Security. Both Teams have trained and participated in various exercises across the state to better prepare for a potential response. This past year both the Tactical Team and the IMAT Team participated in a training exercise that involved Maine Yankee staff. This exercise not only continued to enhance the working relationships between staff members but also identified vulnerabilities. As a result of those exercises, steps have been taken to mitigate those vulnerabilities. New members of each team familiarized themselves with the facility at this time as well.

A replacement plan has been developed to utilize the money from the Interim Spent Fuel Storage Facility Oversight Fund to support and maintain the tactical response capability of the Tactical Team. The periodic equipment purchases are necessary to replace equipment

that is outdated and no longer provides the protection to the wearer due to its finite shelf life. This replacement cycle that has been developed only includes equipment that is directly related to the protection of public health and safety if the State Police respond to an incident at the Independent Spent Fuel Storage Installation.

Maine's designated Fusion Center (State Police-MIAC) continues to monitor classified and unclassified intelligence and threat streams and are able to identify items that my affect Maine Yankee. This information is shared with Maine Yankee when appropriate. Periodic updates are given on issues that impact Maine at quarterly meetings as well. Maine Yankee is also now notifying Fusion Center Staff when they have any suspicious incidents that occur at or around their facility. This is a relationship that will continue to grow and mature as staff matures and relationships continue to develop at both facilities. The Fusion Center also participated in the exercise that the Tactical Team and the IMAT Team participated in this past year as well. Department of Public Safety staff will continue to train with Maine Yankee staff in the following year to further enhance response capabilities, familiarize staff with the facility and develop relationships.

OFFICE OF THE PUBLIC ADVOCATE

During the past year, the Office of Public Advocate has had no cases before the Maine Public Utilities Commission, or the Federal Energy Regulatory Commission, regarding Maine Yankee or the ISFSI at the site of the former Maine Yankee atomic power plant in Wiscasset.

Our only activities have been participation in the quarterly meetings of the Oversight Group.

The Office of Public Advocate has had no proceedings this past year regarding Maine Yankee and the ISFSI, but is preparing for a FERC rate case this spring in which the funds received by Maine Yankee, as reimbursement for the US Department of Energy's failure to carry out its contractual obligations to begin removing Maine Yankee's spent fuel, will be returned to the benefit of Maine ratepayers of CMP and Bangor Hydro/Maine Public Service.

MAINE YANKEE ATOMIC POWER COMPANY

Spent Nuclear Fuel Removal/Disposal Update

Spent Nuclear Fuel removal: the Federal Government's obligation

As required by contract and the Nuclear Waste Policy Act (NWPA), the U.S. Department of Energy (DOE) was to begin removing spent nuclear fuel (SNF) and Greater than Class C waste (GTCC) from Maine Yankee by the end of 1998. As a Nuclear Regulatory Commission (NRC) licensee it is Maine Yankee's responsibility to safely and securely store the SNF in accordance with all applicable regulations. Recognizing that the DOE will legitimately challenge the prudence and appropriateness of all expenditures, the current annual cost to ratepayers for Maine Yankee's Independent Spent Fuel Storage Installation is approximately $8 million. However, that annual cost could well increase as regulations evolve and potentially impose additional requirements on the company.

Given the uncertainty over federal policy for the removal of SNF, this material could remain stored at Maine Yankee for many years.

Favorable federal court ruling after 14 years of litigation between Yankee Companies and DOE

On May 18, 2012 the U.S. Court of Appeals confirmed the 2010 U.S. Court of Federal Claims damages awards to Maine Yankee of $82 million; Connecticut Yankee in the amount of $39.7 million; and increased the award to Yankee Atomic to $38.3 million. The damages awards to the three companies are for the costs incurred through the 2001-2002 timeframe related to the federal government's failure to honor its contract obligation to begin removing SNF and GTCC waste from the sites by January 1998. The federal government chose not to file a petition for certiorari with the U.S. Supreme Court by the December 4 filing deadline at which point the May 18 decision became final and non-appealable.

Maine Yankee will not consider this case closed until the funds are received from the federal government.

Once the funds are received, Maine Yankee anticipates making a filing with the Federal Energy Regulatory Commission that will detail the company's approach for the best way to use the proceeds from the damage awards to benefit ratepayers. Maine Yankee will brief key stakeholders as more information becomes available.

In a second round of litigation for costs incurred through 2008 resulting from the DOE's failure to perform, Maine Yankee is seeking $35 million. A decision in that case could be issued in 2013. The company expects to file a third round of litigation in 2013 for costs incurred from 2009-2012.

While recovering monetary damages from the federal government will be positive for the ratepayers it does not result in SNF and GTCC waste being removed from Maine Yankee, Connecticut Yankee, and Yankee Atomic. However, the January 2013 DOE strategy report for the management and disposal of spent nuclear fuel and high level radioactive waste that recommends a pilot interim storage facility with an initial focus on accepting SNF from shut-down reactor sites is very encouraging. The Administration's report (attached) is in response to the Blue Ribbon Commission on America's Nuclear future report recommendations issued in 2012 to the DOE Secretary.

DOE Strategy Report recommends pilot interim storage facility for accepting SNF from shut down reactor sites

Below is an excerpt from the statement sent to stakeholders by Maine Yankee, Connecticut Yankee and Yankee Atomic following release of the January 11 DOE strategy report:

"While we have not fully evaluated the report yet, we are very pleased to note that the administration supports an integrated nuclear waste management system that includes several elements, including a pilot interim storage facility focused on serving shut-down reactor sites capable of accepting used nuclear fuel and high-level radioactive waste.

We are hopeful Congress and the Administration will move immediately to implement the report recommendations and we look forward to working with others to bring that about.

We would note that today's DOE strategy report is a significant milestone with regard to the evolving national nuclear waste management policy and with respect to moving spent nuclear fuel from the Yankee sites. It is the culmination of years of effort on the part of the Yankee companies and other stakeholders to prioritize the removal of spent nuclear fuel and Greater than Class C waste from decommissioned reactor sites. Everyone from the BRC, to the Administration, to NEI, NARUC, the NWSC and many key members of Congress support this approach which was very much not the case in recent years.

We will continue to work together with other stakeholders to convince the Administration and Congress to implement the report's recommendations.

With all that said, we are cognizant of the fact that these are only recommendations and they don't guarantee DOE performance in the near term or otherwise. It is also clear that there remains significant hurdles with Congress as well as the remainder of the program going forward. Therefore, it is our belief that the SNF and GTCC waste will continue to remain at our sites for many years to come."

The State of Maine, Maine Yankee and other stakeholders working together

During 2012 Maine Yankee, the State of Maine, the Maine Congressional delegation, the Maine Yankee Community Advisory Panel and other regional stakeholders were actively engaged urging the implementation of the BRC recommendations, especially those regarding decommissioned reactor sites like Maine Yankee that exist only to store SNF until the DOE fulfills its obligations.

These recommendations enjoy broad bipartisan support in New England and nationally. Among many others in New England, those expressing support for the BRC recommendations regarding decommissioned reactor sites include Governor Paul LePage, Governor Peter Shumlin of Vermont, Senator Susan Collins, former Senator Olympia Snowe, Congressman Michael Michaud and Congresswoman Chellie Pingree.

Since the early 1990s the State and Maine Yankee have been members of the Nuclear Waste Strategy Coalition. The NWSC includes state utility regulators, state attorney generals, electric utilities and associate members representing dozens of states and organizations. Its mission: "To reform and adequately fund the U.S. civilian high-level nuclear waste transportation, storage, and disposal program in a manner that ensures timely and safe waste removal from operating and decommissioned nuclear power plants and that protects ratepayers' substantial investment in the program." The State and Maine Yankee participate in regular conference calls and other activities of the NWSC that include the National Association of Regulatory Utility Commissioners, the Nuclear Energy Institute and others.

On a quarterly basis the State of Maine and Maine Yankee participate in a meeting of New England policy makers called the Interim Storage Alternatives Effort. This initiative is part of the Federal Energy Regulatory Commission settlement agreements for Maine Yankee, Connecticut Yankee, and Yankee Rowe. Its purpose is to share information and to identify interim SNF storage alternatives outside New England.

Maine Yankee is also a member of the Decommissioning Plant Coalition. The DPC is comprised of the New England decommissioned plants, and decommissioned plants in Wisconsin, Michigan, and California. The DPC is active in Washington, D.C. representing the unique interests of shutdown plants whose only function is the safe storage of SNF until the federal government honors its commitment to remove this material. Wayne Norton, President and CEO of Connecticut Yankee and Yankee Atomic and Chief Nuclear Officer of Maine Yankee, is the chair of the DPC.

DOE making progress on near-term transportation planning

Some DOE strategy report recommendations for SNF program reform such as funding, management, and establishing consolidated interim storage (CIS) will require action by Congress. Others do not such as near-term transportation planning and developing the program for working with communities interested in hosting a CIS facility, should Congress adopt that BRC recommendation.

At the end of August DOE sent a team to Maine Yankee, Connecticut Yankee, and Yankee Atomic to gather information about the SNF and GTCC waste stored at the Yankee sites and the transportation infrastructure available to transport this material to CIS when the time comes. DOE produced a draft report at the end of October that is a preliminary review of the issues associated with removing SNF and GTCC waste from the nine decommissioned reactor. This draft report will serve as a good foundation to build on as planning progresses.

In May DOE announced it plans to resume funding the regional stakeholder groups that are key to transportation and emergency planning. Those funds were eliminated when the Yucca Mountain program was defunded. For Maine the regional stakeholder group is the Northeast High-Level Radioactive Waste Transportation project. State Nuclear Safety Inspector Pat Dostie is Maine's representative on the regional group.

Bipartisan support in the United States Senate for Consolidated Interim Storage

There is bipartisan support in the United States Senate for moving ahead with CIS. On April 26 the Senate Appropriations Committee approved the FY 2013 Energy & Water Development Appropriations legislation introduced by Senator Dianne Feinstein (D-CA) that included the establishment of a pilot program to move SNF from shutdown reactor sites to CIS.

During this past year Senators Feinstein, Lamar Alexander (R-TN), Lisa Murkowski (R-AK), and Jeff Bingaman (D-NM) worked together hoping to produce comprehensive legislation to implement the BRC recommendations. Though they were unable to reach agreement on a bill, on August 1 Senator Bingaman introduced comprehensive reform legislation that, with exceptions in the areas of a new management organization and the mechanism for funding reform, would implement the recommendations of the BRC. The other three senators supported Senator Bingaman introducing his bill as a conversation starter on the BRC recommendations. A hearing on Senator Bingaman's bill was held September 12. Though Senator Bingaman's bill was not marked up and will not be

carried over to the next session, the provisions contained in the bill may well be incorporated into new legislation in this session of Congress.

House continues to push for the resumption of the Yucca Mountain license process

On June 6 the House approved its version of the FY 2013 E&WD Appropriations bill and included $35 million for the NRC to continue its review of the DOE's Yucca Mountain license application. The bill also includes language forbidding the use of funds "to close the Yucca Mountain license application process or for actions that would remove the possibility that Yucca Mountain might be an option in the future."

The House bill is silent on CIS and the Senate bill is silent on Yucca Mountain.

Senate and House remain at odds over spent nuclear fuel program reform

Differences between the Senate and House on the SNF management issue remain unresolved as Congress approved a Continuing Resolution at the end of September that funds the government through March 2013.

Yucca Mountain license application mandamus case still undecided

The Yucca Mountain program for all practical purposes has ceased to exist, but the mandamus case brought by South Carolina, Washington and others asking the U.S. Court of Appeals for the District of Columbia to compel the NRC to resume its review of the Yucca Mountain license application has not been decided. On August 3, 2012 the court ordered the case held in abeyance and gave the parties involved until December 14 to provide an update on the Fiscal Year 2013 appropriations. The NRC successfully petitioned the court for an extension of the deadline to January 4, 2013. Both parties filed supplemental briefs on January 4. Although the Court has not issued the writ of mandamus, in the August 3 Order, two of the three judges wrote opinions that the NRC has a duty to act in conformance with the requirements of the Nuclear Waste Policy Act (NWPA) and that the agency's actions to discontinue review of the application and to terminate the proceeding are violations of the NWPA.

Regardless of what is decided about Yucca Mountain, a geologic repository will be needed for the eventual disposal of SNF and GTCC waste even if CIS is developed.

For more information on these and other issues go to www.maineyankee.com.

ESTIMATED POST DECOMMISSIONING OVERSIGHT EXPENDITURES AND
BUDGETED TRANSFERS FROM ACCOUNT 014-10A-2440-03

CY 2012		DEP 014-06A-1790-14	DHHS Safety Inspector 01410A244003	OPA SNSA 01407H041004	PUS STATE POLICE 01416A029104	DHHS DEH RCP 014-10A-2445-03	TOTAL	INCOME
DEP - Radiological Program		$ 1,640.00					$ 1,640.00	
OPA - Nuclear Safety Advisor							$ -	
OPA- All Other							$ -	
DHHS - RCP						$ 18,078.72	$ 18,078.72	
DHHS - Safety Inspector			$ 125,079.39				$ 125,079.39	
DHHS - Contractor and Independent Expert							$ -	
DHHS - Earned time (vac & sick)			$ 17,274.78				$ 17,274.78	
DHHS - Earned time taken							$ -	
							$ -	
DPS - equipment					$ 30,264.00		$ 30,264.00	
Sub - total		$ 1,640.00	$ 142,354.17	$ -	$ 30,264.00	$ 18,078.72	$ 192,336.89	
DICAP - DHHS $8,100/FTE			$ 8,100.00			$ 1,377.00	$ 9,477.00	
Sta - cap rates OPA	0.006391			$ -			$ -	
Sta - cap rates DEP - Envir. Prot.	0.02088	$ 34.24					$ 34.24	
Sta - cap rates DHHS - Bur Health	0.03449		$ 4,909.80			$ 623.54	$ 5,533.33	
Sta - cap rates DEP - State Police	0.01163				$ 351.97		$ 351.97	
Total Est. Sta-cap Exp.		$ 34.24	$ 13,009.80	$ -	$ 351.97	$ 2,000.54	$ 15,396.54	
TOTALS		**$ 1,674.24**	**$ 155,363.97**	**$ -**	**$ 30,615.97**	**$ 20,079.26**	**$ 207,733.43**	
BALANCE CARRIED FORWARD								$ 23,968.01
REIMBURSEMENT FROM OTHER PROG								$ 17,629.31
CY 2012 FIRST QUARTER		$ 418.56	$ 38,840.99		$ -	$ 5,019.81	$ 44,279.37	$ 55,000.00
CY 2012 SECOND QUARTER		$ 418.56	$ 38,840.99	$ -	$ -	$ 5,019.81	$ 44,279.37	$ 55,000.00
CY 2012 THIRD QUARTER		$ 418.56	$ 38,840.99	$ -	$ -	$ 5,019.81	$ 44,279.37	$ 55,000.00
CY 2012 FOURTH QUARTER		$ 418.56	$ 38,840.99	$ -	$ 30,615.97	$ 5,019.81	$ 74,895.34	$ 55,000.00
						TOTALS	$ 207,733.43	$ 261,597.32

ESTIMATED POST DECOMMISSIONING OVERSIGHT EXPENDITURES AND BUDGETED TRANSFERS FROM ACCOUNT 014-10A-2440-03

CY 2013		DEP 014-06A-1790-14	DHHS Safety Inspector 01410A244003	OPA SNSA 01407H041004	PUS STATE POLICE 01416A029104	DHHS DEH RCP 014-10A-2445-03	TOTAL	INCOME
DEP - Radiological Program		$ 2,808.00					$ 2,808.00	
OPA - Nuclear Safety Advisor							$ -	
OPA- All Other							$ -	
DHHS - RCP						$ 18,078.72	$ 18,078.72	
DHHS - Safety Inspector			$ 121,680.59				$ 121,680.59	
DHHS - Contractor and Independent Expert			$ 11,000.00				$ 11,000.00	
DHHS - Earned time (vac & sick)			$ 17,934.29				$ 17,934.29	
DHHS - Earned time taken							$ -	
							$ -	
DPS - equipment					$ 15,132.00		$ 15,132.00	
Sub - total		$ 2,808.00	$ 150,614.88	$ -	$ 15,132.00	$ 18,078.72	$ 186,633.60	
DICAP - DHHS $8,100/FTE			$ 6,723.00			$ 1,458.00	$ 8,181.00	
Sta - cap rates OPA	0.006391			$ -			$ -	
Sta - cap rates DEP - E	0.02088	$ 58.63					$ 58.63	
Sta - cap rates DHHS -	0.03449		$ 5,194.71			$ 623.54	$ 5,818.24	
Sta - cap rates DEP - S	0.01163				$ 175.99		$ 175.99	
Total Est. Sta-cap Exp.		$ 58.63	$ 11,917.71	$ -	$ 175.99	$ 2,081.54	$ 14,233.86	
TOTALS		**$ 2,866.63**	**$ 162,532.59**	**$ -**	**$ 15,307.99**	**$ 20,160.26**	**$ 200,867.46**	
BALANCE CARRIED FORWARD								$ 53,863.89
REIMBURSEMENT FROM OTHER PROGRAM								$ 21,928.73
CY 2012 FIRST QUARTER		$ 716.66	$ 40,633.15		$ 3,827.00	$ 5,040.06	$ 50,216.86	$ 55,000.00
CY 2012 SECOND QUARTER		$ 716.66	$ 40,633.15	$ -	$ 3,827.00	$ 5,040.06	$ 50,216.86	$ 40,000.00
CY 2012 THIRD QUARTER		$ 716.66	$ 40,633.15	$ -	$ 3,827.00	$ 5,040.06	$ 50,216.86	$ 30,000.00
CY 2012 FOURTH QUARTER		$ 716.66	$ 40,633.15	$ -	$ 3,827.00	$ 5,040.06	$ 50,216.86	$ 30,000.00
						TOTALS	$ 200,867.46	$ 230,792.62

STRATEGY FOR THE MANAGEMENT AND DISPOSAL OF USED NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

JANUARY 2013

In 2010, I chartered the *Blue Ribbon Commission on America's Nuclear Future* ("BRC" or "Commission") to conduct a comprehensive review and recommend a plan of action for the management and disposal of the nation's used nuclear fuel and high-level radioactive waste, also referred to as the back-end of the nuclear fuel cycle. Representative Lee Hamilton and General Brent Scowcroft, two distinguished individuals with decades of public service and governing experience, co-chaired the Commission and led a panel of leading scientists, nuclear energy experts, industry leaders, and former elected officials.

Nuclear power is an integral part of our "all-of-the-above" energy strategy. It provides twenty percent of our nation's electricity supply, and the Administration is promoting the safe use of nuclear power through support for new nuclear power plants incorporating state-of-the-art passive safety features as well as a cost-shared program providing technical support for licensing new small reactor designs. Nuclear energy is an important contributor to our nation's energy security, and promotes clean-energy jobs. Nuclear energy production also provides important environmental benefits by producing little carbon dioxide or conventional air pollutant emissions.

An unfailing commitment to protect public health and safety, security, and the environment is essential to ensuring that nuclear power remains part of our diversified clean-energy portfolio. As part of that commitment, safe, long-term management and disposal of used nuclear fuel and high-level radioactive waste must remain a national priority.

Beyond sustaining an important domestic energy source, progress on a disposal solution can also support the clean-up of those sites that hosted production of defense nuclear materials during the Cold War, and help advance key national-security and non-proliferation objectives. More than 40 percent of the Navy's surface and submarine combatant fleet, for example, is now nuclear-powered. The used nuclear fuel it generates likewise requires a permanent disposal solution.

Since the end of the Cold War, significant quantities of weapons-capable plutonium and highly enriched uranium have become surplus to our national security needs. Some of these nuclear materials will be modified so they can be used in reactors as fuel, but then will be destined for a repository.

Finally, global demand for nuclear energy continues to grow, with commensurate risks in terms of safety, weapons proliferation, and terrorism if this growth occurs outside a vigorous safety and security framework. America's ability to influence the mitigation of these risks is strengthened when we demonstrate the commitment and ability to perform here at home.

For nearly two years, the Commission conducted a comprehensive review and ultimately made recommendations for addressing one of our nation's most intractable challenges. Its work provides a strong foundation for development of a new strategy to manage used nuclear fuel and high-level radioactive waste. We will work with Congress to build a new national program based on this foundation.

Steven Chu

INTRODUCTION AND SUMMARY

The *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* is a framework for moving toward a sustainable program to deploy an integrated system capable of transporting, storing, and disposing of used nuclear fuel[1] and high-level radioactive waste from civilian nuclear power generation, defense, national security and other activities.

The Strategy addresses several important needs. First, it serves as a statement of Administration policy regarding the importance of addressing the disposition of used nuclear fuel and high-level radioactive waste; it lays out the overall design of a system to address that issue; and it outlines the reforms needed to implement such a system. Second, it presents the Administration's response to the final report and recommendations made by the *Blue Ribbon Commission on America's Nuclear Future* ("BRC"). It also responds to direction in the Joint Explanatory Statement accompanying the Consolidated Appropriations Act, 2012, to develop a strategy for the management of used nuclear fuel and nuclear waste in response to the BRC's recommendations. Third, this strategy represents an initial basis for discussions among the Administration, Congress and other stakeholders on a sustainable path forward for disposal of nuclear waste.

The Administration endorses the key principles that underpin the BRC's recommendations. The BRC's report and recommendations provide a starting point for this Strategy, which translates many of the BRC's principles into an actionable framework within which the Administration and Congress can build a national program for the management and disposal of the nation's used nuclear fuel and high-level radioactive waste.[2] The BRC report and the Strategy build on the body of physical and social science work completed during the prior decades and benefit from the lessons learned not only from our nation's experiences, but also from those of other countries.

This Strategy includes a phased, adaptive, and consent-based approach to siting and implementing a comprehensive management and disposal system. At its core, this Strategy endorses a waste management system containing a pilot interim storage facility; a larger, full-scale interim storage facility; and a geologic repository in a timeframe that demonstrates the federal commitment to addressing the

[1] The term "used nuclear fuel" as used in the BRC charter and in this document is intended to be synonymous with the term "spent nuclear fuel" as used in the Nuclear Waste Policy Act and the Standard Contracts.

[2] The BRC recommendations are available here and are summarized as follows:

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 storage facilities.
6. Prompt efforts to prepare for the eventual large-scale transport of used nuclear fuel and high-level waste to consolidated storage and disposal facilities when such facilities become available.
7. Support for continued U.S. innovation in nuclear energy technology and for workforce development.
8. Active U.S. leadership in international efforts to address safety, waste management, non-proliferation, and security concerns.

nuclear waste issue, builds capability to implement a program to meet that commitment, and prioritizes the acceptance of fuel from shut-down reactors. A consent-based siting process could result in more than one storage facility and/or repository, depending on the outcome of discussions with host communities; the Nuclear Waste Policy Act of 1982 (NWPA) envisaged the need for multiple repositories as a matter of equity between regions of the country. As a starting place, this Strategy is focused on just one of each facility.

With the appropriate authorizations from Congress, the Administration currently plans to implement a program over the next 10 years that:

- Sites, designs and licenses, constructs and begins operations of a pilot interim storage facility by 2021 with an initial focus on accepting used nuclear fuel from shut-down reactor sites;
- Advances toward the siting and licensing of a larger interim storage facility to be available by 2025 that will have sufficient capacity to provide flexibility in the waste management system and allows for acceptance of enough used nuclear fuel to reduce expected government liabilities; and
- Makes demonstrable progress on the siting and characterization of repository sites to facilitate the availability of a geologic repository by 2048.

Full implementation of this program will require legislation to enable the timely deployment of the system elements noted above. Legislation should also include the requirements for consent-based siting; a reformed funding approach that provides sufficient and timely resources; and the establishment of a new organization to implement the program, the structure of which should balance greater autonomy with the need for continued Executive and Legislative branch oversight. The Administration looks forward to engaging Congress on comprehensive legislation to move forward on this important national responsibility.

In the meantime, the Administration, through the Department of Energy (DOE), is undertaking activities within existing Congressional authorization to plan for the eventual transportation, storage, and disposal of used nuclear fuel. Activities range from examining waste management system design concepts, to developing plans for consent-based siting processes, to conducting research and development on the suitability of various geologies for a repository. These activities are designed to not limit the options of either the Administration or Congress and could be transferred to the new waste management and disposal organization when it is established.

BACKGROUND

The NWPA established a broad policy framework for the permanent disposal of used nuclear fuel and high-level radioactive waste derived from nuclear power generation. The NWPA authorized the government to enter into contracts with reactor operators – the generators and current owners of used nuclear fuel – providing that, in exchange for the payment of fees, the government would assume responsibility for permanent disposal. The fees were to ensure that the reactor owners and power

generators pay the full cost of the disposal of their used nuclear fuel and high-level radioactive waste.

The federal government did not meet its contractual obligation to begin accepting used nuclear fuel by 1998. As a result of litigation by contract holders, the government was found in partial breach of contract, and is now liable for damages to some utilities to cover the costs of on-site, at-reactor storage.

Currently more than 68,000 metric tons heavy metal (MTHM) of used nuclear fuel are stored at 72 commercial power plants around the country with approximately 2,000 MTHM added to that amount every year. The sooner that legislation enables progress on implementing this Strategy, the lower the ultimate cost will be to the taxpayers. This document outlines a strategy that is intended to limit, and then end, liability costs by making it possible for the government to begin performing on its contractual obligations.

The NWPA specified a process for evaluating sites for a repository. The Administration concurs with the conclusion of the BRC that a fundamental flaw of the 1987 amendments to the NWPA was the imposition of a site for characterization, rather than directing a siting process that is, as the BRC recommends, "explicitly adaptive, staged, and consent-based..." In practical terms, this means encouraging communities to volunteer to be considered to host a nuclear waste management facility while also allowing for the waste management organization to approach communities that it believes can meet the siting requirements. Under such an arrangement, communities could volunteer to provide a consolidated interim storage facility and/or a repository in expectation of the economic activity that would result from the siting, construction, and operation of such a facility in their communities.

In addition to commercial used nuclear fuel, high-level radioactive wastes that are the by-products of the production of the nation's nuclear weapons and used fuel from the Navy's nuclear powered combat vessels also require a defined disposal path. These wastes are currently stored at sites in Idaho, South Carolina, and Washington. Also, significant quantities of weapons-capable plutonium and highly enriched uranium have become surplus to our national security needs, and in some form will be destined for disposal in a repository.

STRATEGY ELEMENTS

This Strategy provides a basis for the Administration to work with Congress to design and implement a program to meet the government's obligation to take title to and permanently dispose of used nuclear fuel and high-level radioactive waste. It also provides near-term steps to be implemented by DOE pending enactment of new legislation. The key elements of this Strategy are captured in Figure 1.

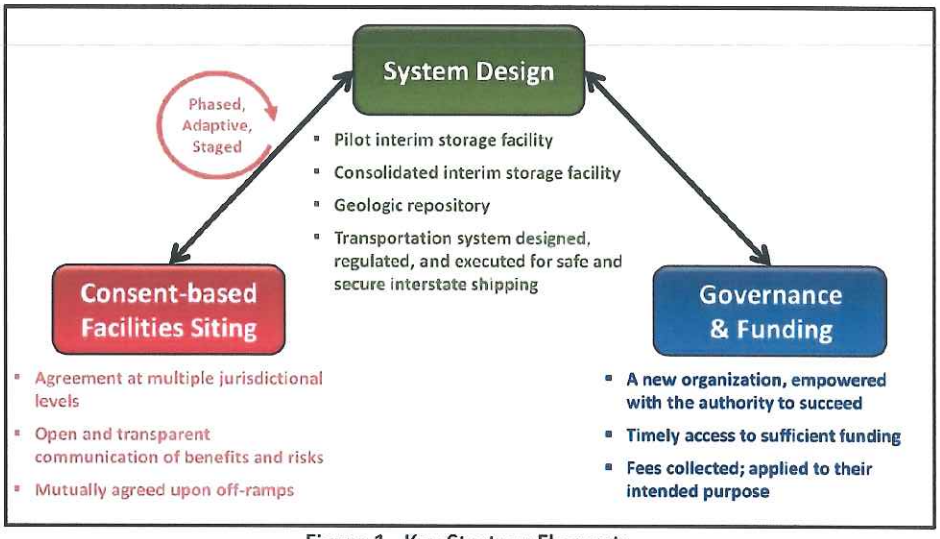

Figure 1. Key Strategy Elements

System Design

The Administration supports an approach to system design that integrates consent-based siting principles and makes progress in demonstrating the federal commitment to addressing used nuclear fuel and high-level radioactive waste disposal, including building the capability to begin executing that commitment within the next 10 years. The Administration supports a nuclear waste management system with the following elements:

- A pilot interim storage facility with limited capacity capable of accepting used nuclear fuel and high-level radioactive waste and initially focused on serving shut-down reactor sites;
- A larger, consolidated interim storage facility, potentially co-located with the pilot facility and/or with a geologic repository, that provides the needed flexibility in the waste management system and allows for important near-term progress in implementing the federal commitment; and
- A permanent geologic repository for the disposal of used nuclear fuel and high-level radioactive waste.

The objective is to implement a flexible waste management system incrementally in order to ensure safe and secure operations, gain trust among stakeholders, and adapt operations based on lessons learned. As will be addressed in the following section on implementation, the Administration agrees with the Blue Ribbon Commission that a consent-based siting process offers the promise of sustainable decisions for both storage and disposal facilities. Figure 2 below portrays a set of possible pathways to developing system facilities and capabilities.

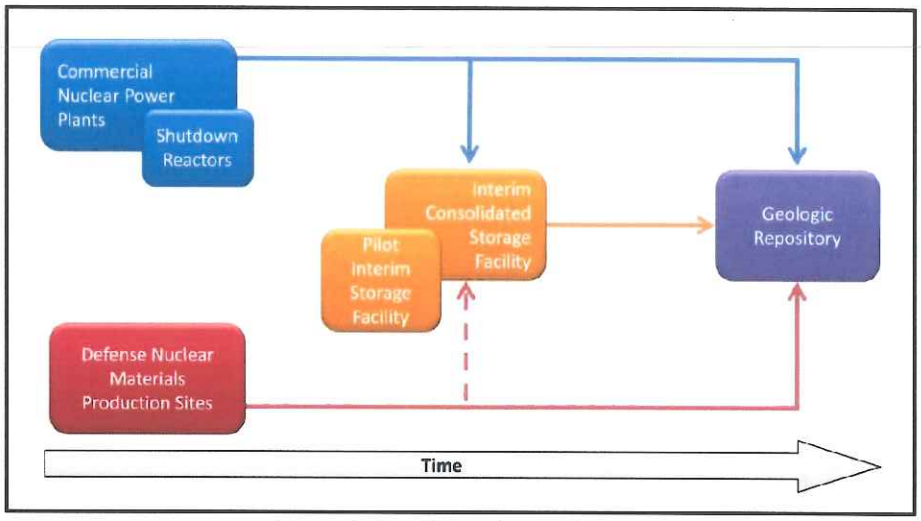

Figure 2. Possible system pathways

This system would initially be focused on acceptance of used nuclear fuel from shut-down reactors; such fuel provides an opportunity to build waste handling capability as well as to relieve surrounding communities and utility contract holders of the burdens associated with long-term storage of used nuclear fuel at a shut-down reactor. Following these initial efforts, capacity will be developed to enable the acceptance and transportation of used nuclear fuel at rates greater than that at which utilities are currently discharging it in order to gradually work off the current inventory. The Administration remains committed to addressing the Cold War legacy; and, in addition to ongoing efforts, will consider transportation and interim storage of government-owned used nuclear fuel and high-level radioactive waste at interim storage facilities.

Interim Storage

The BRC recommended that "one or more consolidated (interim) storage facilities be developed to start the orderly transfer of used nuclear fuel from reactor sites to safe and secure centralized facilities independent of the schedule for operating a permanent repository." The Administration agrees that interim storage should be included as a critical element in the waste management system and has several benefits, including flexibility in system planning and execution and the opportunity to move expeditiously to fulfill government contractual responsibilities.

The Administration also agrees with the BRC that a linkage between opening an interim storage facility and progress toward a repository is important so that states and communities that consent to hosting a consolidated interim storage facility do not face the prospect of a *de facto* permanent facility without consent. However, this linkage should not be such that it overly restricts forward movement on a pilot or larger storage facility that could make progress against the waste management mission. The NWPA currently constrains the development of a storage facility by limiting the start of construction of such a facility until after the Nuclear Regulatory Commission (NRC) has issued a license for construction of a

repository. This restriction has effectively eliminated the possibility of having an interim storage facility as an integral component of a waste management system.

Consistent with legislation recently under consideration in Congress, the Administration supports the development of a pilot interim storage facility with an initial focus on accepting used nuclear fuel from shut-down reactor sites. Acceptance of used nuclear fuel from shut-down reactors provides a unique opportunity to build and demonstrate the capability to safely transport and store used nuclear fuel, and therefore to make progress on demonstrating the federal commitment to addressing the used nuclear fuel issue. A pilot would also build trust among stakeholders with regard to the consent-based siting process and commitments made with a host community for the facility itself, with jurisdictions along transportation routes, and with communities currently hosting at-reactor storage facilities if enabled by appropriate legislation. The Administration would plan to undertake activities necessary to enable the commencement of operations at this facility in 2021, including conducting a consent-based siting process with interested parties, undertaking the requisite analyses associated with siting such a facility, and initiating engineering and design activities as warranted. Full execution of this plan depends on enactment of revised legislative authority.

Beyond a pilot-scale facility, the Administration supports the development of a larger consolidated interim storage facility with greater capacity and capabilities that will provide flexibility in operation of the transportation system and disposal facilities. In addition, a larger-scale facility could take possession of sufficient quantities of used nuclear fuel to make progress on the reduction of long-term financial liabilities. Depending on the outcome of a consent-based process, this facility could have a capacity of 20,000 MTHM or greater, and could be co-located with the pilot facility or the eventual geologic repository. In the context of the overall waste management system, the Administration supports the goal of siting, designing, licensing, constructing and commencing operations at a consolidated interim storage facility by 2025.

In addition to commercial used nuclear fuel, pilot-scale and larger interim storage facilities could provide similar benefits for government-owned and managed used nuclear fuel and high-level radioactive waste, such as demonstration of capability and flexibility in system operations. Therefore, the feasibility of accepting these wastes at interim storage facilities will be considered.

Transportation

The BRC found that existing standards and regulations for the transportation of used nuclear fuel and high-level radioactive waste administered by DOE, NRC, the U.S. Department of Transportation, and state, local, and tribal governments are proven and functioning well. Consistent with the recommendations of the BRC on this issue, the Administration is moving ahead with initial planning for engagement and technical assistance for transportation operations for state and local governments.

As described in the Ongoing Activities section of this document, the Department is proceeding with planning activities for the development of transportation capabilities and storage facilities to facilitate the acceptance of used nuclear fuel at a pilot interim storage facility within the next 10 years and later

at a larger consolidated interim storage facility. The Administration will undertake the transportation planning and acquisition activities necessary to initiate this process with the intent to transfer them to a separate organizational entity if and when it is authorized by Congress and in operation. Outreach and communication, route analysis, and emergency response planning activities consistent with existing NWPA requirements would be conducted during this time. The Administration agrees with the BRC that the relationships and processes built with other federal agencies, state agencies, and local governments to support logistics of shipments to the Waste Isolation Pilot Plant (WIPP) have been successful and the infrastructure and lessons learned from this experience will be utilized moving forward.

Geologic Disposal

There is international consensus that geologic repositories represent the best known method for permanently disposing of used nuclear fuel and high-level radioactive waste, without putting a burden of continued care on future generations. The BRC recommended that the U.S. undertake "an integrated nuclear waste management program that leads to the timely development of one or more permanent deep geologic facilities for the safe disposal of used fuel and high-level nuclear waste." The Administration agrees that the development of geologic disposal capacity is currently the most cost-effective way of permanently disposing of used nuclear fuel and high-level radioactive waste while minimizing the burden on future generations. As noted by the BRC, the linkage between storage and disposal is critical to maintaining confidence in the overall system. Therefore, efforts on implementing storage capabilities within the next 10 years will be accompanied by actions to engage in a consent-based siting process and begin to conduct preliminary site investigations for a geologic repository. The Administration's goal is to have a repository sited by 2026; the site characterized, and the repository designed and licensed by 2042; and the repository constructed and its operations started by 2048. Consistent with this effort, the Administration understands the need for the Environmental Protection Agency to develop a set of generic, non-site-specific, repository safety standards to gain public confidence that any future repository will protect public health and the environment. This will be an important early step in any repository siting effort.

The ability to retrieve used nuclear fuel and high-level radioactive waste from a geologic repository for safety purposes or future reuse has been a subject of repository design debate for many years. A recently completed technical review by Oak Ridge National Laboratory found that approximately 98 percent of the total current inventory of commercial used nuclear fuel by mass can proceed to permanent disposal without the need to ensure post-closure recovery for reuse based on consideration of the viability of economic recovery of nuclear materials, research and development (R&D) needs, time frames in which recycling might be deployed, the wide diversity of types of used nuclear fuel from past operations, and possible uses to support national security interests.[3] This assessment does not preclude any decision about future fuel cycle options, but does indicate that retrievability it is not necessary for purposes of future reuse.

[3] J. C. WAGNER et al., Categorization of Used Nuclear Fuel Inventory in Support of a Comprehensive National Nuclear Fuel Cycle Strategy, ORNL/TM-2012/308 (FCRD-FCT-2012-00232), Oak Ridge National Laboratory, Oak Ridge, Tenn., December 2012.

Disposal of defense wastes alongside commercial wastes is the current policy in accordance with the 1985 decision to use a single repository for both commercial and defense wastes. The issue of "commingling" of wastes in a repository will be the subject of analysis moving forward.

Advanced Fuel Cycles

The BRC concluded 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..." and pointed out that "it is... very likely that disposal will be needed to safely manage at least some portion of the existing commercial [used nuclear fuel] inventory." Even if a closed fuel cycle were to be adopted in the future, permanent geologic disposal will still be required for residual high-level radioactive waste. Cost, nonproliferation, national security, environmental concerns, and technology limitations are some of the concerns that would need to be addressed before any future decision to close the U.S. fuel cycle through the use of recycling would be made. These factors reinforce the likelihood that the once-through fuel cycle will continue at least for the next few decades. Nevertheless, consistent with past practice and the BRC's recommendations, DOE will continue to conduct research on advanced fuel cycles to inform decisions on new technologies that may contribute to meeting the nation's future energy demands while supporting non-proliferation and used nuclear fuel and high-level radioactive waste management objectives.

International Cooperation

International cooperation has been a cornerstone of both U.S. fuel cycle R&D efforts as well as actions to reduce the global proliferation of nuclear materials. Recently, several countries, led by the U.S. and others, have come together to establish frameworks within which multi-national fuel cycle facilities could enable wider access to the benefits of nuclear power while reducing proliferation risks. The BRC recommended that the U.S. develop the capability "to accept used fuel from foreign commercial reactors, in cases where the President would choose to authorize such imports for reasons of U.S. national security." The focus of the present Strategy is on a clear path for the safe and permanent disposal of U.S. used nuclear fuel and high-level radioactive waste; however, the Administration will continue to evaluate the BRC's recommendation and will discuss with Congress the pros and cons of including it in the new waste disposal program.

Implementation

Critical elements for successful implementation of this Strategy include the establishment of a consent-based siting process, a new organization to execute the waste management mission and implementation of a process for long-term, stable funding. The design of both the new organization and the funding source should strike an appropriate balance between independence of the new organization and the need for oversight by Congress and the Executive branch.

Consent-based Siting

The BRC recommends a siting process that is consent-based, transparent, phased, adaptive, standards- and science-based, and governed by legally-binding agreements between the federal government and host jurisdictions. Indeed, promising experiences in other countries indicate that a consent-based process, developed through engagement with states, tribes, local governments, key stakeholders, and the public, offers a greater probability of success than a top down approach to siting. One of the consequences of a consent-based siting process could be the need to have more than one storage facility and/or repository. Multiple communities with differing interests and strengths may propose options leading to system configurations that involve multiple facilities. However, this Strategy focuses on one pilot storage, consolidated interim storage, and repository.

The BRC offered the view that "a good gauge of consent would be the willingness of the host [jurisdictions] to enter into legally binding agreements...that can protect the interests of their citizens." Defining consent, deciding how that consent is codified, and determining whether or how it is ratified by Congress are critical first steps toward siting the storage facilities and repository discussed above. As such, they are among the near-term activities to be undertaken by the Administration in consultation with Congress and others. Legislation recently under consideration by Congress includes requirements for consent at multiple levels, including Congressional ratification. The Department is currently gathering information from the siting of nuclear facilities in the U.S. and elsewhere in order to better understand critical success factors in these efforts and to facilitate the development of a future siting process for a repository and storage facilities.

This Strategy endorses the proposition that prospective host jurisdictions must be recognized as partners. Public trust and confidence is a prerequisite to the success of the overall effort, as is a program that remains stable over many decades; therefore, public perceptions must be addressed regarding the program's ability to transport, store, and dispose of used nuclear fuel and high-level radioactive waste in a manner that is protective of the public's health, safety, and security and protective of the environment.

Management and Disposal Organization

A new waste management and disposal organization (MDO) is needed to provide the stability, focus, and credibility to build public trust and confidence. Managing waste and used fuel is a governmental responsibility and there are multiple possible structures for this new organization. The MDO would be charged with the management and disposal of commercial used nuclear fuel and the associated interface with the utilities. The government will continue to manage its own high-level radioactive waste and used nuclear fuel until it is transferred to an MDO for storage and/or disposal. The BRC recommended the establishment of new, single-purpose organization "to provide the stability, focus, and credibility that are essential to get the waste program back on track." The BRC recommended a specific model in a congressionally-chartered federal corporation. The Administration agrees that a new organizational entity is needed and believes that there are several viable organizational models that can

possess the critical attributes described below.

As part of the development of this Strategy, the Department of Energy commissioned work by the RAND Corporation to examine organizational alternatives for addressing used nuclear fuel and high-level radioactive wastes.[4] RAND assessed lessons learned from the history of the previous DOE organization and analyzed alternative organizational models currently in use both in and out of government. The study's authors concluded that a federal government corporation and an independent government agency are two promising models for a new organization to manage and dispose of used nuclear fuel and high-level radioactive waste, as both models can achieve the critical attributes of accountability, transparent decision-making, autonomy, a public interest mission, and organizational stability. The study also examined the attributes of federally-chartered private corporations and determined that this model is not a good option because obligations to stockholders and the profit motive could result in weakened public accountability and poor political credibility. The RAND study noted that "The success of any future MDO will be driven by many factors and unforeseen circumstances. The organizational form is only one of these factors and perhaps not even the most important one." Rather, of key importance is the flexibility the U.S. government has in crafting a new organization and the specific characteristics with which that organization is endowed.

Whatever form the new organization takes, organizational stability, leadership continuity, oversight and accountability, and public credibility are critical attributes for future success. The Administration will work with Congress to ensure that the MDO authorization provides adequate authority and leadership to execute its mission, with appropriate oversight and controls. Pending enactment of new legislation to establish the MDO, DOE's existing offices retain responsibility to maintain progress in implementing this Strategy. Once the MDO is established, the Administration will carefully evaluate the appropriate activities to be transferred. DOE will take necessary steps to advance the program while taking every precaution to avoid compromising the later ability of the newly established MDO to succeed.

In addition, the mission of the MDO will need to be carefully defined. For example, funding made available to the MDO should be used only for the management and disposal of radioactive waste. While this could include the management and disposal of waste resulting from the processing of defense materials, the MDO itself should not be authorized to perform research on, fund or conduct activities to reprocess or recycle used nuclear fuel. These limitations on the MDO mission are consistent with the recommendations of the BRC.

Funding

With regard to funding, the BRC noted that "...the success of a revitalized nuclear waste management program will depend on making the revenues generated by the nuclear waste fee and the balance in the

[4] *Choosing a New Organization for Management and Disposition of Commercial and Defense High-Level Radioactive Materials*, RAND Corporation, Washington, DC, MG-1230-DOE, 2012. The report is available free for downloading at www.rand.org/pubs/monographs/MG1230.html.

NWF available when needed and in the amounts needed to implement the program." The Administration agrees that providing adequate and timely funding is critical to the success of the nuclear waste mission.

The NWPA established a self-financing mechanism for the nation's commercial nuclear material management system. Congress intended at the time to ensure a stable, ongoing source of funding for the program and also one that would not burden taxpayers. Under the NWPA, the government currently assesses utilities a fee equal to one mill ($0.001) for each kilowatt-hour of electricity sold from nuclear power plants in exchange for agreeing to accept and permanently dispose of utilities' used nuclear fuel. Fees collected total approximately $750 million per year. This fee income is credited to the Nuclear Waste Fund (NWF, or the "Fund"), a fund held in the U.S. Treasury in which monies in excess of appropriations are invested in non-marketable Treasury securities, and the interest earnings are credited to the Fund. The current balance of the Fund is estimated at $28 billion.

Subsequent to passage of the NWPA, a series of broader budgeting acts passed by Congress have had the effect of disconnecting the revenues from the expenditures necessary for a waste disposal solution. All NWF spending is subject to annual appropriations and is required to compete with other priorities within budget caps imposed on all government discretionary spending, while continued collection of the full amount of fees is credited on the mandatory side of the budget as offsetting receipts. As a result, even though the intent of the NWPA was to make the balances of the NWF available when needed to cover the government's cost to dispose of the used nuclear fuel, there is a disconnect that makes access to funding difficult.

Moving forward, the key challenge is to ensure that past and future fee receipts and accrued interest are made available to meet mission requirements in a timely and dependable manner. To achieve this goal, reform of the current funding arrangement is necessary and should consist of the following elements: ongoing discretionary appropriations, access to annual fee collections provided in legislation either through their reclassification from mandatory to discretionary or as a direct mandatory appropriation of the fees, and eventual access to the balance or "corpus" of the NWF.

First, future funding arrangements should include a role for the Appropriations Committees of Congress through ongoing discretionary appropriations, funded within the discretionary spending limits. Ongoing engagement with the Appropriations committees ensures annual oversight and increases the likelihood of a sustained Congressional commitment to the nuclear waste mission. Annual appropriations could be used to fund expenses that are regular and recurring, such as program management costs, including administrative expenses, salaries and benefits, and studies.

Second, access to annual fee collections could support activities such as the development of interim storage facilities, establishment of the transportation system, siting and characterization of a geologic repository, and execution of regulatory development and oversight. This access could be accomplished either through legislative reclassification of fee collections from mandatory to discretionary, or as a direct mandatory appropriation of the fees, or some combination thereof. Legislative reclassification of fee collections from mandatory to discretionary would allow the fees to offset NWF discretionary

appropriations, so that appropriation of the fees no longer would have to compete with other discretionary priorities. Instead, fees would be provided in amounts needed only above the annual appropriations described above and would also be limited by the amount of fee income, as envisioned by the NWPA. This approach could be preferable if additional Appropriator involvement was desired or deemed necessary and regular annual appropriations of that magnitude could be identified.

Alternatively, a direct mandatory appropriation of the annual fees could be coupled with direct access to the corpus of the NWF, as further discussed below. Under this arrangement, spending could be controlled through annual mandatory spending caps set by Congress or by tying funding levels to specific system development milestones in legislation. With continued oversight by the Appropriations Committees, these mandatory spending caps could be adjusted, as deemed necessary and appropriate. Implementation of either or a combination of both of these approaches will require substantial consultation with Authorizing, Budget, and Appropriations Committees of Congress; the Administration is committed to working with Congress to find a mutually agreeable solution to this issue.

Third, regardless of how access to the annual fees is provided, the substantial corpus of the NWF will be needed at an appropriate time in the future, particularly to support the development of a geologic repository. The cost of constructing repository facilities could outstrip the annual fee collections and other discretionary appropriations discussed above. Direct access to the corpus of the NWF through mandatory appropriations could be carefully managed by limiting its use to specific capital expenditures, tied to performance triggers, such as meeting licensing actions and major construction milestones, or subject to hard spending caps.

The cost of the government's growing liability for partial breach of contracts with nuclear utilities is paid from the Judgment Fund of the U.S. Government. While payments are extensively reviewed by DOE, and must be authorized by the Attorney General prior to disbursement by the Department of the Treasury, as mandatory spending they are not subject to Office of Management and Budget or Congressional approval. Past payments are included in full in the budget, but the budget does not reflect full estimates of the future cost of these liabilities and does not fully reflect the potential future cost of continued insufficient action. Future budget projections would be improved by including the full cost of estimated liability payments in the baselines constructed by both CBO and OMB. If the full cost of the estimated liability payments is accurately reflected in the baseline program costs over the life of the project would eventually be offset by reductions in liabilities as the government begins to pick up sufficient waste from commercial sites. As a result, the projected long-term cost of insufficient action surpasses the cost of implementing the program in the short run.

Any new funding structure for this program will need to balance increased funding flexibility and rigorous spending oversight to help assure that the program is implemented in the most cost-effective manner possible, while still holding the MDO accountable to the President and Congress. Further, crafting the MDO funding structure will require a creative and nuanced approach to providing needed funds with involvement by the Administration and all of the appropriate committees of Congress, working together to achieve a viable solution within the current federal budget rules and procedures.

The President's fiscal year 2014 budget will include additional details regarding funding for the program of work described in this Strategy document.

ONGOING ACTIVITIES

Within DOE, the Office of Nuclear Energy's Office of Fuel Cycle Technology has initiated a planning project with the objective of pursuing activities that can be conducted within the constraints of the NWPA and will facilitate the development of an interim storage facility, of a geologic repository, and of the supporting transportation infrastructure. The activities being conducted can be transferred to a new MDO when established and will not constrain its options. This includes initiating planning for a large-scale transportation program; evaluating operational options for consolidated storage and furthering the design of a generic consolidated storage facility. The Department is also developing plans for initiating a consent-based siting process. The Department will continue with these activities and those listed below, within existing Congressional authorization, while the Administration and Congress work together on potential changes to the nuclear waste management program.

The BRC also urged the Department to evaluate options for transportation of used nuclear fuel from shut down reactors. In 2013, DOE is evaluating the inventory, transportation interface, and shipping status of used nuclear fuel at shut-down reactor sites. The Department has established cooperative agreements with state and regional groups and engaged tribal representatives to begin discussions on transportation planning and emergency response training consistent with NWPA Section 180(c). Further, the Department is considering how best to leverage the work of state and regional groups currently engaged in transportation planning and oversight of radioactive waste shipments to WIPP in New Mexico.

In FY 2013, the Department is undertaking disposal-related research and development work in the following areas: an evaluation of whether direct disposal of existing storage containers used at utility sites can be accomplished in various geologic media; an evaluation of various types and design features of back-filled engineered barriers systems and materials; evaluating geologic media for their impacts on waste isolation; evaluating thermal management options for various geologic media; establishing cooperative agreements with international programs; and developing a research and development plan for deep borehole disposal, consistent with BRC recommendations.

CONCLUSION

In this Strategy, the Administration has highlighted agreement with many of the principles of the BRC recommendations and has outlined actions that, with legislative authorization by Congress, can lead to a safe and responsible solution to managing the nation's nuclear waste. Indeed, action by Congress in the form of new authorizing legislation and appropriations is necessary for success of the waste management mission. Specifically, legislation is needed in the near term to permit or address the following activities over the next 10 years:

- Active engagement in a broad, national, consent-based process to site pilot and full-scale interim storage facilities, and site and characterize a geologic repository;
- Siting, design, licensing, and commencement of operations at a pilot-scale storage facility with an initial focus on accepting used nuclear fuel from shut-down reactor sites.;
- Significant progress on siting and licensing of a larger consolidated interim storage facility capable of providing system flexibility and an opportunity for more substantial progress in reducing government liabilities;
- Development of transportation capabilities (personnel, processes, equipment) to begin movement of fuel from shut-down reactors;
- Reformation of the funding approach in ways that preserve the necessary role for ongoing discretionary appropriations and also provide additional funds as necessary, whether from reclassified fees or from mandatory appropriation from the NWF or both; and
- Establishment of a new organization to run the program, the structure and positioning of which balance greater autonomy with the need for continued Executive and Legislative branch oversight.

This Strategy translates the BRC's report and recommendations into a set of broad steps that will ultimately benefit the entire nation. The Administration will work closely with Congress to develop a path forward that maximizes the likelihood of success. When executed, the new program will provide near-term and long-term solutions for managing the back-end of the nuclear fuel cycle, thereby resolving a longtime source of conflict in nuclear policy by providing safe, secure, and permanent disposal. Until the necessary new legislation has been enacted, the Administration will pursue components of the Strategy as described above pursuant to current law and in close coordination with Congress. Finally, in executing the program the federal government must work closely with potential host states, tribes, and communities whose engagement will be essential for successfully operating a comprehensive used nuclear fuel and high-level radioactive waste storage, transportation, and disposal system.