



Christopher J. Wamser
Site Vice President

BVY 14-085

10 CFR 50.54(bb)

December 19, 2014

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Update to Irradiated Fuel Management Program Pursuant to 10 CFR 50.54(bb)
Vermont Yankee Nuclear Power Station
Docket No. 50-271
License No. DPR-28

- REFERENCES:**
1. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Report Pursuant to 10 CFR 50.54(bb)," BVY 07-007, dated March 21, 2007 (ML070860696)
 2. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Revised Spent Fuel Management Plan Pursuant to 10 CFR 50.54(bb)," BVY 08-077, dated October 14, 2008 (ML082910294)
 3. Letter, USNRC to Entergy Nuclear Operations, Inc., "Safety Evaluation Re: Spent Fuel Management Program and Preliminary Decommissioning Cost Estimate (TAC Nos. MD8035 and MD8051)," NVEY 09-009, dated February 3, 2009 (ML083390193)
 4. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Update to Vermont Yankee Spent Fuel Management Plan," BVY 09-022, dated April 1, 2009 (ML091040287)
 5. Letter, Entergy Nuclear Operations, Inc. to USNRC, "VY Spent Fuel Management Plan – RAI Response," BVY 09-048, dated August 18, 2009 (ML092370298)
 6. Letter, USNRC to Entergy Nuclear Operations, Inc., "Safety Evaluation Re: Update to Spent Fuel Management Program (TAC No. ME1152)," NVEY 09-100, dated October 8, 2009 (ML092740238)
 7. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Notification of Permanent Cessation of Power Operations," BVY 13-079, dated September 23, 2013 (ML13273A204)

Dear Sir or Madam:

In accordance with 10 CFR 50.54(bb), Entergy Nuclear Operations, Inc. (ENO) is hereby notifying the NRC of significant changes to the Vermont Yankee Nuclear Power Station (VYNPS) Program for Management of Irradiated Fuel.

Pursuant to 10 CFR 50.54(bb), ENO initially submitted a Program for Maintenance of Irradiated Fuel on March 21, 2007 (Reference 1) and a Revised Program for Maintenance of Irradiated Fuel on October 14, 2008 (Reference 2). On February 3, 2009, the NRC staff approved the VYNPS irradiated fuel management program on a preliminary basis and determined that the preliminary decommissioning cost estimate was reasonable (Reference 3).

On April 1, 2009, ENO submitted an update to its irradiated fuel management program to reflect changes in its decommissioning cost estimate, based on updated information from the Department of Energy (DOE) on when the government would begin accepting spent fuel from the industry (Reference 4), which it supplemented on August 18, 2009 (Reference 5). The NRC staff approved the revised irradiated fuel management program, as supplemented, on a preliminary basis on October 8, 2009 (Reference 6).

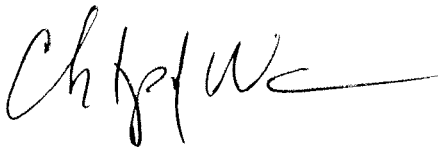
By letter dated September 23, 2013, ENO notified the NRC of its intent to permanently cease power operations at VYNPS at the end of the current operating cycle, which is expected to occur in the fourth quarter of 2014 (Reference 7). As a result of its decision to permanently cease operations at VYNPS, and related changes to the anticipated schedule of decommissioning activities, irradiated fuel management activities, and decommissioning funding assumptions, ENO is modifying the VYNPS Program for Management of Irradiated Fuel. This submittal provides the required Section 50.54(bb) notification. Attachment 1 provides the Updated Program for Management of Irradiated Fuel (Program), which supersedes all prior versions of the Program.

In Reference 5, Entergy Nuclear Vermont Yankee, LLC committed to make a \$127.017 million contribution to the VYNPS decommissioning trust fund in 2026 to ensure adequate funding for license termination and spent fuel management activities. Based on the funding strategy described in the updated Program, this planned contribution is no longer necessary. As a result, ENO is hereby providing written notification on behalf of ENVY of ENVY's cancellation of this commitment. There are no new regulatory commitments made by this letter.

Attachment 2 of this letter contains one cancelled regulatory commitment.

Should you have any questions concerning this letter or require additional information, please contact Mr. Philip Couture at 802-451-3193.

Sincerely,

A handwritten signature in black ink, appearing to read 'Philip Couture', with a long horizontal flourish extending to the right.

CJW/plc/shr

Attachments: 1. Updated Program for Management of Irradiated Fuel
2. List of Cancelled Regulatory Commitments

cc: Mr. Daniel H. Dorman
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Attachment 1

Vermont Yankee Nuclear Power Station
Updated Program for Management of Irradiated Fuel

Vermont Yankee Nuclear Power Station
Updated Program for Management of Irradiated Fuel

I. Background and Introduction

Entergy Nuclear Operations, Inc. (ENO) submitted a Program for Maintenance of Irradiated Fuel (Program) on March 21, 2007 (Reference 1) and a revised Program on October 14, 2008 (Reference 2) for Vermont Yankee Nuclear Power Station (VYNPS). ENO submitted these programs pursuant to 10 CFR 50.54(bb), which requires power reactor licensees to submit a spent fuel management and funding program for NRC review five years prior to the expiration of a reactor operating license. At the time, the VYNPS operating license was set to expire on March 21, 2012. On February 3, 2009, the NRC staff approved the VYNPS Program on a preliminary basis and determined that the preliminary decommissioning cost estimate was reasonable (Reference 3).

On April 1, 2009, ENO submitted an update to the VYNPS Program to reflect changes in its decommissioning cost estimate, based on updated information from the Department of Energy (DOE) on when the government would begin accepting spent fuel from the industry (Reference 4), which it supplemented on August 18, 2009 (Reference 5). In Reference 5, VYNPS owner Entergy Nuclear Vermont Yankee, LLC (ENVY) committed to make a \$127.017 million contribution to the VYNPS decommissioning trust fund in 2026 to ensure adequate funding for license termination and spent fuel management activities. The NRC staff approved the revised VYNPS Program, as supplemented, on a preliminary basis on October 8, 2009 (Reference 6).

By letter dated September 23, 2013, ENO notified the NRC of its intent to permanently cease power operations at VYNPS at the end of the current operating cycle, which is expected to occur later this month (Reference 7).

Pursuant to 10 CFR 50.54(bb), licensees are required to notify the NRC of any significant changes to their proposed spent fuel management plans. As a result of its decision to permanently cease operations at VYNPS, and related changes to the anticipated schedule of decommissioning activities, irradiated fuel management activities, and decommissioning funding assumptions, ENO is modifying the VYNPS Program. This submittal provides the required Section 50.54(bb) notification. This updated Program supersedes all prior versions of the Program.

Pursuant to 10 CFR 50.82(a)(4)(i), on December 19, 2014, ENO submitted a Post Shutdown Decommissioning Activities Report (PSDAR) for VYNPS that included a site-specific decommissioning cost estimate (DCE) as an attachment (Reference 8). The DCE describes the bases for the assumptions regarding the DOE's acceptance of spent fuel from the industry and from VYNPS. As discussed in the DCE (and subject to the assumptions, qualifications, and reservations stated therein), the Program is based on the assumption that DOE will commence acceptance of VYNPS's spent fuel in 2026 and complete removal of all spent fuel from the site in 2052, consistent with the current DOE spent fuel management and acceptance strategy.¹

¹ As noted in the DCE, DOE's repository program assumes that spent fuel is accepted for disposal from the nation's commercial nuclear plants in the order ("queue") in which it was removed from service ("oldest fuel first"). The contracts that U.S. generators have with the DOE provide mechanisms for altering the oldest fuel first allocation scheme, including emergency deliveries, exchanges of allocations amongst generators, and the option of providing priority acceptance from permanently shutdown nuclear reactors. VYNPS will seek the most expeditious means of removing fuel from the site when DOE commences performance. Given DOE's failure to accept fuel under its contracts, however, it is unclear how these mechanisms will operate once DOE begins accepting

The DCE identifies the details, schedules, and costs of spent fuel management activities associated with the Program, along with license termination and site restoration activities and costs.

II. Irradiated Fuel Management Strategy

At the time of shutdown, there will be 368 fuel assemblies residing in the reactor as part of the current operating cycle, 2,628 spent fuel assemblies² stored in the spent fuel pool, and 884 assemblies stored in 13 dry storage casks on an independent spent fuel storage installation (ISFSI) pad. In 2008, construction of the first ISFSI pad was completed, which VYNPS operates under a 10 CFR Part 50 General License (in accordance with 10 CFR Part 72, Subpart K). VYNPS selected the Holtec HI-STORM 100S dry cask storage system for the spent fuel that is currently stored on the ISFSI. The system consists of a multipurpose canister (MPC) with a nominal capacity of 68 fuel assemblies and a concrete storage overpack. The current ISFSI pad was constructed to support 36 dry storage casks (the pad has four additional unused storage locations to allow VYNPS to move the casks if needed). VYNPS completed fuel loading campaigns to the ISFSI in 2008, 2011, and 2012.

As indicated in the VYNPS PSDAR (Reference 8), ENVY has selected the SAFSTOR decommissioning option. The Program assumes that decommissioning is completed within 60 years of permanent plant shutdown (i.e., by the end of 2074). Following shutdown, the reactor building will be operated as an interim wet fuel storage facility for approximately five and one-half years after operations cease. During this time period, the spent fuel residing in the storage pool will be transferred to the ISFSI. The ISFSI will remain operational until DOE is able to accept title to the fuel and complete the transfer of the fuel off site.

The PSDAR and DCE describe three major phases related to spent fuel management at VYNPS, which are summarized below.³ Spent fuel management activities are further broken out into two categories – “operational” spent fuel management activities, such as operating and maintaining the ISFSI and the spent fuel pool, and “transfer to dry storage” activities, such as procurement of dry storage systems, transfer of fuel from the spent fuel pool to the ISFSI, and construction of the second ISFSI pad.

spent fuel from commercial reactors. Accordingly, for planning purposes only, this Program assumes that DOE will accept spent fuel in an oldest fuel first order.

² This figure includes one fuel debris canister.

³ Appendix C to the DCE (Reference 8, Attachment 1) includes a detailed cost analysis of all decommissioning activities, including spent fuel management activities, by period.

TABLE 1 - Irradiated Fuel Management Program: Summary Schedule and Costs

Decommissioning Period	Start	End	Duration (Years)	Cost (thousands of 2014 dollars)
Periods 0 and 1: Planning and Preparations for Dormancy	2013	2016	2.6	23,068
Spent Fuel Management Operations				6,055
Transfer to Dry Storage				17,013
Period 2a: Dormancy with Wet Fuel Storage	2016	2020	4.2	217,318
Spent Fuel Management Operations				91,696
Transfer to Dry Storage				125,548
Period 2b: Dormancy with Dry Fuel Storage	2020	2052	32.5	127,961
Spent Fuel Management Operations				127,961
TOTAL			39.3	368,347

1. Pre-Shutdown Planning and Preparations for SAFSTOR Dormancy

Pre-shutdown planning activities include designing an expanded ISFSI facility to include a second storage pad, which is expected to be located in close proximity to the existing pad. The second pad is being designed for storage of 25 casks, and combined with the existing pad, will allow for dry storage of all spent fuel assemblies generated during the plant operations.

The initial decommissioning activities to be performed after plant shutdown will focus primarily on preparing the plant for a period of safe-storage (also referred to as dormancy) and constructing a second ISFSI pad. During this phase, VYNPS plans to complete the design of the new ISFSI pad and initiate site work. VYNPS also plans to commence security modifications supporting future ISFSI and dormancy operations during this time period.

The estimated spent fuel management costs associated with ISFSI design and construction, site security modifications, and other expenses during this initial phase, such as emergency planning and preparations for dormancy, total approximately \$23.1 million.

2. Dormancy with Wet Fuel Storage

During this phase, spent fuel will remain in the spent fuel pool until it meets the criteria for transfer to dry storage. VYNPS expects to complete expansion of the ISFSI in 2017, assuming the timely receipt of the required state regulatory approvals. The estimated costs associated with expanding the ISFSI, including construction of the second pad and related security modifications, total approximately \$32.7 million. Table 2 below provides additional detail on certain estimated dry storage-specific expenditures.

VYNPS expects to begin transferring the remaining spent fuel from the spent fuel pool to the ISFSI in 2019 and to complete the transfer of all fuel to the ISFSI by mid-2020. In total, 3,879 spent fuel assemblies and one fuel debris canister will be stored in 58 dry cask systems on the two ISFSI pads. Costs associated with purchasing 45 additional dry cask systems, loading fuel, and transferring fuel from the spent fuel pool to the ISFSI are included in this phase. After the fuel transfer is completed, the pool will be drained and supporting systems will be de-energized for the remainder of the dormancy period.

The total estimated spent fuel management costs associated with this phase is approximately \$217.3 million.

3. Dormancy with Dry Fuel Storage

During this phase, the spent fuel will remain stored on the ISFSI until DOE accepts the fuel and removes it from the site. As discussed above and in the DCE (Reference 8, Attachment 1), for planning purposes, the current Program assumes that DOE will begin removing fuel from VYNPS in 2026 and will complete the removal of all spent fuel from the site in 2052, according to the schedule set forth in Table 3 below.

During this phase, programs and procedures required to support safe operation of the ISFSI will be maintained in accordance with applicable requirements. Equipment maintenance, monitoring, and inspection will be performed as necessary. VYNPS will also maintain a 24-hour security force, whose primary responsibility will be to safeguard the spent fuel for as long as it remains on site. A security barrier, sensors, alarms, and other surveillance equipment will be maintained as required to provide security for the spent fuel. The estimated average annual cost to operate the ISFSI during this phase is approximately \$4 million.

Late in the dormancy period, additional activities will include transferring the spent fuel from the ISFSI to the DOE. The estimated cost for the eventual transfer of the MPCs to a DOE-provided transport vehicle for off-site disposal is approximately \$10 million, excluding a \$4.4 million allowance for a spent fuel transfer facility.⁴

The total estimated spent fuel management cost associated with this phase is approximately \$127.96 million.

⁴ As noted in the DCE (Reference 8, Attachment 1), DOE has breached its obligations to remove fuel from reactor sites on the contracted schedule, and has also failed to provide plant owners with information about how it will ultimately perform and fulfill its obligation. DOE officials have stated that DOE does not have an obligation to accept already-canistered fuel without an amendment to the Standard Contract, but DOE has not explained what costs any such amendment would involve. Consequently, the plant owner has no information or expectations on how DOE will remove fuel from the site in the future. In the absence of information about how DOE will specifically deal with already-canistered fuel, and for purposes of the DCE only, the DCE assumes that there will be no additional costs associated with DOE's acceptance of such fuel. If this assumption is incorrect, it is assumed that DOE will have liability for costs incurred to transfer the fuel to DOE-supplied containers, and to dispose of existing containers.

Table 2 - Estimated Expenditures for ISFSI Construction, Spent Fuel Packaging and Canister Transfer
(thousands, 2014 dollars)⁵

Year	New ISFSI Pad Construction	Spent Fuel Related Security Modifications	MPC and Storage Overpack Costs	ISFSI Loading Campaigns	Fuel Transfer Facility	ISFSI to DOE Transfer	Total
2014	4,753	0	0	0	0	0	4,753
2015	7,529	2,215	0	0	0	0	9,744
2016	7,613	0	0	0	0	0	7,613
2017	3,545	0	25,907	0	0	0	29,452
2018	0	1,400	37,940	1,375	0	0	40,715
2019	0	4,250	13,623	21,780	0	0	39,653
2020	0	1,400	1,311	7,920	0	0	10,631
2021	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0
2025	0	0	0	0	4,416	0	4,416
2026	0	0	0	0	0	863	863
2027	0	0	0	0	0	0	0
2028	0	0	0	0	0	518	518
2029	0	0	0	0	0	690	690
2030	0	0	0	0	0	518	518
2031	0	0	0	0	0	518	518
2032	0	0	0	0	0	345	345
2033	0	0	0	0	0	345	345
2034	0	0	0	0	0	345	345
2035	0	0	0	0	0	345	345
2036	0	0	0	0	0	345	345
2037	0	0	0	0	0	345	345
2038	0	0	0	0	0	345	345
2039	0	0	0	0	0	345	345
2040	0	0	0	0	0	0	0
2041	0	0	0	0	0	173	173
2042	0	0	0	0	0	173	173
2043	0	0	0	0	0	518	518
2044	0	0	0	0	0	345	345
2045	0	0	0	0	0	345	345
2046	0	0	0	0	0	345	345
2047	0	0	0	0	0	345	345
2048	0	0	0	0	0	345	345
2049	0	0	0	0	0	345	345
2050	0	0	0	0	0	345	345
2051	0	0	0	0	0	0	0
2052	0	0	0	0	0	863	863
Total	23,440	9,265	78,782	31,075	4,416	10,005	156,983

⁵ The costs identified in the first four columns (New ISFSI Pad Construction, Spent Fuel Related Security Modifications, MPC and Storage Overpack Costs, and ISFSI Loading Campaigns) are considered "transfer to dry storage" costs.

TABLE 3 - Spent Fuel Management Schedule
 (Fuel Assembly Totals by Location)

Year	Pool Inventory	ISFSI Inventory	DOE Acceptance ⁶
2014	2,996	884	
2015	2,996	884	
2016	2,996	884	
2017	2,996	884	
2018	2,996	884	
2019	820	3,060	
2020	0	3,880 ⁷	
2021		3,880	
2022		3,880	
2023		3,880	
2024		3,880	
2025		3,880	
2026		3,502	378
2027		3,502	-
2028		3,284	218
2029		3,010	274
2030		2,784	226
2031		2,558	226
2032		2,422	136
2033		2,286	136
2034		2,157	129
2035		2,029	128
2036		1,901	128
2037		1,781	120
2038		1,661	120
2039		1,549	112
2040		1,549	-
2041		1,464	85
2042		1,405	59
2043		1,209	196

⁶ This schedule is provided for illustrative purposes only and assumes that DOE begins accepting VYNPS fuel in 2026. It is expected that VYNPS will seek to accelerate acceptance based on shutdown reactor priority, exchanges of acceptance allocations, and other Standard Contract provisions.

⁷ Includes one fuel debris canister, which, for purposes of this analysis and for convenience, is assumed to be picked up in the final year of DOE acceptance (2052).

TABLE 3 - Spent Fuel Management Schedule (cont'd)
(Fuel Assembly Totals by Location)

Year	Pool Inventory	ISFSI Inventory	DOE Acceptance
2044		1,073	136
2045		949	124
2046		821	128
2047		701	120
2048		585	116
2049		469	116
2050		349	120
2051		349	-
2052		-	349
Total			3,880

III. ISFSI Decommissioning

The ISFSI pads and facilities will be decommissioned at the time of plant decommissioning or after DOE has removed all spent fuel from the site. The bases and assumptions used to formulate the cost estimate are discussed in the DCE (Reference 8, Attachment 1). As detailed in Appendix D to the DCE, the estimated cost to decommission the ISFSI is approximately \$5.1 million.

IV. Funding Demonstration for License Termination and Spent Fuel Management Operations Costs

As shown in the DCE (Reference 8, Attachment 1), the projected total cost to decommission VYNPS, after an extended period of safe storage, is estimated at \$1.24 billion (in 2014 dollars). This amount includes estimated costs associated with license termination (\$817.22 million), interim spent fuel storage (\$368.35 million), and site restoration (\$57.15 million) activities.

In Reference 9, ENO submitted an updated Decommissioning Funding Status report. Reference 9 reported the VYNPS decommissioning trust fund balance to be approximately \$655 million as of October 31, 2014. Tables 3.4 and 3.5 of the DCE (Reference 8, Attachment 1) set forth the estimated annual expenditures for license termination and spent fuel management, respectively. For convenience, those tables are reproduced below as Tables 4 and 5. This annual expenditure information is used in the cash flow analysis in Table 6 below. The cash flow analysis demonstrates that the VYNPS trust fund is sufficiently funded for all license termination activities and certain spent fuel management activities. ENVY plans to fund “operational” spent fuel management activities, such as operating and maintaining the ISFSI and the spent fuel pool, from the trust fund. Of the estimated \$368 million total spent fuel management costs, the operational costs total approximately \$225 million.

The remaining \$143 million is associated with transfer of spent fuel to dry storage (e.g., procurement of dry storage systems, transfer of fuel from the spent fuel pool to the ISFSI, and construction of the second ISFSI pad). To fund the “transfer to dry storage” portion of spent fuel management costs, ENVY intends to establish two separate revolving credit facilities from third party banks totaling \$145 million. The first facility is planned be a committed credit facility with

an expected duration of three years and a capacity of \$60 million. This facility would be guaranteed by Entergy Corporation, parent company of ENVY and ENO. The committed facility is intended to provide working capital for ENVY from the time it pays an expenditure to the time it receives reimbursement from the trust fund, as well as dry storage costs that are not reimbursable from the trust fund. The second credit facility is planned to be an uncommitted facility with a capacity of \$85 million.⁸ This facility would also be guaranteed by Entergy Corporation. This facility is intended to cover the balance of costs related to transferring fuel from the spent fuel pool to the ISFSI.

Thus, considering the current fund balance of \$655 million (as of October 31, 2014), projected fund earnings during the SAFSTOR period (assuming an annual 2% growth rate), and \$145 million from the two planned external credit facilities to fund the transfer to dry fuel storage costs, the trust fund is expected to have an excess of \$175.9 million over the estimated license termination and spent fuel management costs. As noted above, in Reference 5, ENVY committed to make a \$127.017 million contribution to the VYNPS decommissioning trust fund in 2026 to ensure adequate funding for license termination and spent fuel management activities. As shown in the updated funding strategy for license termination and spent fuel management activities, this planned contribution is no longer necessary. As a result, ENO is hereby providing written notification on behalf of ENVY of ENVY's cancellation of this commitment.

⁸ A committed credit facility is a legal agreement between the lender and the borrower outlining the conditions of the credit facility. Once signed, the agreement requires the lender to lend money to the borrower, provided that the borrower satisfies the agreement's conditions (e.g., paying fees). Committed credit lines differ from uncommitted credit lines in that they legally bind the lender to provide the funds, rather than giving the lender the option of suspending or canceling the credit line based on market conditions.

Table 4 - License Termination Expenditures
(thousands, 2014 dollars)

Year	Labor	Equip. & Materials	Energy	Waste Disposal	Other	Total
2014	0	0	0	0	15,165	15,165
2015	39,626	533	3,912	38	37,089	81,198
2016	15,512	442	1,004	22	19,145	36,126
2017	2,015	395	184	14	8,216	10,823
2018	1,898	395	184	14	7,057	9,548
2019	1,858	395	184	14	5,722	8,173
2020	5,716	1,234	1,288	1,200	8,326	17,763
2021	1,969	284	187	7	2,794	5,241
2022	1,969	284	187	7	2,744	5,191
2023	1,969	284	187	7	2,744	5,191
2024	1,974	285	187	7	1,196	3,650
2025	1,969	284	187	7	1,144	3,591
2026	1,969	284	187	7	1,286	3,733
2027	1,969	284	187	7	1,336	3,783
2028	1,974	285	187	7	1,288	3,742
2029	1,969	284	187	7	1,286	3,733
2030	1,969	284	187	7	1,336	3,783
2031	1,969	284	187	7	1,286	3,733
2032	1,974	285	187	7	1,288	3,742
2033	1,969	284	187	7	1,336	3,783
2034	1,969	284	187	7	1,286	3,733
2035	1,969	284	187	7	1,286	3,733
2036	1,974	285	187	7	1,338	3,792
2037	1,969	284	187	7	1,286	3,733
2038	1,969	284	187	7	1,286	3,733
2039	1,969	284	187	7	1,336	3,783
2040	1,974	285	187	7	1,288	3,742
2041	1,969	284	187	7	1,286	3,733
2042	1,969	284	187	7	1,336	3,783
2043	1,969	284	187	7	1,286	3,733
2044	1,974	285	187	7	1,288	3,742
2045	1,969	284	187	7	1,336	3,783
2046	1,969	284	187	7	1,286	3,733
2047	1,969	284	187	7	1,286	3,733
2048	1,974	285	187	7	1,338	3,792
2049	1,969	284	187	7	1,286	3,733
2050	1,969	284	187	7	1,286	3,733
2051	1,969	284	187	7	1,336	3,783
2052	1,974	285	187	7	1,288	3,742

Table 4 - License Termination Expenditures (cont'd)
(thousands, 2014 dollars)

Year	Labor	Equip. & Materials	Energy	Waste Disposal	Other	Total
2053	1,969	278	187	6	1,142	3,583
2054	1,969	278	187	6	1,192	3,633
2055	1,969	278	187	6	1,142	3,583
2056	1,974	279	187	6	1,144	3,591
2057	1,969	278	187	6	1,192	3,633
2058	1,969	278	187	6	1,142	3,583
2059	1,969	278	187	6	1,142	3,583
2060	1,974	279	187	6	1,194	3,641
2061	1,969	278	187	6	1,142	3,583
2062	1,969	278	187	6	1,142	3,583
2063	1,969	278	187	6	1,192	3,633
2064	1,974	279	187	6	1,144	3,591
2065	1,969	278	187	6	1,142	3,583
2066	1,969	278	187	6	1,192	3,633
2067	1,969	278	187	6	1,142	3,583
2068	35,936	1,912	1,873	32	3,524	43,277
2069	53,909	14,320	1,821	12,174	9,806	92,030
2070	53,452	15,787	1,689	18,228	15,362	104,519
2071	46,489	8,170	1,401	10,716	17,749	84,524
2072	46,616	8,192	1,405	10,745	17,995	84,953
2073	38,409	3,090	599	2,488	5,554	50,139
2074	151	0	0	0	360	512
2075	71.35	0	0	0	224	295
Total	434,259	68,148	24,326	56,003	234,483	817,219

Table 5 - Spent Fuel Management Expenditures
(thousands, 2014 dollars)

Year	Labor	Equip. & Materials	Energy	Waste Disposal	Other	Total
2014	0	0	0	0	4,753	4,753
2015	0	0	0	0	14,319	14,319
2016	9,093	0	1,622	0	18,790	29,506
2017	13,547	0	2,195	0	33,307	49,049
2018	13,547	0	2,195	0	46,588	62,330
2019	13,547	0	2,195	0	43,942	59,684
2020	6,755	0	1,092	0	12,898	20,745
2021	3,238	338	79	0	341	3,996
2022	3,238	338	79	0	341	3,996
2023	3,238	338	79	0	341	3,996
2024	3,246	339	80	0	342	4,007
2025	3,238	338	79	0	341	3,996
2026	3,238	338	79	0	341	3,996
2027	3,238	338	79	0	341	3,996
2028	3,246	339	80	0	342	4,007
2029	3,238	338	79	0	341	3,996
2030	3,238	338	79	0	341	3,996
2031	3,238	338	79	0	341	3,996
2032	3,246	339	80	0	342	4,007
2033	3,238	338	79	0	341	3,996
2034	3,238	338	79	0	341	3,996
2035	3,238	338	79	0	341	3,996
2036	3,246	339	80	0	342	4,007
2037	3,238	338	79	0	341	3,996
2038	3,238	338	79	0	341	3,996
2039	3,238	338	79	0	341	3,996
2040	3,246	339	80	0	342	4,007
2041	3,238	338	79	0	341	3,996
2042	3,238	338	79	0	341	3,996
2043	3,238	338	79	0	341	3,996
2044	3,246	339	80	0	342	4,007
2045	3,238	338	79	0	341	3,996
2046	3,238	338	79	0	341	3,996
2047	3,238	338	79	0	341	3,996
2048	3,246	339	80	0	342	4,007
2049	3,238	338	79	0	341	3,996
2050	3,238	338	79	0	341	3,996
2051	3,238	338	79	0	341	3,996

Table 5 - Spent Fuel Management Expenditures (cont'd)
(thousands, 2014 dollars)

Year	Labor	Equip. & Materials	Energy	Waste Disposal	Other	Total
2052	3,246	339	80	0	342	4,007
2053	0	0	0	0	0	0
2054	0	0	0	0	0	0
2055	0	0	0	0	0	0
2056	0	0	0	0	0	0
2057	0	0	0	0	0	0
2058	0	0	0	0	0	0
2059	0	0	0	0	0	0
2060	0	0	0	0	0	0
2061	0	0	0	0	0	0
2062	0	0	0	0	0	0
2063	0	0	0	0	0	0
2064	0	0	0	0	0	0
2065	0	0	0	0	0	0
2066	0	0	0	0	0	0
2067	0	0	0	0	0	0
2068	0	0	0	0	0	0
2069	0	0	0	0	0	0
2070	0	0	0	0	0	0
2071	0	0	0	0	0	0
2072	0	0	0	0	0	0
2073	0	0	0	0	0	0
2074	0	0	0	0	0	0
2075	0	0	0	0	0	0
Total	160,164	10,816	11,843	0	185,524	368,347

Table 6 - Annual Cash Flow Analysis

Vermont Yankee Nuclear Power Station - SAFSTOR Methodology		
Annual Cash Flow Analysis - Total License Termination, Spent Fuel Management less Transfer to Dry Fuel Storage Costs		
(In Thousands, 2014 Dollars)		
	Date	Amount
Current Value of Qualified Trust Fund	10/31/2014	\$ 654,925
Current Value of Non-Qualified Trust Fund	10/31/2014	\$ 38
Total Trust Fund Balance as of	10/31/2014	\$ 654,963
Start of Decommissioning	12/29/2014	
Decommissioning Funds value at Calculation Date	10/31/2014	\$ 654,963
Total Estimated Costs at Calculation Date	10/31/2014	\$ 1,042,748

0.000%	Cost Escalation Rate	Start of Decom to end of Decom - Assumes 0.0% Decom cost escalation rate
2.000%	Fund Earnings Rate	Start of Decom to end of Decom - Assumes 2.0% Earnings Rate

Vermont Yankee Nuclear Power Station - SAFSTOR Methodology									
Annual Cash Flow Analysis - Total License Termination, Spent Fuel Management less Transfer to Dry Fuel Storage Costs									
(In Thousands in 2014 Dollars)									
Year	Column 1 50.75 License Termination Cost	Column 2 50.54 (bb) Spent Fuel Management Cost	Column 3 Exclude Transfer to Dry Fuel Storage Cost	Column 4 License Termination Cost plus Spent Fuel Management Cost less Transfer to Dry Fuel Storage Cost	Column 5 Beginning of Year Trust Fund Balance	Column 6 Withdraw	Column 7 Contribute	Column 8 Trust Fund Earnings	Column 9 Year Ending Trust Fund Balance
2014	15,165	4,753	4,753	15,165	654,963	15,165	0	2,183	641,981
2015	81,198	14,319	10,001	85,515	641,981	85,515	0	11,984	568,450
2016	36,126	29,506	7,613	58,018	568,450	58,018	0	10,789	521,221
2017	10,823	49,049	28,873	31,000	521,221	31,000	0	10,114	500,335
2018	9,548	62,330	41,644	30,235	500,335	30,235	0	9,704	479,805
2019	8,173	59,684	39,516	28,342	479,805	28,342	0	9,313	460,776
2020	17,763	20,745	10,420	28,088	460,776	28,088	0	8,935	441,622
2021	5,241	3,996		9,237	441,622	9,237	0	8,740	441,125
2022	5,191	3,996		9,187	441,125	9,187	0	8,731	440,669
2023	5,191	3,996		9,187	440,669	9,187	0	8,722	440,204
2024	3,650	4,007		7,657	440,204	7,657	0	8,728	441,274
2025	3,591	3,996		7,587	441,274	7,587	0	8,750	442,437
2026	3,733	3,996		7,729	442,437	7,729	0	8,771	443,480
2027	3,783	3,996		7,779	443,480	7,779	0	8,792	444,493
2028	3,742	4,007		7,749	444,493	7,749	0	8,812	445,557
2029	3,733	3,996		7,729	445,557	7,729	0	8,834	446,662
2030	3,783	3,996		7,779	446,662	7,779	0	8,855	447,738

Vermont Yankee Nuclear Power Station - SAFSTOR Methodology									
Annual Cash Flow Analysis - Total License Termination, Spent Fuel Management less Transfer to Dry Fuel Storage Costs (In Thousands in 2014 Dollars)									
Year	Column 1 50.75 License Termination Cost	Column 2 50.54 (bb) Spent Fuel Management Cost	Column 3 Exclude Transfer to Dry Fuel Storage Cost	Column 4 License Termination Cost plus Spent Fuel Management Cost less Transfer to Dry Fuel Storage Cost	Column 5 Beginning of Year Trust Fund Balance	Column 6 Withdraw	Column 7 Contribute	Column 8 Trust Fund Earnings	Column 9 Year Ending Trust Fund Balance
2031	3,733	3,996		7,729	447,738	7,729	0	8,877	448,887
2032	3,742	4,007		7,749	448,887	7,749	0	8,900	450,039
2033	3,783	3,996		7,779	450,039	7,779	0	8,923	451,183
2034	3,733	3,996		7,729	451,183	7,729	0	8,946	452,400
2035	3,733	3,996		7,729	452,400	7,729	0	8,971	453,642
2036	3,792	4,007		7,799	453,642	7,799	0	8,995	454,839
2037	3,733	3,996		7,729	454,839	7,729	0	9,019	456,129
2038	3,733	3,996		7,729	456,129	7,729	0	9,045	457,446
2039	3,783	3,996		7,779	457,446	7,779	0	9,071	458,738
2040	3,742	4,007		7,749	458,738	7,749	0	9,097	460,087
2041	3,733	3,996		7,729	460,087	7,729	0	9,124	461,482
2042	3,783	3,996		7,779	461,482	7,779	0	9,152	462,855
2043	3,733	3,996		7,729	462,855	7,729	0	9,180	464,306
2044	3,742	4,007		7,749	464,306	7,749	0	9,209	465,767
2045	3,783	3,996		7,779	465,767	7,779	0	9,238	467,225
2046	3,733	3,996		7,729	467,225	7,729	0	9,267	468,764
2047	3,733	3,996		7,729	468,764	7,729	0	9,298	470,333
2048	3,792	4,007		7,799	470,333	7,799	0	9,329	471,863
2049	3,733	3,996		7,729	471,863	7,729	0	9,360	473,494
2050	3,733	3,996		7,729	473,494	7,729	0	9,393	475,158
2051	3,783	3,996		7,779	475,158	7,779	0	9,425	476,804
2052	3,742	4,007		7,749	476,804	7,749	0	9,459	478,514
2053	3,583	0		3,583	478,514	3,583	0	9,534	484,466
2054	3,633	0		3,633	484,466	3,633	0	9,653	490,487
2055	3,583	0		3,583	490,487	3,583	0	9,774	496,678
2056	3,591	0		3,591	496,678	3,591	0	9,898	502,984
2057	3,633	0		3,633	502,984	3,633	0	10,023	509,375
2058	3,583	0		3,583	509,375	3,583	0	10,152	515,944
2059	3,583	0		3,583	515,944	3,583	0	10,283	522,644
2060	3,641	0		3,641	522,644	3,641	0	10,416	529,419
2061	3,583	0		3,583	529,419	3,583	0	10,553	536,389
2062	3,583	0		3,583	536,389	3,583	0	10,692	543,499
2063	3,633	0		3,633	543,499	3,633	0	10,834	550,700
2064	3,591	0		3,591	550,700	3,591	0	10,978	558,086

Vermont Yankee Nuclear Power Station - SAFSTOR Methodology									
Annual Cash Flow Analysis - Total License Termination, Spent Fuel Management less Transfer to Dry Fuel Storage Costs (In Thousands in 2014 Dollars)									
Year	Column 1 50.75 License Termination Cost	Column 2 50.54 (bb) Spent Fuel Management Cost	Column 3 Exclude Transfer to Dry Fuel Storage Cost	Column 4 License Termination Cost plus Spent Fuel Management Cost less Transfer to Dry Fuel Storage Cost	Column 5 Beginning of Year Trust Fund Balance	Column 6 Withdraw	Column 7 Contribute	Column 8 Trust Fund Earnings	Column 9 Year Ending Trust Fund Balance
2065	3,583	0		3,583	558,086	3,583	0	11,126	565,630
2066	3,633	0		3,633	565,630	3,633	0	11,276	573,273
2067	3,583	0		3,583	573,273	3,583	0	11,430	581,120
2068	43,277	0		43,277	581,120	43,277	0	11,190	549,033
2069	92,030	0		92,030	549,033	92,030	0	10,060	467,064
2070	104,519	0		104,519	467,064	104,519	0	8,296	370,841
2071	84,524	0		84,524	370,841	84,524	0	6,572	292,889
2072	84,953	0		84,953	292,889	84,953	0	5,008	212,944
2073	50,139	0		50,139	212,944	50,139	0	3,757	166,563
2074	512	0		512	166,563	512	0	3,326	169,377
2075	295	0		295	169,377	295	0	3,385	172,466
2076	0	0		0	172,466	0	0	3,449	175,915
	817,219	368,347	142,819	1,042,748		1,042,748	0	563,701	

Table 6 Definitions:

Column 1: 50.75 License Termination Cost

Reflects the Total Annual License Termination Plan cost in 2014 dollars at a 0.0% escalation rate

Column 2: 50.54 (bb) Spent Fuel Management Cost

Reflects the Total Annual Irradiated Fuel Management Plan cost in 2014 dollars at a 0.0% escalation rate

Column 3: Exclude Transfer to Dry Fuel Storage Cost

Reflects the Transfer to Dry Fuel Storage Cost included in Column 2 that is planned to be funded by external credit facilities, in 2014 dollars at a 0.0% escalation rate

Column 4: License Termination Cost plus Spent Fuel Management Cost less Transfer to Dry Fuel Storage Cost

Reflects the Total Annual License Termination Plan cost plus Total Spent Fuel Management Plan cost less Transfer to Dry Fuel Storage cost all in 2014 dollars at a 0.0% escalation rate (Column 1 + Column 2 - Column 3)

Column 5: Beginning of Year Trust Fund Balance

Reflects the beginning of year Trust Fund balance in 2014 dollars at a 0.0% escalation rate and 2.0% Fund Earnings

Column 6: Withdraw

Reflects the annual expenditures from the Trust Fund in 2014 dollars at a 0.0% escalation rate (equals Column 4)

Column 7: Contribute

Reflects the annual contributions to the Trust Fund in 2014 dollars at a 0.0% escalation rate

Column 8: Trust Fund Earnings

Reflects earnings on funds remaining in the trust. A 2.0% earnings rate is used over a 0.0% cost escalation rate. The annual 2.0% earnings are calculated on the beginning balance less 50% of the projected annual expenditure for each year. (Column 5 - 50% of Column 6 * 2.0%)

Column 9: Year Ending Trust Fund Balance

Reflects the end of year Trust Fund balance after all projected earnings are added and all projected expenditures are deducted for year end specified at a 0.0% escalation rate and 2.0% Fund Earnings in 2014 dollars. (Column 5 - Column 6 + Column 7 + Column 8)

V. Regulatory Activities

The Program assumes withdrawals from the VYNPS decommissioning trust fund for operational spent fuel management costs. ENO will make appropriate submittals to request an exemption in accordance with 10 CFR 50.12 from the requirements of 10 CFR 50.82(a)(8)(i)(A), which would permit the use of decommissioning trust funds for spent fuel management expenses. The availability of decommissioning funding sources will be periodically revisited to ensure that withdrawals from the fund do not inhibit the ability to complete license termination and spent fuel management activities.

In addition, in accordance with 10 CFR 50.82(a)(8)(vii), ENO will submit a report on the status of spent fuel management funding by March 31 of each year. The report will include, current through the end of the previous calendar year, the amount of funds accumulated to cover the cost of managing spent fuel, the projected cost of managing spent fuel until it is transferred to DOE, and if the funds accumulated do not cover the projected cost, a plan to provide additional funding assurance using one of the methods allowed by NRC regulations.

VI. Summary

The spent fuel management activities described in this updated Program must be performed in conjunction with license termination activities. The annual cash flow analysis demonstrates that the VYNPS decommissioning trust fund with projected earnings, together with an additional \$145 million in credit available for transfer to dry fuel storage activities, will be sufficient to cover the estimated license termination and spent fuel management costs.

VII. References

1. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Report Pursuant to 10 CFR 50.54(bb)," BVY 07-007, dated March 21, 2007 (ML070860696)
2. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Revised Spent Fuel Management Plan Pursuant to 10 CFR 50.54(bb)," BVY 08-077, dated October 14, 2008 (ML082910294)
3. Letter, USNRC to Entergy Nuclear Operations, Inc., "Safety Evaluation Re: Spent Fuel Management Program and Preliminary Decommissioning Cost Estimate (TAC NOs. MD8035 and MD8051)," dated February 3, 2009 (ML083390193)
4. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Update to Vermont Yankee Spent Fuel Management Plan," BVY 09-022, dated April 1, 2009 (ML091040287)
5. Letter, Entergy Nuclear Operations, Inc. to USNRC, "VY Spent Fuel Management Plan – RAI Response)," BVY 09-048, dated August 18, 2009 (ML092370298)
6. Letter, USNRC to Entergy Nuclear Operations, Inc., "Safety Evaluation Re: Update to Spent Fuel Management Program (TAC NO. ME1152)," dated October 8, 2009 (ML092740238)
7. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Notification of Permanent Cessation of Power Operations," BVY 13-079, dated September 23, 2013 (ML13273A204)
8. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Vermont Yankee Nuclear Power Station Post-Shutdown Decommissioning Activities Report," BVY 14-078, dated December 19, 2014
9. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Vermont Yankee Decommissioning Funding Status Report," BVY 14-082, dated December 19, 2014

Attachment 2

Vermont Yankee Nuclear Power Station
List of Cancelled Regulatory Commitments

List of Cancelled Regulatory Commitments

This table identifies actions discussed in this letter for which ENVY no longer commits to perform.

COMMITMENT	DATE OF ORIGINAL COMMITMENT	CHANGED DATE
Provide additional funding of \$127.017 million dollars to trust fund for Spent Fuel Management. Source: Letter BVY 09-048, dated August 18, 2009 (ML092370298)	December 31, 2026	This commitment is cancelled.