

**NorthStar Vermont Yankee, LLC**

Vermont Yankee Nuclear Power Station
320 Governor Hunt Road
Vernon, VT 05354
Office: 802.451.5354

24-Hour Emergency Response: 800.283.2933

The World's Most Comprehensive Facility & Environmental Solutions Company - **We Bring Answers.**

Scott E. State, P.E.

Chief Nuclear Officer

10 CFR 50.75(f)(1)

10 CFR 50.82(a)(8)(v)

10 CFR 50.82 82(a)(8)(vii)

BYV 19-032

September 25, 2019

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

SUBJECT: Response to Request for Information Re: NRC Review of the Status of
Decommissioning and Spent Fuel Management Fund
Vermont Yankee Nuclear Power Station
Docket Nos. 50-271 and 72-59
License No. DPR-28

- REFERENCES:
1. Letter, USNRC to Entergy Nuclear Operations, Inc., "Order Approving Transfer of the License for the Vermont Yankee Nuclear Power Station and Conforming License Amendment (EPID# L-2017-LLM-0002)," dated October 11, 2018, NVY 18-021 (ML 18242A638)
 2. Letter, USNRC to Vermont Yankee Nuclear Power Station, "Issuance of Amendment Re: Application for Order Approving Direct and Indirect Transfer of Renewed Operating License and Independent Spent Fuel Storage Installation General License and Conforming Amendment (EPID# L-2017-LLM-0002)," dated January 11, 2019, NVY 19-001 (ML18347B360)
 3. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Decommissioning Funding Status Report per 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)," CNRO-2019-00005 (BYV 19-011), dated March 28, 2019 (ML19087A318)
 4. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Status of Funding for Managing Irradiated Fuel for Year Ending December 31, 2018 - 10 CFR 50.82(a)(8)(vii)" CNRO-2019-00006 (BYV 19-012), dated March 28, 2019 (ML19087A276)
 5. Letter, USNRC to NorthStar Vermont Yankee, LLC, "Information Needed for the U.S. Nuclear Regulatory Commission (NRC) Review of the Status of Decommissioning and Spent Fuel Management Fund for the Vermont Yankee Nuclear Power Station (EPID No. L-2019-LSO-0029)," dated August 26, 2019, NVY 19-009 (ML19224A470)

ADD 1
NMSS26
NRR
NMSS

Dear Sir or Madam:

On October 11, 2018, the NRC issued an order approving the transfer of the Vermont Yankee Nuclear Power Station Renewed Facility Operating License No. DPR-28 and the transfer of the generally licensed Vermont Yankee Independent Spent Fuel Storage Installation from Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. to NorthStar Nuclear Decommissioning Company, LLC (NNDC) and NorthStar Vermont Yankee, LLC (NVY) (Reference 1). On January 11, 2019, the NRC issued the conforming license amendment to reflect the direct transfer of these licenses for Vermont Yankee (Reference 2).

By letters dated March 28, 2019 Entergy Nuclear Operations, Inc. (ENOI), submitted annual reports on the status of decommissioning funding and funding for managing irradiated fuel for Vermont Yankee Nuclear Power Station (VY) (References 3 and 4). Entergy Nuclear Operations, Inc. (ENOI) submitted the subject annual reports as required by 10 CFR 50.82(a)(8)(v) and (vii), because as of December 31, 2018 (the end of the previous calendar year) ENOI was the Licensee of the facility.

As documented in Reference 5, the NRC identified that in order to complete its review of the status of decommissioning funding and funding for managing irradiated fuel for VY, additional information would be required. The response to the Staff's request for additional information is provided in the attachment to this submittal.

This letter contains no new regulatory commitments.

Should you have any questions concerning this letter, or require additional information, please contact me at 212.951.3660.

Best Regards,
NorthStar Vermont Yankee, LLC

By: 

Scott E. State, P.E.
Chief Nuclear Officer

- Attachment 1: Response to Request for Additional Information in Support of the NRC's Review of the Status of Decommissioning and Spent Fuel Management Funds
- Attachment 2: Status of Decommissioning Funding
- Attachment 3: Annual Cash Flow Analysis
- Attachment 4: Irradiated Fuel Management Funding Analysis

cc:

Mr. David C. Lew
Regional Administrator, Region 1
U.S. Nuclear Regulatory Commission
2100 Renaissance Blvd, Suite 100
King of Prussia, PA 19406-2713

Mr. Jack D. Parrott, Senior Project Manager
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Mail Stop T-5A10
Washington, DC 20555

Ms. June Tierney, Commissioner
Vermont Department of Public Service
112 State Street – Drawer 20
Montpelier, Vermont 05602-2601

Mr. John E. Matthews, Partner
Morgan, Lewis & Bockius, LLP
1111 Pennsylvania Avenue, NW
Washington, DC 20004-2541

Mr. Gregory G. DiCarlo, Vice President & General Counsel
NorthStar Group Services, Inc.
35 Corporate Drive, Suite 1155
Trumbull, CT 06611

Attachment 1

Vermont Yankee Nuclear Power Station

Response to Request for Additional Information in Support of the NRC's Review of the
Status of Decommissioning and Spent Fuel Management Funds
(1 page)

NorthStar Vermont Yankee, LLC
Response to Request for Additional Information
As of January 11, 2019 - 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION IN SUPPORT OF THE
NRC'S REVIEW OF THE STATUS OF DECOMMISSIONING AND SPENT FUEL
MANAGEMENT FUNDS FOR VERMONT YANKEE NUCLEAR POWER STATION**

Background

By letters dated March 28, 2019 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML 19087A318 and ML 19087A276), Entergy Nuclear Operations, Inc. (ENOI) submitted for U.S. Nuclear Regulatory Commission (NRC) review their reports on the status of decommissioning funding and funding for managing irradiated fuel for the Vermont Yankee Nuclear Power Station (VY). The NRC staff has reviewed the reports and determined that additional information from NorthStar Vermont Yankee, LLC (NVY) and NorthStar Nuclear Decommissioning Company, LLC is necessary in order to complete its review.

Request for Additional Information:

Provide revised decommissioning financial assurance and spent fuel management reports in accordance with 10 CFR 50.82(a)(8)(v)(B)-(D) and 10 CFR 50.82(a)(8)(vi)-(vii), reflecting costs and funding associated with NorthStar's accelerated decommissioning plan and schedule, as approved by the NRC in its October 2018 license transfer order.

Response:

Table 3-1 provided below is an annual cash flow analysis that demonstrates that there is reasonable assurance of funding to complete all license termination activities. The beginning NDT balance (year 2019) is the minimum after-tax balance required pursuant to the transaction documents. Accordingly, the NVY concludes that as of January 11, 2019 adequate funding assurance for decommissioning Vermont Yankee has been demonstrated. Further information in response to this request is provided in Attachments 2, 3 & 4.

Attachment 2

Vermont Yankee Nuclear Power Station

Status of Decommissioning Funding
(2 pages)

NorthStar Vermont Yankee, LLC
Status of Decommissioning Funding Vermont Yankee Nuclear Power Station
As of January 11, 2019 - 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)

Plant Name: **Vermont Yankee Nuclear Power Station**

10 CFR 50.75(f)(1)

1. Minimum Financial Assurance (MFA)	\$498.45 million [Note 1]
2. ISFSI Obligation as of 1/11/2019	\$3.454 million [Note 2]
3. Decommissioning Trust Fund & Escrow Account Total as of 1/11/2019	\$517.890 million [Note 3]
4. A schedule of the annual amounts remaining to be collected	\$308.377 million [Note 4]
5. Assumptions used in determining rates of escalation in decommissioning costs, rates of earnings on decommissioning funds, and rates of other factors used in funding projections	2% annual real rate of return per 10 CFR 50.75(e)(1)(i)
6. Any contracts upon which the licensee is relying pursuant to 10 CFR 50.75(e)(1)(v)	None
7. Modifications occurring to a licensee's current method of providing financial assurance since the last submitted report	No
8. Any material changes to trust agreements	No

Note 1: This amount is based upon total DECON expenditures for radiological remediation and license termination set forth in the updated Decommissioning Funding Assurance Plan and PROMPT DECON analysis provided in Attachment 3. This is the amount of decommissioning funds estimated to be required for remaining License Termination Costs.

Note 2: From "Notification of Revised Post-Shutdown Decommissioning Activities Report (Revised PSDAR)," dated April 6, 2017 (ML17096A394) – reference Table 2, 'License Termination' column.

Note 3: NDT Balance - \$487.890 million plus Financial Assurance Escrow Balance \$30.000 million.

Note 4: Cost Recovery from DOE for breach of Standard Contract - \$273.377 million plus \$10 million DOE Round 3 Cost Recovery (2023) payment via Entergy plus Contributions to Financial Assurance Escrow - \$25 million.

NorthStar Vermont Yankee, LLC
Status of Decommissioning Funding Vermont Yankee Nuclear Power Station
As of January 11, 2019 - 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)

Plant Name: **Vermont Yankee Nuclear Power Station**

10 CFR 50.82(a)(8)(v) & (vi)

1. Cumulative decommissioning spending through 12/31/2018	\$189.53 million [Note1]
2. 2018 decommissioning spending	\$46.81 million [Note2]
3. Decommissioning Trust Fund & Escrow Account Total as of 1/11/2019	\$517.890 million
4. Additional planned contributions to the Financial Assurance Escrow Account	\$25 million
5. Estimated costs to complete from latest estimate	N/A – Initial Report
6. Estimate is based on unrestricted release of the site per 10 CFR 20.1402	
7. Modifications to financial assurance since last report	See above in 10 CFR 50.75 information
8. Any material changes to trust agreements	See above in 10 CFR 50.75 information

Note 1: Cumulative spending through 12/31/2018 paid by former owner, Entergy Nuclear Operations, Inc. (ENOI).

Note 2: This estimate only includes 2018 decommissioning costs. 2014 through 2017 qualified costs are included in Item 1 and have been reimbursed in 2018.

Attachment 3

Vermont Yankee Nuclear Power Station

Annual Cash Flow Analysis
(5 pages)

NorthStar Vermont Yankee, LLC
Annual Cash Flow Analysis
As of January 11, 2019 - 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)

Vermont Yankee Nuclear Power Station (Vermont Yankee) permanently ceased operations on December 29, 2014. In January 2019, Entergy Nuclear Vermont Yankee, LLC was acquired by NorthStar Nuclear Decommissioning Company, LLC (NNDC) from Entergy Nuclear Operations, Inc. (ENOI), and renamed NorthStar Vermont Yankee, LLC (NVY). As a result of the acquisition, NVY became the Licensee for Vermont Yankee. NVY is submitting this report because as of January 11, 2019, NVY is the Licensee for the plant and is responsible for Vermont Yankee decommissioning plans.

Total funding available for the Vermont Yankee decommissioning as of January 11, 2019 was \$517.890 million, which includes the decommissioning trust fund balance of \$487.890 million plus the Financial Assurance Escrow balance of \$30 million. Table 3 of the site-specific decommissioning cost estimate (Reference 1, Attachment) set forth the estimated annual expenditures for license termination and spent fuel management, respectively. A cash flow analysis utilizing this annual expenditure and significant schedule change information is included in Table 3-1.

The cash flow analysis demonstrates that the Vermont Yankee decommissioning trust fund was sufficiently funded for all license termination activities and certain spent fuel management activities (i.e., operational costs) as of January 11, 2019. Costs related to spent fuel management operations (e.g., operations and maintenance costs for the spent fuel pool and Independent Spent Fuel Storage Installation, totaling approximately \$273.377 million, Table 3-1 Column 2) are planned to be funded from the decommissioning trust fund and recoveries from the U.S. Department of Energy.

NVY has determined that use of a DECON analysis shows that as of January 11, 2019 there was reasonable assurance that adequate funds will be available for the decommissioning process in compliance with NRC decommissioning funding assurance rules.

Pursuant to 10 CFR 50.75(e)(1)(i), "A licensee that has prepaid funds based on a site-specific estimate under § 50.75(b)(1) of this section may take credit for projected earnings on the prepaid decommissioning trust funds, using up to a 2 percent annual real rate of return from the time of future funds' collection through the projected decommissioning period, provided that the site-specific estimate is based on a period of safe storage that is specifically described in the estimate." NVY understands that a facility-specific analysis may be used for demonstrating the adequacy of decommissioning funds, provided that "the NRC-required cost estimate for decommissioning costs as defined in 10 CFR 50.2 is equal to or greater than the amount stated in the formulas in 10 CFR 50.75(c)(1) and (2) as the basis for justifying a higher than minimum funding level" (Regulatory Guide 1.159 Rev. 2, Section 1.1.1.).

NVY also understands that NRC should be provided the analysis, and that the analysis should include data for each year of the analysis. An updated decommissioning estimate was provided with the licensee's Post Shutdown Decommissioning Activities Report on April 6, 2017 (Reference 1).

NorthStar Vermont Yankee, LLC
Annual Cash Flow Analysis
As of January 11, 2019 - 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)

The updated Vermont Yankee site-specific decommissioning cost estimate is based on initiating DECON on January 11, 2019 and completing DECON by December 31, 2026. Table 3-1 below provides the annual license termination and spent fuel management costs computed in the updated estimate. The decommissioning trust fund (DTF) ending balance is escalated each year by the 2% real growth figure allowed pursuant to 10 CFR 50.75(e)(1)(i).

Thus, considering the fund balance of \$517.890 million, as of January 11, 2019, and projected fund contributions and earnings during the DECON period (assuming an annual 2% growth rate), the trust fund is expected to have adequate funds for completion of license termination and the operational spent fuel management activities that will be funded by the trust fund.

REFERENCE:

1. Letter, NorthStar Group Services, Inc. to USNRC, "Post Shutdown Decommissioning Activities Report," dated April 6, 2017 (Accession No. ML17096A394).

NorthStar Vermont Yankee, LLC
Annual Cash Flow Analysis
As of January 11, 2019 - 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)

Table 3-1

Vermont Yankee Nuclear Power Station - PROMPT-DECON Methodology									
Annual Cash Flow Analysis - Total License Termination, Spent Fuel Management									
(Thousands of 2019 Dollars) - See column definitions below									
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	
Year	License Termination Cost	Spent Fuel Cost	Total Expenses	Beginning of Year Fund Balance	Withdrawals	Contributions DOE Recovery	Contributions NorthStar Escrow Deposits / Distributions	Annual Earnings on Fund	End-Of-Year Fund Balance
2019	\$66,672	\$9,241	\$75,913	\$517,890	\$75,913	\$0	\$0	\$8,840	\$450,817
2020	\$65,612	\$6,141	\$71,753	\$450,817	\$71,753	\$0	\$5,022	\$7,581	\$391,668
2021	\$69,745	\$4,241	\$73,986	\$391,668	\$73,986	\$0	\$7,983	\$6,354	\$332,019
2022	\$78,438	\$4,241	\$82,679	\$332,019	\$82,679	\$0	\$8,735	\$4,987	\$263,061
2023	\$87,519	\$4,241	\$91,760	\$263,061	\$91,760	\$10,000	\$3,259	\$3,626	\$188,187
2024	\$76,253	\$4,241	\$80,494	\$188,187	\$80,494	\$28,105	\$0	\$2,716	\$138,514
2025	\$41,369	\$4,241	\$45,610	\$138,514	\$45,610	\$4,241	\$0	\$1,943	\$99,088
2026	\$9,390	\$4,241	\$13,631	\$99,088	\$13,631	\$4,241	\$0	\$1,794	\$91,493
2027		\$8,944	\$8,944	\$91,493	\$8,944	\$4,241	-\$63,082	\$1,736	\$25,443
2028		\$8,944	\$8,944	\$25,443	\$8,944	\$8,944	\$0	\$509	\$25,952
2029		\$8,944	\$8,944	\$25,952	\$8,944	\$8,944	\$0	\$519	\$26,471
2030		\$8,944	\$8,944	\$26,471	\$8,944	\$8,944	\$0	\$529	\$27,001
2031		\$8,944	\$8,944	\$27,001	\$8,944	\$8,944	\$0	\$540	\$27,541
2032		\$8,944	\$8,944	\$27,541	\$8,944	\$8,944	\$0	\$551	\$28,091
2033		\$8,944	\$8,944	\$28,091	\$8,944	\$8,944	\$0	\$562	\$28,653
2034		\$8,944	\$8,944	\$28,653	\$8,944	\$8,944	\$0	\$573	\$29,226
2035		\$8,944	\$8,944	\$29,226	\$8,944	\$8,944	\$0	\$585	\$29,811
2036		\$8,944	\$8,944	\$29,811	\$8,944	\$8,944	\$0	\$596	\$30,407
2037		\$8,944	\$8,944	\$30,407	\$8,944	\$8,944	\$0	\$608	\$31,015
2038		\$8,944	\$8,944	\$31,015	\$8,944	\$8,944	\$0	\$620	\$31,636
2039		\$8,944	\$8,944	\$31,636	\$8,944	\$8,944	\$0	\$633	\$32,268
2040		\$8,944	\$8,944	\$32,268	\$8,944	\$8,944	\$0	\$645	\$32,914
2041		\$8,944	\$8,944	\$32,914	\$8,944	\$8,944	\$0	\$658	\$33,572
2042		\$8,944	\$8,944	\$33,572	\$8,944	\$8,944	\$0	\$671	\$34,243
2043		\$8,944	\$8,944	\$34,243	\$8,944	\$8,944	\$0	\$685	\$34,928
2044		\$8,944	\$8,944	\$34,928	\$8,944	\$8,944	\$0	\$699	\$35,627
2045		\$8,944	\$8,944	\$35,627	\$8,944	\$8,944	\$0	\$713	\$36,339
2046		\$8,944	\$8,944	\$36,339	\$8,944	\$8,944	\$0	\$727	\$37,066
2047		\$8,944	\$8,944	\$37,066	\$8,944	\$8,944	\$0	\$741	\$37,807
2048		\$8,944	\$8,944	\$37,807	\$8,944	\$8,944	\$0	\$756	\$38,564
2049		\$8,944	\$8,944	\$38,564	\$8,944	\$8,944	\$0	\$771	\$39,335
2050		\$8,944	\$8,944	\$39,335	\$8,944	\$8,944	\$0	\$787	\$40,121
2051		\$8,944	\$8,944	\$40,121	\$8,944	\$8,944	\$0	\$802	\$40,924
2052	\$3,454	\$8,944	\$12,398	\$40,924	\$12,398	\$8,944	\$0	\$749	\$38,219
2053			\$0	\$38,219	\$0	\$8,944	\$0	\$943	\$48,107
TOTAL	\$498,450	\$273,377	\$771,827	\$517,890	\$771,827	\$283,377	-\$38,082	\$56,749	\$48,107

NorthStar Vermont Yankee, LLC
Annual Cash Flow Analysis
As of January 11, 2019 - 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)

Table 3-1 Definitions:

Column 1: **License Termination Cost**

Reflects the Total Annual License Termination Plan cost in 2019 dollars at a 2% escalation rate.

Column 2: **Spent Fuel Costs**

Reflects the Total Annual Irradiated Fuel Management Plan Cost, less Fuel Loading, in 2019 dollars at a 2% escalation rate.

Column 3: **Total Expenses**

Reflects Total Expenses (Column 1 plus Column 2).

Column 4: **Beginning of Year Fund Balance**

Reflects the Fund Balance on January 1 of each year (NDT (excludes Site Restoration subaccount) plus Financial Assurance Escrow):

- January 11, 2019 Beginning of Year Fund Balance equals \$517,890 NDT (\$487,890) plus Financial Assurance Escrow (\$30,000).

Column 5: **Withdrawals**

Reflects the annual expenditures from the Trust Fund in 2019 dollars at a 2% escalation rate.

Column 6: **Contributions DOE Recovery**

Reflects Cost Recovery from DOE for breach of the Standard Contract in 2019 dollars at a 2% escalation rate:

- Year 2023: \$10,000 recovery reflects NorthStar net proceeds from Entergy DOE Litigation (Round 3).
- Year 2024: \$28,105 recovery reflects Initial NorthStar DOE settlement for cost incurred beginning 2019 thru 2023.

Column 7: **Contributions NorthStar Escrow Deposits / Distributions**

Reflects NorthStar contributions as required by Section 2(c) of the Memorandum of Understanding (MOU) dated March 2, 2018 and approved by the State of Vermont Public Utility Commission. Distribution on January 1, 2027 of \$63,082 made pursuant to Section 2(c)(2) of the MOU.

Column 8: **Annual Earnings on Fund**

Reflects earnings on funds remaining in the trust. A 2% Earnings rate is used over a 0% cost escalation rate. The annual 2% earnings are calculated on the Beginning Balance (Column 4) minus 100% of withdrawals (Column 5) plus 100% of contributions (Columns 6 and 7) multiplied by the 2% annual earnings rate.

Column 9: **End-of-Year Fund Balance**

Reflects the End-of-Year Trust Fund Balance.

NorthStar Vermont Yankee, LLC
Annual Cash Flow Analysis
As of January 11, 2019 - 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)

As can be seen from the information provided in Table 3-1, the required funding for DECON decommissioning, is \$498.450 million. The foregoing DECON analysis shows that when the January 11, 2019 DTF balance is escalated at the allowable rate and compared against the annual figures for the DECON period adequate funds exist at the end of the decommissioning project. ISFSI decommissioning costs are planned to be paid for out of the aforementioned adequate funds if not paid for by spent fuel litigation proceeds. Accordingly, NVE concludes that as of January 11, 2019 adequate funding assurance for decommissioning Vermont Yankee has been demonstrated.

Attachment 4

Vermont Yankee Nuclear Power Station

Irradiated Fuel Management Funding Analysis
(1 page)

NorthStar Vermont Yankee, LLC
Irradiated Fuel Management Funding Analysis
As of January 11, 2019 - 10 CFR 50.82(a)(8)(vii)

Plant Name: **Vermont Yankee**

10 CFR 50.82(a)(8)(vii)

1. Funds available to cover the cost of managing irradiated fuel as of January 11, 2019	\$321.484 million ^[Note 1]
2. Projected costs to manage fuel until DOE Removal (See Table 3.1 – Column 2)	\$273.377 million
3. Plan as Required	See Note 2

Note 1: Funds available to cover the cost of managing irradiated fuel as of January 11, 2019 include (\$321.484 million): (a) The anticipated ending balance in the decommissioning fund at the end of decommissioning in 2053 (\$48.107 million) plus (b) Spent Fuel Management cost reimbursement from the Department of Energy (DOE) from 2019 through 2053 (\$273.377 million).

Note 2: Attachment 3 – Table 3-1 demonstrates that the Vermont Yankee decommissioning fund is adequately funded for all license termination activities and spent fuel management activities.