



Entergy Nuclear Operations, Inc.  
1340 Echelon Parkway  
Jackson, MS 39213  
Tel: 601-368-5516

**Bryan S. Ford**  
Senior Manager, Fleet Regulatory  
Assurance

CNRO-2017-00009  
March 31, 2017

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
11555 Rockville Pike  
Rockville, MD 20852-2738

**SUBJECT:** Decommissioning Funding Status Report per 10 CFR §50.75(f)(1) and  
10 CFR 50.82(a)(8)(v) -- Entergy Nuclear Operations, Inc.

Big Rock Point  
Docket No. 50-155

Indian Point Nuclear  
Generating Stations 1, 2, & 3  
Docket Nos. 50-3, 50-247, & 50-286

James A. FitzPatrick  
Nuclear Power Plant  
Docket No. 50-333

Pilgrim Nuclear Power Station  
Docket 50-293

Vermont Yankee Nuclear Power Station  
Docket No. 50-271

Palisades Nuclear Plant  
Docket No. 50-255

- REFERENCES:**
1. NUREG-1307, "Report on Waste Burial Charges," Revision 16, dated November 2016.
  2. NRC Regulatory Issue Summary 2001-07, "10 CFR 50.75(f)(1) Reports on the Status of Decommissioning Funds (Due March 31, 2001)."

Dear Sir or Madam:

10 CFR 50.75(f)(1) requires each power reactor licensee to report to the NRC by March 31, 1999, and every two years thereafter with certain exceptions, on the status of its decommissioning funding for each reactor, or share of a reactor, that it owns. 10 CFR 50.82(a)(8)(v) requires licensees of shutdown sites to report to the NRC annually, by March 31, on the status of decommissioning financial assurance for those sites. On behalf of Entergy Nuclear Indian Point 2, LLC (Indian Point 1 & 2), Entergy Nuclear Indian Point 3, LLC, Entergy Nuclear Vermont Yankee, LLC, Entergy Nuclear Generation Company (Pilgrim Station), Entergy Nuclear FitzPatrick, LLC, and Entergy Nuclear Palisades, LLC (Palisades and Big Rock Point), Entergy Nuclear Operations, Inc. hereby submits the information requested for power reactors operated by Entergy Nuclear Operations, Inc. The reports provided in Attachments 1 through 13 for the licensed facilities addressed by this filing, were prepared in accordance with NUREG-1307 (Reference 1) and NRC Regulatory Issue Summary 2001-07 (Reference 2). Attachments 14 and 15 are updated site specific decommissioning cost estimates for Indian Point Unit 1 and Vermont Yankee, respectively. The Minimum Funding Assurance calculation worksheets, (not

required for this filing) derived from LIC-205, Rev. 4, are provided in Attachment 16 for the convenience of the reviewer.

The estimated minimum decommissioning fund values were determined using the NRC's methodology in NUREG-1307, Rev 16.

The trust fund amounts reported for each facility in the responses to item 3 represent the market value of decommissioning trust funds as of December 31, 2016 net of any material current income tax liability on realized gains, interest, dividends and other income of the trusts. The trusts for the following plants had estimated balances on their 2016 tax liabilities, not reflected in the trust fund balances, as follows (in thousands):

Indian Point 1	\$	0
Indian Point 2	\$	0
Indian Point 3	\$	0
Vermont Yankee	\$	0
Pilgrim	\$	0
FitzPatrick	\$	0
Palisades	\$	0

In accordance with guidance provided by the NRC Staff in April 2014 requests for additional information (Accession No. ML14120A273) that "future 10 CFR 50.75(f) reports should clearly delineate estimate reactor and ISFSI decommissioning costs," the information in Attachments 1, 2, 3, 5, 7, 9, and 11 includes line item 2 identifying the ISFSI decommissioning obligation, escalated from the most recent 10 CFR 72.30 filing. This obligation is also accounted for in the Excess/Shortfall calculations for each plant in Attachment 14.

The aforementioned worksheets, using the December 31, 2016 trust fund balances (excepting Palisades, that uses the February 28, 2017 balance) and parent guarantee amounts, indicate that all of the plants covered by this submittal met or exceeded the NRC's funding requirements. Accordingly, the licensees conclude that no further action is required at this time to demonstrate adequate funding assurance for decommissioning the plants covered by this submittal.

There are no new commitments made in this letter. If you have any questions, please contact me at (601) 368-5516.

Sincerely,



BSF / ljs

Attachments:

1. Entergy Nuclear Operations, Inc. Status of Decommissioning Funding – Indian Point 1
2. Entergy Nuclear Operations, Inc. Status of Decommissioning Funding – Indian Point 2
3. Entergy Nuclear Operations, Inc. Status of Decommissioning Funding – Indian Point 3
4. Entergy Nuclear Operations, Inc. Calculation of Minimum Amount – Indian Point
5. Entergy Nuclear Operations, Inc. Status of Decommissioning Funding – Vermont Yankee

6. Entergy Nuclear Operations, Inc. Calculation of Minimum Amount – Vermont Yankee
7. Entergy Nuclear Operations, Inc. Status of Decommissioning Funding – Pilgrim
8. Entergy Nuclear Operations, Inc. Calculation of Minimum Amount – Pilgrim
9. Entergy Nuclear Operations, Inc. Status of Decommissioning Funding – James A. Fitzpatrick
10. Entergy Nuclear Operations, Inc. Calculation of Minimum Amount – James A. Fitzpatrick
11. Entergy Nuclear Operations, Inc. Status of Decommissioning Funding – Palisades
12. Entergy Nuclear Operations, Inc. Calculation of Minimum Amount – Palisades
13. Entergy Nuclear Operations, Inc. Status of Decommissioning Funding – Big Rock Point
14. Entergy Nuclear Operations, Inc. IP1 DTF Balance Based on Decommissioning Funding Assurance Plan
15. Entergy Nuclear Operations, Inc. Vermont Yankee Annual Cash Flow Analysis
16. Entergy Nuclear Operations, Inc. Minimum Financial Assurance Calculation Worksheets

cc: See next page

cc: Mr. C. Bakken (ECH)  
Mr. B. E. Green (TMBR)  
Mr. J. R. Davis (ECH)  
Mr. L. M. Coyle (ECH)  
Mr. L. J. Smith (ECH)  
Mr. J. A. Ventosa (ECH)  
Mr. B. R. Sullivan (JAF)  
Mr. J. A. Dent (PIL)  
Mr. A. J. Vitale (IPEC)  
Mr. C. F. Arnone(PAL)  
Mr. J. W. Boyle (VTY)

USNRC Regional Administrator, Region I  
USNRC Regional Administrator, Region III

USNRC Project Manager, Indian Point 1  
USNRC Project Manager, Indian Point 2 / 3  
USNRC Project Manager, J. A. FitzPatrick  
USNRC Project Manager, Palisades  
USNRC Project Manager, Pilgrim  
USNRC Project Manager, Vermont Yankee

USNRC Resident Inspector, Indian Point 2 / 3  
USNRC Resident Inspector, J. A. FitzPatrick  
USNRC Resident Inspector, Palisades  
USNRC Resident Inspector, Pilgrim  
USNRC Resident Inspector, Vermont Yankee

Michigan Department of Environmental Quality  
Michigan Public Service Commission  
NYS Department of Public Service  
Vermont Department of Public Service  
Massachusetts Emergency Management Agency

**Attachment 1**  
**CNRO-2017-00009**  
(Page 1 of 2)

**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding - Indian Point 1**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)**

Plant Name: **Indian Point Nuclear Generating Unit No. 1**

**10 CFR 50.75(f)(1)**

- |                                                                                                                                                                                           |                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| 1. Minimum Financial Assurance (MFA)<br>estimated per 10 CFR 50.75(b) and (c) (2016\$)                                                                                                    | \$590.76 million <sup>[Note1]</sup>                           |
| 2. ISFSI Obligation as of 12/31/16                                                                                                                                                        | \$1.1 million <sup>[Note2]</sup>                              |
| 3. Decommissioning Trust Fund Total<br>as of 12/31/16                                                                                                                                     | \$ 442.9 million                                              |
| 4. A schedule of the annual amounts remaining to be collected                                                                                                                             | None                                                          |
| 5. Assumptions used in determining rates of escalation in<br>decommissioning costs, rates of earnings on decommissioning<br>funds, and rates of other factors used in funding projections | 2% annual real rate<br>of return per 10 CFR<br>50.75(e)(1)(i) |
| 6. Any contracts upon which the licensee is relying pursuant to 10<br>CFR 50.75(e)(1)(v)                                                                                                  | None                                                          |
| 7. Modifications occurring to a licensee's current method of providing<br>financial assurance since the last submitted report                                                             | None                                                          |
| 8. Any material changes to trust agreements                                                                                                                                               | None                                                          |

Note 1: This amount is based upon total SAFSTOR expenditures for radiological remediation and license termination set forth in the updated Decommissioning Funding Assurance Plan and SAFSTOR analysis that are provided in Attachment 14. (Calculation of the NRC Minimum Amount is provided in Attachment 4.)

Note 2: From 10 CFR 50.82(a)(8)(vii) filing for Indian Point 1 of March 2017.

**Attachment 1**  
**CNRO-2017-00009**  
(Page 2 of 2)

**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding - Indian Point 1**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)**

Plant Name: **Indian Point Nuclear Generating Unit No. 1**

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

- |                                                                                                                                                                |                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| 1. Cumulative decommissioning spending                                                                                                                         | \$99.43 million <sup>[Note1]</sup>          |
| 2. 2016 decommissioning spending                                                                                                                               | \$5.15 million <sup>[Note1]</sup>           |
| 3. Fund Balance                                                                                                                                                | See above in 10<br>CFR 50.75<br>information |
| 4. No other financial assurance mechanism is being relied upon, but costs through 12/31/2016 have been funded by operations, and not the decommissioning fund. |                                             |
| 5. Estimated costs to complete from latest estimate                                                                                                            | \$560.5 million <sup>[Note2]</sup>          |
| 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<br>CFR 50.75<br>information |
| 8. Any material changes to trust agreements                                                                                                                    | See above in 10<br>CFR 50.75<br>information |

Note 1: Entergy does not possess records that would permit determination of charges to IP1 prior to its acquisition in September 2001 by Entergy Nuclear Indian Point 2, LLC. The costs presented here represent those costs charged in 2016 and the total costs that have been assigned to IP1 since 2001. Entergy has not fully determined what portion of those costs would be considered "decommissioning" costs as that term is defined in 10 CFR 50.2. Cumulative and 2016 decommissioning spending only consists of costs related to license termination.

Note 2: This amount is based upon total SAFSTOR expenditures for radiological remediation and license termination set forth in the updated Decommissioning Funding Assurance Plan and SAFSTOR analysis that are provided in Attachment 14. (Calculation of the NRC Minimum Amount is provided in Attachment 4.) This estimate does not include 2016 spending because current costs are being paid out of operating funds.

**Attachment 2**  
**CNRO-2017-00009**  
(Page 1 of 1)

**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding - Indian Point 2**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

Plant Name: **Indian Point Nuclear Generating Unit No. 2**

- |                                                                                                                                                                                           |                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| 1. Minimum Financial Assurance (MFA)<br>estimated per 10 CFR 50.75(b) and (c) (2016\$)                                                                                                    | \$495.20 million <sup>[Note 1]</sup>                          |
| 2. ISFSI Obligation as of 12/31/16                                                                                                                                                        | \$5.8 million <sup>[Note 2]</sup>                             |
| 3. Decommissioning Trust Fund Total<br>as of 12/31/16                                                                                                                                     | \$564.01 million <sup>[Note 3]</sup>                          |
| 4. A schedule of the annual amounts remaining to be collected                                                                                                                             | None                                                          |
| 5. Assumptions used in determining rates of escalation in<br>decommissioning costs, rates of earnings on decommissioning<br>funds, and rates of other factors used in funding projections | 2% annual real rate<br>of return per 10 CFR<br>50.75(e)(1)(i) |
| 6. Any contracts upon which the licensee is relying pursuant to 10<br>CFR 50.75(e)(1)(v)                                                                                                  | None                                                          |
| 7. Modifications occurring to a licensee's current method of providing<br>financial assurance since the last submitted report                                                             | None                                                          |
| 8. Any material changes to trust agreements                                                                                                                                               | None                                                          |

Note 1: Calculation of the NRC Minimum Amount is provided in Attachment 4.

Note 2: From Entergy's ISFSI Decommissioning Funding Plans Pursuant to 10 CFR 72.30,  
December 17, 2015 (Accession No. ML15351A524), escalated for inflation.

Note 3: Includes provisional fund balance of \$32.42 million.

**Attachment 3**  
**CNRO-2017-00009**

(Page 1 of 1)

**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding – Indian Point 3**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

Plant Name: **Indian Point Nuclear Generating Unit No. 3**

- |                                                                                                                                                                                           |                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| 1. Minimum Financial Assurance (MFA)<br>estimated per 10 CFR 50.75(b) and (c) (2016\$)                                                                                                    | \$495.20 million <sup>[Note 1]</sup>                          |
| 2. ISFSI Obligation as of 12/31/16                                                                                                                                                        | \$6.97 million <sup>[Note 2]</sup>                            |
| 3. Decommissioning Trust Fund Total<br>as of 12/31/16                                                                                                                                     | \$ 719.10 million                                             |
| 4. A schedule of the annual amounts remaining to be collected                                                                                                                             | None                                                          |
| 5. Assumptions used in determining rates of escalation in<br>decommissioning costs, rates of earnings on decommissioning<br>funds, and rates of other factors used in funding projections | 2% annual real rate<br>of return per 10 CFR<br>50.75(e)(1)(i) |
| 6. Any contracts upon which the licensee is relying pursuant to 10<br>CFR 50.75(e)(1)(v)                                                                                                  | None                                                          |
| 7. Modifications occurring to a licensee's current method of providing<br>financial assurance since the last submitted report                                                             | Note 3                                                        |
| 8. Any material changes to trust agreements                                                                                                                                               | Note 3                                                        |

Note 1: Calculation of the NRC Minimum Amount is provided in Attachment 4.

Note 2: From Entergy's ISFSI Decommissioning Funding Plans Pursuant to 10 CFR 72.30, December 17, 2015 (Accession No. ML15351A524), escalated for inflation.

Note 3: While the method for financial assurance (prepaid decommissioning fund) did not change, the decommissioning trust fund has been transferred from New York Power Authority to the licensee. See Order Approving Transfer Of Control Of Master Decommissioning Trust For Indian Point Nuclear Generating Unit No. 3 and James A. Fitzpatrick Nuclear Power Plant From the Power Authority Of The State Of New York To Entergy Nuclear Operations, Inc., dated January 27, 2017 (Accession No. ML16336A492), and application dated August 16, 2016 (Accession No. 16230A308).

**Attachment 4**  
**CNRO-2017-00009**  
(Page 1 of 1)

**Entergy Nuclear Operations, Inc.**  
**Calculation of Minimum Amount – Indian Point**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

**Entergy Nuclear Indian Point 2, LLC:** 100% ownership interest of Indian Point 1 & 2

**Entergy Nuclear Indian Point 3, LLC:** 100% ownership interest of Indian Point 3

**Plant Location:** Buchanan, New York

**Reactor Type:** Pressurized Water Reactor ("PWR")

**Indian Point Unit 1 Power Level:** <3,400 MWt (615 MWt)

**Indian Point Unit 1 PWR Base Year 1986\$:** \$85,560,000

**Indian Point Unit 2 Power Level:** <3,400 MWt (3,216 MWt)

**Indian Point Unit 2 PWR Base Year 1986\$:** \$103,300,800

**Indian Point Unit 3 Power Level:** <3,400 MWt (3,216 MWt)

**Indian Point Unit 3 PWR Base Year 1986\$:** \$103,300,800

**Labor Region:** North

**Waste Burial Facility:** Generic Disposal Site

**10CFR50.75(c)(2) Escalation Factor Formula:**

$$0.65(L) + 0.13(E) + 0.22(B)$$

	<u>Factor</u>
L=Labor (North)	2.78 <sup>1</sup>
E=Energy (PWR)	1.87 <sup>2</sup>
B=Waste Burial-Vendor (PWR)	12.471 <sup>3</sup>

**PWR Escalation Factor:**

$$0.65(L) + 0.13(E) + 0.22(B) = 4.79373$$

**1986 PWR Base Year \$ Escalated:**

<b>Indian Point 1:</b> \$85,560,000 * Factor=	<u>\$410,151,579</u>
<b>Indian Point 2 &amp; 3:</b> \$103,300,800 * Factor=	<u>\$495,196,193</u>

<sup>1</sup> Bureau of Labor Statistics, Series Report ID: CIU2010000000210i (4<sup>th</sup> Quarter 2016)  
<sup>2</sup> Bureau of Labor Statistics, Series Report ID: wpu0543 and wpu0573 (December 2016)  
<sup>3</sup> Nuclear Regulatory Commission: NUREG-1307 Revision 16, Table 2.1 (2016)

**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding Vermont Yankee**  
**For Year Ending December 31, 2016 - 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)<br>estimated per 10 CFR 50.75(b) and (c) (2016\$)                                                                                                    | \$ 728.1 million <sup>[Note 1]</sup>                          |
| 2. ISFSI Obligation as of 12/31/16                                                                                                                                                        | \$5.20 million <sup>[Note 2]</sup>                            |
| 3. Decommissioning Trust Fund Total<br>as of 12/31/16                                                                                                                                     | \$ 561.61 million                                             |
| 4. A schedule of the annual amounts remaining to be collected                                                                                                                             | None                                                          |
| 5. Assumptions used in determining rates of escalation in<br>decommissioning costs, rates of earnings on decommissioning<br>funds, and rates of other factors used in funding projections | 2% annual real rate<br>of return per 10 CFR<br>50.75(e)(1)(i) |
| 6. Any contracts upon which the licensee is relying pursuant to 10<br>CFR 50.75(e)(1)(v)                                                                                                  | None                                                          |
| 7. Modifications occurring to a licensee's current method of<br>providing financial assurance since the last submitted report                                                             | None                                                          |
| 8. Any material changes to trust agreements                                                                                                                                               | None                                                          |

Note 1: This amount is based upon total SAFSTOR expenditures for radiological remediation and license termination set forth in the updated Decommissioning Funding Assurance Plan and SAFSTOR analysis provided in Attachment 15. (Calculation of the NRC Minimum Amount is provided in Attachment 6).

Note 2: From Entergy's ISFSI Decommissioning Funding Plans Pursuant to 10 CFR 72.30, December 17, 2015 (Accession No. ML15351A524), escalated for inflation.

**Attachment 5**  
**CNRO-2017-00009**  
(Page 2 of 2)

**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding Vermont Yankee**  
**For Year Ending December 31, 2016 - 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)**

- |                                                                             |                                             |
|-----------------------------------------------------------------------------|---------------------------------------------|
| 1. Cumulative decommissioning spending through 12/31/2016                   | \$ 110.97 million<br>[Note1]                |
| 2. 2016 decommissioning spending                                            | \$ 36.62 million [Note2]                    |
| 3. Fund Balance                                                             | See above in 10<br>CFR 50.75<br>information |
| 4. No other financial assurance mechanism is being relied upon.             |                                             |
| 5. Estimated costs to complete from latest estimate                         | \$ 728.1 million                            |
| 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<br>CFR 50.75<br>information |
| 8. Any material changes to trust agreements                                 | See above in 10<br>CFR 50.75<br>information |

Note 1: Some decommissioning costs have been paid by the parent company, and not refunded from the decommissioning trust.

Note 2: This estimate only includes 2016 decommissioning costs. 2014 and 2015 costs are included in item 1 and have been reimbursed in 2016.

**Attachment 6**  
**CNRO-2017-00009**  
(Page 1 of 1)

**Entergy Nuclear Operations, Inc.**  
**Calculation of Minimum Amount - Vermont Yankee**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

**Entergy Nuclear Vermont Yankee LLC:** 100% ownership interest  
**Plant Location:** Vernon, Vermont  
**Reactor Type:** Boiling Water Reactor ("BWR")  
**Power Level:** <3,400 MWt (1912 MWt)  
**BWR Base Year 1986\$:** \$121,208,000  
**Labor Region:** North  
**Waste Burial Facility:** Generic Disposal Site

**10CFR50.75(c)(2) Escalation Factor Formula:**  
**0.65(L) +0.13(E) +0.22(B)**

	<u>Factor</u>
L=Labor (North)	2.78 <sup>1</sup>
E=Energy (BWR)	1.87 <sup>2</sup>
B=Waste Burial-Vendor (BWR)	13.132 <sup>3</sup>

**BWR Escalation Factor:**  
0.65(L) +0.13(E) +0.22(B)= 4.93900

**1986 BWR Base Year \$ Escalated:**  
\$121,208,000 \* Factor= \$598,646,270

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<sup>1</sup> Bureau of Labor Statistics, Series Report ID: CIU2010000000210i (4<sup>th</sup> Quarter 2016)  
<sup>2</sup> Bureau of Labor Statistics, Series Report ID: wpu0543 and wpu0573 (December 2016)  
<sup>3</sup> Nuclear Regulatory Commission: NUREG-1307 Revision 16, Table 2.1 (2016)

**Attachment 7**  
**CNRO-2017-00009**  
(Page 1 of 1)

**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding - Pilgrim**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

Plant Name: **Pilgrim Nuclear Power Station**

- |                                                                                                                                                                                           |                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| 1. Minimum Financial Assurance (MFA)<br>estimated per 10 CFR 50.75(b) and (c) (2016\$)                                                                                                    | \$ 603.80 million <sup>[Note 1]</sup>                         |
| 2. ISFSI Obligation as of 12/31/16                                                                                                                                                        | \$9.21 million <sup>[Note 2]</sup>                            |
| 3. Decommissioning Trust Fund Total<br>as of 12/31/16                                                                                                                                     | \$ 960.30 million                                             |
| 4. A schedule of the annual amounts remaining to be collected                                                                                                                             | None                                                          |
| 5. Assumptions used in determining rates of escalation in<br>decommissioning costs, rates of earnings on decommissioning<br>funds, and rates of other factors used in funding projections | 2% annual real rate<br>of return per 10 CFR<br>50.75(e)(1)(i) |
| 6. Any contracts upon which the licensee is relying pursuant to 10<br>CFR 50.75(e)(1)(v)                                                                                                  | None                                                          |
| 7. Modifications occurring to a licensee's current method of<br>providing financial assurance since the last submitted report                                                             | None                                                          |
| 8. Any material changes to trust agreements                                                                                                                                               | None                                                          |

Note 1: Calculation of the NRC Minimum Amount is provided in Attachment 8.

Note 2: From Entergy's ISFSI Decommissioning Funding Plans Pursuant to 10 CFR 72.30,  
December 17, 2015 (Accession No. ML15351A524), escalated for inflation.

**Attachment 8**  
**CNRO-2017-00009**  
(Page 1 of 1)

**Entergy Nuclear Operations, Inc.**  
**Calculation of Minimum Amount - Pilgrim**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

**Entergy Nuclear Generation Co.:** 100% ownership interest  
**Plant Location:** Plymouth, Massachusetts  
**Reactor Type:** Boiling Water Reactor ("BWR")  
**Power Level:** <3,400 MWt (2028 MWt)  
**BWR Base Year 1986\$:** \$122,252,000  
**Labor Region:** North  
**Waste Burial Facility:** Generic Disposal Site

**10CFR50.75(c)(2) Escalation Factor Formula:**

$$0.65(L) + 0.13(E) + 0.22(B)$$

	<u>Factor</u>
L=Labor (North)	2.78 <sup>1</sup>
E=Energy (BWR)	1.87 <sup>2</sup>
B=Waste Burial-Vendor (BWR)	13.13 <sup>3</sup>

**BWR Escalation Factor:**

$$0.65(L) + 0.13(E) + 0.22(B) = 4.93900$$

**1986 BWR Base Year \$ Escalated:**

$$\$122,252,000 * \text{Factor} = \$603,802,586$$

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<sup>1</sup> Bureau of Labor Statistics, Series Report ID: CIU2010000000210i (4<sup>th</sup> Quarter 2016)  
<sup>2</sup> Bureau of Labor Statistics, Series Report ID: wpu0543 and wpu0573 (December 2016)  
<sup>3</sup> Nuclear Regulatory Commission: NUREG-1307 Revision 16, Table 2.1 (2016)

**Attachment 9**  
**CNRO-2017-00009**  
(Page 1 of 1)

**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding – James A. Fitzpatrick**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

Plant Name: **James A. Fitzpatrick Nuclear Power Plant**

- |                                                                                                                                                                                              |                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| 1. Minimum Financial Assurance (MFA)<br>estimated per 10 CFR 50.75(b) and (c) (2016\$)                                                                                                       | \$ 626.38 million <sup>[Note 1]</sup>                         |
| 2. ISFSI Obligation as of 12/31/16                                                                                                                                                           | \$ 8.38 million <sup>[Note 2]</sup>                           |
| 3. Decommissioning Trust Fund Total<br>as of 12/31/16                                                                                                                                        | \$ 784.67 million                                             |
| 4. A schedule of the annual amounts remaining to be collected                                                                                                                                | None                                                          |
| 5. Assumptions used in determining rates of escalation in<br>decommissioning costs, rates of earnings on<br>decommissioning funds, and rates of other factors used in<br>funding projections | 2% annual real rate<br>of return per 10 CFR<br>50.75(e)(1)(i) |
| 6. Any contracts upon which the licensee is relying pursuant to<br>10 CFR 50.75(e)(1)(v)                                                                                                     | None                                                          |
| 7. Modifications occurring to a licensee's current method of<br>providing financial assurance since the last submitted report                                                                | Note 3                                                        |
| 8. Any material changes to trust agreements                                                                                                                                                  | Note 3                                                        |

Note 1: Calculation of the NRC Minimum Amount is provided in Attachment 10.

Note 2: From Entergy's ISFSI Decommissioning Funding Plans Pursuant to 10 CFR 72.30, December 17, 2015 (Accession No. ML15351A524), escalated for inflation.

Note 3: While the method for financial assurance (prepaid decommissioning fund) did not change, the decommissioning trust fund has been transferred from New York Power Authority to the licensee. See Order Approving Transfer Of Control Of Master Decommissioning Trust For Indian Point Nuclear Generating Unit No. 3 and James A. Fitzpatrick Nuclear Power Plant From the Power Authority Of The State Of New York To Entergy Nuclear Operations, Inc., dated January 27, 2017 (Accession No. ML16336A492), and application dated August 16, 2016 (Accession No. 16230A308).

**Attachment 10**  
**CNRO-2017-00009**  
(Page 1 of 1)

**Entergy Nuclear Operations, Inc.**  
**Calculation of Minimum Amount – James A. Fitzpatrick**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

**Entergy Nuclear FitzPatrick LLC.:** 100% ownership interest  
**Plant Location:** Oswego, New York  
**Reactor Type:** Boiling Water Reactor ("BWR")  
**Power Level:** <3,400 MWt (2536 MWt)  
**BWR Base Year 1986\$:** \$126,824,000  
**Labor Region:** North  
**Waste Burial Facility:** Generic Disposal Site

**10CFR50.75(c)(2) Escalation Factor Formula:**  
**0.65(L) +0.13(E) +0.22(B)**

	<u>Factor</u>
L=Labor (North)	2.78 <sup>1</sup>
E=Energy (BWR)	1.87 <sup>2</sup>
B=Waste Burial-Vendor (BWR)	13.132 <sup>3</sup>

**BWR Escalation Factor:**  
0.65(L) +0.13(E) +0.22(B)= 4.93900

**1986 BWR Base Year \$ Escalated:**  
\$126,824,000 \* Factor= \$626,383,692

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<sup>1</sup> Bureau of Labor Statistics, Series Report ID: CIU2010000000210i (4<sup>th</sup> Quarter 2016)  
<sup>2</sup> Bureau of Labor Statistics, Series Report ID: wpu0543 and wpu0573 (December 2016)  
<sup>3</sup> Nuclear Regulatory Commission: NUREG-1307 Revision 16, Table 2.1 (2016)

**Attachment 11**  
**CNRO-2017-00009**  
(Page 1 of 1)

**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding – Palisades**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

Plant Name: **Palisades Nuclear Plant**

- |                                                                                                                                                                                              |                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| 1. Minimum Financial Assurance (MFA)<br>estimated per 10 CFR 50.75(b) and (c) (2016\$)                                                                                                       | \$ 457.25 million <sup>[Note 1]</sup>                         |
| 2. ISFSI Obligation as of 12/31/16                                                                                                                                                           | \$ 7.86 million <sup>[Note 2]</sup>                           |
| 3. Decommissioning Trust Fund Total<br>as of 2/28/17                                                                                                                                         | \$ 425.73 million <sup>[Note 3]</sup>                         |
| 4. A schedule of the annual amounts remaining to be collected                                                                                                                                | None                                                          |
| 5. Assumptions used in determining rates of escalation in<br>decommissioning costs, rates of earnings on<br>decommissioning funds, and rates of other factors used in<br>funding projections | 2% annual real rate<br>of return per 10 CFR<br>50.75(e)(1)(i) |
| 6. Any contracts upon which the licensee is relying pursuant to<br>10 CFR 50.75(e)(1)(v)                                                                                                     | None                                                          |
| 7. Modifications occurring to a licensee's current method of<br>providing financial assurance since the last submitted report                                                                | None                                                          |
| 8. Any material changes to trust agreements                                                                                                                                                  | None                                                          |

Note 1: Calculation of the NRC Minimum Amount is provided in Attachment 12.

Note 2: From Entergy's ISFSI Decommissioning Funding Plans Pursuant to 10 CFR 72.30,  
December 17, 2015 (Accession No. ML15351A524), escalated for inflation.

Note 3: The fund balance as of December 31, 2016 was \$411.8 million.

**Attachment 12**  
**CNRO-2017-00009**  
(Page 1 of 1)

**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding – Palisades**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

**Entergy Nuclear Palisades LLC.:** 100% ownership interest  
**Plant Location:** Covert, Michigan  
**Reactor Type:** Pressure Water Reactor ("PWR")  
**Power Level:** <3,400 MWt (2565 MWt)  
**PWR Base Year 1986\$:** \$97,572,000  
**Labor Region:** Midwest  
**Waste Burial Facility:** Generic Disposal Site

**10CFR50.75(c)(2) Escalation Factor Formula:**  
**0.65(L) +0.13(E) +0.22(B)**

	<u>Factor</u>
L=Labor (Midwest)	2.61 <sup>1</sup>
E=Energy (PWR)	1.87 <sup>2</sup>
B=Waste Burial-Vendor (PWR)	12.471 <sup>3</sup>

**PWR Escalation Factor:**

$$0.65(L) + 0.13(E) + 0.22(B) = 4.68625$$

**1986 PWR Base Year \$ Escalated:**

$$\$97,572,000 * \text{Factor} = \$457,246,441$$

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<sup>1</sup> Bureau of Labor Statistics, Series Report ID: CIU2010000000230i (4<sup>th</sup> Quarter 2016)  
<sup>2</sup> Bureau of Labor Statistics, Series Report ID: wpu0543 and wpu0573 (December 2016)  
<sup>3</sup> Nuclear Regulatory Commission: NUREG-1307 Revision 16, Table 2.1 (2016)

**Attachment 13**  
**CNRO-2017-00009**  
(Page 1 of 1)

**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding – Big Rock Point**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

Plant Name: **Big Rock Point ISFSI**

- |                                                                                                                                                                                     |                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 1. Amount of decommissioning funds required from most recent estimate (2016 dollars).                                                                                               | \$ 2.50 million <sup>[Note 1]</sup>            |
| 2. Decommissioning Funding Assurance Method.                                                                                                                                        | Parent Guarantee (\$5 million)                 |
| 3. A schedule of the annual amounts remaining to be collected                                                                                                                       | None                                           |
| 4. 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 | Escalation rate: CPIU<br>Rate of earnings: n/a |
| 5. Any contracts upon which the licensee is relying pursuant to 10 CFR 50.75(e)(1)(v)                                                                                               | None                                           |
| 6. Modifications occurring to a licensee's current method of providing financial assurance since the last submitted report                                                          | None                                           |
| 7. Any material changes to trust agreements                                                                                                                                         | None                                           |

Note 1: From Entergy's ISFSI Decommissioning Funding Plans Pursuant to 10 CFR 72.30, December 17, 2015 (Accession No. ML15351A524), escalated for inflation.

**Entergy Nuclear Operations, Inc.**  
**IP1 DTF Balance Based on Decommissioning Funding Assurance Plan**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

On October 23, 2008, Entergy Nuclear Indian Point 2, LLC (ENIP2) submitted a preliminary decommissioning cost analysis to the NRC in conjunction with its spent fuel management plan under 10 CFR 50.75(f)(3) and 10 CFR 50.54(bb) (Accession No. ML083040378, as supplemented by ENIP2's reply to RAIs on July 15, 2009 (Accession No. ML092050204). The preliminary decommissioning cost analysis contained separate site-specific decommissioning cost estimates for Indian Point 1 and Indian Point 2. The estimates were subsequently found to be reasonable by the NRC on March 17, 2010 (Accession No. ML100280544).

Pursuant to Regulatory Guide 1.159, Revision 2, adjustment to the site-specific cost estimates should be made at least once a year for the effects of inflation. Adjustment to site-specific cost estimates for the effects of technological and status changes should be made according to the amount of change experienced, as appropriate, but in no event, less than once every 5 years. As such, ENIP2 has updated the aforementioned estimates consistent with the requirements of Regulatory Guide 1.159, Revision 2.

ENIP2 has determined that use of a SAFSTOR analysis shows that there is presently 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." ENIP2 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) ENIP2 also understands that NRC should be provided the analysis, and that the analysis should include data for each year of the analysis.

The updated Indian Point 1 site-specific decommissioning cost estimate is based on a period of safe storage that is specifically described in the estimate, namely storage until 2073, at which time the plant will be decommissioned and the site released for alternative use without restriction. Table 14-1 below provides the annual license termination costs computed in the updated estimate. These costs to date have been funded by operations, and not by the decommissioning fund. 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).

**Attachment 14**  
**CNRO-2017-00009**  
(Page 2 of 4)

**Entergy Nuclear Operations, Inc.**  
**IP1 DTF Balance Based on Decommissioning Funding Assurance Plan**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

Table 14-1		
NRC License Termination Cost (\$ millions)		
	2016 \$ Unit 1 Radiological	Ending DTF Balance
2017	0.970	450.743
2018	3.878	455.880
2019	3.878	461.119
2020	3.889	466.453
2021	3.878	471.904
2022	3.878	477.464
2023	3.878	483.135
2024	3.889	488.910
2025	3.878	494.810
2026	3.878	500.828
2027	3.878	506.966
2028	3.889	513.217
2029	3.878	519.603
2030	3.878	526.118
2031	3.878	532.762
2032	3.889	539.529
2033	3.878	546.441
2034	3.878	553.492
2035	3.878	560.684
2036	3.889	568.009
2037	3.878	575.491
2038	3.878	583.123
2039	3.878	590.907
2040	3.889	598.837
2041	3.878	606.935
2042	3.878	615.196
2043	3.878	623.622
2044	3.889	632.206
2045	3.878	640.972
2046	3.878	649.913
2047	3.878	659.034
2048	3.889	668.326
2049	3.878	677.814
2050	3.878	687.492
2051	3.878	697.364
2052	3.889	707.423
2053	3.878	717.693

**Attachment 14**  
**CNRO-2017-00009**  
 (Page 3 of 4)

**Entergy Nuclear Operations, Inc.**  
**IP1 DTF Balance Based on Decommissioning Funding Assurance Plan**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

Table 14-1		
NRC License Termination Cost (\$ millions)		
	2016 \$ Unit 1 Radiological	Ending DTF Balance
2054	3.878	728.169
2055	3.878	738.855
2056	3.889	749.743
2057	3.878	760.860
2058	3.878	772.199
2059	3.878	783.765
2060	3.889	795.552
2061	3.878	807.585
2062	3.878	819.858
2063	3.878	832.378
2064	3.889	845.136
2065	28.467	833.572
2066	62.491	787.752
2067	104.214	699.294
2068	110.621	602.659
2069	15.962	598.750
2070	15.854	594.871
2071	15.854	590.915
2072	15.897	586.836
2073	7.818	590.755
Total	560.541	

**Attachment 14**  
**CNRO-2017-00009**  
(Page 4 of 4)

**Entergy Nuclear Operations, Inc.**  
**IP1 DTF Balance Based on Decommissioning Funding Assurance Plan**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

As can be seen from the information provided in Table 14-1, the required funding for SAFSTOR decommissioning, \$560.54 million, is greater than the NRC formula amount per 10 CFR 50.75(b) and (c) of \$410.15 million, therefore, the site-specific analysis complies with the requirement from Regulatory Guide 1.159 section 1.1.1 previously discussed. The foregoing SAFSTOR analysis shows that when the December 31, 2016 DTF balance is escalated at the allowable rate and compared against the annual figures for the SAFSTOR period, that an approximately \$590.76 million surplus exists at the end of the decommissioning project. Accordingly, ENIP2 concludes that no further action is required at this time to demonstrate adequate funding assurance for decommissioning Indian Point 1.

**Entergy Nuclear Operations, Inc.**  
**Vermont Yankee Annual Cash Flow Analysis**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

Vermont Yankee Nuclear Power Station (Vermont Yankee) permanently ceased operations on December 29, 2014. The Vermont Yankee decommissioning trust fund balance is approximately \$562 million as of December 31, 2016. Tables 3.4 and 3.5 of the site-specific decommissioning cost estimate (Reference 1, Attachment 1) set forth the estimated annual expenditures for license termination and spent fuel management, respectively. A cash flow analysis utilizing this annual expenditure information is included as Table 15-1.

The cash flow analysis demonstrates that the Vermont Yankee decommissioning trust fund is sufficiently funded for all license termination activities and certain spent fuel management activities (i.e., operational costs). As discussed in the Irradiated Fuel Management Program Update (Reference 2) 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 \$175 million, Table 15-1 Column 2, minus Column 3 amounts funded by external credit facilities) will be funded from the decommissioning trust fund. Entergy Nuclear Operations, Inc. obtained an exemption that allows the use of trust funds for spent fuel management activities (NRC Approval of Exemption Request for Spent Fuel Management, 80 Fed. Reg. 35992, June 23, 2015).

The licensee has determined that use of a SAFSTOR analysis shows that there is presently 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." The licensee 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.) The licensee 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 December 19, 2014 (Accession No. ML14357A110).

The updated Vermont Yankee site-specific decommissioning cost estimate is based on a period of safe storage that is specifically described in the estimate, namely storage until approximately 2075, at which time the plant will be decommissioned and the site released for alternative use without restriction. Table 15-1 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).

**Attachment 15**  
**CNRO-2017-00009**  
(Page 2 of 6)

**Entergy Nuclear Operations, Inc.**  
**Vermont Yankee Annual Cash Flow Analysis**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

Thus, considering the fund balance of \$562 million, as of December 31, 2016, and projected fund earnings during the SAFSTOR period (assuming an annual 2% growth rate), the trust fund is expected to have an excess of \$196.6 million after completion of license termination and the operational spent fuel management activities that will be funded by the trust fund.

**REFERENCES:**

1. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Post Shutdown Decommissioning Activities Report," BVY 14-078, dated December 19, 2014 (Accession No. ML14357A110).
2. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Update to Irradiated Fuel Management Program Pursuant to 10 CFR 50.54(bb)," BVY 14-085, dated December 19, 2014 (Accession No. ML14358A251).
3. NRC Approval of Exemption Request for Spent Fuel Management, 80 Fed. Reg. 35992 (June 23, 2015).

Table 15-1									
Vermont Yankee Nuclear Power Station - SAFSTOR Methodology									
Annual Cash Flow Analysis - Total License Termination, Spent Fuel Management less Dry Fuel Costs									
(In Thousands in 2016 Dollars) (see column definitions below)									
Year	Column 1 50.75 License Termination Cost (\$000's)	Column 2 50.54 (bb) Spent Fuel Management Cost (\$000's)	Column 3 Exclude Dry Fuel Spent Fuel Management Cost (\$000's)	Column 4 License Termination Cost plus Spent Fuel Management Cost less Dry Fuel Cost (\$000's)	Column 5 Beginning of Year Trust Fund Balance (\$000's)	Column 6 Withdraw (\$000's)	Column 7 Contribute (\$000's)	Column 8 Trust Fund Earnings (\$000's)	Column 9 Year Ending Trust Fund Balance (\$000's)
2017	42,386	64,082	46,134	60,333	561,615	60,333	0	10,026	511,307
2018	51,878	60,258	43,366	68,771	511,307	68,771	0	8,851	451,387
2019	5,414	4,131		9,545	451,387	9,545	0	8,837	450,678
2020	5,362	4,131		9,492	450,678	9,492	0	8,824	450,010
2021	5,362	4,131		9,492	450,010	9,492	0	8,810	449,327
2022	3,741	4,131		7,872	449,327	7,872	0	8,829	450,285
2023	3,741	4,131		7,872	450,285	7,872	0	8,848	451,261
2024	3,741	4,142		7,883	451,261	7,883	0	8,868	452,245
2025	3,680	4,131		7,811	452,245	7,811	0	8,889	453,323
2026	3,829	4,131		7,960	453,323	7,960	0	8,907	454,271
2027	3,882	4,131		8,012	454,271	8,012	0	8,925	455,183
2028	3,838	4,142		7,980	455,183	7,980	0	8,944	456,148

**Attachment 15**  
**CNRO-2017-00009**  
 (Page 3 of 6)

**Entergy Nuclear Operations, Inc.**  
**Vermont Yankee Annual Cash Flow Analysis**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

Table 15-1									
Vermont Yankee Nuclear Power Station - SAFSTOR Methodology									
Annual Cash Flow Analysis - Total License Termination, Spent Fuel Management less Dry Fuel Costs									
(In Thousands in 2016 Dollars) (see column definitions below)									
Year	Column 1 50.75 License Termination Cost (\$000's)	Column 2 50.54 (bb) Spent Fuel Management Cost (\$000's)	Column 3 Exclude Dry Fuel Spent Fuel Management Cost (\$000's)	Column 4 License Termination Cost plus Spent Fuel Management Cost less Dry Fuel Cost (\$000's)	Column 5 Beginning of Year Trust Fund Balance (\$000's)	Column 6 Withdraw (\$000's)	Column 7 Contribute (\$000's)	Column 8 Trust Fund Earnings (\$000's)	Column 9 Year Ending Trust Fund Balance (\$000's)
2029	3,829	4,131		7,960	456,148	7,960	0	8,964	457,152
2030	3,882	4,131		8,012	457,152	8,012	0	8,983	458,122
2031	3,829	4,131		7,960	458,122	7,960	0	9,003	459,166
2032	3,838	4,142		7,980	459,166	7,980	0	9,024	460,209
2033	3,882	4,131		8,012	460,209	8,012	0	9,044	461,241
2034	3,829	4,131		7,960	461,241	7,960	0	9,066	462,347
2035	3,829	4,131		7,960	462,347	7,960	0	9,088	463,475
2036	3,891	4,142		8,033	463,475	8,033	0	9,109	464,551
2037	3,829	4,131		7,960	464,551	7,960	0	9,132	465,724
2038	3,829	4,131		7,960	465,724	7,960	0	9,155	466,919
2039	3,882	4,131		8,012	466,919	8,012	0	9,178	468,085
2040	3,838	4,142		7,980	468,085	7,980	0	9,202	469,307
2041	3,829	4,131		7,960	469,307	7,960	0	9,227	470,574
2042	3,882	4,131		8,012	470,574	8,012	0	9,251	471,813
2043	3,829	4,131		7,960	471,813	7,960	0	9,277	473,131
2044	3,838	4,142		7,980	473,131	7,980	0	9,303	474,454
2045	3,882	4,131		8,012	474,454	8,012	0	9,329	475,770
2046	3,829	4,131		7,960	475,770	7,960	0	9,356	477,167
2047	3,829	4,131		7,960	477,167	7,960	0	9,384	478,591
2048	3,891	4,142		8,033	478,591	8,033	0	9,411	479,970
2049	3,829	4,131		7,960	479,970	7,960	0	9,440	481,451
2050	3,829	4,131		7,960	481,451	7,960	0	9,470	482,961
2051	3,882	4,131		8,012	482,961	8,012	0	9,499	484,447
2052	3,838	4,142		7,980	484,447	7,980	0	9,529	485,997
2053	3,671	0		3,671	485,997	3,671	0	9,647	491,972
2054	3,724	0		3,724	491,972	3,724	0	9,765	498,013
2055	3,671	0		3,671	498,013	3,671	0	9,887	504,228
2056	3,680	0		3,680	504,228	3,680	0	10,011	510,559

**Attachment 15**  
**CNRO-2017-00009**  
 (Page 4 of 6)

**Entergy Nuclear Operations, Inc.**  
**Vermont Yankee Annual Cash Flow Analysis**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

Table 15-1									
Vermont Yankee Nuclear Power Station - SAFSTOR Methodology									
Annual Cash Flow Analysis - Total License Termination, Spent Fuel Management less Dry Fuel Costs									
(In Thousands in 2016 Dollars) (see column definitions below)									
Year	Column 1 50.75 License Termination Cost (\$000's)	Column 2 50.54 (bb) Spent Fuel Management Cost (\$000's)	Column 3 Exclude Dry Fuel Spent Fuel Management Cost (\$000's)	Column 4 License Termination Cost plus Spent Fuel Management Cost less Dry Fuel Cost (\$000's)	Column 5 Beginning of Year Trust Fund Balance (\$000's)	Column 6 Withdraw (\$000's)	Column 7 Contribute (\$000's)	Column 8 Trust Fund Earnings (\$000's)	Column 9 Year Ending Trust Fund Balance (\$000's)
2057	3,724	0		3,724	510,559	3,724	0	10,137	516,971
2058	3,671	0		3,671	516,971	3,671	0	10,266	523,566
2059	3,671	0		3,671	523,566	3,671	0	10,398	530,292
2060	3,733	0		3,733	530,292	3,733	0	10,531	537,091
2061	3,671	0		3,671	537,091	3,671	0	10,668	544,088
2062	3,671	0		3,671	544,088	3,671	0	10,808	551,225
2063	3,724	0		3,724	551,225	3,724	0	10,950	558,451
2064	3,680	0		3,680	558,451	3,680	0	11,095	565,865
2065	3,671	0		3,671	565,865	3,671	0	11,244	573,438
2066	3,724	0		3,724	573,438	3,724	0	11,394	581,108
2067	3,671	0		3,671	581,108	3,671	0	11,549	588,986
2068	33,520	0		33,520	588,986	33,520	0	11,109	566,575
2069	74,947	0		74,947	566,575	74,947	0	9,833	501,460
2070	107,412	0		107,412	501,460	107,412	0	7,881	401,930
2071	87,194	0		87,194	401,930	87,194	0	6,295	321,030
2072	87,640	0		87,640	321,030	87,640	0	4,668	238,058
2073	51,945	0		51,945	238,058	51,945	0	3,722	189,834
2074	537	0		537	189,834	537	0	3,786	193,084
2075	310	0		310	193,084	310	0	3,855	196,629
	728,091	264,875	89,500	903,466	561,615	903,466		538,480	196,629

As can be seen from the information provided in Table 15-1, the required funding for SAFSTOR decommissioning, \$728.09 million, is greater than the NRC formula amount per 10 CFR 50.75(b) and (c) of \$598.65 million, therefore, the site-specific analysis complies with the requirement from Regulatory Guide 1.159 section 1.1.1 previously discussed. The cash flows for the years 2017-2020 reflect completion of the transfer to dry fuel storage in 2018, contingent upon certain regulatory approvals. The foregoing SAFSTOR analysis shows that when the December 31, 2016 DTF balance is escalated at the allowable rate and compared against the

**Entergy Nuclear Operations, Inc.  
Vermont Yankee Annual Cash Flow Analysis  
For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

annual figures for the SAFSTOR period, that an approximately \$196.6 million surplus exists at the end of the decommissioning project. Accordingly, the licensee concludes that no further action is required at this time to demonstrate adequate funding assurance for decommissioning Vermont Yankee.

**Table 15-1 Definitions:**

**Column 1: 50.75 License Termination Cost**

Reflects the Total Annual License Termination Plan cost in 2016 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 2016 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 2016 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 2016 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 2016 dollars at a 0.0% escalation rate and 2.0% Fund Earnings

**Attachment 15**  
**CNRO-2017-00009**  
(Page 6 of 6)

**Entergy Nuclear Operations, Inc.**  
**Vermont Yankee Annual Cash Flow Analysis**  
**For Year Ending December 31, 2016 - 10 CFR 50.75(f)(1)**

**Column 6: Withdraw**

Reflects the annual expenditures from the Trust Fund in 2016 dollars at a 0.0% escalation rate (equals Column 4)

**Column 7: Contribute**

Reflects the annual contributions to the Trust Fund in 2016 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 100% of the projected annual expenditure for each year.  $(\text{Column 5} - 100\% \text{ of Column 6}) * 2.0\%$

**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 specified at a 0.0% escalation rate and 2.0% Fund Earnings in 2016 dollars.  $(\text{Column 5} - \text{Column 6} + \text{Column 7} + \text{Column 8})$

Entergy Nuclear Operations, Inc.  
Minimum Financial Assurance Calculation Worksheets

Plant name:

Indian Point Energy Center, Unit 1

Month  
12

Day  
31

Year  
2016

Year of Biennial:

9

28

2013

Termination of Operation:

PWR	MWth	1986\$	ECI	Base Lx	Lx	Px	Fx	Ex	Bx
	615	\$85,560,000	128.7	2.16	2.78	1.883	1.854	1.87	12.471

NRC Minimum:

\$410,151,579

Site Specific: \$560,540,912

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
Entergy	100.00%	\$560,540,912	\$442,855,300

Note: See Attachment 14 for adequacy of the trust fund.

Entergy Nuclear Operations, Inc.  
Minimum Financial Assurance Calculation Worksheets

Plant name:

Indian Point Energy Center, Unit 2

Month

Day

Year

Year of Biennial:

12

31

2016

Termination of Operation:

9

28

2013

	MWth	1986\$	ECI	Base Lx	Lx	Px	Fx	Ex	Bx
PWR	3216	\$103,300,800	128.7	2.16	2.78	1.883	1.854	1.87	12.471
			0.65					0.13	0.22

NRC Minimum:

\$495,196,193

Site Specific:

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
Entergy	100.00%	\$495,196,193	\$564,012,057

Step 1:

Earnings Credit:

Trust Fund Balance:	Real Rate of Return per	Years Left in License	Total Real Rate of	Total Earnings:
\$564,012,057	2%	0.00	1.00000	\$564,012,057

Total Earnings = Trust Fund balance x (1+RRR)^Years left in license

Step 2:

Accumulation:

Value of Annuity per year	Real Rate of Return per	Years of Annuity:	Total Annuity:
\$0	2%	0	\$0

Step 3:

Decom Period:

Total Earnings:	Real Rate of Return per	Decom Period:	Total Real Rate of	Total Earnings for Decom:
\$564,012,057	2%	7	0.14869	\$41,930,255

Total Earnings for Decom = (1/2) x Total Earnings x [(1+RRR)^Decom period - 1]

Total of Steps 1 - 3:

\$605,942,312

Total = Total Earnings + Total Earnings for Decom

Excess (Shortfall)	\$	110,746,119	to NRC minimum
	\$	(6,968,434)	Less ISFSI
	\$	-	Parent Co Guaranty
	\$	103,777,685	Total Excess Financial Assurance

Attachment 16  
CNRO-2017-00009  
(Page 3 of 7)

Entergy Nuclear Operations, Inc.  
Minimum Financial Assurance Calculation Worksheets

Plant name:

Indian Point Energy Center, Unit 3

Month

Day

Year

Year of Biennial:

31

2016

Termination of Operation:

12

2015

PWR	MWth	1986\$	ECI	Base Lx	Lx	Px	Fx	Ex	Bx
	3216	\$103,300,800	128.7	2.16	2.78	1.883	1.854	0.13	12.471

NRC Minimum:

\$495,196,193

Site Specific:

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
Entergy	100.00%	\$495,196,193	\$719,098,560

Step 1:  
Earnings Credit:

Trust Fund Balance:	Real Rate of Return per	Years Left in License	Total Real Rate of	Total Earnings:
\$719,098,560	2%	0.00	1.00000	\$719,098,560
Total Earnings = Trust Fund balance x (1+RRR) <sup>n</sup> Years left in license				

Step 2:

Accumulation:	Real Rate of Return per	Years of Annuity:	Total Annuity:
Value of Annuity per year	2%	0	\$0

Step 3:

Decom Period:	Real Rate of Return per	Decom Period:	Total Real Rate of	Total Earnings for Decom:
	2%	7	0.14869	\$53,459,825
Total Earnings:				
\$719,098,560				
Total Earnings for Decom = (1/2) x Total Earnings x [(1+RRR) <sup>n</sup> Decom period - 1]				
Total = Total Earnings + Total Earnings for Decom				
Total of Steps 1 - 3:				
\$772,558,385				

Excess (Shortfall)	\$	277,362,192	to NRC minimum
	\$	(6,968,434)	Less ISFSI
	\$	-	Parent Co Guaranty
	\$	270,393,758	Total Excess Financial Assurance

Entergy Nuclear Operations, Inc.  
Minimum Financial Assurance Calculation Worksheets

Plant name: **Vermont Yankee Power Station**

Month

Year of Biennial:

Day

Year

Termination of Operation:

2016

2014

	MWth	1986\$	ECI	Base Lx	Lx	Px	Fx	Ex	Bx		
BWR	1912	\$121,208,000	128.7	2.16	2.78	1.883	1.854	0.13	1.87	0.22	13.132

NRC Minimum: **\$598,646,270** Site Specific: **\$728,090,722**

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
Entergy	100.00%	\$728,090,722	\$561,614,638

Note: See Attachment 15 for adequacy of the trust fund.

Entergy Nuclear Operations, Inc.  
Minimum Financial Assurance Calculation Worksheets

Plant name:

Pilgrim Nuclear Generating Station

Month

Day

Year

Year of Biennial:

12

31

2016

Termination of Operation:

5

31

2019

	MWth	1986\$	ECI	Base Lx	Lx	Px	Fx	Ex	Bx			
BWR	2028	\$122,252,000	128.7	2.16	0.65	2.78	1.883	1.854	0.13	1.87	0.22	13.132

NRC Minimum:

\$603,802,586

Site Specific:

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
Entergy	100.00%	\$603,802,586	\$960,300,492

Step 1:

Earnings Credit:

Trust Fund Balance:	Real Rate of Return per	Years Left in License	Total Real Rate of	Total Earnings:
\$960,300,492	2%	2.42	1.04902	\$1,007,374,376
Total Earnings = Trust Fund balance x (1+RRR) <sup>n</sup> Years left in license				

Step 2:

Accumulation:

Value of Annuity per year	Real Rate of Return per	Years of Annuity:	Total Annuity:
\$0	2%	0	\$0

Step 3:

Decom Period:

Total Earnings:	Real Rate of Return per	Decom Period:	Total Real Rate of	Total Earnings for Decom:
\$1,007,374,376	2%	7	0.14869	\$74,891,066
Total Earnings for Decom = (1/2) x Total Earnings x [(1+RRR) <sup>n</sup> Decom period - 1]				

Total of Steps 1 - 3:	Total = Total Earnings + Total Earnings for Decom
\$1,082,265,442	

Excess (Shortfall)	\$	478,462,856	to NRC minimum
	\$	(9,211,348)	Less ISFSI
	\$	-	Parent Co Guaranty
	\$	469,251,508	Total Excess Financial Assurance

Entergy Nuclear Operations, Inc.  
Minimum Financial Assurance Calculation Worksheets

Plant name:

James A. FitzPatrick

Year of Biennial:

Month  
12

Day  
31

Year  
2016

Termination of Operation:

10

17

2034

	MWth	1986\$	ECI	Base Lx	Lx	Px	Fx	Ex	Bx
BWR	2536	\$126,824,000	128.7	2.16	2.78	1.883	1.854	0.13	1.87
								0.22	13.132

NRC Minimum:

\$626,383,692

Site Specific:

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
Entergy	100.00%	\$626,383,692	\$784,667,357

Step 1:

Earnings Credit:

Trust Fund Balance:	Real Rate of Return per year	Years Left in License	Total Real Rate of	Total Earnings:
\$784,667,357	2%	17.79	1.42246	\$1,116,157,408
				Total Earnings = Trust Fund balance x (1+RRR) <sup>n</sup> Years left in license

Step 2:

Accumulation:

Value of Annuity per year	Real Rate of Return per year	Years of Annuity:	Total Annuity:
\$0	2%	0	\$0

Step 3:

Decom Period:

Total Earnings:	Real Rate of Return per year	Decom Period:	Total Real Rate of	Total Earnings for Decom:
\$1,116,157,408	2%	7	0.14869	\$82,978,305
				Total Earnings for Decom = (1/2) x Total Earnings x [(1+RRR) <sup>n</sup> Decom period - 1]

Total of Steps 1 - 3:	Total = Total Earnings + Total Earnings for Decom
\$1,199,135,712	

Excess (Shortfall)	\$	572,752,020	to NRC minimum
	\$	(8,383,155)	Less ISFSI
	\$	-	Parent Co Guaranty
	\$	564,368,865	Total Excess Financial Assurance

Entergy Nuclear Operations, Inc.  
Minimum Financial Assurance Calculation Worksheets

Plant name:

Palisades Nuclear Plant

Month

Day

Year

Year of Biennial:

2

28

2017

Termination of Operation:

9

30

2018

PWR	MWth	1986\$	ECI	Base Lx	Lx	Px	Fx	Ex	Bx
	2565	\$97,572,000	125.7	2.08	0.65	2.61	1.854	1.87	12.471
								0.13	0.22

NRC Minimum:

\$457,246,441

Site Specific:

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
Entergy	100.00%	\$457,246,441	\$425,730,230

Step 1:

Earnings Credit:

Trust Fund Balance:	Real Rate of Return per	Years Left in License	Total Real Rate of	Total Earnings:
\$425,730,230	2%	1.59	1.03196	\$439,337,781
Total Earnings = Trust Fund balance x (1+RRR) <sup>Years left in license</sup>				

Step 2:

Accumulation:

Value of Annuity per year	Real Rate of Return per	Years of Annuity:	Total Annuity:
\$0	2%	0	\$0

Step 3:

Decom Period:

Total Earnings:	Real Rate of Return per	Decom Period:	Total Real Rate of	Total Earnings for Decom:
\$439,337,781	2%	7	0.14869	\$32,661,616
Total Earnings for Decom = (1/2) x Total Earnings x [(1+RRR) <sup>Decom period</sup> - 1]				
Total of Steps 1 - 3:				\$471,999,396
Total = Total Earnings + Total Earnings for Decom				

Excess (Shortfall)	\$	14,752,956	to NRC minimum
	\$	(7,861,426)	Less [SFS]
	\$	-	Parent Co Guaranty
	\$	6,891,530	Total Excess Financial Assurance