



**Entergy Nuclear Operations, Inc.**  
1340 Echelon Parkway  
Jackson, MS 39213  
Tel: 601-368-5000

**Mandy K. Halter**  
Director, Nuclear Licensing

CNRO-2018-00012

10 CFR 50.75(f)(1)  
10 CFR 50.82(a)(8)(v)

March 29, 2018

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

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 Nuclear Plant  
Docket No. 50-155  
License No. DPR-6

Palisades Nuclear Power Plant  
Docket No. 50-255  
License No. DPR-20

Indian Point Nuclear Generating  
Stations 1, 2, & 3  
Docket Nos. 50-3, 50-247, & 50-286  
License Nos. DPR-5, DPR-26, & DPR-64

Pilgrim Nuclear Power Station  
Docket 50-293  
License No. DPR-35

Vermont Yankee Nuclear Power Station  
Docket No. 50-271  
License No. DPR-28

- 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), 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 12 and 13 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 14 for the convenience of the reviewer.

The estimated minimum decommissioning fund values were determined using the NRC's methodology in NUREG-1307, Rev 16 (Reference 1).

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, 2017 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 2017 tax liabilities, not reflected in the trust fund balances, as follows (in thousands):

Indian Point 1	\$	2,406
Indian Point 2	\$	2,882
Indian Point 3	\$	0
Vermont Yankee	\$	0
Pilgrim	\$	2,845
Palisades	\$	1,296

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 estimated 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, 2017 trust fund balances 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 Mr. Philip Couture at 601-368-5102.

Sincerely,



MKH/ljs/plc

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 – Palisades
10. Entergy Nuclear Operations, Inc. Calculation of Minimum Amount – Palisades
11. Entergy Nuclear Operations, Inc. Status of Decommissioning Funding – Big Rock Point
12. Entergy Nuclear Operations, Inc. IP1 DTF Balance Based on Decommissioning Funding Assurance Plan
13. Entergy Nuclear Operations, Inc. Vermont Yankee Annual Cash Flow Analysis
14. Entergy Nuclear Operations, Inc. Minimum Financial Assurance Calculation Worksheets

cc: See next page

cc: Mr. A. C. Bakken (ECH)  
Mr. K. R. Jury (ECH)  
Mr. B. E. Green (TMBR)  
Mr. L. M. Coyle (ECH)  
Mr. C. F. Arnone (PAL)  
Mr. C. R. Costanzo (ECH)  
Mr. L. J. Smith (ECH)  
Mr. A. J. Vitale (IPEC)  
Mr. C. R. Daniels (VTY)  
Mr. B. Sullivan (PIL)

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, Palisades  
USNRC Project Manager, Pilgrim  
USNRC Project Manager, Vermont Yankee  
Ms. Margaret O'Banion, Project Manager, NRC/NRR/DORL

USNRC Resident Inspector, Indian Point 2 / 3  
USNRC Resident Inspector, Palisades  
USNRC Resident Inspector, Pilgrim  
USNRC Resident Inspector, Vermont Yankee

**Attachment 1**  
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**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding - Indian Point 1**  
**For Year Ending December 31, 2017 - 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) estimated per 10 CFR 50.75(b) and (c) (2017\$)   | \$569.23 million <sup>[Note1]</sup>                     |
| 2. ISFSI Obligation as of 12/31/17  | \$1.15 million <sup>[Note2]</sup>                       |
| 3. Decommissioning Trust Fund Total as of 12/31/17  | \$ 493.1 million  |
| 4. A schedule of the annual amounts remaining to be collected   | None  |
| 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  | 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 12. (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 2018 (Reference 1).

REFERENCE: 1. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Status of Funding for Managing Irradiated Fuel For Year Ending December 31, 2017 – 10 CFR 50.82(a)(8)(vii)," CNRO-2018-00014, dated March 2018

**Attachment 1**  
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**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding - Indian Point 1**  
**For Year Ending December 31, 2017 - 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   | \$107.78 million <sup>[Note1]</sup>   |
| 2. 2017 decommissioning spending   | \$8.34 million <sup>[Note1]</sup>     |
| 3. Fund Balance  | See above in 10 CFR 50.75 information |
| 4. No other financial assurance mechanism is being relied upon, but costs through 12/31/2017 have been funded by operations, and not the decommissioning fund. |                                       |
| 5. Estimated costs to complete from latest estimate  | \$569.23 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 CFR 50.75 information |
| 8. Any material changes to trust agreements  | See above in 10 CFR 50.75 information |

Note 1: Entergy Nuclear Operations, Inc. (Entergy) does not possess records that would permit determination of charges to Indian Point 1 (IP1) prior to its acquisition in September 2001 by Entergy Nuclear Indian Point 2, LLC. The costs presented here represent those costs charged in 2017 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 2017 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 12 (Calculation of the NRC Minimum Amount is provided in Attachment 4). This estimate does not include 2017 spending because current costs are being paid out of operating funds.

**Attachment 2**  
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**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding - Indian Point 2**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

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

1. Minimum Financial Assurance (MFA) estimated per 10 CFR 50.75(b) and (c) (2017\$)	\$505.68 million <sup>[Note 1]</sup>
2. ISFSI Obligation as of 12/31/17	\$5.99 million <sup>[Note 2]</sup>
3. Decommissioning Trust Fund Total as of 12/31/17	\$624.39 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 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	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 Status of Funding for Managing Irradiated Fuel For Year Ending December 31, 2017 – 10 CFR 50.82(a)(8)(vii). Total ISFSI obligation for Indian Point 1&2 is \$7.13M with \$5.99M attributable to Indian Point 2 and \$1.15M attributable to Indian Point 1 (totals may not foot due to rounding).

Note 3: Includes provisional fund balance of \$32.75 million.

**Attachment 3**  
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**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding – Indian Point 3**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

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

1. Minimum Financial Assurance (MFA) estimated per 10 CFR 50.75(b) and (c) (2017\$)	\$505.68 million <sup>[Note 1]</sup>
2. ISFSI Obligation as of 12/31/17	\$7.13 million <sup>[Note 2]</sup>
3. Decommissioning Trust Fund Total as of 12/31/17	\$798.17 million
4. A schedule of the annual amounts remaining to be collected	None
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	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). The trust agreement amendments were provided in the August 16, 2016 application, hereby incorporated by reference, and were approved in the January 27, 2017 order.



**Attachment 4**  
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**Entergy Nuclear Operations, Inc.**  
**Calculation of Minimum Amount – Indian Point**  
**For Year Ending December 31, 2017 - 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)	2.85 <sup>1</sup>
E=Energy (PWR)	2.29 <sup>2</sup>
B=Waste Burial-Vendor (PWR)	12.471 <sup>3</sup>

**PWR Escalation Factor:**

$$0.65(L) + 0.13(E) + 0.22(B) = 4.89520$$

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

<b>Indian Point 1:</b> \$85,560,000 * Factor=	<u>\$418,833,686</u>
<b>Indian Point 2 &amp; 3:</b> \$103,300,800 * Factor=	<u>\$505,678,528</u>

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<sup>1</sup> Bureau of Labor Statistics, Series Report ID: CIU201000000210i (4<sup>th</sup> Quarter 2017)  
<sup>2</sup> Bureau of Labor Statistics, Series Report ID: wpu0543 and wpu0573 (December 2017)  
<sup>3</sup> Nuclear Regulatory Commission: NUREG-1307 Revision 16, Table 2.1 (2016)

**Attachment 5**  
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**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding – Vermont Yankee**  
**For Year Ending December 31, 2017 - 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) estimated per 10 CFR 50.75(b) and (c) (2017\$)	\$713.4 million <sup>[Note 1]</sup>
2. ISFSI Obligation as of 12/31/17	\$5.33 million <sup>[Note 2]</sup>
3. Decommissioning Trust Fund Total as of 12/31/17	\$581.54 million
4. A schedule of the annual amounts remaining to be collected	None
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	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 13. (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**  
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**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding – Vermont Yankee**  
**For Year Ending December 31, 2017 - 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 12/31/2017                   | \$ 142.72 million<br>[Note1]                |
| 2. 2017 decommissioning spending  | \$ 31.75 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                         | \$ 713.4 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 2017 decommissioning costs. 2014 through 2016 qualified costs are included in item 1 and have been reimbursed in 2017.

**Attachment 6**  
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**Entergy Nuclear Operations, Inc.**  
**Calculation of Minimum Amount - Vermont Yankee**  
**For Year Ending December 31, 2017 - 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)	2.85 <sup>1</sup>
E=Energy (BWR)	2.32 <sup>2</sup>
B=Waste Burial-Vendor (BWR)	13.132 <sup>3</sup>

**BWR Escalation Factor:**

$$0.65(L) + 0.13(E) + 0.22(B) = 5.04333$$

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

$$\$121,208,000 * \text{Factor} = \$611,291,846$$

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<sup>1</sup> Bureau of Labor Statistics, Series Report ID: CIU201000000210i (4<sup>th</sup> Quarter 2017)  
<sup>2</sup> Bureau of Labor Statistics, Series Report ID: wpu0543 and wpu0573 (December 2017)  
<sup>3</sup> Nuclear Regulatory Commission: NUREG-1307 Revision 16, Table 2.1 (2016)

**Attachment 7**  
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**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding - Pilgrim**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

Plant Name: **Pilgrim Nuclear Power Station**

1. Minimum Financial Assurance (MFA) estimated per 10 CFR 50.75(b) and (c) (2017\$)	\$616.56 million <sup>[Note 1]</sup>
2. ISFSI Obligation as of 12/31/17	\$9.43 million <sup>[Note 2]</sup>
3. Decommissioning Trust Fund Total as of 12/31/17	\$1,070.74 million
4. A schedule of the annual amounts remaining to be collected	None
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	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**  
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**Entergy Nuclear Operations, Inc.**  
**Calculation of Minimum Amount - Pilgrim**  
**For Year Ending December 31, 2017 - 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)	2.85 <sup>1</sup>
E=Energy (BWR)	2.32 <sup>2</sup>
B=Waste Burial-Vendor (BWR)	13.132 <sup>3</sup>

**BWR Escalation Factor:**

$$0.65(L) + 0.13(E) + 0.22(B) = 5.04333$$

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

$$\$122,252,000 * \text{Factor} = \$616,557,082$$

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<sup>1</sup> Bureau of Labor Statistics, Series Report ID: CIU201000000210i (4<sup>th</sup> Quarter 2017)  
<sup>2</sup> Bureau of Labor Statistics, Series Report ID: wpu0543 and wpu0573 (December 2017)  
<sup>3</sup> Nuclear Regulatory Commission: NUREG-1307 Revision 16, Table 2.1 (2016)

**Attachment 9**  
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**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding – Palisades**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

Plant Name: **Palisades Nuclear Plant**

1. Minimum Financial Assurance (MFA) estimated per 10 CFR 50.75(b) and (c) (2017\$)	\$466.32 million <sup>[Note 1]</sup>
2. ISFSI Obligation as of 12/31/17	\$8.05 million <sup>[Note 2]</sup>
3. Decommissioning Trust Fund Total as of 12/31/17	\$459.70 million
4. A schedule of the annual amounts remaining to be collected	None
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	None
8. Any material changes to trust agreements	None

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.

**Attachment 10**  
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**Entergy Nuclear Operations, Inc.**  
**Calculation of Minimum Amount – Palisades**  
**For Year Ending December 31, 2017 - 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)	2.67 <sup>1</sup>
E=Energy (PWR)	2.29 <sup>2</sup>
B=Waste Burial-Vendor (PWR)	12.471 <sup>3</sup>

**PWR Escalation Factor:**

$$0.65(L) + 0.13(E) + 0.22(B) = 4.77924$$

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

$$\$97,572,000 * \text{Factor} = \$466,320,432$$

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<sup>1</sup> Bureau of Labor Statistics, Series Report ID: CIU201000000230i (4<sup>th</sup> Quarter 2017)  
<sup>2</sup> Bureau of Labor Statistics, Series Report ID: wpu0543 and wpu0573 (December 2017)  
<sup>3</sup> Nuclear Regulatory Commission: NUREG-1307 Revision 16, Table 2.1 (2016)



**Attachment 11**  
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**Entergy Nuclear Operations, Inc.**  
**Status of Decommissioning Funding – Big Rock Point**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

Plant Name: **Big Rock Point ISFSI**

- |   |  |
|---|--|
| 1. Amount of decommissioning funds required from most recent estimate (2017\$).   | \$2.56 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.

**Attachment 12**  
**CNRO-2018-00012**  
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**Entergy Nuclear Operations, Inc.**  
**IP1 DTF Balance Based on Decommissioning Funding Assurance Plan**  
**For Year Ending December 31, 2017 - 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 12-1 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 12**  
**CNRO-2018-00012**  
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**Entergy Nuclear Operations, Inc.**  
**IP1 DTF Balance Based on Decommissioning Funding Assurance Plan**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

<b>Table 12-1</b>		
<b>NRC License Termination Cost (\$ millions)</b>		
	<b>2017 \$ Unit 1 Radiological</b>	<b>Ending DTF Balance</b>
2018	0.997	511.153
2019	3.987	517.389
2020	3.998	523.739
2021	3.987	530.227
2022	3.987	536.845
2023	3.987	543.595
2024	3.998	550.469
2025	3.987	557.492
2026	3.987	564.655
2027	3.987	571.961
2028	3.998	579.403
2029	3.987	587.004
2030	3.987	594.757
2031	3.987	602.666
2032	3.998	610.721
2033	3.987	618.949
2034	3.987	627.341
2035	3.987	635.901
2036	3.998	644.621
2037	3.987	653.527
2038	3.987	662.611
2039	3.987	671.876
2040	3.998	681.316
2041	3.987	690.956
2042	3.987	700.788
2043	3.987	710.817
2044	3.998	721.035
2045	3.987	731.469
2046	3.987	742.112
2047	3.987	752.967
2048	3.998	764.029
2049	3.987	775.323
2050	3.987	786.842
2051	3.987	798.592
2052	3.998	810.567
2053	3.987	822.791
2054	3.987	835.260

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**Entergy Nuclear Operations, Inc.**  
**IP1 DTF Balance Based on Decommissioning Funding Assurance Plan**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

<b>Table 12-1</b>		
<b>NRC License Termination Cost (\$ millions)</b>		
	<b>2017 \$ Unit 1 Radiological</b>	<b>Ending DTF Balance</b>
2055	3.987	847.978
2056	3.998	860.940
2057	3.987	874.172
2058	3.987	887.669
2059	3.987	901.436
2060	3.998	915.467
2061	3.987	929.789
2062	3.987	944.398
2063	3.987	959.299
2064	3.998	974.487
2065	29.204	964.773
2066	63.819	920.250
2067	106.283	832.372
2068	112.783	736.236
2069	16.291	734.670
2070	16.112	733.251
2071	16.112	731.803
2072	16.156	730.283
2073	7.946	736.943
<b>Total</b>	<b>569.228</b>	

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**Entergy Nuclear Operations, Inc.**  
**IP1 DTF Balance Based on Decommissioning Funding Assurance Plan**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

As can be seen from the information provided in Table 12-1, the required funding for SAFSTOR decommissioning, \$569.23 million, is greater than the NRC formula amount per 10 CFR 50.75(b) and (c) of \$418.83 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, 2017 DTF balance is escalated at the allowable rate and compared against the annual figures for the SAFSTOR period, that an approximately \$736.94 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.

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**Entergy Nuclear Operations, Inc.**  
**Vermont Yankee Annual Cash Flow Analysis**  
**For Year Ending December 31, 2017 - 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 \$582 million as of December 31, 2017. Tables 3.4 and 3.5 of the site-specific decommissioning cost estimate (Reference 1, Enclosure) set forth the estimated annual expenditures for license termination and spent fuel management, respectively. Subsequent to the filing of Reference 1, two significant schedule changes were submitted to reflect the accelerated completion of the dry fuel loading campaign (Reference 2) and preparations for dismantling and decontamination occurring in 2017-2018 vice 2068-2069 (Reference 3). A cash flow analysis utilizing this annual expenditure and significant schedule change information is included as Table 13-1.

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 4) 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 \$161 million, Table 13-1 Column 2, minus Column 3 amounts funded by external credit facilities) will be funded from the decommissioning trust fund. This information also reflects the significant schedule change submitted for completion of the dry fuel storage campaign in 2018 (Reference 2). Entergy Nuclear Operations, Inc. obtained an exemption that allows the use of trust funds for spent fuel management activities (Reference 5).

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 (Reference 1).

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 13-1 below provides the annual license termination and spent fuel

**Entergy Nuclear Operations, Inc.**  
**Vermont Yankee Annual Cash Flow Analysis**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

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 \$582 million, as of December 31, 2017, and projected fund earnings during the SAFSTOR period (assuming an annual 2% growth rate), the trust fund is expected to have an excess of \$348.9 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," BVI 14-078, dated December 19, 2014 (Accession No. ML14357A110).
2. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Notification of Schedule Change for Dry Fuel Loading Campaign," BVI 17-013, dated April 12, 2017 (Accession No. ML17104A050).
3. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Notification of Schedule Change for Preparations for Dismantling and Decontamination," BVI 17-028, dated August 28, 2017 (Accession No. ML17248A468).
4. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Update to Irradiated Fuel Management Program Pursuant to 10 CFR 50.54(bb)," BVI 14-085, dated December 19, 2014 (Accession No. ML14358A251).
5. NRC Approval of Exemption Request for Spent Fuel Management, 80 Fed. Reg. 35992 (June 23, 2015).

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**Entergy Nuclear Operations, Inc.**  
**Vermont Yankee Annual Cash Flow Analysis**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

Table 13-1									
Vermont Yankee Nuclear Power Station - SAFSTOR Methodology									
Annual Cash Flow Analysis - Total License Termination, Spent Fuel Management less Dry Fuel Costs									
(In Thousands in 2017 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)
2018	63,992	76,992	59,715	81,269	581,539	81,269	0	10,005	510,275
2019	5,560	4,232		9,791	510,275	9,791	0	10,010	510,493
2020	5,506	4,232		9,737	510,493	9,737	0	10,015	510,771
2021	5,506	4,232		9,737	510,771	9,737	0	10,021	511,054
2022	3,842	4,232		8,074	511,054	8,074	0	10,060	513,040
2023	3,842	4,232		8,074	513,040	8,074	0	10,099	515,066
2024	3,842	4,243		8,085	515,066	8,085	0	10,140	517,121
2025	3,779	4,232		8,010	517,121	8,010	0	10,182	519,293
2026	3,932	4,232		8,163	519,293	8,163	0	10,223	521,352
2027	3,986	4,232		8,217	521,352	8,217	0	10,263	523,397
2028	3,941	4,243		8,184	523,397	8,184	0	10,304	525,517
2029	3,932	4,232		8,163	525,517	8,163	0	10,347	527,701
2030	3,986	4,232		8,217	527,701	8,217	0	10,390	529,873
2031	3,932	4,232		8,163	529,873	8,163	0	10,434	532,144
2032	3,941	4,243		8,184	532,144	8,184	0	10,479	534,438
2033	3,986	4,232		8,217	534,438	8,217	0	10,524	536,745
2034	3,932	4,232		8,163	536,745	8,163	0	10,572	539,154
2035	3,932	4,232		8,163	539,154	8,163	0	10,620	541,610
2036	3,995	4,243		8,238	541,610	8,238	0	10,667	544,039
2037	3,932	4,232		8,163	544,039	8,163	0	10,718	546,593
2038	3,932	4,232		8,163	546,593	8,163	0	10,769	549,198
2039	3,986	4,232		8,217	549,198	8,217	0	10,820	551,800
2040	3,941	4,243		8,184	551,800	8,184	0	10,872	554,488
2041	3,932	4,232		8,163	554,488	8,163	0	10,926	557,251
2042	3,986	4,232		8,217	557,251	8,217	0	10,981	560,015
2043	3,932	4,232		8,163	560,015	8,163	0	11,037	562,888
2044	3,941	4,243		8,184	562,888	8,184	0	11,094	565,798
2045	3,986	4,232		8,217	565,798	8,217	0	11,152	568,732



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**Entergy Nuclear Operations, Inc.**  
**Vermont Yankee Annual Cash Flow Analysis**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

Table 13-1									
Vermont Yankee Nuclear Power Station - SAFSTOR Methodology									
Annual Cash Flow Analysis - Total License Termination, Spent Fuel Management less Dry Fuel Costs									
(In Thousands in 2017 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)
2046	3,932	4,232		8,163	568,732	8,163	0	11,211	571,780
2047	3,932	4,232		8,163	571,780	8,163	0	11,272	574,889
2048	3,995	4,243		8,238	574,889	8,238	0	11,333	577,984
2049	3,932	4,232		8,163	577,984	8,163	0	11,396	581,216
2050	3,932	4,232		8,163	581,216	8,163	0	11,461	584,514
2051	3,986	4,232		8,217	584,514	8,217	0	11,526	587,823
2052	3,941	4,243		8,184	587,823	8,184	0	11,593	591,231
2053	3,770	0		3,770	591,231	3,770	0	11,749	599,210
2054	3,824	0		3,824	599,210	3,824	0	11,908	607,293
2055	3,770	0		3,770	607,293	3,770	0	12,070	615,593
2056	3,780	0		3,780	615,593	3,780	0	12,236	624,050
2057	3,824	0		3,824	624,050	3,824	0	12,405	632,630
2058	3,770	0		3,770	632,630	3,770	0	12,577	641,437
2059	3,770	0		3,770	641,437	3,770	0	12,753	650,420
2060	3,834	0		3,834	650,420	3,834	0	12,932	659,518
2061	3,770	0		3,770	659,518	3,770	0	13,115	668,863
2062	3,770	0		3,770	668,863	3,770	0	13,302	678,394
2063	3,824	0		3,824	678,394	3,824	0	13,491	688,061
2064	3,780	0		3,780	688,061	3,780	0	13,686	697,967
2065	3,770	0		3,770	697,967	3,770	0	13,884	708,081
2066	3,824	0		3,824	708,081	3,824	0	14,085	718,342
2067	3,770	0		3,770	718,342	3,770	0	14,291	728,863
2068	34,428	0		34,428	728,863	34,428	0	13,889	708,324
2069	76,618	0		76,618	708,324	76,618	0	12,634	644,340
2070	109,833	0		109,833	644,340	109,833	0	10,690	545,197
2071	89,271	0		89,271	545,197	89,271	0	9,119	465,045
2072	89,728	0		89,728	465,045	89,728	0	7,506	382,823
2073	53,202	0		53,202	382,823	53,202	0	6,592	336,213

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**Entergy Nuclear Operations, Inc.**  
**Vermont Yankee Annual Cash Flow Analysis**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

Table 13-1									
Vermont Yankee Nuclear Power Station - SAFSTOR Methodology									
Annual Cash Flow Analysis - Total License Termination, Spent Fuel Management less Dry Fuel Costs									
(In Thousands in 2017 Dollars) (see column definitions below)									
Year	<u>Column 1</u> 50.75 License Termination Cost (\$000's)	<u>Column 2</u> 50.54 (bb) Spent Fuel Management Cost (\$000's)	<u>Column 3</u> Exclude Dry Fuel Spent Fuel Management Cost (\$000's)	<u>Column 4</u> License Termination Cost plus Spent Fuel Management Cost less Dry Fuel Cost (\$000's)	<u>Column 5</u> Beginning of Year Trust Fund Balance (\$000's)	<u>Column 6</u> Withdraw (\$000's)	<u>Column 7</u> Contribute (\$000's)	<u>Column 8</u> Trust Fund Earnings (\$000's)	<u>Column 9</u> Year Ending Trust Fund Balance (\$000's)
2074	551	0		551	336,213	551	0	6,713	342,375
2075	318	0		318	342,375	318	0	6,841	348,898
	713,385	220,956	59,715	874,625	581,539	874,625	0	641,985	348,898

As can be seen from the information provided in Table 13-1, the required funding for SAFSTOR decommissioning, \$713.39 million, is greater than the NRC formula amount per 10 CFR 50.75(b) and (c) of \$611.29 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 2018-2020 reflect completion of the transfer to dry fuel storage in 2018. The cash flows for the year 2018 reflects the preparations for dismantling and decontamination previously scheduled in 2068-2069. The foregoing SAFSTOR analysis shows that when the December 31, 2017 DTF balance is escalated at the allowable rate and compared against the annual figures for the SAFSTOR period, that an approximately \$348.90 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 2017 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 2017 dollars at a 0.0% escalation rate

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**Entergy Nuclear Operations, Inc.**  
**Vermont Yankee Annual Cash Flow Analysis**  
**For Year Ending December 31, 2017 - 10 CFR 50.75(f)(1)**

**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 2017 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 2017 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 2017 dollars at a 0.0% escalation rate and 2.0% Fund Earnings

**Column 6: Withdraw**

Reflects the annual expenditures from the Trust Fund in 2017 dollars at a 0.0% escalation rate (equals Column 4)

**Column 7: Contribute**

Reflects the annual contributions to the Trust Fund in 2017 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. (Column 5 - 100% 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 2017 dollars. (Column 5 - Column 6 + Column 7 + Column 8)

Energy Nuclear Operations, Inc.  
 Minimum Financial Assurance Calculation Worksheets

Plant name: **Indian Point Energy Center, Unit 1**

Year of Biennial: **2017**      **Month 12**      **Day 31**      **Year 2017**  
 Termination of Operation: **2013**      **Month 9**      **Day 28**      **Year 2013**

<b>PWR</b>	<b>MWth</b> 615	<b>1986\$</b> \$85,560,000	<b>ECI</b> 132.0	<b>Base Lx</b> 2.16	<b>Lx</b> 2.85	<b>Px</b> 2.076	<b>Fx</b> 2.596	<b>Ex</b> 2.29	<b>Bx</b> 12.471
				0.65				0.13	0.22

**NRC Minimum: \$418,833,686      Site Specific: \$569,227,756**

<b>Licensee:</b> Energy	<b>% Owned:</b> 100.00%	<b>Amount of NRC Minimum/Site Specific:</b> \$569,227,756	<b>Amount in Trust Fund:</b> \$493,103,037
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Note: See Attachment 12 for adequacy of the trust fund.

**Entergy Nuclear Operations, Inc.**  
**Minimum Financial Assurance Calculation Worksheets**

**Plant name:** Indian Point Energy Center, Unit 2

**Year of Biennial:** 12      **Month** 12      **Day** 31      **Year** 2017  
**Termination of Operation:** 9      9      28      2013

<b>MWth</b>	3216	<b>1986\$</b>	<b>ECI</b>	132.0	<b>Base Lx</b>	2.16	<b>Lx</b>	2.85	<b>Px</b>	2.076	<b>Fx</b>	2.596	<b>Ex</b>	2.29	<b>Bx</b>	12.471
<b>PWR</b>		\$103,300,800					0.65				0.13					

**NRC Minimum:** \$505,678,528      **Site Specific:**

<b>Licensee:</b>	<b>% Owned:</b>	<b>Amount of NRC Minimum/Site Specific:</b>	<b>Amount in Trust Fund:</b>
Entergy	100.00%	\$505,678,528	\$624,390,278

**Step 1:**

**Earnings Credit:**

<b>Trust Fund Balance:</b>	<b>Real Rate of Return per year</b>	<b>Years Left in License</b>	<b>Total Real Rate of</b>	<b>Total Earnings:</b>
\$624,390,278	2%	0.00	1.00000	\$624,390,278

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

**Step 2:**

**Accumulation:**

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

**Step 3:**

**Decom Period:**

<b>Total Earnings:</b>	<b>Real Rate of Return per year</b>	<b>Decom Period:</b>	<b>Total Real Rate of</b>	<b>Total Earnings for Decom:</b>
\$624,390,278	2%	7	0.14869	\$46,418,943

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

**Total = Total Earnings + Total Earnings for Decom**

<b>Excess (Shortfall)</b>	<b>\$</b>	<b>165,130,692</b>	<b>to NRC minimum</b>
	<b>\$</b>	<b>(7,134,157)</b>	<b>Less ISFSI</b>
	<b>\$</b>	<b>-</b>	<b>Parent Co Guaranty</b>
	<b>\$</b>	<b>157,996,536</b>	<b>Total Excess Financial Assurance</b>

**Entergy Nuclear Operations, Inc.**  
**Minimum Financial Assurance Calculation Worksheets**

**Plant name:** Indian Point Energy Center, Unit 3

**Year of Biennial:** Month 12 Day 31 Year 2017  
**Termination of Operation:** Month 12 Day 12 Year 2015

PWR	MWth	1986\$	ECI	Base Lx	Lx	Px	Fx	Ex	Bx		
	3216	\$103,300,800	132.0	2.16	0.65	2.85	2.076	2.596	0.13	2.29	12.471

**NRC Minimum:** \$505,678,528 **Site Specific:**

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund
Entergy	100.00%	\$505,678,528	\$798,169,140

**Step 1:**

**Earnings Credit:**

Trust Fund Balance:	Real Rate of Return per year	Years Left in License	Total Real Rate of	Total Earnings:
\$798,169,140	2%	0.00	1.00000	\$798,169,140

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 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:
\$798,169,140	2%	7	0.14869	\$59,338,156

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

Total of Steps 1 - 3: \$857,507,296  
 Total = Total Earnings + Total Earnings for Decom

Excess (Shortfall)	\$	351,828,767	to NRC minimum
	\$	(7,134,157)	Less ISFSI
	\$	-	Parent Co Guaranty
	\$	344,694,611	Total Excess Financial Assurance

Entergy Nuclear Operations, Inc.  
 Minimum Financial Assurance Calculation Worksheets

Plant name: **Vermont Yankee Power Station**

Year of Biennial: **2017**      **2014**  
 Termination of Operation: **12/31/2017**      **12/29/2014**

<b>BWR</b>	<b>1912</b>	<b>1986\$</b>	<b>132.0</b>	<b>2.16</b>	<b>0.65</b>	<b>2.85</b>	<b>2.076</b>	<b>2.596</b>	<b>0.13</b>	<b>2.32</b>	<b>0.22</b>	<b>13.132</b>
	<u>MWth</u>		<u>ECl</u>	<u>Base Lx</u>		<u>Lx</u>	<u>Px</u>	<u>Fx</u>		<u>Ex</u>		<u>Bx</u>
	\$121,208,000											

**NRC Minimum: \$611,291,846      Site Specific: \$713,384,534**

<b>Entergy</b>	<b>100.00%</b>	<b>\$713,384,534</b>
<u>Licensee:</u>	<u>% Owned:</u>	<u>Amount of NRC Minimum/Site Specific:</u>
		<b>\$581,538,826</b>

Note: See Attachment 13 for adequacy of the trust fund.

**Energy Nuclear Operations, Inc.**  
**Minimum Financial Assurance Calculation Worksheets**

**Plant name:** Pilgrim Nuclear Generating Station

**Year of Biennial:** 12      **Month:** 12      **Day:** 31      **Year:** 2017  
**Termination of Operation:** 5      **Month:** 5      **Day:** 31      **Year:** 2019

<b>BWR</b>	<b>MWth</b>	<b>1986\$</b>	<b>ECI</b>	<b>Base Lx</b>	<b>Lx</b>	<b>Px</b>	<b>Fx</b>	<b>Ex</b>	<b>Bx</b>
	2028	\$122,252,000	132.0	2.16	2.85	2.076	2.596	2.32	13.132
			0.65				0.13	0.22	

**NRC Minimum:** \$616,557,082      **Site Specific:**

<b>Licensee:</b> Energy	<b>% Owned:</b> 100.00%	<b>Amount of NRC Minimum/Site Specific:</b> \$616,557,082	<b>Amount in Trust Fund:</b> \$1,070,744,356
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**Step 1:**

**Earnings Credit:**

<b>Trust Fund Balance:</b> \$1,070,744,356	<b>Real Rate of Return per year:</b> 2%	<b>Years Left in License:</b> 1.42	<b>Total Real Rate of:</b> 1.02845	<b>Total Earnings:</b> \$1,101,208,032
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**Total Earnings = Trust Fund balance x (1+RRR)<sup>Years left in license</sup>**

**Step 2:**

**Accumulation:**

<b>Value of Annuity per year:</b> \$0	<b>Real Rate of Return per year:</b> 2%	<b>Years of Annuity:</b> 0	<b>Total Annuity:</b> \$0
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**Step 3:**

**Decom Period:**

<b>Total Earnings:</b> \$1,101,208,032	<b>Real Rate of Return per year:</b> 2%	<b>Decom Period:</b> 7	<b>Total Real Rate of:</b> 0.14869	<b>Total Earnings for Decom:</b> \$81,866,926
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**Total Earnings for Decom = (1/2) x Total Earnings x [(1+RRR)<sup>Decom period</sup> - 1]**

**Total = Total Earnings + Total Earnings for Decom**  
**\$1,183,074,958**

<b>Excess (Shortfall)</b>	<b>\$</b>	<b>566,517,876 to NRC minimum</b>
	<b>\$</b>	<b>(9,430,947) Less ISFSI</b>
	<b>\$</b>	<b>- Parent Co Guaranty</b>
	<b>\$</b>	<b>557,086,929 Total Excess Financial Assurance</b>



