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November 5, 2015

Administrative Judge
William J. Froehlich, Chairman
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Atomic Safety and Licensing Board Panel
Mail Stop: T-3 F23
Washington, DC 20555-0001

Administrative Judge
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Subject: In the Matter of ENTERGY NUCLEAR VERMONT YANKEE, LLC AND ENTERGY NUCLEAR OPERATIONS, INC. (Vermont Yankee Nuclear Power Station), Docket No. 50-271-LA-3

Dear Administrative Judges,

The State of Vermont would like to inform you of a filing that the State, the Vermont Yankee Nuclear Power Corporation, and Green Mountain Power Corporation made yesterday with the Commissioners. That filing is attached below. In the proceeding before this Board, the State will file its response to NRC Staff's motion to vacate shortly.

Respectfully submitted,
/s/ Kyle H. Landis-Marinello
Assistant Attorney General

cc: Service list

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
ENTERGY NUCLEAR VERMONT YANKEE, LLC AND ENTERGY NUCLEAR OPERATIONS, INC.	)	Docket No. 50-271-LA-3
	)	November 5, 2015
(Vermont Yankee Nuclear Power Station)	)	

CERTIFICATE OF SERVICE

Pursuant to 10 C.F.R. § 2.305, I hereby certify that copies of the State of Vermont's November 5, 2015 letter to the Administrative Judges and attachment have been served upon the Electronic Information Exchange, the NRC's e-filing system, in the above-captioned proceeding, this Fifth of November 2015.

/Signed (electronically) by/
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Dated at Montpelier, Vermont
this Fifth of November 2015

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of:

Entergy Nuclear Operations, Inc., Vermont Yankee Nuclear Power Station

Docket No. 50-271

Petition of the State of Vermont, the Vermont Yankee Nuclear Power Corporation, and Green Mountain Power Corporation for Review of Entergy Nuclear Operation, Inc.'s Planned Use of the Vermont Yankee Nuclear Decommissioning Trust Fund

Submitted: November 4, 2015

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INTRODUCTION

The State of Vermont and its co-Petitioners respectfully request that the Nuclear Regulatory Commission conduct a robust, comprehensive, and participatory review of Entergy's use of the Vermont Yankee Nuclear Decommissioning Trust Fund.

Nuclear Regulatory Commission (NRC or Commission) regulations require that decommissioning funds be used only for radiological decommissioning. Those requirements advance the purpose of such funds: ensuring that there will be sufficient funds available for decommissioning and protecting against the radiological, environmental, and economic consequences of an improperly decommissioned nuclear power plant. Entergy Nuclear Operations, Inc. and Entergy Nuclear Vermont Yankee LLC (collectively, Entergy), however, have filed a multitude of separate requests to use the Vermont Yankee Nuclear Decommissioning Trust Fund (Decommissioning Fund or Fund) for purposes other than radiological decommissioning. Considered together, Entergy's actions threaten to undermine the radiological decommissioning work that is the very purpose of the Fund. Unless the Commission intervenes, Entergy will divert hundreds of millions of dollars from their intended purpose.

The purpose of this Petition is to have one authority—the Commissioners or a designated Atomic Safety and Licensing Board (ASLB)—address Entergy's interrelated requests in a coordinated manner. Such a proceeding is necessary to ensure adequate protection of public health and safety during the legally required decommissioning of Vermont Yankee. Without such a coordinated approach, Entergy may be allowed to seriously compromise the adequacy and integrity of the Decommissioning Fund.

A coordinated approach also is essential to meet the Commission's obligations under the National Environmental Policy Act (NEPA). The Commission must undertake a NEPA review to evaluate the significant potential environmental and economic consequences associated with the major federal action of allowing Entergy to divert hundreds of millions of dollars from the Decommissioning Fund.

The State of Vermont, its citizens, and its ratepayers have a direct interest in ensuring proper use of the Decommissioning Fund. The Vermont Yankee facility is located in Vernon, Vermont, and Vermont ratepayers paid into the Fund. Vermont and its citizens will be most at risk in the event of a shortfall in the Decommissioning Fund that prevents the site from being fully decontaminated and restored. That risk is radiological and environmental if the site is not fully decontaminated or properly managed before full radiological decontamination and license termination. That risk is also financial—there is no guarantee that Vermont taxpayers will not become the payers of last resort if the Decommissioning Fund is insufficient. Further, Vermont faces other potential harms springing from those risks, including damaging effects on its economy. Due to the breadth of Entergy's requests to use the Decommissioning Fund and the potentially far-reaching consequences associated with them, the Commission should undertake a single, comprehensive review of Entergy's Decommissioning Fund-related requests.

FACTUAL BACKGROUND

When Entergy bought the Vermont Yankee plant in 2002, included in that sale was the Decommissioning Fund, which then contained approximately $310 million. With interest, the Fund grew to approximately $665 million by the time Entergy closed Vermont Yankee in December 2014. The Fund now stands at approximately $595 million. Entergy has never contributed to the Decommissioning Fund. It was created by charging Vermont ratepayers a fee

on every kilowatt-hour of power purchased from Vermont Yankee Nuclear Power Corporation and Green Mountain Power Corporation. Those utilities collected the principal funds that (with interest) constitute the entirety of the Decommissioning Fund. And those utilities have a direct 55% financial interest in any money remaining in the Fund after completion of radiological decommissioning.

As part of its purchase of Vermont Yankee, which required approval not only from the NRC but also from the Vermont Public Service Board, Entergy entered into a Master Trust Agreement. *See* Exhibit 1 (Entergy Nuclear Vermont Yankee, LLC Master Decommissioning Trust Agreement for Vermont Yankee Nuclear Power Station (July 31, 2002)). Like relevant regulations of the Commission,[1] and as discussed in more detail in Section I.b., *infra*, the Master Trust Agreement (and related orders from the Federal Energy Regulatory Commission (FERC) and the Public Service Board) limits the use of the Decommissioning Fund to legitimate decommissioning expenses. In response to requests by Entergy, the Master Trust Agreement allows use of the Decommissioning Fund for two non-decommissioning expenses—spent fuel management and site restoration costs—but with a critical limitation: Entergy promised that decommissioning funds would be available for such uses only *after* completion of decommissioning. Further, if excess funds do remain following decommissioning, Entergy promised that it would, before using those funds for spent fuel management costs, first seek reimbursement from the Department of Energy and only use the Decommissioning Fund for spent fuel management costs that were not reimbursed. Entergy also promised that, once

[1] Ensuring that decommissioning is completed before allowing any diversion of decommissioning funds for other purposes is embodied in NRC Regulations. *See, e.g.*, 10 C.F.R. §§ 50.75(h)(1)(iv), 50.82(a)(8)(i)(A). Those protections intentionally place the risk of inadequate funds for decommissioning where it belongs: on the plant owner, not on the host state or its citizens.

decommissioning and site restoration were complete, it would return 55% of all excess funds to Vermont Yankee Nuclear Power Corporation and Green Mountain Power for the benefit of the ratepayers whose contributions created the Fund. In sum, 55% of the difference between the amount of trust funds and the total amount of the expenditures allowed under the Master Trust Agreement *must* be returned to Vermont ratepayers.

Despite those promises, Entergy has made a number of recent attempts to use the Decommissioning Fund for improper purposes, including actions in direct contravention of the promises it made in 2002:

- On September 4, 2014, Entergy filed a license amendment request to allow it to cease providing 30 days' notice to the NRC or the State before Entergy makes withdrawals from the Decommissioning Fund (ADAMS Accession No. ML14254A405). The State petitioned to intervene in that proceeding (ADAMS Accession No. ML15110A484) (April 20, 2015 Petition), and obtained a favorable decision from an ASLB granting intervention and a hearing. *In re Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc.*, Docket No. 50-271-LA-3, LBP-15-24 (Aug. 31, 2015). Rather than proceed with a hearing, which would require disclosing information about precisely how it seeks to use the Decommissioning Fund, Entergy moved to withdraw its license amendment request (ADAMS Accession No. ML15265A583). The State sought conditions on the withdrawal (ADAMS Accession No. ML15275A438). On October 15, 2015, the ASLB granted Entergy's requested withdrawal, but imposed some of the State's requested conditions, including a requirement that Entergy provide advance notice of certain types of withdrawals identified as improper by the State. *In re Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc.*, Docket No. 50-

271-LA-3, LBP-15-28 (Oct. 15, 2015) (ADAMS Accession No. 15288A223). On October 26, 2015, NRC Staff moved to vacate the Board's underlying August 31, 2015 ruling (LBP-15-24). The State will oppose the Staff's requested vacatur.[2]

- On December 19, 2014, Entergy filed its Post-Shutdown Decommissioning Activities Report (PSDAR) and Decommissioning Cost Estimate (ADAMS Accession No. ML14357A110), as well as an Updated Decommissioning Funding Status Report (ADAMS Accession No. ML14358A250). NRC Staff approved the Updated Decommissioning Funding Status Report on October 5, 2015 (ADAMS Accession No. ML15274A379). As explained in more detail below, Entergy made clear in those documents and subsequent public statements that it intends to use the Decommissioning Fund for expenses that do not meet the NRC's definition of decommissioning. For instance, Entergy seeks to use the Decommissioning Fund for insurance payments, property taxes, and even legal fees for emergency planning litigation.[3] None of those activities will reduce radiological contamination at the site.

[2] That proceeding is a good example of the problems created by Entergy's multi-faceted attempts to use the assets of the Decommissioning Fund improperly. While the Board appeared interested in the subject of the exemptions that were granted by NRC Staff, it felt constrained in its ability to address those issues substantively. *See Entergy*, LBP-15-24, at 18 & n.96 (holding that "the merits of the exemption request itself are . . . outside the scope of this proceeding," even though it "would have been much simpler" if Entergy had made its exemption request part of its license amendment request, "in which case both would have been subject to a hearing"). Those types of fragmentations underscore the importance of a comprehensive proceeding. *See id.* at 15 (holding that the exemptions Entergy requested separate from its license amendment request "are precisely the sort of directly related and dependent exemption-related issues that are within the scope of a license amendment proceeding").

[3] Just months after the State notified the NRC and Entergy that those expenses are not allowed under NRC regulations, Entergy and the Nuclear Energy Institute submitted to NRC Staff proposed guidance on use of decommissioning trust funds. NEI-15-06 (May 2015) (ADAMS Accession No. ML15233A075). That proposed guidance puts forth an incorrect and overly broad view of the NRC's definition of decommissioning so as to encompass the very uses Entergy seeks. *See id.* at B-4 (claiming that "decommissioning" includes "maintaining

Further, Entergy improperly bases its calculations in those documents on the unsupported assumption that the U.S. Department of Energy (DOE) will remove all spent nuclear fuel from Vermont Yankee by 2052.

- On January 6, 2015, Entergy requested exemptions to use the Decommissioning Fund for spent fuel management expenses before radiological decommissioning is complete, and to eliminate related notification to the NRC (ADAMS Accession No. ML15013A171). NRC Staff granted those exemptions on June 17, 2015 (ADAMS Accession No. ML15128A219). The Petitioners challenged that decision in a petition filed August 13, 2015, with the U.S. Court of Appeals for the D.C. Circuit.

Entergy's rationale for seeking use of the Decommissioning Fund for the non-decommissioning costs of spent fuel management is that there will be an excess in the Fund after all decommissioning expenses are paid. That claim is based on demonstrably inaccurate assertions contained in Entergy's December 19, 2014, PSDAR. The State submitted extensive comments on the PSDAR, including detailed analyses challenging a number of Entergy's fundamental assumptions and conclusions. Exhibit 2 (Comments of the State of Vermont (March 6, 2015) (ADAMS Accession No. ML15082A234)). NRC Staff never provided a formal response to Vermont's concerns. Though the PSDAR has not been formally accepted, NRC Staff relied on the flawed analysis in the PSDAR to grant exemptions, release Entergy from parental guarantees, and defend proposed license amendments.

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emergency preparedness capabilities, physical security, property taxes, insurance and fees for attorneys and consultants").

LEGAL BACKGROUND

Decommissioning funds are essential to the approval process for construction and operation of a nuclear power facility. The primary purpose of decommissioning funding—and the requirements that protect those funds—is to provide assurance that the nuclear power facility will be properly decommissioned and that the host state and its citizens will not pay twice for decommissioning the facility and returning the site to unrestricted use. Thus, NRC regulations explicitly prohibit the use of decommissioning funds for any purpose other than legitimate decommissioning expenses. 10 C.F.R. §§ 50.75(h), 50.82(a)(8)(i)(A).

The U.S. Court of Appeals for the Seventh Circuit recently held that "[t]he decommissioning of nuclear facilities is closely regulated by the Nuclear Regulatory Commission, and its regulatory authority embraces every potential malfeasance or misfeasance of assets dedicated to the decommissioning process." *Pennington v. Zionsolutions LLC*, 742 F.3d 715, 719 (7th Cir. 2014) (Posner, J.). The Decommissioning Fund is an "asset[] dedicated to the decommissioning process." *Id.* As "the designated policeman of decommissioners," the NRC is one of the regulatory agencies that must ensure that asset is used appropriately. *Id.*

Additionally, NEPA requires an integrated approach to these matters. *See, e.g.*, *Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1314 (D.C. Cir. 2014) ("The justification for the rule against segmentation is obvious: it prevents agencies from dividing one project into multiple individual actions each of which individually has an insignificant environmental impact, but which collectively have a substantial impact." (quotation and alteration marks omitted)). The Commission's collective actions and inactions allow Entergy to use the Decommissioning Fund in ways that threaten the Fund's ability to pay for actual decontamination of the site. That major federal action—allowing the diversion of money that should remain reserved for

decommissioning alone—creates significant potential environmental and economic consequences that trigger the need for NEPA review.

SCOPE OF REQUESTED REVIEW

The State of Vermont and its co-Petitioners request that the Commission convene a single proceeding, with opportunities for stakeholder participation, to review the use of the Decommissioning Fund for Vermont Yankee, to take all actions necessary to evaluate the various requests advanced by Entergy, and to ensure that Entergy complies with all applicable requirements pertaining to the Fund. At a minimum, the Commission should grant a hearing to allow Petitioners an opportunity to address the need to:

(1) reverse NRC Staff's June 17, 2015 grant of Entergy's exemption requests to use the Decommissioning Fund for spent fuel management expenses before radiological decommissioning is complete[4];

(2) review all of Entergy's requests for withdrawals from the Decommissioning Fund, and prohibit Entergy from making future withdrawals for expenses that do not meet the NRC's definition of decommissioning;

(3) require Entergy to provide detail in its 30-day notices;

(4) find Entergy's December 19, 2014, filings (PSDAR, Decommissioning Cost Estimate, and Updated Irradiated Fuel Management) deficient insofar as those filings contemplate using

[4] That approval also granted Entergy's request to eliminate the 30-day notice requirement for withdrawals from the Decommissioning Fund for spent fuel management expenses, but that issue is now moot since Entergy has withdrawn its license amendment request relating to that requirement. Consequently, NRC Staff's decision granting the exemption request is overbroad and purports to allow something that Entergy's license does not: expenditures without prior notice. Notably, the Board stated that "[i]t is curious that the NRC Staff would approve a request to exempt a licensee from regulations which do not apply to the licensee (until the LAR is approved). It is even more curious that the NRC Staff purports to make such an exemption effective immediately." *Entergy*, LBP-15-24, at 5 n.24.

the Decommissioning Fund for spent fuel management and other non-decommissioning expenses before radiological decommissioning is complete;

(5) undertake the environmental review required by NEPA before deciding whether Entergy may proceed with non-compliant uses of the Decommissioning Fund; and

(6) take any other actions necessary to protect the Decommissioning Fund until radiological decommissioning is complete.

JURISDICTION

The Commission has jurisdiction to review the matters raised in this Petition. To begin, the Commission has general supervisory authority over all decisions (and inaction) by NRC Staff that are the subject of this Petition. Further, the issues raised in this Petition are license-related matters that, under the Atomic Energy Act and the Administrative Procedure Act, require a hearing. In addition, the Commission has interlocutory authority to address matters pending before an ASLB, and appellate authority over decisions of the Board. Although Entergy has now withdrawn its related license amendment request, the ASLB placed conditions on that withdrawal, and the Board's rulings in this matter remain open to appeal and to motions to vacate. Finally, the various actions (and inactions) at issue here threaten the financial ability of Entergy to decommission the Vermont Yankee plant. This constitutes a major federal action with significant environmental impacts and thus requires review under NEPA.

Supervisory authority. The Commission has authority to convene the comprehensive proceeding requested in this Petition. *See, e.g., Safety Light Corp., et al.* (Bloomsburg Site Decontamination & License Renewal Denials), 36 N.R.C. 79, 85 (Aug. 12, 1992) ("Even in the absence of a petition for review, the Commission retains its supervisory power over adjudications to step in at any stage of a proceeding and decide a matter itself."). This is an

"inherent supervisory authority even over matters in adjudication." *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, & 4), 11 N.R.C. 514, 516 (Apr. 17, 1980).

The Commission often has exercised that authority even when review was not requested explicitly. *See, e.g.*, *Entergy Nuclear Vermont Yankee, LLC, & Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), 50-271-LR, CLI-07-01, 2007 WL 96998, at *1 (Jan. 11, 2007) ("[W]e have used *sua sponte* review as a vehicle to address unappealed issues or orders, to set a specific timetable, or otherwise customize our procedures for individual adjudications, to suspend a proceeding, to vacate an unreviewed board order after withdrawal of the challenged application, to decide whether to disqualify a presiding officer, to address an issue of wide implication, and to provide guidance to a licensing board."). The Commission "exercise[s] [its] inherent supervisory authority over the conduct of proceedings to take *sua sponte* review" of important issues, including "*sua sponte* review" of Board's intervention rulings "in the interest of expedition and economy of effort." *N. Atl. Energy Serv. Corp.* (Seabrook Station, Unit 1), 48 N.R.C. 129, 130 (Sept. 17, 1998).

This type of supervisory review is particularly appropriate when an "issue is novel and has broad implications for this and other proceedings." *Id.* That is precisely the case here. Each issue raised by the State is novel and ripe for the Commission's review. For instance, in connection with the issue of what expenses are legitimate "decommissioning" expenses that can be withdrawn from a decommissioning trust fund, the ASLB recently recognized that "Vermont and Entergy define the term [decommissioning] differently." *Entergy*, LBP-15-28, at 11. The Board also recognized that Entergy's withdrawal from that proceeding "leaves Entergy and Vermont's legal dispute over the definition of decommissioning unresolved." *Id.* at 12. Resolution of that novel issue "has broad implications for this and other proceedings." *N. Atl.*

Energy Serv. Corp., 48 N.R.C. at 130. What constitutes appropriate use of a decommissioning trust fund affects not only Vermont Yankee and the Petitioners here, but also affects licensees and other interested parties to future proceedings involving other plants that have closed or will close. The proposed guidance document recently submitted by NEI signals the industry's intent to attempt to utilize decommissioning trusts for non-decommissioning purposes. Further, Staff's routine granting of exemptions to allow decommissioning funds to be used for such purposes demonstrates that the issues raised in this Petition are systemic and industry-wide, and therefore warrant review by the Commissioners.

In addition, because this Petition raises matters that require either adjudication or a rulemaking proceeding, the Commission can "exercise . . . [its] inherent supervisory authority over adjudications and rulemakings." *Private Fuel Storage L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-11, 55 N.R.C. 260 (2002). Supervision is particularly appropriate in this case, given that many of the matters raised in this Petition have ramifications that extend beyond the one decommissioning trust fund at issue here. Thus, it is not only the State of Vermont that would benefit from guidance by the Commission, but also other host states and stakeholders. Further, a comprehensive review is warranted. The disjointed and siloed approach adopted by Entergy in seeking separate approvals for many of its actions—combined with its failure in some instances to seek approval at all—warrants Commission supervision to ensure a cohesive and comprehensive approach to these important matters.

License-related matters requiring a hearing. The matters raised in this Petition are license-related matters that, like license amendment requests, should be considered adjudications within the meaning of 5 U.S.C. § 551(7) of the Administrative Procedure Act. Those actions thus trigger hearing rights under that Act and under the Atomic Entergy Act. *See* 10 C.F.R.

§ 2.104. Entergy's Vermont Yankee license contains a number of specific restrictions on its use of the Decommissioning Fund, including the following:

> (i) The decommissioning trust agreement must be in a form acceptable to the NRC.
>
> ***
>
> (iii) The decommissioning trust agreement must provide that no disbursements or payments from the trust, other than for ordinary administrative expenses, shall be made by the trustee until the trustee has first given the NRC 30 days prior written notice of payment. The decommissioning trust agreement shall further contain a provision that no disbursements or payments from the trust shall be made if the trustee receives prior written notice of objection from the Director of the Office of Nuclear Reactor Regulation.
>
> (iv) The decommissioning trust agreement must provide that the agreement cannot be amended in any material respect without 30 days prior written notification to the Director of the Office of Nuclear Reactor Regulation.

Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station), Docket No. 50-271, Facility Operating License No. DPR-28, Condition 3(J)(a)(iii); *see generally id.* at Condition 3 (noting that Entergy is also "subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect").

The license specifically requires that Entergy "shall take all necessary steps to ensure that the decommissioning trust is maintained in accordance with the application for approval of the transfer of this license," including "the requirements of the Order approving the transfer" and "the safety evaluation supporting the Order." *Id.* at Condition 3(J). The Order approving the transfer and the accompanying safety evaluation both contain the requirements from Entergy's license listed above. *Order Approving Transfer of License and Conforming Amendment*, Docket No. 50-271 (May 17, 2002) (ADAMS ML#020390198); *Safety Evaluation By The Office Of Nuclear Reactor Regulation Proposed Transfer Of Operating License For Vermont Yankee*

Nuclear Power Station From Vermont Yankee Nuclear Power Corporation To Entergy Nuclear Vermont Yankee, LLC And Entergy Nuclear Operations, Inc., And Conforming Amendment, Docket No. 50-271, at 7 (May 17, 2002).

As explained in this Petition, Entergy's actions are in derogation of those license conditions. And, except for the one license amendment request it now has withdrawn, Entergy has not filed any other license amendment requests to relieve itself of those conditions.

The requested comprehensive proceeding also should encompass Entergy's exemption requests. Although stand-alone exemption requests generally do not create hearing rights, hearings on exemption requests that are "directly related" to a license amendment request are excepted from that general rule. *Private Fuel Storage, LLC*, CLI-01-12, 53 NRC 459, 476 (2001); *see also, e.g.*, *Honeywell International, Inc.*, CLI-13-1, 77 NRC 1, 7 ("But when a licensee requests an exemption in a related license amendment application, we consider the hearing rights of the amendment application to encompass the exemption request as well."). Indeed, the ASLB recently noted that "[p]rocedurally, [it] would have been much simpler if Entergy had submitted its LAR [license amendment request] and exemption request together, in which case both would have been subject to a hearing request." *Entergy*, LBP-15-24, slip op. at 18 n.96. Although the Board did not believe it had authority to review the decision that Staff had already made on the exemption request, and although Entergy has now withdrawn from the license amendment proceeding, the Commission retains full supervisory authority over that matter and the related exemption request. It should exercise that authority to provide for a comprehensive proceeding.

Interlocutory and appeal authority over ASLB proceeding. The Commission also has interlocutory and appeal authority to address matters pending before an ASLB. *See, e.g.*, *Private*

Fuel Storage, L.L.C. (Independent Spent Fuel Storage Facility), 47 N.R.C. 307, 310 (June 5, 1998). Here, although Entergy withdrew its license amendment request, the Board imposed two conditions on that withdrawal. *Entergy*, LBP-15-28. One of those conditions is directly related to the subject matter of this Petition: because the Board agreed that the State had raised a "potentially meritorious issue" regarding whether Entergy can use the Decommissioning Fund for certain expenses, the Board has ordered Entergy to provide the State notice of any withdrawals from the Fund for certain expenses that the State identified as improper. *Id.* at 12. Entergy and NRC Staff both opposed that condition. Those parties are within the appeal period for asking this Commission to review the Board's imposition of conditions.

Further, on October 26, 2015, NRC Staff filed a motion to vacate the Board's August 31, 2015, decision (LBP-15-24). The State opposes vacatur of the August 31, 2015 decision, and that matter is thus also likely to appear before the Commission in the near future. Given that the Commission likely will have to address those issues regardless, it should do so in the comprehensive manner requested by Petitioners here.

NEPA review required. NEPA requires an integrated approach to the matters identified above. The fact that Entergy has chosen to present its related requests in a piecemeal fashion does not relieve the NRC of its duties under NEPA. The sum total of the NRC's actions and inactions regarding the Decommissioning Fund constitute a major federal action. The NRC has an independent obligation to review Entergy's various requests together, and to conduct a comprehensive NEPA-compliant analysis of the potential consequences associated with Entergy's planned improper uses of the Fund.

REASONS FOR REVIEW

Consistent with Entergy's agreements and the Commission's rules, the Decommissioning Fund must be used *only* for decommissioning expenses until radiological decommissioning is complete, and otherwise must be held in trust for the ratepayers who paid into that Fund. The NRC must enforce the requirements in its regulations and in the Master Trust Agreement limiting uses of the Decommissioning Fund to expenses that meet the NRC's definition of decommissioning—namely, expenses that reduce radiological contamination at the site—until the site is decontaminated. The Petitioners seek the Commission's intervention to enforce these rules and undertakings.

Failure by the NRC to enforce its regulations protecting the Fund could result in a shortfall, placing public health and the environment at risk that the site will be left radiologically contaminated, or that decommissioning protocols, protections, and goals will not be fully achieved. *See, e.g.*, *Entergy*, LBP-15-24 at 22 (holding that the State's contention that Entergy was using the Decommissioning Fund for unallowed uses "raises health and environmental concerns . . . because the decommissioning fund exists to ensure that companies will be able to decontaminate the site"). The NRC must consider the sum total of its individual approvals and Entergy's actions that cumulatively put the Fund in jeopardy.

Commission review is particularly important here because, unlike past plants that have undergone decommissioning, Entergy is a merchant-generator. It cannot impose additional costs on its ratepayers in the event of a shortfall (though, as discussed throughout this Petition, its actions threaten to deprive ratepayers of the refunds they are due). And there can be no doubt that shortfalls occur during decommissioning—some of them significant (such as at Connecticut Yankee). *See infra* Section II.b(*i*). Further, Entergy's Decommissioning Cost Estimate fails to

properly account for how it will pay for non-decommissioning expenses like property taxes and employee pension fund liabilities. Entergy's ability or inability to fund such liabilities bears directly on its ability to fund radiological decommissioning expenses if the Decommissioning Fund proves inadequate.

In addition to the radiological and environmental consequences of a shortfall in the Decommissioning Fund, a shortfall also creates an economic risk to Vermont taxpayers. *See, e.g.*, *Entergy Nuclear Vermont Yankee LLC v. Shumlin*, 733 F.3d 393, 437 (2d Cir. 2013) (Carney, J., concurring) ("only the citizens of Vermont are faced with the fiscal consequences of the adequacy or inadequacy of Entergy's provisions to address potential financial dissolution").

Failure by the NRC to protect the Decommissioning Fund would directly impact Vermont Yankee Nuclear Power Corporation and Green Mountain Power and their Vermont ratepayers who, under the Master Trust Agreement and the related FERC and Public Service Board orders, have a majority interest in any leftover funds. Given that interest, every time the NRC fails to prevent a withdrawal from the Decommissioning Fund for improper purposes or allows Entergy to be exempted from regulations designed to protect the assets of the Decommissioning Fund, Vermont ratepayers are adversely affected.

Entergy has—on at least two separate occasions—made clear that it will not commit to making up any shortfall in the Decommissioning Fund.[5] Although NRC spokespeople have

[5] Entergy has publicly stated that, although it expects the Decommissioning Fund to have enough money to decommission the plant, it will not commit to making up any shortfall and anticipates that there would be litigation between the State of Vermont and the company over any shortfall. *See* VTDigger.org, *Entergy Makes First Withdrawal from Decommissioning Fund*, http://vtdigger.org/2015/02/11/entergy-makes-first-withdrawal-decommissioning-fund ("If the fund comes up short, [the Entergy representative] said there would be litigation between the state and the company as to how to pay for it."). When pressed further on the meaning of this testimony that was made to State legislators, the Entergy representative "said again . . . that he did not want Entergy committed to a promise that it would cover the cost if the project isn't done

stated that the Commission would pursue Entergy's parent company in the event of any shortfall,[6] those signals have been mixed,[7] and, in any event, the NRC (and ultimately federal taxpayers) should not have to shoulder the burden of tracking down and recovering money from Entergy to replace funds that should never have been withdrawn in the first place.

In addition, NRC Staff recently approved Entergy's elimination of its parent guarantees for decommissioning. *Notice of Cancellation of Parent Company Guarantee* (Apr. 21, 2015) (ADAMS Accession No. ML15107A074). As the State explained in detail in its March 6, 2015 PSDAR Comments, Entergy's new proposed replacement guarantee is not an actual guarantee because it reduces to zero dollars at the very moment it is needed.[8] The NRC Staff's cancellation of the existing parent guarantee appears to have occurred without analysis of the State's March 6, 2015 PSDAR Comments or the State's April 20, 2015 Petition challenging Entergy's financial assurances.

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before the 2070s and funds are still short." Associated Press, *Vermont Yankee official expects enough money to clean site* (Feb. 27, 2015), http://www.washingtontimes.com/news/2015/feb/27/vermont-yankee-official-expects-enough-money-to-cl.

[6] *See* VTDigger.org, *Residents Seek Assurance from Feds on Vermont Yankee Decommissioning* (Feb. 22, 2015), http://vtdigger.org/2015/02/22/residents-seek-assurance-feds-vermont-yankee-decommissioning ("'[w]e're not going to just let them walk away. Even if it involved working with the Department of Justice to go after the parent company,' said NRC spokesperson Neil Sheehan. 'Even if the company dissolves, they still have assets. Entergy owns a transmission company . . . and they own other nuclear power plants other than this.'").

[7] For instance, NRC Staff recently approved—without any substantive analysis—a change in corporate form of one of Entergy's intermediate holding companies from a corporation to a Limited Liability Company. Letter from Douglas V. Pickett to Entergy (June 29, 2015) (ADAMS Accession No. ML15176A270).

[8] *See* Exhibit 2 at 6-7 (explaining that because Entergy has committed only to providing "a total in parental assurance of up to 10% of the remaining trust fund balance or $40 million, *whichever is less*," the amount of the guarantee "decreases the lower the fund balance goes" and in fact becomes $0 at the very moment the Fund is entirely depleted, since 10% of $0 is $0 (emphasis added)).

To fulfill its mandate that it protect against "every potential malfeasance or misfeasance of assets dedicated to the decommissioning process," *Pennington*, 742 F.3d at 719, the Commission should bring together these separate proceedings and consider the interrelationship and cumulative effect of Entergy's multiple Decommissioning Fund requests.

It is crucial for the Commission to resolve these matters now because Vermont Yankee is not the only merchant-generator entering decommissioning. *See N. Atl. Energy Serv. Corp.*, 48 N.R.C. at 130 (Commission review is particularly appropriate when an "issue is novel and has broad implications for this and other proceedings"). In addition to already closed plants, Entergy recently announced the upcoming closures of two other merchant-generator plants, the Pilgrim Nuclear Power Station and the Fitzpatrick Nuclear Power Plant. Thus, although a number of the issues raised here are specific to Vermont Yankee, many other stakeholders need to know what licensees can or cannot do with decommissioning funds.

I. The Decommissioning Fund cannot be used for costs other than radiological decommissioning.

a. Withdrawals from the Decommissioning Fund for expenses that do not meet the NRC's definition of decommissioning are improper.

NRC regulations permit withdrawals of decommissioning funds only for "legitimate decommissioning activities consistent with the definition of decommissioning in [10 C.F.R.] § 50.2." *Id.* § 50.82(a)(8)(i)(A). The NRC's definition of "Decommission" is limited to activities that "reduce residual radioactivity." 10 C.F.R. § 50.2. As the NRC has made clear, "[d]ecommissioning activities *do not include the removal and disposal of spent fuel* which is considered to be an operational activity or the removal and disposal of nonradioactive structures and materials beyond that necessary to terminate the NRC license." *General Requirements for Decommissioning Nuclear Facilities*, 53 Fed. Reg. 24018-01, 24018 (1988) (emphasis

added). Further, decommissioning "do[es] not include the cost of demolition and removal of noncontaminated structures, storage and shipment of spent fuel, or restoration of the site." *Id.* at 24028.

The NRC's regulations on the creation and use of decommissioning funds explicitly state that those funds are intended only for radiological decontamination necessary for site closure: "[a]mounts [required to be set aside in the decommissioning funds] are based on activities related to the definition of 'Decommission' in § 50.2 of this part and do not include the cost of removal and disposal of spent fuel or of nonradioactive structures and materials beyond that necessary to terminate the license." 10 C.F.R. § 50.75 n.1.

The NRC's regulations on financial qualifications for nuclear decommissioning similarly specify that decommissioning funds are to be used for "only those decommissioning costs incurred by licensees to remove a facility or site safely from service and reduce residual radioactivity," which does not include, "for example, the costs of dismantling or demolishing non-radiological systems and structures." *Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance*, NUREG-1577, Rev. 1, at 16, § 2(A)(3) (1999); *see also, e.g.*, Proposed Director's Decision at 5 (Mar. 27, 2015) (ADAMS Accession No. ML15040A161) ("The costs of spent fuel management, site restoration, and other costs not related to decommissioning are not included in the financial assurance for decommissioning for nuclear reactors."); *Entergy*, 733 F.3d at 418 ("By regulation, decommissioning funds may not be used for non-decommissioning related expenses, such as spent nuclear fuel storage." (quotation and alteration marks omitted)); *Entergy*, LBP-15-28, at 3 ("Without an exemption from the NRC, Entergy would be prohibited from using the

decommissioning fund for spent fuel management because it is not an allowable decommissioning expense under the regulations.").

The NRC has made clear that, absent a waiver, only costs that "reduce residual radioactivity" can be withdrawn from a decommissioning fund. *Standard Review Plan for Decommissioning Cost Estimates for Nuclear Power Reactors*, NUREG-1713, Final Report, at 4, § (B)(3) (2004). Industry guidance is equally clear that "decommissioning trust funds are the property of customers (not the electric companies)" and are "dedicated *irrevocably* to decommissioning." NEI, *The Facts about Nuclear Decommissioning Trust Funds*, http://goo.gl/kpYsen (emphasis added).

Entergy has indicated that it intends to use the Decommissioning Fund to reimburse itself not just for spent fuel management expenses, but also for other expenses that do not meet the NRC's definition of decommissioning.[9] For instance, Entergy's Decommissioning Cost Estimate contains a number of non-decommissioning items, including:

a. The $5 million payment (lines 1a.2.22 & 1b.2.22) that Entergy is making to the State as part of a Settlement Agreement (Attachment 2 of the Vermont Yankee PSDAR);

b. Emergency preparedness costs (*e.g.*, lines 1a.2.23 & 1b.2.23);

c. Shipments of non-radiological asbestos waste (*e.g.*, lines 1a.2.27 & 1b.2.27);

d. Insurance (*e.g.*, lines 1a.4.1 & 1b.4.2);

e. Property taxes (*e.g.*, lines 1a.4.2 & 1b.4.3); and

[9] *See, e.g.*, *Entergy*, LBP-15-24, at 28 ("Normally this would not be an issue because the Board does not assume that licensees will fail to comply with the regulations in the absence of documentary support, but Vermont has provided that support here in the form of an official filing with the NRC, a spokesman's statements concerning non-decommissioning expenses, and an expert opinion on the likelihood of cost overruns."); *id.* at 23 (holding that the State "provided the 'sound basis' and documentary support required to support a contention asserting that a licensee will contravene NRC's regulations").

f. Replacement of structures during SAFSTOR (*e.g.*, line 2b.1.4).

Entergy recently provided notice of its intent to withdraw approximately $1.2 million from the Decommissioning Fund to pay its property taxes, and used the circular argument that because a cost like property taxes was included in its Decommissioning Cost Estimate, reimbursement from the Fund is therefore proper. Robert Audette, *Vermont Yankee seeks $6.6 million from trust fund*, Brattleboro Reformer, Oct. 28, 2015, http://www.reformer.com/latestnews/ci_29035785/vermont-yankee-seeks-6-6-million-from-trust.

As the State explained in its March 6, 2015 comments, NRC regulations do not allow use of the Decommissioning Fund for the above expenses, since they do not reduce radiological contamination at the site. Exhibit 2 at 25-27; *see also, e.g.*, Standard Review Plan for Decommissioning Cost Estimates for Nuclear Power Reactors, NUREG-1713, Final Report, at 4, § (B)(3) (2004) (to meet the NRC's definition of "decommissioning" and thus be a proper withdrawal from the Decommissioning Fund, the activity must "reduce residual radioactivity").

Although an NRC Staff guidance document erroneously lists property taxes and "nuclear liability insurance" as part of a decommissioning cost estimate (*id.* at 29), that mistake does not alter the clear regulatory definition of decommissioning.[10] In fact, the text of that same regulatory guidance document is clear that activities must "reduce residual radioactivity" to meet the definition of "decommissioning." *Id.* at 4, § (B)(3). Under any analysis, property taxes and

[10] Petitioners are unaware of any other written statement by the Commission or NRC Staff that provides any support for Entergy's position that property taxes are an allowed expense. In fact, a recent news article referred to an NRC spokesperson as stating that "the commission had not determined whether property taxes were an allowable expense." Rutland Herald, *Vt. Yankee must notify state of decommissioning fund withdrawals* (Oct. 20, 2015), http://www.recorder.com/news/19086443-95/vt-yankee-must-notify-state-of-decommissioning-fund-withdrawals.

insurance payments do not reduce radiological contamination. Thus, regardless of an incorrect example provided in a Staff guidance document, the law as established by NRC regulations is that property taxes and insurance payments are not legitimate decommissioning expenses; therefore they cannot be financed by a decommissioning fund.

As the State observed in its March 6, 2015 comments, Entergy has asserted a right to use the Decommissioning Fund not only for emergency preparedness expenses (which in itself is not allowed), but also for legal fees associated with those expenses. Exhibit 2 at 37 n.9 (citing VTDigger.org, *State Appeals Decision on Vermont Yankee Monitoring*, http://vtdigger.org/2015/02/26/state-appeals-decision-on-vermont-yankee-emergency-monitoring). An Entergy spokesperson stated that legal fees are "part of our decommission costs" and that "[t]his is money that's going to be coming from [the] trust fund." Entergy's reasoning was that "[b]ecause the plant is no longer generating revenue . . . any legal costs the company incurs will come out of the decommissioning trust fund." *Id.* Entergy cannot use its financial bottom line to validate using the Decommissioning Fund for whatever expenses it chooses. Legal fees have no logical connection to reduction of residual radioactivity and are not proper decommissioning expenses.

Entergy now also takes an overly broad view of what constitute spent fuel management expenses. For instance, its Decommissioning Cost Estimate lists "NEI Annual Fee" as a spent fuel management expense. *See* line 1a.2.38. Lobbying association fees are not a proper use of the Decommissioning Fund. Even after radiological decommissioning is complete and 55% of any excess funds are returned to Vermont ratepayers, Entergy promised in the Master Trust Agreement and elsewhere that remaining funds *still* would not be used for expenses of that type.

In sum, Entergy's attempted uses of the Decommissioning Fund for non-decommissioning activities, including legal fees and lobbying association membership fees, are improper. In addition to violating applicable NRC regulations, Entergy's actions create a significant safety risk. As the ASLB recently held, "the decommissioning fund exists to ensure that companies will be able to decontaminate the site." *Entergy*, LBP-15-24, at 22. The Board concluded that the State had raised a valid contention that if Entergy is using the fund for non-decommissioning activities, it "raises health and environmental concerns." *Id.*

Those concerns are heightened by the fact that Entergy's Decommissioning Cost Estimate fails to account for a number of significant costs that are not only possible, but likely. Two significant expenses that are currently unaccounted for are the recent discovery of strontium-90 in places where it had not previously been found, and the possibility of spent fuel storage well beyond the 2052 date that Entergy chose as the year when all fuel will theoretically be removed from Vermont Yankee. The State recently presented evidence to the ASLB on both of these unaccounted-for expenses, and the Board agreed with the State that those issues raised a legitimate safety contention worthy of a hearing. *Entergy*, LBP-15-24, at 23-26. Entergy's subsequent decision to withdraw from that proceeding has left these matters unresolved.

The Commission should exercise its authority to consolidate the referenced matters into a single proceeding so that it may consider their cumulative effects and fulfill its mandate to safeguard the Decommissioning Fund.

b. The Master Trust Agreement prohibits use of the Decommissioning Fund for non-decommissioning expenses.

Both entities that reviewed Entergy's proposed purchase of Vermont Yankee—the NRC and the Public Service Board—conditioned their approvals of the purchase on establishment of and compliance with a trust agreement to protect the Decommissioning Fund. The NRC's

approval explicitly required that the "decommissioning trust agreement must be in a form acceptable to the NRC." *Order Approving Transfer of License and Conforming Amendment*, Docket No. 50-271 (May 17, 2002) (ADAMS ML#020390198). And NRC regulations require Entergy to comply with the Master Trust Agreement. 10 C.F.R. § 50.75(f)(1) and (2).

The Public Service Board included as a condition to its approval of the sale the requirement that Entergy return excess funds to ratepayers: "[u]pon completion of the decommissioning of Vermont Yankee, any property remaining in [Entergy's] Decommissioning Trust funds shall be distributed by the Trustee for the benefits of the customers of Vermont Yankee's sponsors."[11]

The Public Service Board made clear in a related ruling that "the disposition of any potential future excess decommissioning funds has expressly been an issue throughout this proceeding" and was "fully litigated" during the proceeding that led to approval of Entergy's purchase of Vermont Yankee. *Order re: Motions to Alter or Amend, Enter Final Judgment, and Stay Pending Appeal*, Docket No. 6545 (July 30, 2002), at 6 n.17, http://www.state.vt.us/psb/6545.htm. In fact, the Public Service Board rejected a proposal that would have denied Vermont ratepayers their full 55% interest in any excess funds, finding that such a proposal was inconsistent with ratepayer expectations under provisions of the previous decommissioning trust that had been in place since 1988. *Final Order*, Docket No. 6545, at 36-

[11] *Investigation into General Order No. 45 Notice filed by Vermont Yankee Nuclear Power Corporation re: proposed sale of Vermont Yankee Nuclear Power Station to Entergy Nuclear Vermont Yankee, LLC, and related transactions*, Docket No. 6545 (June 13, 2002) at p.158, http://www.state.vt.us/psb/6545.htm, *aff'd*, *In re Proposed Sale of Vermont Yankee Nuclear Power Station*, 829 A.2d 1284 (Vt. 2003); *see also* Entergy's 2002 Certificate of Public Good, Docket No. 6545 (June 13, 2002), Condition 2, http://www.state.vt.us/psb/6545.htm (same); Entergy's 2014 Amendment to 2002 Certificate of Public Good, Docket No. 7862 (Mar. 28, 2014), at p.2, http://psb.vermont.gov/sites/psb/files/orders/2014/2014-03/7862%20%20CPG%20Amendment.pdf.

38. The Public Service Board concluded that "these funds were collected from ratepayers for a specific purpose and, if not needed for that purpose, should be returned" to ratepayers. *Id.* at 152.

FERC regulations also require the return of excess funds to the ratepayers who created the Decommissioning Fund. 18 C.F.R. § 35.32(a)(7). To date, Entergy has not obtained FERC approval to be excused from those requirements.

In sum, Entergy's planned uses of the Decommissioning Fund are prohibited by Entergy's operating license and by NRC regulations. Those improper uses also violate rulings and regulations of the Public Service Board and FERC. Entergy should not be permitted to defy those safeguards, or to circumvent them by strategically framing its actions to evade comprehensive review. The NRC should not facilitate Entergy's disregard of its legal obligations. At a minimum, the Commission should require Entergy to provide proof that obligations imposed on it by State and other federal agencies will not be violated by what Entergy seeks NRC approval to do.

i. The NRC has jurisdiction over the Master Trust Agreement and cannot allow Entergy to breach it.

As explained in detail below, the Master Trust Agreement prohibits use of the Decommissioning Fund for non-decommissioning expenses. The NRC cannot authorize Entergy to breach the Master Trust Agreement to access the Decommissioning Fund for those prohibited purposes. The sole means by which Entergy could potentially utilize the Decommissioning Fund for non-decommissioning expenses at this time without breaching the Master Trust Agreement (though it still would violate NRC regulations) would be to amend the Master Trust Agreement.

NRC regulations and Entergy's operating license require NRC approval for any material amendments to the Master Trust Agreement. *See* 10 C.F.R. § 50.75(h)(1)(iii) (the Master Trust

Agreement "*may not be amended* in any material respect without written notification" to—and lack of objection from—the NRC (emphasis added)). That notification must "provide the text of the proposed amendment and a statement of the reason for the proposed amendment." *Id.* Entergy's operating license contains a parallel provision that "[t]he decommissioning trust agreement must provide that the agreement cannot be amended in any material respect without 30 days prior written notification" to the NRC. License Condition 3(J)(a)(iv). Other licensees have filed such notifications with the NRC when they wished to amend their trust agreements.[12] Entergy, on the other hand, has provided no such notifications to the NRC.

Interestingly, Entergy failed to mention in its January 6, 2015 exemption request (seeking to use the Decommissioning Fund for spent fuel management activities) the clear and legally binding Master Trust Agreement and its provisions that preclude the relief sought, or the fact that Entergy seeks to use the Decommissioning Fund to pay for certain expenses for which it later will pursue reimbursement from DOE.

ii. The Master Trust Agreement prohibits Entergy from using the Decommissioning Fund for non-decommissioning expenses.

Consistent with applicable statutes and NRC regulations, the Master Trust Agreement places important limitations on disbursements from the Decommissioning Fund. The "exclusive purpose" of the Master Trust Agreement is:

> to accumulate and hold funds for the contemplated Decommissioning of the Station and *to use such funds, in the first instance, for* expenses related to the *Decommissioning of the Station as defined by the NRC in its Regulations* and issuances, and as provided in the licenses issued by the NRC for the Station and any amendments thereto.

[12] *See, e.g.*, Exelon Generation Letter to NRC, RS-13-152 (May 30, 2013) (ADAMS Accession No. ML13151A112).

Exhibit 1, § 2.01 (emphasis added).[13]

As explained above, NRC regulations clearly define "decommissioning" as reducing radiological contamination, and explicitly exclude expenses such as spent fuel management and site restoration. The Master Trust Agreement's "exclusive purpose" is to uphold those NRC regulations by ensuring that the Decommissioning Fund is used in the first instance to reduce radiological contamination. That purpose is achieved by clear limitations on disbursements from the Fund to "costs, liabilities and expenses of Decommissioning or, if so specified, administrative expenses." Exhibit 1, § 4.01.[14]

In fact, the Master Trust Agreement establishes a specific sequence that requires *completion* of all radiological decontamination and decommissioning activities before any other disbursements from the Decommissioning Fund are allowed. Exhibit 1, § 4.01 (only "[o]nce Decommissioning is completed" can the bank release Decommissioning Funds to Entergy for "Spent Fuel Costs and Site Restoration Costs").

The Master Trust Agreement explicitly defines the "Completion of Decommissioning" as "plant *dismantlement and decontamination to NRC standards* plus the completion of additional

[13] The Master Trust Agreement defines "Decommissioning" as "the removal of the Station from service and disposal of its components in accordance with Applicable Law." Exhibit 1, § 1.01(j). The Master Trust Agreement recognizes that "decommissioning" may at times include activities that, though not directly reducing radiological contamination by themselves, are nevertheless necessary to allow radiological decommissioning and decontamination, such as the removal of spent fuel from the reactor to the spent fuel pool. Obviously, the reactor cannot be decommissioned and dismantled unless the fuel is removed.

[14] Entergy notes that section 4.01 refers to spent fuel and site restoration costs "to the extent not included in Decommissioning." That parenthetical statement does not mean that the Master Trust Agreement's definition of "Decommissioning" includes all such costs. First, the language "to the extent not included" implies on its face that there are spent fuel costs that are not included in "Decommissioning." Further, as explained below, the definition of "Decommissioning" in the Master Trust Agreement states that it includes "non-DOE spent fuel storage" expenses incurred during "pre-shutdown activities." Exhibit 1, § 1.01(j). Those limitations cannot be reconciled with Entergy's apparent position that "decommissioning" includes all costs of spent fuel management during the post-closure period.

activities agreed to or imposed in the course of [the sale docket] before the Vermont Public Service [Board] or pursuant to any subsequent law or proceeding, but *excluding spent fuel management and any site restoration*." Exhibit 1, at Exhibit D-1 (Decommissioning Requirements) (emphasis added). The Decommissioning Fund could be used for spent fuel management and site restoration expenses only for those activities that occur *after* the completion of radiological decommissioning.

Even following completion of decommissioning, the Decommissioning Fund can be used only for expenses for which DOE is not responsible. At the time the Master Trust Agreement was signed—four years after DOE breached its contractual obligation to remove spent nuclear fuel from nuclear sites such as Vermont Yankee—it was clear that Entergy would have the ability to sue DOE for spent fuel management expenses. In fact, the U.S. Court of Appeals for the Federal Circuit has held that the Purchase and Sale Agreement for Vermont Yankee explicitly conferred rights to such lawsuits, and Entergy has since recovered tens of millions of dollars from DOE for spent fuel management expenses. *See Vermont Yankee Nuclear Power Corp. v. Entergy Nuclear Vermont Yankee, LLC*, 683 F.3d 1330 (Fed. Cir. 2012).

The Master Trust Agreement anticipated continuation of those lawsuits and set up a process to ensure that Entergy did not recover twice for spent fuel management expenses by using the Decommissioning Fund for expenses that it would later recover from DOE. Indeed, the definition of "Decommissioning" in the Master Trust Agreement states that it includes "*non-DOE* spent fuel storage." Exhibit 1, § 1.01(j) (emphasis added). Similarly, the following provision addressing the "return of excess funds" from the NDT clearly requires Entergy to obtain all possible relief from DOE before it attempts to use Decommissioning Funds for spent fuel management expenses:

> Return of Excess Funds in accordance with the second following paragraph, shall occur following the earliest of (i) the date Completion of Decommissioning has occurred and the Company has satisfied all of its responsibilities for spent fuel management and site restoration or (ii) the date on which Completion of Decommissioning occurs and any of the following occur: (x) *settlement* between the Company and the US Department of Energy ("DOE") with respect to spent fuel management responsibilities for the Station, (y) *final resolution of litigation* by the Company against DOE with respect to spent fuel management responsibilities for the Station, *or (z) satisfactory performance by DOE* of its spent fuel responsibility with respect to the Station.

Exhibit 1, at Exhibit D-1 (Decommissioning Requirements) (emphasis added). That provision further provides that "excess funds" excludes costs "not otherwise payable by the federal government in accordance with (x), (y) or (z) above." *Id.*

Years later, after inducing both the NRC and Public Service Board to allow it to purchase and operate Vermont Yankee, and without filing a related license amendment request (which would provide an opportunity for a hearing on the matter), Entergy attempts to introduce a different interpretation of the Master Trust Agreement. For instance, Entergy claims that Exhibit D (Decommissioning Requirements) of the Master Trust Agreement should effectively be ignored since it addresses only the "Completion of Decommissioning" and not the ability of the bank to disburse funds for decommissioning itself. *See* Entergy Feb. 9, 2015, Letter at 3. However, as discussed above, Section 4.01, which governs distributions by the trustee, contains limits and a sequencing of payments consistent with Exhibit D.

The Commission should reject this attempted *post hoc* reinterpretation of a trust document that Entergy signed when it purchased the plant—a reinterpretation that would allow Entergy to sidestep the limitations on use of the Decommissioning Fund, and subject the State of Vermont and its citizens to the potential consequences that decommissioning fund protections were designed to avoid.

iii. Changes to the Master Trust Agreement also require FERC approval.

In recent months, Entergy has asserted that only "FERC has the authority to determine the disposition of any excess trust funds." *Id.* at 4. Entergy has never explained how it reconciles that new position with the agreements it made as part of the extensively negotiated and litigated NRC and Public Service Board sale proceedings in 2002. Regardless, if anything, FERC regulations provide yet another reason why the Master Trust Agreement must be interpreted as limiting Decommissioning Fund expenditures in the post-closure period to decommissioning activities as defined by NRC regulations.

Like their NRC counterparts, FERC regulations do not allow for use of the Decommissioning Fund for anything other than radiological decommissioning. "Absent express authorization of [FERC], no part of the assets of the [NDT] Fund may be used for, or diverted to, any purpose *other than to fund the costs of decommissioning* the nuclear power plant to which the Fund relates, and to pay administrative costs and other incidental expenses, including taxes, of the Fund." 18 C.F.R. § 35.32(a)(6) (emphasis added). As both NRC and FERC regulations dictate, it is only once decommissioning activities are complete (and thus NRC oversight is complete) that any excess funds may be used for any other purposes. FERC regulations further provide that "[i]f the Fund balances exceed the amount actually expended for decommissioning after decommissioning has been completed, the utility shall return the excess jurisdictional amount to ratepayers, in a manner [FERC] determines." *Id.* § 35.32(a)(7).

Entergy's attempted uses of the Decommissioning Fund are at variance with FERC's approval of the 2002 sale and transfer of the Decommissioning Fund. *See Vermont Yankee Nuclear Power Corp. et al.*, 98 FERC ¶ 61,122, *order on reh'g*, 98 FERC ¶ 61,358; *see also New England Coalition v. Vermont Yankee Nuclear Power Corp.*, 101 FERC ¶ 61,239, ¶ 26 (noting that although the sale order did not specifically address the issue of excess decommissioning

funds, "[18 C.F.R.] section 35.32 (a)(7) requires that any excess decommissioning funds will vest in the wholesale customers").

II. Entergy is not entitled to an exemption to use the Decommissioning Fund for spent fuel management.

The NRC cannot grant an exemption that "present[s] an undue risk to the public health and safety." 10 C.F.R. 50.12(a)(1). Entergy's January 6, 2015 exemption request to use decommissioning funds for spent fuel management presents an undue risk because it diverts hundreds of millions of dollars that would otherwise be available to radiologically decontaminate the site.

No special circumstances are present that warrant granting an exemption, and the granting of the exemption therefore violates NRC regulations and Commission precedent. Further, even if special circumstances had been demonstrated, Entergy's contention that the Fund will have an "excess" that it can use for non-decommissioning activities relies on a number of flawed and unsubstantiated assumptions.

a. Entergy fails to demonstrate special circumstances warranting an exemption.

The NRC "will not consider granting an exemption unless special circumstances are present." 10 C.F.R. § 50.12(a)(2). Those circumstances are present only where: (1) applying the requirement in that particular case would not "serve the underlying purpose of the rule" or is not required to achieve that purpose; and (2) complying with the requirement would result in economic hardship. *Id.* Neither is true here.

The exemptions granted by Staff place public health and safety at risk by jeopardizing Entergy's ability to pay for all necessary radiological decontamination activities. Enforcing the safeguards designed to protect decommissioning funding serves the purposes underlying those

rules—to ensure that adequate funding is available for radiological decommissioning. This case presents precisely the type of circumstance in which the NRC's regulations should be enforced, not circumvented through an exemption.

Rather than limiting exemption requests to "special circumstances," as NRC Staff is required to do, it has improperly granted this same exemption to every nuclear power plant that has requested it.[15] An NRC spokesperson was recently quoted as confirming that "[a]ll of the plants that have permanently shut down in recent years have sought, and been approved for, the use of decommissioning funds for spent fuel storage costs."[16] That does not comply with the requirement in 10 C.F.R. § 50.12 that exemption requests will not even be "consider[ed]"—let alone granted—"unless special circumstances are present." 10 C.F.R. § 50.12(a)(2). As the Commission has previously noted:

> Although our regulations . . . authorize exemptions, we consider an exemption to be an "extraordinary" equitable remedy to be used only "sparingly."
>
> The reason for this high standard is simple. Every NRC regulation has gone through the rulemaking process, including public notice-and-comment, and its underlying rationale has been explained in our Statements of Consideration. Although our authority under the Atomic Energy Act of 1954, as amended (AEA), and other statutes to adopt rules of general application "entails a concomitant authority to provide exemption procedures in order to allow for special circumstances," our rules presumably apply until an exemption requester has met the high burden we place upon such requests. Our exemption regulations

[15] Entergy Nuclear Operations, Inc., Vermont Yankee Nuclear Power Station, 80 FR 35992-01 (June 23, 2015); Duke Energy Florida, Inc., Crystal River Unit 3 Nuclear Generating Plant, 80 FR 5795-01 (Feb. 3, 2015); Southern California Edison Company, San Onofre Nuclear Generating Station (SONGS), Units 2 and 3, 79 FR 55019-01 (Sept. 15, 2014); Zion Solutions, LLC, Zion Nuclear Power Station, Units 1 and 2, 79 FR 44213-01 (July 30, 2014); Dominion Energy Kewaunee, Inc., Kewaunee Power Station, 79 FR 30900-0 (May 29, 2014).

[16] Associated Press, *Nuclear plants dip into dismantling funds to pay for waste* (Oct. 25, 2015), http://bigstory.ap.org/article/9a80e8005c974c368bb942439c18e170/nuclear-plants-dip-dismantling-funds-pay-waste.

> are in place to provide equitable relief only when supported by compelling reasons—they are not intended to serve as a vehicle for challenging the fundamental basis for the rule itself. Challenges to the rule itself are more appropriately lodged through a request for rulemaking.

Honeywell, CLI-13-01, 77 N.R.C. at 9.

The exemption cannot be the rule. Granting an exemption each and every time it is requested is hardly using that "extraordinary" option "sparingly." The pervasive approval of exemptions from long-standing NRC regulations threatens the fundamental protections for decommissioning funds established in those regulations, and should be a red flag to the Commissioners to put an end to piecemeal review. If the industry and NRC Staff believe current regulations are not appropriate, they, just like the general public and states, must resort to rulemaking procedures to reform those regulations.

Further, exemptions have been granted routinely without first providing for any opportunity for a hearing, despite the clear impact of such exemptions on license conditions related to decommissioning funds. The Commission has squarely held that "exemption grants *do not* supersede hearing rights in licensing proceedings." *Private Fuel Storage*, CLI-01-12, 53 NRC at 469 (emphasis added).[17] The siloed approach Entergy has taken, with Staff's approval, to modify its obligations regarding the Decommissioning Fund creates precisely the type of "inadequate attention to decommissioning financial assurance" that the Commission has warned "could result in significant adverse health, safety and environmental impacts." *Honeywell*, CLI-

[17] *See also id.* at 474 ("[T]he Commission's rulemaking powers should not place the exemption itself beyond questioning in an otherwise litigable contention."); *id.* at 467 n.3 ("We are aware of no licensing case where we have declared exemption-related safety issues outside the scope of the hearing process altogether.").

13-01, 77 NRC at 7 (citing Final Rule: *General Requirements for Decommissioning Nuclear Facilities*, 53 Fed. Reg. 24018, 24019 (June 27, 1988).[18]

Entergy also failed to demonstrate the economic hardship that is a prerequisite for an exemption. The economic hardship analysis focuses on whether complying with the rule would result in: (1) "undue hardship," (2) "other costs that are significantly in excess of those contemplated when the regulation was adopted," or (3) costs "that are significantly in excess of those incurred by others similarly situated." 10 C.F.R. § 50.12(a)(2)(iii). None of those outcomes are present here.

Entergy claims that without the exemption, "it would be forced to provide additional funding that would not be recoverable from the trust fund until the [Vermont Yankee] operating license is terminated." The alleged "harm" to Entergy is that it must advance money for spent fuel management and wait to be reimbursed for that money later, either from DOE or from excess in the Decommissioning Fund. [19] That is exactly what Entergy promised to do in the Master Trust Agreement. Waiting for the federal government to reimburse it for managing spent fuel that it created while earning millions of dollars generating electricity at the plant does not qualify as a hardship. Further, those costs are not unique to Vermont Yankee nor to Entergy—every nuclear plant must manage the anticipated and necessary by-products of its generation activities.

Entergy's exemption request is an effort to use the Decommissioning Fund as a bank until it can recover from DOE. Entergy cannot use the Decommissioning Fund as a source of

[18] *See also id.* at 7 n.17 (noting that "'delays'" from inadequate funding "'may cause potential health and safety problems'" (quoting 53 Fed. Reg. at 24033)).

[19] Although Entergy has claimed that spent fuel management expenses include items like its NEI dues, those are not valid spent fuel management expenses. All valid spent fuel management expenses accrued during the time of DOE's breach should be recoverable from DOE.

funding for whatever expenses it chooses. It is Entergy's legal duty to manage its spent fuel without using funds that were specifically raised and reserved for decommissioning Vermont Yankee. It has not demonstrated economic hardship, and must look to DOE, not the Decommissioning Fund, for repayment of spent fuel management expenses.[20]

In fact, FERC regulations and NRC guidance specifically provided an avenue for Entergy to create a separate trust fund segregated from the Decommissioning Fund if Entergy wished to use a trust account for spent fuel management expenses. *See, e.g.*, 18 C.F.R. § 35.3(c); NRC Regulatory Guide 1.159 at § 2.2.2.2 (Oct. 2003) (noting that "a trust agreement may contain both qualified and non-qualified decommissioning funds according to IRS Section 468A"); *see generally* 26 U.S.C. § 468A (restricting qualified funds to funds to be used for decommissioning). Entergy could have planned for spent fuel management costs through a separate trust account, but chose not to do so. It should live with its decision. Allowing Entergy instead to use the Decommissioning Fund would violate its obligations under the Master Trust Agreement, Public Service Board Orders, and NRC regulations.

b. Entergy's request was based on faulty assumptions.

NRC Staff's grant of an exemption to use decommissioning funds for spent fuel management based on Entergy's inadequately supported claim of "excess" funds in the Decommissioning Fund was arbitrary and an abuse of discretion. Although Entergy claims that the Decommissioning Fund has more than enough "excess" funds to radiologically decontaminate the site *and* pay for an anticipated $225 million in spent fuel management

[20] As explained above, Entergy could seek to recover funds from the Decommissioning Fund for some spent fuel management expenses *after* the site is radiologically decontaminated and *after* it has exhausted its claims against DOE, at which point non-recovered expenses might come out of the fund. Entergy's January 6, 2015 exemption request attempts to flip the order of things in a way that is not allowed under NRC regulations or the Master Trust Agreement.

expenses, that assertion is fundamentally flawed. Entergy underestimated not only the cost of decommissioning, but also the cost of the spent fuel activities for which it seeks funding.

As noted above, Entergy's Decommissioning Cost Estimate fails to account for a number of significant costs that are not only possible, but likely. The State presented evidence to the ASLB regarding two significant expenses currently unaccounted for: the recent discovery of strontium-90, and the costs associated with potential spent fuel storage beyond 2052. The Board agreed with the State that these issues raised a legitimate safety contention. *Entergy*, LBP-15-24, at 23-26. Entergy, in turn, terminated that proceeding and has since done nothing to address those expenses, which remain unaccounted for.

i. Entergy underestimated the cost of decommissioning.

1. Entergy did not account for all environmental contamination costs.

Entergy's decommissioning estimate failed to account for all costs associated with environmental contamination at the site. NRC regulatory guidance specifically directs that "[t]he cost of remediating known environmental contamination should be included (soil, groundwater, surface water, etc.)" in a PSDAR. NRC Regulatory Guide 1.185 at 8. Entergy's PSDAR and Decommissioning Cost Estimate fail to meet that requirement.

Entergy's claim of an "excess" of funds fails to provide any contingency for discovery of additional contaminants, such as the discovery of strontium-90 in locations where that contaminant had not previously been identified. Exhibit 3 at ¶ 6(e) (Declaration of Vermont Radiological and Toxicological Sciences Program Chief William Irwin, Sc.D., CHP, attached to State of Vermont's April 20, 2015 Petition, Docket No. NRC-2015-0029) at ¶ 6(e).[21] The

[21] *See also* Vermont Department of Health Communications Office, *Strontium-90 Detected in Ground Water Monitoring Wells at Vermont Yankee* (Feb. 9, 2015), http://healthvermont.gov/news/2015/020915_vy_strontium90.aspx.

Vermont Department of Health also found cesium-137, strontium-90, and other long half-life radioactive materials in soil samples taken in 2010.[22] Entergy failed to analyze soil removal activities required near the advanced off-gas (AOG) building, including increased costs for handling and disposal of contaminated soil. *Id.* Entergy's Decommissioning Cost Estimate accounts only for tritium and fails to recognize or provide a contingency for other contamination:

> It should be noted that no additional remediation of the soil in the vicinity of the AOG building was included, based upon the earlier remediation (soil removal) performed by Entergy VY and the findings from the GZA groundwater investigation that *only tritium had migrated into the groundwater*. Tritium is a low-energy beta emitter with a half-life of approximately 12.3 years, decaying to non-radioactive helium. As such, any residual sub-grade tritium is not expected to require any further remediation at the time of decommissioning in order to meet site release criteria.

Decommissioning Cost Estimate, § 3, page 12 (emphasis added; footnote omitted).

The identification of additional contaminants puts into question Entergy's claim in the PSDAR that previous excavation of the AOG leakage site eliminated the need to excavate deeper than three feet below grade. *See id.*; *see also id.* at § 3, page 13 (noting that foundations and building walls will only be removed "to a nominal depth of three feet below grade"). Many long-lived radionuclides are likely to be found in soils and groundwater far from the small excavation made to repair the leaks that likely allowed reactor condensate to enter into the site soils for many years. Exhibit 3 at ¶ 6(e). In addition, those same long-lived radionuclides are likely to be found in the structures, systems, and components left during SAFSTOR and then later decontaminated and dismantled. *Id.*

In that respect and others, the Decommissioning Cost Estimate is outdated and incorrect. It claims that "only tritium ha[s] migrated into the groundwater," in the AOG building area, which is inaccurate. Decommissioning Cost Estimate, § 3, page 12. The Decommissioning Cost

[22] *See* http://healthvermont.gov/enviro/rad/yankee/laboratory_testing.aspx.

Estimate should have accounted for the likely contingency that other known contamination, such as strontium-90, would spread and require further remediation. Instead, it only addresses so-called contingencies that are "almost certain to occur." *Id.* at xii. But actual contingencies—such as the discovery of strontium-90 and other radionuclides in places previously not thought to be contaminated—have historically led to enormous escalations in decommissioning costs (as was the case at Connecticut Yankee, for example, following the discovery of strontium-90 during the radiological decontamination and dismantlement phase). Exhibit 3 at ¶ 6(j). Similar conditions at Vermont Yankee would prove extremely problematic because Entergy intends to postpone that work until the end of its SAFSTOR period. Decommissioning Cost Estimate at xii.

Even if strontium-90 had not been discovered, other evidence indicates that soil contamination exists more than three feet below grade. *Id.* at ¶ 6(i). The October 2014 Site Assessment Study documents a 1991 leak in the chemistry lab drain line, AOG reactor condensate leaks confirmed in 2009, piping leaks between the radioactive waste building and the AOG building discovered in 2010, and other spills and leaks of radioactive materials. *Id.* The area between the Connecticut River, the intake structure, the discharge structure, and the reactor, turbine, and radioactive waste buildings may contain large volumes of contaminated soil requiring excavation to meet the derived concentration guideline levels for appropriate remediation in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual. *Id.* Entergy has not accounted for any of those remediation expenses. *Id.*

The soils at Vermont Yankee also likely contain other long half-life radioactive materials, similar to those found in the decommissioning of both Maine Yankee and Connecticut Yankee. *See* Exhibit 3 at ¶ 6(g); *see also* Letter from Thomas L. Williamson, Maine Yankee Director of

Nuclear Safety and Regulatory Affairs to NRC (Jan. 16, 2002) (ADAMS ML020440651). Carbon-14 has been a major issue in the decommissioning of other sites, such as Yankee Rowe, and is expected to be a concern in the decommissioning of future sites such as San Onofre. Exhibit 3 at ¶ 6(g). Yet, Entergy has provided no explanation of why it believes carbon-14 will not be encountered while decommissioning Vermont Yankee.

Decommissioning also is likely to reveal unanticipated radioactive sources to be remediated. *Id.* at ¶ 6(h). For example, pockets of highly contaminated groundwater dammed up by existing structures were found at Maine Yankee, and a 25-foot-deep 225-foot-long excavation of soil was required around the reactor water storage tank at Connecticut Yankee. *Id.*

Entergy simply categorizes all of these types of potential expenses as "financial risks" and summarily notes that it "does not add any additional costs to the estimate for financial risk." Decommissioning Cost Estimate § 3, page 6. Entergy's Decommissioning Cost Estimate does not include any allowance or contingency for those types of issues. Further, because an adequate characterization of the site (radiological and non-radiological) has not been completed, Entergy cannot provide an accurate estimate of the scope of work and resulting costs for decommissioning. *Id.* at ¶ 6(a). Indeed, Entergy's Decommissioning Cost Estimate explicitly recognizes (at page vii) that it "may not reflect the actual plan to decommission Vermont Yankee."

When the State presented this evidence to the ASLB, the Board agreed that the "PSDAR does not account for the possibility of strontium-90 leaks." *Entergy*, LBP-15-24, at 23. The Board cautioned that "keeping radionuclides below the EPA limit is necessary to maintain public safety at a decommissioning facility" and concluded that, "[g]iven the demonstrated existence of these leaks, Vermont has provided sufficiently supported expert opinion to show at the

contention admissibility stage why this inadvertent release of radionuclides is enough of a risk to public health and safety to warrant 'merits' consideration as an unforeseen expense." *Id.* at 25.

In these circumstances, it is premature for Entergy to claim an "excess" in the Decommissioning Fund, and the NRC should not adopt the questionable assumptions underpinning Entergy's claim to such an excess. No one will know whether there truly is an "excess" until the site has been fully radiologically decommissioned. That concept was central in the Master Trust Agreement and in the approval of Entergy's purchase of the plant. That is precisely why the NRC's regulations require that the Decommissioning Fund be used exclusively for radiological decommissioning until that work is complete. Approving Entergy's requested exemptions undercuts the purposes of those NRC regulations, allows Entergy to break promises it made in relation to the sale proceeding, and violates the Master Trust Agreement.

2. Entergy also fails to account for other costs associated with the site.

Entergy's Decommissioning Cost Estimate fails to properly account for how it will pay for non-decommissioning expenses like property taxes and employee pension fund liabilities. As a merchant-generator, Entergy's ability or inability to fund such liabilities bears directly on its ability to fund radiological decommissioning expenses if the Decommissioning Fund proves inadequate. Entergy erroneously places all projected costs into three categories: NRC License Termination costs, Spent Fuel Management costs, and Site Restoration costs. The NRC should make clear that certain costs (such as those noted in Section I above) fall outside those three categories, and should require Entergy to add one or more appropriate categories for those costs. In addition to those items, any additional category would also capture expenses such as Entergy's industry association expenses (*e.g.*, the "NEI Annual Fee" on line 1a.2.38 of Appendix C).

Regardless of how Entergy pays for those expenses, Entergy's assumptions are flawed. For instance, Entergy states in Appendix C of its Decommissioning Cost Estimate that it expects to pay only approximately $7,000 per year in property taxes beginning in 2020 (*e.g.*, lines 2aa.4.2 & 2b.4.2). That is incorrect. Although Entergy notes that its payments under the generation tax will "cease once the plant is permanently shut down" (Decommissioning Cost Estimate § 3, page 18), Entergy fails to acknowledge that the generation tax is the basis for Entergy's current exemption from otherwise applicable state property taxes. Entergy has no basis for assuming that its current exemption from those taxes will continue once the generation tax ceases to provide revenue to the State of Vermont. Entergy similarly has no basis for its claim that local authorities will tax Vermont Yankee "as vacant land." Decommissioning Cost Estimate § 3, page 18. Entergy has not explained how it will pay for any property taxes that may apply either at the state or local level.

ii. Entergy underestimates the costs of spent fuel management, for which it wants to use "excess" funds.

Ever since Entergy bought Vermont Yankee, it has paid for spent fuel management expenses without any reimbursements from the Decommissioning Fund. Entergy has financed those activities and then successfully sued DOE to recoup nearly all of its proper expenses. *See Vermont Yankee Nuclear Power Corp*, 683 F.3d 1330. Now that Vermont Yankee has ceased operations—and Entergy thus has access to the Decommissioning Fund for decommissioning expenses—it seeks to change course and begin withdrawing money from the Decommissioning Fund to cover its spent fuel expenses. Entergy provides no legally defensible connection between ceasing operations and using the Decommissioning Fund as a bank for spent fuel management expenses.

1. Allowing Entergy's exemption creates a dangerous incentive for nuclear power plants to defer spent fuel costs until after decommissioning begins.

Entergy's intended use of the Decommissioning Fund for spent fuel management expenses is not only contrary to NRC and FERC regulations and Master Trust Agreement requirements, but is also problematic in that it would create a dangerous incentive for owners of nuclear power plants to defer such costs until after plant closure. The NRC recently recognized that dry-cask storage is safer than spent fuel pools. COMSECY-13-0030 at 2 (Nov. 12, 2013) (recognizing "a minor or limited safety benefit" to dry-cask storage over spent fuel pools). If merchant-generators are routinely granted exemptions to use decommissioning funds for spent fuel management expenses—as they have been to date, *see supra* note 15 and surrounding text—they will be motivated to keep fuel stored in spent fuel pools as long as possible, rather than moving fuel to safer dry-cask storage. Although the NRC decided not to *require* plants to expedite the transfer of spent fuel to dry-cask storage at this time, it is entirely different for the NRC to affirmatively take actions that create an *incentive* for plants to choose a less safe option.

2. Entergy's plans for spent fuel management costs have no limit and rely on untenable assumptions regarding changes in law.

Just six years ago, Entergy represented to the NRC that "VY [Vermont Yankee] does not expect to have to use significant, additional decommissioning-trust funds to pay for [spent nuclear fuel] storage." *Update to Vermont Yankee Spent Fuel Management Plan*, Att. 1 at 2 n.1 (April 1, 2009) (ADAMS Accession No. ML091040287). But now, without explanation, Entergy's exemption request seeks to use an "estimate[d]" $225.5 million for spent fuel management expenses. January 6, 2015 Exemption Request, Att. 1 at 2. This unexplained change of course is remarkable. Further, while Entergy has linked its exemption request to "those irradiated fuel management activities described in the updated Irradiated Fuel

Management Program that will be funded by the trust fund," the "estimate[d] amount of $225.5 million" does not appear to cap what Entergy can withdraw to pay for those activities. *Id.* Rather, Entergy appears to have drafted its exemption request to allow access to an unlimited amount of Decommissioning Funds for spent fuel management expenses. *See id.* (referring to "the *estimate* for irradiated fuel management activities" (emphasis added)).

Granting Entergy's exemption request sets a dangerous precedent and puts the Decommissioning Fund in jeopardy because there is no way to ensure that spent fuel expenses will remain below any alleged amount of excess money in the Decommissioning Fund. In all likelihood, spent fuel management expenses will greatly exceed Entergy's estimate of $225.5 million, since that estimate is predicated on the assumption that all spent fuel will be removed from the site by 2052. That assumption, which clearly affects overall spent fuel management costs, is contrary to federal law, historical and current political realities, and recent statements from NRC, the U.S. Court of Appeals for the District of Columbia Circuit, and the Public Service Board.

The NRC cannot accept and rely upon Entergy's assumptions that require, among other things, changes to current law. Yet, according to the U.S. Government Accountability Office (GAO), a change to current law is precisely what would be required for DOE to begin accepting spent fuel in 2026 and complete removal by 2052, as Entergy assumes will occur. Entergy's Updated Irradiated Fuel Management Plan and its cost estimates for spent fuel management expenses depend on DOE's plan to attempt to site an interim storage facility by 2025. But Yucca Mountain will not open within the next 10 years, and the GAO has stated that an interim storage facility will require congressional action because "new legislative authority is needed for developing interim storage that is not tied to Yucca Mountain." GAO 15-141, *Spent Nuclear*

Fuel Management at 20 (October 2014), http://www.gao.gov/assets/670/666454.pdf. Further, "experts and stakeholders generally [have] noted that because the Congress has not agreed on a new path forward for managing spent nuclear fuel since funding was suspended in 2010, nor have DOE officials proposed legislation requesting new authority, obtaining specific legislative authority in time to meet DOE's proposed time frames might be challenging." *Id.*[23] In other words, not only does Entergy's spent fuel management plan require congressional action before it can be implemented, but it requires congressional action that has not yet even been proposed, and that would be "challenging" to get passed even if it was proposed. *See id.*

As the U.S. Court of Appeals for the District of Columbia recently held, the societal and political barriers to siting an offsite nuclear waste storage facility require the NRC to analyze the very real possibility that spent fuel will be stored onsite at plants like Vermont Yankee indefinitely. *See generally New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012).

The NRC itself recognized this possibility in its recently issued Continued Storage Rule, which includes an analysis of onsite spent nuclear fuel storage under an "indefinite timeframe to address the possibility that a repository never becomes available." NUREG-2157 at iii. When the ASLB reviewed the evidence the State presented on this issue in the license amendment proceeding, it held that "Vermont has correctly noted that the indefinite storage of spent fuel on-site is a very possible outcome, as demonstrated by the assumptions underlying the Continued Storage Rule." *Entergy*, LBP-15-24, at 26.

[23] Even if DOE were to receive legislative approval to site an interim storage facility, the GAO report lists several other challenges to the actual siting of such a facility. *Id.* at 19-37. These include technical challenges to transporting high-burnup fuel (which Vermont Yankee has), as well as the political and societal challenges that have historically proved insurmountable in past attempts to site nuclear waste storage facilities at Yucca Mountain and elsewhere.

Indeed, Entergy admits that its estimates are uncertain. It states in its Decommissioning Cost Estimate that, based upon a number of "performance assumptions," it "anticipates" that spent fuel removal "could" be complete by 2052. *See* Decommissioning Cost Estimate at xi. The Decommissioning Cost Estimate identifies a number of the reasons that spent fuel removal is unlikely to occur by that time, including the fact that "the country is at an impasse on high-level waste disposal." Decommissioning Cost Estimate at xiv; *id.* at § 1, page 5. Further, the prospect of an interim storage facility—which is a necessary prerequisite to Entergy's spent fuel storage plan—is identified merely as one of the Blue Ribbon Commission on American's Nuclear Future's "recommendations" that "*may* impact decommissioning planning." *Id.* at xv & § 1, page 6 (emphasis added). And the Decommissioning Cost Estimate concedes that Entergy's spent fuel storage plan depends upon "the appropriate authorizations from Congress." *Id.* An Entergy spokesperson recently admitted that "the timing" of decommissioning is uncertain because it "will depend on 'the schedule from the DOE with regard to removal of spent fuel.'" Platts, *Inside NRC*, vol. 37 #7, at 4 (Apr. 6, 2015).

Additionally, in 2006 Entergy "agreed to" a condition in its Certificate of Public Good for a dry-cask storage pad that it said would address the possibility of spent nuclear fuel remaining onsite through as late as 2082. Order, Docket No. 7082, at 80-81 (Vt. Pub. Svc. Bd. Apr. 26, 2006), http://www.state.vt.us/psb/orders/2006/files/7082fnl.pdf; *see also* Certificate of Public Good, Docket No. 7082 (Vt. Pub. Svc. Bd. Apr. 26, 2006), http://www.state.vt.us/psb/orders/2006/files/7082cpg.pdf. Entergy has not explained why it now ignores that obligation and estimate.

Thus, Entergy's use of 2052 as the date for completion of removal of spent nuclear fuel is not only unrealistic and dependent on a change to current federal law, but it is also directly

contrary to statements of the NRC, the Public Service Board, and the U.S. Court of Appeals for the D.C. Circuit. The NRC cannot accept and rely upon Entergy's improbable assumptions about what "could" happen to allow it to circumvent safeguards for the Decommissioning Fund.

3. Entergy incorrectly truncates spent fuel costs.

Any claimed "excess" in the Decommissioning Fund cannot cover the costs of spent fuel management if the NRC recognizes, as it must, that spent fuel could remain onsite after 2052. Granting Entergy's requested exemption "present[s] an undue risk to the public health and safety" in light of the possibility—or, perhaps more accurately, the probability—that Entergy will have to store spent fuel onsite for years, decades, or maybe even centuries beyond 2052. 10 C.F.R. 50.12(a)(1).

Entergy's request to withdraw money from the Decommissioning Fund is predicated on the assumption that it will incur no spent fuel management expenses after 2052. If Entergy is permitted to use the Decommissioning Fund to finance its spent fuel management activities, and those activities continue longer than expected, there is a real and significant risk it will not have the funding necessary to complete radiological decommissioning. Indeed, Entergy's claimed "excess" of approximately $176 million at the end of decommissioning in 2076 predominantly disappears if Entergy includes the estimated annual expenses of $4 million (and consequent lost interest) for spent fuel management from 2053 to 2076. Even if a small portion of those alleged "excess" funds remain in the Decommissioning Fund by 2076, those funds would not nearly suffice to finance ongoing spent fuel management expenses from that date forward.

Numerous flawed assumptions and omissions underpin Entergy's questionable claim that spent fuel expenses will be less than the alleged "excess" amount in the Decommissioning Fund. Although Entergy relies on the Continued Storage Rule in its PSDAR, it fails to address the NRC's explicit recognition in that Rule that spent fuel may be stored indefinitely at each reactor

site. Entergy further ignores that Rule's related assumption that each reactor operator would need a Dry Fuel Transfer Station to move spent fuel into new dry casks every 100 years. Nowhere does Entergy explain how it would address the contingency of indefinite onsite storage, including safety and environmental concerns regarding transferring fuel into new dry casks every 100 years. Finally, Entergy's PSDAR, Decommissioning Cost Estimate, and its January 6, 2015 exemption request fail to account for numerous potential expenses identified in the Rule, including: (a) the construction of a Dry Fuel Transfer Station; (b) the purchase of 58 new casks and all other labor and material costs for transferring the fuel every 100 years; and (c) the costs of maintaining security at the site indefinitely. The Commission should not permit Entergy to use portions of NRC rules to buttress its positions when convenient, but ignore other provisions of those very same rules when better suited to its claim that spent fuel activities will cost less than the Decommissioning Fund's alleged "excess."

III. The Commission should require Entergy to provide additional information in its 30-day notices of withdrawals from the Decommissioning Fund.

Entergy's September 4, 2014, license amendment request sought to eliminate the condition in Entergy's license requiring 30 days' notice for Decommissioning Fund withdrawals, and instead to replace that condition with the 30-day notice requirement in 10 C.F.R. § 50.75(h)(1)(iv). Relatedly, Entergy's exemption request presumed that the license amendment request would be granted, and asked for an exemption from that very regulation. After the State successfully intervened in the license amendment proceeding and was granted a hearing on two of its contentions (LBP-15-24), Entergy moved to withdraw from that proceeding. The ASLB granted withdrawal, but imposed some of the State's requested conditions, including a requirement that Entergy notify the State before reimbursing itself from the Decommissioning

Fund for certain types of expenses identified by the State as improper. *Entergy*, LBP-15-28. On October 26, 2015, NRC Staff moved to vacate the Board's underlying August 31, 2015 ruling (LBP-15-24). The State will oppose the Staff's requested vacatur.

The consolidated proceeding requested in this Petition should include any appeal by Entergy or NRC Staff of the Board's ruling imposing conditions (LBP-15-28). Once the ASLB rules on NRC Staff's motion to vacate, any appeal of that decision should be included in the consolidated proceeding requested by this Petition. The Commission should not abide Entergy's claim that these matters are unrelated to its exemption requests. Although those proceedings are not identical, they are interrelated and should not be considered in isolation. As the ASLB recently noted, "[p]rocedurally, [it] would have been much simpler if Entergy had submitted its [license amendment request] and exemption request together, in which case both would have been subject to a hearing request." *Entergy,* LBP-15-24, slip op. at 18 n.96. The Board also highlighted the connection between the two requests by agreeing with the State that the license amendment request went from "being hypothetical to being *counterfactual*" when the exemption requests were granted. *Entergy,* LBP-15-24, at 44 (quotation omitted).

The 30-day notice requirement is necessary to protect against encroachments on the Decommissioning Fund, like those now pursued by Entergy. The NRC, by ordering License Condition 3(J)(a)(iii), assured the public at the time of the sale that Entergy would have to provide notice before making any withdrawals from the Decommissioning Fund. Those notices provide the NRC with opportunities to exercise its oversight of the Decommissioning Fund, and provide the State and interested citizens with (somewhat more limited) opportunities to comment on and, when necessary, oppose, improper withdrawals from the Decommissioning Fund. That license requirement helps ensure compliance with applicable NRC regulations, which by

definition serve the NRC's overriding goal of protecting public health and safety by mandating adequate funding for radiological decommissioning.

The ASLB was correct to place conditions on Entergy's withdrawal from the licensing proceeding. The Board recognized that "Vermont and Entergy define the term [decommissioning] differently," and that Entergy's withdrawal from the proceeding "leaves Entergy and Vermont's legal dispute over the definition of decommissioning unresolved." *Entergy*, LBP-15-28, at 11-12. The Board further recognized that "not receiving notice of [Entergy's requested] expenses before they occur would create a legal harm by depriving Vermont of the chance to litigate this potentially meritorious issue." *Id.* at 12. Accordingly, the Board ordered Entergy to provide more detail in its 30-day notices. However, the Board limited that directive to only the six line items (plus legal costs) that were specifically identified in that proceeding as improper.

The Commission is not similarly constrained. In light of the above, the Commission should require Entergy to provide detailed information supporting *all* proposed withdrawals from the Decommissioning Fund, not just those in the six categories that were the subject of the license amendment proceeding. Requiring Entergy to provide a basic level of detail on how it intends to use the Decommissioning Fund will provide the public (including the State and its co-Petitioners) critical information that is otherwise unavailable. Further, that basic level of detail will assist the Commission in discharging its duty to "review, and possibly reject, a particular proposed expense"—a key function that the Board identified as the very root of the 30-day notice requirement. *See id.* at 3.

For these reasons, the Commission should exercise its inherent supervisory authority to order Entergy to provide additional information for both past and future withdrawals, and

consolidate any appellate issues from the ASLB proceeding with all other directly related matters raised in this Petition.

IV. The NRC's oversight of Entergy's use of the Decommissioning Fund is subject to the National Environmental Policy Act.

The NRC cannot permit Entergy to proceed with Decommissioning Fund withdrawals for purposes other than radiological decommissioning without performing a proper NEPA analysis of potential environmental impacts. As explained in detail in the State's March 6, 2015 PSDAR comments, neither Entergy nor the NRC has conducted a NEPA-compliant analysis of the environmental impacts of Entergy's planned decommissioning activities. *See* Exhibit 2 at 40-54.

a. Relevant NEPA requirements.

NEPA and applicable NRC regulations require environmental review before the NRC acts on matters affecting the quality of the human environment. 10 C.F.R. § 51.20; 42 U.S.C. § 4332. Specifically, NEPA requires federal agencies, including the NRC, to "examine and report on the environmental consequences of their actions." *New York v. NRC I*, 681 F.3d 471, 476 (D.C. Cir. 2012). Courts have long held that NEPA requires "environmental issues to be considered at every important stage in the decision making process concerning a particular action." *Calvert Cliffs' Coordinating Comm., Inc. v. Atomic Energy Comm'n*, 449 F.2d 1109, 1118 (D.C. Cir. 1971). While NEPA is recognized as an "essentially procedural" statute, it is intended to ensure "fully informed and well-considered" decision-making. *Id*. Further, "NEPA ensures that the agency will not act on incomplete information, only to regret its decision after it is too late to correct." *Marsh v. Or. Natural Resources Council*, 490 U.S. 360, 371 (1989).

The U.S. Court of Appeals for the Second Circuit has held that "public scrutiny [is] an 'essential' part of the NEPA process." *Brodsky v. NRC*, 704 F.3d 113, 120 (2d Cir. 2013)

(quoting 40 C.F.R. § 1500.1(b)). In *Brodsky*, the Second Circuit vacated the NRC's decision to grant an exemption without the public comment and participation process that NEPA requires. *Id.* at 124 (concluding that the agency record was insufficient to show whether a reasoned basis exists for the NRC's decision not to afford opportunity for public involvement).

At a minimum, NEPA requires an agency to prepare an environmental assessment to determine whether the proposed activity would "significantly affect[] the quality of the human environment" 42 U.S.C. § 4332; 40 C.F.R. § 1508.18. That analysis must include consideration of "(t)he degree to which the proposed action affects public health and safety". 40 C.F.R. § 1508.27(b)(2); *see also Citizens Against Toxic Sprays, Inc. v. Bergland*, 428 F. Supp. 908, 927 (D. Or. 1977) ("No subject to be covered by an [environmental impact statement] can be more important than the potential effects of a federal [action] upon the health of human beings [and the environment]."); *Maryland-Nat'l Capital Park & Planning Comm'n v. U.S. Postal Service*, 487 F.2d 1029, 1039-40 (D.C. Cir. 1973) (agency must consider "genuine issues as to health" before deciding whether to prepare an environmental impact statement).

If the agency determines that the action is non-significant, it must prepare a finding of no significant impact explaining that finding. 40 C.F.R. § 1501.4; *id.* § 1508.14; *New York v. NRC I*, 681 F.3d 471, 476 (D.C. Cir. 2012); *Sierra Club v. Dep't of Transp.,* 753 F.2d 120, 127 (D.C. Cir. 1985); *Theodore Roosevelt Conservation P'ship v. Salazar,* 616 F.3d 497, 503-04 (D.C. Cir. 2010) (explaining NEPA and its procedures in detail).

Conversely, if that process indicates that the action is significant, and the proposal involves a "major federal action", the agency must perform a full environmental impact analysis. 42 U.S.C. § 4332(1)(C)(i); *see generally* 42 U.S.C. §§ 4321 *et seq.* "Major federal actions" are those with "effects that may be major and which are potentially subject to Federal control and

responsibility," and include project approvals and other instances in which regulatory approval is a necessary precursor to an action. 40 C.F.R. § 1508.18.

NEPA dictates that, whenever an agency is faced with a close call on a significance determination, it should "err in favor of preparation of an environmental impact statement." *National Audubon Soc. v. Hoffman*, 132 F.3d 7, 18 (2d. Cir. 1997) (reversing a decision by the U.S. Forest Service not to prepare an environmental impact statement because the Forest Service failed to consider the possible effects of the challenged action); *see also id.* at 18 (agencies should "err in favor of preparation of an environmental impact statement"). Thus, it is only when an agency's action "'*will not* have a significant effect on the human environment'" that an environmental impact statement is not required. *Id.* (quoting 40 C.F.R. § 1508.13).

b. The Commission is obligated to conduct a NEPA analysis.

The NRC's grant of Entergy's exemption requests, and other similar approvals, standing alone and in combination, constitute "major federal actions" within the meaning of NEPA. *See* 40 C.F.R. § 1508.18; *see also Citizens Awareness Network, Inc. v. NRC*, 59 F.3d 284, 293 (1st Cir. 1995) ("it is undisputed that decommissioning is an action . . . requir[ing] NEPA compliance").

NEPA also applies more broadly to licensee proposals that "are *potentially* subject to Federal control and responsibility," such as Entergy's PSDAR. 40 § 1508.18 (emphasis added); *see also Citizens Awareness* at 293 ("[a]n agency cannot skirt NEPA or other statutory commands by essentially exempting a licensee from regulatory compliance, and then simply labelling its decision 'mere oversight' rather than a major federal action. To do so is manifestly arbitrary and capricious.").

Indeed, "major federal actions" include those in which "the responsible officials *fail to act* and that failure to act is reviewable by courts or administrative tribunals under the Administrative Procedure Act or other applicable law as agency action." 40 § 1508.18 (emphasis added). Under the Administrative Procedure Act, the requirements of NEPA apply equally to an agency's failure to act as to an agency's actions. 5 U.S.C. § 551(13); 5 U.S.C. § 706(1). In an analogous situation, the Ninth Circuit Court of Appeals held that when a federal agency has a "mandatory obligation to review" plans, the agency's "failure to disapprove" of those plans constitutes "major federal action" triggering NEPA review. *Ramsey v. Kantor*, 96 F.3d 434, 445 (9th Cir. 1996).

There is no doubt that the NRC has authority over the decommissioning of nuclear power plants, and the NRC has explicitly recognized its authority to "find the PSDAR deficient." NRC Regulatory Guide 1.185, *Standard Format and Content for Post-Shutdown Decommissioning Activities Report* at 10 (June 2013); 10 C.F.R. §§ 50.82, 50.75, 51.33, and 51.95. Nor is there any doubt that the NRC has authority (under its regulations, under the Master Trust Agreement, and under Entergy's operating license) to stop improper NDT withdrawals.

Thus, although the NRC has taken the position that it need not formally approve a PSDAR and related Decommissioning Cost Estimate, it nevertheless has duties under NEPA to review the environmental impacts of decommissioning plans. The NRC also has NEPA responsibilities to police Entergy's 30-day notifications for anticipated withdrawals. Those notices consistently fail to provide the detail necessary to determine whether the withdrawn funds are to be used to reduce radiological contamination at the site, or whether (as discussed above) some of those expenses are improper.

c. A comprehensive analysis is required.

The NRC must review the potential environmental and economic impacts of allowing the Decommissioning Fund to be used for purposes other than radiological decommissioning, thus greatly increasing the chances of a shortfall in the Fund that could leave the site radiologically contaminated.

A comprehensive analysis is required to avoid segmenting the review into discrete parts without looking at the full combined effects—an approach that NEPA does not allow. *See, e.g.*, 40 CFR 1508.25(a); *Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1314 (D.C. Cir. 2014) ("The justification for the rule against segmentation is obvious: it prevents agencies from dividing one project into multiple individual actions each of which individually has an insignificant environmental impact, but which collectively have a substantial impact." (quotation and alteration marks omitted)); *see also, e.g.*, *NRDC v. Callaway*, 524 F.2d 79, 88 (2d Cir. 1975) (NEPA is meant to provide "a more *comprehensive approach* so that long term and cumulative effects of small and unrelated decisions could be recognized, evaluated and either avoided, mitigated, or accepted as the price to be paid for the major federal action under consideration" (emphasis added)). The NRC has previously underscored the value of a comprehensive NEPA analysis: "[w]hile NEPA does not require agencies to select particular options, it is intended to foster both informed decision-making and informed public participation, and thus to ensure that the agency does not act upon incomplete information, only to regret its decision after it is too late to correct." *In Re Duke Energy Corporation (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units and 2)*, CLI-02-17, 56 N.R.C. 1, 10 (2002).

To satisfy NEPA, agencies are required to take a "hard look" at the environmental consequences of a proposed action. *Baltimore Gas & Elec. Co. v. Natural Res. Def. Council,*

Inc., 462 U.S. 87, 97 (1983). A NEPA analysis must be comprehensive and must include all "potential environmental effects" associated with the proposed activities. *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Comm'n*, 449 F.3d 1016, 1030 (9th Cir. 2006). The State has specifically identified numerous potential environmental impacts that previously have not been evaluated (and thus cannot be bounded), including the discovery of strontium-90 after Entergy submitted its PSDAR. *Id.*; *see also* Exhibit 3 at ¶ 7. That discovery certainly requires analysis under NEPA. But NEPA also requires analysis of *potential* impacts, which must include, for instance, the storage of spent nuclear fuel beyond 2052. As the ASLB recently held, the "indefinite storage of spent fuel on-site is a very possible outcome, as demonstrated by the assumptions underlying the Continued Storage Rule." *Entergy,* LBP-15-24, at 26. It thus requires NEPA review.

Agencies also are required under NEPA to consider the "effects" of a project or action on the "human environment," which specifically includes an analysis of *economic* impact. 40 C.F.R. § 1508.8; *see also Calvert Cliffs' Coordinating Comm., Inc.*, 449 F.2d at 1123 (discussing NEPA's required balancing of economic and environmental costs).

As explained above and in related filings, there is a significant risk that the Decommissioning Fund will have a shortfall and will not be able to cover all of the costs of radiologically decontaminating the site if the NRC does not closely monitor withdrawals from that Fund. *See, e.g.*, Exhibit 3 at ¶ 8. Because Vermont ratepayers have a 55% interest in all leftover funds, there are enormous economic impacts to those ratepayers from Entergy's failure to comply with NRC regulations and the Master Trust Agreement. Further, neither the NRC nor Entergy has taken into account the negative economic impacts to the surrounding area resulting from Entergy's decision to use the maximum SAFSTOR period rather than a shorter SAFSTOR.

NEPA requires analysis of those types of considerations—Entergy cannot proceed with its decommissioning plans or its planned use of the Decommissioning Fund until such an assessment is performed.

d. Staff's decision to grant a categorical exclusion was arbitrary and capricious pursuant to NEPA.

Staff incorrectly classified its exemption decision as categorically excluded from NEPA.[24] "Categorical exclusions, by definition, are limited to situations where there is an insignificant or minor effect on the environment." *Alaska Ctr. For the Env't v. U.S. Forest Serv.,* 189 F.3d 851, 859 (9th Cir. 1999). Those exclusions apply only to "actions which do not individually or cumulatively have a significant effect on the human environment." 40 C.F.R. § 1508.4.

i. Staff failed to support its conclusion that the action would have an insignificant effect.

Staff cannot "avoid [the NRC's] statutory responsibilities under NEPA by merely asserting that an activity it wishes to pursue will have an insignificant effect on the environment." *Jones v. Gordon*, 792 F.2d 821, 828 (9th Cir. 1986) (quotation omitted). Rather, an agency "must provide a reasoned explanation of its decision." *Id.*; *see also, e.g., Alaska Ctr.*, 189 F.3d at 859 ("When an agency decides to proceed with an action in the absence of an EA or

[24] *See Entergy Nuclear Operations, Inc.*; *Vermont Yankee Nuclear Power Station*, 80 Fed. Reg. 35992-01 (June 23, 2015). The Agency determined that it was not required to prepare an environmental assessment (EA) or an environmental impact statement (EIS) because it was categorically excluded under 10 C.F.R. 51.22. Under 10 C.F.R. § 51.22, the granting of an exemption qualifies as a categorical exclusion provided that: (i) there is no significant hazards consideration; (ii) there is no change in the types or significant increase in the amounts of any effluents that may be released offsite; (iii) there is no significant increase in individual or cumulative public or occupational radiation exposure; (iv) there is no significant construction impact; (v) there is no significant increase in the potential for or consequences from radiological accidents; and (vi) the requirements from which an exemption is sought are among those identified in 10 C.F.R. 51.22(c)(25)(vi).

EIS, the agency must adequately explain its decision."). Staff failed to provide such an explanation to support its approval. Its analysis consisted merely of a recitation of the factors listed in 10 C.F.R. § 51.22(b) and 10 C.F.R. § 51.22(c)(25). *See* 80 Fed. Reg. 35992-01, 35994. That checklist approach is the antithesis of the "reasoned explanation" that is required under NEPA and the Council of Environmental Quality guidelines. *See Jones*, 792 F.2d at 829.

ii. Staff failed to analyze cumulative impacts.

NEPA requires agencies to consider the cumulative impacts of their actions. *See, e.g.*, 40 C.F.R. § 1508.4. A cumulative impact is any "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions." 40 C.F.R. § 1508.7. Agencies must consider all foreseeable direct, indirect, and cumulative impacts before applying an established categorical exclusion. *See Brady Campaign to Prevent Gun Violence v. Salazar*, 612 F. Supp. 2d 1, 23 (D.D.C. 2009); *see also, e.g.*, *In the Matter of Northern States Pwr. Co.* (Prairie Island Nuclear Island Nuclear Generating Plant), 76 N.R.C. 503, 514 (2012) (ASLB agreed that cumulative impacts analysis of initial storage facility must take into account later application to expand storage facility, since it is "reasonably foreseeable" that the facility will be expanded).

NRC Staff failed to provide any analysis of cumulative impacts. In lieu of a "reasoned explanation," Staff simply reasserted the requirements for a categorical exclusion under 10 C.F.R. § 51.22(c)(25) and provided conclusory statements supporting its position. *See* 80 Fed. Reg. 35992-01, 35994. That cursory support does not comply with NEPA.

Federal courts have reversed similar agency failures to analyze environmental impacts. For instance, in *Sierra Club v. Bosworth*, 510 F.3d 1016 (9th Cir. 2007), the Ninth Circuit held that the U.S. Forest Service inadequately assessed the environmental significance of a categorical

exclusion for fuel reduction projects in national forests throughout the United States. *Id.* at 1016. In particular, the Court held the Forest Service "failed to consider adequately the unique characteristics of the applicable geographic areas, the degree to which effects on the quality of the environment were controversial or the risks were unknown… and whether there existed cumulative impacts from other related actions." *Id.* Despite the Forest Service's analysis of certain data before applying the categorical exclusion, the court still found its evaluation to be "inadequate as a cumulative impacts analysis because it offer[ed] only conclusory statements that there would be no significant impact[s]." *Id.* at 1029. In addition, the Court rejected the Forest Service's assessment of foreseeable environmental impacts, which is similar to the NRC's conclusory analysis here, because the agency "summarily conclude[d], without citing hard data to support its conclusion, that there were no cumulative impacts." *Id*. The court further emphasized that "this is precisely the reason why a global cumulative impact analysis must be performed." *Id.*

Here, NRC Staff performed even less of an analysis and made an even more cursory evaluation than what the Forest Service presented in *Sierra Club.* Rather than determining the extent of foreseeable environmental impacts, Staff simply concluded that there were none. That is not the "hard look" at environmental consequences that NEPA requires. 42 U.S.C. § 4332(C); *Marsh*, 490 U.S. at 374.

In sum, the NRC cannot permit Entergy to proceed with its planned uses of the Decommissioning Fund without performing a proper NEPA-compliant analysis of the potential environmental impacts of withdrawals for purposes other than radiological decommissioning.

CONCLUSION AND RELIEF REQUESTED

For the reasons identified herein and in the State's expressly incorporated March 6, 2015 comments and other Exhibits, the NRC should grant the Petition and grant Petitioners a hearing encompassing all of Entergy's requested withdrawals for non-decommissioning expenses, including spent fuel management expenses, from the Vermont Yankee Decommissioning Fund.

Specifically, the NRC should provide a hearing to determine whether Entergy's proposed PSDAR and related filings, including its January 6, 2015 exemption request, are deficient insofar as Entergy seeks permission to spend Decommissioning Funds at this time on anything other than reducing radiological contamination at the site. At a minimum, the Commission should grant a hearing to allow Petitioners an opportunity to address the need to:

(1) reverse NRC Staff's June 17, 2015 grant of Entergy's exemption requests to use the Decommissioning Fund for spent fuel management expenses before radiological decommissioning is complete;

(2) review all of Entergy's requests for withdrawals from the Decommissioning Fund, and prohibit Entergy from making future withdrawals for expenses that do not meet the NRC's definition of decommissioning;

(3) require Entergy to provide detail in its 30-day notices;

(4) find Entergy's December 19, 2014 filings (PSDAR, Decommissioning Cost Estimate, and Updated Irradiated Fuel Management) deficient insofar as those filings contemplate using the Decommissioning Fund for spent fuel management and other non-decommissioning expenses before radiological decommissioning is complete;

(5) undertake the environmental review required by NEPA before deciding whether Entergy may proceed with non-compliant uses of the Decommissioning Fund; and

(6) take any other actions necessary to protect the Decommissioning Fund until radiological decommissioning is complete.

Respectfully submitted, this 4th day of November 2015,

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EXHIBIT 1

Petition of the State of Vermont, the Vermont Yankee Nuclear Power Corporation, and Green Mountain Power Corporation for Review of Entergy Nuclear Operation, Inc.'s Planned Use of the Vermont Yankee Nuclear Decommissioning Trust Fund

Master Decommissioning Trust Agreement for Vermont Yankee Nuclear Power Station (July 31, 2002)

ENTERGY NUCLEAR VERMONT YANKEE, LLC

MASTER DECOMMISSIONING TRUST AGREEMENT

FOR

VERMONT YANKEE NUCLEAR POWER STATION

Dated July 31, 2002

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MASTER DECOMMISSIONING TRUST AGREEMENT

MASTER DECOMMISSIONING TRUST AGREEMENT made as of this 31st day of July 2002, by and between ENTERGY NUCLEAR VERMONT YANKEE, LLC, a Delaware limited liability company (the "Company"), and MELLON BANK, N.A., as Trustee (the "Trustee"), a national banking association having trust powers.

WHEREAS, the Station is a nuclear fueled electric generating station which will require Decommissioning at the end of its useful life;

WHEREAS, pursuant to the requirements of the NRC, the owner of the Station is required to create and maintain a source of funding to provide for the costs associated with the Decommissioning of the Station;

WHEREAS, the Company is party to a Purchase and Sale Agreement (the "Purchase and Sale Agreement"), dated as of August 15, 2001, as amended from time to time, by and among Vermont Yankee Nuclear Power Corporation, a Vermont corporation ("VYNPC"), the Company, and Entergy Corporation, a Delaware corporation, pursuant to which VYNPC is transferring to the Company all or substantially all of the assets and certain of the liabilities constituting the Station;

WHEREAS, among those assets and liabilities being transferred to the Company pursuant to the Purchase and Sale Agreement, are (i) all of those assets comprising the trust funds maintained by VYNPC with respect to Decommissioning of the Station pursuant to the Indenture of Trust, dated as of March 11, 1988, as amended, between VYNPC and The Bank of New York, as successor trustee (the "VYNPC Trust Funds"), and (ii) all of the liabilities of VYNPC in respect of: (a) the Decommissioning of the Station and the Site following permanent cessation of operations, (b) the management, storage, transportation and disposal of spent nuclear fuel generated at the Station (other than as specified in the Purchase and Sale Agreement), and (c) any other post-operative disposition of the Station or any other of the assets being purchased by the Company;

WHEREAS, pursuant to Section 468A of the Internal Revenue Code of 1986, as amended, (the "Code") certain federal income tax benefits are available to the Company as a result of creating and making contributions to certain nuclear decommissioning reserve funds;

WHEREAS, the Company, in order to comply with the requirements of the NRC, and in order to be in a position to take advantage of the federal income tax benefits available under the aforementioned Section 468A, wishes to establish the Qualified Fund and the Nonqualified Fund to hold amounts in trust for the future Decommissioning of the Station;

WHEREAS, the Company wishes to establish a master trust (the "Master Trust") for the retention and investment of the assets of the Qualified Fund and Nonqualified Fund for the Station, wherein each of the Funds shall constitute a separate trust under the Master Trust; and

WHEREAS, Mellon Bank, N.A. is willing to serve as Trustee under the Master Trust on the terms and conditions herein set forth.

NOW, THEREFORE, in consideration of the mutual promises herein contained and other good and valuable consideration, receipt and sufficiency of which is hereby acknowledged, the Trustee hereby agrees to accept, from and after the date first above written, Contributions to the Master Trust delivered to it from time to time by or on behalf of the Company;

TO HAVE AND TO HOLD such assets;

TO INVEST AND REINVEST the same as provided herein;

IN TRUST NEVERTHELESS, for the uses and purposes and upon the terms and conditions, as hereinafter set forth; and

TO PAY OR DISTRIBUTE from the Master Trust as provided herein.

ARTICLE I.

DEFINITIONS

1.01 Definitions. As used in this Master Decommissioning Trust Agreement, the following terms shall have the following meanings:

(a) "Administrative Expenses" has the meaning given in Section 4.02.

(b) "Agreement" means this Master Decommissioning Trust Agreement as the same may be amended, modified, or supplemented from time to time.

(c) "Applicable Law" means all applicable laws, statutes, treaties, rules, codes, ordinances, Regulations, certificates, orders, interpretations, licenses and permits of any Governmental Authority and judgments, decrees, injunctions, writs, orders or like action of any court, arbitrator or other judicial or quasi-judicial tribunal of competent jurisdiction (including those pertaining to health, safety, the environment or otherwise).

(d) "Applicable Tax Law" means Section 468A of the Code (or any comparable subsequent provision of the Code) and the Regulations thereunder, and any other provision of the Code relating to the federal taxation of the Funds or credits or deductions based on Contributions.

(e) "Authorized Representatives" has the meaning given in Section 2.07.

(f) "Business Day" means any day other than Saturday, Sunday and any day which is a legal holiday or a day on which banking institutions in the Commonwealth of Pennsylvania are authorized or required by Applicable Law or other action of Governmental Authority to close.

(g) "Code" has the meaning given in the recitals of this Agreement.

(h) "Company" has the meaning given in the preamble of this Agreement.

(i) "Contribution" means any contribution, cash or otherwise, made to the Trustee for deposit in one or more of the Funds and in such subaccounts thereunder as provided in this Agreement. No contribution that consists of real property shall be permitted.

(j) "Decommissioning" means the removal of the Station from service and disposal of its components in accordance with Applicable Law. This process shall include, but not be limited to, (i) pre-shutdown activities related to the removal and disposal of the Station including studies, planning, licensing, regulatory filings and non-DOE spent fuel storage, (ii) work done to prepare and carry out DECON, ENTOMB or SAFSTOR (as defined by the NRC) of the Station and the Site, whichever is applicable, (iii) the removal of radioactively contaminated and radioactively uncontaminated portions of the Station and disposing of the same at the end of the operating life of the Station, (iv) work done to the Site and the Station's associated equipment and facilities and to other areas, whether or not such areas are contiguous to the Site and equipment and facilities, in order to decontaminate such Site and such areas, and (v) work done by or on behalf of the Company (or for which the Company is charged) to a facility where any portion of the Station and its associated equipment and facilities are to be disposed of in order to prepare and maintain such facility as a disposal site.

(k) "Decommissioning Certificate" means a document properly completed and executed by an Authorized Representative and substantially in the form of Exhibit B as it may from time to time be amended.

(l) "Decommissioning Costs" shall mean all costs and expenses relating or allocable to, or incurred in connection with, Decommissioning, including, but not limited to, the decontamination and/or removal of the equipment, structures and portions of the Station and the Site provided, however, that if Applicable Law prohibits the foregoing or imposes requirements that are more costly to implement than their removal, the term "Decommissioning Costs" shall mean all costs and expenses relating or allocable to, or incurred in connection with, the requirements imposed by Applicable Law at the end of the Station's operating life.

(m) "Docket 6545 Decommissioning Activities" has the meaning given in Exhibit D.

(n) "Excess Funds" shall have the meaning given in Exhibit D.

(o) "Exemption" has the meaning given in Section 8.03(b).

(p) "FERC" means the Federal Energy Regulatory Commission or any successor thereto.

(q) "Funds" means the Qualified Fund and the Nonqualified Fund, collectively.

(r) "Governmental Authority" means any federal, state, county, municipal, foreign, international, regional or other governmental authority, agency, board, body, instrumentality or court, including, without limitation, the NRC and the FERC.

(s) "Investment Account" has the meaning given in Section 8.01.

(t) "Investment-Grade Securities" means "investment-grade" securities, including, without limitation, investment-grade bonds and preferred stocks, which are those rated at least "BBB" or equivalent by a national rating service, but shall not included (i) speculative issues of common stocks, including without limitation "bulletin board" stocks listed on the NASDAQ exchange, "pink sheet" stocks, and stocks not traded on major exchanges, and (ii) high yield or "junk" bonds.

(u) "Investment Manager" has the meaning given in Section 8.01.

(v) "Master Trust" has the meaning given in the recitals of this Agreement.

(w) "Nonqualified Fund" means a trust fund that does not constitute the Qualified Fund established under, and in accordance with, Section 2.02(b) or such other Nonqualified Funds as the Company shall establish from time to time in accordance with Section 2.05. A Nonqualified Fund shall have such subaccounts as the Company may specify.

(x) "NRC" means the Nuclear Regulatory Commission, the agency established in Title II of the Energy Reorganization Act of 1974, as amended, comprising the members of the Commission and all offices, employees and representatives authorized to act in any case or matter, or any successor agency.

(y) "NRR Director" has the meaning given in Section 4.05.

(z) "Nuclear Safety Director" has the meaning given in Section 4.05.

(aa) "Order" shall mean any order relating to Decommissioning issued by a Governmental Authority and applicable to the Station.

(bb) "Purchase and Sale Agreement" has the meaning given the recitals of this Agreement.

(cc) "Qualified Fund" means the trust fund established under, and in accordance with, Section 2.02(b) for purposes of Section 468A of the Code, which is designated as such in the records of the Trustee. The Qualified Fund shall have such subaccounts as the Company may specify. Contributions, if any, made to the Qualified Fund in any year shall not exceed the amount permitted to be made to such Fund with respect to the year in question in order for the Company to be allowed to take the deduction afforded by Section 468A of the Code.

(dd) "Regulation" means any requirement having the force of law which is binding on the Company.

(ee) "Service" means the Internal Revenue Service or any successor thereto.

(ff) "Site" means the land upon which the Station is situated, located in Vernon, Vermont.

(gg) "Site Restoration Costs" shall have the meaning given in Exhibit D.

(hh) "Spent Fuel Costs" has the meaning given in Exhibit D.

(ii) "Sponsors" shall have the meaning given in Exhibit E.

(jj) "Station" means the nuclear fueled electric generating station designated as and known as Vermont Yankee Nuclear Power Station (NRC Operating License No. DPR-28) at the Site together with those facilities, equipment, supplies, and improvements included in the Acquired Assets (as such term is defined in the Purchase and Sale Agreement).

(kk) "Trustee" has the meaning given in the preamble of this Agreement or any successor appointed pursuant to Section 6.01.

(ll) "VYNPC" has the meaning given in the recitals of this Agreement.

ARTICLE II.

MASTER TRUST PURPOSE, NAME AND FUNDS

2.01 Master Trust Purpose. The exclusive purpose of this Master Trust is to accumulate and hold funds for the contemplated Decommissioning of the Station and to use such funds, in the first instance, for expenses related to the Decommissioning of the Station as defined by the NRC in its Regulations and issuances, and as provided in the licenses issued by the NRC for the Station and any amendments thereto.

2.02 Establishment of Master Trust. By execution of this Agreement, the Company:

(a) establishes the Master Trust for the retention and investment of the assets of the Funds, which shall be effective on the date first above written;

(b) establishes the Qualified Fund and the Nonqualified Fund for the Station; and

(c) appoints Mellon Bank, N.A. as Trustee of the Master Trust.

2.03 Acceptance of Appointment. Upon the terms and conditions herein set forth the Trustee accepts the appointment as Trustee of this Master Trust. The Trustee declares that it will hold all estate, right, title and interest it may acquire hereunder exclusively for the purposes set forth in this Article II. The Trustee shall receive any Contributions deposited with it by the Company in trust for the benefit of the Company and shall deposit such Contributions in one or more of the Funds, and in such subaccounts thereunder, as provided in Section 2.05 and otherwise as the Company shall specify. The Trustee shall hold, manage, invest and administer such Contributions, together with earnings and appreciation thereon, in accordance with this Agreement. In performing its duties under this Agreement, the Trustee shall exercise the same care and diligence that it would devote to its own property in like circumstances. The Trustee, Investment Manager or anyone else directing the investments made in this Master Trust shall

adhere to a "Prudent Investor" standard as specified in 18 CFR 35.32(a)(3) of the Federal Energy Regulatory Commission's regulations or any comparable Regulation.

2.04 Name of Master Trust. The Contributions received by the Trustee from the Company together with the proceeds, reinvestments and appreciation thereof shall constitute the "Entergy Nuclear Vermont Yankee Master Decommissioning Trust."

2.05 Division of Master Trust.

(a) The Master Trust shall be divided by the Trustee into the Qualified Fund and the Nonqualified Fund for the Station and into such other Nonqualified Funds as the Company from time to time shall establish. Each Fund shall constitute a separate trust under the Master Trust and shall be designated as relating to the Station. Each Fund may have subaccounts as the Company from time to time shall specify.

(b) The Trustee shall maintain such records as are necessary to reflect each Fund and each subaccount thereunder separately on its books from each other Fund and subaccount.

2.06 Designation of Funds. Upon (i) any Contribution to the Master Trust; or (ii) any withdrawal from the Master Trust; or (iii) any transfer between the Funds or subaccounts thereunder, the Company shall designate (in writing) in accordance with Articles III or IV of this Agreement, as applicable, the Fund(s), and the subaccount(s) thereunder, which is to be credited or debited for the amount of such Contribution, withdrawal or transfer, and the Trustee shall credit or debit the Fund(s), and the subaccount(s) thereunder, in accordance with such designation.

2.07 Duties of Authorized Representatives. The Company shall provide the Trustee with a written statement setting forth the names and specimen signatures of those persons it designates as "Authorized Representatives". The Company hereby empowers the Authorized Representatives and their delegates to act for the Company in all respects hereunder. The Authorized Representatives may act as a group or may designate one or more Authorized Representative(s) or delegate(s) to perform the duties described in the foregoing sentence. The Authorized Representatives shall provide the Trustee with a written statement setting forth the name and specimen signature of any delegate of the Authorized Representatives. Until otherwise notified in writing by the Company, the Trustee may rely upon any written notice, instruction, direction, certificate or other communication believed by it to be genuine and to be signed or certified by any one or more Authorized Representatives or their designated delegate(s) and the Trustee shall be under no duty to make any investigation or inquiry as to the truth or accuracy of any statement contained therein.

2.08 No Authority to Conduct Business. The purpose of this Master Trust is limited specifically to the matters set forth in Section 2.01, and there is no objective to carry on any business unrelated to the Master Trust purpose set forth in Section 2.01, or to divide the gains therefrom.

2.09 No Transferability of Master Trust. The interest of the Company in the Master Trust is neither transferable, whether voluntarily or involuntarily, by the Company nor subject to the payment of the claims of creditors of the Company; provided, however, that any creditor of the Company as to which a Decommissioning Certificate has been properly completed and submitted to the Trustee may assert a claim directly against the Master Trust in an amount not to exceed the amount specified in such Decommissioning Certificate; and provided, further, that all or a portion of the interest of the Company in the Master Trust may be transferred to a purchaser of all or substantially all of the assets of the Station that also assumes responsibility for Decommissioning the Station.

2.10 Use of Qualified Fund. The assets of the Qualified Fund shall be used only as authorized by Code Section 468A and the Regulations thereunder as amended from time to time.

ARTICLE III.

CONTRIBUTIONS AND INCOME

3.01 Contributions. The Company may make such Contributions to any Fund from time to time as it shall deem necessary or appropriate. The Trustee shall return Contributions to the Company to the extent such Contributions are made by the Company and such Contribution is stated in a written opinion of legal counsel to the Company, who may be an employee of the Company, to be excessive in light of Applicable Law and Applicable Tax Law.

3.02 Allocation of Net Income. The Trustee may pool the assets among the Funds for investment purposes in accordance with the written instructions of the Company, subject to the limitations on investments contained in Exhibit A, and, upon so doing, shall treat each Fund so pooled as having received or accrued a pro rata portion (based on the principal balances of the Fund so pooled) of the net income of the Master Trust (including appreciation) related to such pooled assets in any accounting period of the Master Trust. Without limiting the requirements of Section 6.05, the Trustee shall maintain such separate records of each of the Funds and the subaccounts thereunder as are necessary to reflect the assets thereof and the allocation of income and losses among the Funds and subaccounts thereunder. The Trustee may rely upon the written opinion of legal counsel of the Company, who may be an employee of the Company, with respect to any question arising under this Section 3.02.

3.03 Subsequent Transfers. Upon receipt of a written directive of the Company signed by one or more Authorized Representatives or their designated delegate(s) which sets forth an amount to be transferred from one of the Funds or subaccounts thereunder and states that such amount should be transferred to one or more other Funds or subaccounts as specified, the Trustee shall transfer such amount to the Fund(s) or subaccounts specified by the Company in the written directive.

ARTICLE IV.

DISTRIBUTIONS

4.01 Payment of Decommissioning Costs and Administrative Expenses. In addition to payments otherwise authorized by this Agreement, the Trustee shall make payments out of the Funds or any subaccounts thereunder upon being presented with a Decommissioning Certificate by the Company that instruct the Trustee to disburse amounts in the Funds or any subaccounts thereunder in a manner designated in such Decommissioning Certificate for purposes of paying costs, liabilities and expenses of Decommissioning or, if so specified, administrative expenses related to services authorized by the Company pursuant to Section 4.02. Once Decommissioning is completed, the Trustee shall also disburse amounts in the Funds in a manner designated in any Decommissioning Certificate for the purposes of paying costs, liabilities and expenses of Docket 6545 Decommissioning Activities, Spent Fuel Costs and Site Restoration Costs (each to the extent not included in Decommissioning). If the assets of any Fund or subaccount thereof are insufficient to permit the payment in full of amounts to be paid pursuant to a Decommissioning Certificate, the Trustee shall have no liability with respect to such insufficiency and no obligation to use its own funds to pay the same.

4.02 Administrative Expenses. In addition to the payment of administrative expenses paid pursuant to Section 4.01, from time to time, the Trustee shall make payments of all administrative expenses (including taxes, reasonable out-of-pocket expenses, and the Trustee's fees as specified in the agreement referred to in Section 4.03) (collectively, the "Administrative Expenses") in connection with the operation of the Master Trust pursuant to this Agreement. All such Administrative Expenses and incidental expenses of the Master Trust shall be allocated proportionately among the Funds (based on the fair market value of each Fund immediately prior to any such payment) and within each Fund among the subaccounts in the proportion that the balance in each subaccount bears to the aggregate balance of all subaccounts in such Fund; provided, that income taxes shall be paid for each of the Funds in accordance with the income tax actually imposed on each such Fund. The Trustee shall maintain such records as are necessary to reflect the allocation of Administrative Expenses and incidental expenses among the Funds in accordance with this Section 4.02. If the assets of any Fund or subaccount thereof are insufficient to permit the payment in full of amounts payable under this Section 4.02, the Trustee shall have no liability with respect to such insufficiency and no obligation to use its own funds to pay the same.

4.03 Fees. The Trustee shall receive as exclusive compensation for its services such amounts as may from time to time be agreed to by the Trustee and the Company.

4.04 Liquidation of Investments. At the direction of the Company or its Investment Manager, the Trustee shall sell or liquidate such investments of the Funds as may be specified. The proceeds of any such sale or liquidation shall be credited pro rata to the Fund or Funds and within each Fund to the subaccount or subaccounts thereunder to which such investments were credited prior to such sale or liquidation.

4.05 Notice to the NRC. Notwithstanding anything in this Agreement to the contrary, no disbursements or payments shall be made by the Trustee, other than Administrative Expenses

in accordance with Section 4.02, until the Trustee has first given the NRC thirty (30) days' prior written notice of payment; provided, however, that no disbursement or payment from this Master Trust shall be made if the Trustee receives prior written notice of objection from the Director, Office of Nuclear Reactor Regulation (the "NRR Director"). After the Company has first authorized the Trustee to disburse funds from the Master Trust to pay Decommissioning Costs in accordance with 10 CFR 50.82(a)(8)(i) or other applicable NRC Regulation, the Trustee will no longer be obligated to notify the NRC for subsequent disbursements or payments in connection with Decommissioning the Station.

4.06 Approval by State of Vermont Public Service Board. In the event the Company shall request disbursements or payments from this Master Trust other than pursuant to Section 4.01 (Decommissioning costs including costs for decommissioning, spent fuel storage and site restoration contemplated under Exhibit D pursuant to Section 5.01), Section 4.02 (Administrative Expenses including Trustee fees and income taxes) or Section 5.02 (termination), then in such other case the Company shall have received the approval for such disbursement or payment from the State of Vermont Public Service Board (or its successor).

ARTICLE V.

TERMINATION

5.01 Termination of Funds and Master Trust in General. Each Fund established hereunder shall terminate only upon the earlier of (i) the date on which the Trustee receives written notification from an Authorized Representative of the occurrence of both the "Completion of Decommissioning" (as defined in Exhibit D) and the satisfaction of the other requirements regarding the conditions precedent for the return of excess funds set forth in Exhibit D; or (ii) twenty-one (21) years after the death of the last survivor of each person who was an officer, director, member, or manager of the Company on the date of this Agreement and each of their descendants born on or prior to that date. This Master Trust shall terminate upon the termination of all of the Funds. Prior to its termination, this Master Trust shall be irrevocable.

5.02 Distribution of Master Trust and Funds Upon Termination. Without limitation of Section 3.01 of this Agreement, upon termination of this Master Trust or of the Funds with respect to the Station, the Trustee shall liquidate the assets of the Master Trust or such Funds, as the case may be, and distribute the Excess Funds (which shall not include funds necessary for Spent Fuel Costs and Site Restoration Costs) held in such Funds (less all reasonable final Administrative Expenses), unless otherwise determined, ordered or required by any Governmental Authority, to VYNPC as provided in Exhibit D and for the benefit of the Sponsors in pro rata shares in proportion to the stated ownership percentage of the Sponsors set forth on Exhibit E. The term Excess Funds shall not include any amounts contributed by the Company after the date of this Agreement pursuant to Section 3.01, or any amounts of net income in respect of such amounts, all of which amounts shall be distributed to the Company upon liquidation of the assets of the Master Trust or Funds. Further, upon termination of this Master Trust or such Funds, the Trustee shall distribute all funds necessary for Spent Fuel Costs and Site Restoration Costs to the Company. An Authorized Representative will provide the Trustee with

one or more written notices regarding the timing and amount of distributions to be made pursuant to this Section 5.02 and also of the satisfaction of the conditions precedent regarding the return of Excess Funds set forth in Exhibit D. The Trustee shall be permitted to rely conclusively upon any written notification received from an Authorized Representative relating to matters arising under Exhibit D or as to any determination, order or decision of Governmental Authorities.

5.03 Assignment of Right to Receive Payment of Excess Funds. Notwithstanding anything in this Agreement, including Section 5.02 or Exhibit D to the contrary, VYNPC and each of the Sponsors shall each have the right to irrevocably transfer all of their respective right, title and interest to receive Excess Funds under this Agreement. The party assigning its rights to receive excess funds shall notify the Trustee in a writing signed by a duly authorized representative of the assigning entity upon such assignment, using the form of assignment attached hereto as Exhibit F. The Trustee may rely conclusively upon any notice of assignment and such assignment shall be binding upon the Company, the Trustee, the assigning party and each of their respective successors, assigns, personal representatives, executors and heirs. Upon receipt of notice of an assignment, the Trustee shall thereafter deliver the excess funds, if any and at the time otherwise distributable pursuant to Section 5.02, directly to the named assignee, notwithstanding the provisions of Section 5.02 and Exhibit D .

ARTICLE VI.

TRUSTEES

6.01 Designation and Qualification of Successor Trustee(s).

(a) At any time during the term of this Master Trust, the Company shall have the right to remove the Trustee (at the Company's sole discretion) acting hereunder and appoint another qualified entity as a successor Trustee upon thirty (30) days' notice in writing to the Trustee, or upon such shorter notice as may be acceptable to the Trustee. In the event that the bank or trust company serving as Trustee or successor Trustee shall: (i) become insolvent or admit in writing its insolvency; (ii) be unable or admit in writing its inability to pay its debts as such debts mature; (iii) make a general assignment for the benefit of creditors; (iv) have an involuntary petition in bankruptcy filed against it; (v) commence a case under or otherwise seek to take advantage of any bankruptcy, reorganization, insolvency, readjustment of debt, dissolution or liquidation law, statute, or proceeding; or (vi) resign, the Company shall appoint a successor Trustee as soon as practicable. In the event of any such removal or resignation, the Trustee or successor Trustee shall have the right to have its accounts finalized as provided in Section 6.05. Any successor to the Company, as provided herein, shall have the same right to remove and to appoint any Trustee or successor Trustee.

(b) Any successor Trustee shall be a bank or trust company incorporated and doing business within the United States of America and having a combined capital and surplus of at least Two Hundred Fifty Million Dollars ($250,000,000), if there be such an institution willing, able and legally qualified to perform the duties of Trustee hereunder upon reasonable or customary terms.

(c) Any successor Trustee shall qualify by a duly acknowledged acceptance of this Master Trust, delivered to the Company. Upon acceptance of such appointment by the successor Trustee, the Trustee shall assign, transfer and pay over to such successor Trustee the assets then constituting the Master Trust. Any successor Trustee shall have all the rights, powers, duties and obligations herein granted to the original Trustee.

6.02 Exoneration from Bond. No bond or other security shall be exacted or required of any Trustee or successor Trustee appointed pursuant to this Agreement.

6.03 Resignation. The Trustee or any successor Trustee hereof may resign and be relieved as Trustee at any time without prior application to or approval by or order of any court by a duly acknowledged instrument, which shall be delivered to the Company by the Trustee no less than thirty (30) days prior to the effective date of the Trustee's resignation or upon such shorter notice as may be acceptable to the Company. If for any reason the Company cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor Trustee and the cost of making such application shall be an Administrative Expense.

6.04 Transactions with Third Parties. No person or organization dealing with the Trustee hereunder shall be required to inquire into or to investigate its authority for entering into any transaction or to see to the application of the proceeds of any such transaction.

6.05 Accounts and Reports.

(a) The Trustee shall keep accurate and detailed accounts of all investments, receipts and disbursements and other transactions hereunder with respect to each Fund and each subaccount thereunder in accordance with specifications of the Company, and all accounts, books and records relating thereto shall be open to inspection and audit at all reasonable times by any person designated by the Company. Within twenty-five (25) days following the close of each month, the Trustee shall provide a written report of the estimated market value of each Fund and each subaccount thereunder, prepared on an accrual basis. Within thirty-five (35) days following the close of each month, the Trustee shall file with the Company a final written report setting forth all investments, receipts and disbursements and other transactions effected by it during the month and containing an exact description of all cash and securities contributed, purchased, sold or distributed and the cost or net proceeds of sale, and showing all cash, and securities and other investments held at the end of such month and the cost and fair market value of each item thereof as carried on the books of the Trustee. Such accounts and reports shall be based on the accrual method of reporting net income and expenses and shall show the portion of the assets applicable to each Fund and subaccount thereunder and shall also identify all disbursements from each Fund and subaccount thereunder.

(b) Upon the expiration of ninety (90) days from the date of filing such written reports with the Company, the Trustee shall be forever released and discharged from all liability or accountability to anyone with respect to all acts and transactions shown in such written reports, except such acts or transactions as to which the Company shall take exception by written notice to the Trustee within such ninety (90) day period; provided, however, that nothing contained in this Section 6.05(b) shall be deemed to relieve the Trustee of any liability imposed

pursuant to Section 6.07. In the event that any exception taken by the Company cannot be amicably adjusted, the Company may, within one (1) year of the date of such exception, file the written report in a court having jurisdiction and upon the audit thereof any and all such exceptions which may not have been amicably settled shall be heard and adjudicated. Any exception not so filed within one (1) year shall be deemed waived and any liability of the Trustee with respect thereto shall be deemed released.

(c) All records and accounts maintained by the Trustee with respect to the Master Trust and the Funds shall be preserved for such period as the Company shall specify and in the absence of any instructions from the Company shall be preserved for a period of four (4) years. Upon the expiration of any such required retention period, the Trustee shall have the right to destroy such records and accounts after first notifying the Company in writing of its intention and transferring to the Company any records and accounts requested by the Company.

6.06 Tax Returns and Other Reports. The Company, or the Trustee at the Company's direction, shall prepare and file all federal, state and local income or franchise tax returns and other reports (including estimated tax returns and information returns) as may be required from time to time with respect to the Qualified Fund, and the Trustee agrees to provide the Company in a timely manner with any information which is necessary to such filings which is not in the possession of the Company. The Trustee shall prepare and submit to the Company in a timely manner all information requested by the Company regarding the Funds required to be included in the Company's federal, state and local income tax returns or other reports (including tax returns and information returns). The Trustee may employ independent certified public accountants or other tax counsel to prepare or review such returns and reports and the reasonable cost thereof shall be an Administrative Expense. The Trustee agrees to sign any tax returns or other reports where required by law to do so or arising out of the Trustee's responsibilities hereunder, and to remit from the Master Trust appropriate payments or deposits of federal, state and local income or franchise taxes directly to the taxing agencies or authorized depositaries or to the Company, in the event that the Company has directly paid such taxes. Any interest or penalty charges assessed against the Master Trust pursuant to Chapters 67 or 68 of the Code or pursuant to any similar state or local tax provisions, as a result of the Trustee's failure to comply with this Section 6.06 shall be an Administrative Expense unless caused by the Trustee's negligence or willful misconduct in which case such interest or penalty charges shall be borne by the Trustee and not the Master Trust. The Trustee agrees to notify the Company in writing within ten (10) days of the commencement of the audit of the Qualified Fund's federal, state or local tax returns, and to participate with the Company on behalf of the Qualified Fund in such audits and related inquiries. The Trustee further agrees to provide the Company with any additional information in its possession regarding the Master Trust that may be requested by the Company to be furnished in an audit of the Company's federal, state or local tax returns.

6.07 Liability.

(a) The Trustee shall not be liable for any loss or injury resulting from its actions or its performance of its duties hereunder or for its investment decisions in the absence of its own willful misconduct or negligence. In no event shall the Trustee be liable (i) for acting in accordance with instructions from an Authorized Representative or a duly designated delegate or pursuant to a legal opinion of counsel to the Trustee or to the Company, or (ii) for special or

consequential damages or (iii) for any losses resulting from the deposit or maintenance of securities or other property (in accordance with market practice, custom, or regulation) with any recognized foreign or domestic clearing facility, book-entity system, centralized custodial depository, or similar organization.

(b) Notwithstanding anything contained in this Agreement to the contrary, upon receipt of written notice from the Company (satisfactory in form to the Trustee) identifying persons and entities as "disqualified persons" which may not engage in transactions with the Master Trust because to do so would constitute "self-dealing" pursuant to Code Section 468A(e)(5) or Code Section 4951 (or any applicable successor provisions), the Trustee shall refrain from authorizing or carrying out the transactions with such "disqualified persons" unless the decision to so refrain would require knowledge of facts not apparent on the face of such transaction. In this latter case, the Trustee will so refrain only if it has knowledge of the pertinent facts and shall be under no obligation to determine the facts. If the Trustee authorizes or carries out any transaction in violation of the provisions of this clause (b), the Trustee (and not the Master Trust or the Qualified Fund) shall be liable for any tax imposed on the Master Trust, the Qualified Fund, or the Trustee pursuant to Code Section 4951 (or any applicable successor provision) and for any loss or damage sustained by the Master Trust, the Qualified Fund, or the Company. Otherwise, the Trustee shall not be liable for any such tax or loss.

(c) The Company shall indemnify the Trustee and hold it harmless against any and all claims, losses, liabilities, excise taxes, damages or reasonable expenses (including attorneys' fees and expenses) arising from or in connection with this Agreement or the performance of its duties hereunder, together with any income taxes imposed on the Trustee as a result of any indemnity paid by it hereunder, provided, however, that nothing contained herein shall require that the Trustee be indemnified for any liability imposed pursuant to clauses (a) or (b) of this Section 6.07. Nothing contained herein shall limit or in any way impair the right of the Trustee to indemnification under any other provision of this Agreement.

(d) The Company understands that when and if the Trustee delivers property against payment, it may deliver such property prior to receiving final payment and that, as a matter of bookkeeping convenience, the Trustee may credit one or more of the Funds with anticipated proceeds of sale prior to actual receipt of final payment. The risks of non-receipt of payment shall be the Company's and the Trustee shall have no liability therefore.

(e) All credits to the Funds of the proceeds of sales and redemptions of property and of anticipated income from property shall be conditional upon receipt by the Trustee of final payment and may be reversed to the extent final payment is not received. In the event that the Trustee in its discretion advances funds to the Master Trust to facilitate the settlement of any transaction, the Master Trust shall, immediately upon demand, reimburse the Trustee for such amounts plus any interest thereon, and to secure such obligations as well as any other obligations of the Master Trust hereunder, the Company, to the extent permitted by Applicable Law, hereby grants a continuing security interest in and pledges to the Trustee the property in the Funds and any funds so credited.

(f) The provisions of this Section 6.07 and the right of the Trustee to claim the benefit thereof shall survive any termination of this Agreement and any resignation or removal of the Trustee.

ARTICLE VII.

TRUSTEE'S GENERAL POWERS

The Trustee shall have, with respect to the Master Trust, the following powers, all of which powers are fiduciary powers to be exercised in a fiduciary capacity and in the best interests of this Master Trust and the purposes hereof, namely:

7.01 Registration of Securities. To hold any stocks, bonds, securities, and/or other property in the name of a nominee, in a street name, or by other title-holding device, without indication of trust and generally to exercise the powers of an owner, including, without limitation, the power to vote in accordance with instructions provided by the Company, with respect to any such property whether so held or held in its own name, as Trustee.

7.02 Borrowing. To borrow money in such amounts and upon such terms as the Company may authorize in writing as necessary to carry out the purposes of this Master Trust, and to pledge any securities or other property for the repayment of any such loan as the Company may direct.

7.03 Retention and Removal of Professional and Employee Services. To employ such attorneys, accountants, custodians, engineers, contractors, clerks and agents as may be reasonably necessary to carry out the purposes of this Master Trust. The reasonable cost of any such employment shall be an Administrative Expense.

7.04 Delegation of Ministerial Powers. To delegate to other persons such ministerial powers and duties as the Trustee may deem to be advisable.

7.05 Powers of Trustee to Continue Until Final Distribution. To exercise any of such powers after the date on which the principal and income of the Funds under the Master Trust shall have become distributable and until such time as the entire principal of, and income from, the Master Trust shall have been actually distributed by the Trustee. It is intended that distribution of the assets of one or more of the Funds under the Master Trust will occur as soon as possible after termination of the Master Trust or any Fund.

7.06 Discretion in Exercise of Powers. To do any and all other acts which the Trustee shall deem proper to effectuate the powers specifically conferred upon it by this Agreement, provided, however, that the Trustee may not do any act or participate in any transaction which would:

(a) Contravene any provision of this Agreement; or

(b) Violate the terms and conditions of any instructions provided in a written statement of the Company.

7.07 Deposit of Funds. To deposit funds in interest bearing account deposits maintained by or savings certificates issued by the Trustee in its separate corporate capacity, or in any other banking institution affiliated with the Trustee; provided, however, that, the assets of the Qualified Fund may only be so deposited if the requirements of Applicable Tax Law are met.

7.08 Loaning of Securities. To loan securities to brokers or dealers or other borrowers under such terms and conditions as the Company authorizes pursuant to a separate agreement.

7.09 Retention of Uninvested Cash. To hold uninvested cash awaiting investment and such additional cash balances as it shall deem reasonable or necessary, without incurring any liability for the payment of interest thereon.

ARTICLE VIII.

INVESTMENTS

8.01 General Investment Powers. The Company may appoint one or more investment managers, which may include the Trustee, but shall not include the Company, to direct the investment of all or part of the Master Trust and, as to the Qualified Fund, in accordance with the limitations set forth in Applicable Tax Law; provided, however, that such investments are in conformance with the permitted investments as set forth in Exhibit A. (Each such investment manager is referred to herein as an "Investment Manager" and collectively as "Investment Managers.") The Company shall also have the right to remove such Investment Manager(s). Whenever such appointment is made, the Company shall provide written notice of such appointment to the Trustee, shall specify the portion of the Master Trust with respect to which the Investment Manager has been designated, and shall instruct the Trustee to segregate into specified accounts those assets designated for management by each Investment Manager (each such account is referred to herein as an "Investment Account"). To the extent that assets are segregated into an Investment Account, the Trustee shall be released and relieved of all investment duties, responsibilities and liabilities customarily or statutorily incident to a trustee with respect to the assets in each such Investment Account, and as to such Investment Account the Trustee shall act as custodian. The Company shall cause the Investment Manager to certify in writing to the Trustee the identity of the person or persons authorized to give instructions or directions to the Trustee on behalf of such Investment Manager and to provide specimen signatures of such persons. The Trustee may continue to rely upon and comply with all such certifications unless and until otherwise notified in writing by the Company or an Investment Manager, as the case may be. Notwithstanding anything else in this Agreement to the contrary, including, without limitation, any specific or general power granted to the Trustee and to the Investment Managers, including the power to invest in real property, no portion of the Funds shall be invested in real estate. For this purpose "real estate" includes, but is not limited to, real property, leaseholds or mineral interests.

8.02 Direction by Investment Manager(s).

(a) An Investment Manager designated by the Company to manage an Investment Account shall have authority to manage and to direct the acquisition and disposition of the assets of the Master Trust, or a portion thereof, as the case may be, and the Trustee shall

exercise the powers set forth in Article VIII only when, if, and in the manner directed by the Company in writing, and shall not be under any obligation to invest or otherwise manage any assets in the Investment Account. An Investment Manager shall have the power and authority, exercisable in its sole discretion at any time, and from time to time, to issue and place orders for the purchase or sale of portfolio securities directly with qualified brokers or dealers. The Trustee, upon proper notification from an Investment Manager, shall settle the transactions in accordance with the appropriate trading authorizations. The Company shall cause each Investment Manager to promptly provide to the Trustee written notification of each transaction and shall cause each such Investment Manager to confirm in writing (or cause the broker or dealer to confirm in writing) the settlement of each such transaction to the Trustee and to the Company. Such notification shall be proper authority for the Trustee to pay for portfolio securities purchased against receipt thereof and to deliver portfolio securities sold against payment therefor, as the case may be. All directions to the Trustee by an Investment Manager shall be in writing and shall be signed by a person who has been certified by such Investment Manager pursuant to Section 8.01 as authorized to give instructions or directions to the Trustee.

(b) Should an Investment Manager at any time elect to place security transactions directly with a broker or a dealer, the Trustee shall not recognize such transaction unless and until it has received instructions or confirmation of such fact from an Investment Manager. Should an Investment Manager direct the Trustee to utilize the services of any person with regard to the assets under its management or control, such instructions shall be in writing and shall specifically set forth the actions to be taken by the Trustee as to such services. In the event that an Investment Manager places security transactions directly or directs the utilization of a service, such Investment Manager shall be solely responsible for the acts of such persons. The sole duty of the Trustee as to such transactions shall be incident to its duties as custodian.

(c) The authority of an Investment Manager and the terms and conditions of the appointment and the retention of an Investment Manager shall be the sole responsibility of the Company, and the Trustee shall not be deemed to be a party or to have any obligations under any agreement with an Investment Manager. Any duty of supervision or review of the acts, omissions or overall performance of each Investment Manager shall be the exclusive responsibility of the Company, and the Trustee shall have no duty to review any securities or other assets purchased by an Investment Manager, or to make suggestions to an Investment Manager or to the Company with respect to the exercise or nonexercise of any power by an Investment Manager. Notwithstanding the foregoing, except in connection with the requirement that investments be in Investment-Grade Securities, the Trustee shall review all transactions of which it is notified by an Investment Manager to determine if such transactions are in conformance with the permitted investments as set forth in Exhibit A, and if they are not, to so notify the Company and the Investment Manager.

8.03 Trustee's General Investment Powers.

(a) The Trustee recognizes the authority of an Investment Manager to manage, invest, and reinvest the assets in an Investment Account pursuant to an investment manager agreement and as provided in this Article VIII, and the Trustee agrees to cooperate with any Investment Manager as deemed necessary to accomplish these tasks. Notwithstanding the foregoing, to the extent that the assets of the Master Trust have not been segregated into an

Investment Account to be invested by an Investment Manager, the Trustee may agree to conduct the day-to-day investment management of such assets in accordance with the written general investment instructions of the Company and, as to the Qualified Fund, in accordance with the limitations set forth in Applicable Tax Law.

(b) Nothing in this Agreement shall restrict the Trustee, in its individual capacity, from acting as an agent for, providing banking, investment advisory, investment management and other services to, and generally engaging in any kind of business with others (including, without limiting the generality of the foregoing, issuers of securities, of money market instruments or of other property purchased by or on behalf of the Master Trust or any of the Funds) to the same extent as if it was not the Trustee hereunder. Nothing in this Agreement shall in any way be deemed to restrict the right of the Trustee, in its individual capacity, to perform services for any other person or entity, and the performance of such services for others will not be deemed to violate or give rise to any duty or obligation to the Company or the Master Trust not specifically undertaken by the Trustee hereunder. Nothing in this Agreement shall limit or restrict the Trustee, in its individual capacity, or any of its officers, affiliates or employees from buying, selling or trading in any securities for its or their own accounts. The Trustee, in its individual capacity, its officers, employees or affiliates, and its other clients may at any time have, acquire, increase, decrease or dispose of positions in investments which are at the same time being acquired or disposed of for the account of the Master Trust or one or more of the Funds. The Trustee shall have no obligation to acquire for the Master Trust or any of the Funds a position in any property which it acquires in its individual capacity, or which its officers, employees or affiliates may acquire for its or their own accounts or for the account of a client. The Trustee may invest in any collective, common or pooled trust fund operated or maintained exclusively for the commingling and collective investment of monies or other assets including any such fund operated or maintained by the Trustee or an affiliate. The Company expressly understands and agrees that any such collective fund may provide for the lending of its securities by the collective fund trustee and that such collective fund trustee will receive compensation for the lending of securities that is separate from any compensation of the Trustee hereunder, or any compensation of the collective fund trustee for the management of such collective fund. The Trustee is authorized to invest in a collective fund which invests in Mellon Financial Corporation stock in accordance with the terms and conditions of the Department of Labor Prohibited Transaction Exemption 95-56 (the "Exemption") granted to the Trustee and its affiliates and to use a cross-trading program in accordance with the Exemption. The Company acknowledges receipt of the notice entitled "Cross-Trading Information", a copy of which is attached to this Agreement as Exhibit C. The Trustee may purchase, enter, sell, hold, and generally deal in any manner in and with contracts for the immediate or future delivery of financial instruments of any issuer or of any other property; to grant, purchase, sell, exercise, permit to expire, permit to be held in escrow, and otherwise to acquire, dispose of, hold and generally deal in any manner with and in all forms of option in any combination.

ARTICLE IX.

MISCELLANEOUS

9.01 Headings. The section headings set forth in this Agreement and the Table of Contents are inserted for convenience of reference only and shall be disregarded in the construction or interpretation of any of the provisions of this Agreement.

9.02 Interpretation. When a reference is made in this Agreement to an Article, Section, Schedule or Exhibit, such reference shall be to an Article or Section of, or Schedule or Exhibit to, this Agreement unless otherwise indicated. Any word contained in the text of this Agreement shall be read as the singular or plural and as the masculine, feminine, or neuter as may be applicable or permissible in the particular context. Unless otherwise specifically stated, the word "person" shall be taken to mean and include an individual, partnership, association, trust, company or corporation.

9.03 Severability of Provisions. If any provision of this Agreement or its application to any person or entity or in any circumstances shall be invalid and unenforceable, the application of such provision to persons and in circumstances other than those as to which it is invalid or unenforceable and the other provisions of this Agreement, shall not be affected by such invalidity or unenforceability.

9.04 Delivery of Notices Under Agreement. Any notice, direction or instruction required by this Agreement to be given to the Company or the Trustee shall be deemed to have been properly given when delivered by personal service, mailed, postage prepaid, by registered or certified mail, to the person to be notified as set forth below:

If to the Company:

Entergy Nuclear Vermont Yankee, LLC
c/o Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601
Fax No.: 914-272-3205
Attention: Chief Operating Officer

with a copy to:

Entergy Nuclear, Inc.
P.O. Box 31995
Jackson, MS 39286-1995
Attention: Assistant Secretary

If to the Trustee:

Mellon Bank, N.A.
500 Grant Street, Room 1320

Pittsburgh, PA 15258
Attention: Mr. Glen Metzger

The Company or the Trustee may change the above address by delivering notice thereof in writing to the other party.

9.05 Alterations and Amendments.

(a) The Trustee and the Company understand and agree that modifications or amendments may be required to this Agreement, and to the exhibits hereto, from time to time to effectuate the purpose of the Master Trust and to comply with Applicable Law, Applicable Tax Law, any Order, any changes in tax laws, Regulations or rulings (whether published or private) of the Service and any similar state taxing authority, and any other changes in the laws applicable to the Company or the Station. This Agreement, and the exhibits hereto may be altered or amended to the extent necessary or advisable to effectuate such purposes or to comply with such Applicable Law, Applicable Tax Law, Order or changes.

(b) Except as provided in clause (a) and (d) of this Section 9.05, this Agreement, and the exhibits hereto, may be amended, modified, or altered for any purpose requested by the Company so long as such amendment, modification, or alteration does not affect the use of the assets of any Fund to pay the costs of Decommissioning. Notwithstanding the foregoing, this Agreement shall not be amended so as to violate Code Section 468A or the Regulations thereunder, as amended from time to time.

(c) Any alteration or amendment to, or modification of, this Agreement or an exhibit hereto must be in writing and signed by the Company and the Trustee. The Trustee shall execute any such alteration, modification, or amendment required to be executed by it and shall accept and be governed by any amended, modified or altered schedule delivered to it but shall have no duty to inquire or make any investigation as to whether any amendment, modification or alteration is consistent with this Section 9.05.

(d) Notwithstanding anything in this Section 9.05 to the contrary, this Agreement cannot be amended in any material respect without (30) days' prior written notice to the NRR Director; provided, however, that if the Company receives prior written notice of objection from either the NRR Director or the Nuclear Safety Director, as appropriate, no such material amendment, modification or alteration shall be made.

(e) Notwithstanding anything in this Section 9.05 to the contrary, no amendment, modification or alteration of this Agreement shall become effective unless the Company shall have provided at least thirty (30) days' notice to the State of Vermont Public Service Board and the State of Vermont Department of Public Service (or their successors, if any) of its intent to amend, modify or alter this Agreement. In addition, the Company shall not amend, modify or alter any of the terms of Sections 5.01 and 5.02 without the prior approval of the State of Vermont Public Service Board.

9.06 Successors and Assigns. Subject to the provisions of Sections 2.09 and 6.01, this Agreement shall be binding upon and inure to the benefit of the Company, the Trustee, and their respective successors, assigns, personal representatives, executors and heirs.

9.07 Governing Law; Jurisdiction; Certain Waivers.

(a) This Agreement, the Master Trust and all questions pertaining to their validity, construction, and administration shall be interpreted, construed and determined in accordance with the internal substantive laws (and not the choice of law rules) of the Commonwealth of Pennsylvania to the extent not superseded by federal law. All actions and proceedings brought by the Trustee relating to or arising from, directly or indirectly, this Agreement may be litigated in courts located in the Commonwealth of Pennsylvania and the Company hereby submits to the jurisdiction of such courts. The Company and the Trustee hereby waive the right to a trial by jury in any action or proceeding brought hereunder.

(b) To the extent that, in any jurisdiction, the Company has or hereafter may acquire, or is or hereafter may be entitled to claim, for itself or its assets, immunity (sovereign or otherwise) from suit, execution, attachment (before or after judgment) or any other legal process brought by or on behalf of the Trustee and arising with respect to this Master Trust or the Trustee's functions hereunder, the Company irrevocably agrees not to claim, and hereby waives, such immunity.

9.08 Accounting Year. The Master Trust shall operate on an accounting year that coincides with the calendar year, January 1 through December 31.

9.09 Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument.

9.10 Decommissioning Liability. Nothing in Agreement or in any supplement to this Agreement is intended to impose any responsibility on the Trustee for overseeing or paying the cost of the Decommissioning of the Station, other than the disbursement of funds in accordance with Article IV.

9.11 Limitation on Liability of Trustee. Notwithstanding anything in this Agreement to the contrary, the Trustee shall not be responsible or liable for its failure to perform under this Agreement or for any losses to the Funds resulting from (a) any event beyond the reasonable control of the Trustee, its agents or subcustodians, including but not limited to nationalization, strikes, expropriation, devaluation, seizure, or similar action by any Governmental Authority, de facto or de jure, or (b) enactment, promulgation, imposition or enforcement by any such Governmental Authority of currency restrictions, exchange controls, levels or other charges affecting the Funds' property, or (c) the breakdown, failure or malfunction of any utilities or telecommunications systems, or (d) any order or regulation of any banking or securities industry including changes in the market rules and market conditions affecting the execution or settlement of transactions, or (e) acts of war, terrorism, insurrection or revolution, or (f) acts of God; or any other similar event. This Section 9.11 shall survive the termination of this Agreement.

9.12 Representation. The Company and the Trustee hereby each represent and warrant to the other that it has full authority to enter into this Agreement upon the terms and conditions hereof and that the individuals executing this Agreement on its behalf have the requisite authority to bind the Company and the Trustee to this Agreement.

IN WITNESS WHEREOF, the Company and the Trustee have set their hands and seals to this Agreement as of the day and year first above written.

ENTERGY NUCLEAR VERMONT YANKEE, LLC

By: _____
Name: Steven C. McNeal
Title: Vice President and Treasurer

Attest: _____
Name: Michael A. Caruso
Title: Assistant Treasurer

MELLON BANK, N.A., as Trustee

By: _____
Name:
Title: Paul R. Kraus, Vice President
Mellon Bank, N.A.

Attest: _____
Name: Glen R. Metzger
Title: AVP

STATE OF LOUISIANA)

) ss:

PARISH OF ORLEANS)

I, Paul J. Day, a Notary Public in and for the aforesaid jurisdiction, do hereby certify that Steven C. McNeal and Michael A. Caruso, who are personally known to me to be the persons who executed the foregoing Entergy Nuclear Vermont Yankee, LLC Master Decommissioning Trust Agreement, personally appeared before me in the aforesaid jurisdiction, and as Vice President and Treasurer and Assistant Treasurer of ENTERGY NUCLEAR VERMONT YANKEE, LLC, and by virtue of the power and authority vested in them, acknowledged the same to be the act and deed of ENTERGY NUCLEAR VERMONT YANKEE, LLC and they executed the same as such.

Given under my hand and seal this 29th day of July, 2002.

Notary Public
State of Louisiana

My commission is for life

COMMONWEALTH OF PENNSYLVANIA)
) ss:
COUNTY OF Allegheny)

I, Julie Ann Mosco, a Notary Public in and for the aforesaid jurisdiction, do hereby certify that Paul R. Kraus and Glen R. Metzger, who are personally known to me to be the persons who executed the foregoing Entergy Nuclear Vermont Yankee, LLC Master Decommissioning Trust Agreement, personally appeared before me in the aforesaid jurisdiction, and as Vice President and Asst. Vice President of MELLON BANK, N.A., and by virtue of the power and authority vested in them, acknowledged the same to be the act and deed MELLON BANK, N.A., and they executed the same as such.

Given under my hand and seal this 30th day of July, 2002.

Julie Ann Mosco
Notary Public
Commonwealth of Pennsylvania

My commission expires Oct 13, 2003

Notarial Seal
Julie Ann Mosco, Notary Public
Pittsburgh, Allegheny County
My Commission Expires Oct. 13, 2003
Member, Pennsylvania Association of Notaries

EXHIBIT A

PERMITTED INVESTMENTS

Permitted investments for both the Qualified Fund and the Nonqualified Fund(s) shall be any investments in Investment-Grade Securities permitted by Applicable Law; provided that, subject to clarification, if any, by the NRC, investments in securities settled or safekept outside of the United States shall be prohibited and provided further that investments in the securities or other obligations of Entergy Corporation and its affiliates or subsidiaries, successors or assigns shall be prohibited. In addition, except for investments tied to market indexes or other non-nuclear sector mutual funds, investments in any entity owning one or more nuclear power plants are prohibited. Permitted investments include investments tied to market indexes, mutual funds or common trust funds which may hold securities issued by Entergy Corporation, its affiliates and subsidiaries.

EXHIBIT B

DECOMMISSIONING CERTIFICATE NO.

The undersigned Authorized Representative of Entergy Nuclear Vermont Yankee, LLC, a Delaware limited liability company (the "Company"), being duly authorized and empowered to execute and deliver this Decommissioning Certificate, hereby certifies that payments in the amounts and to the payees listed below are for obligations duly incurred by the Company for the Decommissioning of the Vermont Yankee Nuclear Power Station under Applicable Law or for Spent Fuel Costs or Site Restoration Costs or Docket 6545 Decommissioning Activities, to the extent permitted by the Master Trust, and hereby directs the Trustee of the Entergy Nuclear Vermont Yankee Master Decommissioning Trust, pursuant to Article IV of the Master Trust Agreement to pay to each payee listed, including the Company if so listed, (Payees) in Exhibit 1 hereto, the amounts set forth therein, and certifies that the payments requested are proper expenditures of the Master Trust.

Accordingly, request is hereby made that the Trustee provide for the withdrawal of $_____ from the (Qualified/Nonqualified) Fund [and Subaccount(s)] in order to permit payment of such sum to be made to the Payees. You are further requested to disburse such sum, once withdrawn, directly to such Payees in the following manner: [CHECK/WIRE TRANSFER/_____] on or before _____, 20__.

ENTERGY NUCLEAR VERMONT YANKEE, LLC

By:_____
Name:
Authorized Representative

EXHIBIT C

CROSS-TRADING INFORMATION

As part of the cross-trading program covered by the Exemption for the Trustee and its affiliates, the Trustee is to provide to each affected Trust the following information:

I. The existence of the cross-trading program

The Trustee has developed and intends to utilize, wherever practicable, a cross-trading program for Indexed Accounts and Large Accounts as those terms are defined in the Exemption.

II. The "triggering events" creating cross-trade opportunities

In accordance with the exemption three "triggering events" may create opportunities for cross-trading transactions. They are generally the following (see the Exemption for more information):

A. A change in the composition or weighting of the index by the independent organization creating and maintaining the index;

B. A change in the overall level of investment in an Indexed Account as a result of investments and withdrawals of the account's opening date, where the Account is a bank collective fund, or on any relevant date for non-bank collective funds; provided, however, a change in an Indexed Account resulting from investments or withdrawals of assets of the Trustee's own plans (other than the Trustee's defined contribution plans under which participants may direct among various investment options, including Indexed Accounts) are excluded as a "triggering event"; or

C. A recorded declaration by the Trustee that an accumulation of cash in an Indexed Account attributable to interest or dividends on, and/or tender offers for, portfolio securities equal to not more than 0.5% of the Account's total value has occurred.

III. The pricing mechanism utilized for securities purchased or sold

Securities will be valued at the current market value for the securities on the date of the crossing transaction.

Equity securities – the current market value of the equity security will be the closing price on the day of trading as determined by an independent pricing service; unless the security was added to or deleted from an index after the close of trading, in which case the price will be the opening price for that security on the next business day after the announcement of the addition or deletion.

Debt securities – the current market value of the debt security will be the price determined by the Trustee as of the close of the day of trading according to the Securities and Exchange Commission's Rule 17a-7(b)(4) under the Investment Company Act of 1940.

Debt securities that are not reported securities or traded on an exchange will be valued based on an average of the highest current independent bids and the lowest current independent offers on the day of cross-trading. The Trustee will use reasonable inquiry to obtain such prices from at least three independent sources that are brokers or market makers. If there are fewer than three independent sources to price a certain debt security, the closing price quotations will be obtained from all available sources.

IV. The allocation methods

Direct cross-trade opportunities will be allocated among potential buyers or sellers of debt or equity securities on a prorata basis. With respect to equity securities, please note the Trustee imposes a trivial share constraint to reduce excessive custody ticket charges to participating accounts.

V. Other procedures implemented by the Trustee for its cross-trading practices

The Trustee has developed certain internal operational procedures for cross-trading debt and equity securities. These procedures are available upon request.

EXHIBIT D

DECOMMISSIONING REQUIREMENTS

Upon Completion of Decommissioning (as defined below) of the Station, any Excess Funds remaining in the decommissioning trust funds transferred from VYNPC or the VYNPC Trust Funds pursuant to the Purchase and Sale Agreement, including any gains, losses or fees on the trust funds while held in a fund hereunder ("transferred trust funds") shall be distributed in accordance with the terms hereof. The Completion of Decommissioning is defined for the purposes of this Exhibit D as plant dismantlement and decontamination to NRC standards plus the completion of additional activities agreed to or imposed in the course of Docket No. 6545 before the Vermont Public Service Commission or pursuant to any subsequent law or proceeding, but excluding spent fuel management and any site restoration ("Docket 6545 Decommissioning Activities"). Completion of Decommissioning shall be deemed to have occurred for purposes hereof notwithstanding that the Company may choose to re-use the Site, and portions of existing structures, systems and components, and that spent fuel is not removed from the Site. Site restoration shall mean that, once the Site is no longer used for nuclear purposes or non-nuclear commercial, industrial or other similar uses consistent with the orderly development of the property, the Site will be restored by removal of all structures and, if appropriate, regrading and reseeding the land.

Return of Excess Funds in accordance with the second following paragraph, shall occur following the earliest of (i) the date Completion of Decommissioning has occurred and the Company has satisfied all of its responsibilities for spent fuel management and site restoration or (ii) the date on which Completion of Decommissioning occurs and any of the following occur: (x) settlement between the Company and the US Department of Energy ("DOE") with respect to spent fuel management responsibilities for the Station, (y) final resolution of litigation by the Company against DOE with respect to spent fuel management responsibilities for the Station, or (z) satisfactory performance by DOE of its spent fuel responsibility with respect to the Station.

Excess Funds shall mean any funds remaining in the transferred trust funds following the Completion of Decommissioning, less those funds necessary for management of spent nuclear fuel (including reasonable contingencies for delays in removal of the spent fuel from the Site, or cost overruns associated with the storage or removal of the spent fuel) (the "Spent Fuel Costs") and site restoration costs not otherwise payable by the federal government in accordance with (x), (y) or (z) above (the "Site Restoration Costs"). Excess Funds shall not include any amounts contributed by the Company after the date of this Agreement pursuant to Section 3.01, or any amounts of net income in respect of such amounts, all of which amounts are to be distributed to the Company upon liquidation of the assets of the Master Trust.

Subject to the assignment provisions of Section 5.03 of the Master Trust, the Excess Funds remaining shall be paid to VYNPC for the benefit of electric consumers in pro rata shares in proportion to the stated ownership percentage of the Sponsors set forth on Exhibit E. In the event VYNPC shall have ceased to exist at the time Excess Funds are to be distributed as provided above, the Company shall notify the State of Vermont Public Service Department and the state public utility commission or comparable regulatory body, that either presently exercises or formerly exercised rate regulation authority over each Sponsor which is entitled to a distribution, that the pro rata share of Excess Funds is available. Upon compliance with the instructions of each such state public utility commission or comparable regulatory body, the Company and the Trustee holding such funds shall have no further obligation with regard to the Excess Funds or their distribution.

EXHIBIT E

Central Vermont Public Service Corporation	35.0%
Green Mountain Power Corporation	20.0%
New England Power Company	22.5%
The Connecticut Light and Power Company	9.5%
Central Maine Power Company	4.0%
Public Service Company of New Hampshire	4.0%
Western Massachusetts Electric Company	2.5%
Cambridge Electric Light Company	2.5%

EXHIBIT F

Mellon Bank, N.A.
500 grant Street, Room 1320
Pittsburgh, PA 15258
Attn: Mr. Glen Metzger

Dear Mr. Metzger:

Reference is made to the Entergy Nuclear Vermont Yankee, LLC Master Decommissioning Trust Agreement for Vermont Yankee Nuclear Power Station dated July __, 2002. Pursuant to Section 5.03 of such Master Trust, the undersigned hereby notifies you that it has irrevocably assigned its right to receive "Excess Funds" under the Master Trust to _____, its successors and assigns.

[Sponsor]

EXHIBIT 2

Petition of the State of Vermont, the Vermont Yankee Nuclear Power Corporation, and Green Mountain Power Corporation for Review of Entergy Nuclear Operation, Inc.'s Planned Use of the Vermont Yankee Nuclear Decommissioning Trust Fund

State of Vermont's PSDAR Comments (March 6, 2015)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of:

Entergy Nuclear Operations, Inc., Vermont Yankee Nuclear Power Station Post-Shutdown Decommissioning Activities Report

Docket No. NRC-2015-0004
Docket No. 50-271

Comments of the State of Vermont

Submitted: March 6, 2015

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Radiological and Toxicological Sciences Program Chief
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Burlington, VT 05401

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INTRODUCTION

The State of Vermont and its citizens have a direct and ongoing interest in all aspects of the decommissioning, spent fuel management, and site restoration of the nuclear power plant that lies within the State's borders. The Vermont Yankee Nuclear Power Station (Vermont Yankee) is in Vernon, Vermont, on the banks of the Connecticut River. After 42 years of generating power, Vermont Yankee has now ceased operations. On December 19, 2014, Entergy Nuclear Operations, Inc. (Entergy) submitted its Post Shutdown Decommissioning Activities Report (PSDAR), including a site-specific Decommissioning Cost Estimate (DCE) (ADAMS Accession No. ML14357A110). On that same day, Entergy submitted several other filings, including an Updated Irradiated Fuel Management Plan (ADAMS Accession No. ML14358A251) and an Updated Decommissioning Funding Status Report (ADAMS Accession No. ML14358A250). On January 6, 2015, Entergy filed an exemptions request to allow it to access the Nuclear Decommissioning Trust (NDT) Fund for spent fuel management expenses (ADAMS Accession No. ML15013A171).

The State of Vermont objects to these filings. While Entergy has previously worked with the State toward mutually agreeable solutions on a number of matters, including an omnibus Settlement Agreement in December 2013 that resolved many legal and policy disputes between the parties, Entergy's latest round of filings were made with full knowledge that the State objected to many aspects of these filings.

The State respectfully requests that the Nuclear Regulatory Commission (NRC) act immediately to force Entergy to address the many concerns the State raises in its Comments below and in the attachments to these Comments.

I. The NRC Should Require Entergy to Address the State's Concerns—Expressed Today and in Comments the State Previously Provided to Entergy—and Hold a Full Adjudicatory Hearing on Whether Entergy Can Proceed with Its Decommissioning Plans

In December 2013, after Entergy had announced its plans to shut down by the end of 2014, the State of Vermont and Entergy signed an omnibus Settlement Agreement that resolved many legal and policy disputes between the parties. Entergy has attached that Settlement Agreement to its recently submitted PSDAR. In paragraph 6 of the Settlement Agreement, Entergy agreed to provide the State with a comprehensive site assessment study. Paragraph 6 then states that Entergy "shall review the results of the study" with the Department of Public Service, the Agency of Natural Resources, and the Department of Health, and Entergy "shall consider any comments provided by those parties for inclusion in the PSDAR." To ensure that this occurred, the Settlement Agreement imposed a minimum period of "sixty (60) days after completing the site assessment study" before Entergy could submit its PSDAR. The clear intent of this paragraph was that a meaningful dialogue would occur between Entergy and the State during the 60-day waiting period when Entergy was required to review and consider the State's comments. Unfortunately, Entergy effectively ignored the substantive comments provided by three separate State agencies during this 60-day time period.

On December 13, 2014, within the required 60-day waiting period, Vermont Department of Public Service Commissioner Christopher Recchia sent Entergy detailed comments from three separate State agencies, including 190 itemized comments explicitly requesting a response or additional information from Entergy to better understand Entergy's post-closure plans and thus allow the agencies to determine whether Entergy's post-closure activities will comply with applicable law.

Despite its contractual obligation to "consider" the State's comments before submitting its PSDAR (Settlement Agreement ¶ 6), Entergy appears to have not done so. The PSDAR that Entergy submitted to the NRC on December 19, 2014 contains an internal date on every page of "December 2, 2014"—which is 11 days *before* the State provided Entergy with the comments Entergy was required to consider.

The entirety of the State's December 13, 2014 submittal is attached—and expressly incorporated into—these Comments. *See* Exhibit 1. Entergy's site assessment study and the draft filings it provided to the State in October 2014 are also attached. *See* Exhibit 2. Although Entergy—on February 28, 2015, more than two months after it already submitted the PSDAR—provided a limited response to some of the comments the State submitted, its response was inadequate and did not provide the State agencies with the information they requested. *See* Exhibit 3. In its February 28, 2015 letter, Entergy responded to only a portion of the State's comments, and although Entergy stated that it was responding to all of the State's comments on the PSDAR, it did not do that. It did not address the State's

comments on draft documents like the TLG Maximum SAFSTOR Cost Estimate, even though that document was incorporated (without any apparent changes) into Appendix C of the Decommissioning Cost Estimate that was included with Entergy's PSDAR.[1] The NRC should require Entergy to provide a detailed response to all of the State's December 13, 2014 comments before the NRC allows Entergy to proceed with its decommissioning plans.

The NRC should also require Entergy to respond to the State's Comments provided today before the NRC allows Entergy to proceed with its decommissioning plans. If there is to be any meaning given to the State's rights under NRC regulations to comment on Entergy's proposed PSDAR, the NRC should require Entergy to respond to the State's concerns.

In these circumstances, the NRC can—and should—"find[] that a hearing is required in the public interest" and provide a full adjudicatory hearing. 10 C.F.R. § 2.104. Many of Entergy's specific requests for exemptions, License Amendment Requests, and its December 19, 2014 filings, including the PSDAR and Decommissioning Cost Estimate, are interrelated, amend the terms of their license, and should be addressed comprehensively in an adjudicatory hearing. As explained below, Entergy's PSDAR, Decommissioning Cost Estimate, and related filings raise a number of previously unaddressed issues that greatly affect the public interest. This is particularly important in light of the piecemeal approach that Entergy has

[1] Further, even for the State comments that Entergy responded to, many of its responses were simply cross-references that were in fact unresponsive to the issues raised by the State.

taken to its post-closure-related filings with the NRC over the last year. The public interest requires a full adjudicatory hearing to address the concerns expressed in these Comments.

II. The NRC Should Require the PSDAR, Decommissioning Cost Estimate, and Related Filings to Provide Reasonable Assurance that Adequate Funds Will Be Available for Decommissioning

NRC regulations do not allow Entergy to take any decommissioning actions that would "[r]esult in there no longer being reasonable assurance that adequate funds will be available for decommissioning." 10 C.F.R. § 50.82(6)(iii). Entergy's PSDAR, Decommissioning Cost Estimate, and other December 19, 2014 filings, including updates to its Irradiated Fuel Management Plan and Decommissioning Funding Status Report, make clear that Entergy intends to access the NDT Fund for non-decommissioning uses, including spent fuel management expenses. Entergy's January 6, 2015 exemption request explicitly seeks permission to use the NDT Fund for spent fuel management expenses. The NRC should reject that request and take all other necessary actions to ensure that each of Entergy's withdrawals from the NDT Fund complies with applicable NRC regulations and with the Master Trust Agreement that Entergy signed when it bought Vermont Yankee. *See* Exhibit 4.

A. To Ensure Adequate Funding for Decommissioning, the NRC Should Require Entergy to Revise Its Cost Estimates

Entergy's Decommissioning Cost Estimate includes a number of assumptions that undermine Entergy's claim of reasonable assurances that it will meet its legal obligation to decommission Vermont Yankee. The NRC should require Entergy to

revise its cost estimates to address the risk that some of these assumptions may prove incorrect. In evaluating any claim that the NDT Fund contains "excess" funds—as Entergy asserts in its December 19, 2014 filings and its January 6, 2015 exemptions request—the NRC must take into account recognized contingencies that would increase the total cost for decommissioning, spent fuel management, and site restoration.

It is no great insight that Entergy's financial analysis and its claim of "excess" funds are based upon many assumptions that may not come to be. Indeed, the only significant change between the draft PSDAR that Entergy provided the State in October 2014 and the later version that Entergy submitted to the NRC appears to be the addition of a regulatory commitment "to provide a total in parental assurance of up to 10% of the remaining trust fund balance or $40 million, whichever is less." PSDAR List of Regulatory Commitments. This addition to the PSDAR is telling because it is triggered "[i]n the event that additional financial assurance beyond the amounts contained in the remaining trust fund . . . is required." *Id.* In other words, Entergy concedes—as it must—that the trust fund might turn out to be inadequate, thus triggering "the event that additional financial assurance" is needed. *Id.* But at that point, the NRC regulations have failed to assure adequate funding for decommissioning.

At that point, where "additional financial assurance . . . is required," Entergy should not place a *limit* on how much assurance it will provide, much less a limit that decreases the lower the fund balance goes, as occurs with Entergy's

"commitment" of $40 million or "10% of the remaining trust fund balance . . . whichever is less." *Id.* Depending on the circumstances (e.g., market decline), the amount should be *increased* the lower the fund balance goes. Yet Entergy's parental assurance "commitment" literally goes to $0 once the NDT Fund goes to $0.

In other words, at the very moment when a parental guarantee may well be needed, it no longer exists.

The lack of a true parental guarantee is not a small matter, particularly given that Vermont Yankee is one of the first merchant generators to undergo the decommissioning process. As the NRC heard from numerous members of the public during the public hearing on February 19, 2015, Vermonters are greatly concerned about whether the corporation of Entergy will exist decades from now when Entergy must begin radiological decontamination and dismantlement. If at any point Entergy fails to pay for all of the radiological decommissioning and spent fuel management that is needed at the site, the State's concern is that uncovered costs may ultimately fall upon the citizens of Vermont. The NRC has a legal duty to ensure that this does not occur. At the February 19, 2015 hearing, NRC officials assured Vermonters that Entergy would not be allowed to walk away from its legal obligations. The NRC made similar reassurances in a later statement to the press:

> "We're not going to just let them walk away. Even if it involved working with the Department of Justice to go after the parent company," said NRC spokesperson Neil Sheehan. "Even if the company dissolves, they still have assets. Entergy owns a

> transmission company . . . and they own other nuclear power plants other than this."

VTDigger.org, *Residents Seek Assurance from Feds on Vermont Yankee Decommissioing* (Feb. 22, 2015), http://vtdigger.org/2015/02/22/residents-seek-assurance-feds-vermont-yankee-decommissioning/.

While the State of Vermont appreciates these reassurances, such statements are not a substitute for the NRC's legal obligation to uphold regulatory requirements that ensure that Entergy will have adequate funds to decommission Vermont Yankee. This is especially important in light of the fact that Entergy has already publicly expressed its view that, although it expects the fund to have enough money to decommission the plant, Entergy expects litigation between the State of Vermont and the company over any shortfall. *See* VTDigger.org, *Entergy Makes First Withdrawal from Decommissioning Fund*, http://vtdigger.org/2015/02/11/entergy-makes-first-withdrawal-decommissioning-fund/ ("If the fund comes up short, [the Entergy representative] said there would be litigation between the state and the company as to how to pay for it.").

If such a lawsuit is ever brought by the State of Vermont, by the NRC working with the Department of Justice, or by all three governmental agencies working cooperatively, everyone will look back at the decisions the NRC makes (or fails to make) over the next few months and wonder what went wrong. And if such lawsuits fail, or succeed in a pyrrhic way because even the parent company is insolvent at that point, the State of Vermont could be left with a radiologically

contaminated site and spent nuclear fuel within its borders. The State asks the NRC to do everything within its power now to ensure that this does not occur.

In particular, as noted in more detail below, there are several concrete steps that the NRC can—and should—take now to ensure adequate funding for decommissioning.

i. The NRC should require Entergy to do additional radiological and non-radiological site characterization. Although Entergy chose to submit its PSDAR more than two years before this filing is due, Entergy has until December 2016 to submit its PSDAR. The NRC should require Entergy to use this time to engage in a more thorough radiological and non-radiological site characterization. This is especially important in light of the recent discovery of radionuclides like strontium-90 in locations where those contaminants have not previously been discovered.

The characterization of the site (radiological and non-radiological) has not yet occurred. Rather, Entergy has elected to wait decades until nearly the end of the allowed SAFSTOR period before engaging in this characterization. The decision to delay characterization makes it incredibly difficult for the NRC and the State of Vermont, including the Department of Health, the Agency of Natural Resources, and the Department of Public Service, to evaluate the PSDAR. The decision to delay characterization also calls into question all of the cost estimates that Entergy has provided in its PSDAR and related filings. Without a full site characterization,

there is no way to determine what it will ultimately cost to perform radiological decommissioning, spent fuel management, and site restoration.

Overall, the PSDAR is written with inadequate detail for the Department of Health to be confident that the public health and the environment are protected during any of the five plant status types—transition from operations, SAFSTOR dormancy, preparations for dismantling and decontamination, dismantling and decontamination, and site restoration. For instance, the PSDAR does not adequately estimate the number and type of personnel onsite to accomplish work, especially: wet spent fuel operations; fire protection; monitoring of structure, system, and component integrity; and radiological environmental monitoring.[2] The PSDAR also fails to identify what external resources (local, state, or federal) Entergy is relying on to protect the health and safety of the public during the various phases of post-shutdown activities. Without adequate information on these and other matters, the Department of Health cannot be certain that public health and safety will be served to the degree needed.

The PSDAR also does not describe the depth and breadth of the planned radiological environmental monitoring program. Doing so is important because of the large volume of radioactive materials generated by plant operations and to be maintained within the structures, systems, and components during each phase of

[2] It is unclear why the plant staffing is not adequately identified, given that such information is routinely included in supplemental data developed by TLG in performing decommissioning costs estimates. The PSDAR should provide the staffing plan for each phase of post-shutdown activities and describe how the plant activities and programs are expected to change over the phases of post-shutdown activities.

decommissioning. At multi-unit sites like Millstone 1 and Indian Point 1, there is a robust radiological environmental monitoring program that covers the unit that is in SAFSTOR. The PSDAR provides no indication that robust radiological environmental monitoring is planned or will be executed at Vermont Yankee.

The PSDAR also inadequately describes radiological emergency preparedness during decommissioning. The basis of emergency planning ignores hostile action based scenarios that could destroy key structures storing radioactive materials or result in a zirconium fuel cladding fire while fuel remains in the spent fuel pool.

The Department of Health has concerns for public health during the time to prepare for SAFSTOR and when spent fuel is transferred from the spent fuel pool to dry casks. Plans are inadequately described in the PSDAR to assure the Department of Health that accidents and releases that may affect the environment and public health can be managed by Entergy with a dramatically reduced work force. The Department of Health is concerned as well about radioactive material releases during the period of decontamination and dismantling just before license termination. Concerns arise due to the complex and unique nature of the radiological industrial and transportation activities to occur during decontamination and dismantling.

Throughout the SAFSTOR years, large quantities of radioactive materials in solid and liquid form will be left in storage onsite where leaks have occurred in the past, and may occur again. In addition to radioactive material storage, inventory management and monitoring, and response to leaks into the environment, there is a

serious concern about fire protection for the structures, systems, and components containing radioactive materials in storage. Capabilities to monitor for and respond to these kinds of radiological emergencies are not adequately addressed in the PSDAR.

The inadequacy of the PSDAR's site characterization violates directly applicable NRC regulatory guidance. For instance, the NRC has directed that "[t]he cost of remediating known environmental contamination should be included (soil, groundwater, surface water, etc.)" in the PSDAR. NRC Regulatory Guide 1.185 at 8. Entergy's PSDAR does not meet this requirement because such costs cannot be estimated without more detailed site characterization.

One clear omission from the PSDAR (and the Site Assessment Study that Entergy did before completing the PSDAR) is the recent discovery of strontium-90 in locations where that contaminant had not previously been discovered. *See* Vermont Department of Health Communications Office, *Strontium-90 Detected in Ground Water Monitoring Wells at Vermont Yankee* (Feb. 9, 2015), http://healthvermont.gov/news/2015/020915_vy_strontium90.aspx. The Department of Health also found cesium-137, strontium-90, and other long half-life radioactive materials in soil samples taken in 2010. *See* http://healthvermont.gov/enviro/rad/yankee/laboratory_testing.aspx.
The Department of Health's publication of results regarding strontium-90 in groundwater wells occurred *after* Entergy submitted its PSDAR. At this point, we already know of at least one way in which the Decommissioning Cost Estimate is

incorrect—namely, the analysis underlying the estimated amount of soil removal that will be needed surrounding the advanced off-gas (AOG) building. On that issue, Entergy has stated the following:

> It should be noted that no additional remediation of the soil in the vicinity of the AOG building was included, based upon the earlier remediation (soil removal) performed by Entergy VY and the findings from the GZA groundwater investigation that *only tritium had migrated into the groundwater*. Tritium is a low-energy beta emitter with a half-life of approximately 12.3 years, decaying to non-radioactive helium. As such, any residual sub-grade tritium is not expected to require any further remediation at the time of decommissioning in order to meet site release criteria.

Decommissioning Cost Estimate, § 3, page 12 (emphasis added; footnote omitted).

The Decommissioning Cost Estimate is clearly out-of-date and incorrect in its claim that "only tritium ha[s] migrated into the groundwater" in this area. *Id.* This new data on strontium-90 creates doubt regarding Entergy's claim in the PSDAR that previous excavation of the AOG leakage site eliminates the need to excavate deeper than three feet below grade. *See id.*; *see also id.* at § 3, page 13 (noting that foundations and building walls will only be removed "to a nominal depth of three feet below grade"). Many long-lived radionuclides are likely to be found in soils and groundwater far from the small excavation made to repair the leaks that likely allowed reactor condensate to enter into the site soils for many years. In addition, these same long-lived radionuclides are likely to be found in the structures, systems, and components left during SAFSTOR and then later decontaminated and dismantled.

At an absolute minimum, the recent discovery of strontium-90 requires further analysis by Entergy and revision of the PSDAR to take this into account.

This is an important issue because the presence of strontium-90 or other long-lived radionuclides could greatly increase the costs of decommissioning and site restoration. NRC regulatory guidance on the requirements of a PSDAR specifically directs that "[t]he cost of remediating known environmental contamination should be included (soil, groundwater, surface water, etc.)." NRC Regulatory Guide 1.185 at 8. Entergy's PSDAR does not meet this requirement.

Long half-life radioactive materials are to be expected to be found in soils at Vermont Yankee. These include 5,730-year half-life carbon-14, 100-year half-life nickel-63, 29-year half-life strontium-90, 30-year half-life cesium-137, 13.5-year half-life europium-152, and 12.3-year half-life hydrogen-3. *See* Abelquist, Eric W., *Decommissioning Health Physics, A Handbook for MARSSIM Users* (2d Ed. 2014). These radioactive materials and hard-to-detect radionuclides were found in the decommissioning of both Maine Yankee and Connecticut Yankee in addition to transuranics, radioisotopes of plutonium, curium, neptunium, and americium. *See* Letter from Thomas L. Williamson, Maine Yankee Director of Nuclear Safety and Regulatory Affairs to NRC (Jan. 16, 2002) (ADAMS ML020440651). Further, as the State pointed out to Entergy in the State's December 2014 comments, carbon-14 has been a major issue in the decommissioning of other sites such as Yankee Rowe and is expected to be a concern in the decommissioning of future sites such as San Onofre. Despite the State's explicit request, Entergy has not yet provided any

evaluations, analyses, or other bases for assuming that carbon-14 will not be of concern in decommissioning Vermont Yankee.

Conversations with Health Department staff in Maine and with Environmental Conservation Department staff in Connecticut indicate that decommissioning is likely to reveal unanticipated radioactive sources to be remediated. These included pockets of highly contaminated groundwater dammed up by existing structures at Maine Yankee and a 25-foot-deep 225-foot-long excavation of soil around the reactor water storage tank at Connecticut Yankee. These kinds of potential situations are not adequately accounted for in the PSDAR. The PSDAR provides no assurance that the challenges of remediating these radioactive materials are factored into the planning and funding for the decommissioning of Vermont Yankee.

Even if strontium-90 had not recently been discovered, the PSDAR would be deficient given other evidence that soil contamination exists—and that remediation is thus likely to be needed—more than three feet below grade. The October 2014 Site Assessment Study documents the 1991 leak in the chemistry lab drain line, the AOG reactor condensate leaks confirmed in 2009, the piping leaks between the radioactive waste building and the AOG building discovered in 2010, and other spills and leaks of radioactive materials. The area between the Connecticut River, the intake structure, the discharge structure, and the reactor, turbine, and radioactive waste buildings may contain large volumes of contaminated soil requiring excavation to meet the derived concentration guideline levels for

appropriate remediation in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual. Significant leakage of reactor condensate and radioactive materials spills have occurred: in the AOG piping tunnel; in piping between the AOG building and the radioactive waste building; in and around the radioactive waste building; in the condensate storage tank courtyard; and between the Connecticut River and the reactor, radioactive waste, and AOG buildings. Entergy should sample soils at depths greater than three feet and be prepared to remove contaminated soil for off-site disposal when necessary. If Entergy fails to remediate beyond three feet below grade, contamination could reach the groundwater and river water down-gradient of these areas. The PSDAR provides no information to determine whether the human and financial resources required for all necessary soil removal and other remediation will be available at the time the remediation must occur.

Because an adequate characterization of the site (radiological and non-radiological) has not yet been done, Entergy cannot provide an accurate estimate of the scope of work and resulting costs for decommissioning. Indeed, Entergy's Decommissioning Cost Estimate explicitly recognizes (at page vii) that it "may not reflect the actual plan to decommission Vermont Yankee."

More generally speaking, the PSDAR does not provide sufficient information about the plans and resources to be dedicated to post-shutdown decommissioning activities at Vermont Yankee. The lack of sufficient information in the PSDAR leaves the Department of Health unable to ensure that Entergy will leave the site

in a safe condition that will not lead to adverse health effects. Entergy must provide the NRC and the State of Vermont with substantial additional information before the NRC allows Entergy to proceed with its decommissioning plans. This would provide, among other things, the needed assurance that there will be: (1) robust environmental surveillance of this site where large volumes of radioactive material as well as asbestos, lead, and other hazardous materials may be stored for fifty years or more before disposal[3]; (2) adequate staff and other resources to monitor the integrity of structures, systems, and components that contain these radiological and other hazardous materials; and (3) adequate plans and funding to assure the removal of soils and other sources of radioactive and other hazardous contamination that resulted from 42 years of operation in Vermont, including many years of long-unidentified leaks and identified radiological and non-radiological incidents.

As noted above, Entergy has until December 2016 to submit its PSDAR, and the NRC should require Entergy to use this time to engage in a more thorough site characterization so that it can make a more accurate Decommissioning Cost Estimate in connection with its PSDAR. At a minimum, if a more detailed site characterization is not going to occur until after the SAFSTOR period, then the

[3] The Department of Health has comprehensive regulations governing asbestos and lead. *See* Department of Health, *Vermont Regulations for Asbestos Control* (1995), http://healthvermont.gov/regs/asbestos_control_reg.pdf; Department of Health, *Vermont Regulations for Lead Control*, http://healthvermont.gov/regs/VRLCFINAL0912.pdf. The PSDAR does not explain what actions Entergy plans to take to ensure compliance with these regulations during post-closure operations.

NRC should require Entergy to plan for contingencies that may not be discovered until that time.

As it stands, although Entergy's Decommissioning Cost Estimate claims to take into account "contingencies," it in fact does not do so. Rather, Entergy puts forth an estimate "based on ideal conditions" and then factors in "a percentage contingency" based on "unforeseeable events that are *almost certain to occur* in decommissioning, based on industry experience." Decommissioning Cost Estimate at xii (emphasis added). Entergy goes on to note that "[c]ontingency funds . . . are *expected to be fully expended*." *Id.* (emphasis added); *see also id.* at § 3, page 4 ("Contingency funds are expected to be fully expended throughout the program."). If such funds are "expected to be fully expended," then—by definition—they are not really contingencies, but rather expenses that are expected to occur.

Actual contingencies—such as the discovery of strontium-90 and other radionuclides in places not previously thought to be contaminated—have historically led to enormous escalations in decommissioning costs. For instance, at Connecticut Yankee, the discovery of strontium-90—the very same radiological contaminant that was recently discovered in the groundwater at Vermont Yankee—led to an enormous decommissioning cost escalation during the radiological decontamination and dismantlement phase that Entergy intends to postpone until the end of its SAFSTOR period. Yet Entergy categorizes all of these types of potential expenses as "financial risks" and explicitly notes that it "does not add *any*

additional costs to the estimate for financial risk." Decommissioning Cost Estimate § 3, page 6 (emphasis added).

The NRC cannot allow Entergy to ignore contingencies that may not be discovered until the site is characterized after the SAFSTOR period. This is particularly true in light of Entergy's January 6, 2015 exemption request and other filings that explicitly request that the NRC rely upon this already-outdated Decommissioning Cost Estimate as proof that there are allegedly "excess" funds in the NDT Fund.

ii. The NRC cannot allow Entergy to assume that it will have no spent fuel management expenses after 2052. Entergy's cost estimates include *no* funding for spent fuel management beyond 2052, and thus provide no explanation for how decommissioning costs might escalate if spent fuel remains onsite at the time that decontamination and dismantlement begins. Further, Entergy's claim of "excess" funds in the NDT Fund is predicated on the assumption that all spent fuel will be removed by 2052. This assumption conflicts with federal law, historical and current political realities, and recent statements from the NRC, the U.S. Court of Appeals for the District of Columbia Circuit, and the Vermont Public Service Board.

The NRC cannot allow Entergy to make assumptions that require, among other things, changes to current law. Yet, according to the U.S. Government Accountability Office (GAO), a change to current law is precisely what is needed to allow the U.S. Department of Energy (DOE) to begin accepting spent fuel in 2026 and complete the removal of spent fuel by 2052, as Entergy assumes will occur.

Entergy's entire Updated Irradiated Fuel Management Plan, and all of its cost estimates for spent fuel management expenses, depend upon DOE's plan to attempt to site an interim storage facility by 2025. (There is clearly no prospect of Yucca Mountain opening within the next 10 years.) But the GAO has stated that an interim storage facility requires congressional action because "new legislative authority is needed for developing interim storage that is not tied to Yucca Mountain." GAO 15-141, *Spent Nuclear Fuel Management* at 20 (October 2014), *available at* http://www.gao.gov/assets/670/666454.pdf. Further, "experts and stakeholders generally [have] noted that because the Congress has not agreed on a new path forward for managing spent nuclear fuel since funding was suspended in 2010, nor have DOE officials proposed legislation requesting new authority, obtaining specific legislative authority in time to meet DOE's proposed time frames might be challenging." *Id.* In other words, not only does Entergy's spent fuel management plan require congressional action before it can be implemented, but it requires congressional action that has not yet even been proposed and that would be "challenging" to get passed even if it were proposed. *Id.*

And even if DOE were to receive legislative approval to site an interim storage facility, the GAO report lists several other challenges to the actual siting of such a facility. *Id.* at 19-37. These include technical challenges to transporting high-burnup fuel (which Vermont Yankee has), as well as the political and societal challenges that have historically proved insurmountable in past attempts to site nuclear waste storage facilities at Yucca Mountain and elsewhere. As the U.S.

Court of Appeals for the District of Columbia recently held, the societal and political barriers to siting an offsite nuclear waste storage facility require the NRC to analyze the very real possibility that spent fuel will be stored onsite at plants like Vermont Yankee indefinitely. *See generally New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012). The NRC itself recognized this possibility in its recently issued Continued Storage Rule, which includes an analysis of onsite spent nuclear fuel storage under an "indefinite timeframe to address the possibility that a repository never becomes available." NUREG-2157 at iii. Given the NRC's acknowledgement that spent fuel might be stored onsite at plants like Vermont Yankee indefinitely, the NRC cannot allow Entergy to assume that all fuel will be removed by 2052.

Indeed, even Entergy's own Decommissioning Cost Estimate notes a number of the reasons that spent fuel removal is unlikely to occur by 2052. For instance, Entergy notes that "the country is at an impasse on high-level waste disposal." Decommissioning Cost Estimate at xiv; *id.* at § 1, page 5. Further, the prospect of an interim storage facility—which is a necessary prerequisite to Entergy's spent fuel storage plan—is identified merely as one of the Blue Ribbon Commission on American's Nuclear Future's "recommendations" that "*may* impact decommissioning planning." *Id.* at xv & § 1, page 6 (emphasis added). And the Decommissioning Cost Estimate candidly admits that Entergy's spent fuel storage plan depends upon "the appropriate authorizations from Congress." *Id.* Further, other sections of the Decommissioning Cost Estimate recognize—as Entergy must—that the fuel may not be removed by 2052. For instance, in discussing

decommissioning of the dry-cask storage pad and facilities, Entergy notes that this will occur "at the time of plant decommissioning *or after DOE has removed all spent fuel from the site*." Decommissioning Cost Estimate § 2, page 6 (emphasis added).

Also, as Entergy is well aware, in 2006 the Vermont Public Service Board, in its Docket 7082 Order and Certificate of Public Good, required Entergy to address the possibility of spent nuclear fuel remaining onsite as long as through 2082. *See* http://www.state.vt.us/psb/orders/2006/files/7082cpg.pdf. Entergy's PSDAR fails to explain why it has chosen to ignore the Order of the Vermont Public Service Board requiring an analysis based on spent fuel being onsite for at least 30 years longer than Entergy assumes in its PSDAR.

In short, Entergy's 2052 date for the completion of the removal of spent nuclear fuel is not only unrealistic and dependent on a change to current federal law, but it is also directly contrary to statements of the Vermont Public Service Board, the NRC, and the U.S. Court of Appeals for the D.C. Circuit. When the Vermont Yankee reactor was licensed in 1972, the Atomic Energy Commission stated that the reactor's spent fuel would be promptly transported to an out-of-state reprocessing facility soon after that fuel was removed from the reactor. *Vermont Yankee Nuclear Power Station Final EIS* at 93-94 (July 1972) (ML061880207). More than forty years later, none of the spent nuclear fuel has been removed, nor is there any likely prospect that removal will occur in the near future. Just as the U.S. Court of Appeals for the D.C. Circuit recently forced the NRC to confront this reality in the context of its Continued Storage Rule, the NRC must confront that

reality here as well. Indeed, even Entergy candidly admits that, based upon a number of "performance assumptions," it "anticipates" that spent fuel removal "could" be complete by 2052. Decommissioning Cost Estimate at xi. The NRC cannot allow Entergy to make assumptions about what "could" happen, particularly when Entergy is attempting to use those assumptions in related filings to claim an alleged "excess" of funds. Any claimed "excess" quickly disappears as soon as the NRC recognizes, as it must, that spent fuel could remain onsite after 2052.[4]

iii. The NRC cannot allow Entergy to assume that site restoration will cost only $57 million. Because Entergy has chosen to put Vermont Yankee into SAFSTOR, the PSDAR provides only general summaries of the non-radiological aspects related to how final site restoration will be achieved. Further, Entergy's cost estimate of $57 million for site restoration ignores evidence that the Department of Public Service has presented to the Vermont Public Service Board in Docket #7862 that a more reasonable estimate for site restoration would equate, adjusted for current 2014 dollars, to around $100 million and could be as high as $133 million once contingencies are taken into account. And as both the NRC and Entergy have recognized on numerous occasions, the ultimate site restoration standards that apply to Vermont Yankee are a matter of State authority. Thus, if

[4] Entergy's claimed "excess" of around $176 million at the end of decommissioning in 2076 mostly disappears if Entergy includes the estimated annual expenses of $4 million (and consequent lost interest) for spent fuel management from 2053 to 2076 (rather than assuming, as Entergy does, that those expenses are "$0"). And even if a small portion of that alleged "excess" money still remains in the NDT Fund by 2076, it would not be nearly enough to pay for ongoing spent fuel management expenses in the future.

Entergy is going to provide the NRC with estimates about the cost of site restoration, it should assume that these costs could be as high as $133 million.

B. To Ensure Adequate Funding for Decommissioning, the NRC Should Limit Entergy's Use of the Vermont Yankee NDT Fund at This Time to Activities that Reduce Radiological Contamination

As the State recently explained in two letters to NRC Nuclear Reactor Regulation Director William Dean (dated January 26, 2015 and January 27, 2015), the NRC has a statutory duty to ensure that Vermont Yankee's owners and operators have—and will continue to have—the ability to pay for decommissioning. The NRC is charged with overseeing each nuclear power plant's NDT Fund to ensure that each fund is sufficient to fully decontaminate the site to below the NRC's allowed radiological limits. As the U.S. Court of Appeals for the Seventh Circuit recently held, "[t]he decommissioning of nuclear facilities is closely regulated by the Nuclear Regulatory Commission, and its regulatory authority embraces every potential malfeasance or misfeasance of assets dedicated to the decommissioning process." *Pennington v. Zionsolutions LLC*, 742 F.3d 715, 719 (7th Cir. 2014) (Posner, J.). As "the designated policeman of decommissioners," the NRC is tasked with "assess[ing] the management of the complex, technologically sophisticated process of nuclear decommissioning." *Id.*

Entergy's proposed funding approach for decommissioning, spent fuel management, and site restoration is problematic for at least two reasons. First, applicable NRC regulations do not allow Entergy to use NDT Funds for anything other than radiological decommissioning. Those regulations serve an important

purpose, and the NRC should not exempt Entergy from those regulations. Second, the Vermont Yankee NDT Fund is subject to a Master Trust Agreement that Entergy signed when it purchased Vermont Yankee, and the Master Trust Agreement does not allow Entergy to make the withdrawals it seeks to make.

i. NRC regulations limit NDT disbursements to activities that reduce radiological contamination. Applicable statutes and NRC regulations do not allow Entergy to use NDT Funds for anything other than radiological decommissioning. Disbursements from the NDT Fund "are restricted to decommissioning expenses." 10 C.F.R. § 50.75(h)(1)(iv). All withdrawals must be "for legitimate decommissioning activities consistent with the definition of decommissioning in [10 C.F.R.] § 50.2." *Id.* § 50.82(a)(8)(i)(A). The NRC's definition of "Decommission" is limited to activities that "reduce residual radioactivity." 10 C.F.R. § 50.2. As the NRC has made clear, "Decommissioning activities do not include the removal and disposal of spent fuel which is considered to be an operational activity or the removal and disposal of nonradioactive structures and materials beyond that necessary to terminate the NRC license." *General Requirements for Decommissioning Nuclear Facilities*, 53 Fed. Reg. 24018-01, 24018 (1988). Because decommissioning only includes activities that reduce radiological contamination, it "do[es] not include the cost of demolition and removal of noncontaminated structures, storage and shipment of spent fuel, or restoration of the site." *Id.* at 24028.

The NRC's regulations on the creation and use of NDT Funds explicitly state that these funds are intended to cover only radiological decontamination necessary for site closure: "Amounts [required to be set aside in the NDT Funds] are based on activities related to the definition of 'Decommission' in § 50.2 of this part and do not include the cost of removal and disposal of spent fuel or of nonradioactive structures and materials beyond that necessary to terminate the license." 10 C.F.R. § 50.75 n.1. The NRC's regulations on financial qualifications for nuclear decommissioning similarly note that NDT Funds address "only those decommissioning costs incurred by licensees to remove a facility or site safely from service and reduce residual radioactivity," which does not include, "for example, the costs of dismantling or demolishing non-radiological systems and structures." *Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance*, NUREG-1577, Rev. 1, at 16, § 2(A)(3) (1999). In short, the NRC has made abundantly clear that, absent a waiver, only costs that "reduce residual radioactivity" can be withdrawn from the NDT Fund. *Standard Review Plan for Decommissioning Cost Estimates for Nuclear Power Reactors*, NUREG-1713, Final Report, at 4, § (B)(3) (2004).

Entergy is well aware of this restriction—hence it has filed its January 6, 2015 exemptions request in an attempt to avoid having to comply with long-standing and directly applicable NRC regulations. Entergy has recently asserted that the NDT Fund can be used for planning costs associated with spent fuel management, citing NRC Regulatory Guide 1.184. *See* Letter from T. Michael

Twomey to Kyle H. Landis-Marinello and Christopher Recchia at 2 & n.7 (Feb. 9, 2015). But that very same passage of the NRC regulatory guidance also highlights the general rule that NDT Funds cannot be used for spent fuel management expenses:

> [F]unds collected and set aside in the decommissioning trust for decommissioning are *exclusively for radiological decommissioning* as defined in 10 CFR 50.2. Therefore, the amount set aside for radiological decommissioning as required by 10 CFR 50.75 should not be used for: (1) the maintenance and storage of spent fuel in the spent fuel pool, (2) the design, construction, or decommissioning of spent fuel dry storage facilities directly related to permanent disposal, (3) other activities not directly related to, radiological decontamination, or dismantlement of the facility or site.

NRC Regulatory Guide 1.184 at 6 (emphasis added).

ii. The Master Trust Agreement limits NDT disbursements at this time to activities that reduce radiological contamination. Just as applicable statutes and regulations place important limitations on what disbursements are allowable from the NDT Fund, the Master Trust Agreement—which Entergy signed when it purchased Vermont Yankee—also places limitations on NDT Fund disbursements.[5] The Master Trust Agreement imposes legal restrictions on when and for what purposes Entergy can withdraw money from the NDT Fund. Such restrictions are not surprising given that Vermont ratepayers contributed the majority of the principal funds that currently exist in the NDT Fund—Entergy has never contributed any money to that Fund. Rather, Entergy inherited the NDT

[5] The NRC's approval of the sale of Vermont Yankee explicitly required that the "decommissioning trust agreement must be in a form acceptable to the NRC," including 30-day notice to the NRC before any disbursements. *Order Approving Transfer of License and Conforming Amendment*, Docket No. 50-271 (May 17, 2002) (ADAMS ML#020390198).

Fund—subject to numerous conditions in the Master Trust Agreement—as part of its purchase of the plant in 2002, and Entergy has never made a payment to the NDT Fund. The Vermont Legislature has directed the Vermont Department of Public Service to advocate for prudent use of the ratepayer contributions that created the NDT Fund. *See* Vt. Stat. Ann. tit. 30, § 2(d). The State has a significant interest in ensuring that this money is spent consistent with NRC regulations and the terms of the Master Trust Agreement. The NRC should apply extra scrutiny to disbursements from the Vermont Yankee NDT to ensure that Vermont ratepayer money is spent prudently and appropriately.

Further, Vermont ratepayers have an existing 55% interest in any leftover funds. That direct interest is noted in several provisions of the Master Trust Agreement, including Exhibits D and E. The 55% interest is also required under various Vermont Public Service Board Orders and Certificates of Public Good that remain in effect today. When Entergy sought to purchase the Vermont Yankee plant in 2002, the Vermont Public Service Board approved that sale only upon a number of conditions, including the return of any excess NDT funds to ratepayers: "Upon completion of the decommissioning of Vermont Yankee, any property remaining in [Entergy's] Decommissioning Trust funds shall be distributed by the Trustee for the benefits of the customers of Vermont Yankee's sponsors." *Investigation into General Order No. 45 Notice filed by Vermont Yankee Nuclear Power Corporation re: proposed sale of Vermont Yankee Nuclear Power Station to Entergy Nuclear Vermont Yankee, LLC, and related transactions*, Docket No. 6545

(June 13, 2002) at p.158, *available at* http://www.state.vt.us/psb/6545.htm, *aff'd*, *In re Proposed Sale of Vermont Yankee Nuclear Power Station*, 829 A.2d 1284 (Vt. 2003); *see also* Entergy's 2002 Certificate of Public Good, Docket No. 6545 (June 13, 2002), Condition 2, *available at* http://www.state.vt.us/psb/6545.htm (same); Entergy's 2014 Amendment to 2002 Certificate of Public Good, Docket No. 7862 (Mar. 28, 2014), at p.2, *available at* http://psb.vermont.gov/sites/psb/files/orders/2014/2014-03/7862%20%20CPG%20Amendment.pdf.

As the Vermont Public Service Board noted in a related ruling, "the disposition of any potential future excess decommissioning funds has expressly been an issue throughout this proceeding" and was "fully litigated" as part of the proceeding that approved Entergy's purchase of Vermont Yankee. *Order re: Motions to Alter or Amend, Enter Final Judgment, and Stay Pending Appeal*, Docket No. 6545 (July 30, 2002), at 6 n.17, *available at* http://www.state.vt.us/psb/6545.htm. In fact, the Vermont Public Service Board rejected a proposal that would have denied Vermont ratepayers their full 55% interest in leftover NDT Funds, finding that such a proposal was inconsistent with ratepayer expectations under provisions of the previous decommissioning trust that had been in place since 1988. *Final Order*, Docket No. 6545, at 36-38. The Vermont Public Service Board concluded that "these funds were collected from ratepayers for a specific purpose and, if not needed for that purpose, should be returned" to ratepayers. *Id.* at 152.

Given their 55% interest in any leftover funds, Vermont ratepayers have a direct interest in ensuring that every disbursement from the NDT Fund complies with applicable statutes, regulations, and the Master Trust Agreement. Vermont ratepayers are directly harmed by any money that the Bank of New York Mellon improperly disburses.

The Master Trust Agreement places numerous restrictions on any use of the NDT Fund. Most importantly, the Master Trust Agreement:

(1) requires that all radiological decontamination and decommissioning be complete before any money from the NDT Fund can be used for spent fuel management or site restoration[6]; and

(2) once radiological decontamination and decommissioning is complete, allows withdrawals only for spent fuel management costs that were not recovered from the Department of Energy.[7]

The "exclusive purpose" of the Master Trust Agreement is "to accumulate and hold funds for the contemplated Decommissioning of the Station and *to use such funds, in the first instance, for* expenses related to the *Decommissioning of the Station as defined by the NRC in its Regulations* and issuances, and as provided in

[6] The Master Trust Agreement recognizes that "Decommissioning" may at times include activities that, though not directly reducing radiological contamination by themselves, are nevertheless necessary to allow radiological decommissioning and decontamination, such as the removal of spent fuel from the reactor to the spent fuel pool.

[7] Noticeably absent from Entergy's January 6, 2015 exemption request is any reference to the legally binding Master Trust Agreement or to the fact that Entergy's request seeks to use the NDT Fund to pay for certain expenses that the U.S. Department of Entergy (DOE) is legally required to undertake.

the licenses issued by the NRC for the Station and any amendments thereto." Master Trust Agreement § 2.01 (emphasis added). As discussed above, NRC regulations clearly define decommissioning as activities that reduce radiological contamination, and explicitly exclude expenses such as spent fuel management and site restoration. The Master Trust Agreement's "exclusive purpose" is to follow these NRC regulations by ensuring that NDT expenses are used in the first instance to reduce radiological contamination. Thus, the Master Trust Agreement requires that all radiological decontamination and decommissioning be complete before any money from the NDT Fund can be used for spent fuel management or site restoration.

Other sections of the Master Trust Agreement similarly require the Bank to refrain from disbursing funds for anything other than radiological decontamination and decommissioning until those activities are complete. In particular, the Master Trust Agreement, in several sections, specifically sets up a sequencing of disbursements that requires all radiological decontamination and decommissioning activities to be "completed" before any other disbursements are allowed. Master Trust Agreement § 4.01.

Section 4.01 of the Master Trust Agreement, like the applicable NRC regulations discussed above, limits disbursements from the NDT Fund to "paying costs, liabilities and expenses of Decommissioning or, if so specified, administrative expenses." The Master Trust Agreement defines "Decommissioning" as "the removal of the Station from service and disposal of its components in accordance

with Applicable Law." Master Trust Agreement § 1.01(j). Only "[o]nce Decommissioning is *completed*" can the Bank release NDT Funds to Entergy for uncovered "Spent Fuel Costs and Site Restoration Costs." *Id.* § 4.01 (emphasis added).[8]

This sequencing is explained further by Exhibit D of the Master Trust Agreement. Exhibit D—labeled "Decommissioning Requirements"—explicitly defines the "Completion of Decommissioning" as "plant *dismantlement and decontamination to NRC standards* plus the completion of additional activities agreed to or imposed in the course of [the sale docket] before the Vermont Public Service Commission or pursuant to any subsequent law or proceeding, but *excluding spent fuel management and any site restoration*." Master Trust Agreement Ex. D (emphasis added). In other words, spent fuel management and site restoration expenses could be recovered from the NDT Fund only if they occurred *after* the completion of radiological decommissioning.

And even then, the NDT Fund can only be used to cover expenses that the U.S. Department of Energy (DOE) does not have to pay. The Master Trust Agreement was signed in 2002. At that point, four years after DOE breached its

[8] Although Entergy notes that section 4.01 refers to spent fuel and site restoration costs "to the extent not included in Decommissioning," that parenthetical statement does not mean that the Master Trust Agreement's definition of "Decommissioning" includes all such costs. First, the language "to the extent not included" implies that there are spent fuel costs that are not included in "Decommissioning." Further, as noted in detail below, the definition of "Decommissioning" in the Master Trust Agreement states that it includes "non-DOE spent fuel storage" expenses incurred during "pre-shutdown activities." Master Trust Agreement § 1.01(j). Those limitations cannot be reconciled with Entergy's apparent position that "Decommissioning" includes all costs of spent fuel management during the post-closure period.

contractual obligation to remove spent nuclear fuel from nuclear sites such as Vermont Yankee, it was clear that Entergy would have the ability to sue DOE for spent fuel management expenses. In fact, the Purchase and Sale Agreement for Vermont Yankee explicitly transferred all rights to such lawsuits, and Entergy has since recovered tens of millions of dollars from DOE for spent fuel management expenses that would not have occurred had DOE removed the fuel in 1998.

The continuation of these lawsuits was anticipated by the Master Trust Agreement, which set up a process to ensure that Entergy did not double recover for spent fuel management expenses by using NDT Funds for expenses that it would later recover from DOE through litigation. In particular, the definition of "Decommissioning" in the Master Trust Agreement states that it includes "*non-DOE* spent fuel storage." Master Trust Agreement § 1.01(j) (emphasis added). Similarly, Exhibit D of the Master Trust Agreement sets up the following provision to address the "return of excess funds" from the NDT—a provision that clearly requires Entergy to obtain all possible relief from DOE before it attempts to use NDT Funds for spent fuel management expenses:

> Return of Excess Funds in accordance with the second following paragraph, shall occur following the earliest of (i) the date Completion of Decommissioning has occurred and the Company has satisfied all of its responsibilities for spent fuel management and site restoration or (ii) the date on which Completion of Decommissioning occurs and any of the following occur: (x) *settlement* between the Company and the US Department of Energy ("DOE") with respect to spent fuel management responsibilities for the Station, (y) *final resolution of litigation* by the Company against DOE with respect to spent fuel management responsibilities for the Station, *or (z) satisfactory performance by DOE* of its spent fuel responsibility with respect to the Station.

Master Trust Agreement Ex. D (emphasis added). Exhibit D then notes that "excess funds" excludes costs "not otherwise payable by the federal government in accordance with (x), (y) or (z) above."

Section 5.02 of the Master Trust Agreement similarly notes that it is "upon termination of this Master Trust or such Funds, [that] the Trustee shall distribute all funds necessary for Spent Fuel Costs and Site Restoration Costs to the Company." That is because, as NRC regulations require, the NDT Fund must cover all necessary radiological decontamination and decommissioning expenses before any disbursements can be made to cover other expenses such as spent fuel management and site restoration. That sequencing is the only way to ensure, as the NRC must do, that Entergy maintains sufficient funds to radiologically decontaminate the site.

The sequencing mentioned above is also required by the Master Trust Agreement—for the same safety reasons that the NRC requires it, but also because Vermont ratepayers have a direct interest in all excess funds. In particular, as mentioned above, Vermont ratepayers will obtain 55% of all excess funds from the NDT Fund. Thus, the Master Trust Agreement contains numerous provisions to ensure proper care of these funds by Entergy and the Bank of New York Mellon—including, for instance, the requirement that Entergy not spend any NDT Funds on expenses that DOE is legally required to undertake.

While Entergy's February 9, 2015 letter attempts to assert a different interpretation of the Master Trust Agreement, Entergy's position is untenable and in fact demonstrates why the NRC cannot allow Entergy to withdraw NDT Funds for spent fuel management during the post-closure period before radiological decommissioning is complete. For instance, Entergy claims that Exhibit D of the Master Trust Agreement should effectively be ignored since it only addresses the "Completion of Decommissioning" and not the ability of the Bank to disburse funds for decommissioning itself. Entergy Feb. 9, 2015 Letter at 3. Yet, as discussed above, section 4.01, which governs distributions by the trustee, contains limits and sequencing of payments consistent with Exhibit D.

Entergy also asserts that only "FERC has the authority to determine the disposition of any excess trust funds." *Id.* at 4. If anything, FERC regulations provide yet another reason why the Master Trust Agreement must be interpreted as limiting initial NDT Fund expenditures in the post-closure period to decommissioning activities as defined by NRC regulations, since Entergy does not have FERC approval to use the NDT Fund for anything other than radiological decommissioning: "Absent express authorization of [FERC], no part of the assets of the [NDT] Fund may be used for, or diverted to, any purpose *other than to fund the costs of decommissioning* the nuclear power plant to which the Fund relates, and to pay administrative costs and other incidental expenses, including taxes, of the Fund." 18 C.F.R. § 35.32(6) (emphasis added). Thus, as both NRC and FERC regulations require, it is only once decommissioning activities are complete (and

thus NRC oversight complete) that excess funds can be used for other purposes, such as spent fuel management. Also, Entergy's argument ignores FERC's approval of the 2002 sale and transfer of the NDT Fund. *See Vermont Yankee Nuclear Power Corp. et al.*, 98 FERC ¶ 61,122, *order on reh'g*, 98 FERC ¶ 61,358; *see also New England Coalition v. Vermont Yankee Nuclear Power Corp.*, 101 FERC ¶ 61,239.

For these and other reasons, the NRC should reject all aspects of Entergy's proposed PSDAR and related filings, including its January 6, 2015 exemptions request, insofar as Entergy seeks permission to spend NDT Funds at this time on anything other than reducing radiological contamination at the site. At a minimum, this means the following:

(1) The NRC should reject all requests by Entergy to use the Vermont Yankee NDT Fund for spent fuel management expenses during the post-closure period before radiological decommissioning is complete. This would include rejecting Entergy's January 6, 2015 exemptions request, as well as Entergy's December 19, 2014 Updated Irradiated Fuel Management, Updated Decommissioning Funding Status Report, and proposed PSDAR and Decommissioning Cost Estimate insofar as those documents rely on using the Vermont Yankee NDT Fund for spent fuel management expenses before radiological decommissioning is complete. The NRC should then require Entergy to submit revised filings of its December 19, 2014 filings, including a revised plan for spent fuel management expenses that is consistent with the requirements of 10 C.F.R. § 50.54bb.

(2) The NRC should analyze Appendix C of Entergy's Decommissioning Cost Estimate and prohibit Entergy from withdrawing money from the Vermont Yankee NDT Fund for all items that fail to meet the NRC's definition of decommissioning, including, at a minimum, the following:

a. The $5 million payment (lines 1a.2.22 & 1b.2.22) that Entergy is making to the State as part of the Settlement Agreement;

b. Emergency preparedness costs (*e.g.*, line 1a.2.23)[9];

c. Shipments of non-radiological asbestos waste (*e.g.*, line 1a.2.27);

d. Insurance (*e.g.*, line 1a.4.1);

e. Property taxes (*e.g.*, line 1a.4.2);

f. Replacement of structures during SAFSTOR (*e.g.*, line 2b.1.4);

g. Any costs associated with offsite buildings that are not radiologically contaminated; and

h. All other listed costs that relate to activities that do not reduce radiological contamination.

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[9] Expenses for emergency preparedness do not reduce radiological contamination at the site and are thus not proper uses of the NDT Fund. Entergy would therefore need an exemption (which has neither been requested nor granted) before it could withdraw NDT Funds for emergency preparedness expenses. Nevertheless, in addition to listing emergency planning as a license termination expense in Appendix C of its Decommissioning Cost Estimate, an Entergy spokesperson recently stated that Entergy intends to use NDT Funds not only for emergency preparedness measures, but also for "any *legal* costs" resulting from the State's challenges to Entergy's planned reductions in emergency preparedness. VTDigger.org, *State Appeals Decision on Vermont Yankee Monitoring*, http://vtdigger.org/2015/02/26/state-appeals-decision-on-vermont-yankee-emergency-monitoring/ (emphasis added). According to the Entergy spokesperson, these legal costs are "'part of our decommission costs,' he said. 'This is money that's going to be coming from trust fund.'" Entergy's reasoning was that "[b]ecause the plant is no longer generating revenue, [the Entergy spokesperson] said any legal costs the company incurs will come out of the decommissioning trust fund." *Id.* The NRC cannot allow that to happen.

(3) The NRC should request that Entergy explain, in light of its merchant-generator status, how Entergy will fund items such as those listed above, as well as costs that are not currently listed in its Decommissioning Cost Estimate, such as employee pension fund liabilities. Entergy's ability or inability to fund such liabilities bears directly on Entergy's ability to fund radiological decommissioning expenses should those expenses turn out to be larger than anticipated. Entergy erroneously places all projected costs into three categories: NRC License Termination costs, Spent Fuel Management costs, and Site Restoration costs. The NRC should make clear that certain costs, such as those noted above, fall outside of these three categories, and the NRC should ask Entergy to add a fourth category for those costs. In addition to those items listed above, this fourth category would also contain expenses such as Entergy's "NEI Annual Fee" (e.g., line 1a.2.38 of Appendix C). Further, the NRC should require Entergy to revise some of those costs. For instance, Entergy states in Appendix C of its Decommissioning Cost Estimate that it expects to pay only around $7,000 per year in property taxes beginning in 2020 (e.g., lines 2aa.4.2 & 2b.4.2). This is incorrect. Although Entergy notes that its payments under the generation tax will "cease once the plant is permanently shutdown" (Decommissioning Cost Estimate § 3, page 18), Entergy fails to account for the fact that the generation tax is the basis for Entergy's current exemption from otherwise applicable state property

taxes. Entergy has no basis for assuming that its current exemption from those taxes will continue once the generation tax ceases to provide revenue to the State of Vermont. Entergy similarly has no basis for its claim that local authorities will tax Vermont Yankee "as vacant land." Decommissioning Cost Estimate § 3, page 18. Entergy has not explained how it will pay for any higher property taxes that may apply either at the state or local level.

(4) The NRC should take all other actions necessary to protect the money in the NDT Fund until radiological decommissioning is complete. *See, e.g.*, 10 C.F.R. § 50.82(a)(8)(i)(A) (requiring that all withdrawals from NDT Funds must be "for legitimate decommissioning activities consistent with the definition of decommissioning in [10 C.F.R.] § 50.2"); Master Trust Agreement § 2.01 (stating that the "exclusive purpose" of the Master Trust Agreement is "to accumulate and hold funds for the contemplated Decommissioning of the Station and *to use such funds, in the first instance, for* expenses related to the *Decommissioning of the Station as defined by the NRC in its Regulations* and issuances, and as provided in the licenses issued by the NRC for the Station and any amendments thereto" (emphasis added)).

III. In Accordance with the National Environmental Policy Act, the NRC Must Analyze the Environmental Impacts of Entergy's Proposed PSDAR and Related Filings

The National Environmental Policy Act (NEPA) requires federal agencies to prepare "a detailed statement . . . on the environmental impact" of any proposed major federal action "significantly affecting the quality of the human environment." 42 U.S.C. § 4332(1)(C)(i); *see generally* 42 U.S.C. §§ 4321 *et seq*. At a minimum, if an agency is going to allow a licensee to engage in activities with environmental impacts without the agency first issuing a detailed environmental impact statement, the agency must do an environmental analysis and issue a "finding of no significant impact" (FONSI). 40 C. F. R. § 1501.4; *id.* § 1508.14.

The requirements of NEPA apply not only to affirmative actions by an agency (such as a licensing decision), but also to actions of a licensee that "are *potentially* subject to Federal control and responsibility," such as the PSDAR. *Id.* § 1508.18 (emphasis added). "Actions include the circumstance where the responsible officials fail to act and that failure to act is reviewable by courts or administrative tribunals under the Administrative Procedure Act or other applicable law as agency action." *Id.* Under the Administrative Procedure Act, the requirements of NEPA apply equally to an agency's actions as to an agency's "failure to act." 5 U.S.C. § 551(13). Thus, although the NRC takes the position that it need not formally approve a PSDAR, it nevertheless has duties under NEPA to review the environmental impacts of decommissioning plans. NEPA responsibilities are triggered by the fact that a federal agency "has actual power to control the project." *Ross v. Fed.*

Highway Admin., 162 F.3d 1046, 1051 (10th Cir. 1998). Here, there is no doubt that the NRC has authority over the decommissioning of nuclear power plants, and the NRC itself has explicitly recognized its authority to "find the PSDAR deficient." NRC Regulatory Guide 1.185, *Standard Format and Content for Post-Shutdown Decommissioning Activities Report* at 10 (June 2013).

At least one federal circuit court of appeals has already made clear that "[r]egardless of the label the [Nuclear Regulatory] Commission places on its decision," the act of "permitting [a licensee] to decommission the facility" requires NEPA review: "An agency cannot skirt NEPA or other statutory commands by essentially exempting a licensee from regulatory compliance, and then simply labelling its decision 'mere oversight' rather than a major federal action. To do so is manifestly arbitrary and capricious." *Citizens Awareness Network, Inc. v. Nuclear Regulatory Comm'n*, 59 F.3d 284, 293 (1st Cir. 1995). Another federal circuit court of appeals has similarly held in an analogous situation that when a federal agency has a "mandatory obligation to review" plans, the agency's "failure to disapprove" of those plans constitutes "major federal action" triggering NEPA review. *Ramsey v. Kantor*, 96 F.3d 434, 445 (9th Cir. 1996).

The required NEPA analysis must be comprehensive and address all "potential environmental effects" unless those effects are so unlikely as to be "remote and highly speculative." *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Comm'n*, 449 F.3d 1016, 1030 (9th Cir. 2006). Potential environmental

impacts from the storage of spent nuclear fuel include impacts resulting from "the possibility of terrorist attack." *Id.* at 1031.

Before the NRC allows Entergy to proceed with decommissioning, the NRC must perform the required NEPA analysis of potential environmental impacts associated with Entergy's specific PSDAR and related filings. This would necessarily include analyzing the environmental and economic impacts of the PSDAR's election of the maximum SAFSTOR period.

A comprehensive analysis is required here in part to avoid segmenting environmental analyses into discrete parts without ever looking at their full combined effects—an approach that NEPA does not allow. *See e.g. Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1314 (D.C. Cir. 2014) ("The justification for the rule against segmentation is obvious: it prevents agencies from dividing one project into multiple individual actions each of which individually has an insignificant environmental impact, but which collectively have a substantial impact." (quotation and alteration marks omitted)); *see also, e.g.*, *NRDC v. Callaway*, 524 F.2d 79, 88 (2d Cir. 1975) (NEPA is meant to provide "a more *comprehensive approach* so that long term and cumulative effects of small and unrelated decisions could be recognized, evaluated and either avoided, mitigated, or accepted as the price to be paid for the major federal action under consideration" (emphasis added)). The NRC has previously underscored the value of a comprehensive NEPA analysis: "While NEPA does not require agencies to select particular options, it is intended to foster both informed decision-making and informed public participation, and thus to

ensure that the agency does not act upon incomplete information, only to regret its decision after it is too late to correct." *In Re Duke Energy Corporation (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units and 2)*, CLI-02-17, 56 N.R.C. 1, 10 (2002).

In short, NEPA does not allow the NRC to permit Entergy to proceed with its decommissioning activities without further analysis by the NRC of the potential environmental impacts of those activities. The PSDAR as it currently stands is insufficient to identify and assess the site-specific environmental impacts of Entergy's decommissioning activities to facilitate proper planning. The process outlined in NRC Regulatory Guide 1.185 requires a conclusion to be made based on comparison to pre-defined and generic environmental impacts that may or may not be applicable to all nuclear power plants. Additionally, the range of environmental impacts addressed by Entergy's PSDAR does not include environmental impacts associated with non-radiological contaminants and the generation and storage of non-radiological wastes. Thus, the PSDAR fails to provide sufficient information to allow the NRC, the State, and the public to assess all of the environmental impacts associated with Entergy's decommissioning activities.

While it is the State's position that a full NEPA analysis is required here before the NRC can allow Entergy to proceed with decommissioning, Entergy's PSDAR is also deficient because it incorrectly claims that all environmental impacts are "bounded" by previously issued environmental impact statements. *See* PSDAR § 5; 10 C.F.R. § 50.82(a)(4)(i); NRC Regulatory Guide 1.185. As an initial matter,

while Entergy states that it "has concluded that the environmental impacts associated with planned VYNPS site-specific decommissioning activities" are bounded by previous environmental impact statements (PSDAR at 22), it is of course the NRC, not Entergy, that is the entity legally responsible for compliance with the National Environmental Policy Act.

Further, Entergy does not and cannot support its "bounding" claim. Entergy attempts to show "bounding" by citing three documents issued between the years 1997 and 2007: the 1997 Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities (NUREG-1496); the 2002 Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities (NUREG-0586); and the 2007 Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 30, Regarding Vermont Yankee Nuclear Power Station (NUREG-1437, Supplement 30).

Those three documents, the most recent of which is now eight years old, do not "bound" all of the environmental impacts associated with decommissioning this specific plant under the specific PSDAR that Entergy has just submitted. Entergy asserts—without citation to any scientific or environmental reports, studies, or analyses—that because Vermont Yankee "is smaller than the reference boiling water reactor used in the [2002 Decommissioning] GEIS . . . [it] is therefore bounded by those assessments." PSDAR at 22. But Entergy has provided no scientific basis for concluding that the size of a plant is the exclusive factor for

determining its potential environmental and other impacts during decommissioning.

To the contrary, regardless of a plant's size, other site-specific factors can—and do—affect the potential environmental and other impacts of decommissioning. For instance, Vermont Yankee has an operating elementary school located just 1500 feet from the reactor building. The 2002 Decommissioning GEIS never took that site-specific factor into account. The 2007 Supplemental GEIS also failed to take it into account. In fact, the 2007 Supplemental GEIS does not appear to have addressed *any* site-specific factors at Vermont Yankee, concluding instead that "there are no impacts related to these issues beyond those discussed in the [2002 Decommissioning] GEIS." NUREG-1437, Supplement 30, at 7-2.

The close proximity of an operating elementary school cannot be ignored. At a minimum, this factor calls for imposing common-sense mitigation measures that ensure that schoolchildren are not present during certain decommissioning activities, such as the transfer of spent nuclear fuel or the demolition of buildings containing radioactive or non-radiological hazardous materials like asbestos and lead.[10] It is well known that young children are more vulnerable to adverse health reactions to airborne contaminants such as lead. *See, e.g.*, Vermont Dept. of Health, *Lead Poisoning and Prevention*, http://healthvermont.gov/enviro/lead/ ("Young

[10] Despite specific requests for such information by the Department of Health and the Agency of Natural Resources in the December 2014 comments that the State provided to Entergy, the PSDAR is silent on the presence and eventual disposition of asbestos-containing materials and lead-based paint, and Entergy has failed to provide this requested information to either the Department of Health or the Agency of Natural Resources.

children are at highest risk because their developing bodies absorb lead more easily. Lead dust exposure can have life-long health effects such as lowering a child's IQ.").

Thus, in contrast to Entergy's "bounding" claim, a decommissioning activity such as the demolition of a building that contains lead (and the lead dust created from that) might have minimal or no environmental impacts at a larger plant in an isolated area, but significant consequences at Vermont Yankee if even a small amount of lead dust travels the short distance between the plant and the nearby elementary school. Entergy's PSDAR therefore fails to show that these environmental impacts are bounded by previous analyses.

The failure of Energy's PSDAR to address an issue such as lead dust is particularly problematic in light of the NRC's regulatory guidance requiring the consideration of "impacts from non-radiological hazards, such as *dust*, noise, water use, and hazardous (non-radiological) waste." NRC Regulatory Guide 1.185 at 9 (emphasis added).

More generally, the PSDAR's limited discussion of non-radiological hazards is deficient. Neither the PSDAR nor the October 2014 Site Assessment Study acknowledges or specifies a plan or schedule for ensuring compliance with Vermont's hazardous waste generator closure requirements, outlined in Section 7-309(c) of the Vermont Hazardous Waste Management Regulations. In order for its activities to comply with state laws, including Agency of Natural Resources regulations, Entergy must submit a plan for closure of the site that includes closure of all non-radiological hazardous waste handling and storage areas on site in a

manner that minimizes the need for further maintenance and that appropriately minimizes or eliminates post-closure escape of non-radiological hazardous waste and hazardous constituents to the groundwater and atmosphere, as requested by the Agency in its response to Entergy's October 2014 Site Assessment Study. To date, Entergy has not done so.

Another factor that is clearly not bounded by previous environmental analyses is the potential for environmental impacts associated with the storage of spent nuclear fuel. Entergy's PSDAR for Vermont Yankee raises numerous environmental, safety, and other impacts related to spent fuel storage that are not addressed by any of the environmental analyses that Entergy cites. In fact, the 2002 Decommissioning GEIS did not analyze any environmental, safety, or other impacts related to spent fuel storage, but rather explicitly relied on the NRC's Waste Confidence Decision—a decision that has since been vacated by the U.S. Court of Appeals for the D.C. Circuit. *See New York v. NRC I*, 681 F.3d 471 (D.C. Cir. 2012). Similarly, the 2007 GEIS for Vermont Yankee explicitly relied on the now-vacated Waste Confidence Decision and noted that the 2007 analysis was "based upon the assumption that storage of the spent fuel onsite is not permanent." NUREG-1437, Supplement 30, A-146.

Entergy's PSDAR also makes reference to the NRC's recently issued Continued Storage Rule (NUREG-2157), noting that this Rule "found that the generic environmental impacts of ongoing spent fuel storage are small." PSDAR at 36. Entergy fails to mention that this Rule has been directly challenged by the

State of Vermont and others in a current proceeding in the U.S. Court of Appeals for the D.C. Circuit (*New York v. NRC II*).

Further, Entergy's reliance on the Continued Storage Rule requires Entergy to address the NRC's explicit recognition in that Rule that spent fuel may be stored indefinitely at each reactor site, and the assumption that, in that scenario, each reactor operator will need a Dry Fuel Transfer Station to move spent fuel into new dry casks every 100 years. Entergy's PSDAR is deficient because it fails to explain how it would address the contingency of indefinite onsite storage, including all safety and environmental concerns regarding transferring fuel into new dry casks every 100 years. Entergy's PSDAR, Decommissioning Cost Estimate, and related filings are also deficient because they fail to identify any funding source for: (a) the construction of a Dry Fuel Transfer Station; (b) the purchase of 58 new casks and all other labor and material costs for transferring the fuel every 100 years; and (c) the costs of maintaining security at the site indefinitely.

Other factors at this particular nuclear power plant that are clearly not bounded by previous environmental analyses include:

- Recreational activities take place on the Connecticut River bordering the plant.
- In addition to what Entergy identifies as currently endangered and threatened species, over the next 60 years it is likely that the list of endangered and threatened species will increase due to human activity, climate change, and other factors.

• Indeed, science's increased understanding of climate change—and its ensuing weather events—is an independent factor that the NRC needs to address to properly evaluate the potential environmental impacts of Entergy's current plan to decommission Vermont Yankee. For instance, given this plant's proximity to the Connecticut River, the NRC needs to evaluate whether the current standard for nuclear power plant External Flood evaluations is outdated. The current standard only looks at the 100-year flood plain. Neither Entergy nor the NRC has provided any explanation for why a 100-year flood plain (rather than a 500- or 1,000-year flood plain) suffices in light of our current scientific understanding of climate change—an understanding that was not available during previous environmental analyses. This is particularly true with regard to issues such as placement of the dry-cask storage pad, given that, as the NRC recently recognized in its Continued Storage Rule, spent nuclear fuel could be stored onsite for 500 or 1,000 years, or even longer.

• There is known and unknown contamination at Vermont Yankee from previously identified tritium leaks and the more recently identified presence of strontium-90. The NRC should require Entergy to address the environmental and other effects of any delay during the SAFSTOR period in addressing such leaks, including the well-known fact that migration will increase the area that is contaminated.

• There are unique environmental and economic impacts related to the length of any SAFSTOR period, and numerous reasonable alternatives (each with unique environmental and economic impacts) to the SAFSTOR period that Entergy has elected. Neither the NRC nor Entergy has ever taken into account that, for this particular nuclear power plant, there are negative economic impacts to the surrounding area resulting from Entergy's decision to use the maximum SAFSTOR period rather than a shorter SAFSTOR. Regulations implementing NEPA (such as 40 C.F.R. § 1508.8) require the NRC to analyze the economic impacts of major federal actions significantly affecting the environment. Neither the NRC nor Entergy has ever done such an analysis, which would require, among other things, accounting for the economic costs of leaving the plant dormant (taking up space that could otherwise be used productively), as well as 60 years of downward pressure on property values and area development due to hesitancy to invest in an area that is slated for a major industrial deconstruction project (with attending noise, aesthetic, and other concerns). This analysis is required by federal law, and Entergy cannot proceed with its decommissioning plans until such an analysis is performed.

• Because Vermont Yankee is owned by a merchant generator (rather than a regulated utility), Entergy cannot go back to ratepayers if it has underestimated the costs of decommissioning, spent fuel management, or site restoration. The lack of a guaranteed ratepayer base raises numerous thus-

far-unanalyzed environmental concerns, including the possibility that certain decommissioning or site restoration activities will not occur due to lack of funding.

• Entergy's PSDAR announces for the first time that an estimated 1.3 million gallons of highly radioactive water will be stored in the torus within the reactor building during decades of SAFSTOR. Given that it was not until the PSDAR that Entergy revealed plans to deal with this radioactive water in this manner, this issue raises environmental issues that are obviously not "bounded" by any previous environmental analysis. Nor has Entergy pointed to any previous analysis addressing potential environmental impacts associated with storing radioactive water in this manner. The Department of Health is concerned that Entergy has not yet identified what instrumentation will be used to monitor torus water levels in the PSDAR. Entergy should also describe what kind of inspection regimen for possible leakage will be used until this water is properly disposed of as radioactive waste. Further, Entergy should explain in the PSDAR when disposal of this water will occur and how.

The PSDAR is also inadequate in terms of its environmental analysis related to the need for extensive groundwater monitoring. To protect public health, safety, and the environment, Entergy must extensively monitor groundwater until decommissioning is complete and its license has been terminated. After tritium contamination was measured in groundwater at many nuclear power plants, the

Nuclear Energy Institute developed the Groundwater Protection Initiative (NEI Technical Report 07-07). Throughout the different phases of decommissioning, Entergy should, at a minimum, maintain its current monitoring levels as required by NEI 07-07 at the Vermont Yankee facility until NRC license termination. This is necessary since radioactive materials will remain in storage for decades before decontamination and dismantling. It is particularly important in light of the Department of Health's recent identification of strontium-90 in groundwater.

The recent discovery of strontium-90 in groundwater raises additional concerns regarding soil contamination that may enter the groundwater and move in a way that threatens public health, safety, and the environment. This includes contamination from previously mentioned long half-life radioactive materials, as well as shorter half-life materials in the soils at Vermont Yankee. For instance, cobalt-60, cesium-134, zinc-65, and manganese-54 have been all been documented in soils and as sources in previously investigated leaks at Vermont Yankee. *See* Site Assessment Study; Department of Health, *Laboratory analyses for soil samples collected March 17, 2010 at locations along the Vermont Yankee Advanced Off-Gas Pipe Tunnel leak pathway*, *available at* http://healthvermont.gov/enviro/rad/yankee/documents/VY_Data_soil_samples_march2010.pdf.

Despite the clear need for robust environmental monitoring until license termination, the PSDAR is mostly silent on this subject. For protection of the environment and public health, monthly sampling from all 32 groundwater

monitoring wells and all three drinking water wells currently sampled at Vermont Yankee should continue through license termination, and split samples from those wells should be provided to the Vermont Department of Health for independent confirmatory analysis. In addition, Entergy should continue to perform radiological environmental monitoring of the pathways to the public, direct gamma radiation, soils, sediments, fish and other flora and fauna as conducted during operation of the facility until the large volume of radioactive materials stored onsite are removed by decontamination, dismantling, and licensed disposal.

Along with those samples currently split with the Department of Health, including onsite groundwater and drinking water, sediments and fish from the Connecticut River, and direct gamma radiation measurements by dosimeter, the State of Vermont must be provided split samples from the final status surveys that are intended to document that soil and structure remediation will allow release of the site for unrestricted use at NRC license termination. The PSDAR fails to include any such requirement and is thus deficient in this regard.

Further, as noted in Section V.B below, the PSDAR provides an inadequate environmental analysis of potential impacts from a radiological incident.

In summary, it is indisputable that there are many environmental impacts related to decommissioning, and the PSDAR does not analyze those impacts in the manner required by NEPA and other applicable statutes and regulations. It is the State's position that the NRC must engage in a full NEPA analysis of those impacts before allowing Entergy to proceed with decommissioning. Even if the NRC

disagrees with that position, then, at a minimum, the NRC must evaluate the PSDAR for compliance with 10 C.F.R. § 50.92, which requires a supplemental environmental impact statement in situations such as this where new information has not previously been analyzed. *See also, e.g.*, *Marsh v. Oregon Natural Res. Council*, 490 U.S. 360, 374 (1989) (noting that when an agency receives new and significant information casting doubt on a previously issued environmental analysis, the agency must reevaluate the earlier analysis). At a minimum, the NRC should require the PSDAR to list all of the environmental impacts related to decommissioning and identify where each one has been evaluated in another context. Entergy has not done so. Nor could it do so, as many of these impacts have not been previously evaluated. Consequently, further environmental analysis is needed before the NRC allows Entergy to proceed with decommissioning.

IV. The NRC Should Require Entergy to Revise Its Analyses Regarding the Emergency Planning Zone

Entergy's decommissioning plans, including its Decommissioning Cost Estimate and the environmental analysis contained in its PSDAR, seem to assume that Entergy will obtain a number of exemptions requests and License Amendment Requests related to emergency management. *See, e.g.*, Decommissioing Cost Estimate § 3, page 17 (noting that "fees associated with emergency planning are assumed to continue through 2016" at which point "the fees are discontinued"). At least two of those requests—a license amendment that would discontinue the Emergency Response Data System (ERDS), and a license amendment that would reduce the Emergency Planning Zone (EPZ)—are being actively challenged by the

State of Vermont. Unless and until those legal challenges have been resolved, Entergy cannot go forward with a decommissioning plan that assumes that these license amendments will be allowed.

A. Entergy Cannot Assume a Reduced Emergency Planning Zone

The State of Vermont has filed extensive comments and submitted a request for a hearing regarding Entergy's license amendment request to reduce the Emergency Planning Zone. Those comments, provided by three separate State agencies, are attached—and expressly incorporated into—these Comments. *See* Exhibit 5. The attached comments explain why the NRC should not allow Entergy to reduce the Emergency Planning Zone in the way Entergy has requested.

B. Even If Entergy Could Assume a Reduced Emergency Planning Zone, That Assumption Would Require Additional Environmental Analyses to Comply with the National Environmental Policy Act and NRC Regulations

Entergy's PSDAR claims—without citation—that "emergency plans and procedures will remain in place to protect the health and safety of the public while the possibility of significant radiological releases exists." PSDAR at 29. On this basis, Entergy "concludes that the impacts of [Vermont Yankee] decommissioning on radiological accidents are small and are bounded by the previously issued GEIS." *Id.* This analysis is flawed for several reasons.

To begin, Entergy's current plans with regard to the Emergency Planning Zone were not available—and thus could not have been analyzed—until Entergy announced those plans through various detailed requests for exemptions and License Amendment Requests filed within the last year. Those detailed plans are

clearly not bounded by documents from 1997, 2002, and 2007, which were developed many years before Entergy's recently announced plans. Indeed, as noted above, what plans Entergy will actually be allowed to implement is currently an open question and will remain so until the current ERDS and EPZ litigation is complete. A significant part of that litigation relates directly to the State's arguments that Entergy's plan to reduce the Emergency Planning Zone exposes the State and its citizens to unacceptable potential environmental and health impacts. *See generally* Exhibit 4. Entergy cannot seriously claim that documents from 1997, 2002, and 2007 "bound" the potential environmental impacts of plans that were never provided between 1997 and 2007 and that remain uncertain to date because they are the subject of active litigation.

In fact, the 2007 GEIS for Vermont Yankee explicitly disclaimed any environmental analysis of emergency management: "the Commission has determined that there is no need for a special review of emergency planning issues in the context of an environmental review for license renewal." NUREG-1437, Supplement 30, A-213 to A-214. The NRC's rationale was that "[o]ffsite entities such as State and local governments and the U.S. Federal Emergency Management Agency have responsibility for offsite emergency planning" and any "[p]erceived deficiencies . . . in the offsite emergency plans should be directed to the government entities that have responsibility for the specific portions of the plan judged to be deficient." *Id.* at A-214. In other words, the NRC refused to do the requisite environmental analysis because other agencies, including "State and local

governments" were responsible for offsite emergency planning. Yet Entergy has now proceeded with at least two actions related to emergency management—disconnection of the ERDS notification system, and reduction of the EPZ—that are expressly opposed by the State of Vermont and that threaten to diminish the State's ability to meet its emergency planning obligations.

Entergy and the NRC cannot have it both ways. If Entergy and the NRC are going to make emergency management decisions that are opposed by the State of Vermont, they cannot claim that such decisions are "bounded" by an environmental analysis that relied on State authority over these important matters.

Further, the PSDAR has clear inadequacies regarding issues such as radiological spill control during dewatering operations. The PSDAR contains a statement that one of the processes for placing the plant in SAFSTOR is "[p]rocessing and disposal of water and water filter and treatment media not required to support dormancy." PSDAR page 10. These activities present a significant risk for release to the environment. Yet there is inadequate evidence in the PSDAR that these activities are well-planned and that sufficient staff will be employed to prevent accidents.

The PSDAR also inadequately describes what fire protection systems will be in place at Vermont Yankee. Throughout every stage of decommissioning, large quantities of radioactive material will exist within the remaining structures, systems, and components until they are decontaminated and dismantled. In the event of a fire, these materials may result in radioactive contamination of, and

radiation doses to, firefighters and other first responders. Consumption by fire of radioactive materials may also result in offsite contamination. No evidence is provided in the PSDAR that local fire department personnel are fully prepared for onsite firefighting with limited support offered by reduced staff at Vermont Yankee. There is also no evidence in the PSDAR as to how offsite responders can manage offsite contamination that results from fires that consume radioactive materials stored onsite.

The PSDAR claims that the 2002 Decommissioning GEIS "assessed the range of possible radiological accidents during decommissioning" and that "the risk at spent fuel pools is low and well within the NRC's Quantitative Health Objectives." PSDAR at page 29. But this ignores the wide range of hostile-action-based scenarios that were made vividly possible after the attacks of September 11, 2001. These hostile actions, according to the National Academies of Science, could lead to a zirconium fire in the spent fuel pool or severely damage the torus where more than one million gallons of radioactive water will be stored until decontamination and dismantling. *See* National Academies of Science, Committee on the Safety and Security of Commercial Spent Nuclear Fuel Storage Board on Radioactive Waste Management Division on Earth and Life Studies National Research Council, *Safety And Security Of Commercial Spent Nuclear Fuel Storage [Public Report]* (2006).

The U.S. Court of Appeals for the Ninth Circuit has already ruled that "the possibility of terrorist attack" is not so "remote and highly speculative" as to fall outside the bounds of NEPA. *San Luis Obispo Mothers for Peace*, 449 F.3d at 1030.

The NRC thus must assess the potential environmental impacts from, for instance, a terrorist attack that leads to a zirconium fire in the spent fuel pool or severely damages the torus where more than one million gallons of radioactive water will be stored until decontamination and dismantling. *See id.*

V. The NRC Should Require Entergy to Address Numerous Other Deficiencies in the PSDAR and Related Filings

In addition to addressing the overarching concerns raised above, the State requests that the NRC require Entergy to address a number or other deficiencies in its PSDAR and related filings. The State flagged many of these errors and oversights in its December 13, 2014 submission to Entergy—a submission that, as noted earlier, is expressly incorporated into these Comments. *See* Exhibit 1.

In addition:

• A number of aspects of the Site Assessment Study bear directly on the PSDAR, and the NRC should require Entergy to explain aspects of the Site Assessment Study that are unsupported or inconsistent with representations that Entergy makes in the PSDAR. For instance, in § 8.3, page 53, of the Site Assessment Study, Entergy provides a table of "Cost Estimate Results" with numbers that are unexplained and unsupported. The State pointed this out to Entergy in the State's comments in December 2014, but received no response on this issue. The text preceding this section indicates that the vendor estimates were only for license termination work. The implication is that the vendor estimates of license termination were combined with Entergy's estimates for spent fuel management and site restoration to arrive at a total estimate. Thus, one would

expect the difference between each vendor license termination estimate and the total to be roughly the same. One would also expect the difference to be equal to Entergy's cost estimate of a total of about $425 million in spent fuel management and site restoration costs (the difference between $817 million in license termination costs and the total $1.24 billion estimate). Yet neither is the case. Rather than $425 million, each of the three vendor estimates add in around $694 to about $754 million for spent fuel management and site restoration. The NRC should ask Entergy to explain what spent fuel management and site restoration costs were used to arrive at the total decommissioning cost for each vendor, and why these costs differ for each vendor even though the vendors apparently were not asked to estimate those costs.

• Table 2.1 (page 8): The Large Component Removal duration is given as 1.3 years, including reactor vessel internals and reactor vessel segmentation. This is unrealistic given that the Zion decommissioning currently underway began these activities in 2010 and is not yet complete and may take another year or so. The NRC should ask Entergy to explain how the cost for the segmentation work included in the Vermont Yankee estimate would change if the period of performance were four years or more consistent with Zion experience. The NRC should also ask Entergy to explain how any change in the period of performance for this work would affect the overall duration or cost of the license termination work.

• Section 2.2.3: Entergy claims that radioactive decay during the SAFSTOR period will significantly reduce the quantity of contamination and radioactivity that

must be disposed of during decommissioning. But, as the State pointed out to Entergy in its December 2014 comments, the Site Assessment Study shows that there appears to be *no reduction* in waste volume based on decay during SAFSTOR. Similarly, Entergy says as much in its own Decommissioning Cost Estimate: "No process system containing/handling radioactive substances at shutdown is presumed to meet material release criteria by decay alone (i.e., systems radioactive at shutdown [will] still be radioactive over the time period during which the decommissioning is accomplished, due to the presence of long-lived radionuclides.)". Decommissioning Cost Estimate § 5, page 2. While decay would reduce the number of curies to be removed and in that sense the quantity of radioactivity removed, the discussion should be clarified to note that waste volumes are not decreased.

• Section 2.2.4: Assuming that the current cost estimate is based on disposal of waste at the Waste Control Specialists Site (WCS) facility, a comparison of waste disposal costs in the 2012 Vermont Yankee estimate and the current estimate reveals inconsistencies that the NRC should ask Entergy to explain. In the 2012 estimate, it was assumed that a large fraction of the low-level waste would be sent to an off-site processing facility with the remainder being sent to Envirocare for burial. The total cost of waste processing and burial for a total of about 669,000 cubic feet of waste was a little over $60 million dollars. However, in the current estimate it appears no waste would be sent to a processor and all waste would be sent for burial at WCS, with higher disposal cost than Envirocare, but the total waste burial cost is only about $45 million for a total volume of about 666,000 cubic

feet. It is unclear how shifting from the lower cost off-site processing and Envirocare assumption to the WCS assumption results in substantially lower cost. Further, the average cost per cubic foot for disposing of waste through a processor in the 2012 estimate is about $66 per cubic foot. Calculating the average cost of waste disposal at WCS in the current estimate, the cost is about $67 per cubic foot. It is unclear how the per-cubic-foot cost for disposal at WCS could be comparable to the 2012 cost for off-site processing which was cheaper than even disposal at Envirocare. In 2012, the rate for disposal at WCS was about $150 per cubic foot. Using that rate, the total waste burial cost would be about $99 million rather than the $45 million that Entergy estimates in its Decommissioning Cost Estimate. The NRC should ask Entergy to explain the rates assumed for disposal of low-level waste and the basis for this rate.

• Section 2.2.5 (Removal of Mixed Waste): This section currently states that "[i]f technology, resources, and approved processes are available, the processes will be evaluated to render the mixed waste non-hazardous." Rendering mixed waste non-hazardous may only occur pursuant to 40 C.F.R. 266.235 as adopted by Vermont in VHWMR 7-109(b)(2), when applicable, or pursuant to a hazardous waste treatment facility permit (*see* Subchapter 5 of the Vermont Hazardous Waste Management Regulations). This section of the PSDAR should be revised accordingly to reflect this requirement.

• Section 2.2.6 (Site Characterization): This section currently states that "[d]uring the decommissioning process, site characterization will be performed in

which radiological, regulated, and hazardous wastes will be identified, categorized, and quantified." The State of Vermont regulates and manages non-radiological Hazardous Waste Sites utilizing the Agency of Natural Resources' *Investigation and Remediation of Contaminated Properties Procedure* (IROCPP), which outlines processes for the investigation and remediation of releases of non-radiological hazardous materials. Entergy must prepare and submit a detailed plan outlining its characterization process for the site that is consistent with the IROCPP, as well as a proposed schedule for site assessment and remediation of the site. The PSDAR should be revised to reflect this information.

• Section 2.2.7: This discussion is inappropriately limited to remediation of tritium and fails to account for the recent discovery of strontium-90 in groundwater. Further, even if Entergy could limit this section to tritium contamination, Entergy cannot assume that remediation or removal of structural materials or soil containing tritium will not be required solely because the levels are less than those required by the NRC for license termination. When decommissioning occurred at the Yankee Rowe plant, the licensee processed or removed all material with detectable tritium. The NRC should ask Entergy to explain why it believes that similar remedial measures at Vermont Yankee will not be required.

• Section 4.1, page 21: The PSDAR should explain the rationale for using the HIS Global Insight's Index for CPI, All Urban, All Items, for the escalation of low-level waste costs at WCS. Historically, low-level waste costs have grown at much higher rates than general cost escalation.

• Section 5.4 (Additional Considerations): Entergy's PSDAR reaffirms its commitment to "conduct all activities in Vermont, including at the VY Station site, in accordance with federal and state laws, including VDH's Radiological Health Rule" in accordance with the December 2013 Settlement Agreement. To demonstrate that Entergy's decommissioning and site restoration activities will comply with all state laws, including Agency of Natural Resources regulations, Entergy must submit a more detailed plan and timeline of decommissioning and other activities required to remediate the site. This must include a detailed description and schedule for such non-radiologically related processes as: demolishing buildings on site, removal of underground petroleum storage tanks, the phased closure of waste handling and storage areas on the site, and site characterization and investigation procedures and techniques. As noted earlier, requests for this information as well as other information pertaining to Entergy's plan for decommissioning and remediation of the site were submitted to Entergy by the Agency of Natural Resources in its December 2014 comments. To date, Entergy has not supplied this information to the Agency. The PSDAR should be revised to demonstrate how Entergy's post-closure activities will comply with state laws and regulations.

CONCLUSION

The State of Vermont has a number of concerns with the decommissioning plans that Entergy has submitted to the NRC in Entergy's PSDAR and related filings. For the reasons noted above, the PSDAR is deficient and does not comply

with applicable NRC regulations. Entergy has a lot more work to do before the NRC and State officials can conclude that Entergy's plans for decommissioning Vermont Yankee will comply with all applicable state and federal law.

Entergy's decommissioning plans are also deficient because they delay the site characterization that is needed to determine the true costs of decommissioning, while simultaneously claiming that there is already an "excess" amount of money in the NDT Fund. On that front, the State's request is a modest one—simply that the NRC apply the regulations that already apply to the NDT Fund and not allow Entergy to be exempted from those regulations. This request coincides with what Entergy is already obligated to do under the Master Trust Agreement it signed when it bought the Vermont Yankee plant.

The State of Vermont is a sovereign entity hosting the plant at issue in this proceeding. The State and its citizens are the ones who will ultimately live with the consequences of the decisions that are made in the next few months. The NRC must take the State's concerns seriously.

For the reasons noted above, the NRC should act now to address all of the matters raised in these Comments. For the NRC's convenience, the State has summarized its specific requested actions in the Addendum immediately following these Comments.

The State looks forward to the NRC's response to these Comments and to a continued dialogue with the NRC and Entergy as these matters proceed forward.

ADDENDUM

The State respectfully requests that the NRC should take the following actions now:

- Require Entergy to provide a detailed response to all of the State's December 13, 2014 comments.
- Require Entergy to respond to the State's Comments provided today.
- Provide the NRC's response to each of the State's Comments.
- Provide the State with a full adjudicatory hearing in accordance with 10 C.F.R. § 2.104 to address the State's concerns and protect the public interest.
- Require Entergy to revise its cost estimates as noted above.
- Require Entergy to use the time between now and December 2016 to engage in a more thorough radiological and non-radiological site characterization so that it can make a more accurate Decommissioning Cost Estimate in connection with its PSDAR.
- Require Entergy to plan for contingencies that may not be discovered until the end of SAFSTOR and that would increase the total cost for decommissioning, spent fuel management, or site restoration.
- Not allow Entergy to rely on cost estimates that assume that all spent fuel will be removed from the site by 2052.
- Not grant Entergy's January 6, 2015 exemption request, and find deficient Entergy's December 19, 2014 Updated Irradiated Fuel Management, Updated Decommissioning Funding Status Report, and related portions of the PSDAR and Decommissioning Cost Estimate insofar as Entergy is attempting to use the

Vermont Yankee NDT Fund for spent fuel management expenses during the post-closure period before radiological decommissioning is complete. The NRC should then require Entergy to submit revised filings of its December 19, 2014 filings, including a revised plan for spent fuel management expenses that is consistent with the requirements of 10 C.F.R. § 50.54bb.

- Analyze Appendix C of Entergy's Decommissioning Cost Estimate and prohibit Entergy from withdrawing money from the Vermont Yankee NDT Fund for all items that fail to meet the NRC's definition of decommissioning, including, at a minimum, the following:

    a. The $5 million payment (lines 1a.2.22 & 1b.2.22) that Entergy is making to the State as part of the Settlement Agreement;

    b. Emergency planning costs (*e.g.*, line 1a.2.23);

    c. Shipments of non-radiological asbestos waste (*e.g.*, line 1a.2.27);

    d. Insurance (*e.g.*, line 1a.4.1);

    e. Property taxes (*e.g.*, line 1a.4.2);

    f. Replacement of structures during SAFSTOR (*e.g.*, line 2b.1.4);

    g. Any costs associated with offsite buildings that are not radiologically contaminated; and

    h. All other listed costs that relate to activities that do not reduce radiological contamination.

- Require Entergy to explain, in light of its merchant-generator status, how it will fund items such as those listed above, as well as costs that are not currently

listed in its Decommissioning Cost Estimate, such as employee pension fund liabilities.

- Require Entergy to revise Appendix C of its Decommissioning Cost Estimate to include a fourth category that contains expenses such as the ones listed above and Entergy's "NEI Annual Fee" (e.g., line 1a.2.38 of Appendix C).

- Require Entergy to revise incorrect estimates, such as Entergy's claim that it will pay only around $7,000 per year in property taxes beginning in 2020 (e.g., lines 2aa.4.2 & 2b.4.2).

- Take all other actions necessary to protect the money in the NDT Fund and allow its expenditure only for allowable uses until radiological decommissioning is complete.

- Undertake a NEPA-compliant comprehensive analysis of all potential environmental and economic impacts of Entergy's post-closure plans, including an analysis of all potential impacts related to:

    a. All potential radiological incidents at the site;
    b. The continued storage of spent nuclear fuel, including the possibility of indefinite storage onsite and the possibility of a terrorist attack on stored spent nuclear fuel;
    c. The transfer of spent nuclear fuel and the possibility of accidents during such transfers from the spent fuel pool to dry casks and potentially from old dry casks to new dry casks;

d. The creation and operation of a Dry Fuel Transfer Station to move spent fuel into new dry casks every 100 years, and the funding source for: (1) the construction of a Dry Fuel Transfer Station; (2) the purchase of 58 new casks and all other labor and material costs for transferring the fuel every 100 years; and (3) the costs of maintaining security at the site indefinitely
e. The existence of radiological and non-radiological contamination;
f. The generation and storage of non-radiological contaminants; and
g. Site-specific impacts resulting from:
    i. the plant's close proximity to an operating elementary school (and potential airborne asbestos and lead contamination, as well as potential impacts from a radiological incident);
    ii. recreational activities on the bordering Connecticut River;
    iii. species that may become listed as endangered or threatened in the next 60 years;
    iv. science's increased understanding of climate change, including expected increases in the severity of floods;
    v. known and unknown contamination at Vermont Yankee from previously identified tritium leaks and the more recently identified presence of strontium-90;

vi. unique environmental and economic impacts and alternatives related to the length of any SAFSTOR period, including negative impacts from a longer SAFSTOR period;

vii. the inability to go back to ratepayers if any post-closure costs have been underestimated; and

viii. the storage of an estimated 1.3 million gallons of highly radioactive water in the torus during SAFSTOR.

• Require Entergy to explain how each of the above impacts is allegedly bounded by previously issued environmental impact statements and why Entergy believes that a supplemental environmental impact statement is not needed to meet the requirements of 10 C.F.R. § 50.92.

• Require Entergy to explain how it plans to comply with state law for the closure of non-radiological waste handling and storage areas on site, including whether it has submitted a plan to the Agency of Natural Resources as the Agency requested.

• Require Entergy to extensively monitor groundwater until decommissioning is complete and its license has been terminated, including at a minimum: maintaining its current monitoring levels as required by NEI 07-07; undertaking monthly sampling from all 32 groundwater monitoring wells and all three drinking water wells currently sampled at Vermont Yankee; and providing split samples from those wells to the Vermont Department of Health for independent confirmatory analysis.

- Require Entergy to continue to perform radiological environmental monitoring of the pathways to the public, direct gamma radiation, soils, sediments, fish and other flora and fauna as conducted during operation of the facility.

- Require Entergy to provide the State with split samples from the final status surveys that are intended to document that soil and structure remediation will allow release of the site for unrestricted use at NRC license termination.

- Require Entergy to revise its analyses to reflect the current requirements under its license for maintaining an Emergency Planning Zone.

- Require Entergy to explain what fire protection systems will be in place at Vermont Yankee.

- Perform a NEPA-compliant analysis of any proposed reductions in the Emergency Planning Zone, including analyzing issues such as radiological spill control during dewatering operations and the potential environmental impacts from a terrorist attack that leads to a zirconium fire in the spent fuel pool or severely damages the torus where more than one million gallons of radioactive water will be stored until decontamination and dismantling.

- Require Entergy to explain aspects of the Site Assessment Study that are unsupported or inconsistent with representations that Entergy makes in the PSDAR, including unexplained and unsupported numbers in the table of "Cost Estimate Results" in § 8.3, page 53, of the Site Assessment Study.

- Require Entergy to explain why Large Component Removal will take only 1.3 years at Vermont Yankee when it is taking more than 4 years at Zion, and how a longer period would affect Entergy's cost and duration estimates.

- Require Entergy to clarify that waste volumes will not be decreased as a result of SAFSTOR.

- Require Entergy to explain discrepancies between its current cost estimate for waste disposal at the WCS facility and the estimate it made in 2012.

- Require Entergy to explain how it plans to comply with state law requiring that rendering mixed waste non-hazardous may only occur pursuant to 40 C.F.R. 266.235 as adopted by Vermont in VHWMR 7-109(b)(2), when applicable, or pursuant to a hazardous waste treatment facility permit (*see* Subchapter 5 of the Vermont Hazardous Waste Management Regulations).

- Require Entergy to prepare and submit a detailed plan outlining its characterization process for the site that is consistent with the *Investigation and Remediation of Contaminated Properties Procedure*, as well as a proposed schedule for site assessment and remediation of the site.

- Require Entergy to revise the PSDAR in light of the recent discovery of strontium-90 in groundwater.

- Require Entergy to explain why it assumes that remediation or removal of structural materials or soil containing tritium will not be required if the levels are less than those required by the NRC for license termination, when the licensee at plants like Yankee Rowe processed or removed all material with detectable tritium.

- Require Entergy to explain the rationale for using the HIS Global Insight's Index for CPI, All Urban, All Items, for the escalation of low-level waste costs at WCS, given that historically low-level waste costs have grown at much higher rates.
- Require Entergy to submit a more detailed plan and timeline of decommissioning and other activities required to remediate the site.

EXHIBIT 3

Petition of the State of Vermont, the Vermont Yankee Nuclear Power Corporation, and Green Mountain Power Corporation for Review of Entergy Nuclear Operation, Inc.'s Planned Use of the Vermont Yankee Nuclear Decommissioning Trust Fund

Declaration of William Irwin, Sc.D, CHP (April 20, 2015)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of: Entergy Nuclear Operations, Inc., Vermont Yankee Nuclear Power Station September 4, 2014 License Amendment Request	Docket No. NRC-2015-0029 Docket No. 50-271

Declaration of William Irwin, Sc.D, CHP

I declare under penalty of perjury that the foregoing is true and correct:

(1) A true and correct copy of my CV is attached to this declaration.

(2) Since December 2005, I have been an employee of the Vermont Department of Health, where I am the Radiological and Toxicological Sciences Program Chief.

(3) In my role at the Vermont Department of Health, I have managed or helped manage environmental surveillance and emergency preparedness for the Vermont Yankee Nuclear Power Station.

(4) I was involved in helping draft portions of the State of Vermont's March 6, 2015 Comments ("State's Comments") on Entergy's proposed Post Shutdown Decommissioning Activities Report ("PSDAR").

(5) I attest to and affirm the factual underpinnings of those portions of the State's Comments that speak to radiological contamination discovered at the site that will likely increase the anticipated costs of radiological decommissioning.

(6) In addition, and without limitation on other statements I could attest to and affirm, I specifically attest to and affirm the factual underpinnings discussed in pages 9-19 of the State's Comments, including, among other things the following:

a. The characterization of the site (radiological and non-radiological) has not yet occurred. Rather, Entergy has elected to wait decades until nearly the end of the allowed SAFSTOR period before engaging in this characterization. The decision to delay characterization calls into question all of the cost estimates that Entergy has provided in its PSDAR and related filings. Without a full site characterization, there is no way to determine what it will ultimately cost to perform radiological decommissioning, spent fuel management, and site restoration.

b. The PSDAR also does not describe the depth and breadth of the planned radiological environmental monitoring program.

c. The PSDAR also inadequately describes radiological emergency preparedness during decommissioning. The basis of emergency planning ignores hostile action based scenarios that could destroy key structures storing radioactive materials or result in a zirconium fuel cladding fire while fuel remains in the spent fuel pool.

d. Throughout the SAFSTOR years, large quantities of radioactive materials in solid and liquid form will be left in storage onsite where leaks have occurred in the past, and may occur again. In

addition to radioactive material storage, inventory management and monitoring, and response to leaks into the environment, there is a serious concern about fire protection for the structures, systems, and components containing radioactive materials in storage. Capabilities to monitor for and respond to these kinds of radiological emergencies are not adequately addressed in the PSDAR.

e. One clear omission from the PSDAR and Decommissioning Cost Estimate is the recent discovery of strontium-90 in locations where that contaminant had not previously been discovered. *See* Vermont Department of Health Communications Office, *Strontium-90 Detected in Ground Water Monitoring Wells at Vermont Yankee* (Feb. 9, 2015), http://healthvermont.gov/news/2015/020915_vy_strontium90.aspx. The Department of Health also found cesium-137, strontium-90, and other long half-life radioactive materials in soil samples taken in 2010. *See* http://healthvermont.gov/enviro/rad/yankee/laboratory_testing.aspx. The Department of Health's publication of results regarding strontium-90 in groundwater wells occurred *after* Entergy submitted its PSDAR. At this point, we already know of at least one way in which the Decommissioning Cost Estimate is incorrect—

namely, the analysis underlying the estimated amount of soil removal that will be needed surrounding the advanced off-gas (AOG) building. On that issue, Entergy has stated the following:

> It should be noted that no additional remediation of the soil in the vicinity of the AOG building was included, based upon the earlier remediation (soil removal) performed by Entergy VY and the findings from the GZA groundwater investigation that *only tritium had migrated into the groundwater*. Tritium is a low-energy beta emitter with a half-life of approximately 12.3 years, decaying to non-radioactive helium. As such, any residual sub-grade tritium is not expected to require any further remediation at the time of decommissioning in order to meet site release criteria.

Decommissioning Cost Estimate, § 3, page 12 (emphasis added; footnote omitted). The Decommissioning Cost Estimate is clearly out-of-date and incorrect in its claim that "only tritium ha[s] migrated into the groundwater" in this area. *Id.* This new data on strontium-90 creates doubt regarding Entergy's claim in the PSDAR that previous excavation of the AOG leakage site eliminates the need to excavate deeper than three feet below grade. *See id.*; *see also id.* at § 3, page 13 (noting that foundations and building walls will only be removed "to a nominal depth of three feet below grade"). Many long-lived radionuclides are likely to be found in soils and groundwater far from the small excavation made to repair the leaks that likely allowed reactor condensate to enter into the site soils for many years. In addition, these same long-

lived radionuclides are likely to be found in the structures, systems, and components left during SAFSTOR and then later decontaminated and dismantled.

f. The presence of strontium-90 or other long-lived radionuclides could greatly increase the costs of decommissioning and site restoration.

g. Long half-life radioactive materials are expected to be found in soils at Vermont Yankee. These include 5,730-year half-life carbon-14, 100-year half-life nickel-63, 29-year half-life strontium-90, 30-year half-life cesium-137, 13.5-year half-life europium-152, and 12.3-year half-life hydrogen-3. *See* Abelquist, Eric W., *Decommissioning Health Physics, A Handbook for MARSSIM Users* (2d Ed. 2014). These radioactive materials and hard-to-detect radionuclides were found in the decommissioning of both Maine Yankee and Connecticut Yankee in addition to transuranics, radioisotopes of plutonium, curium, neptunium, and americium. *See* Letter from Thomas L. Williamson, Maine Yankee Director of Nuclear Safety and Regulatory Affairs to NRC (Jan. 16, 2002) (ADAMS ML020440651). Further, as the State pointed out to Entergy in the State's December 2014 comments, carbon-14 has been a major issue in the decommissioning of other sites such as Yankee Rowe and is expected to be a concern in the decommissioning of future sites such

as San Onofre. Despite the State's explicit request, Entergy has not yet provided any evaluations, analyses, or other bases for assuming that carbon-14 will not be of concern in decommissioning Vermont Yankee.

h. Conversations with Health Department staff in Maine and with Environmental Conservation Department staff in Connecticut indicate that decommissioning is likely to reveal unanticipated radioactive sources to be remediated. These included pockets of highly contaminated groundwater dammed up by existing structures at Maine Yankee and a 25-foot-deep 225-foot-long excavation of soil around the reactor water storage tank at Connecticut Yankee. These kinds of potential situations are not adequately accounted for in the PSDAR. The PSDAR provides no assurance that the challenges of remediating these radioactive materials are factored into the planning and funding for the decommissioning of Vermont Yankee.

i. Even if strontium-90 had not recently been discovered, the PSDAR would be deficient given other evidence that soil contamination exists—and that remediation is thus likely to be needed—more than three feet below grade. The October 2014 Site Assessment Study documents the 1991 leak in the chemistry lab drain line, the AOG reactor condensate leaks confirmed in 2009, the piping leaks

between the radioactive waste building and the AOG building discovered in 2010, and other spills and leaks of radioactive materials. The area between the Connecticut River, the intake structure, the discharge structure, and the reactor, turbine, and radioactive waste buildings may contain large volumes of contaminated soil requiring excavation to meet the derived concentration guideline levels for appropriate remediation in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual. Significant leakage of reactor condensate and radioactive materials spills have occurred: in the AOG piping tunnel; in piping between the AOG building and the radioactive waste building; in and around the radioactive waste building; in the condensate storage tank courtyard; and between the Connecticut River and the reactor, radioactive waste, and AOG buildings. If Entergy fails to remediate beyond three feet below grade, contamination could reach the groundwater and river water down-gradient of these areas. The PSDAR provides no information to determine whether the human and financial resources required for all necessary soil removal and other remediation will be available at the time the remediation must occur.

j. Entergy's Decommissioning Cost Estimate only addresses so-called contingencies that are "almost certain to occur." Decommissioning

Cost Estimate at xii. Actual contingencies—such as the discovery of strontium-90 and other radionuclides in places not previously thought to be contaminated—have historically led to enormous escalations in decommissioning costs. For instance, at Connecticut Yankee, the discovery of strontium-90—the very same radiological contaminant that was recently discovered in the groundwater at Vermont Yankee—led to an enormous decommissioning cost escalation during the radiological decontamination and dismantlement phase that Entergy intends to postpone until the end of its SAFSTOR period. Yet Entergy categorizes all of these types of potential expenses as "financial risks" and explicitly notes that it "does not add any additional costs to the estimate for financial risk." Decommissioning Cost Estimate § 3, page 6.

(7) In addition, and without limitation on other statements I could attest to and affirm, I specifically attest to and affirm the following factual underpinnings discussed in pages 45-46, 49, 51-53, and 57 of the State's Comments:

a. Regardless of a plant's size, other site-specific factors can—and do—affect the potential environmental and other impacts of decommissioning. For instance, Vermont Yankee has an operating elementary school located just 1500 feet from the reactor building. The close proximity of an operating elementary school cannot be ignored. At a minimum, this factor calls for imposing common-

sense mitigation measures that ensure that schoolchildren are not present during certain decommissioning activities, such as the transfer of spent nuclear fuel or the demolition of buildings containing radioactive or non-radiological hazardous materials like asbestos and lead.[1] It is well known that young children are more vulnerable to adverse health reactions to airborne contaminants such as lead. *See, e.g.*, Vermont Dept. of Health, *Lead Poisoning and Prevention*, http://healthvermont.gov/enviro/lead/ ("Young children are at highest risk because their developing bodies absorb lead more easily. Lead dust exposure can have life-long health effects such as lowering a child's IQ."). Thus, in contrast to Entergy's "bounding" claim, a decommissioning activity such as the demolition of a building that contains lead (and the lead dust created from that) might have minimal or no environmental impacts at a larger plant in an isolated area, but significant consequences at Vermont Yankee if even a small amount of lead dust travels the short distance between the plant and the nearby elementary school. Entergy's PSDAR therefore fails to show that these environmental impacts are bounded by previous analyses.

[1] Despite specific requests for such information by the Department of Health and the Agency of Natural Resources in the December 2014 comments that the State provided to Entergy, the PSDAR is silent on the presence and eventual disposition of asbestos-containing materials and lead-based paint, and Entergy has failed to provide this requested information to either the Department of Health or the Agency of Natural Resources.

b. There is known and unknown contamination at Vermont Yankee from previously identified tritium leaks and the more recently identified presence of strontium-90. Entergy has not analyzed the environmental and other effects of any delay during the SAFSTOR period in addressing such leaks, including the well-known fact that migration will increase the area that is contaminated.

c. Entergy's PSDAR announces for the first time that an estimated 1.3 million gallons of highly radioactive water will be stored in the torus within the reactor building during decades of SAFSTOR. Given that it was not until the PSDAR that Entergy revealed plans to deal with this radioactive water in this manner, this issue raises environmental issues that are obviously not "bounded" by any previous environmental analysis. Nor has Entergy pointed to any previous analysis addressing potential environmental impacts associated with storing radioactive water in this manner. Entergy has not yet identified what instrumentation will be used to monitor torus water levels in the PSDAR or what kind of inspection regimen for possible leakage will be used until this water is properly disposed of as radioactive waste. Further, Entergy has not explained when disposal of this water will occur and how.

d. The PSDAR is also inadequate in terms of its environmental analysis related to the need for extensive groundwater monitoring.

To protect public health, safety, and the environment, Entergy must extensively monitor groundwater until decommissioning is complete and its license has been terminated. After tritium contamination was measured in groundwater at many nuclear power plants, the Nuclear Energy Institute developed the Groundwater Protection Initiative (NEI Technical Report 07-07). Throughout the different phases of decommissioning, Entergy should, at a minimum, maintain its current monitoring levels as required by NEI 07-07 at the Vermont Yankee facility until NRC license termination. This is necessary since radioactive materials will remain in storage for decades before decontamination and dismantling. It is particularly important in light of the Department of Health's recent identification of strontium-90 in groundwater.

e. The recent discovery of strontium-90 in groundwater raises additional concerns regarding soil contamination that may enter the groundwater and move in a way that threatens public health, safety, and the environment. This includes contamination from previously mentioned long half-life radioactive materials, as well as shorter half-life materials in the soils at Vermont Yankee. For instance, cobalt-60, cesium-134, zinc-65, and manganese-54 have been all been documented in soils and as sources in previously investigated leaks at Vermont Yankee. *See* Site Assessment Study;

Department of Health, *Laboratory analyses for soil samples collected March 17, 2010 at locations along the Vermont Yankee Advanced Off-Gas Pipe Tunnel leak pathway*, *available at* http://healthvermont.gov/enviro/rad/yankee/documents/VY_Data_soil_samples_march2010.pdf.

f. Despite the clear need for robust environmental monitoring until license termination, the PSDAR is mostly silent on this subject. For protection of the environment and public health, monthly sampling from all 32 groundwater monitoring wells and all three drinking water wells currently sampled at Vermont Yankee should continue through license termination, and split samples from those wells should be provided to the Vermont Department of Health for independent confirmatory analysis. In addition, Entergy should continue to perform radiological environmental monitoring of the pathways to the public, direct gamma radiation, soils, sediments, fish and other flora and fauna as conducted during operation of the facility until the large volume of radioactive materials stored onsite are removed by decontamination, dismantling, and licensed disposal. Along with those samples currently split with the Department of Health, including onsite groundwater and drinking water, sediments and fish from the Connecticut River, and direct gamma radiation measurements by dosimeter, the State of

Vermont must be provided split samples from the final status surveys that are intended to document that soil and structure remediation will allow release of the site for unrestricted use at NRC license termination. The PSDAR fails to include any such requirement and is thus deficient in this regard.

g. The PSDAR also inadequately describes what fire protection systems will be in place at Vermont Yankee. Throughout every stage of decommissioning, large quantities of radioactive material will exist within the remaining structures, systems, and components until they are decontaminated and dismantled. In the event of a fire, these materials may result in radioactive contamination of, and radiation doses to, firefighters and other first responders. Consumption by fire of radioactive materials may also result in offsite contamination. No evidence is provided in the PSDAR that local fire department personnel are fully prepared for onsite firefighting with limited support offered by reduced staff at Vermont Yankee. There is also no evidence in the PSDAR as to how offsite responders can manage offsite contamination that results from fires that consume radioactive materials stored onsite.

(8) In light of these and other concerns, there is a significant risk that the Vermont Yankee Nuclear Decommissioning Trust Fund will have a shortfall and will not be able to cover all of the costs of radiologically decontaminating the site if

the Nuclear Regulatory Commission does not closely monitor withdrawals from that fund.

Executed on April 20, 2015 in Montpelier, Vermont

/s/ *William Irwin*
William Irwin, Sc.D., CHP
Vermont Department of Health
Radiological and Toxicological
Sciences Program Chief
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William E. Irwin, Sc.D., CHP

Education

- **Doctor of Science, Work Environment Engineering**, University of Massachusetts Lowell
- **Master of Science, Radiological Sciences**, University of Massachusetts Lowell
- **Master of Business Administration**, Southern New Hampshire University
- **Bachelor of Arts, Philosophy and History**, Christopher Newport University

Experience

- ***Vermont Department of Health, December 2005-present: Radiological and Toxicological Sciences Program Chief.*** Manage a staff of scientists who provide guidance to the public, state agencies and other stakeholders on the health risks and methods of health protection for acute and chronic exposures to ionizing and non-ionizing radiation and toxic materials. Provide guidance to citizens of Vermont and advice to members of Vermont state government on regulated and unregulated radiological and toxicological health matters. Manage environmental surveillance and emergency preparedness for the Vermont Yankee Nuclear Power Station.
- ***Harvard University, October 2001-September 2005: Health Physicist, Laser Safety Officer, Associate Radiation Protection Officer.*** Directed technical services for environmental health and safety programs at Harvard University. Managed a staff of eight technicians and physicists at the Harvard Medical School and the Faculty of Arts and Sciences. Significant accomplishments included direction of radiological and environmental health activities during the decommissioning of the Harvard Cyclotron Laboratory, and development and initial implementation of the Harvard University Laser Safety Program. Taught courses in laser health physics.
- ***Massachusetts Institute of Technology, October 1992-October 2001: Health Physicist, Assistant Radiation Protection Officer*** Managed the safe use of ionizing and non-ionizing radiation producing devices for campus research laboratories. Designed safety measures for radiological hazards, taught courses in radiological health protection, performed measurements and calculations for radiological emissions, supervised technicians, and determined doses and potential consequences of radiological exposures. Special projects included leading the MIT-Cambridge Collaboration on Education for the Environment.
- ***Biological, Chemical and Radiological Occupational Health Consultant, 1994-2005:*** Praecis Pharmaceuticals; Suntory Pharmaceuticals, Wolfe Laboratories, Inc.; Satori Pharmaceuticals, Inc.; Cubist Pharmaceuticals; Arcturus Pharmaceuticals; Millenium Pharmaceuticals; Kinetix Pharmaceuticals; Animal Rescue League of Boston; W.R.Grace; Sontra Pharmaceuticals, Inc.; Implant Sciences; East Coast Chiropractic; Chemical & Atomic Workers Union; Lasertron; Vizidyne; Duracell; Gillette; Senior Flexonics; Telephotonics; Esdaile, Barret & Esdaile; AT&T Wireless; Bell Atlantic Mobile; Entel; NLS; Omnipoint;Verizon Wireless; Sprint PCS; T-Mobile Communications; the Town of Medfield, MA; the Town of Wrentham, MA; General Dynamics, Inc.
- ***North Atlantic Energy Services, July 1990--October 1992:*** Health Physics and Supervisor Training Instructor. Designed, developed and taught courses in health physics, nuclear power plant operations, and supervision. Emergency Responder and Emergency Response Trainer.
- ***Arizona Public Service Company, December 1985 –July 1990:*** Health Physics, Chemistry, and Engineering Training Instructor and Supervisor. Designed, developed and taught courses in health physics, nuclear power plant operations, and chemistry. Led the team of instructors who prepared and presented courses in engineering and plant operations, and supervised the team of chemistry instructors.
- ***Contract Health Physics Instructor and Technician during refueling and maintenance outages, June 1984 -December 1985:*** Virginia Power (Surry and North Anna Stations); Southern Nuclear Operating Company (Farley Station); South Carolina Electric & Gas (Brunswick Station); Carolina Power & Light (V.C. Summer Station).

- ***Newport News Shipbuilding and Dry Dock Company, Newport News, Virginia, Radiological Controls Technician. October 198 –June 1984.*** Trained and worked according to the US Navy Training Criteria of NAVSEA 389-0288 on submarines, aircraft carriers and guided missile cruisers.

Professional Certifications

- **Certified Health Physicist**, certified by the American Board of Health Physics, comprehensive examination passed July, 1996. Re-certified in 2000, 2004 , 2008, 2012.
- **Hazardous Materials Technician/Specialist/Crew Chief**, Vermont Hazardous Materials Response Team, August 2007.
- **Firefighter I**, certified by the Vermont Fire Service Training Council, May 2008
- **Firefighter II**, certified by the Vermont Fire Service Training Council, February 2012
- **Emergency Medical Technician,** certified by the National Registry of Emergency Medical Technicians, June 2013
- **AgriSafe Provider,** certified by the University of Iowa Center for Agricultural Safety & Health, July 2013.
- **Professional Ski Instructor**, certified by the Professional Ski Instructors of America, March 2009

Professional Affiliations

- **Conference of Radiation Control Program Directors** (CRCPD), Chair-Elect (2004-2005), Director Member; Chair of CRCPD Homeland Security/Emergency Response Task Force 4 for evaluation of resources for radiological and nuclear emergency response; Advisor to CRCPD Environmental Task Force 43 for radiological data sharing policy development.
- **National Council on Radiation Protection and Measurements (NCRP)**, Member of Council Committee CC-1 *Radiation Protection Guidance for the United States* and Scientific Committee SC 3-1, *Guidance for Emergency Responder Dosimetry*.
- **New England Radiological Health Conference**, Executive Board Member.
- **American Academy of Health Physics**, Diplomat.
- **Health Physics Society**, Plenary Member
- **Vermont Firefighters Association**, Member
- **Bakersfield Volunteer Fire Department**, Fire Captain and EMT

Specialized Training

- **Turbo FRMAC, Assessment Scientist**, 24 hour course conducted by Sandia National Laboratories on the use of derived response level, derived intervention level and emergency worker protection computer software, July 2013.
- **Emergency Medical Technician,** 144 hour course with scheduled completion by April 2013.
- **Agricultural Medicine and Occupational Safety Training**, 48 hour course on agricultural illnesses, injuries and exposures with a focus on prevention, as well as care presented by the University of Iowa Center for Agricultural Safety & Health and the New York Center for Agricultural Medicine & Health, July 2013.
- **Computer Assisted Management of Emergency Operations**, 24 hour course conducted by the Environmental Protection Agency, May 2013.
- **HazCat Field Identification Course,** 32 hour course presented by Haz Tech Systems , Inc., February 2013.
- **Firefighter II**, 90 hour training and certification provided by the Vermont Fire Service Training Council, February 2012.
- **Turbo FRMAC, Assessment** Scientist, 24 hour course conducted by Sandia National Laboratories on the use of derived response level, derived intervention leve and emergency worker protection computer software, March 2009.
- **HazCat Field Identification Course,** 32 hour course presented by Haz Tech Systems , Inc., October 2008.

- **Small-scale Chemical and Biological Weapons Production,** 40 hour course by Responders Resource Technology, January 2007.
- **Homeland Security Exercise Evaluation Program**, Vermont Homeland Security Unit, November 2008
- **Firefighter I**, 160 hour training and certification provided by the Vermont Fire Service Training Council, May 2008.
- **Hazardous Materials Technician**, Vermont Hazardous Materials Response Team, February 2007-2012.
- **Hazardous Materials Emergency Responder.** 24-hour course presented by Harvard University, 2001, 2002, 2003, 2004, 2005.
- **Multi-Agency Radiological Survey and Site Investigation Manual.** 8-hour course presented by the American Academy of Health Physics, July 2004.
- **Concepts and Methods for Communicating with Responders and the Public**. 8-hour course presented by the American Academy of Health Physics, July 2003.
- **Medical Management of Patients from Radiological Terrorist Events.** 8-hour course presented by the American Academy of Health Physics, June 2002.
- **Incident Command System.** NIMS 700, ICS 100, 200, 300, 400 and 441 qualified through courses presented by the Vermont Criminal Justice Training Council through May 2006-September 2011.
- **Non-Ionizing Radiation Safety: Evaluation and Management Techniques**, 24-hour course presented by Narda Microwave, November 1998.
- **Radiofrequency Radiation Safety in the Telecommunications Industry**, 8-hour course presented by Narda Microwave, September 1996.
- **Advanced Laser Safety**, 24-hour course presented by the Engineering Technology Institute, August 1996.
- **Health Physics at Research Reactors**, 8-hour course presented by the American Academy of Health Physics, July 1996.
- **Radiation Physics at Accelerators**, 8-hour course presented by the American Academy of Health Physics, July 1995.
- **Environmental Radioactivity Quantification**, 8-hour course presented by Canberra Industries, June 1994.
- **Laser Safety**, 32-hour course presented by the Engineering Technology Institute, June 1993.
- **MIT Reactor Safety Study,** 40-hour course presented by the Massachusetts Institute of Technology, Department of Nuclear Engineering, July 1988.
- **Arizona Public Service, Instructor Development:** Instructor Platform Skills; Course Documentation; Conducting Topic, Task and Paradigm Analysis; Incorporation of Operating Experiences in Training Programs; Learning Objectives; Evaluating Student Performance; Maintaining Training Materials; Motivating Students and Responding to Student Needs; Advanced Platform Skills; Laboratory instruction.
- **Arizona Public Service Technical Development:** Management Oversight and Risk Tree Root Cause Analysis; Emergency Planning; Fundamentals of Working Fluids; Chemistry; Mitigating Core Damage; Plant Modifications; Instrumentation and Process Controls; Systems, Plant Components and Design Bases; reactor Theory; Plant Operations, Human Performance Evaluation Systems; Hazardous Materials Control; Nuclear Reactor Safety
- **U.S. Naval Reactors Radiological Controls**, three-month training program presented by Newport News Shipbuilding and Dry Dock Company, October-December 1981.

Publications

- ***Symptoms Associated with prolonged Radio Frequency Radiation Exposure,*** Lee, Ernest C., Irwin, William E. and Winters, Thomas H., Environmnetal Health Perspectives, June 2004.
- ***Radio Frequency Radiation Risk - A Focus on Wireless Telephones***. Dissertation for The University of Massachusetts Lowell, 2002.
- ***New Technology in Art.*** Encyclopedia of Occupational Health and Safety, Fourth Edition, International Labour Office, Geneva, Switzerland, 1996.

Software Knowledge

- **HPAC, RASCAL, TurboFRMAC, RES/RAD, MetPac,** and **HotSpot** for response and recovery from radiological and nuclear emergencies.
- **CAMEO** for computer assisted management of emergency operations for chemical releases.
- **Microshield** for external dose and shielding calculations.
- **Varskin** for skin dose calculations.
- **INDOS** for internal dose calculations.
- **Lazan** for laser nominal hazard zone, MPE and OD calculations
- **SPSS** for epidemiological statistics and **Stata** for other statistics.
- **Microsoft Word** for word processing, **Excel** for spreadsheets, **Powerpoint** for presentations, **Access** for databases, and **Project** for project management.

Presentations

- ***Vermont Yankee Decommissioning,*** New England Chapter of the Health Physics Society, May 2014.
- ***Science and Response to a Nuclear Reactor Accident,*** National Academies of Science, May 2014.
- ***Regional Rad/Nuc Exercises,*** Conference of Radiation Control Program Directors, May 2014
- ***Chemical and Biological Weapons***, Vermont Hazardous Materials Response Team, July 2013.
- ***The Vermont Dairy Air: Formaldehyde Use on Farms,*** National Environmental Health Association, July 2013.
- ***Public Health Response to an Improvised Nuclear Device.*** Vermont Emergency Medical Services Conference, Burlington, Vermont, October 2012.
- ***Public Health Response to an Improvised Nuclear Device.*** New England Radiological Health Conference, October 2012.
- ***Public Health Response to an Improvised Nuclear Device.*** Vermont Healthcare Preparedness Conference, Burlington, Vermont, June 2012.
- ***Tri-State Radiological Analysis of Fish.*** New England Radiological Health Conference, October 2012.
- ***Vermont Yankee Groundwater Protection and the 2010 Tritium Leak.*** Northeast Epidemiology Conference, October 2012.
- ***The CRCPD Radiological/Nuclear Emergency Toolbox for Response and Recovery for an RDD or IND.*** Conference of Radiation Control Program Directors, Orlando, Florida, May 2012.
- ***TMI, Chernobyl, Fukushima and their Impacts on Vermont Yankee.*** Vermont Emergency Preparedness Conference, Stowe, Vermont, November 2011.
- ***The Fukushima Reactor and Spent Fuel Pool Accidents.*** Vermont Healthcare Preparedness Conference, Stowe, Vermont, October 2011.
- ***Situational Awareness and Assessment.*** CDC Radiation Emergencies Bridging the Gaps Conference, Atlanta, Georgia, March 2011.
- ***Vermont Yankee Tritium Release.*** International Emergency Management Conference, Porsmouth, NH, December 2010.
- ***Vermont and Empire 09.*** The National Radiological Emergency Preparedness Conference, Chicago, Illinois, July 2009.
- ***The NERHC 2007 RDD Conference Exercise.*** Conference of Radiation Control Program Directors, Columbus, Georgia, May 2009.
- ***Radiological/Nuclear Emergency Response for EMS.*** Vermont Emergency Medical Services Conference, Burlington, Vermont, March 2009.
- ***The Health Physics of Radon.*** Vermont Radon Conference, Bolton, Vermont, January 2009.
- ***Radiological/Nuclear Emergency Response for Emergency Department Directors.*** Killington, Vermont, September 2007.
- ***Radio Frequency Radiation Risk from Base Stations in the Environment***. Hundreds of Presentations to communities in Massachusetts, Connecticut, Rhode Island, New Hampshire and New York; January 1993 to September 2004.
- ***Radio Frequency Radiation Risk - A Focus on Wireless Telephones***. Presentation to the Health Physics Society, Washington, DC, July 2004.

- ***Decommissioning of the Harvard Cyclotron***. Presentation to the Health Physics Society, Washington, DC, July 2004.
- ***Decommissioning of the Harvard Cyclotron***. Presentation to the New England Chapter of the Health Physics Society, Westford, MA, June 2003.
- ***Radon in the Home and Laser Safety***. Presentations for the Massachusetts Institute of Technology Independent Activities Period, 1995 - 2000.
- ***Radiation Safety***, for the Massachusetts Safety Council, Braintree, MA, December 2000.
- ***Laser Accidents at the Massachusetts Institute of Technology***. Presentation to the North American Campus Radiation Safety Officers, 17th Biennial CRSO Conference, July 1999.

Testimony

- Testimony before the Vermont Public Service Board relative to the granting of a Certificate of Public Good for the on Vermont Yankee Nuclear Power Station, June 2013.
- Testimony before Vermont Legislature on wind turbine sound, radiofrequency radiation from smart meters, Vermont Yankee Nuclear Power Station and radiological program funding from 2009 to present.
- Testimony on the physics and health impacts of wind turbine sound at the Vermont Public Service Board, February 2011.
- Testimony on the physics and health effects of electromagnetic field and radio frequency radiation sources:
    - In Massachusetts - Arlington, Barnstable, Billerica, Boston, Boxboro, Braintree, Brighton, Brookline, Bridgewater, Brookfield, Brookline, Burlington, Cambridge, Dedham, Dennis, Dorchester, Easton, Fairhaven, Fall River, Fitchburg, Gloucester, Grafton, Groton, Groveland, Hamilton, Hanson, Harvard, Harwich, Holliston, Hudson, Jamaica Plain, Lancaster, Lexington, Lincoln, Lynnfield, Mansfield, Marblehead, Marshfield, Mattapoisett, Maynard, Medfield, Methuen, Middleton, Millis, Nantucket, Needham, Newton, Norfolk, Northborough, North Dartmouth, Norton, Norwell, Ogunquit, Orleans, Oxford, Peabody, Plymouth, Provincetown, Quincy, Randolph, Reading, Revere, Rochester, Rockport, Saugus, Sharon, Scituate, Stoneham, Sudbury, Sutton, Swampscott, Tewksbury, Tisbury, Townsend, Waltham, Wellfleet, Westborough, Weston, West Roxbury, Westminster, Westwood, Weymouth, Winthrop, Worcester and Wrentham
    - In New Hampshire - Candia, Derry, Goffstown, Hollis, Hudson, Nashua, Sutton and Pelham
    - In New York - Duanesburg and Saratoga Springs
    - In Rhode Island - Barrington, Johnston, Portsmouth, Providence, Middletown, North Providence, North Smithfield, Smithfield, Warwick and Woonsocket.

Teaching Experience

- **Harvard University, 2001-September 2005, *Laser Safety*:** Two-hour course delivered to research faculty, students and staff on the physics of lasers, biological effects of lasers, engineering and administrative controls for laser safety.
- **Massachusetts Institute of Technology, 1992-2001, *Radiation Safety:*** Three-hour course to research students, faculty and staff on physics of radiation, biological effects of radiation, radiation detection methods, and radiation protection regulations. ***Laser Safety*:** Two-hour course delivered to research faculty, students and staff on the physics of lasers, biological effects of lasers, engineering and administrative controls for laser safety. ***Occupational and Environmental Law, Radiological Risk Management in High Technology Enterprise, Environmental Health and Safety Case Studies - The Microelectronics and Biotechnology Industries***; ***Comprehensive Environmental Health and Safety Program Design Projects***: Presentations for the MIT Independent Activities Period, 1999.
- **North Atlantic Energy Services, 1990-1992, *Team Building*:** As part of the overall management training program, this eight-hour course used a variety of tools to better understand people and how they might be motivated to become part of a highly successful team. ***Kepner-Tregoe Problem Solving and Decision Analysis:*** As part of the management Training Program, this 24-hour course presented a set of tools for systematic analysis of work situations leading to effective decisions and well-planned

strategies for work. ***Power Plant Fundamentals*:** Forty-hour course in mathematics, physics and chemistry fundamentals; nuclear fission; electrical power generation; plant systems and components; instrumentation and control; normal and emergency plant operations

- **Arizona Public Service, 1985-1990*, Nuclear Power Plant Operations*:** Forty-hour course as part of the engineering and chemistry training programs that presented power plant fundamentals, nuclear fission, reactor systems, startup, routine operations, and emergency operations. ***Plant Systems*:** Forty-hour course in all major systems of a nuclear power plant, including the nuclear reactor, steam generation, electricity generation and safety system components.

Educational Details

- **University of Massachusetts Lowell, Work Environment Engineering, Doctor of Science:** Doctoral courses in Biostatistics, Epidemiology, Ergonomics, Industrial Hygiene, Environmental Law, Occupational Law, Pollution Prevention, Cleaner Production and Healthy Work Organization Design. Research in occupational cancer policy, recombinant DNA health protection, radio frequency radiation risk and the Environmental Protection Agency. Dissertation: A risk assessment on wireless telephones.
- **University of Massachusetts, Lowell, Radiological Sciences, Master of Science:** Masters courses in Mathematical Methods, Radiochemistry, Internal Dosimetry, Radiation Shielding, Radiation Dosimetry and Radiation Safety and Control. Research thesis on Gamma Spectroscopy.
- **Southern New Hampshire University, Masters in Business Administration:** Graduate courses in Managerial Accounting, Finance, Statistics, Economics, Marketing, Management, Business Law, Strategic Analysis, Operations Management, Research Methods, Database Management, Information Engineering, Organizational Behavior and Computer Information Systems. Research in electric utility operations management.
- **Arizona State University, Business Administration:** Computer Information Systems, Managerial Statistics, Management, Managerial Marketing, Legal Environment of Business, Managerial Accounting, Financial management, Managerial Communications and Macro- and Micro-economics.
- **Old Dominion University, Physics:** Algebra, Trigonometry, Calculus and Chemistry.
- **Christopher Newport University, Bachelor of Arts in Philosophy and History:** In addition to the required curriculum for a bachelor's degree, courses in Logic, Ethics, Aesthetics, Epistemology, Metaphysics, Politics, Existentialism, and Chinese, Indian, and Greek Philosophy; American, European, Russian and Asian History. Thesis in Architectural History.