



**TESTIMONY OF CHRISTOPHER RECCHIA
COMMISSIONER
VERMONT PUBLIC SERVICE DEPARTMENT
BEFORE THE U.S. SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
“NUCLEAR REACTOR DECOMMISSIONING: STAKEHOLDER VIEWS”
MAY 14, 2014**

Good Morning. Thank you Chairman Boxer, Ranking Member Vitter and members of the Committee, for the opportunity to be here today to discuss Vermont’s observations regarding nuclear decommissioning in general, and the lessons we’ve learned so far in our specific work on the upcoming shutdown, and hopeful expeditious decommissioning, of the Vermont Yankee Nuclear Power Station in Vernon, Vermont.

I say “hopeful” because I believe it is in everyone’s interest to see the plant decommissioned promptly now that the decision to close the plant has been made. It is particularly important to Vermonters that the site not remain mothballed for decades to come when our economy is better served by a quick cleanup. But, left to rely on the existing NRC structure, Vermont has precious little control over how and when decommissioning occurs, and very little influence over how the NRC and Entergy, the owner of the plant, choose to proceed.

This needs to change, and my testimony today suggests several very reasonable and measured steps to ensure Vermont, and other states similarly situated, have a meaningful role in the NRC process going forward, and that the NRC is directed to take certain steps to move the process in the right direction. I want to take a moment to acknowledge and thank Senator Sanders for his leadership in Vermont Yankee issues over many decades and his efforts to engage NRC constructively on these issues. More help is needed from Congress to ensure states’

rights are advanced and protected.

Brief History and Status of the Vermont Yankee Situation

Vermont willingly hosted the plant for the 40 years that its original license authorized, beginning with operation in 1972 until the term of the original license ended in 2012. As we neared the end of this period, the NRC granted the owner, Entergy, a 20-year renewal over Vermont's objection. Our belief was, then and now, that the plant had served its purpose, was at the end of its useful life, and that our energy future rested elsewhere. The State was a needed partner in the initial licensing of the plant and should have been a needed partner for any license extension.

In 2011, under the leadership of Governor Peter Shumlin, and with overwhelming support of Vermonters, we adopted a Comprehensive Energy Plan with the goal of obtaining 90% of all of Vermont's energy needs from renewables. Nuclear power is not renewable. We have also implemented the first statewide Energy Efficiency Utility that, since its inception in 1999, has saved Vermonters over a billion dollars in energy costs. The parent company of this utility, Vermont Energy Investment Corporation, is now helping Washington, DC achieve similar results. We also made sure to put our commitment to this renewable energy future into practice – since March of 2012, Vermont has purchased no power from the VY Station.

In August of 2013, Entergy announced the closure of the plant, effective at the end of 2014. We reached a Settlement Agreement and Memorandum of Understanding (MOU) in December of last year to enable us to support a Certificate of Public Good (a state-required license) for continued operation through this period. While we are pleased with the agreement reached under the circumstances, our ability to negotiate this agreement, and the necessity to do so for the benefit of Vermonters, was hampered by the NRC's limitations on a state's involvement in decommissioning, and the lack of responsiveness by the NRC to state concerns at VY and elsewhere. In short, Vermont was not served well by the NRC's past decisions and current approach to decommissioning as an underpinning of these negotiations. We negotiated with one hand tied behind our backs, and did the best we could for Vermonters.

Moving Forward

As a result of this most recent experience, the Vermont delegation, along with Vermont Attorney General William Sorrell and Governor Peter Shumlin, wrote to and met with NRC Chairman Macfarlane (February 11, 2014 meeting; March 4, 2014 letter – Exhibit 1) to discuss the need for improvement. In a May 5, 2014 response (Exhibit 2), Chairman Macfarlane relays that states are free to comment at two occasions: when the Post Shutdown Decommissioning Activities Report (PSDAR) is submitted at the beginning of the process, and when a License Termination Plan (LTP) is submitted at the end – which can be many decades later.

What the NRC fails to mention in this letter is that it is under no obligation to respond to state concerns or comments, provides no opportunity for public participation through the NRC's independent hearing process, and indeed with respect to the PSDAR, does not even have to take any formal action on that report. With this approach, the NRC has demonstrated it prefers not to address, let alone resolve, issues of concern to states or local communities.

We acknowledge and accept that Congress gave the NRC sole responsibility for regulating radiological health, safety and security at commercial nuclear power plants under the Atomic Energy Act of 1954. However, that does not mean it should do so in a vacuum. Decommissioning also involves a host of issues (many of which are economic and entirely unrelated to radiological safety) that greatly affect local communities. The PSDAR is a facility-generated report that guides all further decommissioning at a given facility. I know of no other regulatory agency – from a local zoning board to state or federal agencies – that claims it is not required to make an affirmative decision on a plan of this magnitude, complete with its reasoning explained, and a responsiveness summary addressing comments received. This is particularly important with the increasing number of merchant facilities that also have no public utility oversight. Yet “no reply” is how the NRC chooses to address its responsibilities in the review of a PSDAR, and based on the Macfarlane letter, apparently the NRC intends to continue to shirk such decision-making into the future.

This is why legislation is so critical and so logical a step. It is necessary simply to provide a process whereby states, tribes and local communities can have a meaningful role in review of the PSDAR and provide comments to the NRC, and to require the NRC to formally make a decision on the document, with consideration given to comments received.

This step is long overdue. The current statutory and regulatory system is outdated. It is a system that might have made sense when nuclear power plants were solely owned by utilities, since a state's inherent authority over utilities and rate regulation would have given states a strong role in post-closure decisions. With the switch to merchant generators, states have been left without a say and without a federal agency willing to take its regulatory role into the 21st century in an open and responsive way. It is hard to believe this is how Congress expected this to unfold, and Congress should act now to correct this.

Examples of NRC Abuse of Discretion

There are many examples where the NRC has not acted in the best interest of the citizens of the United States, but I'll mention only two here: NRC's willingness to exempt plants from rules the NRC duly promulgated, and the NRC's current direction on waste management – as indicated by its discussion of spent nuclear fuel treatment in its Waste Confidence Rule and accompanying Draft Generic Environmental Impact Statement (DGEIS) – a position it is pursuing without regard to clear and compelling information to the contrary.

Exemptions:

The NRC would tell you it is only concerned with radiological health, safety and security at commercial nuclear power facilities, and this has always been its mission since 1954. One could reasonably assume then that all its rules and regulations are adopted with this single purpose in mind. Why then does the NRC routinely exempt facilities from the rules it promulgated and upon which the states and their citizenry rely? The NRC historically and routinely “exempts” nuclear power plants from applicable regulatory requirements whenever the

industry claims there would be no safety risk from doing so. Such broad-sweeping exemptions, often granted without any public input, upsets the expectations of other interested parties, such as states and local governments, which rely upon the NRC to adhere to applicable regulations. If regulations “on the books” are really not needed for radiological health, safety or security, then those rules should be amended or repealed under a formal rulemaking process consistent with the Administrative Procedures Act (APA), not simply held inapplicable whenever the NRC chooses to grant an exemption.

Two specific examples of improper exemptions that are particularly problematic for states include:

a. Exemptions to Emergency Preparedness requirements after a plant has shutdown.

This is particularly inappropriate for plants that still have fuel remaining in their spent fuel pools. I have attached detailed comments on the Interim Guidance (Exhibit 3) where the NRC staff recommendation is to allow elimination of the Emergency Planning Zone (EPZ) for all licensed reactors once the last reactor fuel has been moved to the storage pool and cooled for approximately 15 months. The assumed basis for these proposed exemptions is that spent nuclear fuel remaining in the pool presents virtually equivalent off-site emergency risks as that in dry cask – that is to say (according to the NRC), none. This defies logic. Leaving aside the many scientific articles refuting that claim, the NRC staff themselves, in other documents, while claiming that all of the risks are at acceptable levels, acknowledge that spent fuel in pools is more risky than fuel stored in dry casks. This is an example of where the NRC does not consistently develop or apply its rationale. Changes to existing rules need to undergo the rigor of formal rulemaking so that this poorly supported reasoning can be fully vetted. Once the NRC has determined, by *rule*, that particular safety requirements are essential, it should not be allowed to create wholesale exemptions from those requirements, in a manner that public participation and the protections of the APA are unavailable.

- b. Exemptions to the requirement that Nuclear Decommissioning Trust (NDT) funds be used solely for “decommissioning.”

The money in most NDTs is ratepayer money. Vermont Yankee’s NDT, for instance, consists 100% of ratepayer contributions (plus accrued interest) from before Entergy purchased the plant. Since owning the plant in 2002, Entergy has put not one dime into that trust fund, and by agreement they were not obligated to. However, under non-NRC contracts, trust fund agreements, and applicable Vermont Public Service Board orders, Vermont ratepayers have a direct interest in that fund. The NRC should not be granting waivers or exemptions that allow these decommissioning trust funds to be raided for activities the operator should otherwise be planning to fund – things ranging from spent fuel management to maintenance of an EPZ after closure. Plants, especially merchant plants, should be obligated to provide funds during their operating period that ensure these activities are fully funded post-closure. States have a legitimate interest in the expenditures of funds for at least two reasons: (1) premature and non-decommissioning related expenditures from the funds will delay, if not prevent, achieving the level of funding needed for timely decommissioning; and (2) in many situations, such as with Vermont Yankee, state ratepayers have a direct interest in the funds that remain in the NDT after decommissioning. NRC should not be allowed to routinely grant exemptions, and especially not without state involvement and response to legitimate concerns. NRC should also expressly recognize that the operator may need other approvals (such as from the state) to use funds for non-decommissioning purposes according to trust fund agreements or other non-NRC obligations, and that NRC approval does not relieve a plant owner from these responsibilities. The NRC needs to acknowledge these limitations in granting access to the trust funds upon the request of the closed or closing plant.

Spent Fuel Management

Finally, all of these concerns about decommissioning and a role for the states and communities are inextricably linked to decisions about Spent Fuel Management (SFM). Without opining on the wisdom of the US Government taking responsibility for this aspect of the industry’s liability, problems that must be addressed include the management of fuel during

operation and upon closure for as long as the fuel is on site. The NRC has not shown a willingness to address spent fuel management in a manner that is responsive to states' interests. Our goal is to restore that site to useful economic purposes as quickly and cost-effectively as possible. Right now, Vermont Yankee has about 3,879 fuel rod assemblies in its spent fuel pool (originally designed to hold about 350). The facility has 13 dry casks on site, room for 36, and will need 58 casks in all. For perspective, the Fukushima Reactor 4 pool had 1,533 assemblies in it at the time of the presumed hydrogen explosion that damaged the pool. Important matters to accomplish legislatively include:

- Move SNF out of the pool on a regular basis during operations;
- Upon closure – move remaining fuel out within 5 to 7 years thereafter;
- Ensure funding of SNF movement during operation; and
- Encourage prompt DOE Reimbursement

For merchant facilities, the NRC – as overseer of the fuel management – needs to ensure funds are available from facilities. States need a role in the management of SNF after closure, as demonstrated by the NRC's incomprehensible Waste Confidence Rule which relies on a DGEIS that concludes fuel is equally as safe in the spent fuel pools as in dry casks (Exhibit 4). Ironically, one of the reasons stated for this conclusion is that the Emergency Response Plans and EPZs in place (now proposed, as discussed above, to be generically eliminated by exemption) help protect the public when fuel is stored in a pool. Regardless of the presence or absence of an EPZ, common sense tells us a passive system is less risky than an active one.

Conclusion

The increasing numbers of closing nuclear plants, along with the fact that many are merchant facilities, require the NRC to be a vigilant protector of nuclear health, safety and security at commercial nuclear power plants in the U.S. The lack of affirmative decisions on important decommissioning documents, along with lack of responsiveness and reaction to state interests, speak to the need for a meaningful role of states in NRC processes as these plants come in for decommissioning. Exemptions to rules should be rare, not routine, and wherever generic changes to rules are warranted, they should be done by rulemaking, not waivers. Spent Nuclear

Fuel should be moved to dry cask storage regularly throughout the life of a plant, so that it does not build up in the pools, and all moved to dry cask within a short period of time after closure. Until that is done, an effective EPZ must be maintained. Expenses for all these truly operational matters should be covered during plant operation, with costs related to spent fuel management and storage reimbursed promptly and regularly by DOE in fulfillment of its obligations.

If closed nuclear facilities create radiation hazards or if decommissioning ends up costing more than the plant owner has provided, the host state may have to bear both the financial and the public safety burden. The issues I have raised today are fundamental issues of states' rights. Since the states are required to continue to house the nuclear plant and its wastes until current problems are resolved – which is not foreseeable – states must be allowed to play a full and effective role in the post-shutdown process. Without the legislation, the states are left with a problem they did not create and with imposed circumstances they cannot influence.

Thank you very much for the opportunity to be here today and to share these thoughts with you. I am happy to answer any questions you may have now, or in the future, as you consider these important issues.

Respectfully submitted,



Christopher Recchia
Commissioner

Congress of the United States
Washington, DC 20515

March 4, 2014

The Hon. Allison M. Macfarlane, Chair
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Chair Macfarlane:

Thank you for taking the time to meet with us on February 11th regarding Vermont's interest in safe, expeditious decommissioning of the Vermont Yankee Nuclear Power Station and nuclear decommissioning matters in general.

As we discussed, the current NRC rules were designed to address rate-regulated plants, and merchant plants like Vermont Yankee present unique challenges to both the NRC and the states in which they are located. As a result, it is important that states have a meaningful role in various aspects related to post-closure and decommissioning choices made by merchant facilities, including: (1) how decommissioning funds are established and maintained; (2) how it is determined that sufficient funds exist to commence and complete decontamination and dismantlement; and (3) how funds are expended. Because adequate funding is key to safety over the long term, fund availability for spent fuel management is also an important consideration for merchant facilities that are closed or closing. As Entergy nears closure of its Vermont Yankee facility, the best place for this engagement to start is by enabling participation in the review and finalization of the PSDAR. For other merchant facilities, this state involvement should start even sooner.

We ask that the NRC look for ways in which states can have a meaningful role in decommissioning decisions, and urge you to do all you can to ensure that such a role for states is promptly established. The need is not unique to Vermont, though we are perhaps facing these issues sooner than others. We are committed to working constructively with you, but equally committed to ensuring this need is addressed. As we offered, Governor Shumlin, through the National Governors Association, and Attorney General Sorrell, through the National Association of Attorneys General, are willing to assist in gaining support for rule changes at the NRC necessary to accomplish this goal. Similarly, the Vermont delegation is equally committed to finding a path for state engagement.

We look forward to working with you constructively to address these concerns. Again, thank you for your time and attention to these issues.

Sincerely,


PATRICK LEAHY
Senator


BERNARD SANDERS
Senator


PETER WELCH
Member of Congress


PETER SHUMLIN
Governor


WILLIAM H. SORRELL
Attorney General



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 5, 2014

CHAIRMAN

Governor Peter Shumlin
109 State Street, Pavilion
Montpelier, VT 05609

Dear Governor Shumlin:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your February 11, 2014, letter and the March 4, 2014, letter from you and your colleagues of the Vermont congressional delegation, Vermont Governor Peter Shumlin, and Vermont Attorney General William Sorrell. These letters urge us to provide host States and other interested parties a larger role in the decommissioning process for commercial nuclear power reactors. We share your view that States and local communities have a strong interest in the decommissioning of nuclear power plants within their boundaries.

Under the Atomic Energy Act of 1954, as amended, the NRC has sole responsibility for regulating radiological health, safety, and security at commercial nuclear power plants. This includes oversight for the establishment of funding for radiological decommissioning. The objective of decommissioning is to remove a nuclear facility safely from service and reduce the residual radioactivity to levels that meet NRC requirements to protect the public and support license termination. The NRC has approved alternative decommissioning strategies which have been evaluated to be protective of public health and safety. It is up to the licensee to choose which of these options (or combinations of options) it will use for decommissioning. The NRC's regulations require that adequate funding for decommissioning be established regardless of whether the licensee is a utility or a merchant operator. Since 1982, the NRC has overseen the successful decommissioning of 11 nuclear power plants, including 7 since we established our license termination regulations in 1996 and 1997. The NRC continually assesses the lessons learned in its decommissioning process to identify appropriate program improvements.

Other decommissioning activities that may take place after the licensee has demonstrated to the NRC that the radiological criteria for license termination have been met, and after the license has been terminated, are outside the jurisdiction or oversight of the NRC. For example, after the radiological decommissioning is complete, the NRC does not define the end state of site restoration to "greenfield" conditions.

Commercial nuclear reactor radiological decommissioning is a multi-year activity that includes an extensive decommissioning planning process and reliance on natural radioactive decay to reduce the level of radioactivity and volume of radioactive waste generated during decommissioning at the facility. Also, prior to being able to safely transfer spent fuel from the spent fuel pool to dry cask storage, the fuel needs several years to cool to comply with safety limits for the dry casks. "SAFSTOR," a process whereby a nuclear facility is placed and maintained in a condition that allows it to be safely secured, monitored and stored, relies on natural radioactive decay to reduce the radiation dose rates for workers by up to 98 percent and to reduce radioactive waste requiring disposal as waste volumes are expected to be as little as 10 percent of the original volume at plant shutdown. During the first years after shutdown, the nuclear power plant is transitioned for decommissioning. Continuing NRC inspections provide

further assurance that the facility is being managed by the licensee with public health and safety foremost in mind until the license is terminated.

Our regulations provide opportunities for interested parties to communicate their views to the NRC and the licensee regarding radiological decommissioning. NRC regulations provide the public an opportunity to comment when a licensee submits the Post-Shutdown Decommissioning Activities Report (PSDAR) and a License Termination Plan (LTP) which is reviewed as a license amendment request. In addition, the NRC conducts public meetings in the vicinity of the facility following licensee submission of its PSDAR and LTP and there is an opportunity for a hearing regarding the LTP. We strongly encourage licensees to continue the industry practice of communicating with States, local communities, and other interested parties by sponsoring citizen advisory groups.

States often play a significant role in nuclear facility decommissioning beyond the NRC's responsibility for radiological safety and security, particularly on matters relating to socio-economic impacts, including the funding of additional activities, and State-specific remediation standards. For example, regarding a licensee's decommissioning trust funds, the NRC has jurisdiction over a portion of these funds that are designated for radiological decommissioning of the nuclear facility. Recognizing that the decommissioning of power reactor sites may also be subject to regulation over non-radiological hazards by other Federal or State government agencies, it is incumbent upon the licensee to properly allocate funding for the entire decommissioning process, including both Federal and State requirements. Furthermore, it is imperative for the licensee to have an adequate and accurate reporting process in place to ensure that all regulatory bodies, Federal and State alike, are well informed of the status of a licensee's financial ability to comply with regulatory requirements and to complete the various stages of decommissioning in a timely manner.

In the case of the Vermont Yankee Nuclear Power Station, the NRC is aware that the Vermont Department of Public Service, the Vermont Agency of Natural Resources, and the licensee have entered into a Memorandum of Understanding that we understand will address a number of the State's concerns. These include the development of site restoration standards for the period of time after radiological decommissioning has been completed, and the funding for and timing of ultimate site restoration; a right of first refusal for Vermont to purchase the Vermont Yankee property; and funding for local economic transition and development.

NRC's regulatory opportunities for public involvement in the radiological decommissioning process, combined with independent State action to address directly with the plant owners issues of interest within the State's authority, provide an opportunity for State involvement in the closure and decommissioning of the Vermont Yankee Nuclear Power Station and other nuclear power plants.

I hope this response clarifies the statutory responsibilities of the NRC and current opportunities for States and other interested parties to participate in nuclear power plant decommissioning. If you need any additional information, please contact me or Mark Satorius, Executive Director for Operations, at (301) 415-1700.

Sincerely,

A handwritten signature in black ink, appearing to read "Allison M. Macfarlane", with a long horizontal flourish extending to the right.

Allison M. Macfarlane

Identical letter sent to:

The Honorable Bernard Sanders
United States Senate
Washington, DC 20510

The Honorable Patrick Leahy
United States Senate
Washington, DC 20510

The Honorable Peter Welch
United States House of Representatives
Washington, DC 20515

Governor Peter Shumlin
109 State Street, Pavilion
Montpelier, VT 05609

Attorney General William Sorrell
109 State Street
Montpelier, VT 05609



DEPARTMENT OF PUBLIC SAFETY
DIVISION OF EMERGENCY MANAGEMENT
AND HOMELAND SECURITY

112 State Street
Montpelier, Vermont 05620

103 South Main Street
Waterbury, Vermont 05671

April 10, 2014

COMMENTS OF THE VERMONT DEPARTMENT OF PUBLIC SERVICE AND THE VERMONT DIVISION OF EMERGENCY MANAGEMENT AND HOMELAND SECURITY ON DRAFT INTERIM STAFF GUIDANCE (ISG) NSIR/DPR-ISG-02, "EMERGENCY PLANNING EXEMPTION REQUESTS FOR DECOMMISSIONING NUCLEAR POWER PLANTS"

Introduction

The proposed Interim Staff Guidance on Emergency Planning Exemption Requests For Decommissioning Nuclear Power Plants ("Proposal" or "Interim Guidance") is flawed both in terms of the fundamental concepts underlying it as well as the bases provided for the Proposal. The Proposal creates a process by which the owners of decommissioned nuclear facilities will be allowed to avoid their responsibilities to the communities and states where they are located. The Proposal also essentially eliminates any thorough or effective public participation. The Vermont Department of Public Service and the Vermont Division of Emergency Management and Homeland Security oppose the Interim Guidance and urge the Staff to withdraw the Proposal and initiate a process for full public participation and direct Commission involvement to explore the implications more thoroughly than is allowed through the current written comments process.

The State of Vermont has a particular interest in the Interim Guidance because it will allow substantial reductions in overall post-accident mitigation measures for reactors that are permanently shutdown and, as of the end of 2014, Vermont Yankee will be permanently shutdown. If this Interim Guidance is put into effect, Vermont and its citizens face the threat of inadequate post-accident emergency planning following plant shutdown.

The Proposal Undermines NRC Safety Regulations

A number of the responsibilities related to emergency planning were recently enacted after a full rulemaking proceeding. *See* 76 Fed. Reg. 72560 (November 23, 2011) (“The requirements enhance the ability of licensees in preparing to take and taking certain EP and protective measures in the event of a radiological emergency; address, in part, security issues identified after the terrorist events of September 11, 2001; clarify regulations to effect consistent emergency plan implementation among licensees; and modify certain EP requirements to be more effective and efficient”). The Interim Guidance, however, would allow a wide range of “exemptions” from NRC safety regulations that have been duly promulgated through procedures established under the Administrative Procedure Act and NRC regulations. *See* 10 C.F.R. §§ 50.47(b), 50.54(q), Part 50 Appendix E. What Staff proposes is to substitute these safety regulations with widespread ad hoc waivers of safety requirements in a process which does not permit meaningful public participation even though the result will be to seriously compromise public safety. *See Brodsky v. NRC*, 578 F.3d 175 (2d Cir. 2009). If the NRC believes that safety regulations need to be amended, it should propose those amendments through the normal process, not grant widespread exemptions.

The Proposal Relies On Faulty and Unsupported Assumptions

The Interim Guidance begins with the faulty premise that an accident involving a spent fuel pool is substantially less severe than a reactor accident and thus it is permissible to reduce emergency planning requirements when a reactor is shutdown permanently. This premise ignores NUREG/CR-6451, which noted a high estimate for a full pool release as an economic cost of \$566 billion, not including health effects and 143,000 latent fatalities. Travis et al., *A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear*

Power Plants, NUREG/CR-6451 (1997) (“NUREG/CR-6451”), at 4-2. The high estimate in that study also found condemnation of 2,790 square miles of land—roughly a 50 mile by 50 mile square of total desolation. *Id.* The Draft Generic Environmental Impact Statement for Waste Confidence (“DGEIS”) characterizes NUREG/CR-6451 as providing “reasonable bounding estimates for offsite consequences for the most severe accidents.” DGEIS at B-11. Even the Consequence Study cited often in the Interim Guidance included possible spent fuel pool accidents with enormous economic and health impacts. *See* Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor (Oct. 2013) (ML13256A342). It found that an average area of 9,400 square miles would be rendered uninhabitable, with 4.1 million people being displaced over the long-term. Consequence Study at 162 (Table 33) and 232 (Table 62).

The Interim Guidance also assumes that following a spent fuel pool there will be ample time to do emergency planning as the accident is unfolding. This assumption is problematic for two reasons. First, it ignores the real possibility that the accident may have been triggered by a destabilizing event such as an earthquake—the sole accident initiator analyzed in the Consequence Study—or a malevolent act, either of which would likely create a chaotic post-accident environment.

Second, while it may be reasonable to assume that there will be adequate time to respond to an accident involving dry cask storage of nuclear fuel, it is not reasonable to make that assumption for decommissioned plants where fuel is still stored in pools. The Interim Guidance assumes that spent fuel pools can be repaired and refilled within 10 hours of an incident. But if, as noted above, the triggering event is an earthquake or a malevolent act, it could well take much longer than 10 hours to repair and refill a pool. This at the very least requires delaying any

exemptions from emergency planning requirements until after a decommissioned reactor has moved all of its fuel from its spent fuel pool into dry cask storage.

The Proposal also assumes, by implication, that there will be a robust and effective NRC oversight and enforcement program that will assure that any unforeseen problems will be dealt with adequately should they arise. But this assumption is refuted by a long history of failures to manage and control nuclear wastes. In addition to the most obvious example of Fukushima, there are even more recent examples of the breakdown in safety involving nuclear wastes at the Hanford Reservation in Hanford, Washington and at the Waste Isolation Pilot Project (“WIPP”) in New Mexico. These recent events, discussed in detail below, demonstrate why the Interim Guidance should not assume that NRC regulations will avoid significant problems in the future or will ensure that any problems are addressed appropriately.

The Proposal Ignores Important Additional Considerations

The Proposal is written as though spent fuel will remain at a reactor site for only a relatively brief time. However, as the ongoing Waste Confidence proceeding finally acknowledges, and as the United States Court of Appeals for the District of Columbia Circuit has ruled (*New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012)), NRC has no basis for such an assumption and must consider the real possibility that wastes will remain at reactor sites indefinitely. That reality requires NRC to evaluate this Proposal—to allow reactor owners to substantially dismantle their programs for off-site emergency planning—in light of a potential for decades upon decades or longer of spent fuel storage at reactor sites. While the spent fuel may be less vulnerable to fire, it is actually more vulnerable to leakage from its storage containers, as the history of radiation releases from high level waste facilities demonstrates.

In the last few months, there have been breakdowns in safety involving nuclear wastes at

Hanford and at WIPP. Both of these facilities have taken steps in recent years to “assure” that nuclear waste stored there was safe and secure and that releases of such waste would not occur. Both were operated under the watchful eye of the Department of Energy, which has a robust and dedicated staff devoted to the utmost nuclear safety. Nonetheless, just in 2014, information has come to light that demonstrates that even the best intentions and best regulations and the best people cannot assure that serious problems will not occur.

On March 21, 2014, the Washington Department of Ecology issued an Administrative Order in Docket 10156 against the United States Department of Energy because of serious leaks of radioactive materials from storage at the Hanford facility. The Administrative Order found the following violations:

Violation 1 - Failure to stop the flow of hazardous waste into secondary containment.

40 CFR 265.196(a) requires the owner or operator of the tank to immediately stop the flow of hazardous waste into the secondary containment system.

As of the date of this Order, USDOE and WRPS have not stopped the flow of waste into the secondary containment of 241-AY-102.

Violation 2 - Failure to inspect the tank to determine the cause of the release.

40 CFR 265.196(a) requires the owner or operator of the tank to inspect the tank to determine the cause of the release.

As of the date of this Order, USDOE and WRPS have not inspected the tank to determine the cause of the release. USDOE states in the revised Pumping Plan that Tank 241-AY-102 will have to be emptied to determine the cause of the release. USDOE has not emptied the tank and has submitted a plan according to which waste removal will not be authorized, nor a removal schedule determined, before March 4, 2016. The revised plan does not demonstrate that an initial pumping date sometime after March 4, 2016 is the earliest practicable time to begin waste removal.

Violation 3 - Failure to remove, at the earliest practicable time, as much of the waste as is necessary to prevent further release of hazardous waste to the environment and to allow inspection and repair of the tank to be performed.

Where the release is from the tank system, as it is here, 40 CFR 265.196(b) provides that “the owner or operator must, within 24 hours after detection of the leak or, if the owner or operator demonstrates that that is not possible, at the earliest practicable time remove as much of the waste as is necessary to prevent further release of hazardous waste to the environment and to allow inspection and

repair of the tank system to be performed.”

As of the date of this Order, USDOE and WRPS have failed to remove, or take any actions to begin removing, as much of the waste as is necessary to prevent further release to the environment and to allow for inspection and repair of the tank system to be performed. USDOE states in its revised Pumping Plan that removing the contents of the tank will not be authorized before March 4, 2016. USDOE has not demonstrated that March 4, 2016, or later would be the “earliest practicable time” to begin removing the waste.

Violation 4 - Failure to remove all released materials from the secondary containment system within 24 hours or in as timely a manner as is possible to prevent harm to human health and the environment.

40 CFR 40 CFR 265.196(b)(2) requires that, if the release was to a secondary containment system, all released materials must be removed within 24 hours or in as timely a manner as is possible to prevent harm to human health and the environment.

As of the date of this Order, USDOE and WRPS have failed to remove any of the released materials from the secondary containment. The revised plan indicates that the released materials will be removed only after waste is removed from the primary tank.

Administrative Order at 6-7 (emphasis in original).

The problems at Hanford are not new and these are just the latest failures of the Hanford facility to contain the high level waste stored there. *See, e.g., R. Alvarez, Reducing the Risks of High-Level Radioactive Wastes at Hanford* (Science and Global Security 2005) at 13:43–86.

The Interim Guidance does not address either the previous or current failures of Hanford or use that experience as a cautionary tale regarding predictions about how well nuclear waste will remain contained at reactor sites for decades upon decades or longer. Rather, it asserts and assumes that because NRC regulates the storage and handling of such wastes, no serious problems will arise that will require full compliance with emergency planning requirements.

A second recent example of a failure of nuclear waste handling even though great efforts were made to assure that nothing would go wrong is the release of radiation from WIPP only 15 years after it began operations. The EPA has reported the following about a February 2014 release of radiation from the WIPP facility :

According to the U.S. Department of Energy (DOE), at about 11:30 p.m. (MT) on February 14, 2014, airborne radiation was detected by an underground air monitor at the DOE's Waste Isolation Pilot Plant (WIPP). The source of the radiation is believed to be one or more radioactive waste containers that were breached by an undetermined event that occurred in the underground repository. However, an investigation in the underground is necessary and currently underway to determine the true cause of the release.

EPA, *Radiological Event at the WIPP*, <http://www.epa.gov/rpdweb00/news/wipp-news.html#wippradevent>; *see also* Jeff Tollefson, *Radiation Levels Fall after Nuclear Waste Leak in New Mexico* (Feb. 26, 2014), <http://www.scientificamerican.com/article/radiation-levels-fall-after-nuclear-waste-leak-in-new-mexico>. This currently unexplained radiation leak underscores the inherent uncertainties in handling high level nuclear wastes.

Related to implications of long term spent fuel storage being ignored in the Interim Guidance is the additional complexity created by the increasing use of high-burnup fuel. When that fuel is spent, it presents special problems that significantly increase the chance of radiation releases from spent fuel storage and make the movement of high-burnup spent fuel from container to container much more dangerous.

The Interim Guidance essentially ignores the potential environmental impacts of the use of high-burnup fuel and its storage in spent fuel pools. Recent studies and analyses demonstrate that the potential magnitude of the incremental impact of storage of spent high-burnup fuel in spent fuel pools is much greater than the Proposal assumes.

For example, the danger of a criticality accident in a spent fuel pool is dismissed because NRC regulations require plant operators to maintain adequate boron levels to absorb neutrons and prevent criticality:

Licensees are required to demonstrate that some margin to criticality is maintained for a variety of abnormal conditions, including fuel-handling accidents involving a dropped fuel assembly. The environmental impacts are small, therefore, because criticality accidents in spent fuel pools are prevented.

DGEIS at 4-70. New evidence shows that when high-burnup fuels are used and placed in the spent fuel pools at certain reactors, it can create special problems that interfere with boron control. R. Alvarez, *The Storage and Disposal Challenges of High Burnup Spent Power Reactor Fuel* (Jan. 3, 2014) (“Alvarez 2014”) at 9-11. As the NRC has acknowledged, high-burnup fuel is likely to remain in spent fuel pools for much longer than the 5 years of normal fuel and possibly as long as 20 years. DGEIS at 2-25. However, that extended time in the pool—combined with the much larger inventory of radionuclides in the high-burnup fuel—places additional demands that require the use of neutron-absorbing panels in the spent fuel pools. Alvarez 2014 at 6-11. Those panels are subject to deterioration causing a loss of neutron absorption ability and the release of particles into the spent fuel pool. *Id.* at 10. While one can attempt to address this by adding more boron to the water in the spent fuel pool at pressurized water reactors, the boron reacts with the concrete used for the walls of the pools and causes it to be more susceptible to leaks. *Id.* at 11. High-burnup fuel thus requires enhanced chemistry controls and more neutron-absorbing panels. *Id.* But the pools are already densely packed, and the additional equipment in the pools restricts water and air circulation, making the pools more vulnerable to systemic failures from an inability to remove the increased decay heat from high-burnup fuels. *Id.*

NRC contractors, the Electric Power Research Institute, and the National Academy of Scientists have all raised concerns about high-burnup fuel. Alvarez 2014 at 2-3. The NRC itself has also recognized that there is inadequate information on the structural integrity of high-burnup fuels after 20 years. *See* NRC Division of Spent Fuel Storage and Transportation Interim Staff Guidance-24, Revision 0 (Issue: The Use of a Demonstration Program as Confirmation of Integrity for Continued Storage of High Burnup Fuel Beyond 20 Years) (ML13056A516).

The proposed Interim Guidance never discusses the lack of critical knowledge about high-burnup fuel that is essential for determining whether its presence in spent fuel pools creates problems substantially more serious than normal spent fuel. It never considers that high-burnup fuel continues to be generated and placed in spent fuel pools even though the work to determine whether it can ever be safely removed from the pools has yet to be completed. These uncertainties make the current proposal to increase the opportunity for exemption from emergency planning requirements premature at best. Such a proposal should at least include a bounding calculation that considers the consequences if the ongoing research confirms the worst concerns about high-burnup fuel. The Technical Study of Spent Nuclear Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants, NUREG-1738 (2001) (ML010430066), is used by Staff as the primary reference for the conclusion regarding spent fuel pool fires during the 60 years following the operating life of the reactor. DGEIS at xxix and F-14. (The DGEIS relies on, and essentially incorporates, this 2001 study for its analysis of the risk and consequences of a spent fuel pool fire.) New evidence, which post-dates the 2001 NUREG-1738 study that Staff cites, demonstrates that this 60 year period could include more than 20 years of high-burnup fuel storage in the spent fuel pool, by which time deterioration of fuel cladding could occur and movement of the high-burnup spent fuel from the pool to dry casks could be problematic.

The Proposal Will Result In Reducing Safety Margins

The Interim Guidance seeks to remove emergency planning even though the impact of emergency planning on accident consequences from spent fuel was a significant consideration in the Consequence Study. *See* Consequence Study at Appendix A (providing an extended discussion of the Staff's reliance on emergency planning to justify lower post-accident consequences in the event of spent fuel pool failure). Moreover, as noted above, the Interim

Guidance ignores that the triggering event for a radiological release could well create a chaotic post-accident environment that would substantially disable a quick and effective response.

Conclusion

The proposed Interim Guidance is a poorly justified and premature effort to allow owners of shutdown reactors to avoid maintaining a high level of emergency preparedness to mitigate the consequences of the severe risks created by the continued presence of spent nuclear fuel at reactor sites. It is particularly problematic that the Interim Guidance does not address the common sense idea of refusing to grant exemptions from emergency planning requirements until after a decommissioned reactor has moved all of its fuel from its spent fuel pool into dry cask storage. Staff should withdraw the Proposal, engage fully with all interested stakeholders in a real dialogue—not just a notice and comment period—and develop a record that fully explores all of the implications of leaving spent fuel at reactor sites. The Staff should make particular efforts to reach out to local communities and host states, such as Vermont, before exempting decommissioned reactors from otherwise applicable regulations. This is especially important in light of the enormous financial burdens that will be placed on local communities and states for emergency planning that should be provided by the companies that are creating the risks.

Respectfully,

/s/ Christopher Recchia
Christopher Recchia
Commissioner
Anthony Z. Roisman
Of Counsel
Vermont Department of Public Service
112 State Street
Montpelier, Vermont 05602

/s/ Joe Flynn
Joe Flynn
Director
Vermont Division of Emergency
Management and Homeland Security
103 South Main Street
Waterbury, VT 05671

April 24, 2014

VIA ELECTRONIC MAIL

Andy Imboden, Branch Chief
Communications, Planning, and Rulemaking
Waste Confidence Directorate
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Re: Need for a supplemental waste confidence DGEIS (Docket NRC-2012-0246)

Dear Mr. Imboden:

Through this letter, the State of Vermont, the State of Connecticut, and the Commonwealth of Massachusetts formally request that the NRC Staff prepare a supplemental Waste Confidence Draft Generic Environmental Impact Statement (“DGEIS”) in light of recent information and events. The current DGEIS contains many assumptions, including:

1. That high-burnup spent fuel does not present unique problems for long term storage of spent nuclear fuel.
2. That the consequences of a severe spent fuel pool accident are appropriately bounded, including the off-site economic impacts and the time needed for off-site decontamination.
3. That NRC oversight will avoid adverse environmental impacts from unforeseen safety problems and will ensure the development of new technologies when needed.

While Vermont, Connecticut, Massachusetts, and others have already presented extensive comments criticizing these assumptions, this letter provides new and significant information that is not addressed by the DGEIS. Because this information—which was not available before the December 20, 2013 deadline for commenting on the DGEIS—is both new and significant, the NRC Staff is obligated to evaluate it and issue a supplemental DGEIS for public comment.

In *Marsh v. Oregon Natural Resources Counsel*, 490 U.S. 360 (1989), the U.S. Supreme Court held that federal regulations “impose a duty on all federal agencies to prepare supplements to either draft or final EIS’s if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.” 490 U.S. at 372 (quotation omitted). When there remains a major federal action to occur and “the new information is sufficient to show that the remaining action will affect the quality of the human environment in a significant manner or to a significant extent not already considered, a supplemental EIS must be prepared.” *Id.* at 374 (quotation omitted). In these situations, it does not suffice to address the new information in the final impact statement. Rather, a supplemental EIS is needed to serve NEPA’s action-forcing purpose in two important respects. *See Baltimore*

Gas & Electric Co. v. Natural Resources Defense Council, Inc., 462 U.S. 87, 97 (1983); *Weinberger v. Catholic Action of Hawaii/Peace Education Project*, 454 U.S. 139, 143 (1981). First, a supplemental EIS is needed to ensure the agency can “carefully consider” all available information before making its decision. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989). Second, a supplemental EIS is needed so that “the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision.” *Id.*

The NRC has incorporated these well-established principles in the regulations applicable to all environmental impact statements:

(a) The NRC staff will prepare a supplement to a draft environmental impact statement for which a notice of availability has been published in the FEDERAL REGISTER as provided in § 51.117, if:

(2) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

10 C.F.R. § 51.72(a)(2). The NRC has held that it must prepare a supplemental draft EIS when the new information “present[s] a seriously different picture of the environmental impact of the proposed project from what was previously envisioned.” *In re Union Elec. Co.*, CLI-11-05, 74 N.R.C. 141, 167-68 (2011) (quotations and alteration marks omitted).

The new evidence presented here meets that standard. The current DGEIS does not address important information that has arisen since the date of its publication.

I. New and Significant Information on the Problems of High-Burnup Fuel

The DGEIS says little about the potential environmental impacts of high-burnup fuel and its storage in spent fuel pools. And what the DGEIS does say is refuted by recent studies and analyses of the impact of storing high-burnup fuel in spent fuel pools.

For example, the DGEIS dismisses the danger of a criticality accident in a spent fuel pool because NRC regulations require plant operators to maintain adequate boron levels to absorb neutrons and prevent criticality:

Licenses are required to demonstrate that some margin to criticality is maintained for a variety of abnormal conditions, including fuel-handling accidents involving a dropped fuel assembly. The environmental impacts are small, therefore, because criticality accidents in spent fuel pools are prevented.

DGEIS at 4-70. New evidence shows that when high-burnup fuels are used and placed in the spent fuel pools at certain reactors, it can create special problems that interfere with boron control. Ex. 1 (R. Alvarez *The Storage and Disposal Challenges of High Burnup Spent Power Reactor Fuel* (Jan. 3, 2014)) at 9-11. As the DGEIS acknowledges, high-burnup fuel is likely to

remain in spent fuel pools for much longer than the 5 years of normal fuel and possibly as long as 20 years. DGEIS at 2-25. However, that extended time in the pool—combined with the much larger inventory of radionuclides in the high-burnup fuel—places additional demands that require the use of neutron-absorbing panels in the spent fuel pools. Ex. 1 at 6-11. Those panels are subject to deterioration causing a loss of neutron absorption ability and the release of particles into the spent fuel pool. *Id.* at 10. While one can attempt to address this by adding more boron to the water in the spent fuel pool at pressurized water reactors, the boron reacts with the concrete used for the walls of the pools and causes it to be more susceptible to leaks. *Id.* at 11. High-burnup fuel thus requires enhanced chemistry controls and more neutron-absorbing panels. *Id.* But the pools are already densely packed, and the additional equipment in the pools restricts water and air circulation, making the pools more vulnerable to systemic failures from an inability to remove the increased decay heat from high-burnup fuels. *Id.*

NRC contractors, the Electric Power Research Institute (“EPRI”), and the National Academy of Scientists have all raised concerns about high-burnup fuel. Ex. 1 at 2-3. The NRC itself has also recognized that there is inadequate information on the structural integrity of high-burnup fuels after 20 years. Ex. 2 (NRC Division of Spent Fuel Storage and Transportation Interim Staff Guidance-24, Revision 0 (Issue: The Use of a Demonstration Program as Confirmation of Integrity for Continued Storage of High Burnup Fuel Beyond 20 Years) (ML13056A516)). The NRC is allowing the continued use of high-burnup fuel, even though the NRC recognizes that further studies are needed to determine whether high-burnup fuel can be safely moved from a spent fuel pool to dry cask storage. Ex. 2. While the DGEIS lists some of these references, it never discusses whether high-burnup fuel creates more serious problems than normal spent fuel. The attached Exhibit 1 provides new information that the NRC must now address in a supplemental DGEIS.

In particular, the supplemental DGEIS must, at a minimum, provide a required bounding calculation that considers the consequences of high-burnup fuel. Instead, the DGEIS relies on The Technical Study of Spent Nuclear Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants, NUREG-1738 (2001) (ML010430066). The DGEIS cites that 2001 study as the primary reference for its conclusion regarding spent fuel pool fires during a period of 60 years beyond the operating life of the reactor. DGEIS at xxix, F-14. But that 60 year period could include more than 20 years of high-burnup fuel storage in the spent fuel pool. Recent analyses, such as Exhibit 1, make clear that by that time there could be significant deterioration of fuel cladding, making movement of high-burnup fuel from the pool to dry casks problematic. The DGEIS does not take the NEPA-required “hard look” at this or any of the other special problems created by high-burnup fuel.

The DGEIS’s conclusion that spent fuel pool storage is environmentally safe also ignores known facts about high-burnup fuel. For example, the DGEIS indicates that the NRC “is aware of concerns regarding potential detrimental effects of hydride reorientation on cladding behavior (e.g., reduced ductility). Reduced ductility, which makes the cladding more brittle, increases the difficulty of keeping spent fuel assemblies intact during handling and transportation.” *Id.* at B-13. But the DGEIS contains no discussion of how this recognized “difficulty” affects transferring this fuel from spent fuel pools to dry cask storage, and contains only a cursory discussion of the problems with moving high-burnup fuel from one dry cask to another. *Id.*

Finally, because of the special problems created by high-burnup fuel and the uncertainties inherent in its current use, the DGEIS fails to consider the alternative of prohibiting the further generation of high-burnup fuel until the unresolved safety problems with its use have been addressed. That alternative would have the advantage of allowing the movement of spent fuel from spent fuel pools to dry casks sooner, allowing for a reduction of the crowding of the spent fuel pools and reducing both the risk and the consequences of a severe spent fuel pool accident.

II. New and Significant Information on Spent Fuel Pool Accident Consequences

The DGEIS asserts that earlier studies of spent fuel pool accident consequences, like NUREG-1738, were too conservative. DGEIS at F-4 to F-5. New and significant information, including recent analyses of the Fukushima accident, makes clear that those studies in fact underestimated the real potential adverse impacts of a severe spent fuel pool accident.

The NRC has stated that a central part of the input for the DGEIS is the Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor (October 2013) (“Consequences Study”) and the related COMSECY-13-0300. *See e.g.*, Ex. 3 (NRC Slides for 8-22-13 Meeting with Commissioners re: Tier 3 Issues, Slide 4 (“Schedules are aligned to improve the public’s ability to understand the relationships between the Tier 3 issue, the SFPS, ongoing Waste Confidence activities, and related policy issues.”)). Both of those documents address whether expedited transfer of spent fuel to dry cask storage would be preferable to using spent fuel pools for 60 years after reactor operation ceases. Central to those analyses, and to the accident analysis in Appendix F of the DGEIS, is the MELCOR Accident Consequence Code Systems-2 (“MACCS2”) code.

The New York Attorney General’s Office has submitted comments explaining in detail some of the flaws underlying the inputs used by the MACCS2 code. *See* International Safety Research, Inc., Review of Waste Confidence Generic Environmental Impact Statement, ISR Report 13014-01-02, 20 December 2013 (“ISR Report”). Since the time of the ISR Report, additional information makes clear that the post-accident situation is much longer and the cleanup following the accident is much more difficult than is assumed in the DGEIS.

In particular, the real world experience of the Fukushima accident is far different than what the DGEIS assumes, in terms of (1) the problems created by the need to decontaminate a large area; (2) the time and money required for cleanup; and (3) the lost economic revenue when a large area is rendered unusable for a much longer time than was assumed in the DGEIS. *See* Ex. 4 (David McNeil, *Squelching Efforts to Measure Fukushima Meltdown* (NY Times March 16, 2014)) (explaining how the actual damage caused by Fukushima may be much greater than reported by Japan and that just removal of contaminated dirt—not its ultimate disposal—will cost at least \$50 billion); Ex. 5 (*Fukushima operator restarts water decontamination system* (AFP March 24, 2014)) (“The embattled firm [TEPCO] said two of three lines that clean the toxic water were running again as of Monday afternoon. A third line remained offline while workers tried to fix a filter defect which had prevented proper decontamination. . . . TEPCO is struggling to handle a huge—and growing—volume of contaminated water at the tsunami-damaged plant. There are about 436,000 cubic metres of contaminated water stored at the site in

about 1,200 purpose-built tanks.”); Ex. 6 (*Contaminated water still troubles Fukushima* (Press TV March 11, 2014)) (“The radioactive water at Japan’s crippled nuclear power plant remains the biggest problem, hampering the cleanup process three years after the disaster, officials say. On Monday, officials at Japan’s crippled Fukushima nuclear power plant said the contaminated water accumulated at the facility was hampering the cleanup process.”); Ex. 7 (*Fukushima water decontamination might be suspended indefinitely* (Rt.com March 20, 2014)); *see also* D. Lochbaum et. al., *Fukushima—The Story of a Nuclear Disaster* (New Press 2014).

This recently disclosed information about Fukushima contrasts sharply with the DGEIS. For instance, the DGEIS assumes that the total economic cost of a full release of radiation from a spent fuel pool would be around \$55 billion. DGEIS at F-4. As noted above, one recent analysis of Fukushima has estimated that it would cost that much money just to remove the contaminated soil, which is only one of many costly steps in the process of radiological decontamination. *See* Ex. 4. This requires the NRC to issue a supplemental DGEIS that incorporates this information, which is more in line with a previous NRC study that noted a high estimate for a full pool release as an economic cost of \$566 billion, not including health effects and 143,000 latent fatalities. Ex. 8 (Travis et al., *A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants*, NUREG/CR-6451 (1997)) at 4-2. The DGEIS notes that NUREG/CR-6451 provides “reasonable bounding estimates for offsite consequences for the most severe accidents,” DGEIS at B-11—a conclusion that is reinforced by recent analyses of Fukushima—but then fails to apply those estimates in its offsite consequences analysis. In light of the recent studies and analyses of Fukushima, the NRC must issue a supplemental DGEIS addressing these analyses and addressing previous studies borne out by the new and significant information about Fukushima. *See id.*; Ex. 9 (Alvarez et al., *Reducing the Hazards from Stored Spent Power-Reactor Fuel in the United States* (Science and Global Security, 11:1–51, 2003)); *see also* U.S. Senate Committee on Environment and Public Works, Subcommittee on Clean Air and Nuclear Safety, “Oversight Hearing: NRC’s Implementation of the Fukushima Near-Term Task Force Recommendations and other Actions to Enhance and Maintain Nuclear Safety” (SD-406) (Jan. 30, 2014) (Chair Macfarlane at 1:28:10: “There was no evidence that a Fukushima-type accident would have been completely avoided in the US. . . . We did not, prior to the Fukushima accident, expect or analyze for more than one reactor at a site to have an accident. That was not planned for. . . . And the operating experience that we’ve gained during the Fukushima accident is significant.”; Chair MacFarlane at 1:51:54: “Passive systems are certainly better than active systems—systems that have to be activated. So those passive systems are certainly an improvement.”).

In addition to these recent analyses of the Fukushima accident, new and significant information from the NRC Staff also calls into question the DGEIS’s underlying assumption that spent fuel pool accidents can be analyzed generically. In particular, the NRC Staff—after the close of the comment period for the DGEIS—issued a draft guidance document that specifically recommends requiring a “site-specific analysis” of spent fuel pool accidents before the NRC can exempt decommissioned plants from emergency planning requirements. Ex. 10 (Interim Staff Guidance on Emergency Planning Exemption Requests For Decommissioning Nuclear Power Plants, NSIR/DPR-ISG-02 (January 10, 2014)) at 6. A supplemental DGEIS is required to provide the public with an opportunity to comment on why the NRC would allow a generic analysis in the DGEIS when site-specific analysis is required elsewhere.

III. New and Significant Information on the Failure of Institutional Controls

When the Commission abandoned the attempt to predict when, if ever, a permanent waste repository would come into existence, one Commissioner observed that “this is a particularly difficult time to be in the prediction business.” Comments of Commissioner Svinicki on SECY - 09-0090 Final Update of the Commission’s Waste Confidence Decision (Sept. 24, 2009). Despite this warning, the current DGEIS includes a number of assumptions about what will happen decades, centuries, or even millennia into the future. *See, e.g.*, DGEIS at 4-76 to 4-79 & B-15 to B-17. One of those predictions—that institutional controls will provide vigorous regulation and enforcement of safety measures—cannot withstand scrutiny in light of recent events. In particular, the most recent examples of the breakdown in safety involving nuclear wastes occurred at the Hanford Reservation in Hanford, Washington and at the Waste Isolation Pilot Project (“WIPP”) in New Mexico. These recent events—discussed in detail below and not considered in the DGEIS—demonstrate why the DGEIS should not assume that NRC regulations will avoid significant problems in the future and ensure that any problems are addressed appropriately. If there is one over-arching lesson from Fukushima, it is that things can go terribly wrong. The following events are further proof of that truth.

First, the Hanford Reservation in Hanford, Washington, despite extensive oversight and numerous measures to avoid releases of radioactive waste, continues to leak radioactive materials. On March 21, 2014—well after the close of the comment period for the DGEIS—the Washington Department of Ecology issued an Administrative Order in Docket 10156 against the United States Department of Energy because of serious leaks of radioactive materials from storage. Ex. 11. The Administrative Order found the following violations:

Violation 1 - Failure to stop the flow of hazardous waste into secondary containment.

40 CFR 265.196(a) requires the owner or operator of the tank to immediately stop the flow of hazardous waste into the secondary containment system.

As of the date of this Order, USDOE and WRPS have not stopped the flow of waste into the secondary containment of 241-AY-102.

Violation 2 - Failure to inspect the tank to determine the cause of the release.

40 CFR 265.196(a) requires the owner or operator of the tank to inspect the tank to determine the cause of the release.

As of the date of this Order, USDOE and WRPS have not inspected the tank to determine the cause of the release. USDOE states in the revised Pumping Plan that Tank 241-AY-102 will have to be emptied to determine the cause of the release. USDOE has not emptied the tank and has submitted a plan according to which waste removal will not be authorized, nor a removal schedule determined, before March 4, 2016. The revised plan does not demonstrate that an initial pumping date sometime after March 4, 2016 is the earliest practicable time to begin waste removal.

Violation 3 - Failure to remove, at the earliest practicable time, as much of the waste as is necessary to prevent further release of hazardous waste to the environment and to allow inspection and repair of the tank to be performed.

Where the release is from the tank system, as it is here, 40 CFR 265.196(b) provides that “the owner or operator must, within 24 hours after detection of the leak or, if the owner or operator demonstrates that that is not possible, at the earliest practicable time remove as much of the waste as is necessary to prevent further release of hazardous waste to the environment and to allow inspection and repair of the tank system to be performed.”

As of the date of this Order, USDOE and WRPS have failed to remove, or take any actions to begin removing, as much of the waste as is necessary to prevent further release to the environment and to allow for inspection and repair of the tank system to be performed. USDOE states in its revised Pumping Plan that removing the contents of the tank will not be authorized before March 4, 2016. USDOE has not demonstrated that March 4, 2016, or later would be the “earliest practicable time” to begin removing the waste.

Violation 4 - Failure to remove all released materials from the secondary containment system within 24 hours or in as timely a manner as is possible to prevent harm to human health and the environment.

40 CFR 40 CFR 265.196(b)(2) requires that, if the release was to a secondary containment system, all released materials must be removed within 24 hours or in as timely a manner as is possible to prevent harm to human health and the environment.

As of the date of this Order, USDOE and WRPS have failed to remove any of the released materials from the secondary containment. The revised plan indicates that the released materials will be removed only after waste is removed from the primary tank.

Ex. 11 at 6-7 (emphasis in original).

The DGEIS does not address the current failures at Hanford or explain how future storage of nuclear waste will be more successful than it is today. The recent events at Hanford provide new and significant information that undermines the DGEIS’s assumption that the NRC’s regulation of spent fuel storage will avoid serious failures to contain radiation in the future. A supplemental DGEIS must address the recent Administrative Order, as well as the context of past failures to contain high level waste at Hanford. *See, e.g., Ex. 12 (R. Alvarez, Reducing the Risks of High-Level Radioactive Wastes at Hanford (Science and Global Security 2005) at 13:43–86).*

Second, there is new and significant information about a February 2014 release of radiation from the WIPP facility in New Mexico:

According to the U.S. Department of Energy (DOE), at about 11:30 p.m. (MT) on February 14, 2014, airborne radiation was detected by an underground air monitor at the DOE’s Waste Isolation Pilot Plant (WIPP). The source of the radiation is believed to be one or more radioactive waste containers that were breached by an undetermined event that occurred in the underground repository. However, an investigation in the underground is necessary and currently underway to determine the true cause of the release.

Ex. 13 (EPA, *Radiological Event at the WIPP*, <http://www.epa.gov/rpdweb00/news/wipp-news.html#wippradevent>); *see also* Exs. 14-18 (attachments to Exhibit 13); Ex. 19 (Jeff Tollefson, *Radiation Levels Fall after Nuclear Waste Leak in New Mexico* (Feb. 26, 2014), <http://www.scientificamerican.com/article/radiation-levels-fall-after-nuclear-waste-leak-in-new-mexico>). This currently unexplained radiation leak underscores the inherent uncertainties in handling high level nuclear wastes—uncertainties that are ignored in the DGEIS.

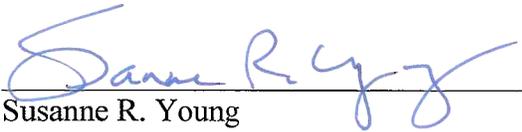
The WIPP radiation leak occurred 9 days after another accident at the WIPP involving a fire inside the mine. Although it appears radiation was not released during that fire, a DOE investigation of this event found “the root cause of this accident to be the failure of Nuclear Waste Partnership LLC (NWP) and the previous management and operations (M&O) contractor to adequately recognize and mitigate the hazard regarding an underground fire. This includes recognition and removal of the buildup of combustibles through inspections and periodic preventative maintenance (e.g., cleaning), and the decision to deactivate the automatic onboard fire suppression system.” Ex. 20 (Accident Investigation Report, Underground Salt Haul Truck Fire at the Waste Isolation Pilot Plant February 5, 2014 (March 2014)) at ES-3. The Accident Investigation Report includes a long list of deficiencies in the operation of this disposal facility and recommends substantial corrective actions. *Id.* at 92-97. The Report also notes that these problems arose despite the clearly stated mission of the Carlsbad Field Office of DOE to store radioactive waste safely through protection measures “put into operation at all levels (site, facility, task, and activity) by requiring and routinely verifying that work is conducted following” all applicable protocols. *Id.* at 64. NRC regulations contain similar protocols and statements, and the recent incidents at the WIPP make clear that where nuclear wastes are concerned, even the best intentions do not prevent serious accidents.

The recent Hanford and WIPP incidents are particularly relevant to the DGEIS in light of the NRC’s Office of Inspector General’s conclusion that the “NRC’s approach for oversight of licensees’ management of active component aging is not focused or coordinated” and lacks “mechanisms for systematic and continual monitoring, collecting, and trending of age-related data for active components.” Ex. 21 (Audit of NRC’s Oversight of Active Component Aging, OIG-14-A-02 (Oct. 28, 2013)) at ii. That same office had previously found deficiencies in NRC’s follow-up to assure that licensees fulfill commitments they have made to assure adequate protection of the public health and safety. Ex. 22 (Audit of NRC’s Management of Licensee Commitments OIG-A-17 (Sept. 19, 2011)). These reports make clear that NRC regulation can be subject to the same kinds of institutional deficiencies that led to the incidents at the WIPP.

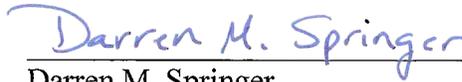
The fact that the NRC and DOE have had problems managing nuclear waste is not a reflection of failures of these agencies—to the contrary, it shows that even with competent and committed staff and leadership, things can go wrong. That is the history of nuclear waste storage, and it is what the NRC must assume going forward, particularly when attempting—as the DGEIS does—to forecast decades, centuries, or even millennia into the future. Or as it is written on the face of the National Archives, “What is past, is prologue.” Given this history, highlighted by the new and significant information on the Hanford and WIPP incidents, the DGEIS should not assume that future oversight and future technical developments will eliminate future problems. When it comes to handling nuclear waste, history demonstrates that optimistic assumptions about containment—such as those in the DGEIS—do not become realities.

For the above reasons, the State of Vermont, the State of Connecticut, and the Commonwealth of Massachusetts respectfully request that the NRC Staff prepare a supplemental waste confidence DGEIS in light of recent information and events. Thank you for your consideration of this request.

Sincerely,



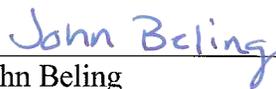
Susanne R. Young
Deputy Attorney General
Vermont Attorney General's Office
109 State Street
Montpelier, Vermont
05609-1001
syoung@atg.state.vt.us



Darren M. Springer
Deputy Commissioner
Anthony Z. Roisman
Of Counsel
Vermont Department of Public Service
112 State Street
Montpelier, Vermont 05602
Darren.Springer@state.vt.us
aroisman@nationallegalscholars.com



Robert Snook
Assistant Attorney General
State of Connecticut
Office of the Attorney General
55 Elm Street, P.O. Box 120
Hartford, Connecticut 06106
robert.snook@ct.gov



John Beling
Assistant Attorney General
Commonwealth of Massachusetts
Office of the Attorney General
One Ashburton Place
Boston, MA 02108
john.beling@state.ma.us