RECOMMENDATIONS SUBMITTED BY MARY AND JAMES LAMPERT

SPENT NUCLEAR FUEL

Recommendation 1: Moving spent fuel out of the spent fuel pool

Finding: It is in Entergy's economic interest to move spent fuel out of the spent fuel and into dry casks as quickly as reasonably possible. At one of the NDCAP meetings, Mr. Lynch said that Entergy hoped to move the spent fuel assemblies out of the pool within three years after shutdown. At Vermont Yankee, Entergy has agreed to empty the pool within four years after shutdown. The six-year cut-off date in this recommendation provides time to resolve unexpected problems that might introduce some delay into Entergy's three-to-four -year schedule.

Moving spent fuel out of the spent fuel pool is also in the public interest. It would eliminate the risks of a spent fuel pool fire.

Recommendation: All spent nuclear fuel at Pilgrim should be moved out of the spent fuel pool as soon as reasonably possible and in no event later than 6 years after Pilgrim stops generating electricity.

Recommendation 2: Leaking or otherwise defective dry casks.

Finding: Dry cask storage is safer than pool storage but not without risk. Each cask contains about ½ as much Cesium-137 as was released at Chernobyl. NRC documents, statements made by Holtec, the maker of Pilgrim's casks, and vulnerability studies by the Massachusetts Attorney General's expert witness during license renewal, Dr. Gordon Thompson, teach us that:

- The thin (0.5") stainless steel canisters may crack within 30 years, exacerbated by exposure to salt in our marine environment.[1]
- No current technology exists to inspect, repair, or replace cracked canisters.[2]
- With limited monitoring, we will only know after the fact that a cask has leaked radiation.
- Casks are vulnerable to a terrorist attack.[3]

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[1] Chloride-Induced Stress Corrosion Cracking Tests & Example Aging Management Program, Darrell S. Dunn, NRC/NMSS/SFST, Public Meeting with NEI on Chloride Induced Stress Corrosion Cracking Regulatory Issue Resolution Protocol, August 5, 2014 https://sanonofresafety.files.wordpress.com/2013/06/8-5-14-scc-rirp-nrc-presentation.pdf; https://sanonofresafety.files.wordpress.com/2011/11/diablocanyonscc-2014-10-23.pdf;

[2] https://www.youtube.com/watch?v=euaFZt0YPi4&feature=youtu.be; https://www.youtube.com/watch?v=QtFs9u5Z2CA; EPRI Extended Storage: Research Perspective, John Kessler, EPRI Used Fuel and High-Level Waste Management Program, NWTRB Meeting, September 14, 2011 http://www.nwtrb.gov/meetings/2011/sept/kessler.pdf; Viability of Existing INL Facilities for Dry Storage Cask Handling, Rev. 1, April 30, 2013, Randy Bohachek, et al., Idaho National Lab http://energy.gov/sites/prod/files/2013/12/f5/INLFacilitiesDry%20StorHBUFViabilRptR1b.pdf

[3] Environmental Impacts of Storing Spent Nuclear Fuel and High-Level Waste from Commercial Nuclear Reactors: A Critique of NRC's Waste Confidence Decision and Environmental Impact Determination, Dr. Gordon Thompson, February 6, 2009, pgs., 29, 47, 50, Tables 7-6, 7-7; Safety and Security of Commercial Spent Nuclear Fuel Storage, Public Report, National Academies of Sciences, April 2005, http://www.nap.edu/books/0309096472/html/

One way to immediately respond is to replace the cask overpack. This can be done much more quickly if there are spare overpacks on site. Then, when it becomes commercially available, the licensee should provide onsite dry cell technology systems to move a leaking or otherwise defective cask into a new canister. They are very expensive and not yet available.

Recommendation: Until such time that title to all spent nuclear fuel at Pilgrim has been transferred to the Department of Entergy, and all such fuel been removed from the Pilgrim site, Entergy and any entity to which Pilgrim's operating license or spent fuel storage license is transferred maintains at Pilgrim a supply of spare overpacks for canisters of spent nuclear fuel assemblies, and takes all reasonable steps to have at Pilgrim hot cells when available or some other system that is capable of moving spent nuclear fuel from a leaking or otherwise defective cask or canister into a new canister.

Recommendation 3: Rising Sea Levels

Finding: There is no doubt that sea levels will rise in the future. A significant rise would likely result in flooding the current spent fuel pad. Many want the existing pad to be moved to, and any second pad to be built at, a higher elevation. Entergy does not want to spend the money to do this; among other things its position seems to be that all Pilgrim's dry casks will have left the site before there is any significant increase in sea level. However, how much sea level will rise and by when is uncertain. See recommendation 4. If the spent nuclear fuel dry casks have not been moved off-site by the time that Pilgrim's operating license has terminated, the Commonwealth does not want to be responsible for the costs of moving it to a higher elevation.

Recommendation 4: The licensee shall move any spent fuel remaining on the Pilgrim site to higher ground than the existing dry cask pad if all spent fuel has not been removed from the Pilgrim site by the anticipated date of license termination.

Recommendation 4: Indefinite On-Site Spent Fuel Storage

Finding: The planning for decommissioning and site restoration, and the costs of on-site spent fuel storage should not assume that all dry casks of spent nuclear fuel will be removed from the Pilgrim site by a specified date, but rather should assume that the casks will remain at Pilgrim indefinitely.

NRC: Its September 2014 Continued Storage final rule and generic environmental impact statement, formerly referred to as the "Nuclear Waste Confidence Decision," found that spent fuel assemblies are safe in either the pool or dry casks for 60 years after the end of the reactor's license. In Pilgrim's case, this would be to 2092 when the spent fuel pool and its supporting structures will be 120 years old. The NRC also recognized that spent fuel assemblies could be kept in dry

casks on site for as long as another 300 years, assuming that the dry cask pad and casks are changed every 100 years, and thereafter may remain onsite indefinitely until an offiste storage facility is available. For NRC documents on waste storage see http://www.nrc.gov/waste/spent-fuel-storage/wcd.html.

DOE: DOE's Strategy for The Management and Disposal of Used Nuclear Fuel and High -Level Radioactive Waste (January 2013) said that: (i) a pilot interim storage facility will be designed, licensed, constructed, and begin operations by **2021,** with an initial focus on accepting used nuclear fuel from shut-down reactor sites; (ii) Advances toward the siting and licensing of a larger interim storage facility that will have sufficient capacity to provide flexibility in the waste management system and allow for acceptance of enough used nuclear fuel to reduce expected government liabilities will be available by **2025**; and, (iii) demonstrable progress will be made on the siting and characterization of repository sites to facilitate the availability of a geologic repository by **2048**.

Importantly, DOE qualified its goals. It recognized that "Full implementation of this program will require legislation to enable the timely deployment of the system elements noted above." In the ensuing five years, there has been Congressional action to authorize or fund what DOE's plan requires.

Currently, two commercial consolidated (interim) spent fuel storage sites are being investigated, one in Texas (WCS) and another in New Mexico (Holtec). The consolidated storage proposals face some public opposition and uncertain legal procedures. A table of nuclear waste legislation is provided by the Congressional research service at 24 https://fas.org/sgp/crs/misc/RL33461.pdf.

Entergy's apparent assumptions that offsite nuclear fuel storage will be available soon, and that its decommissioning plans and cost estimates do not need to consider that the spent fuel may remain on site far longer than 30 or so years after shutdown, are overly optimistic. These assumptions do not appreciate the lack of any evidence that Congress will take the necessary legislative action promptly enough to even begin implementation of DOE's goals, and also seem not to consider that there is opposition to siting in local communities, that opposition along transportation routes is being organized, and that there are many already pending lawsuits challenging siting, and there will be many more. For example, the State of Nevada has 218 admitted legal contentions opposing Yucca before the NRC. A total of 299 contentions from all parties to Yucca's licensing proceeding have been accepted by the NRC licensing boards to date. http://www.state.nv.us/nucwaste/news2017/pdf/nv2017comm_report_final.pdf

In July of 2008, Entergy's Preliminary Decommissioning Cost Analysis for the Pilgrim Nuclear Power Station, prepared by TLG Services and submitted to the NRC, said that its cost estimates were, "Based upon a 2017 start date for the pickup of spent fuel from the commercial industry. That date has come and past, and DOE has not been picked up any spent fuel from any commercial reactor. In Vermont, Entergy's April 6, 2017 Revised VY Post-Shutdown Decommissioning Activities Report (PSDAR) for the accelerated decommissioning and site restoration based its cost projections on spent fuel on: (1) a 2025 start date for the DOE initiating transfer of commercial spent fuel to a federal facility, (2) a corresponding 2026 date for beginning to remove spent fuel from VYNPS. Even DOE's "plan" recognized that, even assuming the necessary Congressional

action has been taken, it would take 8 years before even "a pilot interim storage site" could begin operations, and 12 for there to be "advances toward the siting and licensing of a larger interim storage facility." In other words, Entergy projected dates for removing spent fuel from Vermont Yankee that cannot be met, and there is no apparent reason that this Panel should not assume that spent nuclear fuel may remain at Pilgrim indefinitely.

Recommendation: Pilgrim decommissioning plans and cost estimates should assume indefinite onsite spent fuel storage.

Recommendation 5: Rubblization

Finding: Rubblization is a decommissioning process that demolishes above grade structures into rubble after the surfaces have been reduced to the accepted level of radiation. Large concrete blocks might be broken up into gravel size pieces and dumped into holes. The site surface would then be covered, graded, and landscaped for future use.

There are several potential problems with rubblization, the first is that the buried rubble will not be free of radiation, and Massachusetts law (that will clearly apply after Pilgrim's license is terminated) forbids burial of radioactive material. In addition: (i) Rubblization would create a low level radioactive waste site at Pilgrim, but without meeting NRC requirements to provide protections equivalent to offsite facilities for storing low-level radioactive waste; (ii) Contaminated rubble is likely to leach into the soil and groundwater both on and offsite; (iii) Water intrusion into the rubble is likely at Pilgrim due to flooding and proximity to the water table; (iv) There is a potential of excavation of soil and rubble for use for future construction, resulting in radiation exposure; (v) Rubblization results in a less stable surface than soil and sand due to inevitable spaces between the rubble; (vi) There may be temptation to mix clean and contaminated concrete to bring the radioactive intensity down to clearance levels, while not reducing the overall radiation content of the disposed concrete; and (vii) It is difficult to verify the amount of radioactivity present, as major radioactive dose contributors may be completely shielded from field instrument detection by a thin layer of concrete.

Recommendation: **As of the date the NRC releases the site and terminates Pilgrim's operating license, no rubblized concrete or other material that is contaminated with any radioactivity shall be left onsite.**

Recommendation 6: Rapid Decommissioning

(Note: This Recommendation is like Recommendation 3, Decommissioning Option, proposed by the PSDAR & Decommissioning Working Group)

Finding: NRC regulations would allow Pilgrim to be placed in SAFSTOR for 60 years, and active decommissioning not to begin until about 2070. It is in everyone's interests that Pilgrim be decommissioned and the site released for unrestricted use as soon as possible after shut-down. Entergy has agreed with Vermont to begin active decommissioning in 2020 (6 years after Vermont Yankee) shut down, and to complete it by 2030.[4] NorthStar intends to complete decommissioning,

[4] Entergy's December 2014 Post-Shutdown Decommissioning Activities Report

restoration and release for unrestricted use, except the ISFI, by 2026 and no later than 2030.[5] There is no apparent reason that Entergy could not start active decommissioning at Pilgrim by 2025 (six years after shutdown and by which time all spent fuel should have been moved into dry casks) or that decommissioning should not be completed by 2035.

Recommendation 5: Dismantling of the Pilgrim facility should commence as soon as reasonably possible after Pilgrim stops generating electricity, all equipment, structures and portions of the facility containing radioactive and hazardous contaminants should be removed be from the site, and as soon as reasonably possible the site should be decontaminated to a level that permits the NRC to release of the property for unrestricted use and terminate of the NRC license.

Recommendation 6 – Onsite Residual Radiation

(Note: This Recommendation is like Recommendation 1, Decommissioning Annual Radiation Standard, proposed by the PSDAR & Decommissioning Working Group)

Finding: A principal goal of decommissioning a reactor is to reduce the level of residual radiation on the reactor site.

The level of residual radioactivity at the Pilgrim site will govern potential uses of that site for hundreds of years – long after the plant has been decommissioned and long after all spent fuel has been moved off-site. A lower level of residual radioactivity means a lower risk.

The Massachusetts Department of Health stated in a letter to Entergy April 10, 2018 that, "An unrestricted release level of residual radioactivity of <10 millirem per year for all pathways and that the residual radioactivity be reduced to levels as low as reasonably achievable (ALARA). (105 CMR 120.245). Further, under the US Environmental Protection Agency's Safe Drinking Water Act (SDWA), exposure limits of <4 millirem per year are set for all potential drinking water pathways. MDPH is the Commonwealth's state agency with expertise and authority on radioactive release standards.

MDPH's recommendation is supported by research from the National Academies most recent report on the Biological Effects of Ionizing Radiation (BEIR VII)[6] that found exposure over a 70-year lifetime to 10 millirem a year would likely result in 70/100,000 developing cancer; whereas exposure to NRC's 25 millirem/year would likely result in 175/100,000.

MDPH's proposal is achievable. According to Mr. Bruce Watson, the chief of the NRC Decommissioning Branch, the seven sites most recently decommissioned have achieved residual radioactivity level of less than three (3) millirem per year.

In its Preliminary Decommissioning Cost Analysis submitted to the NRC in 2008, Entergy said that:

[5] Revised VY Post-Shutdown Decommissioning Activities Report

[6] The 25 mrem/year NRC regulation deals only with what is required for the NRC to "release" the site for unrestricted use; not to what use can be made of the site after it is "released."

> "Plant personnel reviewed the records of information important to the safe decommissioning of the facility (as maintained under 10 CFR 50.75(g)). The records did not indicate any areas of significant site contamination (specifically soil, groundwater, and surface water) that needed to be addressed in the financial planning for decommissioning, at this time. that there has been very little radioactivity released from Pilgrim" (Preliminary Decommissioning Cost Analysis, Section 1.8.2).

Entergy also said "Regulatory criteria established by the Massachusetts State Department of Public Health (10 mrem/yr.) would also be met before the property would be transferred. Has the site become significantly dirtier and costlier to cleanup since 2008?

The 25 mrem/year NRC regulation that sets a less than 25 millirem per year standard deals only with what is required for the NRC to "release" the site for unrestricted use; it has nothing to do with what use can be made of the site after a Pilgrim's license has been terminated and the site has been "released." Massachusetts, and not the NRC, has the authority to limit the level of radioactivity of any portion of the Pilgrim site that has been released, and to require that the residual radiation on the released site be far less than 25 mrem/year and that EPA's Maximum Contaminant Levels for drinking water are also met.

The NRC's Frequently Asked Questions About Decommissioning say that after the license has been terminated and a site has been released, the NRC no longer has any authority over the released site:

> Activities that take place after the licensee has demonstrated that the radiological hazard has been removed, and after the license has been terminated, are not within the jurisdiction of the NRC. The NRC has no oversight of these activities once the license is terminated.

In its 2008 Pilgrim Decommissioning Cost Analysis (ML082170672) filed with the NRC: (Pg. 16 - 1.7.8 Site Conditions Following Decommissioning), Entergy agreed:

> The NRC will terminate (or amend) the site license if it determines that site remediation has been performed in accordance with the license termination plan, and that the terminal radiation survey and associated documentation demonstrate that the facility is suitable for release. The NRC's involvement in the decommissioning process ends at this point. Building codes and state environmental regulations dictate the next step in the decommissioning process, as well as the owner's own future plans and commitments for the site.

Both Maine and New Jersey require that the residual radioactivity at a site that has been decommissioned and is no longer licensed be lower than 25 millirems/year. Yankee Atomic NPS, located in Rowe Massachusetts, entered a Memorandum of Understanding with the Massachusetts Department of Public Health in 2005 in which Yankee Atomic agreed to follow the department's

10 millirem/year standard and committed to meet EPA's Maximum Contaminant Levels for drinking water.[7]

Recommendation: **The NDCAP supports the radiological cleanup standard put forth by the Massachusetts Department of Public April 10, 2018 Letter to Entergy outlining the Commonwealth's position on residual radioactivity. The level of residual radioactivity on the Pilgrim site as of the date the NRC releases the site and terminates Pilgrim's operating license shall be as low as reasonably achievable, less than 10 millirem per year, for all pathways; and the radioactivity level for all potential drinking water pathways shall be less than 4 millirem per year.**

Recommendation 7 – Compliance

Finding: Providing a mechanism for ensuring that the Commonwealth's residual radiation level requirements are met goes hand in hand with the requirements themselves. A mechanism to accomplish this is set out in MDPH's April 10, 2018 Letter to Entergy. We recommend that it be adopted.

Recommendation: Before submitting its PSDAR to the NRC, Entergy shall submit to the Commonwealth RCP a compliance document that (i) describes the methods for achieving compliance with the aforementioned criteria; (ii) outline a protocol to confirm achievement of these standards after any necessary remediation, and (iii) provides assurances those obligations will be met in the event that the site is sold to a third party. Following review and approval of the compliance document by RCP and the Massachusetts Department of Environmental Protection, the compliance document be adopted and implemented by Entergy as part of the Post-Shutdown Decommissioning Activities Report (PSDAR).

Recommendation 8: Environmental Monitoring

Finding: The need for offsite monitoring does not go away when the spent fuel is moved into dry casks. MDPH should continue its offsite radiological monitoring and testing program until all spent nuclear fuel dry casks have been moved off-site and there is no longer a risk of radiation release from a cask. The amount of radiation in a single cask of the almost 70 casks that Entergy plans to store in its ISFSI is about one-half the total release at Chernobyl. There is a real and ongoing risk that a cask will fail before or in the 100 years allowed by NRC to store the assemblies in a cask or from a terrorist attack.

Recommendation 8: Until such time that the Department of Entergy has taken title to all spent nuclear fuel at Pilgrim and transferred the fuel to the Department of Entergy and all such fuel has been removed from the Pilgrim site, the Massachusetts Department of Public Health (DPH) should continue offsite radiological monitoring and testing, including real-

[7] http://www.yankeerowe.com/siteclosure/docs/BYR%202005-101.pdf

time air monitoring, offsite environmental sampling and testing, and onsite monitoring well and media sampling. Entergy and any entity to which Pilgrim's operating license or spent fuel storage license may be transferred should provide funding to DPH for all such monitoring and sampling.

Recommendation 9: Safety-Offsite Emergency Planning

(Note: This Recommendation is like Recommendation 2, Emergency Planning Zone (EPZ) proposed by the PSDAR & Decommissioning Working Group)

Finding: The major risk at Pilgrim after shut-down is a spent fuel pool fire that could cause more than $450 million in damages, result in more than 20,000 cancers and contaminate thousands of square miles.[8]

Although dry cask storage is safer than pool storage, the casks are vulnerable to terrorist attack; corrosion and cracking. Each cask contains approximately ½ the Cesium-137 as released from the Chernobyl accident. Second, 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 offsite contamination requiring emergency response. A fire also can result in contamination of, and radiation doses to, offsite first responders that for their safety requires monies available for emergency first responders' training and special equipment. Public and worker safety cannot be insured without proper emergency planning.

KI requirements can be eliminated 90 or more days after defueling. The rule of thumb is that I-131 does not pose a threat in irradiated fuel that has been removed from an operating reactor core 90 or more days ago (roughly ten half-lives for the 8-day radionuclide).

Recommendation 9: Current radiological emergency planning requirements should remain in place until all spent fuel is removed from the pool and placed in hardened dry casks, except that potassium iodide provisions may be eliminated 90 days after the reactor is refueled. After all spent fuel has been moved into dry casks, offsite emergency planning should continue, to a lesser degree, until the fuel leaves the site.

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[8] The Massachusetts Attorney General's Request for a Hearing and Petition for Leave to Intervene With respect to Entergy Nuclear Operations Inc.'s Application for Renewal of the Pilgrim Nuclear Power Plants Operating License and Petition for Backfit Order Requiring New Design features to Protect Against Spent Fuel Pool Accidents, Docket No. 50-293, May 26, 2006 includes a Report to The Massachusetts Attorney General On The Potential Consequences Of A Spent Fuel Pool Fire At The Pilgrim Or Vermont Yankee Nuclear Plant, Jan Beyea, PhD., May 25, 2006 (NRC Electronic Hearing Docket, Pilgrim 50-293-LR, 2—6 pleadings, MAAGO 05/26 (ML061640065) & Beyea (ML061640329); Frank N. von Hippel, Michael Schoeppner, "Reducing the Danger from Fires in Spent Fuel Pools," Science & Global Security 24, no.3 (2016): 141-173 http://scienceandglobalsecurity.org/archive/sgs24vonhippel.pdf; Consequence Study Of A Beyond Design-Basis Earthquake Affecting The Spent Fuel Pool For A U.S. Mark I Boiling Water Reactor (October 2013) at 232 (Table 62) and 162 (table 33), Adams Accession NO ML13256A342)
Richard Stone, "Spent fuel fire on U.S. soil could dwarf impact of Fukushima," *Science*, May 24, 2016. (available at: **http://www.sciencemag.org/news/2016/05/spent-fuel-fire-us-soil-could-dwarf-impact-fukushima**

Recommendation 10: Finances

(Note: Recommendation 9, Decommissioning Trust Fund (DTF), proposed by the PSDAR & Decommissioning Working Group is also concerned with assuring sufficient decommissioning funds)

Finding: Entergy has about a billion dollars in its Decommissioning Trust Fund (DTF). Entergy says that this will be enough. But judging from Entergy's estimate to decommission Vermont Yankee, a smaller reactor, this is at least $400 million short now, and the longer it takes to decommission the more it will cost. If the amount in the DTF proves to be insufficient, there is no reason that the Commonwealth's taxpayers should be forced to pay the deficit.

In Vermont, Entergy has reduced the amount of money in the DTF by using the fund to pay for such items as property taxes, insurance, and lobbyists.

We recommend:

- Requiring Pilgrim's owner(s) pay a fee sufficient to cover any potential shortfall. The money should be placed in the State Treasurer's Office to use if the DTF comes up short - otherwise it will be returned to the owner(s) with interest. The fund should include monies for contingencies that may not be discovered until near the end of the decommissioning process and that would increase the total cost for decommissioning, spent fuel management, or site restoration. In determining the amount to be paid into the fund, the owners should not be allowed to rely on cost estimates that assume that all spent fuel will be removed from the site by 2052.
- Requiring a cash flow analysis at 5-year intervals until decommissioning is complete to provide policymakers information to determine if there are sufficient funds.
- Requiring an audit of the finances of any company, such as NorthStar LLC, to which Pilgrim may be sold or to which a Pilgrim license is transferred.

Recommendation 10: The Commonwealth should ensure that Entergy LLC, the licensee, or any other entity to which Pilgrim is sold pays all decommissioning costs. Pilgrim's owners should be prohibited from withdrawing money from Pilgrim's DTF Fund to pay any costs that do not meet the NRC's definition of decommissioning - removal of radioactivity - unless all such monies withdrawn from the DTF are paid into a state fund within five business days after they are withdrawn from the DTF.

Recommendation 11: NEPA Analysis

(Note: We recognize that this recommendation may be premature since the Panel and its working groups seem not to have addressed NEPA. However, it is an issue that should considered in the very near future since this recommendation should be made before Entergy files its Pilgrim PSDAR.)

FINDING: A NEPA analysis of the potential environmental impacts of Entergy's post closure plans will include review of:

1) All potential radiological incidents at the site;
2) 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;
3) 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;
4) The creation and operation of a Dry Fuel Transfer Station to move spent fuel into new dry casks every 100 years or sooner as needed, and the funding source for: (a) the construction of a Dry Fuel Transfer Station; (b) the purchase of 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;
5) The existence of radiological and non-radiological contamination;
6) The generation and storage of non-radiological contaminants; and
7) Site-specific impacts resulting from: (a) potential airborne asbestos and lead contamination, as well as potential impacts from a radiological incident; (b) recreational activities on Cape Cod Bay and beaches; species that may become listed as endangered or threatened in the next 60 years; (c) science's increased understanding of climate change, including expected increases in the severity of floods; (d) known and unknown contamination at Pilgrim from previously identified tritium leaks and other residual radionuclides from Pilgrim's early operations and 1982 releases; (e) unique environmental and economic impacts and alternatives related to the length of any SAFSTOR period, including negative impacts from a longer SAFSTOR period.

The costs of decommissioning Pilgrim, and a determination of whether there are sufficient funds available and the likelihood and extent of any potential shortfall cannot be accurately estimated without such an analysis. An initial analysis should be conducted before Pilgrim's PSDAR is submitted to the NRC, and it should be updated at regular intervals until decommissioning is complete.

Recommendation 11: Require NEPA-compliant comprehensive analyses of all potential environmental and economic impacts of Entergy's post-closure plans to assure accurate cost estimate. An initial such analysis should be completed before Pilgrim submits its PSDAR to the NRC, and updates based on then-current information should be submitted at five- year intervals thereafter until decommissioning is complete and Pilgrim's operating license has been terminated.

Recommendation 12: NDCAP- Funding

Finding: NDCAP does not have the funds, and its members have neither the expertise nor the time, to accomplish the tasks assigned to it. It needs to be able to hire experts and staff. It cannot depend simply on volunteers. This could be accomplished by either amending the enabling legislation that created NDCAP or a Budget amendment.

Recommendation 12: Provide NDCAP the funding it needs to hire staff and experts to accomplish its work.

Recommendation 13: Interagency Working Group

(Note: This Recommendation is like Sean Mullin's Recommendation 1)

Finding: The decommissioning of Pilgrim Nuclear Power Station is one of the major issues that the Commonwealth needs to address over the next 20 or more years. Although NDCAP does not have the staff or experts needed, the needed personnel can be found within the executive branch of state government, and with adequate funding they will have the time and expertise to do what needs to be done.

Recommendation 13: Establish and fund an interagency working group that includes representatives of the Office of the Attorney General, the Department of Public Health, the Department of Environmental Protection, the Public Utilities Commission, the Department of Health and Human Services, the Massachusetts Emergency Management Agency and other departments, agencies and commissions within the Executive Branch to oversee, and work with the NRC and Pilgrim's owner(s) in connection with decommissioning Pilgrim Nuclear Power Station.

Respectfully Submitted,

Mary & Jim Lampert
Pilgrim Watch/Town of Duxbury Nuclear Advisory Committee
Duxbury, MA
April 30, 2018