

400 *years* *.....and counting*



2020 Report to the Governor & Energy Committees of the General Court

Pilgrim Nuclear Decommissioning Citizens Advisory Panel
Plymouth, Massachusetts

Nuclear Decommissioning Citizens Advisory Panel

21 December 2020

Dear Governor Baker,

The Nuclear Decommissioning Citizen Advisory Panel (NDCAP) has completed its 3rd Annual Report for the period 1 September 2019 to 1 September 2020, which is attached.

Power generation at Pilgrim Nuclear Power Station ended on May 31, 2019, and all nuclear fuel was removed from the reactor shortly thereafter, and placed into the spent fuel pool located in the main reactor building. Since then, 17 additional dry concrete casks have been loaded with waste fuel from the pool, and a new site for dry cask storage has been constructed on station property, at a higher elevation from the coast and about 500 feet from the shore. Buildings are undergoing demolition, a site characterization survey is underway, and the reactor vessel is currently being dismantled. Site clean-up and restoration is scheduled with most activities planned for completion by 2028.

Tons of highly radioactive “spent” nuclear fuel will remain in Plymouth for the foreseeable future and, in our informed opinion, will be the single greatest safety and security issue facing surrounding communities and the state. A central federal repository has not come to fruition for nuclear facilities waste anywhere in the nation; therefore, it appears dependent on the states to work together and come up with a viable solution.

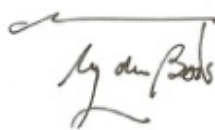
In 2021, NDCAP will continue to work collaboratively with Holtec International during continued decommissioning efforts to ensure that the spent fuel is safely stored in dry cask storage on-site. We also hope to investigate longer-term and real solutions to nuclear waste storage.

We do not feel equipped to do this without significant input from the industry and educational sectors. In addition to Pilgrim’s nuclear waste, Massachusetts must deal with the remains at Yankee Rowe, and Vermont Yankee, nearby across our border, which will be contending with the same issues, as will New York, Connecticut, New Hampshire and Maine. We need your help and engagement, and thus invite you to remotely attend one of our NDCAP meetings in early 2021 to discuss these issues, and envision an enduring solution for the safety of the Commonwealth.

Sincerely,



John T. Mahoney, Chair



Pine duBois, Vice-chair

Cc: Senator Michael J. Barrett
Representative Thomas A. Golden, Jr.



TABLE OF CONTENTS

List of Abbreviations	3
Executive Summary	4
Introduction	7
Statutory Authority and Duties	8
Meeting Schedule and Priorities for 2019-2020	9
Meeting Highlights (From NDCAP Minutes)	10
September 2019 Meeting	10
October 2019 Meeting	11
November 2019 Meeting	11
January 2020 Meeting	12
February 2020 Meeting	12
March, April and May 2020 Meetings – Cancelled due to Covid-19	12
June 2020 Meeting	13
July 2020 Meeting	14
Interagency Working Group (IWG) Agreement	15
Financial Assurances	15
Cleanup Requirements	16
Public Safety	16
Plymouth Board of Selectmen Memorandum of Agreement (MOA)	16
Future Pilgrim Site Use	19
Layout and Site Images	20
Major Milestones and Activities at the Pilgrim Site as reported by Holtec	21
Spent Nuclear Fuel Location and Status at Pilgrim - A review of what is known	23
Current State of Rad Waste at Pilgrim	23
Waste Transportation and Handling	24
Current ISFSI Site Status	25
Public Concerns About ISFSI	29
Nuclear Decommissioning Trust (NDT) Fund Updates	30
Current Decommissioning Fund Balance	30

Attachments

- #1 Settlement Agreement
- #2 DOE Preliminary Evaluation of Removing SNF from Nuclear Power Plant Sites
– Pilgrim Site Visit

LIST OF ABBREVIATIONS

AGO/AG	Attorney General Office
ALARA	As Low As Reasonably Achievable
CRDM	Control Rod Drive Mechanism
CDI	Comprehensive Decommissioning International
DEP	Department of Environmental Protection
DPH	Department of Public Health
DOE	Department of Energy (Federal)
DOT	Department of Transportation (Federal)
DTF	Decommissioning Trust Fund
EEA	Executive Office of Energy and Environmental Affairs
EPZ	Emergency Planning Zone
HDI	Holtec Decommissioning International
ISFSI	Independent Spent Fuel Storage Installation
IWG	Interagency Work Group
MEMA	Massachusetts Emergency Management Agency
NDCAP	Nuclear Decommissioning Citizens Advisory Panel
NPDES	National Pollution Discharge Elimination System (permit)
NRC	Nuclear Regulatory Commission
PACTV	Plymouth Area Cable Television
PNPS	Pilgrim Nuclear Power Station
PSDAR	Post Shutdown Decommissioning Activities Report
Rad	Radioactive

Contributors to the Report

Rich Grassie
Pine duBois
David Johnston
Patrick O'Brien
Sean Mullin
Reviewed by Members of the NDCAP Panel

Cover page photo credit

[https://upload.wikimedia.org/wikipedia/commons/9/9d/Copyrighted and Published by A S Burbank%2C The Mayflower at Sea %28NBY 21340%29.jpg](https://upload.wikimedia.org/wikipedia/commons/9/9d/Copyrighted_and_Published_by_A_S_Burbank%2C_The_Mayflower_at_Sea_%28NBY_21340%29.jpg)

EXECUTIVE SUMMARY

The events and related NDCAP activities covered in this Annual Report are intended to serve as advice to the Governor, the General Court, the agencies of the Commonwealth, and the public. The primary focus during the 12-month period from September 1, 2019 was on the transfer of plant ownership and licenses from Entergy to Holtec International, and the continuation of decommissioning activities in accordance with the Commonwealth's Agreement with Holtec in June 2020 that resolved significant concerns.

By the end of this reporting period in September 2020, all nuclear fuel had been transferred from the reactor to the spent fuel pool. Aged nuclear fuel in the pool had already begun to be loaded into dry casks and placed on a dry cask storage pad (ISFSI) adjacent to the reactor at sea level. Construction began on a newer, elevated upper ISFSI adjacent to Rocky Hill Road where all the nuclear fuel will eventually be stored in a total of 61 dry casks holding 4,114 spent fuel assemblies. The next fuel campaign for the transfer of spent fuel to dry casks will begin in Spring 2021 and be covered in the next Annual Report.

Related work focusing on various aspects of early decommissioning continued, including: the removal of Control Rod Drive Mechanisms (CRDMs); reactor segmentation, removal and handling of all classes of nuclear waste from the reactor vessel; permit and construction of a new protected area and haul path for the upper ISFSI; certain buildings demolition in accordance with permits; the hiring of a Site Characterization contractor (ERM) to examine the site and prepare the Initial Environmental Site Assessment Work Plan; and compliance steps with the Commonwealth's Settlement Agreement.

In addition to working with Holtec and the Interagency Work Group (IWG), the NDCAP in June 2020 assisted in promoting a Memorandum of Agreement between the Town of Plymouth and Holtec to address a number of critical host community issues including: ISFSI screening; funding for emergency planning; financial assurances associated with Decommissioning Trust Fund (DTF) balances and local PILOT funding; commitments relative to public safety and security with Plymouth agencies as first responders; displaced employee assistance; land clean-up requirements; and, public health funding.

As of the last available December 31, 2019 report on the status of the DTF, the balance was \$979M remaining of the estimated cost of \$1.031B. The DTF is the sum total of monies available for decommissioning, including license termination expenses (\$548M), spent fuel management (\$443M) and site restoration costs (\$40M). Further, under the Commonwealth Agreement Holtec must maintain at least \$193M in funds until it completes most of the cleanup and site restoration work and, after that point, \$38.4M in funds until the spent nuclear fuel is completely removed from the site.

NDCAP and all engaged parties are keenly aware that the greatest challenge following the safe decommissioning of Pilgrim will be the secure confinement of highly radioactive waste fuel in Plymouth. NDCAP does not possess the capacity to assure absolute protection for hundreds or thousands of years, and requires additional expertise and resources to make progress.

NDCAP Panel Composition 2020

Chair

John T. Mahoney, Plymouth Nuclear Matters Committee (June 2020 to replace Joe Coughlin)
Appointed by the Plymouth Select Board

Vice Chair

Pine duBois
Appointed by the Speaker of the House

Members

Sean G. Mullin, Chair NDCAP 2017 - July 20, 2020
Appointed by the Minority Leader of the Senate

Kevin O'Reilly, Vice-Chair NDCAP 2017 - July 20, 2020
Appointed by the Speaker of the House

Robert Jones, ex officio. Deputy Chief of Staff
Designee of the Secretary of Health and Human Services

David Johnston, ex officio. Deputy Regional Director MA DEP-SERO
Designee of the Secretary of Energy and Environmental Affairs

Robert Hayden, ex officio. Commissioner DPU
Designee of the Commissioner Public Utilities

Susan Whitaker, ex officio. Regional Director, Office of Business Development
Designee of the Secretary of Housing and Economic Development

H. Joseph Coughlin, Plymouth Nuclear Matters Committee, (Resigned June 2020)
Appointed by the Plymouth Select Board

Richard Quintal, Selectman (Appointed November 2020)
Representative of the Town of Plymouth
Appointed by the Plymouth Select Board

Jack Priest, ex officio. Director, MA DPH Radiation Control Program
Appointed by the Department of Public Health

Amy Naples, Exec. Director, Plymouth Area Chamber of Commerce
Appointed by the President of the Senate

Mary Waldron, Exec. Director (replaced Pat Ciamarella who retired January 2020)
Appointed by the Old Colony Planning Council

Richard Rothstein, Representative of the Town of Plymouth
Appointed by the Plymouth Select Board

John G. Flores
Appointed by the Governor

David C. Nichols
Appointed by the Governor

Richard Grassie
Appointed by the Minority Leader of the House

Daniel Wolf, Retired State Senator
Appointed by the President of the Senate

Patrick O'Brien, CDI Manager, Communications and Government Affairs
Appointed by Owner of the Pilgrim Nuclear Power Station

John Moylan, Site Vice-President (replaced Brian Sullivan)
Appointed by Owner of the Pilgrim Nuclear Power Station

Paul D. Smith
Representative of the Utility Workers Union of America, UWUA, Local 369

Samantha Phillips, Director
Massachusetts Emergency Management Agency

INTRODUCTION

This Nuclear Decommissioning Citizens Advisory Panel (NDCAP) Annual Report covers the activities and accomplishments for the 12-month period beginning September 1, 2019 to ending September 1, 2020.

During much of this period the Commonwealth and the entire nation has been engulfed by a continuing pandemic caused by a highly contagious and dangerous flu variation called Covid-19. As a result, there was a hiatus in NDCAP meetings from March 2020 into June 2020, as we regrouped. Meetings were facilitated by PACTV via zoom in June, July and September 2020 these meetings are recorded on YouTube. These and other materials are posted on the Commonwealth website, by the Executive Office of Energy and Environmental Affairs (EEA), where meeting agendas, presentations and additional information is made available¹. During the reporting period, the NDCAP maintained its meeting schedules and coordination with Holtec/CDI except for the monthly meetings in March, April and May that were canceled due to the Pandemic. NDCAP does not schedule planned meetings in August and December.

As provided in last year's NDCAP Annual Report, by June 1, 2019, the Pilgrim Nuclear Power Station ceased operating after nearly 50 years of operations. Upon the cessation of power generation and in accordance with its advertised plans, Pilgrim's previous owners, Entergy, announced its intention to transfer ownership of the closed facility to Holtec International for decommissioning. This ownership is called Holtec Pilgrim.

By June 10, 2019 all nuclear fuel had been removed from the Reactor and on August 23, 2019, the Nuclear Regulatory Commission (NRC) approved the transfer of Pilgrim, Nuclear Facility Operating License from Entergy to Holtec International for "possession, maintenance, and decommissioning." Upon the License transfer, Holtec International representatives replaced Entergy representatives on the NDCAP. The Commonwealth of Massachusetts opposed the NRC's license transfer decision until Holtec International and the Commonwealth entered into the June 17, 2020 Settlement Agreement (Attachment #1).

For the current reporting period, the NDCAP spent portions of every meeting discussing the ownership/license transfer process, related concerns, as well as the Settlement Agreement negotiations. Throughout the period, NDCAP meetings also focused on the decommissioning activities that had begun post-closure, including movement of spent nuclear fuel from the cooling pool to dry cask storage, and construction of the new Independent Spent Fuel Storage Installation (ISFSI) at a higher location on the property, and farther back from the shore of Cape Cod Bay.

¹ <https://www.mass.gov/orgs/nuclear-decommissioning-citizens-advisory-panel>

STATUTORY AUTHORITY AND DUTIES

The Nuclear Decommissioning Citizens Advisory Panel (NDCAP) was established pursuant to Chapter 188 of the Acts of 2016 § 14, to “advise the governor, the general court, the agencies of the commonwealth, and the public on issues related to the decommissioning of the Pilgrim Nuclear Power Station (PNPS), with a written report being provided annually to the governor and to the energy committees of the General Court.” The first meeting of NDCAP was in May 2017.

The NDCAP was established to: serve as a conduit for public information and education on, and to encourage community involvement in, matters related to the decommissioning of the Pilgrim Nuclear Power Station (PNPS); receive written reports and presentations on the decommissioning of the Station at its regular meetings; periodically receive reports on the Decommissioning Trust Fund and other funds associated with the decommissioning of the PNPS, including fund balances, expenditures made, and reimbursements received; receive reports regarding the decommissioning plans for the PNPS, including any site assessments and post-shutdown decommissioning assessment reports; provide a forum for receiving public comment on these plans and reports; and, to provide comment on these plans and reports, as the panel may consider appropriate, to public and private sector stakeholders, including the owner of the PNPS, and in the NDCAP’s annual report.

The NDCAP continued to explore, discuss and communicate its advice and involve citizens on a broad range of topics and subject matter areas during its third year. The Panel’s list of topics, questions, observations and recommendations that were discussed and communicated during 2019-2020 included:

- License Transfer from Entergy to Holtec and related petitions
- PNPS Decommissioning Trust Fund
- Community Involvement and concerns
- Post Shutdown Decommissioning Activities Report (PSDAR)
- Economic Impacts
- Government Relations
- Holtec’s/CDI’s decommissioning planning activities
- Socio-economics, Economics and Finances
- Storage of spent nuclear fuel, and construction of relocated ISFSI and protections
- Radioactive and hazardous materials storage and handling
- Site Restoration impediments and plans
- Public Safety, including emergency preparedness & environmental monitoring
- Federal, State, and local government authority and possible roles
- Panel Administration, including community involvement, documents, and annual reports
- Environmental Issues, including hazardous materials
- Holtec’s/CDI’s Dry Cask Storage systems, technologies, and monitoring
- Site Assessment & Site Characterization report
- Existing and proposed NRC Decommissioning regulations
- Emergency Planning, Current EPZ and Impact of Plant Closure/Decommissioning

- RAD Monitoring in place and across regional communities
- Progress and updates on plant dismantling of components, buildings, etc.

MEETING SCHEDULE AND PRIORITIES FOR 2019-2020

In performing these critical NDCAP functions during the reporting period, the NDCAP held seven meetings during 2019-2020.

In-person meetings and virtual meetings are coordinated with our local Plymouth Area Community Television (PACTV), which normally broadcasts NDCAP meetings and provides video recordings. The March 2020 meeting was the beginning of Covid-19 pandemic disruption. As a result, meetings for the months of March, April and May were cancelled. June and July were virtual meetings.

Plant operations effectively ceased by June of 2019, thus most of the Panel's attention was directed upon the process of plant license transfer from Entergy to Holtec Decommissioning International², which has assumed the responsibility of plant decommissioning. Holtec Pilgrim, LLC is the owner of the 1700-acre site. Further discussion centered around the location of the spent fuel, aka, dry cask storage pad or "ISFSI" within the protected area. Following an investigative process, the new ISFSI location atop the hill is being constructed adjacent to the protected area along Rocky Hill Road. Discussions of securing and protecting this additional site are on-going. There is a separate section later in this report addressing the ISFSI and associated issues the NDCAP is reviewing.

Significant discussions, presentations and comments/questions were generated as a result of the development of the Commonwealth's Interagency Working Group (IWG), their meetings and concentrations on decommissioning and the status of various forms of legislative initiatives, as well as the creation and negotiation of the license transfer agreement involving Holtec, the IWG and the Attorney General's Office (AGO), and public petitioners.

In addition to monitoring various Holtec/CDI updates provided on a monthly basis, the Panel also focused on the construction of the new ISFSI pad, various issues (safety, security, vulnerability) associated with handling and transfer of radioactive waste and the reliability, maintainability and security associated with the dry cask storage on the existing and new pad.

Of significant interest to the Panel and the public is the on-going status and sufficiency of the Decommissioning Trust Fund (DTF) and the process of accounting for monies contained therein during various phases of decommissioning, and how the transfer and storage of dry

² Comprehensive Decommissioning International (CDI) is a joint venture formed by Holtec and SNC-Lavalin and serves as the general contractor performing decommissioning services at numerous plants under Holtec ownership. <https://holtecinternational.com/2019/08/26/holtec-completes-acquisition-of-pilgrim-nuclear-power-station> The Commonwealth AG filed a Petition to Intervene in the transfer, requesting a Stay of the Transfer on September 3, 2019. The Commonwealth entered into an Agreement with the Company in June 2020. See Attachment #1

casks between the ISFSI's would impact the fund. The NRC has given Holtec, and other nuclear power plant owners, permission to use the DTF for spent fuel/dry cask storage management as well as site restoration costs. This is an expansion of the original intended use of the Fund.

MEETING HIGHLIGHTS (FROM NDCAP MINUTES)

The following Meeting Highlights are taken from the Meeting Minutes section of the NDCAP web site: <https://www.mass.gov/orgs/nuclear-decommissioning-citizens-advisory-panel>

September 2019 Meeting

NDCAP member, David Johnston, an ex officio Designee of the Secretary of Energy and Environmental Affairs and representative to the Interagency Work Group (IWG), provided an update on Negotiations for a Settlement Agreement with Holtec. He stated that, on August 22, 2019 the NRC staff approved Holtec's license transfer application and request for a waiver to use decommissioning trust fund ("DTF") money for non-decommissioning purposes, including site restoration and spent fuel management.

Motions have been filed in the case. The AGO and IWG seek a safe decommissioning of the plant, including through additional discussions and negotiations with Holtec. A discussion of employee transfers from Pilgrim and Workforce Training opportunities was discussed.

The NRC approved the license transfer to Holtec on August 22, that the sale from Entergy to Holtec was finalized on August 26, and that site employees transitioned to Holtec/CDI on August 26/27. The Holtec/CDI Government Affairs and Communications manager provided an update on the new dry cask storage (ISFSI) pad up the hill from the plant adjacent to Rocky Hill Road. He explained that permits have been approved by the Town of Plymouth and that initial site work has begun. Holtec submitted an initial waiver request for its ISFSI haul path to the town's Conservation Commission in August. The focus for first year of decommissioning include integrating the Entergy and CDI teams, hazard reduction in buildings, the movement of spent fuel into dry casks, reactor segmentation preparations, site characterization, electrical load reduction, and water inventory.

NDCAP Chair noted problems with the panel make up of a majority of ex officio members that means acting on issues is almost impossible, and that the Panel needs funds for legal and expert support. The Public raised concerns about getting information and having the panel (and the NRC) being controlled by the industry.

October 2019 Meeting

Mass. DEP and US (EPA) provided a briefing and answered questions on the draft Clean Water Act (NPDES) permit which prohibits discharges of pollutants except in conformance permit. Pilgrim's permit expired 22 years ago. A draft renewal was issued in 2016 that

received extensive comments. It contained two separate permits: one for use when the plant was generating electricity and one for use after the plant stopped generating. The draft permit does not include any new discharges, which would also need to be covered by a permit.

Holtec's rep to the panel addressed a question on the Post Site Decommissioning Activities Report. He explained that the PSDAR requires planning, stakeholder interaction, procurement of services and supplies, historical site reviews, planning for the site characterization, ALARA³ budget, waste management plans, safety, security, and environmental studies, reactor vessel internals and reactor vessel segmentation, and licensing and permitting actions. Panel members asked for both the Historic and 2018 site characterization studies to be made public, including information related to both radionuclides and non-radionuclides, and if a new PSDAR cost estimate would be developed after receiving the results of the site characterization. Holtec responded this is possible if unanticipated information is in the report. The Panel discussed the difficulty of passing motions due to the panel composition and discussed whether its Working Groups⁴ should be continued.

During the public discussions, a member of the community asked if the interim waste storage facility in New Mexico will accept waste from Pilgrim in 2024. A Holtec representative responded that the facility could be complete as early as 2024 and that it will begin accepting waste after that, but that he had made no representation about when Pilgrim's waste would be shipped there.

November 2019 Meeting

The representative of the Interagency Working Group (IWG) provided an update on the IWG's progress relative to the resolution of the AG petitions at the NRC and D.C. District Court, and the NPDES permit. An update on Decommissioning progress was given by the Holtec/CDI representative. A Panel member asked about the process for expending funds and how it is tracked, monitored and evaluated, to which the Holtec/CDI representative explained the paperwork is sent to the NRC stating that oversight is tight process that requires review and determination of qualified and non-qualified expenses. A Panel member asked when the waste would be leaving Pilgrim. Holtec responded that the timeframe mentioned isn't set for all waste and that DOE was at the site for four days, looked at plant and local infrastructure to determine how material would be moved from the site, and determined there was no decision at this point on both waste and fuel movement from Pilgrim (Attachment #2). Thereafter there was a general discussion concerning Working Groups and whether they would continue to be scheduled. The MEMA Panel member indicated that the EPZ communities and Holtec meet monthly, however, they are not public meetings.

January 2020 Meeting

³ ALARA - As low as reasonably achievable in reference to radiation remaining on site after decommissioning

⁴ Working Groups included: Government & Community Relations, Site Cleanup and Restoration; Safety and Security; PSDAR & Decommissioning; Financial/Economic

The IWG representative reported that the AGO's office was diligently working on an Agreement with Holtec/HDI concentrating on various aspects of the LTA (license transfer agreement) and use of Decommissioning Trust Funds. It was also reported that the previous assumption of costs in the revised cost estimate were not using 2027 as a base but were assumptions on cost using 2017 as a base. The Panel's MEMA representative does not agree with the NRC reduction of the EPZ from its current ten miles (to the security perimeter), and that Potassium Iodine pills will not be resupplied by the government for public distribution because there is no further risk of an iodine radiation release due to cession of Pilgrim operations. It was also revealed that an NRC representative is onsite at Pilgrim to monitor dry cask storage operations which are ongoing. Plymouth Selectmen plan to meet again with Holtec in mid-February to discuss their interests in the site.

Paul Blanch, formerly a site engineer at San Ofre and Indian Point, and on Navy reactors, presented some concerns regarding decommissioning at the meeting indicating that the NRC is biased toward the nuclear industry. His slide presentation indicated he felt the Holtec cask design and engineering was deficient and there seemed to be no long-term cask reliability with the spent fuel held in storage at Pilgrim (or elsewhere) in the dry casks for decades. He also indicated the biggest risk to Holtec was insufficient monitoring of dry casks coupled with potential NRC negligence of oversight when there is lethal Cesium 137 in each cask as well as vulnerability due to potential zirconium fractures⁵. He indicated that he was not aware of any planned inspection of the cask sites by either the NRC or DOE while the regulations clearly require the NRC to monitor spent fuel handling and storage.

February 2020 Meeting

The Panel was informed that the EPA issued its updated surface water discharge permit (NPDES) in conjunction with MA DEP to Holtec on Jan 30, 2020. Prior to issuance, MA DEP certified that the discharges would meet the Massachusetts Surface Water Quality standards. Holtec and Entergy appealed the federal permit (Water Quality Certification).⁶ The MA permit was not appealed. The permit does not address decommissioning and site restoration. Holtec's application did not include a change in operations post shut down, so modification will be needed following the company's anticipated request for an amendment. It was noted that DEP does not authorize discharges for decommissioning and site restoration, and that the AG and state are continuing its petition and are negotiating a settlement agreement with Holtec. Regarding the Pilgrim Watch petition, Entergy and Holtec petition is pending at the NRC; and also pending at DC Circuit Court. The petition includes issues regarding the use of Trust Fund for spent fuel and site restoration. On Feb 12, 2020 the DC Circuit combined the petitions in court.

Regarding safety of spent fuel management, the Panel was briefed by a representative from the NRC's Director of Nuclear Materials Safety, a Branch Chief of Storage and Transportation, a representative from Region 1 spent fuel management, as well as a materials engineer who is an

⁵ Zirconium is a metal that provides cladding to the uranium fuel pellets as rods that are bundled in casks. There are 68 bundles in each cask

⁶ On Nov. 25, 2020, EPA's Environmental Appeals Board Dismissed Holtec's Petition at the company's request

expert on aging management. Regarding the ISFSI dry cask design, representatives stated that cask design is reviewed and approved by the NRC, including a public process, and rule-making certifies the cask under credible conditions (drops, earthquakes, accidents) plus a review of manufacturers tests, and design. System of cask design is licensed initially for 20-years and is subject to a 40-year renewal term at Pilgrim. The presenters also indicated that the Consolidated Interim Storage Facility EIS in New Mexico and West Texas was under review and that the NRC and DOT are responsible for associated transportation regulations, the DOT for actual movement by road, rail and air and the NRC is responsible for design of transportation packages, i.e. transport casks.

Regarding the Pilgrim ISFSI, the 17 Hi-Storm casks (at the ISFSI in February) use a multi-purpose canister, holding 68 fuel assemblies. The casks have passive cooling, on site monitoring, and 24-hour checks which at Pilgrim is every 12 hours. They also indicated that monthly radiation protection surveys are conducted on the pad, and that the hottest cask on Pilgrim pad – 150 degrees when loaded – is the “equivalent of 3 household ovens cranked up.” Considering security and target hardening, security guards are military style and as long as fuel is on site, security will be maintained. Concerns were raised about vulnerability of the nuclear fuel as a target. Representatives indicated that emergency planning is on-going as long as fuel is on site, in addition to relying upon the MEMA, the FBI and local emergency police and fire services. There were questions regarding cask warranty and it was noted that NRC does not deal with warranties as business matters – only safety is within the NRC purview. A site representative indicated that as part of Decon⁷ the Met Tower would be removed. He also indicated that a site characterization contractor had been hired. He also considered site re-use and redevelopment options.

March, April and May 2020 Meetings – Cancelled due to Covid-19

June 2020 Meeting

This NDCAP meeting focused specifically on an update on the finalized Settlement Agreement between Holtec/CDI and the Commonwealth Attorney General. The Assistant Attorney General (AAG) explained the highlights of the Settlement Agreement and indicated that it establishes a clear framework for waste cleanup at the Pilgrim site. Holtec/CDI also gave a presentation summarizing the Decommissioning Settlement Agreement through a Power Point presentation. NDCAP members expressed concerns about the corporate limited liability of Holtec/CDI, meaning that if litigation occurs, there is no way to access funds of Holtec/CDI's parent company. The AAG stated that this was a serious concern during negotiations, and noted his team spent much time developing a financial assurance structure that would alleviate these concerns. In particular, the Agreement ties financial liability to recoveries from the U.S. Department of Energy (DOE) that would accrue to Holtec/CDI. The

⁷ DECON

A method of [decommissioning](#), in which structures, systems, and components that contain [radioactive contamination](#) are removed from a site and safely disposed at a commercially operated [low-level waste disposal](#) facility, or [decontaminated](#) to a level that permits the site to be released for unrestricted use shortly after it ceases operation. For further information, see the [Fact Sheet on Decommissioning Nuclear Power Plants](#).

state views this as a viable source of funding. Several NDCAP members raised their hope that, with settlement reached, that the IWG will be able to be more transparent in their monthly report-outs and generally provide specific decommissioning information. The AAG emphasized that the Settlement Agreement provides for reporting by Holtec/CDI and for Holtec/CDI to hold an annual public meeting to update interested parties on decommissioning progress.

In response to questions from the public, Holtec/CDI's representative responded that the company will comply with the requirements established in the Settlement Agreement, and while indicating he believed it was a good agreement for both sides that met most of the community's desired outcomes, he did not commit to a Holtec financial guarantee. The public also expressed concern that more was not done to reduce line-of-sight visibility from Rocky Hill Road to the Interim Spent Fuel Storage Installation (ISFSI). Before the end of the meeting, the Panel elected John Mahoney, recent member of the Plymouth Board of Selectmen, as its new Chair, and Pine duBois of Jones River Watershed in Kingston as Vice-Chair.

July 2020 Meeting

Holtec/CDI provided an overview that included their Radiation Manager. Nine casks have been successfully filled with fuel rods from the spent fuel pool, two more are scheduled. They are stored with others on the existing pad adjacent to the reactor building. The next fuel campaign will begin in Spring 2021. Building demolition to allow for haul path road construction to the new ISFSI on the hill is proceeding. The DPH NDCAP member inquired about radiation contamination in the area of building demolition, and requested that the oversight agencies receive information on this issue as the work progresses. The Holtec/CDI Radiation Manager provided a report on site characterization activities, as he indicated the purpose of which is to characterize remaining radiological and non-radiological materials on site that will require cleanup. An NDCAP member asked if the site reports, especially the historical reports, could be made available to the NDCAP. Holtec/CDI's representative indicated that they agreed to consider what materials can be made available to the public.

The representative from Holtec/CDI commented that it would be helpful for the panel to push for federal legislation for spent fuel disposal and to work with the Town of Plymouth to determine reuse. A resident commented that there is insufficient financial assurance to ensure the Holtec parent company will be liable for any shortfalls in the decommissioning trust fund. This resident also suggested that a financial assurance work group should continue to study this issue, and suggested that Dr. Singh of Holtec and others could be invited to the NDCAP to comment.

INTERAGENCY WORKING GROUP (IWG) AGREEMENT

Since 2018, the Baker-Polito Administration, through the Executive Office of Energy and Environmental Affairs, has led an interagency work group consisting of all relevant state agencies involved in the decommissioning effort to provide technical assistance to the

Massachusetts Attorney General (AG)’s office and keep the public apprised of developments through the Nuclear Decommissioning Citizen Advisory Panel established by Section 14 of Chapter 188 of the Acts of 2016.

On June 17, 2020, the AG’s office and Administration reached a settlement agreement with Holtec Pilgrim, LLC, and Holtec Decommissioning International LLC (Holtec) to resolve a petition the Commonwealth filed with the Nuclear Regulatory Commission (NRC) to challenge an application to transfer Pilgrim’s federal license from Entergy Nuclear Operations, Inc. and Entergy Nuclear Generation Company to Holtec. The agreement also resolves two lawsuits (September 2019 and January 2020) the Commonwealth filed to challenge the NRC’s approval of the license transfer application, and several administrative challenges Holtec filed to challenge conditions in the January 2020 state water permit for the plant.

The settlement agreement addresses the following key areas:

Financial Assurances

The agreement establishes a robust set of financial assurances and related reporting mechanisms to ensure that sufficient funds will be available to promptly and safely dismantle the nuclear power plant, clean up radiological and non-radiological contamination, restore the site, and manage spent nuclear fuel onsite until it is transported out of the state. Under the terms of the agreement, Holtec must maintain at least \$193 million in funds until it completes most of the cleanup and site restoration work and, after that point, \$38.4 million in funds until the spent nuclear fuel is removed from the site. The \$193 million will ensure funds are available to cover future cost increases and unforeseen contingencies such as project delays and newly discovered contamination, and the \$38.4 million will ensure that funds are available to cover the costs to transport the spent nuclear fuel out of state and clean up the land where the spent nuclear fuel will be stored.

Holtec is also required to obtain \$30 million in pollution liability insurance and secure performance bonds for certain contracts. The agreement requires Holtec to provide monthly reports to the state in order to monitor the progress of the work at the plant and to foresee any financial issues.

Cleanup Requirements

The agreement requires Holtec to comply with the state’s strict cleanup standards when it comes to radiological and non-radiological hazardous materials such as oil and polychlorinated biphenyl (PCBs). To advance the cleanup work, the agreement requires Holtec to submit to the Massachusetts Department of Environmental Protection (MassDEP) and the Massachusetts Department of Public Health (DPH) an initial site assessment of the property to ascertain the types of contamination at the property and where such contamination may be located, and establishes clear guidelines for the removal and decontamination of structures, including radiologically contaminated structures, at the site.

MassDEP and DPH will oversee the cleanup work to ensure that public health and environment are protected. To aid in that effort, the agreement secures future funding for DPH so that it can continue monitoring air and food sources outside of the plant's boundaries for any offsite radiological contamination. The agreement will ensure that the property is cleaned up to a level that will allow for its future reuse to benefit of surrounding local communities, including the Town of Plymouth.

Public Safety

The agreement includes specific emergency preparedness requirements to protect the public in the event of a radiological emergency at the site. To further those requirements, MEMA will receive continued funding each year to perform its emergency preparedness functions until the risks decrease. Without the agreement, most of the existing emergency preparedness requirements and related funding for MEMA would have been eliminated because the NRC decided earlier this year to exempt the plant from federal emergency planning requirements by removing the requirement to maintain a ten-mile emergency planning zone (EPZ) around the site perimeter.

To further enhance public safety, the agreement also requires Holtec to implement cybersecurity measures to limit threats that could compromise plant systems designed to safely secure plant assets such as the spent nuclear fuel that will remain stored onsite. These requirements are not currently required by the NRC.

PLYMOUTH BOARD OF SELECTMEN MEMORANDUM OF AGREEMENT (MOA)

In November, 2018 the Board of Selectmen for the Town of Plymouth had presented the NDCAP with a list of fifteen (15) items, adopted unanimously by the Board, that the Town of Plymouth wanted to discuss and negotiate with Holtec/CDI.

In June 2020 a Memorandum of Agreement (MOA) was created addressing a majority of the issues addressed to Holtec by the community, namely:

- 10 millirem clean up standard (Settlement)
- ISFSI screening (Settlement)
- Plymouth Emergency Planning funding through 6/30/22 (Prior Holtec Town Agreement)
- Financial assurance on Trust Fund balances for clean-up (both rad and non-rad), spent fuel (Settlement)
- Commitments on Security and Cyber Security (NRC requirements, as well as Settlement)
- Annual reports provided to the community (Commitment by Holtec)
- Employment assistance for those displaced (Trade Adjustment and Assistance Act)
- Land Clean-up for Unrestricted Use (Settlement)
- Funding for Dept. of Public Health Needs through Partial Site Release (Settlement)

These same issues and others were provided to the NDCAP, which in turn provided this list to the IWG. The following items were considered, as indicated, as part of the June Agreement between the Commonwealth and CDI/Holtec:

1. Moving the long-term ISFSI location higher and farther away from Cape Cod Bay – **Agreed, and new ISFSI under construction.**
2. Written Agreement with Holtec to commit to 10 millirem standard – **Agreed.**
3. Transfer title and ownership of the 1,600 acres (+ or -) to the Town of Plymouth at no cost to the Town of Plymouth within 30 days of the NRC's approval of the transfer to Holtec – **In Negotiation. Holtec is committed to working with the Town on the end use of the property but at this time is not in a position to donate the land for a number of reasons, including NRC license area covering 600+ acres that will need to get through the partial site release projected in 2027.**
4. Annual payments of \$9.25M by Holtec to the Town of Plymouth until 180 days after the last assembly is moved to, and secured in, dry casks. Thereafter, on-going payments will be made by Holtec to the Town of Plymouth in lieu of taxes at a mutually agreed upon reduced rate until all ISFSI containers are moved to a remote repository – **In Negotiation, Holtec is currently negotiating a new PILOT agreement with Plymouth.**
5. Annual payments of \$2.6M by Holtec to support and maintain current levels of Emergency Planning (EP) until 180 days after the last assembly is moved and secured in the new ISFSI. Thereafter, on-going payments will be made by Holtec at a mutually agreed upon reduced rate until all ISFSI containers are moved to a remote repository – **In Negotiation – Plymouth's current EP grant from Holtec runs through 6/30/2022, the other communities agreed to 2020 funding to fulfill the program through the zirc-fire window (while there is still spent fuel in the pool) and wind down their programs.**
6. Annual payments of \$300K by Holtec to support and maintain current levels of community and charitable donations until 180 days after the last assembly is moved and secured in ISFSI. Thereafter, on-going payments by Holtec at a mutually agreed upon reduce rate until all ISFSI containers are moved to a remote repository – **Holtec remains committed to providing support to the local community and charitable organizations and have done so in 2020, including \$20,000 to the Plymouth Chamber of Commerce. The company intends to evaluate requests on a case by case basis.**
7. Written assurance and financial guarantees from new Holtec LLC that the parent corporation(s) and its successors will assume all responsibility and liability for Pilgrim's decommissioning costs if there are insufficient funds in the Decommissioning Trust Fund to successfully complete the decommissioning – **This is in the AG agreement.**
8. Written assurance and financial guarantees from new Holtec LLC that it will address, remove and remediate previously unknown radiological, non-radiological and

environmental conditions which are discovered during decommissioning – Not part of Town negotiations – **This is in NRC requirements, and the AG agreement.**

9. Written assurance and financial guarantees from new Holtec LLC to provide sufficient annual funding to the Massachusetts Department of Public Health to pay for offsite radiological monitoring and testing during the site restoration period – **This is reflected in the AG Agreement.**
10. Written assurance and financial guarantees from new Holtec LLC to provide sufficient security to protect the spent fuel stored in dry cask storage, at a level mutually agreed upon with the appropriate state agencies, until such time as all spent fuel is removed from the Pilgrim property – **This is Required by the NRC, and discussion is included in the AG agreement until 2063.**
11. Written assurance from new Holtec LLC that it will provide detailed financial reports to the appropriate state agencies and NDCAP on an annual basis, starting six (6) months after the approval of the transfer by the NRC, which will provide a comprehensive and accurate status of the decommissioning process – **AG agreement includes requiring Annual reports.**
12. Written assurance and financial guarantees from new Holtec LLC that it will retain responsibility and liability for repairing or replacing any dry casks that crack or leak in the future including, but not limited to, any costs associated with any damages resulting from a failure or defect with the casks – **NRC, Holtec is required to remain compliant with the licenses of the casks. As the owner, cask maker and designer, Holtec has that obligation until all fuel is removed from the facility.**
13. Written assurance and financial guarantees from new Holtec LLC that it has based its decommissioning plans and cost estimates on the assumption that the spent fuel will be stored on-site indefinitely – **Holtec’s plans show that in 2062 fuel will (have been) removed from site. As part of the AG agreement, certain financial triggers are in place to ensure that there is enough money to properly manage the fuel and eventually decommission the ISFSI pad once the fuel is removed from site.**
14. Written assurance and financial guarantees from new Holtec LLC that it agrees to remediate and remove any structural materials or soil containing detectable tritium regardless of whether the level detected is below NRC requirements for license termination – **Holtec agreed to meet the state standards as part of the AG agreement.**
15. Written assurance from the new Holtec LLC that, upon completion of decommissioning, the existing Pilgrim site will be restored, released and transferred to the Town of Plymouth for unrestricted use – **Holtec has agreed to work with the Town on the potential final use of the property but states it is not in a position to commit to donating the land.**

Plus, according to Holtec/CDI in their monthly report to the NDCAP, Holtec/CDI committed to continuing to work with the Town on issues not addressed in the agreement, namely:

- PILOT Agreement (Currently good thru 6/30/21)
- Land Final Disposition and Use, as well as Water Needs of the Community
- Charitable Contributions to the Community

Holtec maintains it is committed to open communication and regular meetings to provide information and updates as appropriate.

FUTURE PILGRIM SITE USE

The hundreds of acres of land that comprises the Pilgrim Nuclear Generating Station must remain undivided until the decommissioning process is complete. A major phase of decommissioning is Site Restoration.

By a determination from the Department of Public Utilities (DPU)⁸ Entergy Nuclear Generating Company, nor its successor Holtec International/CDI, are electric companies subject to the Department's jurisdiction under G.L. c. 164. According to the Deed of Transfer from Boston Edison Company to Entergy and then to Holtec Pilgrim, an easement for ownership and operation of the Transmission Line goes with the property. An easement exists for the Transmission line, but the easement(s) does not provide any control over the property except as specified in the easements related to the Transmission Lines.

⁸ D.P.U./D.T.E. 96-100 and D.P.U./D.T.E. 96-23

As shown in the Deed of Transfer from Boston Edison Company to Entergy, Boston Edison Company has an easement for its ownership and operation of its Transmission Line. Those easements go with the property, so they remain in effect from Entergy's sale of Pilgrim. These easements do not provide any control over the property except as specified in the easements related to the Transmission Lines. Entergy Nuclear Generating Company is not, and has not been, an electric company subject to the Department's jurisdiction under G.L. c. 164.

Pilgrim Power Plant Site Layout in September 2020



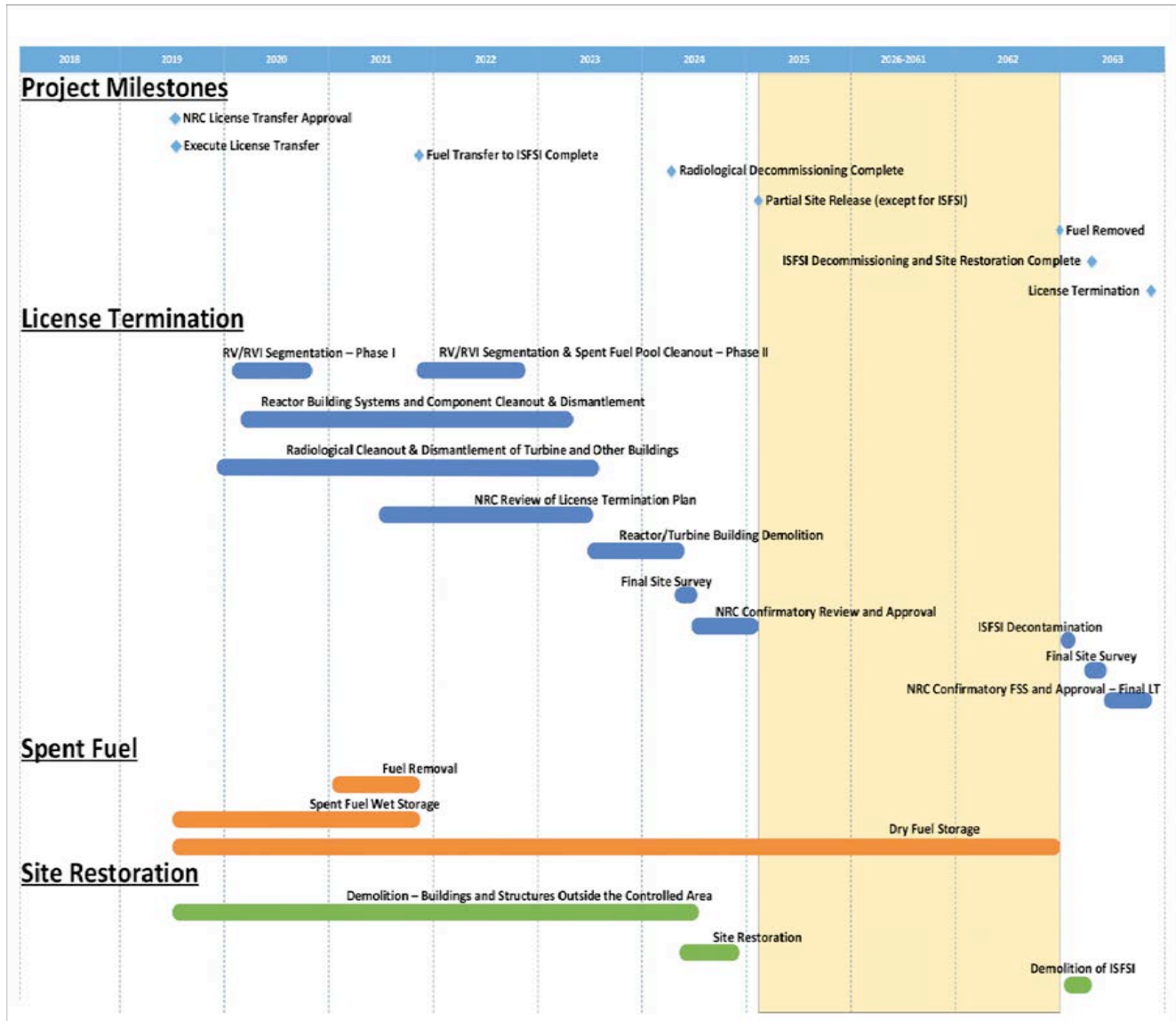
Courtesy Holtec International



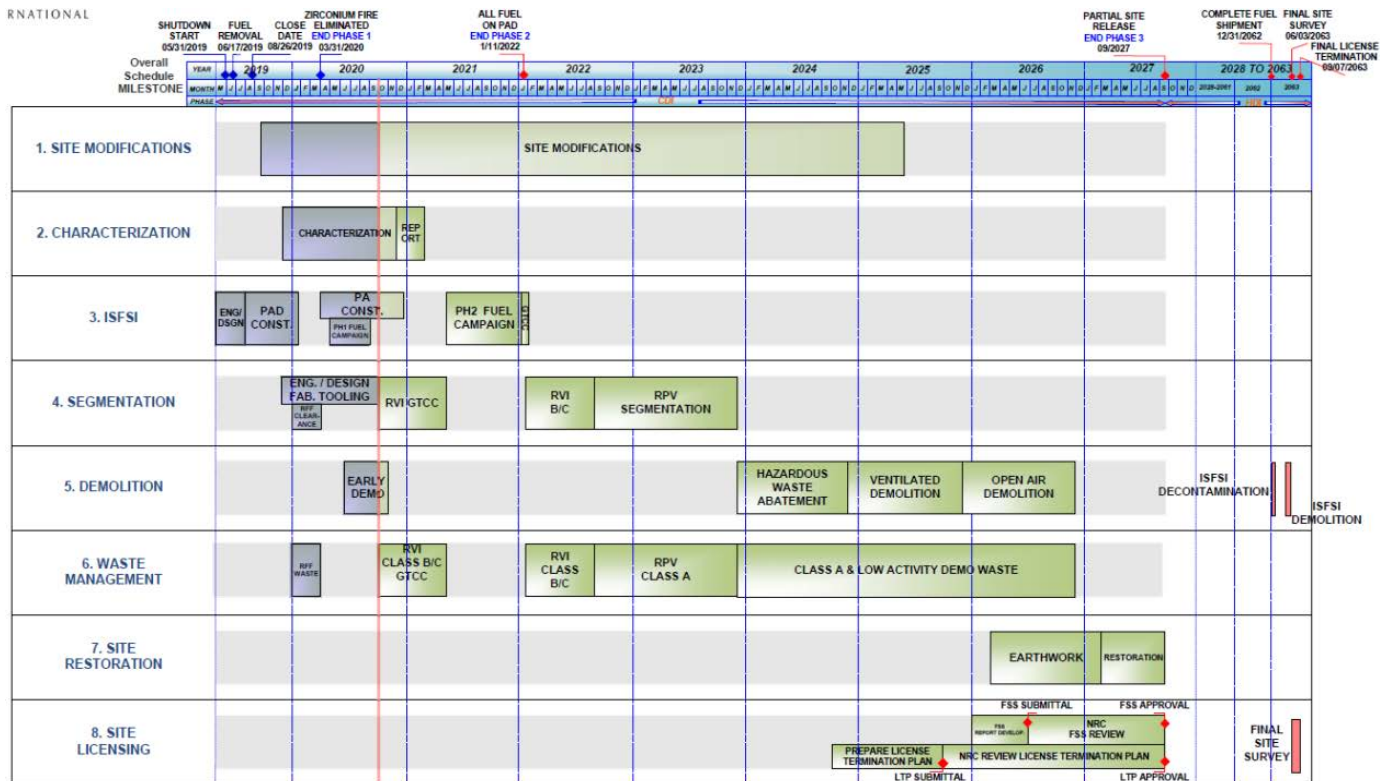
**High Tide September 2020
at the former Barge Ramp.
“Breakwater” beyond in bay.**

MAJOR MILESTONES AND ACTIVITIES AT THE PILGRIM SITE AS REPORTED BY HOLTEC

The following two charts depict: first, the overall Pilgrim decommissioning schedule per the Holtec/CDI PSDAR; and second, the latest Holtec/CDI decommissioning milestone chart showing progress made to date as of September 2020. The first chart, the PNPS Decommissioning Schedule, provides a project timeline that presents the general project schedule and milestones for decommissioning, including spent fuel storage and licensing.



Nuclear Decommissioning Citizens Advisory Panel (NDCAP) - 2020 Annual Report



The second schedule shows progress made in decommissioning during 2019 and into 2020 consistent with this annual reporting period up to September 2020. During this period, the NDCAP did not meet from March 2020 until June this year. The following summarizes major milestones reported by Holtec/CDI for the remainder of the annual reporting period through September 2020:

- Lessons learned from Oyster Creek Decommissioning, and the industry have, been incorporated in Pilgrim decommissioning planning.
- Fuel Campaign completed in August with eleven additional casks loaded onto the existing pad (28 total on pad, including those previously moved by Entergy). Next Fuel campaign will be in Spring of 2021. HI-STORM (cask) preparations are underway for the Spring 2021 fuel campaign.
- Removal of Control Rod Drive Mechanisms (CRDMs) began in August 2020, while reactor segmentation and removal of class B & C, as well as greater than Class C waste from the reactor vessel was to begin this Fall 2020.
- New Protected Area and Haul Path for Upper ISFSI under construction with the Security Building for the new ISFSI pad is underway. Security electronics plus command and control systems currently being installed by an outside contractor.
- Site Characterization contractor, ERM, had been hired according to the above schedule of activities with delivery on 10/14/20 to the Commonwealth of the Initial Environmental Assessment Work Plan as part of the Attorney General's Settlement Agreement.
- Demolition permits for certain out buildings are in hand and work has begun on certain buildings demolition and removal.

SPENT NUCLEAR FUEL LOCATION AND STATUS AT PILGRIM - A REVIEW OF WHAT IS KNOWN



Current State of Rad Waste at Pilgrim

NDCAP has persistently discussed radioactive waste management as part of the decommissioning process. Prior to its formation, members of the public urged Entergy and the NRC to move the location of the spent fuel pad (Independent Spent Fuel Storage Installation or ISFSI) to a location higher from the flood stage and farther from the shore. After exploration of alternatives, in the fall of 2018 Entergy announced its choice of a new site. This is located on top of the hill on the north side of the reactor site. As of September 2020, the pad is constructed with vehicle barriers, and a new haul path has been permitted and is under construction. Work on finalizing the security electronics and monitoring building inside the perimeter continues.

Radioactive Waste management is a significant feature in the decommissioning budget and will use Trust Fund resources to move all of the waste from the Spent Fuel pool which has been cooling all the used fuel over the forty-eight years of Pilgrim operation. Seventeen dry cask storage canisters are on the original sea-level pad that will be relocated to the new hillside pad, and when all the fuel is out of the fuel pool inside the reactor building, approximately 63 canisters will contain all of the highly radioactive waste that has been generated over nearly five decades on the Pilgrim site. The canisters are 20 feet tall, and weigh 380,000 lbs., or 180

tons each when filled and sealed on the pad.⁹ 61 of the 63 casks will contain “spent” fuel – which is not very spent and thus very radioactive, and will remain so for perhaps a million years. **This is the problem!** DTF funds will also be used to provide 24/7 security forces to be located at the new pad to prevent accidents, monitor for degradation of canisters, and defend against malicious attacks.

The Federal Government, through the Department of Energy is ultimately responsible for long-term storage of the nuclear waste based on legislation in the early 1980’s. Yucca Mountain was the presumed repository based on legislation in 1987, but political opposition, coupled with questioned geo-physical assessments have stalled any active movement in that direction – which was to be deep underground storage. **Given the storage timeline over millennia and the monumental challenges for security, communications and political stability, in addition to long range transportation issues at the present time, no real progress has been made toward development of permanent high-level radioactive waste storage at Yucca Mountain in Nevada or any alternative location.**

“Interim Storage” alternatives have been proposed to address the issue. This means that plans and consideration are being given to the development of storage locations for the spent fuel from all US reactor sites. Currently these employ dry cask storage canisters staged in the open air, or in the ground, on arid landscapes in the southwest region of the country. There are two sites currently undergoing permitting through the NRC, EPA, Federal lands, Native Tribes and two states. These locations include one in eastern New Mexico, and the other across the border in Andrews County West Texas.

Based on communications with NDCAP this year, the NRC currently licenses dry casks for an initial period of 20 years and is expected to license an additional 40-year period. NDCAP continues to discuss major concerns regarding monitoring of the casks, which appears to be a general monitoring of heat and radiation and not monitoring of every cask all the time. Concerns are serious that a breach or crack of stainless-steel canisters holding the nuclear fuel within a dry cask, could expose the regional public and the environment to dangerous levels of radiation.

Waste Transportation and Handling

Pilgrim has hosted meetings to discuss transportation of the waste. The Department of Transportation is responsible for shipments by air, truck and rail while NRC certifies and licenses the containers that the waste is shipped in. The last published plan for waste from Pilgrim was in 2002. According to that Environmental Impact Statement for Yucca Mountain, Pilgrim’s spent nuclear fuel would be barged into Boston and shipped by rail. Alternative methods have been discussed at Pilgrim including with DOT and the process of trucking waste with security escorts in the dead of night to avoid high traffic conditions. Such procedures would take considerable time, for example getting to western Mass could take two days. Other discussions include the redevelopment of the barge ramp and shipment by tanker down the east coast.

⁹ <https://www.mass.gov/doc/memo-re-pilgrims-spent-fuel-dry-cask-storage-issues/download>

The disposition of nuclear waste is a world-wide problem and more information can be obtained through the World Nuclear Organization¹⁰ and other sites.

The DOE provided an analysis of the transportation options for high level used nuclear fuel waste from Pilgrim to the West, as presented to a conference in Arizona in March 2020. This report highlights two truck-to-Middleborough-rail options. Attachment #2 provides this 2020 DOE report, which is summarized below.

The U.S. Department of Energy Office of Integrated Waste Management (DOE-IWM) conducted an on-site evaluation of removing spent nuclear fuel (SNF) from the Pilgrim site on November 4-8, 2019. Participants in the site visit included the U.S. Department of Energy, Oak Ridge National Laboratory, Pacific Northwest National Laboratory, the state of Massachusetts, the Federal Railroad Administration, the U.S. Coast Guard, the U.S. Army Corps of Engineers, the Mashpee Wampanoag Tribe, the Consolidated Group of Tribes and Organizations, the Council of State Governments–Eastern Regional Conference, the Pilgrim Nuclear Decommissioning Citizens Advisory Panel, and the Massachusetts Coastal Railroad. The Pilgrim site was found to have two transportation mode options for the removal of SNF, offsite rail access and onsite barge access. Two offsite heavy haul truck to rail transload locations were evaluated, one in Middleborough, Massachusetts, about 35-47 km from the Pilgrim site, and a second location in Middleborough about 36-43 km from the Pilgrim site. A passenger railroad terminates in Plymouth, Massachusetts, about 11 km from the Pilgrim site; however, it was determined that this location is not suitable for freight rail involving large SNF transportation casks. There is also an onsite barge ramp located on the Pilgrim site that was used during Pilgrim’s construction (1968-72) and would require refurbishment to be used.

CURRENT ISFSI SITE STATUS

A representative from Holtec/CDI provided the NDCAP an overview of activities on site since the Pilgrim plant shutdown at the end of May 2019. During early June 2019 all remaining reactor fuel was moved from the reactor to the spent fuel pool, while the Phase 1 decommissioning staffing plan took effect. The NRC approved the license transfer to Holtec in August and the sale from Entergy to Holtec was finalized on August 26, a few days prior to the beginning of this Annual Report reporting period.

With zoning and planning permits having been approved by the Town of Plymouth, initial ISFSI new pad site work began in late summer 2019. Another issue resolved by Holtec and the Plymouth Conservation Commission was an initial waiver request for the proposed ISFSI haul path. Site work on the new ISFSI pad began in October 2019.

¹⁰ <https://www.world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-waste/storage-and-disposal-of-radioactive-waste.aspx>
<https://www.nrc.gov/waste.html>

As mentioned previously in this report, Pilgrim's initial ISFSI now located inside the Plant protected area will be replaced by the new ISFSI located atop the hill adjacent to the reactor site and Rocky Hill Road. The finished ISFSI will contain a total of 4,114 spent fuel assemblies placed in a total of 61 casks. The current pad within the existing Protected Area has seventeen (17) loaded Holtec System 100 Multi-Purpose Canisters (MPCs), each with 68 fuel assemblies (1,156 total). All the casks, including the 17 currently loaded casks on the lower ISFSI, will be moved to the new, uphill ISFSI pad now nearing completion.

During the reporting period, Holtec/CDI applied for the elimination of existing emergency planning and preparedness requirements before all spent nuclear fuel is transferred to dry casks and stored on the existing and planned ISFSI. The Commonwealth via MEMA has determined that it does not agree that implementation of Comprehensive Emergency Management (all hazards planning) and eliminating the existing ten-mile emergency planning zone are justified.

An update provided by Holtec/CDI in July 2020 indicated that during this year's fuel campaign 9 of 11 casks have been loaded onto the existing Interim Spent Fuel Storage Installation (ISFSI) pad.¹¹ The next fuel campaign will begin in Spring 2021, and building demolitions to allow for haul path construction are proceeding.

With the current Pilgrim Independent Spent Fuel Storage Installation (ISFSI) located at the northwestern edge of the Pilgrim site within the Protected Area, the following three figures indicate the evolution of the ISFSI from inside the Pilgrim site to the new ISFSI location outside the current Plant security fencing in its own Protected Area adjacent to Rocky Hill Road. The current ISFSI inside the Plant Protected Area is located 8 m (25.5 feet) above sea level; the new ISFSI adjacent to Rocky Hill Road will be located 23 m (75 feet) above sea level. All dry storage canisters will be moved to this new ISFSI in 2021.

¹¹ As of this writing this campaign is complete with 11 new canisters filled





**New ISFSI site
under construction
Sept 2020**

Presently, 1,904 fuel assemblies are packed in Multi-purpose canisters, each holding 68 assemblies, which are stored outside in 28 individual HI-STORM dry concrete storage systems. In addition to the SNF in dry storage, 2,210 fuel assemblies remain in the spent fuel pool which, by 2022, will also be stored in an additional 33 HI-STORM dry storage systems in MPC-68 canisters. A total of 61 casks of waste nuclear fuel will eventually be stored at the Pilgrim site. In addition, approximately 2 Hi-STORM will store greater than Class C nuclear reactor waste taken from the reactor internals as it is disassembled. The HI-STAR 100 (not pictured) transportation cask is certified to ship these canisters.



**HI-STORM
concrete casks
on lower pad
November 2019**

Public Concerns About ISFSI

Holtec's exterior storage ISFSI facility will contain thousands of tons of the most toxic, long lasting, nasty substance on earth, using manufactured dry casks which will be stored in Plymouth, MA for an unknown period of time unless a repository elsewhere is identified and transportation issues resolved. The NDCAP has reviewed and citizens have expressed concerns over the following issues relative to nuclear waste storage in Plymouth:

- The NRC seems relatively reluctant to provide meaningful oversight. The NRC only licenses and approves acceptable storage casks, not the location of spent nuclear spent fuel. Nuclear waste is governed by the Department of Energy (DOE).
- Cask design and engineering for long term storage have been questioned as severely deficient by members of the public, and various organizations.
- There is general concern about accident analysis or aging management program associated with dry casks and the level of monitoring of the ISFSI overall. Although the NDCAP has not heard directly from DOE.
- There remains concern that Holtec/CDI's warranty for the casks is limited, unsecured and insufficient over the expected time of the ISFSI residing in Plymouth which could be 60 years or longer. In response, Holtec maintains that because it is the manufacturer of the casks, the owner of Pilgrim, and in the business of dry cask storage, it will always be responsible for the integrity of the casks.
- As of current plans, it is expected that Holtec/CDI will do the inspecting, monitoring, or repairing of casks/canisters for the duration of storage. This inspection and monitoring will be accomplished by onsite security personnel using manual monitoring means. This is an area the NDCAP will be aggressively pursuing during 2020/2021.
- The new ISFSI storage site adjacent to Rocky Hill Road is being secured using some of the most effective security technologies and devices known, yet when operational the day to day issues associated with a high security site manned by a full time 24/7 security force is troubling since these security forces will have little capability other than to monitor, report and defend against an on-site attack, an accident or detection of radiological problems. These cask monitoring functions will require regular patrols within the cask staging pad, and there is concern that severe weather and other impediments will degrade the monitoring capability intended in the ISFSI design.
- No approved technology or plans currently exist at the federal level to relocate high level waste from Pilgrim to a designated nuclear waste repository.
- In 2020, the NRC continued its regulatory review of ISFSI Security intending new Rulemaking to cover dry cask storage both inside and outside of security perimeters at the Nation's nuclear stations. The proposed new rules will establish a risk-informed and performance-based structure to update security regulations based on comments from the industry and the public to change from its "design basis threat" (DBT) for radiological sabotage to a dose-based approach. This issue can be followed on the NRC website: <https://www.nrc.gov/about-nrc/radiation/related-info/isfsi-security.html>
- The DTF covers the entire Holtec/CDI plan for Decon, and the AG Agreement addresses many concerns regarding who will be responsible if the DTF is exhausted before release of the site occurs.

NUCLEAR DECOMMISSIONING TRUST FUND (DTF) UPDATES

Per the NRC, Holtec's decommissioning strategy for Pilgrim, including scope, schedule and cost estimates, were provided in the DECON Post-Shutdown Decommissioning Activities Reports (PSDARs) submitted to the NRC in support of the respective applications for license transfer in 2018. The NRC reviewed Pilgrim's management strategy, schedule and cost estimates as well as associated funding assurance. Since the site transfers occurred in mid-year 2019, the decommissioning funding, irradiated fuel management funding, and financial assurance cover the period August 2019 through December 2019. The Beginning of Year Fund Amount is the amount in the Nuclear Decommissioning Trust on the date of license transfer for each site net of current tax liabilities.

Current Decommissioning Fund Balance

The Pilgrim Nuclear Decommissioning Trust fund balance as of December 31, 2019 was \$979M. This amount represents the market value of the fund as of December 31, 2019 net of any material current income tax liability on realized gains, interest, dividends and other income of the trust. No additional amounts remain to be collected. The trust fund amount is the total available for decommissioning including costs of license termination decommissioning, spent fuel management, and site restoration activities. HDI received an exemption from 10 CFR 50.82(a)(8)(i)(A) to allow the Pilgrim Trust fund to be used for site spent fuel management and site restoration costs.

The revised total estimate to complete decommissioning for the Pilgrim site is \$1,031M. Of that total cost estimate, the revised estimate for license termination expenses is \$548M, the current estimate for spent fuel management costs is \$443M and the current separate estimate for site restoration costs is \$40M. By March 2021 NDCAP will have updated estimates in the form of a revised PSDAR and DTF balance, which should include interest accrued over the year. Holtec currently assumes a 2% growth rate.

Variance: HDI has revised the estimated decommissioning costs (including the license termination, spent fuel management and site restoration costs) to reflect detailed project planning, contracting and site-specific information. The revised estimates below have been inflated from 2018 dollars to December 31, 2019 dollars.

ENCLOSURE 2

Table 1

Holtec Decommissioning International Pilgrim Nuclear Power Station

Remaining Decommissioning Estimated Cost 10 CFR 50.82(a)(8)(v)(B) /(vii)(B)

Year	License Termination	Spent Fuel	Site Restoration	Total	Comments
2020	\$548M	\$443M	\$40M	\$1,031M	Estimated in 2019 Dollars

Decommissioning Criteria Upon Which the Estimate is Based 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)(B)

Summary Information as of December 31, 2019

10 CFR 50.82(a)(8)(v)-(vii)

Year	Type of Trust	Fund Balance (2019 \$)	Comments
2019	Decommissioning Trust	\$979M	As of 12/31/2019; net of tax liabilities

Decommissioning Trust Fund Balance 10 CFR 50.75 (f)(1) and 10 CFR 50.82(a)(8)(v)(A)

Other Financial Assurance Methods Being Relied Upon 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)(B)

NONE

Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2019	\$45M	\$56M	\$0M	\$101M	2019 Costs in as-Spent Dollars

Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2019 Estimated	\$85M	\$54M	\$0M	\$139M	
2019 Actual	\$45M	\$56M	\$0M	\$101M	

HDI Decommissioning Expenditures 10 CFR 50.82(a)(8)(v)(A) Since License Transfer

NONE

DECON

Nuclear Decommissioning Citizens Advisory Panel (NDCAP) – 2020 Annual Report

Annual Cash Flow in Millions of 2019 Dollars

Year	License Termination Cost	Spent Fuel Management Cost	Site Restoration Cost	Total Costs	Beginning of Year NDT Balance	Withdrawals	NDT Earnings ¹	Year Ending NDT Balance
2020	59	66		125	979 ²	(158) ³	16	837
2021	70	89	1	159	837	(159)	14	691
2022	118	3	15	137	691	(137)	11	566
2023	140	3	2	145	566	(145)	8	429
2024	98	3	9	110	429	(110)	6	325
2025	25	8	3	36	325	(36)	6	295
2026	18	8	3	29	295	(29)	5	271
2027	4	7	8	19	271	(19)	5	257
2028		6		6	257	(6)	5	256
2029		6		6	256	(6)	5	255
2030		7		7	255	(7)	5	253
2031		7		7	253	(7)	5	251
2032		7		7	251	(7)	5	248
2033		7		7	248	(7)	5	246
2034		7		7	246	(7)	5	243
2035		7		7	243	(7)	5	240
2036		7		7	240	(7)	5	238
2037		7		7	238	(7)	5	235
2038		7		7	235	(7)	5	232
2039		7		7	232	(7)	4	229
2040		7		7	229	(7)	4	227
2041		7		7	227	(7)	4	224
2042		7		7	224	(7)	4	221
2043		7		7	221	(7)	4	218
2044		7		7	218	(7)	4	214
2045		7		7	214	(7)	4	211
2046		7		7	211	(7)	4	208
2047		7		7	208	(7)	4	205
2048		7		7	205	(7)	4	201
2049		7		7	201	(7)	4	198
2050		7		7	198	(7)	4	194
2051		7		7	194	(7)	4	191
2052		7		7	191	(7)	4	187

ATTACHMENT #1
SETTLEMENT AGREEMENT

SETTLEMENT AGREEMENT

BETWEEN THE

COMMONWEALTH OF MASSACHUSETTS

AND

HOLTEC PILGRIM, LLC AND
HOLTEC DECOMMISSIONING INTERNATIONAL, LLC

REGARDING THE

PILGRIM NUCLEAR POWER STATION,
PLYMOUTH, MASSACHUSETTS

TABLE OF CONTENTS

Preamble	1
I. Definitions.....	2
II. Financial Assurance Requirements	4
III. Site Restoration and Environmental Requirements and Reporting.....	9
IV. Payments, Radiation Monitoring, ISFSI, and Waste Transportation.....	18
V. Withdrawal of Petitions and Other Legal Challenges.....	24
VI. Miscellaneous Terms.....	25
VII. Notices.....	29
VIII. Authority of Signatories	30

PREAMBLE

The Commonwealth of Massachusetts (the “Commonwealth”), Holtec Pilgrim, LLC (“Holtec Pilgrim”) and Holtec Decommissioning International, LLC (“HDI,” and together with Holtec Pilgrim, collectively, “Holtec”) (Holtec and the Commonwealth are collectively referred to herein as “the Parties”) enter into this Settlement Agreement (“Agreement”) to resolve issues surrounding the transfer of control of the Pilgrim Nuclear Power Station (“Pilgrim”), as well as the Pilgrim Independent Spent Fuel Storage Installation (“ISFSI”), from Entergy Nuclear Operations, Inc. (“ENOI”) to Holtec, use of Pilgrim’s Decommissioning Trust Fund, decommissioning and site restoration of Pilgrim, spent nuclear fuel management at Pilgrim, and emergency planning for Pilgrim.

WHEREAS, on July 30, 2018, Entergy Holding Company #1 and Entergy Nuclear Generation Company (“ENGCO”) entered into an Equity Purchase and Sale Agreement with Nuclear Asset Management Company, LLC (“NAMCO”) and Holtec International, under which NAMCO would acquire for a nominal cost 100% of the equity interests of ENGCO, which would then be renamed Holtec Pilgrim (the “Transaction”);

WHEREAS, on November 16, 2018, ENOI, ENGCO, Holtec International, and HDI (the “Applicants”) submitted a joint application (the “Application”) to the U.S. Nuclear Regulatory Commission (“NRC”) requesting, among other things, the NRC’s consent to the direct and indirect transfers of control over the NRC-issued operating license for Pilgrim, and HDI requested an exemption from 10 C.F.R. § 50.82(a)(i)(A) to allow Holtec to use money from Pilgrim’s Decommissioning Trust Fund to pay for site restoration activities and management of spent nuclear fuel at Pilgrim;

WHEREAS, on February 20, 2019, the Commonwealth filed with the NRC a Petition for Leave to Intervene and Hearing Request (“NRC Petition”) regarding the Applicants’ Application;

WHEREAS, on March 18, 2019, the Applicants filed their Answer opposing the Commonwealth’s NRC Petition;

WHEREAS, by letter dated June 10, 2019, ENOI certified to the NRC that ENOI had permanently ceased operations at Pilgrim on May 31, 2019 and that it had permanently removed the fuel from the Pilgrim reactor on June 9, 2019;

WHEREAS, on August 20 and 22, 2019, the NRC Staff approved the Applicants’ Application without acting on the Commonwealth’s Petition (“NRC Staff Approval”), and, on August 26, 2020 the Transaction was finalized;

WHEREAS, the Commonwealth’s NRC Petition is, nonetheless, still pending as of the Effective Date and the NRC retains the authority to rescind or modify the NRC Staff Approval;

WHEREAS, the Commonwealth filed a Petition with the U.S. Court of Appeals for the District of Columbia Circuit on September 25, 2019 (No. 19-1198), seeking judicial review of

the NRC Staff Approval and a second Petition with the U.S. Court of Appeals for the District of Columbia Circuit on January 22, 2020 (No. 20-1019), seeking judicial review of the NRC's denial of the Commonwealth's application for a stay of the NRC Staff Approval and the NRC Staff Approval ("D.C. Circuit Petitions");

WHEREAS, the Parties to this Agreement agree that withdrawal of the NRC Petition and D.C. Circuit Petitions, if all terms and conditions described in this Agreement are met, is in the best interests of Holtec and the Commonwealth;

WHEREAS, in consideration of the good faith and arm's length compromises made by and between the Parties to this Settlement Agreement, the Parties have made the commitments described below;

NOW, THEREFORE, the Parties agree as follows:

I. DEFINITIONS

1. Capitalized terms shall have the meaning specified in the Preamble or as otherwise described below:

- (a) "CDI" shall mean Comprehensive Decommissioning International, LLC.
- (b) "Chapter 21E" shall mean the Massachusetts Oil and Hazardous Material Release Prevention and Response Act, Mass. Gen. Laws c. 21E, §§ 1-22.
- (c) "Day" shall mean a calendar day. A "business day" shall mean a day other than a Saturday, Sunday, or a Massachusetts or Federal holiday.
- (d) "DEP" shall mean the Massachusetts Department of Environmental Protection.
- (e) "DPH" shall mean the Massachusetts Department of Public Health .
- (f) "DOE" shall mean the U.S. Department of Energy.
- (g) "EEA" shall mean the Massachusetts Executive Office of Energy and Environmental Affairs.
- (h) "Effective Date" shall mean the date when this Agreement becomes effective according to the terms of Paragraph 43.
- (i) "Fiscal Year" shall mean a Massachusetts fiscal year, which begins on July 1 of each year and ends on June 30 of the following year (for example, FY 2020 covers the period from July 1, 2019 to June 30, 2020).
- (j) "GTCC" means Greater Than Class-C waste.

(k) “Holtec Decommissioning Cost Estimate” shall mean the Pilgrim DECON-Site Specific Decommissioning Cost Estimate included as Enclosure 1 to the Holtec PSDAR

(l) “Holtec PSDAR” shall mean the Revised Post-Shutdown Decommissioning Activities Report and Revised Site-Specific Decommissioning Cost Estimate for Pilgrim, as filed with the NRC on November 16, 2018 in Docket. Nos. 50-293 and 72-1044, and available at ADAMS Accession No. ML18320A040.

(m) “ISFSI” shall mean the consolidated Independent Spent Fuel Storage Installation designed and to be constructed for the interim storage of Spent Nuclear Fuel in casks at the Site, construction for which began in 2019 and which will be located at 75 feet above mean sea level adjacent to Rocky Hill Road, including all components and systems associated with the containers in which the Spent Nuclear Fuel is stored, as well as the storage pad, Central Alarm System (“CAS”) building, and security infrastructure for the new Security Owner Controlled Area (“SOCA”). For clarity, the term ISFSI does not include the original Independent Spent Fuel Storage Installation pad constructed by Entergy in 2014 with an administrative capacity of thirty-eight casks, which will be decommissioned at the time of Partial Site Release and must otherwise comply with the terms of Paragraphs 10(d) and 10(e).

(n) “License Termination” shall mean the date that the NRC terminates the general or specific license (whichever is applicable) for the Pilgrim Site, including the ISFSI, all radiological waste stored on the Pilgrim ISFSI has been removed and transported out of Massachusetts, and the Site, including the ISFSI, has been decommissioned and restored for unrestricted use in accordance with all NRC requirements and the terms of this Agreement.

(o) “MCP” shall mean the Massachusetts Contingency Plan, 310 C.M.R. §§ 40.001 to 40.1600, which consists of the regulations promulgated to implement Chapter 21E.

(p) “MEMA” shall mean the Massachusetts Emergency Management Agency.

(q) “OHM” shall mean Oil and/or Hazardous Material.

(r) “OU” or “Operable Unit(s)” shall mean discrete, geographically defined areas at the Site that will be remediated.

(s) “Partial Site Release” shall mean the date on which the NRC approves, pursuant to 10 C.F.R. § 50.83, HDI’s application for partial release of the Pilgrim Site (with the exception of the ISFSI) for unrestricted use in accordance with 10 C.F.R. § 20.1402.

(t) “Pilgrim” shall mean the Pilgrim Nuclear Power Station located in Plymouth, Massachusetts, including the land and associated facilities (including the ISFSI) and equipment transferred to Holtec on the closing date.

(u) “Pilgrim Decommissioning Trust Fund” or “Trust Fund” shall mean the nuclear decommissioning trust fund maintained by Holtec Pilgrim in accordance with the Amended and Restated Holtec Pilgrim, LLC Master Decommissioning Trust Agreement for Pilgrim, dated March 10, 2020, with The Bank of New York Mellon acting as trustee, and having an amount of no less than \$979 million as of December 31, 2019.

(v) “Pilgrim Supplemental Fund” shall have the meaning set forth in Paragraph 3(c).

(w) “Site” or “Pilgrim Site” shall mean Pilgrim and any place or area where radiological or non-radiological oil or hazardous material (as defined by the Massachusetts Contingency Plan) has been deposited, stored, disposed of or placed, or otherwise come to be located.

(x) “Switchyard” shall mean the 345 kV transmission switchyard and appurtenant facilities, including the real property upon which such facilities are located.

2. Unless otherwise expressly provided in this Agreement, terms used in this Agreement that are defined by Chapter 21E and the MCP, shall have the meaning assigned to them in Chapter 21E and the MCP.

II. FINANCIAL ASSURANCE REQUIREMENTS

3. Holtec shall comply with the following Trust Fund management obligations:

(a) Prior to Partial Site Release (Phase 1):

(1) To provide added assurance that the funds necessary to complete decommissioning, site restoration, and spent nuclear fuel management remain in the Trust Fund through Partial Site Release, Holtec will, in its annual 10 C.F.R. § 50.75(f)(1) report to the NRC, provide the estimated amount in the Trust Fund at Partial Site Release. If the estimated amount in the Trust Fund at Partial Site Release is ever less than the value of \$193.3 million in 2019 dollars (“Phase 1 Minimum Balance” and a “Phase 1 Triggering Event”), Holtec will, within thirty (30) days following submission of the annual NRC filing, deposit an amount sufficient to increase the estimated value of the Trust Fund at Partial Site Release to an amount equal to the Phase 1 Minimum Balance. To do so, Holtec shall use money equivalent to that which it recovers through litigation or settlement from DOE. If DOE recoveries are insufficient to make-up any shortfall, Holtec will utilize funds from an alternative source or other financial assurances of equivalent value in the form of a parent guarantee, letter of credit, or other mutually acceptable instrument. Holtec shall deposit the money into the Trust Fund or a separate fund meeting the requirements of Paragraph 3(c) below or, in the event this obligation is satisfied through one of the financial assurance mechanisms

described above, provide to the Commonwealth a copy of the financial assurance instrument.

(2) Assuming there is a Phase 1 Triggering Event, no later than thirty (30) days after the NRC annual update is provided to the NRC, Holtec shall notify the Commonwealth in writing that its obligation has been triggered, including in such notice the amount that has been deposited or otherwise satisfied by one of the alternative financial assurance mechanisms described in Paragraph 3(a)(1) above if necessary together with a copy of the financial assurance instrument, and provide the Commonwealth with an updated version of the cash flow analysis for the Trust Fund demonstrating that the Phase 1 Minimum Balance has been restored.

(b) After Partial Site Release (Phase 2):

(1) To provide added assurance that the funds necessary to transfer spent nuclear fuel and GTCC from the Site, pay for the disposal of GTCC, and complete the ISFSI decommissioning and site restoration remain in the Trust Fund, or a separate fund meeting the requirements of Paragraph 3(c), after Partial Site Release through License Termination, Holtec will calculate each year from its annual 10 C.F.R. § 50.75(f)(1) report to the NRC the estimated amount required to pay for those activities in accordance with the calculation methodology and cost category inputs included in the spreadsheet attached as Exhibit 1. If the amount in the Trust Fund is ever less than that established under Paragraph 3(b)(3) below (the “Phase 2 Minimum Balance” and “Phase 2 Triggering Event”), Holtec will, within thirty (30) days following submission of the annual NRC filing, deposit an amount sufficient to increase the value of the Trust Fund, or separate fund meeting the requirements of Paragraph 3(c), to an amount at least equal to the Phase 2 Minimum Balance. To do so, Holtec shall use money equivalent to that which it recovers through litigation or settlement from DOE. If DOE recoveries are insufficient to make-up any shortfall, Holtec will utilize funds from an alternative source or other financial assurances of equivalent value in the form of a parent guarantee, letter of credit, or other mutually agreed instrument. Holtec shall deposit the money into the Trust Fund or a separate fund meeting the requirements of Paragraph 3(c) below or, in the event this obligation is satisfied through one of the financial assurance mechanisms described above, provide to the Commonwealth a copy of the financial assurance instrument.

(2) Assuming there is a Phase 2 Triggering Event, no later than thirty (30) days after the NRC annual update is provided to the NRC, Holtec shall notify the Commonwealth in writing that its obligation has been triggered, including in such notice the amount that has been deposited or otherwise satisfied by one of the alternative financial assurance mechanisms described in Paragraph 3(b)(1) above if necessary together with a copy of the financial assurance instrument, and provide the Commonwealth with an updated version of the cash flow analysis for

the Trust Fund demonstrating that the Phase 2 Minimum Balance has been restored.

(3) The Phase 2 Minimum Balance is initially set at \$38.4 million in 2019 dollars and may be adjusted annually, either up or down, as set forth in this subparagraph after the date of Partial Site Release. Any adjustment will be based on the estimated future costs reflected in Holtec's annual submittal to the NRC, which will be informed by evidence of actual or invoiced costs at Pilgrim or other facilities if available, and calculated based on the methodology and cost category inputs included in the spreadsheet attached as Exhibit 1. Holtec shall respond to reasonable informal requests by the Commonwealth for data or other information relating to Holtec's adjustment. If the annual recalculated amount based on the annual NRC submittal indicates an increase in future costs, the Phase 2 Minimum Balance shall be increased and funded in accordance with the terms of Paragraph 3(b)(2) in the amount equal to the calculated cost increase. If the annual recalculated amount based on the annual NRC submittal indicates a decrease in future costs, Holtec will be entitled to adjust the Phase 2 Minimum Balance, effective after providing thirty (30) days written notice to the Commonwealth, if the change is less than 17.5% of the Phase 2 Minimum Balance from the prior year. Otherwise the parties must mutually agree on the adjustment. If the Parties are unable to reach agreement on the adjustment after thirty (30) days or such longer period of time as mutually agreed, either Party may initiate binding arbitration to resolve the dispute in the Commonwealth of Massachusetts before a single arbitrator in an arbitration administered by JAMS. An award of arbitration may be confirmed in the Massachusetts Superior Court. The Parties agree to equally share the costs of any arbitration, except that each Party shall bear its own attorneys' fees.

(c) Pursuant to Paragraphs 3(a) or 3(b), if Holtec is required to set aside any money, including money recovered from DOE, for the benefit of Pilgrim decommissioning, site restoration, spent nuclear fuel management, ISFSI decommissioning and site restoration, spent nuclear fuel loading, and/or GTCC loading and/or disposal, and if Holtec is unable or deems it inadvisable to deposit such money into the Trust Fund for whatever reason, Holtec shall establish and maintain a new fund dedicated solely to Pilgrim decommissioning; site restoration; spent nuclear fuel management costs; ISFSI decommissioning and site restoration; spent nuclear fuel loading; and GTCC loading and/or disposal ("Pilgrim Supplemental Fund") with a commercial bank or trust company authorized to conduct business under the laws of the United States, or any state thereof. For purposes of this requirement, BNY Mellon, JPMorgan Chase, Northern Trust, and BMO Harris shall be deemed acceptable institutions. Other institutions may be selected, subject to the requirements of maintaining an office or branch in New York, New York, having an aggregate capital surplus in excess of \$25 billion, and having a senior unsecured debt rated at least "A" by Standard & Poor's corporation or "A2" by Moody's Investor Service. Within five (5) days of the date that the Pilgrim Supplemental Fund is created, Holtec shall provide

notice to the Commonwealth that the Pilgrim Supplemental Fund has been created and the bank where it has been created.

4. No later than thirty (30) days after the Effective Date, Holtec shall obtain a \$30 million insurance product that names the Commonwealth as an additional insured party and that will provide coverage for “Contractor’s Pollution Liability” (for non-radiological contamination exacerbated by certain decommissioning and Site restoration activities) and “Pollution Legal Liability” (for previously unknown non-radiological conditions identified at the Pilgrim Site after August 26, 2019). For the Contractor’s Pollution Liability Coverage, the policy term shall be six (6) years plus completed operations coverage for ten (10) years. For the Pollution Legal Liability coverage, the policy term will be eight (8) years.

5. Except with regard to Holtec’s existing contract for Pilgrim reactor segmentation with GE-Hitachi Nuclear Energy and Holtec’s contract for Pilgrim radioactive waste management (including disposal and transportation), Holtec shall cause CDI, the decommissioning general contractor, to require all its subcontractors, including affiliates, with subcontracts with a value of \$25 million dollars or greater to post performance bonds or equivalent performance assurance issued by Treasury-rated surety companies to guarantee performance of work scope at customary amounts not less than 25% of the specified contract value. Bond and other security instruments shall be provided in customary forms with such terms and conditions as the sureties or other issuers would typically provide other comparably sized projects. Upon request, Holtec shall cause CDI to make any performance bonds or equivalent performance assurance available to the Commonwealth, subject to the confidentiality terms in this Agreement.

6. On or before March 31 of each calendar year following the Effective Date, Holtec shall provide copies to the Commonwealth, EEA, DEP, DPH, and MEMA of Holtec’s annual decommissioning and spent nuclear fuel management funding assurance reports filed with the NRC pursuant to 10 C.F.R. § 50.75(f)(1) and 10 C.F.R. § 50.82(a)(8)(v) (NRC Annual Trust Fund Status Reports). Holtec’s NRC Annual Trust Fund Status Reports shall take substantially the same form and include the same information as Holtec’s March 31, 2020 Report, which is available at ADAMS Accession No. ML20091M858, including Table 2 (Pilgrim Nuclear Power Station Annual Decommissioning Cash Flow Analysis), except that Holtec shall report the cash flow in thousands of dollars, and Figure 1 (Pilgrim Nuclear Power Station Decommissioning Schedule Timeline), unless that information is provided separately to the Commonwealth and the Commonwealth agencies identified in first sentence of this Paragraph. Holtec shall provide copies to the Commonwealth, EEA, DEP, DPH, and MEMA of Holtec’s decommissioning funding plan submitted to the NRC pursuant to 10 C.F.R. § 72.30(c) within fourteen (14) days of submittal. If the deadline for the submittal of any reports mentioned in this Paragraph to the NRC changes, Holtec’s obligation under this Paragraph 6 shall correspondingly be modified to match the submittal date required by the NRC.

7. On or before March 31 of each calendar year following the Effective Date, Holtec shall provide to the Commonwealth a report detailing the status of the Pilgrim Supplemental Fund if one has been created pursuant to the terms of Paragraph 3(c), including the bank or trust company where the account resides and the balance of the aforementioned account, and certify that any other financial assurance mechanisms used pursuant to Paragraphs 3(a) or 3(b) remain

valid and of a sufficient amount to offset any shortfall in the Phase 1 or Phase 2 Minimum Balances. In addition, on or before March 31 of each calendar year following Partial Site Release, Holtec shall provide to the Commonwealth the spreadsheet used to recalculate the Phase 2 Minimum Balance described in Paragraph 3(b)(3). The foregoing spreadsheet shall include a column for each of the cost-categories identified in the spreadsheet attached as Exhibit 1 (unless categories are added to account for any financial assurance required under Paragraphs 10(d)(2)(v) or 10(e)(2) or both) and report the costs in thousands of dollars.

8. Subject to the confidentiality terms in Paragraph 32, no later than the last business day of each month, Holtec shall provide to the Commonwealth Holtec's monthly project status reports, which shall include safety record, status of major project activities (e.g., reactor vessel segmentation, building demolition, and spent nuclear fuel loading), project schedule, project budget (including comparison of budgeted costs against actual costs), staffing, waste management, and regulatory assurance and compliance. Following the submission of each monthly project status report, Holtec shall make one or more members of its team available at a mutually agreeable time and place (which may be in-person or by teleconference or videoconference) to answer any questions the Commonwealth may have about the report. In addition, and without limiting the scope of the terms in Paragraphs 20(b) (regarding MEMA access to Pilgrim's control room), 33 (Site Access), or 34 (Regulatory Authority), upon reasonable advance notice but no more than quarterly unless mutually agreed, the Commonwealth may send a representative(s) to the Site to confirm the activities described in the aforementioned monthly project status reports and review a copy of reasonably requested documentation supporting the information included in the aforementioned monthly project status reports.

9. Notwithstanding the submissions required by Paragraphs 6 to 8 of this Agreement, following the Effective Date, Holtec shall notify the Commonwealth within thirty (30) days of:

(a) Any notices provided to NRC pursuant to 10 C.F.R. §§ 50.9, 50.54(bb), 50.82(a)(7), or 72.30(g). With regard to events, including schedule changes, that occur between the Effective Date and the date of Partial Site Release and that could have adverse financial consequences of greater than \$30 million, Holtec shall provide a written notification to the Commonwealth that describes the event, the financial consequences of the event, and the steps Holtec plans to take to mitigate the financial consequences of the event and to otherwise address it. The aforementioned notification may take the form of a submittal to the NRC if the schedule or cost event triggers an NRC submittal and such submittal includes the required information or in a supplement to the NRC submittal if necessary to fully address the requirements of this subparagraph 9(a);

(b) Any insolvency, reorganization, bankruptcy, liquidation, or government investigations of Holtec, Holtec Power, Inc., NAMCo, Holtec Pilgrim, HDI, or CDI, except that notifications regarding government investigations shall be limited to government investigations by the United States or any State related to decommissioning, site restoration, spent nuclear fuel management, and regulatory compliance. For the avoidance of doubt, this reporting obligation does not include

routine NRC staff inspections that will be conducted throughout the decommissioning project, the results of which will be publicly available on the NRC Pilgrim docket. In addition, for any investigations conducted by the NRC's Office of Investigations, Holtec shall only have an obligation to report upon receipt of a Notice of Apparent Violation, and prior to issuance of a formal Notice of Apparent Violation, any information disclosed by Holtec to the Commonwealth regarding a matter shall be subject to the confidentiality terms in Paragraph 32.

III. SITE RESTORATION AND ENVIRONMENTAL REQUIREMENTS AND REPORTING

10. The Parties agree that the site restoration standards and requirements identified below shall apply to the Pilgrim Site:

(a) Within sixty (60) days of the Effective Date, Holtec shall provide to DEP and DPH all documents referenced in section 10 of the Historical Site Assessment for Pilgrim dated December 8, 2018 ("HSA") and any other document related to radiological and non-radiological contamination at the Site that it or Holtec International possesses or may come to possess through a request to Entergy within the sixty-day (60) period;

(b) Within thirty (30) days of the Effective Date, Holtec shall provide notice to DEP and DPH that it has retained a Massachusetts Licensed Site Professional ("LSP"), as that term is defined in 310 C.M.R. § 40.0006, along with the identity of the LSP. Holtec shall retain the LSP until Partial Site Release. If Holtec hires a different or additional LSP prior to Partial Site Release, then Holtec shall provide another notice to DEP and DPH within thirty (30) days of the new or additional LSP.

(c) Within sixty (60) days of the Effective Date, Holtec shall schedule a meeting with DEP and DPH to meet and confer about compliance with the terms of this Section III. Holtec shall ensure that the LSP it retains under Paragraph 10(b) attends the meeting with DEP and DPH.

(d) Holtec shall comply with the following requirements for addressing radiological contamination at the Site:

(1) At the time of Partial Site Release under the Renewed Facility Operation License No. DPR-35 for Pilgrim and in regard to the land where the ISFSI is located, at the time of License Termination, Holtec shall (i) meet applicable NRC standards for radiological contamination, including the criteria in 10 C.F.R. § 20.1402, "Radiological criteria for unrestricted use" and (ii) demonstrate compliance, or progress toward compliance, with 105 C.M.R. § 120.245, the Massachusetts radiological standard for unrestricted use of <10 millirem per year for all pathways, and reduction of residual radioactivity to levels that are otherwise as low as reasonably achievable ("ALARA"). In the event Holtec does not expect to demonstrate compliance with the Massachusetts radiological

standard in accordance with Paragraph 10(d)(5) below (excepting the land where the ISFSI is located) at the time of Partial Site Release, Holtec shall file a plan with DPH as provided in Paragraph 10(d)(2) below.

(2) If Holtec needs to file a plan with DPH under the last sentence of Paragraph 10(d)(1), then Holtec shall file that plan with DPH within one year of the date Holtec submits its application to the NRC for Partial Site Release for any necessary control and maintenance of the Site (with the exception of land where the ISFSI is located) and to perform any additional work necessary to comply with the requirements of Paragraph 10(d)(5) below within five (5) years of Partial Site Release. If Holtec files a plan under this Paragraph and Paragraph 10(d)(1), it shall be subject to DPH approval, which shall not be unreasonably withheld by DPH, and shall include:

- (i) a description of the conditions of the site sufficient to evaluate the acceptability of the plan;

- (ii) a description of planned remediation activities;

- (iii) a description of methods used to ensure protection of workers and the environment against radiation hazards during the remediation;

- (iv) a description of the planned final radiation survey; and,

- (v) sufficient financial assurance for any necessary control and maintenance of the Site (with the exception of the land where the ISFSI is located) and to perform any additional work necessary to meet the Massachusetts radiological standard if radioisotope decay is by itself insufficient to comply with those requirements during the five (5) year period. In the event that financial assurance is required under this Paragraph, the spreadsheet attached as Exhibit 1 shall be modified to include a new "State Radiological Standard Financial Assurance" column, the Phase 2 Minimum Balance that Holtec must maintain under Paragraph 3(b) shall be increased by the financial assurance amount accepted by DPH under this Paragraph, and the portion of the Phase 2 Minimum Balance attributable to State Radiological Standard Financial Assurance shall be reserved only for use to satisfy the requirements of Paragraphs 10(d)(1)-(5) if needed and may be eliminated on the date DPH determines that Holtec has complied with Paragraphs 10(d)(1)-(3).

(3) Notwithstanding Paragraph 10(d)(2), the five (5) year period from Partial Site Release to comply with the requirements of Paragraph 10(d) may be extended by mutual agreement, which shall not be unreasonably withheld by DPH, for a reasonable period of time in the event of unforeseen conditions or circumstances beyond Holtec's control. Such conditions or circumstances shall be described in writing as soon as Holtec is aware of them but no later than in the plan filed

pursuant to Paragraph 10(d)(2), and Holtec shall provide information documenting the additional time necessary to meet the standards.

(4) In all events, Holtec shall not sell, transfer, and/or lease control, use, or ownership of or over the Site prior to compliance with the terms of Paragraph 10(d).

(5) To demonstrate compliance with Paragraph 10(d), Holtec shall use (i) the Multi-Agency Radiation Survey and Site Investigation Manual, NUREG-1575, Rev. 1 (2000) (“MARSSIM”) (or any successor standard at the time of Partial Site Release, if the successor standard is more restrictive) to determine the amount of residual radioactivity that remains in all pathways and (ii) consistent with NRC NUREG-1727, NUREG/CR-5512 (vol. 1) (or any successor standard, if it is more restrictive), and 105 C.M.R. § 120.245, the “resident farmer scenario” and “basement inventory model” to model the potential exposure to residual radioactivity in all pathways, provided, however, that the Parties may mutually agree to an alternative standard for modeling if an approved future reuse supports the use of such an alternative standard. If Holtec opts not to use its NRC partial license termination report to demonstrate compliance with Paragraph 10(d), then it may rely on both its NRC partial license termination report and a supplement to that report for purposes of demonstrating compliance with Paragraph 10(d).

(6) Holtec shall not be subject to general or specific licensing requirements under 105 C.M.R §§ 120 *et seq.* if Holtec complies with the terms of Paragraph 10(d) within five (5) years of the date of Partial Site Release or such extended period as determined under Paragraph 10(d)(3). Holtec reserves the right to challenge any subsequent license determination.

(7) If either the Massachusetts Legislature or DPH shall make more stringent the current Massachusetts radiological standard set forth in Paragraph 10(d)(1) above, then Holtec shall provide notice to DPH and the Commonwealth of the change and Holtec, DPH, and the Commonwealth shall thereafter meet and negotiate in good faith any reasonable amendments to this Agreement regarding compliance with the Massachusetts radiological standard and the related financial assurance requirement in Paragraph 10(d)(2)(v).

(e) Holtec shall comply with Chapter 21E and the MCP as applicable. In support of this requirement:

(1) Holtec shall conduct a site-wide Initial Pilgrim Environmental Site Assessment, as described in Paragraph 11 below, under the direction of the LSP retained in accordance with Paragraph 10(b) for both radiological and non-radiological contamination consistent with the requirements of ASTM International Standard E1527-13 (“Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process”), MARSSIM, the

criteria specified in Paragraph 10(d) above, and with reference to the recommendations detailed in the HSA;

(2) Any response actions required by the MCP following the identification and notification of a release or threat of release of radiological and non-radiological contamination pursuant to 310 C.M.R. § 40.0300 shall follow the schedule and phases in the MCP. If response actions (as defined by 310 C.M.R. § 40.0006) are required at the Site (excepting the Switchyard, which is addressed under Paragraph 14 below) and Holtec will not comply with the requirements of Paragraph 10(e)(3) at the time Partial Site Release, Holtec shall submit to DEP within one (1) year of the date Holtec submits its application to the NRC for Partial Site Release an estimate of the costs to comply with Paragraph 10(e)(3) and such estimate, once accepted by DEP, shall establish the amount of financial assurance necessary under 310 C.M.R. § 40.0170(5). In the event that financial assurance is required under this Paragraph, the spreadsheet attached as Exhibit 1 shall be modified to include a new "Sitewide Chapter 21E Financial Assurance" column, the Phase 2 Minimum Balance that Holtec must maintain under Paragraph 3(b) shall be increased by the financial assurance amount accepted by DEP under this Paragraph, and the portion of the Phase 2 Minimum Balance attributable to Sitewide Chapter 21E Financial Assurance shall be reserved only for use to satisfy the requirements of Paragraph 10(e)(3) if needed and may be eliminated on the date DEP determines that Holtec has complied with Paragraph 10(e)(3); and

(3) Holtec shall remediate the non-radiological and radiological contamination at the Pilgrim Site to comply with the requirements for a Permanent Solution with No Conditions under 310 C.M.R. § 40.1041(1), provided, however, Holtec may comply with the requirements for a Permanent Solution with Conditions under 310 C.M.R. § 40.1041(2) to the extent mutually agreed upon by the Parties (which agreement shall not be unreasonably withheld, conditioned, or delayed) for one or more discrete portions of the Site to accommodate any beneficial use determination issued by DEP pursuant to 310 C.M.R. § 19.060 or based on 310 C.M.R. § 40.0860 in regard to an approved future reuse that is compatible with a Permanent Solution with Conditions.

(f) For any releases of oil and hazardous material reported pursuant to Paragraph 11 below, Holtec shall demonstrate compliance with Paragraphs 10(d) and 10(e) by submitting to DEP and DPH a Site-wide Permanent Solution Statement in accordance with 310 C.M.R. § 40.1056. Holtec shall include in the Permanent Solution Statement the confirmatory radiological surveillance and analytics referred to in Paragraph 11(f) and may also rely on the materials and data Holtec submits to the NRC to support its application to the NRC for Partial Site Release.

(g) Holtec's obligation to remove Site structures shall be as follows:

(1) By the Partial Site Release date, Holtec shall remove all structures at the Pilgrim Site necessary for Partial Site Release (including the shoreline and in-water structures), other than the seawall, water intake structure, ISFSI and associated security facilities or other structures approved by DEP to remain on Site and, in the case of structures subject to Mass. Gen. Laws ch. 91, authorized by a non-expired Chapter 91 license (or amendment or minor modification to an existing license to the extent applicable);

(2) By the License Termination date, Holtec shall remove all structures that remain at the Pilgrim Site including the ISFSI and associated security facilities, other than the Switchyard and those structures DEP approves to remain on Site. With regard to shoreline and in-water structures subject to Mass. Gen. Laws c. 91 only and the seawall (whether or not it is subject to Mass. Gen. Laws c. 91), Holtec may retain them as long as they are licensed by DEP or, in the case of the seawall, otherwise approved by DEP and Holtec demonstrates to the satisfaction of DEP that the environmental impacts of their removal will exceed the environmental harm of leaving them in place;

(3) The requirements in this Paragraph 10(g) apply to all underground structures, including building foundations, buried piping, and contained piping, unless retention of such structures is approved by DEP through issuance of a beneficial use determination pursuant to 310 C.M.R. § 19.060. For the avoidance of doubt, DEP understands that Holtec will seek approval through a beneficial use determination to leave clean, uncontaminated underground structures, such as concrete foundations and similar structures, in place at depths of three (3) feet or more below the grade existing on the Effective Date as established by the plan submitted under Paragraph 10(j), and such determination will not be unreasonably conditioned, withheld or delayed;

(h) Holtec shall remove the radioactive waste materials from the Site necessary to meet the NRC radiological release criteria and the terms of this Agreement and legally dispose of them or otherwise contain the materials in dry cask storage located on the Pilgrim ISFSI until removed from Massachusetts. Holtec may not dispose of any radioactive waste materials on the Site or use rubbleized radioactive waste materials as fill at the Site;

(i) Notwithstanding any other provision in this Agreement, Holtec shall abate all asbestos and lead containing materials prior to any demolition activities and remove all asbestos and lead containing material from the Site for disposal at an authorized off-Site location, unless otherwise approved and agreed to in writing by DEP;

(j) Holtec shall, unless otherwise approved by DEP and DPH, fill all subsurface voids, regrade the land to the currently existing-site ground elevations, and reseed the land. The currently existing-site ground elevation shall be demonstrated by submission

of one or more plans to DEP and DPH within one hundred and eighty (180) days of the Effective Date that shows the pre-decommissioning and site restoration surface levels at Pilgrim. Within sixty (60) days of the completion of the land surface restoration work, Holtec shall submit to DEP and DPH one or more post-restoration site plans that show that the land-surface has been restored in accordance with the terms of this Paragraph, unless a variation is approved by DEP, which variation shall not be unreasonably withheld. Holtec may use excavated soil from the Site as fill on Site if the excavated soil does not have a detectable radiation level equal to or greater than 10 millirem per year for all pathways and/or contain OHM equal to or greater than the Category S-1 Reportable Concentration and is placed back in its original location or reused elsewhere at the Site where existing radiation levels are not significantly lower than the levels of those present in the soil being reused;

(k) Holtec shall address polychlorinated biphenyl (PCBs) contamination at the Site in accordance with the Toxic Substances Control Act (TSCA), 15 U.S.C. §§ 2601-2692, and its regulations, and Chapter 21E and the MCP;

(l) Holtec shall comply with all applicable environmental and human-health based standards and regulations of the Commonwealth;

(m) Holtec shall copy DEP, DPH, and MEMA on Holtec's formal submittals to the NRC related to decommissioning and/or site restoration; and

(n) If either the Massachusetts Legislature or DEP eliminates or restricts the applicability of a beneficial use determination pursuant to 310 C.M.R. § 19.060 as contemplated under this Agreement, then Holtec shall provide notice to DEP and the Commonwealth of the change and Holtec, DEP, and the Commonwealth shall thereafter meet and negotiate in good faith any reasonable amendments to this Agreement regarding compliance with the Site restoration requirements set forth in this Section III.

11. Within one hundred and twenty (120) days of the Effective Date, Holtec shall submit to DEP and DPH for their review and approval the Initial Pilgrim Environmental Site Assessment work plan prepared by the LSP retained in accordance with Paragraph 10(b). The plan shall be, at minimum, consistent with recommendations contained in the HSA, and shall include (though does not need to appear in this precise order), at a minimum, the following:

(a) An inventory of all structures, buildings, rooms, equipment, workspaces, land areas, and groundwater resources to be assessed, together with any proposed Operable Units. Consistent with the Atomic Energy Act, HDI shall delineate Operable Units in a manner that maximizes areas available for immediate site characterization, remediation, and release;

(b) A description of all proposed assessment activities to address data gaps identified by the LSP's review of the HSA;

(c) A proposed schedule of all proposed activities to be undertaken under the plan (including characterization, demolition, on-site management, regrading, and reseeded);

(d) A proposed schedule for completion of site-wide environmental assessment activities for the Site;

(e) A proposed list of potential radiological and non-radiological contaminants for which sampling and testing will be conducted at the Site or, in the event Holtec designates Operable Units, each Operable Unit at the Site and the sampling and analysis protocols for the Site or each Operable Unit, if any;

(f) A proposed plan for testing and demonstrating compliance with the radiological cleanup standard set forth in Paragraph 10(d), which shall include a plan to submit confirmatory radiological surveillance and analytics to DPH and DEP with the Permanent Solution Statement required by Paragraph 10(e) above;

(g) A proposed plan to perform initial groundwater sampling of radiological and non-radiological contamination, including a plan for the installation of any additional monitoring wells necessary to characterize the scope and extent of radiological and non-radiological groundwater contamination; proposed sampling and independent analysis protocols, including the frequency with which sampling will occur, the contaminants to be tested, and the results of the independent laboratory analysis reported to DEP and DPH; protocols for quality assurance and split sampling with DEP and DPH; and proposed protocols in the event a radionuclide or hazardous material is identified;

(h) A proposed plan to perform initial soil sampling of radiological and non-radiological contamination, including a plan for the location of surficial soil samples, soil borings and/or test pits necessary to characterize the scope and extent of radiological and non-radiological soil contamination; proposed sampling and independent analysis protocols, including the frequency with which sampling will occur, the contaminants to be tested, and the results of the independent laboratory analysis reported to DEP and DPH; protocols for quality assurance and split sampling with DEP and DPH; and proposed protocols in the event a radionuclide or hazardous material is identified;

(i) A proposed plan to perform initial sampling of radiological and non-radiological contamination in environmental media other than soil and groundwater consistent with the recommendations contained in the HSA and the data gap review;

(j) A proposed schedule for submitting a plan that complies with the MCP and the Massachusetts Solid Waste regulations for use of off-site materials proposed to be used as fill on Site, including a proposed plan to characterize off-site materials that includes, at a minimum, the following: a list of all non-radiological contaminants for which the off-site materials will be characterized and the specific sampling and analysis methods and processes that will be used to characterize the off-site materials;

(k) A proposed schedule for submitting a detailed description of how concrete material will be processed, managed, and removed from the Site, including how concrete materials will be processed (removal of rebar and other reinforcing materials) and resulting size of specification of resulting aggregate material; and

(l) A description of a process to characterize each below grade structure and the steps that Holtec would need to take if removal of those structures is necessary for Partial Site Release or under the terms of this Agreement.

12. Following DEP and DPH's review of the Initial Pilgrim Environmental Site Assessment work plan described in Paragraph 11, Holtec shall meet and confer with DEP and DPH to discuss the terms of the work plan and a reasonable schedule for conducting the Initial Pilgrim Environmental Site Assessment. Following the date on which DEP and DPH meet and confer with Holtec under this Paragraph, DEP and DPH will complete their review of the draft Initial Pilgrim Environmental Site Assessment work plan and either approve it or provide comments to Holtec on it if the work plan otherwise complies with the requirements of Paragraph 11. If DEP and DPH provide comments to Holtec on the draft Initial Pilgrim Environmental Site Assessment work plan then, within thirty (30) days of Holtec's receipt of those comments, Holtec shall submit a revised Initial Pilgrim Environmental Site Assessment work plan that addresses DEP and DPH's comments. Upon approval of the revised work plan, Holtec shall, under the direction of the LSP retained under Paragraph 10(b), perform all actions in the Initial Pilgrim Environmental Site Assessment work plan and submit an Initial Pilgrim Environmental Site Assessment report in accordance with the schedule approved by DEP and DPH in the final Initial Pilgrim Environmental Site Assessment work plan together with any release notifications required by Paragraph 13 and the MCP.

13. Following the identification of radiological or non-radiological contamination in the Initial Pilgrim Environmental Assessment conducted pursuant to the work plan approved by DEP and DPH under Paragraph 12 and subsequent to timely notification of any Reportable Conditions as defined in the MCP and Chapter 21E to DEP and DPH, Holtec shall perform comprehensive site assessment and response actions in accordance with the MCP and under the oversight of the LSP retained by under Paragraph 10(b). In determining the need for alternative deadlines for response actions, DEP and DPH shall consider the complexity of the decommissioning and site restoration process and the need to sequence activities within any defined Operable Units at the Site. DEP shall determine the level of Department oversight required for response actions conducted pursuant to the MCP, including the need for DEP approval of reports and plans submitted to it.

14. The site restoration requirements set forth in this Agreement apply to the Switchyard, except that if the Initial Pilgrim Environmental Site Assessment report indicates that response actions (as defined by 310 C.M.R. § 40.0006) are required at the Switchyard, then Holtec shall not be required to undertake those response actions at the Switchyard if it demonstrates to DEP's satisfaction that it is not feasible based on the criteria in 310 C.M.R. § 40.0860 and considering any relevant DEP guidance to perform those actions while the in-place equipment remains in the Switchyard. If response actions are required for the Switchyard and a Permanent Solution Statement with No Conditions has not been submitted to DEP by the date of Partial Site Release

because it is not feasible, based on the analysis required by the foregoing sentence, to perform those actions while the in-place equipment remains on the Switchyard, then Holtec shall submit to the DEP a Permanent Solution Statement with Conditions or a Temporary Solution Statement (as those terms and the related processes are defined and described in the MCP) for the portion of the disposal site defined to be the Switchyard, pursuant to 310 C.M.R. § 40.1003(3) and § 40.1003(4). Holtec may need to provide a financial assurance mechanism pursuant to 310 CMR § 40.0170(5) approved by DEP to ensure sufficient financial resources are available to perform that work in the future to remediate any radiological contamination and/or any oil or hazardous materials within the Switchyard when it becomes feasible to do so and it shall perform that work in compliance with the radiological and non-radiological site restoration standards in this Agreement.

15. Following the Effective Date, Holtec shall provide to DEP and DPH:

(a) the Annual Radioactive Effluent Release Report and the Annual Radiological Environmental Operating Report for Pilgrim at the same time they are submitted to the NRC;

(b) the reports and/or written correspondence regarding events described in sections 3.2.2 (p.3/4-13), 3.2.3 (p.3/4-14), and 3.5.1 (p.3/4-24) of Pilgrim's Offsite Dose Calculation Manual, Revision 9 (2003) (NRC Adams Accession No. ML041400430) at the same time they are submitted to the NRC;

(c) as to DEP only, notwithstanding the Notice requirements in Section VII (Notices) of this Agreement, Holtec shall transmit the foregoing by electronic mail to David Johnston, MassDEP Southeast Regional Office, david.johnston@mass.gov, and Cathy Vakalopoulos, MassDEP Surface Water Discharge Permitting Program, catherine.vakalopoulos@mass.gov, or other contact as may be identified by DEP;

(d) the reporting requirements in Paragraph 15 shall supersede and replace state conditions 4 and 5 in Part I.H. of the National Pollutant Discharge Elimination System ("NPDES") Permit and the state surface water discharge permit ("SW"), which were issued by the U.S. Environmental Protection Agency ("EPA") and DEP respectfully as a combined document on January 30, 2020 ("SW / NPDES Permit"), and numbered conditions 2 and 3 of the related Water Quality Certification ("WQC"), which was issued by DEP on January 10, 2020, and when the SW / NPDES Permit and DEP's WQC are modified or reissued, whether such modification or reissuance occurs before or at the conclusion of the challenges to the SW / NPDES Permit pending currently before EPA's Environmental Appeals Board ("EAB"), those two conditions shall be removed from the SW / NPDES Permit and DEP's WQC, except that DEP may note in the WQC that the conditions removed from the WQC and the SW / NPDES Permit were replaced and superseded by the conditions in Paragraph 15 of this Agreement.

16. Nothing in this Agreement shall release any person from the obligation to investigate and remediate new, undiscovered, or undisclosed releases of radiological contamination or non-

radiological oil or hazardous materials in accordance with federal or Massachusetts statutes and regulations.

IV. PAYMENTS, RADIATION MONITORING, ISFSI, AND WASTE TRANSPORTATION

17. Within ninety (90) days of the Effective Date of this Agreement, Holtec shall initiate negotiations into an Alternative Fee Agreement with DEP pursuant to 310 C.M.R. § 4.05, except with respect to all fees incurred pursuant to Chapter 21E, so that DEP may process multi-programmatic permits and facilitate oversight in a more expeditious manner. This provision shall not limit or eliminate any fees payable pursuant to Chapter 21E.

18. Holtec shall make payments to DPH and MEMA in accordance with Table 1 (DPH) and Table 2 (MEMA) and the payment instructions received from DPH and MEMA, except that DPH and MEMA, after requesting in advance and obtaining Holtec's concurrence, may make reasonable adjustments to the amounts specified in Table 1 (DPH) and Table 2 (MEMA), respectively, if the schedule included in Figure 3-1 of the Holtec PSDAR is delayed by three (3) or more months for any identified phase. Holtec shall make each payment identified in Table 1 (DPH) and Table 2 (MEMA) no later than thirty (30) days after the start of each Fiscal Year. If an act of the Legislature for the Commonwealth of Massachusetts requires Holtec to make any payments to DPH or MEMA that duplicate the payments in Table 1 (DPH) or Table 2 (MEMA), then the amounts set forth in Tables 1 or 2 shall be offset by the legislatively required payment and Holtec shall be responsible under this Agreement only for the remainder of the payment due under Tables 1 or 2.

Table 1: Payments and Payment Schedule for DPH

Fiscal Year	Agency	Funding	Scope of Work
2021	DPH	\$522,471	Annual expenses for emergency planning and environmental monitoring.
2022	DPH	\$386,236	Annual expenses for emergency planning and environmental monitoring. If all spent nuclear fuel is not on the ISFSI, payments will be at FY 2021 amounts.
2023	DPH	\$250,000	Reduced annual expenses for emergency response and to maintain environmental monitoring. If all spent nuclear fuel is not on the ISFSI, payments will be at FY 2021 amounts.
2024	DPH	\$250,000	Reduced annual expenses for emergency response and to maintain environmental monitoring. If all spent nuclear fuel is

Fiscal Year	Agency	Funding	Scope of Work
			not on the ISFSI, payments will be at FY 2021 amounts.
2025	DPH	\$250,000	Reduced annual expenses for emergency response and to maintain environmental monitoring. . If all spent nuclear fuel is not on the ISFSI, payments will be at FY 2021 amounts.
2026	DPH	\$200,000	Further reductions in annual expenses for environmental monitoring. If all spent nuclear fuel is not on the ISFSI, payments will be at FY 2021 amounts.
2027 until the FY when the Massachusetts radiological standard is met in accordance with Paragraph 10(d)	DPH	\$100,000	Further reductions in annual expense for environmental monitoring if Partial Site Release occurs during FY 2027. If Partial Site Release does not occur in FY 2027, then payments shall remain at FY 2026 amounts. And if all spent nuclear fuel is not on the ISFSI, payments will be at FY 2021 amounts.

Table 2: Payments and Payment Schedule for MEMA

Fiscal Year	Agency	Funding	Scope of Work
2021	MEMA	\$1,170,684 (if federal emergency planning requirements remain in effect) or \$500,000 (if federal emergency planning requirements no longer apply)	Annual operating expenses for maintaining off-site emergency preparedness requirements of the Emergency Planning Zone. This includes planning, training and exercising. Annual operating expenses associated with transitioning to decommissioning planning.
2022	MEMA	\$275,000 (if all spent nuclear fuel has been moved to the ISFSI)	Half a year of annual operating expenses associated with transitioning to decommissioning planning and half a year of annual operating expenses associated with the decommissioning process, including biennial exercises for security, radiation exposure, fire response and

Fiscal Year	Agency	Funding	Scope of Work
			medical response; following decommissioning activities to assure there is no impact to public safety; support and follow the work of DOE on a repository for spent nuclear fuel and transportation of spent nuclear fuel to a repository; coordinate with Pilgrim's Security Department to install a VHF radio into Pilgrim's Central Alarm Station and conduct weekly communications checks between Pilgrim and MEMA's Communications Center; review all NRC and Pilgrim documents throughout the decommissioning process.
2023 - 2027	MEMA	\$50,000	Annual operating expenses until Partial Site Release associated with the decommissioning process, including biennial exercises for security, radiation exposure, fire response and medical response; following decommissioning activities to assure there is no impact to public safety; support and follow the work of DOE on a repository for spent nuclear fuel and transportation of spent nuclear fuel to a repository; conduct weekly communications checks between Pilgrim and MEMA's Communications Center; review all NRC and Pilgrim documents throughout the decommissioning process.
2028	MEMA	\$32,500	Half year of annual decommissioning costs, and half year of ISFSI costs.
2029 until License Termination	MEMA	\$15,000	Support of ISFSI by participating in annual drills and exercises at the Site; conduct weekly communications checks between Pilgrim and MEMA's Communications Center; support and follow the work of DOE on a repository for spent nuclear fuel and transportation of spent nuclear fuel to a repository; participate in security meetings throughout the year.

19. At least thirty (30) days prior to the date any payment is due in accordance with Paragraph 18 and the accompanying Table 1 (DPH) and Table 2 (MEMA) of this Agreement, the respective agency shall provide instructions together with an invoice for the required payment, if they have not already been provided, for making the required payment amount and each payment shall then be made to the respective agency in accordance with those instructions on or before the date the payment is due.

20. In addition to any ongoing on-site and off-site NRC emergency planning requirements, until all spent fuel is moved from the spent nuclear fuel pool to the ISFSI or as otherwise specified in the subparagraphs to this Paragraph 20, Holtec shall comply with the following obligations:

(a) Initially and annually, provide MEMA with a point of contact who has direct knowledge of Pilgrim's emergency response procedures. Holtec shall notify MEMA in writing within ten calendar days of any point-of-contact change. Pilgrim and MEMA shall agree on a designated Pilgrim employee to be fully available in the event of a radiological emergency. In the event of such an emergency, MEMA shall contact that employee (or, where such designated employee is unavailable, Pilgrim's continuously-monitored control room) who shall provide all emergency-related information to MEMA. The obligations in this paragraph shall end when all spent nuclear fuel is removed from the Site.

(b) Continue to monitor and provide daily summaries to MEMA and DEP of Pilgrim's Meteorological and Effluent and Safety Data including: wind speed, direction and temperature at the 33' and 220' elevations, ventilation exhaust monitoring, area radiation monitoring, spent nuclear fuel pool level and temperature, and water discharge monitoring. In the event that the meteorological data is temporarily not available or the on-site equipment for collecting the meteorological data must be removed to perform decommissioning or site restoration work, then Holtec may use meteorological data collected by the National Weather Service. Upon request, Holtec shall also allow properly credentialed MEMA personnel to access Pilgrim's control room to monitor the information described in this Paragraph;

(c) Identify Pilgrim Site staff members who will meet quarterly with MEMA, such as at continued Pilgrim Working Group meetings, to coordinate schedules for drills and exercises, review and discuss any changes to Holtec's onsite security plan or the state's offsite response plan, and ensure lines of communication are functioning through training and exercises as needed.

(d) Maintain primary and alternate communication with the Commonwealth's Primary Warning Point (MEMA). Primary communications will be through commercial phone, and backup communications will be via satellite phone. Holtec shall notify MEMA within one hour of initiation of any emergency event through the currently established means of communication with MEMA so that MEMA can take appropriate actions to notify the public, including sending Wireless Emergency Alerts if

the circumstances justify sending such alerts. The obligations in this paragraph shall end when all spent nuclear fuel is removed from the Site.

(e) Until all spent nuclear fuel is moved from the spent nuclear fuel pool to the ISFSI, continue to maintain full participation in state and local (onsite and offsite) exercises annually, which exercises shall be discussion-based events, such as workshops and table-top exercises for state and local first responders and emergency planning personnel, and shall be designed in conjunction with Holtec, local communities, and MEMA. Until all spent nuclear fuel is removed from the Site, Holtec shall continue testing of communications capabilities weekly.

(f) Support state efforts in performing routine testing of a public alert and notification system; and

(g) Provide the public with information on Pilgrim's emergency plan through Pilgrim's external website until all spent nuclear fuel is removed from the Site.

21. In accordance with Paragraph 37 of this Agreement, the Letter of Agreement attached as Exhibit 2 to this Agreement between the Pilgrim Site and the Commonwealth (represented by MEMA), dated February 12, 2019, regarding emergency planning notifications and emergency response activity requirements shall, subject to, and as modified by, the requirements in Paragraph 20, remain in full force and effect until the general or specific license for the ISFSI is terminated by the NRC unless terminated or modified by MEMA and Holtec prior to that date. The modification or termination of the Letter Agreement referenced in this Paragraph shall not constitute the modification or termination of this Agreement or any of this Agreement's terms.

22. Holtec shall ensure that the ISFSI is surrounded by a protective area that complies with all NRC requirements, including those set forth at 10 C.F.R. § 73.51, and include concrete vehicle barriers, lighting, video cameras, and intrusion detection equipment. In addition, Holtec shall, within thirty (30) days of the Effective Date, provide to the Commonwealth and the Town of Plymouth plans and photo realistic renderings from the Public Right-of-Way (i.e., Rocky Hill Road) of the ISFSI protected area prepared by a consultant with relevant expertise depicting:

(a) an enhanced vegetation planting scheme consisting of trees and/or other species that retain year-round foliage for the area between the outer ISFSI fence and the top and downward slope of the hill on the Rocky Hill Road side of the ISFSI to better or completely obscure the ability to view the ISFSI and related buildings from Rocky Hill Road;

(b) (i) a vegetation planting scheme consisting of arborvitaes or a like species that retains year-round foliage for the area in front of the Rocky Hill Road facing surface of the proposed vehicle barrier to obscure the ability to view the vehicle barrier wall from Rocky Hill Road and (ii) a scheme to install a rock or other appealing facade on the face of the of Rocky Hill Road facing surface of the proposed vehicle barrier wall and a planting scheme for Ivy or a like species along the same;

(c) Within thirty (30) days of the Commonwealth's and the Town of Plymouth's receipt of the aforementioned plans, the Commonwealth and the Town of Plymouth will state jointly to Holtec whether they have any proposed modifications to the plans and materials submitted in accordance with Paragraph 22(a) and their selection of one of the alternatives presented in the plans and materials submitted in accordance with Paragraph 22(b) together with any proposed modifications to the selected alternative;

(d) Within ninety (90) days of the Commonwealth's and the Town of Plymouth's response pursuant to the prior Paragraph 22(c) or ninety (90) days after Holtec has completed construction of the ISFSI, whichever is later, Holtec shall implement the plantings and other requirements in the selected plans and related materials and maintain that work in substantial conformance with those plans for the life of the ISFSI unless otherwise mutually agreed upon by Holtec, the Commonwealth, and the Town of Plymouth;

(e) Notwithstanding the foregoing, Holtec reserves the right to (i) implement reasonable changes needed to address security and maintenance procedures / concerns (e.g., preserving access for security walk-downs and inspecting the barrier's integrity), and (ii) to forego the installation of a rock facade if the cost is deemed grossly excessive in comparison to the expected benefit as demonstrated by the renderings.

23. HDI shall, within thirty (30) days of the Effective Date, certify to the implementation of a cybersecurity plan at Pilgrim, which shall, at the very least, include the following cybersecurity measures:

(a) Maintain an accurate inventory of digital assets related to safety, security and emergency preparedness functions ("Critical Digital Assets") and eliminate exposure of this equipment to external networks to the extent Pilgrim currently uses such Critical Digital Assets now or in the future;

(b) Implement network segmentation and apply firewalls;

(c) Use secure remote access methods;

(d) Establish role-based access controls and implement system logging;

(e) Use only strong passwords, change default passwords, and consider other access controls;

(f) Maintain security systems with no exposure to external networks (i.e., air gapped) or maintain awareness of vulnerabilities and implement necessary patches and updates for Critical Digital Assets, whichever is applicable;

(g) Develop and enforce policies on the use of mobile devices at the Site such as laptops, portable external hard drives, USBs, or flash drives;

(h) Implement an employee cybersecurity training program;

(i) Involve senior management (e.g., site vice president) in cybersecurity briefings and key decision-making; and

(j) Implement measures for detecting compromises and develop a cybersecurity incident response plan.

24. Holtec shall undertake commercially reasonable efforts to evaluate use of a barge for shipment of solid, hazardous, and low-level radioactive waste (other than spent nuclear fuel) from the Site to other off-site locations licensed to receive the waste. Such evaluation will consider safety, economic, technical, and environmental criteria. If Holtec determines to proceed with barge shipments, then Holtec shall secure all required permits, licenses, and approvals and the relevant regulatory agencies of the Commonwealth will support those efforts in a timely manner. Notwithstanding the foregoing, Holtec shall in all events submit a radioactive waste management plan to MEMA, DPH, and DEP for review and approval and reimburse the agencies for the time and resources they expend on plan review, approval, and implementation, including the Massachusetts State Police.

V. WITHDRAWAL OF PETITIONS AND OTHER LEGAL CHALLENGES

25. Within fourteen (14) days of the Effective Date, the Commonwealth shall file a notice with the NRC to withdraw the NRC Petition and any other petitions or motions then still pending before the NRC in regard to applications or requests by Holtec for NRC actions regarding Pilgrim, and the Commonwealth and Holtec will file with the U.S. Court of Appeals for the District of Columbia Circuit a dismissal agreement regarding the D.C. Circuit Petitions. In regard to the latter, Holtec shall be responsible for securing the joinder in the dismissal agreement of all other parties to the matter, and all parties shall bear their own costs. Thereafter, the Commonwealth shall not initiate any new action opposing the Application or the Transaction before the NRC or any court of law and will not file any motion or take any other action before the NRC or a court of law that would have the effect of delaying the resolution of the Application or the Transaction. The Commonwealth also agrees not to request that the NRC make any part of this Agreement a part of the decisional basis for resolution of the Application, Pilgrim's licensing basis, a condition of license transfer, or a regulatory commitment to the NRC—it being expressly understood and agreed that this Agreement is not intended to supplement, amend, be incorporated into, or otherwise affect the Pilgrim licensee's commitments to or regulation by the NRC.

26. Neither the Commonwealth's withdrawal of its Petition under this Section nor any other provision of this Agreement shall affect the Commonwealth's right to participate in rulemaking or other activities addressing the NRC's general approach to decommissioning, the NRC's exemption process and policies, the purpose of decommissioning funds, what expenditures from those funds are appropriate, or other matters.

27. Within fourteen (14) days of the Effective Date, Holtec shall conditionally withdraw or stipulate to the dismissal of:

(a) In the matter of *In re Holtec Decommissioning International*, NPDES Appeal No. 20-03 before EPA's EAB, Holtec's challenge denoted as issue seven (7) in its March 6, 2020 EAB Petition for Review of the SW / NPDES Permit and any other challenges to the state only conditions in the SW / NPDES Permit;

(b) In the consolidated WQC and NPDES Permit appeals pending before DEP's Office of Appeal and Dispute Resolution ("OADR"), originally Docket Nos. 2020-004, 2020-005, Holtec's Notice of Claim challenging the WQC; and

(c) In the consolidated WQC and NPDES Permit appeals pending before DEP's OADR, originally Docket Nos. 2020-014, 2020-015, Holtec's challenge to the state only conditions in the SW / NPDES Permit.

The finality and effect of Holtec's withdrawal and/or stipulated dismissal of the foregoing challenges shall be conditioned on DEP's compliance with the requirements in Paragraph 15(d) of this Agreement.

28. Except for matters addressed in this Agreement, the Parties otherwise retain all authority and reserve all rights to take any actions authorized by law, including enforcement of the terms of this Agreement. For a period of one (1) year following the Effective Date, the Commonwealth agrees not to take a position before the NRC or a court of law opposing or seeking to modify the terms of Holtec's acquisition of, and subsequent conduct of decommissioning activities at, Indian Point Energy Center in Buchanan, New York or Palisades Nuclear Generating Station in Covert Township, Michigan. During the second year of this Agreement, the Commonwealth agrees to the foregoing limitation, except that during the second year of the Agreement the Commonwealth may participate as an amicus curiae before a federal court regarding any issue related to Holtec's acquisition of any nuclear plant.

VI. MISCELLANEOUS TERMS

29. Scope of Agreement. The terms of this Agreement shall apply to and bind Holtec, and any person or entity acting by, for, or through Holtec, including their managers, directors, officers, supervisors, and employees, and the Commonwealth. This Agreement shall also apply to and bind any successors or assigns of the above listed entities and any person or entity acting by, for, or through such successors or assigns. For the avoidance of doubt, nothing in this Agreement dictates how Holtec must satisfy its regulatory obligations to NRC. In addition, nothing in this Agreement shall be construed to create any rights in, or grant any cause of action to, any person not a party to this Agreement.

30. Change in Owner, Management, or Operation. From the Effective Date until License Termination, at least sixty (60) days prior to any transfer in ownership, management, or operation of Pilgrim, or any portion of Pilgrim, including the ISFSI, Holtec shall provide a true copy of this Agreement to the proposed new owner, manager, or operator (collectively, the "transferee(s)") and shall simultaneously provide written notice of the prospective transfer in ownership, management, or operation of Pilgrim, or any portion of Pilgrim, including the ISFSI,

to the Commonwealth, with a copy to EEA, by electronic and first class mail in accordance with Section VII (Notices) of this Agreement; provided, however, that the requirements in this Paragraph shall not apply to those portions of the Site covered by Partial Site Release and that have satisfied the requirements in Paragraphs 10(d) and 10(e). No transfer shall be permitted to a transferee having any outstanding tax delinquency or held criminally liable for illegal acts, including the acts of its directors, officers, employees, and agents. In addition, no transfer in ownership, management, or operation of Pilgrim, or any portion thereof, including the ISFSI, whether in compliance with the procedures of this Paragraph or otherwise, shall relieve Holtec or their managers, officers, directors, agents, successors, assigns, heirs, and/or servants of any obligation under this Agreement, unless:

- (a) the proposed transferee agrees, in writing, to undertake the obligations required by this Agreement and to be added as a party or substituted for one or more of the named Parties to this Agreement and thus assume the obligations, rights, and benefits of the Agreement, and be bound by, its terms;
- (b) the proposed transferee obtains NRC approvals, if applicable;
- (c) Holtec certifies the Trust Fund and Pilgrim Supplemental Fund (if created) are transferred to, or replaced by, the transferee such that the financial assurances obligations in Paragraph 3 and elsewhere in this Agreement are preserved; and
- (d) the Commonwealth confirms in writing, within forty-five (45) days after Holtec provides reasonable evidence unless extended by mutual agreement, that the foregoing requirements have been satisfied. For additional clarity, this requirement shall be deemed to have been waived by the Commonwealth if it does not provide its confirmation within forty-five (45) days unless extended by mutual agreement.

Any attempt to transfer ownership, management, or operation of Pilgrim, or any portion thereof, including the ISFSI, without complying with this Paragraph 30 shall constitute a violation of this Agreement.

31. Public Participation. Until Partial Site Release, Holtec will conduct annual stakeholder information forums, within ninety (90) days of the date Holtec submits the report required by 10 C.F.R. § 50.75(f)(1), to inform the public of about the status of Pilgrim's emergency plans and Pilgrim's operating, decommissioning, site restoration, and spent nuclear fuel management work and to solicit public comments. Holtec will establish and maintain a website that is accessible to the public as another venue to disseminate this information. Holtec shall provide the public with reasonable notice of the date and location for each annual stakeholder information forum, provided, however, that the date for each Forum shall not coincide with a meeting held by the Nuclear Decommissioning Citizens Advisory Panel.

32. Confidentiality. To the extent that Holtec determines that the information it must submit to the Commonwealth, DEP, DPH, EEA, or MEMA pursuant to this Agreement constitutes a Holtec trade secret or confidential business information or other information that is exempt from disclosure under the Massachusetts Public Records Act, Mass. Gen. Laws c. 66,

§ 10, Mass. Gen. Laws c. 4, § 7(26)(a-q), Holtec shall designate the information as such and shall provide a redacted version for public disclosure, unless redaction would render the document meaningless. If the Commonwealth, DEP, DPH, EEA, or MEMA receive a request by a non-party to release, disclose, or obtain access to any information marked by Holtec as trade secret or confidential business information, then the entity that receives the request shall notify Holtec prior to the date on which a response to such a request is due. Unless Holtec consents to the disclosure or release of the marked information, the entity that received the request shall assert, to the extent authorized by law, and subject to any mandatory disclosure required by a court order, all relevant exemptions to disclosure, any applicable privileges, and other objections the receiving entity determines are relevant and applicable to the requested disclosure of such information.

33. Site Access. Prior to receiving access to the Pilgrim Site, all Commonwealth representatives shall comply with all applicable Pilgrim security and safety protocols and procedures related to Site access.

34. Regulatory Authority. Nothing in this Agreement shall affect, restrict, or limit the jurisdiction or regulatory authority of any state or federal agencies over Holtec or Pilgrim, including any authority to access the Site to review compliance with laws, regulations, licenses and permits within their respective jurisdiction. This Agreement is entered into by Holtec with a full reservation of its rights under federal laws and regulations. Nothing in this Agreement shall be interpreted as prohibiting or restricting Holtec from complying with any requirements or orders of the NRC, or any obligation under the Pilgrim operating license or any other federal agency as applicable.

35. Governing Laws. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth and enforceable by an action in the Massachusetts Superior Court for Suffolk County.

36. Precedential Impact. This Agreement, and any orders approving or implementing provisions of this Agreement, shall not be construed by any party or tribunal as having precedential impact on any future proceedings involving the Parties, except in a proceeding to enforce the terms and conditions of this Agreement or in proceedings to give effect to matters addressed by this Agreement.

37. Full Force and Effect. Except as superseded expressly by name by this Agreement, all other agreements, orders, and Memoranda of Understanding (“MOU”) related to Pilgrim remain in full force and effect unless terminated or modified by their own terms.

38. Good Faith. The Parties shall negotiate in good faith the terms of the necessary instruments to be filed with the appropriate tribunals and agencies necessary to accomplish the terms and conditions of this Agreement. Each Party to this Agreement shall reasonably and in good faith cooperate in connection with this Agreement, including by providing executed versions of documents reasonably requested in connection with carrying out the objectives of this Agreement. The Commonwealth agrees, to the extent approvals, permits, or other matters arise before the Commonwealth (including its agencies) that relate to the matters addressed in

this Agreement, that the Commonwealth (including its agencies) will act in a reasonable amount of time and in a manner consistent with the provisions of this Agreement and will not seek to alter the requirements contemplated by this Agreement or delay any permitting or other regulatory action necessary to give effect to matters addressed by this Agreement.

39. Right to Counsel. Each Party enters into this Agreement freely and after opportunity for and actual consultation with all desired counsel, legal and otherwise, of its choice.

40. Disputes. The Parties understand, agree, and acknowledge that (a) this Agreement has been freely negotiated by all Parties; and (b) in any controversy, dispute or contest over the meaning, interpretation, validity, or enforceability of this Agreement or any of its terms or conditions, there shall not be any inference, presumption, or conclusion drawn whatsoever against any Party by virtue of that Party having drafted this Agreement or any portion thereof. The Parties agree that previous drafts, as well as verbal, electronic, or written communications related to the settlement negotiations of this Agreement, shall not be used to interpret intent. The Parties further agree that all previous drafts, as well as verbal, electronic, or written communications related to the settlement negotiations of this Agreement, were and must remain confidential to the extent permitted by law and shall not be admissible in any state or federal court or other tribunal.

41. Third Parties. This Agreement is not intended to, nor shall it, vest rights in persons or entities who do not represent the Parties to this Agreement or who are not Parties to this Agreement.

42. Calculation of Deadlines. In computing any period of time under this Agreement, where the last day would fall on a Saturday, Sunday, or Massachusetts or Federal holiday, the period shall run until 5:00 p.m. EST of the next business day.

43. Effective Date. Except as noted in the next sentence, this Agreement shall become effective on the date that the last party signs the Agreement ("Effective Date"). This Agreement may be executed in one or more counterparts, each of which will be considered an original document. A .pdf copy of the wet signatures to this Agreement transmitted by electronic mail will have the same effect as physical delivery of the paper document bearing the original signature.

44. Amendment.

(a) The Parties may amend this Agreement if they determine and agree that an amendment is necessary to accomplish its objectives; and

(b) Any amendment of this Agreement shall be effective only if it is in writing and executed by all Parties to this Agreement, provided that reasonable extensions of any deadlines set forth in this Agreement may be agreed to in writing without amending this Agreement.

45. Anti-deficiency. Nothing in this Agreement shall be construed as obligating the Commonwealth, its officers, agents or employees, to expend any funds, including expenditures in excess of appropriations or other amounts authorized by law.

46. Integration. Except as expressly set forth in this Agreement, this Agreement and any referenced Exhibits constitute the entire agreement and understanding between the Parties with respect to all subjects covered by this Agreement and supersedes all prior discussions, agreements, and understandings between the Parties with respect to such matters; any other representations, communications or agreements by or between the Parties, whether written or oral, shall have no force and effect. This Agreement shall not be changed, modified, or altered in any manner except by an instrument in writing executed by the Parties pursuant to Paragraph 44.

47. Severability. If any part of this Agreement is determined to be invalid by a court of competent jurisdiction, such provision shall be null and void, and the remainder of the Agreement shall continue in full force and effect, unless all Parties otherwise agree.

48. Validity. No Party to this Agreement (or any person or entity affiliated or related to a Party to this Agreement) shall assert that any provision of this Agreement (or the Agreement itself) is invalid under any federal law or any provision of the U.S. Constitution.

VII. NOTICES

49. Unless otherwise specified in this Agreement, notices and submissions required by this Agreement shall be made in writing by first class and electronic mail to the following:

**For the Commonwealth of
Massachusetts:**

Massachusetts Attorney General's Office
Energy and Environment Bureau
Attn: Seth Schofield, Senior Appellate
Counsel

One Ashburton Place, 18th Floor
Boston, MA 02108-1598

seth.schofield@mass.gov

**For the Massachusetts Executive Office
of Energy and Environmental Affairs:**

Massachusetts Executive Office of Energy
and Environmental Affairs
Attn: Benjamin Goldberger, General
Counsel

100 Cambridge Street, Suite 900
Boston, MA 02114

benjamin.goldberger@mass.gov

For the Massachusetts Department of Environmental Protection, Southeast Regional Office:

Massachusetts Department of Environmental Protection,
Attn: David Johnston, Deputy Regional Director
20 Riverside Drive
Lakeville, MA 02347

david.johnston@mass.gov

For the Massachusetts Department of Public Health:

Massachusetts Department of Public Health
Bureau of Environmental Health
Attn: Jana Ferguson, Director
250 Washington Street
Boston, MA 02108

jana.ferguson@mass.gov

For the Massachusetts Emergency Management Agency:

Massachusetts Emergency Management Agency
Attn: Samantha C. Phillips, Director
400 Worcester Road
Framingham, MA 01702

samantha.phillips@mass.gov

For the Massachusetts Department of Environmental Protection:

Massachusetts Department of Environmental Protection
Attn: Benjamin Ericson, General Counsel
One Winter Street
Boston, MA 02108

benjamin.ericson@mass.gov

For the Massachusetts Department of Public Health:

Massachusetts Department of Public Health
Radiation Control Program
Attn: "Jack" John M. Priest, Jr., Director
Schrafft Center
529 Main St., Suite 1M2A
Charlestown, MA 02129

jack.priest@mass.gov

For Holtec Pilgrim, LLC and Holtec Decommissioning International, LLC:

Attn: William F. Gill, Vice President and Corporate Counsel
1 Holtec Blvd.
Camden, NJ 08104

W.Gill@holtec.com

or, to such other place or to the attention of such other individual as a Party may from time to time designate by written notice to the other Party to this Agreement.

VIII. AUTHORITY OF SIGNATORIES

50. Holtec Pilgrim and HDI, represent that each of them possesses the power and authority to execute, deliver and perform their respective obligations under this Agreement and agrees that those obligations are valid, binding, and enforceable under this Agreement.

51. The person or persons signing this Agreement on behalf of Holtec Pilgrim and HDI, acknowledges (i) that he or she has personally read and understands the terms of the Agreement; (ii) that, to the extent necessary, Holtec Pilgrim and HDI's managers, directors, officers, and shareholders have consented to Holtec Pilgrim and HDI entering into this Agreement and have

consented to its terms; and (iii) that he or she is authorized to sign the Agreement and to bind the party on behalf of which he or she is signing to the terms of this Agreement.

52. The Massachusetts Attorney General represents and warrants (i) that it has the power and authority to execute and deliver this Agreement, which represents a binding obligation on the Commonwealth, and (ii) all authorizations required to give effect to the foregoing (i) have been obtained.

[Signatures on Next Pages]

The Undersigned Party enters into this Settlement Agreement:

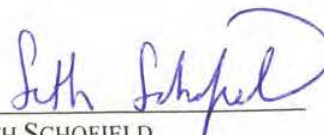
Dated: June 16, 2020

FOR THE COMMONWEALTH OF
MASSACHUSETTS

MAURA HEALEY
ATTORNEY GENERAL

MELISSA A. HOFFER
Chief, Energy and Environment Bureau

REBECCA TEPPER
*Chief, Energy and Telecommunications
Division*




SETH SCHOFIELD
Senior Appellate Counsel
JOSEPH DORFLER
Assistant Attorney General
LIAM J. PASKVAN
Special Assistant Attorney General
Energy and Environment Bureau
Office of the Attorney General
One Ashburton Place, 18th Floor
Boston, Massachusetts 02108

The Undersigned Party enters into this Settlement Agreement:

Dated: June 16, 2020

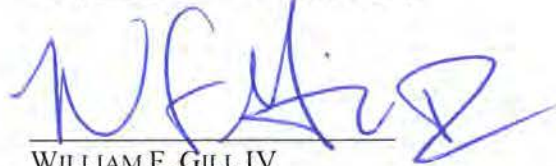
FOR HOLTEC DECOMMISSIONING
INTERNATIONAL, LLC



PAMELA B. COWAN
Sr. Vice President & Chief Operating Officer
Holtec Decommissioning International, LLC
Krishna P. Singh Technology Campus
1 Holtec Blvd.
Camden, New Jersey 08104

Dated: June 16, 2020

FOR HOLTEC PILGRIM, LLC



WILLIAM F. GILL IV
VICE-PRESIDENT AND CORPORATE COUNSEL
1 Holtec Blvd.
Camden, NJ 08104

EXHIBIT 1
Financial Assurance Calculation Methodology – Paragraph 3(b)

Column A Year	Column B Spent Fuel Loading Cost	Column C GTCC Loading Cost	Column D GTCC Disposal Cost	Column E ISFSI Decommissioning Costs	Column F Beginning of Year Balance	Column G Minimum End of Year Balance
2028						38,400
2029					38,400	38,400
2030	1,280				38,400	37,862
2031	1,280				37,862	37,314
2032	1,280				37,314	36,755
2033	1,280				36,755	36,184
2034	1,280				36,184	35,602
2035	1,280				35,602	35,009
2036	1,280				35,009	34,403
2037	1,280				34,403	33,786
2038	1,280				33,786	33,156
2039	1,280				33,156	32,513
2040	1,280				32,513	31,858
2041	1,280				31,858	31,190
2042	1,280				31,190	30,508
2043	1,280				30,508	29,812
2044	1,280				29,812	29,103
2045	1,280				29,103	28,380
2046	1,280				28,380	27,642
2047	1,280				27,642	26,889
2048	1,280				26,889	26,121
2049	1,280				26,121	25,338
2050	1,280				25,338	24,539
2051	1,280				24,539	23,724
2052	1,280				23,724	22,893
2053	1,280				22,893	22,045
2054	1,280				22,045	21,181
2055	1,280				21,181	20,299
2056	1,280				20,299	19,399
2057	1,280				19,399	18,481
2058	1,280				18,481	17,545
2059	1,280				17,545	16,591
2060	1,280	476	1,250	54	16,591	13,802
2061	1,280	476	1,250	134	13,802	10,875
2062	1,280	476	1,244	129	10,875	7,901
2063	0	0		1,624	7,901	6,402
Total	42,240	1,428	3,744	1,941		

Notes

- 1 The costs in Column B (Spent Fuel Loading Cost), Column C (GTCC Loading Cost), Column D (GTCC Disposal Cost), and Column E (ISFSI Decommissioning Cost) are taken from the latest Holtec 10 CFR 50.75(f)(1) filing.
- 2 All costs are in thousand constant year dollars consistent with the latest Holtec filings per 10 CFR 50.75(f)(1).
- 3 To calculate Column G (Minimum End of Year Balance) values, take Column F (Beginning of Year Balance), subtract the sum of Columns B, C, D, and E, and multiply the resulting value by 1.02 (to reflect 2 percent annual earnings). $G=(F-(B+C+D+E))*1.02$
- 4 Costs shown in this initial spreadsheet are in thousand 2019 dollars.
- 5 Starting with Partial Site Release, the costs in Columns B, C, D, and E are to be updated annually per the latest Holtec filings with the NRC and the minimum end of year balance (Column G for the appropriate year) modified to ensure a positive balance in column G for the year of license termination (initially assumed to be 2063 and highlighted in green).
- 6 For example, for 2028, all costs will be updated annually following the Holtec filing pursuant to 10 CFR 50.75(f)(1) to the amounts in the most recent Holtec filings with the NRC and the amount in cell G7 (highlighted in yellow) modified to ensure the value in cell G42 (highlighted in green) is greater than zero. This amount in cell G7 is the minimum balance for Phase 2 per the Agreement.
- 7 For this example spreadsheet, the values for GTCC Loading and GTCC Disposal are based on the 2020 Holtec 10 CFR 50.75(f)(1) filing as modified to reflect the currently planned number of GTCC canisters (2 instead of 5; e.g., the amount in cell D39 was calculated as follows: Holtec March 31, 2020 Amount (\$3,124) * 2/5 = \$1,250)).

EXHIBIT 2

LETTER OF AGREEMENT BETWEEN PILGRIM NUCLEAR POWER STATION (PNPS) AND THE COMMONWEALTH OF MASSACHUSETTS

I. PURPOSE

The purpose of this Letter of Agreement is to establish conditions regarding emergency planning notification and emergency response activities should an event at the plant require Emergency Plan activation, which include those events resulting from hostile actions. This LOA will take effect when all agreements and requirements for the maintenance and existence of an off-site Emergency Planning Zone are no longer in effect.

II. DEFINITIONS

Emergency Director—A member of the Pilgrim Emergency Response Organization (ERO) who is responsible for initiating emergency actions to limit the consequences of the incident and to bring the plant into a stable condition and planning recovery actions.

The Commonwealth of Massachusetts—state emergency management agency.

Licensee—Pilgrim Nuclear Power Station located in Plymouth, Massachusetts.

III. AGREEMENT

The Commonwealth and Licensee agree to the following:

Emergency Classification:

- A. The licensee will classify emergencies within 30 minutes of presented conditions

Initial Notification:

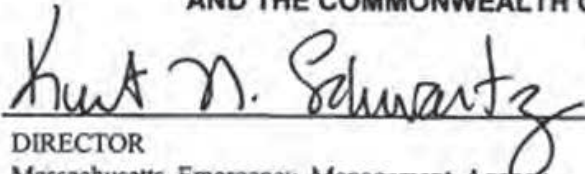
- A. It is the Licensee's duty and obligation to notify the Commonwealth as soon as possible but no later than 60 minutes after the event has been classified as either an Unusual Event or Alert. The initial notification shall be made, as specified in the Licensee and State plans. (More expedient notifications will be made for Initial Notification of selected security events as determined by the Licensee).
- B. The Licensee will notify the Commonwealth as soon as possible but no later than 60 minutes after an Unusual Event emergency condition has been observed but immediately terminated. Notification shall be made, as specified in the Licensee and State plans.
- C. The Licensee agrees to notify the Commonwealth as soon as possible but no later than 60 minutes after a decision has been reached by the Licensee on a

change in classification.

- D. The Commonwealth agrees that the Licensee may terminate an Unusual Event emergency without obtaining State concurrence. However, it is the Licensee's obligation to notify the Commonwealth when it terminates the Unusual Event.
- E. De-escalation from an Alert to the recovery phase or termination of the emergency will not be made without the concurrence of responsible State officials.
- F. The Commonwealth agrees to inform the Licensee of any protective actions it chooses to implement.
- G. The Licensee and Commonwealth agree to exchange and coordinate in the maintenance, updating, and exercise of both Licensee and State Emergency Plan and Emergency Procedure changes that pertain to those elements of interface prior to implementing the change. The Licensee and State will discuss and coordinate the effective date of these changes so as not to render either Emergency Plan ineffective or unworkable.
- H. The Licensee and the State agree to exchange in a timely manner all information known and available for emergency decision making, regarding plant conditions, plant radiological releases, off-site radiological impact and other plant technical data.
- I. The Pilgrim Emergency Director will be the point of contact for Commonwealth representatives. Responsibilities of the Commonwealth and Licensee personnel will be as outlined in their respective Emergency Plans.
- J. To maintain public confidence and to avoid public apprehension, information regarding an emergency declaration shall be released to the public as soon as possible and in a coordinated manner through the Commonwealth's Public Information Officer (PIO).
- K. Pilgrim Nuclear Power Station will use a dose assessment methodology acceptable to the Department of Public Health Radiation Control Program.
- L. In the event of a radiological emergency requiring offsite response or monitoring, the Licensee agrees to make an Environmental Laboratory (E- Lab) available to the Commonwealth as close as reasonably possible to the plant for radiochemical processing of all types of environmental media sampled.
- M. An Alert shall be deemed to have terminated when, in the agreement of both the Commonwealth and Licensee, there is no longer a need for either consideration of protective action or surveillance related to off-site protective action. Close out of the emergency classification shall be as outlined in respective Emergency Plans.

- N. The Licensee shall notify the Commonwealth as soon as possible but no later than 60 minutes of any plant event that does not constitute an emergency classification but is significant enough to have the Licensee notify the NRC or issue a news release. This includes issues involving Law Enforcement, EMS or Fire Department resources.
- O. This agreement may be amended by subsequent agreement between the Commonwealth and the Licensee.
- P. This agreement reflects the Licensee's current obligations to the Commonwealth under the current statutory, regulatory, and NRC license requirements with which the Licensee must comply ("Legal Requirements"), as well as the current NRC-approved PNPS Emergency Plan. In the event there is (1) a change to the Licensee's Legal Requirements; or (2) a revision to the PNPS Emergency Plan, the Commonwealth and Licensee agree to engage in good faith negotiations to amend or terminate this agreement, as appropriate, to reflect the changed Legal Requirements and/or revisions to the PNPS Emergency Plan. If the Commonwealth and Licensee are unable to negotiate a mutually-acceptable amended agreement, to the extent that the Licensee's obligations under this agreement exceed or differ from the changed Legal Requirements, the Commonwealth agrees that the Licensee is only obligated to comply with the applicable Legal Requirements.
- Q. This agreement shall be effective upon implementation of the Permanently Defueled Emergency Plan. This agreement shall remain in effect until and unless it is renegotiated or replaced in accordance with paragraph III P.
- R. It is agreed that the Memorandum of Understanding (MOU) Between Pilgrim Nuclear Power Station (PNPS) and the Commonwealth of Massachusetts Regarding the Alert and Notification System (ANS) will no longer be in effect when all agreements and requirements for the maintenance and existence of an off-site Emergency Planning Zone are no longer in effect.
- S. It is agreed that the Agreement for the Operation of a NOAA Weather Radio Transmitter by Pilgrim Nuclear Power Station, Plymouth, MA will no longer be in effect with the implementation of the Permanently Defueled Emergency Plan.

LETTER OF AGREEMENT BETWEEN
PILGRIM NUCLEAR POWER STATION (PNPS)
AND THE COMMONWEALTH OF MASSACHUSETTS



DIRECTOR
Massachusetts Emergency Management Agency
(MEMA)

1/17/19
DATE



PILGRIM NUCLEAR POWER STATION

02.12.19
DATE

ATTACHMENT #2

DOE Preliminary Evaluation of Removing
SNF from Nuclear Power Plant Sites –
Pilgrim Site Visit

**Preliminary Evaluation of Removing SNF from Nuclear Power Plant Sites – Pilgrim Site Visit –
20048**

Steven Maheras *, Erica Bickford **, L. Mel Massaro ***, Matt Feldman ****

* Pacific Northwest National Laboratory

** US DOE

*** Federal Railroad Administration - US DOT

**** Oak Ridge National Laboratory

ABSTRACT

The U.S. Department of Energy Office of Integrated Waste Management (DOE-IWM)^a conducted an evaluation of removing spent nuclear fuel (SNF) from the Pilgrim site on November 4-8, 2019. The Pilgrim site is located on the western shore of Cape Cod Bay in the Town of Plymouth, Massachusetts, about 61 km southeast of Boston and 71 km east of Providence, Rhode Island. Participants in the site visit included the U.S. Department of Energy, Oak Ridge National Laboratory, Pacific Northwest National Laboratory, the state of Massachusetts, the Federal Railroad Administration, the U.S. Coast Guard, the U.S. Army Corps of Engineers, the Mashpee Wampanoag Tribe, the Consolidated Group of Tribes and Organizations, the Council of State Governments–Eastern Regional Conference, the Pilgrim Nuclear Decommissioning Citizens Advisory Panel, and the Massachusetts Coastal Railroad.

The Pilgrim site was found to have two transportation mode options for the removal of SNF, offsite rail access and onsite barge access. Two offsite heavy haul truck to rail transload locations were evaluated, one in Middleborough, Massachusetts, about 35-47 km from the Pilgrim site, and a second location in Middleborough about 36-43 km from the Pilgrim site. A passenger railroad terminates in Plymouth, Massachusetts, about 11 km from the Pilgrim site; however, this location is not suitable for freight rail involving large SNF transportation casks. There is also an onsite barge facility located on the Pilgrim site that was used during construction and would require refurbishment to be used.

INTRODUCTION

The Pilgrim site is located on the western shore of Cape Cod Bay in the Town of Plymouth, Massachusetts, about 61 km southeast of Boston and 71 km east of Providence, Rhode Island. Pilgrim was a 2028 MW thermal/677 MW electric boiling water reactor originally licensed in 1972. Figure 1 provides an aerial view of the Pilgrim site. The current Pilgrim Independent Spent Fuel Storage Installation (ISFSI) is located at the northwestern edge of the Pilgrim site (Figure 2). At the ISFSI, 1156 fuel assemblies are stored in 17 HI-STORM dry storage systems (Docket No. 72-1014) in MPC-68 dry storage canisters. In addition to the SNF in dry storage, 2958 fuel assemblies are stored in the spent fuel pool and will be stored in 44 HI-STORM dry storage systems in MPC-68 dry storage canisters. A total of

^a This is a technical paper that does not take into account contractual limitations or obligations under the Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste (Standard Contract) (10 CFR Part 961). For example, under the provisions of the Standard Contract, spent nuclear fuel in multi-assembly canisters is not an acceptable waste form, absent a mutually agreed to contract amendment.

To the extent discussions or recommendations in this paper conflict with the provisions of the Standard Contract, the Standard Contract governs the obligations of the parties, and this paper in no manner supersedes, overrides, or amends the Standard Contract.

This paper reflects technical work which could support future decision making by the U.S. Department of Energy (DOE or Department). No inferences should be drawn from this report regarding future actions by DOE, which are limited both by the terms of the Standard Contract and a lack of Congressional appropriations for the Department to fulfill its obligations under the Nuclear Waste Policy Act including licensing and construction of a spent nuclear fuel repository.

61 MPC-68 canisters will eventually be stored at the Pilgrim site. The HI-STAR 100 transportation cask (Docket No. 71-9261) is certified to ship these canisters. A new ISFSI is currently being constructed at the Pilgrim site (see Figures 3 and 4). The current ISFSI is located 8 m (25.5 feet) above sea level; the new ISFSI will be located 23 m (75 feet) above sea level. All dry storage canisters will be moved to this new ISFSI in 2021.



Fig. 1 Aerial view of the Pilgrim site



Fig. 2 Current Pilgrim ISFSI



Fig. 3 Location of new Pilgrim ISFSI



Fig. 4 Construction of new Pilgrim ISFSI

PILGRIM SITE VISIT

The site visit to Pilgrim was conducted November 4-8, 2019. Participants in the site visit included the U.S. Department of Energy, Oak Ridge National Laboratory, Pacific Northwest National Laboratory, the Federal Railroad Administration, the U.S. Coast Guard, the U.S. Army Corps of Engineers, the Mashpee Wampanoag Tribe, the Consolidated Group of Tribes and Organizations, the Council of State Governments–Eastern Regional Conference, the Massachusetts Emergency Management Agency, the Massachusetts Department of Transportation, the Massachusetts Department of Marine Fisheries, the Massachusetts Department of Environmental Protection, the Massachusetts Office of Coastal Zone Management, the Massachusetts Bay Transportation Authority, the Pilgrim Nuclear Decommissioning Citizens Advisory Panel, and the Massachusetts Coastal Railroad. During the site visit, the site visit team met with the Chairman of the Plymouth Board of Selectmen and the Vice Chair of the Pilgrim Nuclear Decommissioning Citizens Advisory Panel, and visited the Mashpee Wampanoag Tribe.

Pilgrim does not currently have rail service. In the past, Pilgrim used a freight line that terminated in Plymouth, Massachusetts, about 11 km from the site, for moving heavy equipment such as transformers to the site. This rail line is now a passenger line and is not suitable for shipping large SNF transportation casks because the large SNF transportation casks will not clear the station platforms.

During the site visit, two offsite heavy haul truck to rail transload locations were evaluated, one in Middleborough, Massachusetts, about 35-47 km from the Pilgrim site (see Figures 5 and 6), and a second location in Middleborough about 36-43 km from the Pilgrim site (see Figures 7-10). Access to the first location is provided by Interstate-495; however, the closest exit contains a low overhead [4.2 m (13 feet 11 inches)] bridge (see Figure 11).



Fig. 5 Aerial view of first potential Middleborough, Massachusetts transload location



Fig. 6 First potential Middleborough, Massachusetts transload location (looking west)



Fig. 7 Aerial view of second potential Middleborough, Massachusetts transload location



Fig. 8 Second potential Middleborough, Massachusetts transload location at junction with the Massachusetts Railroad (looking southeast)



Fig. 9 Second potential Middleborough, Massachusetts transload location (looking south)



Fig. 10 Second potential Middleborough, Massachusetts transload location at end of spur (looking southeast)



Fig. 11 Low overhead bridge at first potential Middleborough, Massachusetts transload location (looking southeast)

Barge access to the Pilgrim site is at the north end of the site (see Figures 12 and 13). During construction, this location was used to receive the Pilgrim reactor pressure vessel. Refurbishment would be required to use this location for barge shipments of SNF.

Two sites south of the Cape Cod Canal were evaluated as a potential barge to heavy haul truck to rail transload location (see Figures 14-16). Use of these sites would require a short heavy haul and an additional transload from heavy truck to rail. The Cape Cod Canal Vertical Lift Railroad Bridge would be used to cross the Cape Cod Canal (see Figure 17).



Fig. 12 Aerial view of barge access at the Pilgrim site



Fig. 13 Barge access at the Pilgrim site



Fig. 14 Aerial view of potential barge to heavy haul truck to rail transload locations



Fig. 15 First potential barge to heavy haul truck to rail transload location



Fig. 16 Second potential barge to heavy haul truck to rail transload location



Fig. 17 Cape Cod Canal Vertical Lift Railroad Bridge

CONCLUSIONS

DOE-IWM conducted an evaluation of removing SNF from the Pilgrim site. This evaluation included a site visit that was conducted on November 4-8, 2019. Observations from the Pilgrim site evaluation include:

- One transportation cask model, the HI-STAR 100, will be required to remove the SNF from the Pilgrim site.
- Direct rail access to the Pilgrim site is not available. The use of rail as a transport mode for SNF would require heavy haul truck transport to a transload location. Two potential transload locations were evaluated, one in Middleborough, Massachusetts, about 35-47 km from the Pilgrim site, and a second location in Middleborough about 36-43 km from the Pilgrim site. A passenger railroad terminates in Plymouth, Massachusetts, about 11 km from the Pilgrim site; however, this location is not suitable for freight rail involving large SNF transportation casks because the transportation casks will not clear the station platforms.
- Onsite barge access to the Pilgrim site is available and was used during construction and would require refurbishment to be used.

ACKNOWLEDGEMENTS

Pacific Northwest National Laboratory is operated by Battelle Memorial Institute for the U.S. Department of Energy under Contract No. DE-AC05-76RL01830. This work was supported by the U.S. Department of Energy Office of Integrated Waste Management.