

# Pilgrim Nuclear Decommissioning Advisory Panel

May 23, 2023

Governor Maura Healey  
Massachusetts State House  
24 Beacon Street  
Boston, MA. 02133

Dear Governor Healey

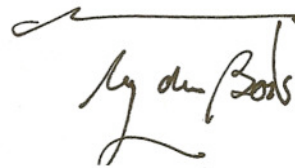
Attached, in accordance with Chapter 188, "An Act to Promote Energy Diversity", Section 1, Chapter 23M, Commercial Property Assessed Clean Energy", Section 14, (h)(i)(3) is the Nuclear Decommissioning Citizens Advisory Panel (NDCAP) Annual Report for a period of 12 months, from January 2022 to December 2022.

NDCAP appreciates your attention to this Report. Should you have any questions, concerns or special interest we should undertake as we continue, please do not hesitate to contact the NDCAP Chairman John Mahoney at 508-328-3631 or the Vice Chair, Pine duBois at 781-424-0353.

Regards,

A handwritten signature in dark ink, appearing to read "J. Mahoney", with a large, stylized initial "J" and a horizontal line extending to the right.

John T. Mahoney, Chair

A handwritten signature in dark ink, appearing to read "Pine duBois", with a horizontal line above the name and a stylized "P" and "B".

Pine duBois, Vice Chair

cc:

Michael J. Barret, Senate, Chair Joint Committee on Telecommunications & Energy  
Jeffery N. Roy, House, Chair Joint Committee on Telecommunications & Energy

Attachment – 2022 NDCAP Annual Report

2022 NDCAP Annual Report  
(22 pages)

# **2022 Annual Report**

## **Pilgrim Nuclear Decommissioning Citizens Advisory Panel**



Submitted to:  
Governor Maura Healey  
Joint Committee on Telecommunications, Utilities and Energy  
May 22, 2023

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## **I. INTRODUCTION**

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Pilgrim Nuclear Power Station (“PNPS” or “Pilgrim”) stopped generating electricity on May 31, 2019. In August of 2019, Pilgrim was purchased by Holtec International. Holtec-Pilgrim, LLC, a wholly owned subsidiary of Holtec International, owns PNPS and Pilgrim’s Decommissioning Trust Fund. The Holtec entity responsible for decommissioning PNPS is Holtec Decommissioning International (HDI), LLC, another wholly owned subsidiary.<sup>1</sup>

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], with a written report being provided annually to the governor and to the energy committees of the General Court”. This Report is intended to fulfill this directive, reporting on matters before NDCAP in 2022.

NDCAP held six meetings during 2022. Video recordings, meeting minutes and presentations are posted on the NDCAP website, which is managed by the Commonwealth through EEA. <https://www.mass.gov/orgs/nuclear-decommissioning-citizens-advisory-panel>

Generally, the Panel was concerned with a number of topics, including spent fuel management; water and waste management, reviewing the historical site assessment and the site assessment work plan; the demolition of building structures; sufficiency of the decommissioning trust fund; NRC Regulatory Exemptions and the results of NRC inspections at the plant, as well as the role of EPA, especially relative to any discharge of water used to contain radioactivity in the spent fuel pool, and then subsequent dismantlement of the reactor internals, which is on-going.

The issues of significant interest to the Panel and the public include:(i) the proposed discharge of that approximately 1.1 million gallons of chemically and radioactively contaminated water from Pilgrim Station, (ii) ensuring that the Pilgrim site is properly cleaned and remediated, (iii) safe storage of spent nuclear fuel on the Pilgrim site, and (iv) the sufficiency of the Decommissioning Trust Fund (DTF) including the process of accounting for monies contained therein during various phases of decommissioning, and how the costs of repair and long-term storage of the dry casks of spent nuclear fuel could impact the fund.

## **II. Decommissioning in General-Settlement Agreement**

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The Nuclear Regulatory Commission (NRC) regulates decommissioning.

In June 2020 the Commonwealth and Holtec Decommissioning International signed a Settlement Agreement outlining specific requirements, goals, expectations, deadlines, and processes to achieve acceptable decommissioning in preparation for reuse of the Pilgrim

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<sup>1</sup> This report generally uses “Holtec” to refer to Holtec-Pilgrim and HDI. Where the difference between the parent company and subsidiaries is important, it refers to the parent as Holtec International.

site. The US EPA also has specific regulatory oversight discussed in the Agreement. Public Health and Department of Environmental Protection, and US Environmental Protection Agency have specific regulatory roles in decommissioning Pilgrim.

The NRC defines decommissioning as “safely removing a facility or site from service and reducing residual radioactivity to a level that permits either of the following actions:

- Release the property for unrestricted use and terminate the license.
- Release the property under restricted conditions and terminate the license”.<sup>2</sup>

Major steps that make up this decommissioning process are permanent cessation of operations, removal of fuel from the reactor core, submittal, and implementation of the post-shutdown decommissioning activities report (PSDAR), submittal of the license termination plan (LTP), implementation of the LTP, and completion of decommissioning<sup>3</sup>. Pilgrim's decommissioning process began when the reactor permanently ceased operations and its NRC Operating License was terminated, following removal of the all the fuel from the reactor in 2019.

The NRC's “Decommissioning program activities include ... (3) reviewing and approving decommissioning plans (DPs) and license termination plans (LTPs); (4) reviewing and approving license amendment requests for decommissioning facilities; (5) inspecting licensed and non-licensed facilities undergoing decommissioning; (6) developing environmental assessments (EAs) and environmental impact statements (EISs) to support the NRC's reviews of decommissioning activities; (7) reviewing and approving final site status survey reports; and (8) conducting confirmatory surveys.”<sup>4</sup>

Consistent with the NRC definition of decommissioning, “restoration costs to prepare the site for its next use after license termination is complete” are not decommissioning activities. Decommissioning activities also do not include the removal, storage, management, and disposal of spent fuel, or the removal and disposal of nonradioactive structures and materials beyond that necessary to terminate the NRC license.

Disposal of nonradioactive hazardous waste is not necessary for NRC license termination and is not covered by NRC regulations, but is regulated by DEP.

The Settlement Agreement between the Commonwealth and Holtec Pilgrim and HDI deals with any area of the Pilgrim site in which there is any radiological or non-radiological oil or hazardous material. Its major sections include Financial Assurance Requirements (Sec. II), Site Restoration and Environmental Requirements and Reporting (Sec. III), and Payments, Radiation Monitoring, ISFSI, and Waste Transportation (Sec. IV).

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<sup>2</sup> <https://www.nrc.gov/waste/decommissioning.html>;

<sup>3</sup> <https://www.nrc.gov/waste/decommissioning/process.html>

<sup>4</sup> <https://www.nrc.gov/waste/decommissioning.html#how>

- The site restoration requirements of Sec. III require Holtec to, among other things:
- i. Submit an Initial Environmental Site Assessment work plan that includes, at minimum, twelve specified plans and schedules for dealing with both radiological and non-radiological contamination;
  - ii. Comply with “MGH ch 21E and the MCP as applicable” and with “all applicable environmental and human-health based standards of the Commonwealth”; and
  - iii. Demonstrate “compliance, or progress toward compliance, with the Massachusetts radiological standard for unrestricted use of <10 millirem per year for all pathways”.

Holtec has submitted three proposed Environmental Site Assessment work plans to the Commonwealth – an Initial Environmental Site Assessment submitted on 14 October 2020, an Amended Environmental Site Assessment submitted 28 May 2021, and a Revised Environmental Site Assessment submitted 25 February 2022. The Commonwealth rejected the first two; the third is still under review.

Section IV (Payments) requires Holtec to make payments, reducing over time, to DPH and MEMA.

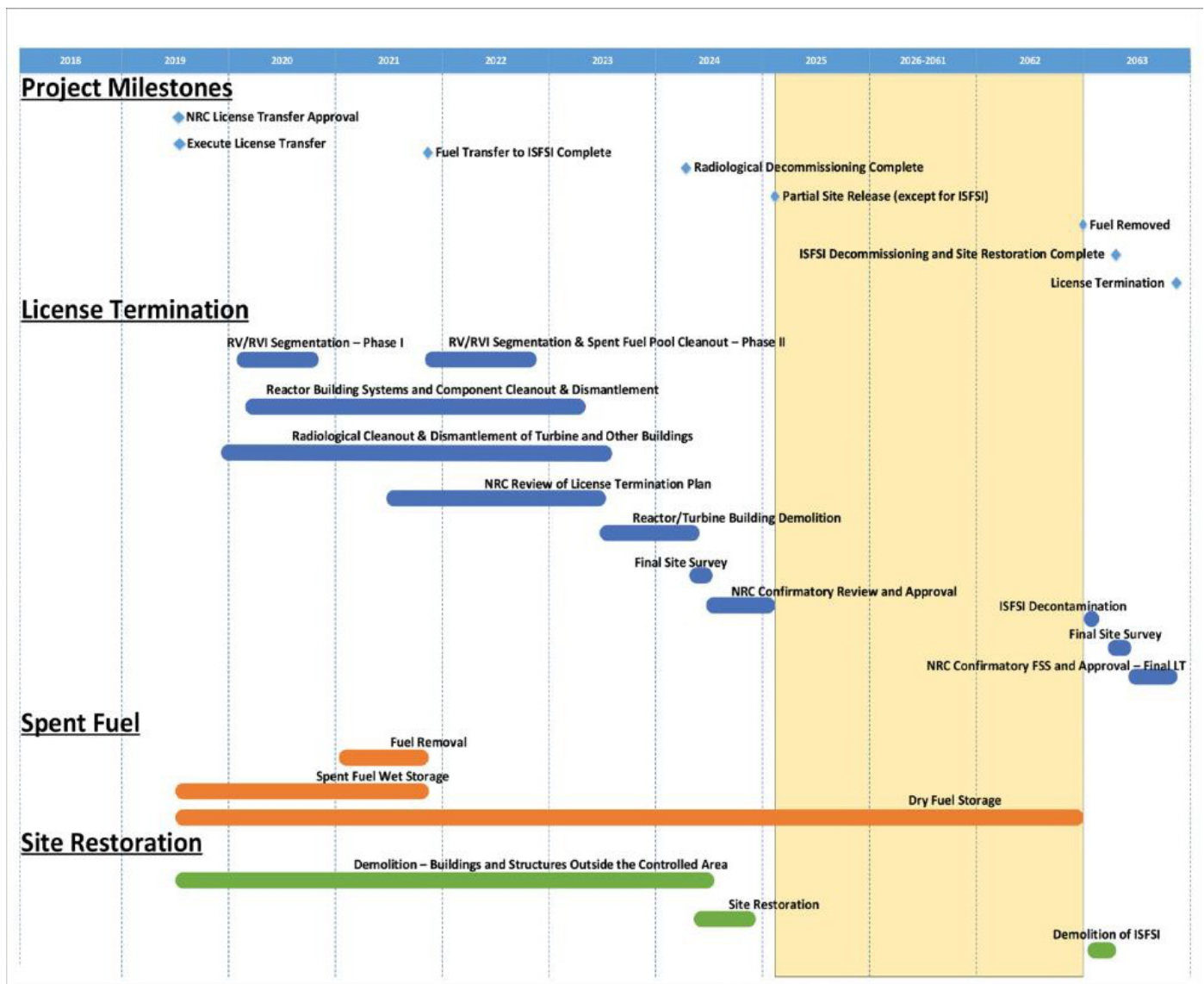


### III. Site Progress - AS REPORTED BY HOLTEC

The two schedules below were prepared by Holtec.

The first is the PNPS Decommissioning Schedule that was part of Holtec's PSDAR, filed with the NRC on November 16, 2018. A PSDAR should include a description and schedule for the planned decommissioning activities; an estimate of the expected costs; and a discussion showing that the environmental impacts associated with the decommissioning activities will be bounded by appropriate, previously issued environmental impact statements (EISs).

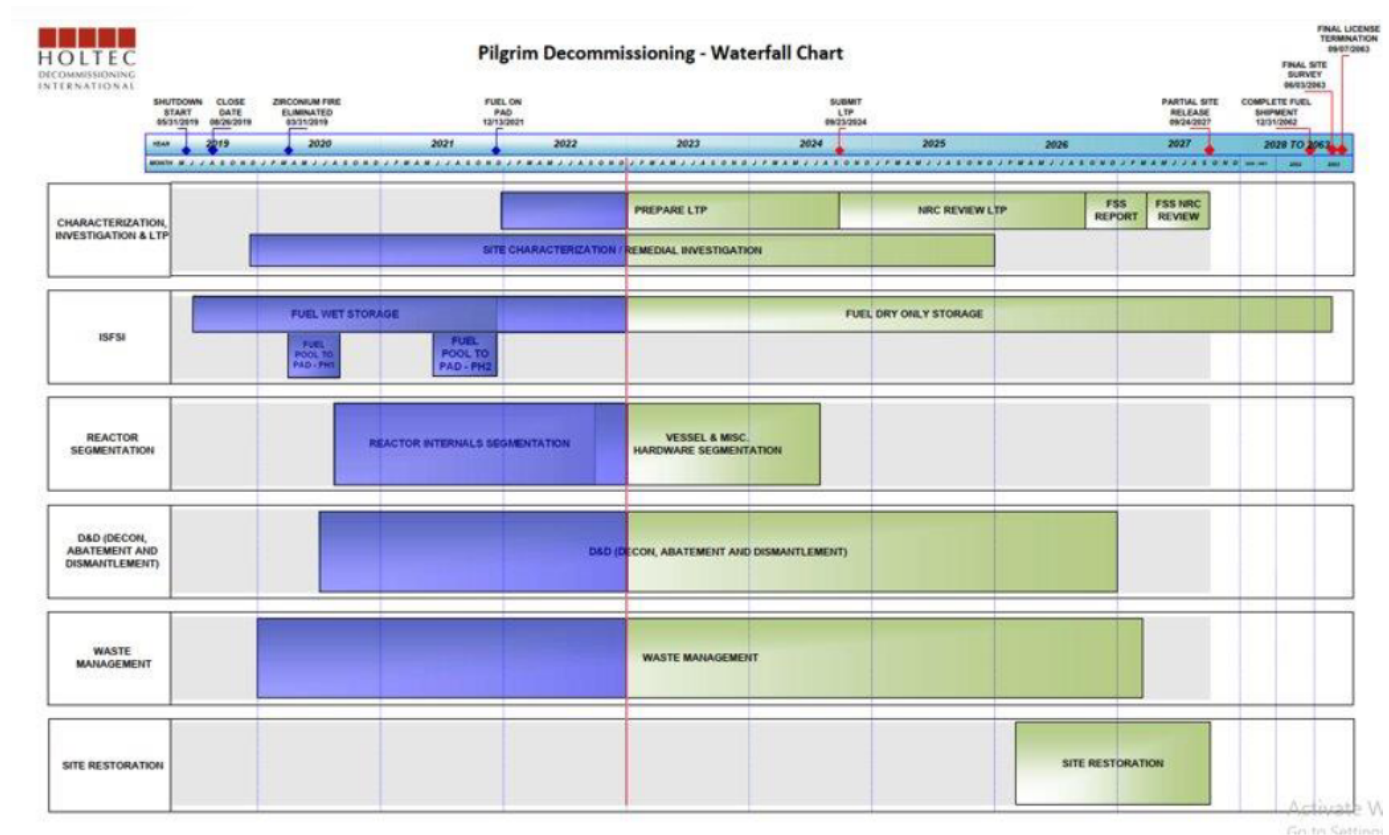
The 2018 PSDAR schedule below shows the then-planned project timeline. It presents the general project schedule and milestones for decommissioning, including spent fuel storage and release of Pilgrim's site.





According to the 2018 PSDAR plan, radiological decommissioning, site restoration and release of the site (other than the ISFSI) were to be accomplished by 2024. All spent fuel was scheduled to be removed from the site by the end of 2062.

The second depicts actual progress made to date and progress made in each of eight categories, and projects when the work in that category is planned to be completed. Holtec regularly updated the Waterfall Chart in its presentations to NDCAP.

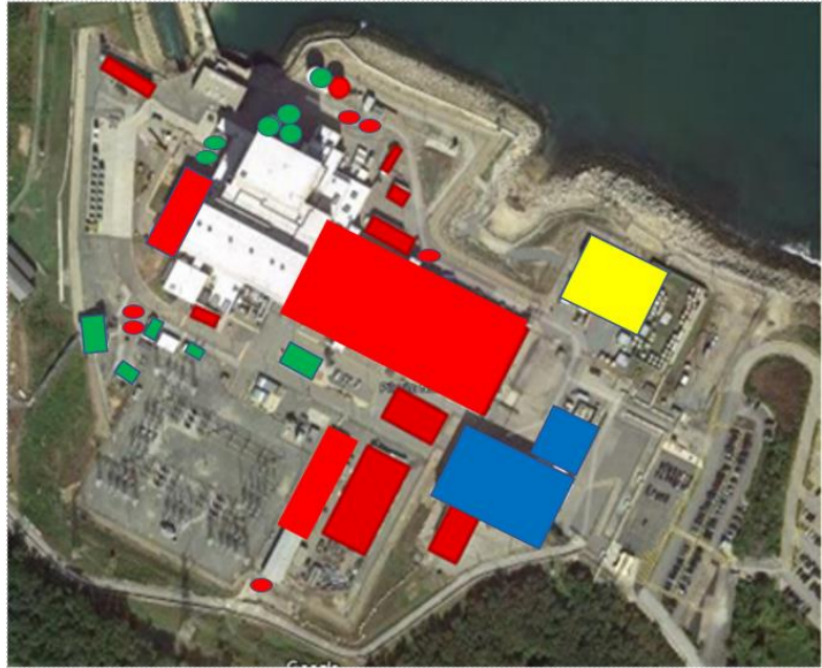


The projected dates for removal of all spent fuel from the site (the end of 2062), and demolition of the ISFSI and final license termination (2063), remain the same as of the end of 2022.

Major demolition activities at Pilgrim during 2022 included removal of six of eight underground storage tanks (USTs), and demolition of the Fitness for Duty Building, Two-Story Butler Building, Operations and Maintenance Building along with the onsite Warehouse, and Administrative Executive Building.

The two remaining USTs are slated for removal during 2023.

- More than 70% of outbuilding square footage has been demolished (Red)
- Active demolition activity (Yellow)
- 2023 Demo upcoming (Green)



Reactor segmentation is slated for completion by the 2<sup>nd</sup> quarter of 2023, segmentation of other components is slated for completion by the middle of 2024 and any additional decontamination, abatement, and demolition by mid-2027.

During 2022, Pilgrim shipped (by truck and rail) about 76,000 cubic feet (ft<sup>3</sup>) low level radioactive waste to WCS in Texas. Holtec reports that demolished materials that are not contaminated are recycled to the greatest extent possible.

The presentations that Holtec made to NDCAP meetings during 2022, and the NDCAP meeting minutes discussing them, are on the NDCAP website.

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

## **IV. HOLTEC 2022 DECOMMISSIONING TRUST FUND REPORT**

NRC regulations require Holtec to file an annual financial status assurance report. 10 CFR 50.82(8)(v). Holtec filed its report showing the status of Pilgrim's decommissioning trust fund as of December 31, 2021, on March 25, 2022. The updated report for 2022 is due by March 31, 2023.<sup>5</sup>

According to the 2021 report, the decommissioning trust fund balance on 12/31/2021 was \$825 million and estimated future decommissioning expenses (in 2021 dollars) were \$661 million - \$292 million for license termination, \$342 for spent fuel management, and \$28 million for site restoration. The detailed site-specific Independent Spent Fuel Storage Installation (ISFSI) decommissioning cost estimate was \$4.4 million (again in 2021 dollars).

Consistent with Holtec's 2018 PSDAR, no funds were projected for spent fuel management after 2063. One difference between the PSDAR and the 2021 report is that the former estimated \$40 million for site restoration, while the latter estimated only \$28 million. The 2021 report says that \$5 million has already been spent on site restoration. According to the 2022 report, \$12 million has already been spent on site restoration, and the remaining future cost will be \$20 million.

In papers filed with the NRC, Pilgrim Watch pointed out that Holtec's estimates assume (i) that there will be no inflationary increase in future costs, (ii) that DOE will remove all spent fuel from the Pilgrim site by the end of 2062 and (iii) that no cask/cannister repairs would be required before then. At some other reactors, site restoration after decommissioning has cost hundreds of millions of additional dollars.

## **V. Interagency Working Group (IWG)**

The Interagency Working Group was formed by Governor Baker in 2018, in response to a request by NDCAP. Its purpose was to get relevant state agencies more involved in Pilgrim's decommissioning.

Since then, the IWG has led and coordinated state agency involvement in matters pertaining to the plant's decommissioning, including radiological and environmental standards, emergency preparedness and funding, and site restoration. It meets regularly, including meetings and discussions with Holtec.

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<sup>5</sup> These numbers will be updated in the 2023 Holtec Annual Decommissioning Report to the NRC. [Holtec's Annual- Decommissioning-Fund-Report-To-The-NRC](#)

The fifteen executive agencies that are members of the IWG are:

- Governor
- Executive Office of Energy and Environmental Affairs
- Office of Massachusetts Environmental Protection Act
- Office of Coastal Zone Management
- Department of Environmental Protection
- Department of Fish and Game
- Division of Marine Fisheries (under DFG)
- Department of Fisheries and Wildlife (under DFG)
- Executive Office of Health and Human Services
- Department of Public Health
- Executive Office of Public Safety and Security
- Massachusetts Emergency Management Agency
- Executive Office of Labor and Workforce Development
- Executive Office of Housing and Economic Development
- Office of Consumer Affairs and Business Regulation

In 2022, two NDCAP members, Seth Pickering of DEP, and Jack Priest of DPH, as members of the IWG, provide updates at NDCAP meetings regarding the IWG engagement at Pilgrim. The substance of their reports can be found in the meeting minutes on the NDCAP website. <https://www.mass.gov/orgs/nuclear-decommissioning-citizens-advisory-panel>.

The Settlement Agreement required Holtec to submit an Initial Environmental Site Assessment Work Plan within 180 days of the effective date of the settlement agreement, i.e., by mid-December of 2020. Holtec hired ERM to prepare the plan.

One of the IWG's major projects has been to review the Environmental Site Assessment and Works Plans that Holtec has submitted. The Commonwealth rejected the first two plans. The most recent, Revised Environmental Site Assessment, was submitted February 25, 2022 and is still being reviewed. The purpose of the Site Assessment is to detail the issues of contamination at the site, including legacy issues, so that complete site clean-up and remediation will occur, and the goals of all regulations are met.

## **VI. Issues Relating to Pilgrim's Decommissioning**

The legislation establishing the Nuclear Decommissioning Citizens Advisory Panel (NDCAP) requires NDCAP 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], with a written report being provided annually to the governor and to the energy committees of the General Court".

The Panel recognizes that there are differences of opinion among its members about the relative importance of these issues, and potential ways to resolve them.

#### A. Pilgrim's radioactively and chemically contaminated water

As part of decommissioning, Pilgrim must dispose of about 1.1 million gallons of plant water containing radiological and non-radiological contaminants remaining from activities involving spent fuel management, and decommissioning activities at Pilgrim Nuclear Power Station accumulated during its December 1972 through May 2019 operating life, and throughout dismantlement in 2022.

Based on analysis provided to the Panel, the untreated plant water containing radiological and non-radiological contaminants contains tritium at levels below both Nuclear Regulatory Commission (NRC) and Environmental Protection Agency (EPA) limits. The untreated plant water containing radiological and non-radiological contaminants was also analyzed for EPA priority pollutants in accordance with applicable EPA standards. The results indicated that Nickel, Zinc, Copper, and Lead were above these standards, however all other metals, inorganics, Polychlorinated biphenyls (PCBs), pesticides Semi-volatile Organic Compounds (SVOCs), Volatile Organic Compounds (VOCs), or dioxin furans on the priority pollutant list were not detected. It should be noted that the boron concentration of the plant water containing radiological and non-radiological contaminants was below the EPA Quality Criteria for Water in 1986 (4,500 µg/L). Boron is naturally present in seawater and has been permitted to be discharged through the permitted outfall point at 1,000 µg/L above measured ambient. The current levels of Tritium in the untreated plant water containing radiological and non-radiological contaminants are Spent Fuel Pool – 20.4 µg/L, Dryer Separator Pit (DSP)/Reactor – 22.7 µg/L, and Torus – 186 µg/L. Currently, the 2020 Pilgrim NPDES permit specifically prevents this discharge. For this reason, modification of the permit is necessary if discharge to the bay is to occur. It is important to note that this plant water containing radiological and non-radiological contaminants would be filtered and treated prior to removal from the facility. Holtec agreed to submit a request for an amended NPDES permit.

During the September NDCAP meeting, a presentation was given by Dr. James Conca on the science of tritium including both biological and environmental studies to address the possibility of releasing tritiated water into Cape Cod Bay. Dr. Conca confirmed that tritium would not be removed when the water was processed for final disposition. [Tritium Presentation link.](#)

Holtec has presented five options: discharge of the water into Cape Cod Bay; evaporation of the water from the site; shipment of the water to an off-site low level waste storage facility; storage the water on-site at Pilgrim (in the torus) or discharging the plant water containing radiological and non-radiological contaminants into Cape Cod Bay.

The NRC says "HDI may elect to use any of the methods allowed under the NRC's regulations, which allow discharge, shipment for disposal, or evaporation of the liquid and

disposal of the resulting solid waste”. <https://www.nrc.gov/info-finder/reactors/pilg/faq-discharge.html#what>.

In July of 2022, Holtec told NDCAP that it “would not pursue discharge of water in violation of any state or federal requirement”.

In a November 17, 2022, letter to Senator Markey<sup>6</sup>, the president of HDI stated, “We expect that all methods of water treatment will be utilized including treated water release, evaporation, transport for final disposition at an approved offsite facility, or onsite storage”.

NDCAP has not taken a position with respect to a preferred method of disposal.

## 1. Discharge into Cape Cod Bay

In the Settlement Agreement with the Commonwealth, HDI and Holtec-Pilgrim agreed to “comply with Chapter 21E and the MCP as applicable” (par. 10(e)(1), and also to “comply with all applicable environmental and human-health based standards and regulations of the Commonwealth”. Par. 19(l).

Massachusetts laws prohibit the unpermitted discharge of commercial or industrial waste, hazardous materials or wastewater, or damage to the environment. MGL ch 21 §§26-53; ch 21E; 214§ 7A; ch 131A; and ch 132A §§ 12A-16K. Cape Cod Bay is an “Ocean Sanctuary” and also protected by the Massachusetts and National Estuary Programs established under Section 320 of the U.S Clean Water Act.

Over the entire operating life of Pilgrim, until shutdown in 2019, Pilgrim had a permit to withdraw and discharge 480 million gallons every day, from and discharge it back to Cape Cod Bay. This water was used to cool the turbine and the reactor in order to keep the facility safely operating. The discharge water was at least 30 degrees warmer than the intake water, and also contained radioactive and chemical contaminants. The remaining plant water containing radiological and non-radiological contaminants is apparently not more contaminated or damaging than the near 50-year practice for once-through cooling.

Many elected officials and members of the public oppose discharging Pilgrim’s water into Cape Cod Bay for fear it will impact the environmental health of the Bay and perception of the quality of the seafood harvested from the Bay. Twenty towns on Cape Cod and Martha’s Vineyard have voted, by large majorities, in opposition to Holtec’s plan to discharge. The Select Boards, Boards of Health, and/or citizens of north of the Cape Cod Canal have also objected to Holtec’s plan. Some members of the public and some

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<sup>6</sup> In May 2022, Senator Markey, in his capacity as chair of the Congressional subcommittee on Clean Air, Climate and Nuclear Safety, held a public hearing in Plymouth on the proposed release of water from the plant to Cape Cod Bay



members of the panel asserted that the proposed discharge of wastewater would be illegal.

Senator Markey, Senator Warren and Congressman Keating, or their representatives, appeared before NDCAP several times, as did State Senator Moran and several State Representatives. They made statement to oppose discharging any of the water into Cape Cod Bay. They made clear their concerns regarding the possible impact to the local economy, and the shell-fishing & fishing industries, as well as the potential impact to public health and safety.

Comments and questions from members of the public included concerns about the potential discharge of the plant water containing radiological and non-radiological contaminants to Cape Cod Bay; members of the public oppose any discharge of tritiated water into the Bay, which they fear will unduly harm the quality, health, and integrity of the Bay's natural resources. The public as well as Commonwealth legislators were active in raising concerns regarding potential impact to the local economy, shell-fishing & fishing industries as well as their concern for impact to public health and safety. Members of the public have organized rallies against any further discharge of radioactive materials into Cape Cod Bay. Concerns were raised that there would be an adverse impact to economic growth of the area, impacts to the fishing & tourist industries in the area, due to perceived pollution, and impacts to public health and safety.

The EPA has repeatedly said, and DEP agrees, that discharge into Cape Cod Bay is not authorized under Pilgrim's 2020 NPDES permit. See Pilgrim's Discharge Permits, pg. 27 of 36.<sup>7</sup> To clarify, water from the "Spent Fuel Pool" is "Unauthorized" in the permit, and if Holtec intends or needs to discharge that water then Holtec must apply for an Amended Permit. In other words, EPA is not prohibiting that discharge, but it has not reviewed information in order to authorize the discharge or prohibit the discharge. Pilgrim's present permits do not authorize the discharge, Holtec may apply for a modification, which may or may not be granted, that would authorize a discharge.

Holtec's reasons for wanting to discharge the water into Cape Cod Bay include that discharge is relatively inexpensive and avoids decommissioning delay, and that after treatment the discharged water will contain very few chemical contaminants. Holtec has indicated that the discharged water will contain tritium that cannot be filtered.<sup>8</sup> The tested levels of tritium are below both the EPA and NRC regulatory limits.

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<sup>7</sup> <https://www.epa.gov/npdes-permits/pilgrim-nuclear-power-station>

<sup>8</sup> Like normal hydrogen, tritium can bond with oxygen to form water. When this happens, the resulting "tritiated" water is radioactive. Tritiated water (not to be confused with heavy water) is chemically identical to normal water and the tritium cannot be filtered out of the water. NRC [Backgrounder On Tritium, Radiation Protection Limits, And Drinking Water Standards | NRC.gov](#)



## James Lampert Presentation

With respect to other contaminants, Holtec's 2019 Environmental Report to the NRC said: "Of all wastes processed through liquid radwaste treatment, 90 to 95 percent of all wastes are purified and the processed liquid is re-used in plant systems" ([Pilgrim Nuclear Power Station, Annual Radiological Environmental Operating Report for 2019 \(nrc.gov\)](#), pg. 16)

### 2. Shipping the water offsite

Some members of the public have expressed a preference for transporting the water offsite without regard to cost of methods of transport, or carbon emissions contributing to further climate catastrophe.

During decommissioning, Pilgrim has shipped most, its solid low level radioactive waste to Waste Control Specialists (WCS) in Andrews County Texas. Pilgrim's plant water containing radiological and non-radiological contaminants could potentially also be shipped to WCS.

Shipping the contaminated water to an existing off-site low level waste storage facility such as WCS is an option requested by some vocal members of the public. It was noted that Vermont Yankee shipped<sup>9</sup> industrial water offsite from its facility to avoid discharging it into the Connecticut River. NDCAP has not taken a position on whether to recommend shipping the water off-site.

### 3. Evaporation

In a January 22, 2022 letter and accompanying fact sheet to stakeholders, elected officials, advocacy groups and community members, HDI's president said Pilgrim had evaporated water in the past using residual heat as part of normal operations<sup>10</sup>, but that the "residual heat" and "air handling systems" that Pilgrim previously used for evaporation have been decommissioned and are no longer there: "With residual heat not available, evaporation would require an alternate heat source, and the use of carbon creating fossil fuels" (Fact Sheet, p. 3). Pilgrim "would need to use electricity in great quantities to generate such heat and might also need to use the diesel fuel/diesel generator to help create the power". (Letter, p. 2).

DPH's member of NDCAP said that he opposes evaporation because it has higher risks of spreading contamination on and offsite. The public does not actively support this option due to concerns associated with the release of tritium to the atmosphere.

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<sup>9</sup> It was also noted that VY used the on-site railroad for shipment of 2 million gallons for disposal in Idaho.

<sup>10</sup> <https://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/pilg.html>

NDCAP has not taken a position on whether to recommend evaporation.

#### 4. Storage onsite

This option resulted from a U.S. Senate subcommittee hearing in May of 2022, and subsequent correspondence between Holtec's CEO, Dr. Singh, and Senator Markey.

In a May 6, 2022, letter to Senator Markey, Dr. Singh agreed that Holtec "will voluntarily refrain from releasing plant water containing radiological and non-radiological contaminants to the bay even if lawfully permitted by the Authorities (EPA and NRC) until the processed water discharge is confirmed by your expert's determination to contain radiological levels low enough to ensure that the local marine life remains protected".

In a June 6, 2022, letter, Dr. Singh said:

"We are also voluntarily refraining from discharge until we can confer with your appointed expert and determine that the discharge would contain radiological levels low enough to ensure that there is no adverse environmental impact. We have also agreed to hold the water inside the plant as long as necessary, even if it means delaying the completion of the decommissioning program (which is likely)".

Senator Markey's representatives have told the panel that discussions between the Senator's office and Holtec about selection of an expert and the procedure that will be followed are continuing.

NDCAP has not taken a position on whether to recommend on-site storage.

#### 5. Discharge Permits

Pilgrim's 2020 discharge (NPDES) permit is issued jointly by EPA and Massachusetts Department of Environmental Protection.

Paragraph B of the permit says that neither (i) "discharge of pollutants in spent fuel pool water (including, but not limited to, boron)" nor (ii) "discharges of pollutants ... associated with ... physical alterations or additions resulting in the discharge of pollutants associated with the dismantlement and decontamination of plant systems and structures and/or the demolition of buildings" is "authorized by this permit".

EPA and DEP have formally confirmed that the current NPDES permit does not authorize Pilgrim's proposed discharges, and Holtec must apply for a modification to the permit in order to discharge the plant water containing radiological and non-radiological contaminants.

In a letter dated December 5, 2022, the EPA Compliance and Enforcement Assurance Division wrote HDI's President:

EPA, Region 1 has already provided Holtec with written notice that “discharges of pollutants in water stored in the spent fuel pool, dryer/separator pit, torus, or reactor cavity are not authorized under the current NPDES permit”. Such unauthorized discharges would be a violation of the Act and could subject the Company and its agents to the full array of enforcement authority that Congress has granted to EPA in Section 309 of the Act, 33 U.S.C. § 1319.

Holtec representatives indicated in the November 2022 meeting that the company intends to submit the necessary paperwork to seek a modification to the permit to allow for discharge of the water.

## B. Storage of Pilgrim’s Spent Nuclear Fuel

All 4,144 spent fuel assemblies used at Pilgrim since it started generating electricity in 1972 are now stored in sixty-two (62) Holtec Hi-Storm 100, Version B, MPC-68 casks in Pilgrim’s on-site ISFSI on the hillside near the reactor building on Rocky Hill Road.

Two important questions are how long the casks will remain safe, and how long they will remain at the Pilgrim ISFSI. Holtec’s PSDAR timeline, and November 2022 update targets 2062 as the termination date for the ISFSI.

The NRC’s Continued Storage Final Rule<sup>11</sup> and Generic Environmental Impact Statement say that the spent fuel assemblies may be safely kept in dry casks onsite for 300 years or more, assuming that the dry cask pad and casks are changed every 100 years.

NDCAP has taken no position and has made no recommendations relating to long-term on-site storage of Pilgrim’s spent nuclear fuel. This is a substantial and critical issue, as the plan to permanently store spent nuclear fuel at Yucca Mountain is effectively dead. In 2022, the Department of Energy embarked on another effort for Consent Based Siting of Spent Nuclear Fuel.

No federally licensed interim spent fuel storage location exists today.

The NRC has licensed a proposed consolidated interim storage facility (CISF) at the existing WCS disposal site in Andrews County Texas<sup>12</sup>.

When this or another site might be constructed and be licensed to accept Pilgrim’s spent fuel is not known. The future of proposed sites depends on many things, including when Congress might take action to change existing law, as well as public opposition and litigation.

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<sup>11</sup> <https://www.nrc.gov/waste/spent-fuel-storage/wcd.html>

see also: <https://www.nrc.gov/waste/spent-fuel-storage/regs-guides-comm.html>

GEIS Abstract: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2157/v1/index.html>

<sup>12</sup> <https://www.nrc.gov/waste/spent-fuel-storage/cis.html>

NDCAP has not taken a position on whether to recommend consolidated interim storage, or any other option to address the stockpile of nuclear waste.

### c. Site Clean-Up

It is important to the public, and to any future development of the property, that the Pilgrim Site is properly cleaned-up and remediated. The Pilgrim site is unlikely to be restored to its pre-nuclear-power-plant condition. The ISFISI will remain for an undetermined period, the jetties and some intake structures are likely to remain as outlined in the Settlement Agreement, the alterations of the landscape for the barge area, discharge canal and transmission infrastructure are likely to remain for an undetermined period. This has yet to be fully discussed at NDCAP meetings. The clean-up and decommissioning goal however is to ensure that the site will meet the Massachusetts residual radiation standard. In addition, decommissioning is monitored to minimize the release of radiological and hazardous materials and to ensure that residual radiation above NRC and EPA standards will not eventually migrate into Cape Cod Bay or into the Plymouth-Carver Aquifer beneath the site.

The Settlement Agreement<sup>13</sup> defines “Site” or “Pilgrim Site” as “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, or placed, or otherwise come to be located”.

The Settlement Agreement requires Holtec to “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”)” Par 10(d).

The Settlement Agreement also requires that the site meet the most conservative cleanup standard- the Resident Farmers Standard, someone who lives on the land and eats produce grown on the site; and that cleanup of buildings follow the basement inventory model.

When Holtec prepared its PSDAR site restoration cost estimates, it did not know what radiological and hazardous waste already existed on Pilgrim’s site. (Holtec PSDAR<sup>14</sup> 8-11; DCE pg., 14). Holtec said there is “no significant contamination” on the Pilgrim site. (Decommissioning Cost Estimate, p. 22)

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<sup>13</sup> <https://holtecinternational.com/wp-content/uploads/2021/02/Settlement-Agreement-Commonwealth-of-MA-and-Holtec.pdf>

<sup>14</sup> <https://www.nrc.gov/docs/ML1832/ML18320A034.pdf>

Holtec's PSDAR said that site restoration would include only "conventional dismantling, demolition, and removal from the site of structures and systems" (PSDAR, p 19). Holtec estimated that the site restoration costs would be about \$40 million; its most recent financial filing reduced the total estimated site restoration costs to about \$28 million, see Holtec 2022 Decommissioning Trust Fund Report,<sup>15</sup> pg. Enclosure 2, first page, B.)

The roughly 1700-acre Pilgrim property owned by Holtec has two parts – about 140 ac. on the Bay side of Rocky Hill Road on which PNPS (including the ISFSI) are located, and a larger part (largely undeveloped) on the other side of the road.

To determine how much of the Pilgrim site would be investigated to define the extent of actual radiological and other contamination, Holtec hired Environmental Resources Management (ERM).

According to ERM's Initial Environmental Site Assessment Plan, site characterization would "focus on, the approximately 140-acre industrial portion of the licensed property north of Rock Hill Road", and "an assumed original construction disposal area south of Rocky Hill Road and west of Power House Road." This road connects Route 3A to Rocky Hill Road along the Transmission line, where past unpermitted dumping is said to have occurred. This is now in the Site Assessment.

Some have expressed concerns that this characterization was too limited. DEP, as noted in the IWG Report, above, required revisions. The second revision was provided to DEP in February 2022, and has not yet been approved.

#### D. The Decommissioning Trust Fund

The sufficiency of the Decommissioning Trust Fund (DTF) and the process of accounting for monies contained therein during various phases of decommissioning, and how the costs of storing the dry casks of spent nuclear fuel could impact the fund, was also of significant interest to NDCAP.

Assuming there will be no significant increase in what the NRC and Holtec call license termination costs or the costs of site restoration, the DTF 12/31/2021 balance appears to be sufficient to cover those costs, even if reasonable inflation is considered.<sup>16</sup> It is less clear that the DTF will be large enough to pay all spent fuel management and site restoration costs.

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<sup>15</sup> <https://www.nrc.gov/docs/ML2208/ML22084A059.pdf>

NRC Staff has said that the NRC has “the ability to take action on any actual or potential funding deficiencies”.

NRC regulations requires a licensee to make-up the balance of any shortfall (10 CFR 72.30(g))

## **VII. NDCAP**

The Massachusetts legislature established the panel, section 14, Chapter 188, Acts of 2016. It has 21 members: six (6) state officials; eight (8) members appointed by state officials,; two (2) Pilgrim representatives; one (1) representative from the Utility Workers Union America Local 369 who either works or worked at Pilgrim; one (1) representative from the Old Colony Planning Council; and three (3) appointees of the Town of Plymouth.

The Panel currently meets every other month (Jan, March, May, July, September, November) in Plymouth for 2-3 hours. The meeting dates, agendas, minutes, presentations, additional information and recordings are publicly available on the Panel’s website: <https://www.mass.gov/orgs/nuclear-decommissioning-citizens-advisory-panel>

NDCAP’s enabling legislation has significantly limited NDCAP’s effectiveness and its ability to meet its statutory obligations.

A major problem is that NDCAP is unfunded. It cannot hire independent experts, and must largely depend on information from Holtec, the self-educated public, and the IWG..

A second problem is that the Panel’s enabling legislation, even as amended, requires a vote of a majority of all members present at a meeting. Over the years, it has been essentially impossible to obtain a majority vote for any substantive motion, given the directive that IWG members abstain, unless guidance from their agencies is provided.

There is some discontent in NDCAP regarding public participation. The usual practice has been to provide a limited amount of time. Typically about 20-45 minutes, for the public to speak during a meeting.

Finally, there has been controversy over the terms of those who are not ex-officio members. Section 14(b) of the enabling legislation says that “Each appointing authority initially shall appoint a member for a 3-year term and a member for a 4-year term” and that “Ex-officio members shall serve for the duration of their time in office or until a successor has been appointed.

The position of some members of the panel is that ex-officio members continue to be members after their 3 or 4-year term has expired. Others’ view is that they are no longer members until or unless they are reappointed. Some panel members have raised this question with the Office of the Attorney General.

# **ATTACHMENT I**

## **LIST OF ABBREVIATIONS**

AGO/AG	Attorney General Office
ALARA	As Low as Reasonably Achievable
CRDM	Control Rod Drive Mechanism
CDI	Comprehensive Decommissioning International
DAW	Dry Active Waste
DEP	Department of Environmental Protection
DPH	Department of Public Health
DOE	Department of Energy (Federal)
DOT	Department of Transportation (Federal)
DTF	Decommissioning Trust Fund
EOEA	Executive Office of Energy and Environmental Affairs
EPZ	Emergency Planning Zone
ESA	Environmental Site Assessment
HDI	Holtec Decommissioning International
ISFSI	Independent Spent Fuel Storage Installation
IWG	Interagency Work Group
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MCP	Massachusetts Contingency Plan
MEMA	Massachusetts Emergency Management Agency
NDCAP	Nuclear Decommissioning Citizens Advisory Panel
NPDES	National Pollution Discharge Elimination System (permit)
NRC	Nuclear Regulatory Commission
NUREG	Nuclear Regulation
PACTV	Plymouth Area Cable Television
PFAS	Per- and polyfluoroalkyl substances
PNPS	Pilgrim Nuclear Power Station
PSDAR	Post Shutdown Decommissioning Activities Report
WCS	Waste Control Specialists



## **ATTACHMENT II - NDCAP PANEL MEMBERS 2022**

### **Members**

**Chair** - John T. Mahoney

Appointed by the Plymouth Select Board, 2017, 2022

**Vice Chair** - Pine duBois,

Appointed by the Speaker of the House, 2017, 2023

**Mary J. Gatslick**, Public Member

Appointed by the Minority Leader of the Senate, 2022

**James Lampert**, Public Member

Appointed by the Speaker of the House, October 2022

**Robert Jones**, ex officio. Resigned September 20, 2022

Designee of the Secretary of Health and Human Services

**Seth Pickering** ex officio. June 2021

Designee of the Secretary of Energy and Environmental Affairs

Deputy Regional Director MA DEP-SERO

**Robert Hayden**, ex officio. Commissioner DPU, resigned April 7, 2023

Designee of the Commissioner Public Utilities

**Mary Lampert**, Public member

Appointed by the Senate President, 2021

**Jack Priest**, Director, MA DPH Radiation Control Program

Appointed by the Department of Public Health, 2017, 2022

**Amy Naples**, Exec. Director, Plymouth Area Chamber of Commerce

Appointed by the Senate President, resigned (2023?)

**Mary Waldron**, Exec. Director Old Colony Planning Council (OCPC)

Appointed by the OCPC, 2020

**Andrew Gottlieb**, Public Member

Appointed by the Governor, November 2022

**Henrietta Consentino**, Public member

Appointed by the Plymouth Select Board, November 2021

**David C. Nichols**, Public member

Appointed by the Governor, 2017

**David Noyes**, HDI Senior Manager, Compliance

Appointed by Owner of PNPS, replaced Patrick O'Brien, September 2022.

**John Moylan**, Site Vice-President, Holtec-Pilgrim, 2019

Appointed by Owner of PNPS

**Kelly O'Brien**

Representative of the Utility Workers Union of America, UWUA, Local 369, 2022

**John L. Viveiros**, Technical Hazards Unit Supervisor, appointed December 2021

Designee of Massachusetts Emergency Management Agency

**Representative William Crocker**, Southeast Regional Director of Massachusetts Office of Business Development appointed 2022

Designee of Executive Office of Housing and Economic Development (EOHED)

### **Vacancies**

Plymouth Board of Selectman (BOS) - Nuclear Matters Committee

Senate President appointee

### **2023 New Appointees**

Senate Minority Leader Appointee (Michael Fortini) January 23, 2023

Commonwealth of Massachusetts Health and Human Services (HHS) designee,  
Jennifer R. Roberson, (May 22, 2023)

Commonwealth of Massachusetts, Department of Public Utilities (DPU) designee,  
Jonathan Goldberg, (May 22, 2023)