CONFIDENTIAL FINANCIAL INFORMATION TO BE WITHHELD FROM PUBLIC DISCLOSURE PURSUANT TO 10 CFR 2.390 & 10 CFR 9.17

TMI-19-164

GPU Nuclear
c/o FirstEnergy
Service Company
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GPU NUCLEAR

December 12, 2019
TMI-19-164

10 CFR 50.51
10 CFR 50.82(a)(7)

U.S. Nuclear Regulatory Commission
ATTN; Document Control Desk
Washington, DC 20555-0001

Subject: Notification of "Amended Post-Shutdown Decommissioning Activities Report" (PSDAR) for Three Mile Island, Unit 2 in Accordance with 10 CFR 50.82(a)(7)

Three Mile Island, Unit 2
NRC Possession Only License No. DPR-73
NRC Docket No. 50-320

References:

1) Letter TMI-19-112 from Halnon, G.H. (GPU Nuclear, Inc.), and Sauger J. (TMI-2 Solutions LLC), "Application for Order Approving License Transfer and Conforming License Amendments," (ML19325C600) dated November 12, 2019.

GPU Nuclear, Metropolitan Edison Company, Jersey Central Power & Light Company, Pennsylvania Electric Company, and TMI-2 Solutions, LLC, submitted an "Application for Order Approving License Transfer and Conforming License Amendments" for Three Mile Island Unit-2 (TMI-2) to the U. S. Nuclear Regulatory Commission (NRC) for review in a letter dated November 12, 2019 (Reference 1) (the Application).

This letter is provided to notify the NRC of a significant schedule change in the PSDAR in accordance with 10 CFR 50.82, "Termination of license," paragraph (a)(7). The intended change is to accelerate the decommissioning schedule for TMI-2 following approval of the Application and transfer of the TMI-2 license pursuant to the terms set forth in the Application. Decommissioning cost changes reflecting the current

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decommissioning strategy are also provided. Other changes to the PSDAR are summarized in the Revision History. Attachment 1 provides PSDAR Revision 3. Attachment 1, Enclosure 1A contains confidential commercial and financial information. FirstEnergy and Energy*Solutions* requests that this information be withheld from public disclosure pursuant to 10 CFR 2.390, as described in the Affidavit provided in Attachment 2. A redacted version of Enclosure 1A, suitable for public disclosure, is provided as Attachment 1, Enclosure 1B.

The PSDAR in Attachment 1 provides financial and planning information to support the Application. As decommissioning planning progresses further, TMI-2 Solutions will submit an updated PSDAR for review, to be made effective upon implementation of the license transfer. The updated PSDAR will refine and update the TMI-2 decommissioning project schedule, cost estimates and environmental impacts, and provide additional information about decommissioning planning. This is reflected as a regulatory commitment in Attachment 3.

In accordance with 10 CFR 50.91(b)(1), a copy of this submittal has been sent to the Commonwealth of Pennsylvania.

This document contains regulatory commitments as noted in Attachment 3.

In the event that the NRC has any questions, please contact Greg Halnon, GPU Nuclear, Inc. President and Chief Nuclear Officer, at 330-761-4270. Please also include the following on the distribution list for all correspondence related to the PSDAR:

For GPU Nuclear:

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In addition, please place Mr. Sauger, Mr. Workman Mr. Halnon, and Ms. Sealy on the NRC correspondence distribution for all correspondence related to the PSDAR.

Sincerely,

Gregory H. Halnon
President and Chief Nuclear Officer
GPU Nuclear, Inc.

Attachments:

Attachment 1 – Three Mile Island Nuclear Power Station, Unit 2 Post-Shutdown Decommissioning Activities Report, Revision 3 (contains Enclosures)

Attachment 2 – 10 CFR 2.390 Affidavit

Attachment 3 – List of Regulatory Commitments

cc w/Proprietary Enclosures:

NRC Project Manager
NRC Region I Administrator
NRC Resident Inspector

cc w/o Proprietary Enclosures:

Director, Bureau of Radiation Protection,
Department of Environmental Protection, Commonwealth of Pennsylvania
Chief, Division of Nuclear Safety, Bureau of Radiation Protection,
Department of Environmental Protection, Commonwealth of Pennsylvania
Chairman, Board of County Commissioners, Dauphin County
Chairman, Board of Supervisors of Londonderry Township

ATTACHMENT 2 TO TMI-19-164

10 CFR 2.390 AFFIDAVIT

THREE MILE ISLAND NUCLEAR POWER STATION, UNIT 2

NRC POSSESSION ONLY LICENSE NO. DPR-73

10 CFR 2.390
AFFIDAVIT OF RUSSELL G. WORKMAN

I, Russell G. Workman, General Counsel of TMI-2 Solutions, LLC, state that:

1. I am authorized to execute this affidavit on behalf of TMI-2 Solutions, LLC (TMI-2 Solutions).

2. GPU Nuclear, Inc. is providing information in support of the above-described "Post-Shutdown Decommissioning Activities Report" (PSDAR). Enclosure 1A of the PSDAR contains trade secrets and financial information, including proprietary aspects to the decommissioning of Three Mile Island Nuclear Station, Unit 2 ("TMI-2"), which constitute proprietary commercial and financial information, belonging to TMI-2 Solutions, that should be held in confidence by the NRC pursuant to the policy reflected in 10 CFR 2.390(a)(4) and 10 CFR 9.17(a)(4), because:

a. This information is and has been held in confidence by TMI-2 Solutions, its affiliates and contractors, and is the subject of confidentiality obligations owed by GPU Nuclear, Inc., as well as their affiliates and contractors.

b. This information is of a type that is held in confidence by TMI-2 Solutions and GPU Nuclear, Inc., and their affiliates and contractors, and there is a rational basis for doing so because the information contains sensitive trade secret or financial information concerning the decommissioning of TMI-2.

c. This information is being transmitted to the NRC in confidence.

d. This information is not available in public sources and could not be gathered readily from other publicly available information.

e. Public disclosure of this information would create substantial harm to the competitive position of TMI-2 Solutions and its affiliates by disclosing unique decommissioning analyses, including approaches to decommissioning developed by TMI-2 Solutions at considerable time and expense, to other parties whose commercial interests may be adverse to those of TMI-2 Solutions.

Accordingly, TMI-2 Solutions requests that Enclosure 1A to the "Post-Shutdown Decommissioning Activities Report" be withheld from public disclosure pursuant to 10 CFR 2.390(a)(4) and 9.17(a)(4).

TMI-2 Solutions, LLC

Russell G. Workman
General Counsel

STATE OF UTAH

COUNTY OF SALT LAKE

Subscribed and sworn to me, a Notary Public, in and for the County and State above named, this 12th day of December.

My Commission Expires: 2/4/20

HEIDI ANNE NAKAISHI
Notary Public
State Of Utah
My Commission Expires Feb. 4, 2020
COMMISSION NUMBER 687128

ATTACHMENT 3 TO TMI-19-164

LIST OF REGULATORY COMMITMENTS

THREE MILE ISLAND NUCLEAR POWER STATION, UNIT 2

NRC POSSESSION ONLY LICENSE NO. DPR-73

The following list identifies those actions committed to by FirstEnergy in this letter and Attachment 1("Three Mile Island Nuclear Power Station, Unit 2 Post-Shutdown Decommissioning Activities Report"). Any other actions discussed in the submittal represent intended or planned actions by FirstEnergy. They are described only as information and are not Regulatory Commitments. Please notify Greg Halnon, GPU Nuclear, Inc. President and Chief Nuclear Officer, at 330-761-4270 of any questions regarding this document or associated Regulatory Commitments.

REGULATORY COMMITMENT	TYPE		SCHEDULED COMPLETION DATE
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
TMI-2 Solutions will submit an updated PSDAR for review, to be made effective upon implementation of the license transfer.	X		**Prior to Closing**
TMI-2 Solutions will submit a plan for management of Debris Material for review by the NRC.	X		**Prior to Closing**

ATTACHMENT 1 TO TMI-19-164

POST-SHUTDOWN DECOMMISSIONING ACTIVITIES REPORT (PSDAR)

THREE MILE ISLAND NUCLEAR POWER STATION, UNIT 2

NRC POSSESSION ONLY LICENSE NO. DPR-73

3

REVISION 3

DECEMBER 2019

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ENCLOSURES

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REVISION HISTORY

Revision Number	Revision Description
0	Initial Issue (June 2013)
1	Incorporated information to update Table 1 to 2012 dollars (November 2013) Changes are on Pages 1, 2, 14, and 15
2	Incorporated information resulting from 2014 Decommissioning Cost Analysis, revised information on the post-defueling monitored storage agreement, and incorporated various administrative clarifications. (December 2015) Changes are on Pages 1, 2, 5 through 15, and 25
3	Revised section I "Introduction" with general information pertaining to transfer of ownership of TMI-2 and accelerated decommissioning. Revised section II "Background" to include information that addresses transfer of Possession Only License No. DPR-73 from FirstEnergy to TMI-2 Solutions; Revised section III "Description of Decommissioning Activities" to address activities following license transfer to TMI-2 Solutions, update the project organization, and replace decommissioning "periods" with decommissioning "phases." Revised section IV "Schedule of Decommissioning Activities," and section V "Estimated Cost of Decommissioning Activities," with updated detailed schedule and decommissioning cost information. Changes are on pages throughout.

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I. INTRODUCTION

GPU Nuclear, Inc. (GPU Nuclear), acting for itself and for the Metropolitan Edison Company, Jersey Central Power & Light Company, and the Pennsylvania Electric Company, (collectively the FirstEnergy Companies), has developed this post-shutdown decommissioning activities report (PSDAR) for the Three Mile Island Nuclear Station, Unit 2 (TMI-2) in accordance with the requirements of 10 CFR 50.82, "Termination of license," paragraph (a)(4)(i). This revision of the PSDAR has been prepared to reflect the application requesting that the U.S. Nuclear Regulatory Commission (NRC) consent to the transfer of Possession Only License No. DPR-73 for TMI-2 (POL) from the FirstEnergy Companies to TMI-2 Solutions, LLC (TMI-2 Solutions), a wholly-owned subsidiary of Energy*Solutions Inc.* (Energy*Solutions*) (the Application) (Reference 1). The transfer is to occur pursuant to the October 15, 2019 Asset Purchase and Sale Agreement among the applicants, FirstEnergy Companies and TMI-2 Solutions, which is enclosed with the Application. Following the closing of the transaction described in the Application, TMI-2 Solutions will be the TMI-2 licensee. 3

TMI-2's POL is currently maintained in accordance with the NRC approved SAFSTOR condition (a method in which a nuclear facility is placed and maintained in a condition that allows it to be safely stored and subsequently decontaminated) known as post-defueling monitored storage (PDMS). GPU Nuclear has maintained TMI-2 in the PDMS state since the NRC provisions for cleanup were met and accepted in 1993. 3 3

By letter dated August 14, 2012, (Reference 2)(ML12235A227) GPU Nuclear informed the NRC of the TMI-2 status relative to the 1996 Decommissioning Rule changes specifically related to 10 CFR 50.51, "Continuation of license," and 10 CFR 50.82, "Termination of license." The letter stated the intent to submit a PSDAR that describes the planned decommissioning activities, schedule, cost estimates, and the environmental impacts of TMI-2 plant specific decommissioning. By NRC letter dated February 13, 2013, (Reference 3) (ML12349A291) the NRC stated that September 14, 1993 is considered the date of TMI-2's cessation of operations. 3 3

The PSDAR is provided in accordance with the requirements of 10 CFR 50.82. The PSDAR includes: 3

- A description of the planned decommissioning activities,
- A schedule for their accomplishment,
- A site-specific decommissioning cost estimate including the projected cost of managing irradiated fuel, and
- A discussion that provides the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by previously issued environmental impact statements.

Due to the unique nature of TMI-2, GPU Nuclear has included a Section II, "Background," in the PSDAR to provide information on the design, history, and current status of TMI-2. Sections III through V address the 10 CFR 50.82 requirements to describe and provide a schedule and cost estimate for the planned decommissioning activities. Section VI provides the reasons for concluding that the activities planned for the decommissioning of TMI-2 are bounded by previously issued environmental impact statements. Section VII provides a list of references used in the PSDAR. 3

II. BACKGROUND

TMI-2 is located on the northern-most section of Three Mile Island near the east shore of the Susquehanna River in Dauphin County, Pennsylvania. The station is comprised of two pressurized water reactors. The TMI Nuclear Station includes Unit 1, owned by Exelon Generation Company, LLC (Exelon), which has permanently ceased power operations and as such the fuel has been removed from the reactor vessel, and the shutdown Unit 2 owned by GPU Nuclear. 3

TMI-2 is a non-operational pressurized water reactor that was rated at a core thermal power level of 2772 megawatt-thermal with a corresponding turbine-generator gross output of 959 megawatt-electric. TMI-2 employed a two loop pressurized water reactor nuclear steam supply system designed by Babcock and Wilcox Corporation. The reactor coolant system is housed within a steel-lined, post-tensioned concrete structure (reactor building), in the shape of a right, vertical cylinder with a hemispherical dome and a flat, reinforced concrete basemat. A welded steel liner plate, anchored to the inside face of the reactor building, serves as a leak-tight membrane.

GPU Nuclear was issued an operating license for TMI-2 on February 8, 1978, with commercial operation declared on December 30, 1978. On March 28, 1979, the unit experienced an accident initiated by interruption of secondary feedwater flow. 3

The lack of secondary feedwater resulted in the reduction of primary-to- secondary heat exchange that caused an increase in the reactor coolant temperature, creating a surge into the pressurizer, and an increase in system pressure. The pressure operated relief valve (PORV) opened to relieve the pressure, but failed to close when the pressure decreased. The reactor coolant pumps were turned off and a core heat-up began as the reactor coolant system water inventory continued to decrease resulting in a reactor vessel water level below the top of the core. This led to a core heat up that caused fuel damage. The majority of the fuel material travelled down through the region of the southeastern assemblies and into the core bypass region. A portion of the fuel material passed around the bypass region and migrated down into the lower internals and lower head region, but overall reactor vessel integrity was maintained throughout the accident.

As a result of this accident, small quantities of core debris and fission products were transported through the reactor coolant system and the reactor building. In addition, a small quantity of core debris was transported to the auxiliary and fuel handling buildings.

Further spread of the debris also occurred as part of the post-accident water processing cleanup activities.

The quantity of fuel remaining at TMI-2 is a small fraction of the initial fuel load; approximately 99 percent (%) was successfully removed in the defueling. Additionally, large quantities of radioactive fission products that were released into various systems and structures were removed as part of the waste processing activities during the TMI-2 Clean-up Program. The cleanup to meet the NRC post accident safe storage criteria was completed and accepted by the NRC with TMI-2 entering into post-defueling monitored storage in 1993.

NUREG-0683, "The Programmatic Environmental Impact Statement Related to Decontamination and Disposal of Radioactive Wastes Resulting from the March 28, 1979 Accident Three Mile Island Nuclear Station, Unit 2," Supplement 3 (PEIS) (Reference 4), discusses the activities performed to achieve the PDMS state at TMI-2. The PEIS evaluates the activities associated with the post-accident cleanup for environmental impact, and addresses the significant amount of decontamination and waste removal that would normally be part of a decommissioning plan, which were completed to achieve PDMS.

Approximately 99% of the fuel was removed and shipped to the Idaho National Engineering and Environmental Laboratory (INEEL) under the responsibility of the U.S. Department of Energy (DOE). The reactor coolant system was decontaminated to the extent practical to reduce radiation levels to as low as is reasonably achievable (ALARA). As part of the decontamination effort, water was removed to the extent practical from the reactor coolant system and the fuel transfer canal, and the fuel transfer tubes were isolated. Radioactive wastes from the major clean-up activities have been shipped off-site or has been packaged and staged for shipment off-site. | 3

Following the decontamination activities, only the reactor building and a few areas in the auxiliary and fuel handling buildings continued to have general area radiation levels higher than those of an undamaged reactor facility nearing the end of its operating life.

GPU Nuclear maintained TMI-2 in the PDMS state while successfully operating TMI-1 until AmerGen (a joint venture between Philadelphia Energy Company and British Energy) purchased the operating TMI-1 from GPU Nuclear in 1998. The sale of TMI-1 included the Unit 1 buildings, structures, and the majority of the site property; however, GPU Nuclear maintained ownership of TMI-2. | 3 | 3 | 3

FirstEnergy acquired GPU Nuclear and ownership of TMI-2 in 2001 as part of a larger acquisition of GPU. In December 2003, Exelon Corp. acquired sole ownership of TMI-1. A monitoring agreement between GPU Nuclear and Exelon provides for Exelon performing certain functions at TMI-2, on behalf of GPU Nuclear, while TMI-2 is in PDMS. These functions include maintenance and testing, radiological and environmental controls, security and safety functions and licensing activities required by the PDMS Technical Specifications and PDMS Final Safety Analysis Report. | 3 | 3

A 2004 site-specific cost analysis for decommissioning TMI-2 assumed a delayed DECON scenario, which deferred the decontamination and dismantling activities at TMI-2 until they are synchronized with TMI-1 such that the licenses for both units are terminated concurrently. This scenario assumed a 10-year dormancy period for TMI-2, following the TMI-1 original license expiration in 2014, with decommissioning preparation to begin in about 2024. The initial schedule assumed decommissioning operations would begin in about 2026, and would be completed over a 10-year period with site restoration projected in 2036. Since that time a 20-year extension to the TMI-1 operating license was granted by the NRC. This warranted a revision to the decommissioning cost analysis for TMI-2. 3

A 2014 site-specific cost analysis for TMI-2 evaluated a DECON scenario that assumes TMI-1 would commence decommissioning upon cessation of operations in 2034 and that the decommissioning programs for both units would run independently from each other. PSDAR revision 2, section IV "Schedule of Decommissioning Activities" established the schedule for the decommissioning of TMI-2 to commence following the expiration of the TMI-1 Operating License on April 19, 2034, with TMI-2 license termination occurring in 2053. However, upon approval of the Application and transfer of the POL TMI-2 Solutions will assume all authorities provided for and responsibilities under the POL, including possession, maintenance, and eventual decommissioning of TMI-2 and associated buildings and structures. Thereafter, following completion of all necessary engineering and licensing actions, TMI-2 Solutions will move into DECON with the goal to accelerate the decommissioning of TMI-2. 3

The transfer of the POL is desirable from a public health and safety perspective because TMI-2 Solutions will benefit from Energy*Solutions*' and its affiliates' demonstrated capability to safely and promptly decommission TMI-2, and to help eliminate the risk associated with the cost and capacity for low level radioactive waste disposal from the TMI-2 site. Energy*Solutions* and GPU Nuclear have concluded that the environmental impacts provided in revision 2 of the PSDAR remain valid based primarily on that there is no change in decommissioning technique; acceleration of the schedule and a change in ownership in themselves do not change the underlying assumptions of the environmental impacts. A more detailed review will be provided in a future revision that will be contingent on the approval of the License Transfer Application. 3

Upon the transfer of TMI-2 to TMI-2 Solutions, TMI-2 Solutions will initially maintain the site in a PDMS state, as it prepares for decommissioning furthering the conclusion that no additional environmental impacts need to be addressed in this revision of the PSDAR. After taking the necessary engineering and licensing actions, TMI-2 Solutions will commence decommissioning of TMI-2 and will complete all activities necessary to terminate the license and release the TMI-2 site years ahead of the plan reflected in revision 2 of the PSDAR which presumes license termination occurring in 2053. TMI-2 Solutions anticipates completing decommissioning of TMI-2 and releasing the TMI-2 site (except for any onsite waste storage facilities) approximately 16.5 years after the license transfer—seventeen years earlier than the current schedule. Refer to Enclosure 1A Figure 1A-1 for a detailed TMI-2 decommissioning schedule.

III DESCRIPTION OF DECOMMISSIONING ACTIVITIES

The objective of decommissioning TMI-2 is to safely perform all the activities associated with decontamination and dismantlement of the remaining plant systems, components, structures, and facilities in a cost effective manner.

Following the closing of the transaction described in the purchase agreement as presented in the Application, TMI-2 Solutions will be the TMI-2 licensee. It will hold title to and ownership of any real estate encompassing the TMI-2 site; any TMI-2 improvements at the site; easements for other portions of the site; and any spent nuclear fuel, damaged core material, high level waste, and Greater-Than-Class C ("GTCC") waste within the TMI-2 facility (collectively referred to as "Debris Material"). TMI-2 Solutions will be responsible for developing NRC-compliant storage and/or disposal plans for any remaining Debris Material until title to the Debris Material is transferred to the DOE for disposal. TMI-2 Solutions will assume responsibility for all licensed activities at the TMI-2 site, including responsibility under the license to complete radiological decommissioning pursuant to NRC regulations. 3

TMI-2 Solutions will initially maintain the TMI-2 site under the PDMS state as it prepares for Decommissioning. The PDMS condition was established following the accident at TMI-2 to establish an inherently stable and safe condition of the facility such that there was no risk to the public health and safety. The PDMS state has been approved by the NRC and is governed by a PDMS Safety Analysis Report, PDMS Technical Specifications, and PDMS Quality Program.

The PDMS Technical Specification requirements to monitor and survey radiological conditions have been established and maintained since 1993. Site security is maintained as a contracted service by Exelon that owns and operates TMI-1.

As discussed in the TMI-2 PDMS Safety Analysis Report:

- There is no credible possibility of nuclear criticality.
- Fuel and core debris removed from the reactor vessel and associated systems has been shipped offsite.
- Any potential for significant release of radioactivity has been eliminated.
- Water has been removed to the extent practical from the reactor coolant system and fuel transfer canal, and fuel transfer tubes have been isolated. The treatment and processing of accident generated water has been completed.
- Radioactive waste from the major cleanup activities has been shipped off-site or has been packaged for shipment off-site.

- Radiation within the facility has been reduced, as necessary, consistent with ALARA principles to levels that will allow necessary plant monitoring activities, the performance of required maintenance, and any necessary inspections.

After taking the necessary engineering and licensing actions, TMI-2 Solutions will commence decommissioning of TMI-2 and will complete all activities necessary to terminate the license and release the TMI-2 site. TMI-2 Solutions intends to substantially complete decommissioning of TMI-2 and release the site by 2037, except for a potential area set aside for waste storage facilities.

TMI-2 Solutions will, during a transition period, ensure continuity of the existing site procedures, currently implemented for the TMI-2 site by Exelon on behalf of GPU Nuclear, while also establishing TMI-2 specific procedures using TMI-2 Solutions project procedures, programs, personnel and contractors, although some support functions will continue to be performed by Exelon.

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The TMI-2 Solutions organization will provide an experienced nuclear management team to assure compliance with the requirements of the License and the NRC regulations. TMI-2 Solutions will implement a management approach to assure efficient and effective decommissioning and decontamination planning, preparation, and execution, which is expected to include: a safety conscious work environment; day-to-day industrial safety; radiological protection; radioactive waste handling; management rigor; an effective corrective action program; performance reporting, monitoring, and metrics; personnel performance; and financial controls.

The decommissioning of TMI-2 has been divided into two Phases.

A discussion of the significant activities, and the general sequencing of activities in each of the two Phases is presented below. The planning required for each decommissioning activity, including the selection process to perform the work, will be completed prior to the start of work for that activity.

Phase 1

Phase 1 focuses on planning and engineering activities (including NRC licensing actions), and remediation of the areas subject to the 1979 core-damage accident, with the overall goal of Phase 1 being to reduce the radiological source term at TMI-2 and the TMI-2 site to levels that are generally consistent with a nuclear plant toward the end of its operational life that has not experienced a core-damage accident.

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The first 4-5 years under Phase 1 will be preparation for decommissioning, including engineering work, procurement of long-lead time items, and infrastructure upgrades. During this time TMI-2 will remain in PDMS.

As indicated in Enclosure 1A Figure 1A-1 physical dismantlement and decontamination activities will start in 2024, with containment opening. Phase 1 is thereafter expected to last 5 years, until remediation of the reactor building is complete and Debris Material is packaged in 2029. Specific Phase 1 decommissioning objectives include:

- Reducing the reactor building source term.
- Reducing the source term and cleaning out the Debris Material from the reactor vessel.
- Reducing the source term of large components by removing Debris Material.
- Packaging, transporting, and storing Debris Material.
- Removing and packaging Class B and C radioactive waste.

Phase 2

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The overall goal of Phase 2 is decommissioning of the TMI-2 site to a level that permits the release of the site, except for an area potentially to be set aside for waste storage facilities. Specific Phase 2 decommissioning objectives include:

- Removing, packaging, and disposing of all remaining systems and equipment in preparation for structural demolition.
- Demolishing and dispositioning all plant structures to nominally three feet below grade.
- Demolishing the cooling towers.
- Backfilling the site to the existing grade elevation.

Phase 2 is expected to complete in 2037.

Also included in Phase 2 is the preparation and execution of the license termination plan (LTP) and site restoration activities. The LTP will be prepared in accordance with the requirements of 10 CFR 50.82(a)(9), and will be prepared at least two years prior to the anticipated date of license termination. The LTP will include a site characterization, description of remaining dismantling activities, plans for site remediation, updated cost estimate to complete the decommissioning, any associated environmental concerns, designation of the end use of the site, and the procedures for the final radiation survey. The LTP will be developed following the guidance contained in Regulatory Guide 1.179, "Standard Format and Content of License Termination Plans for Nuclear Power Reactors." As described in Regulatory Guide 1.179, the LTP will use the guidance contained in NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)" to develop the final radiological survey plan and survey methods. The use of MARSSIM to develop the final radiological survey plan and survey methods will demonstrate compliance with the requirements 10 CFR 20, Subpart E, "Radiological Criteria for License Termination." Once the LTP is approved, the final remediation of the site facilities and services can commence. These activities include, but are not limited to:

- Removal of remaining plant systems and components as they become nonessential to the decommissioning program, or worker health and safety (for example, waste collection and processing systems, electrical power and ventilation systems).

- Removal of contaminated yard piping and any contaminated soil.

- Remediation and removal of the contaminated equipment and material from the auxiliary and fuel buildings, and any other contaminated facility.

Use of the NUREG-1575 guidance ensures that the surveys are conducted in a manner that provides a high degree of confidence that applicable NRC criteria are satisfied. Once the final survey is complete, the results are provided to the NRC. The NRC will terminate the license if it determines that site remediation has been performed in accordance with the LTP, and that the terminal radiation survey and associated documentation demonstrate that the facility is suitable for release.

Following completion of decommissioning operations, site restoration activities will begin. Site restoration will involve the dismantling and disposal of any remaining non-radiological structures. Restored areas of the site will be backfilled, graded and landscaped to support vegetation for erosion control.

Enclosure 1B, Figure 1B-2 provides a high level schedule of activities per phase. 3

IV. SCHEDULE OF DECOMMISSIONING ACTIVITIES

As noted in letter from the NRC to GPU Nuclear dated February 13, 2013, (Reference 3) (ML12349A291) the equivalent to the certificate of cessation of operations was determined to be the NRC's issuance of TMI-2 License Amendment 45, converting the TMI-2 operating license to a possession only license. This amendment was granted on September 14, 1993 (Reference 5) and establishes that date as the date that TMI-2 is considered to have submitted certification of permanent cessation of operations. 3 3

TMI-2 has been in a PDMS state since its permanent shutdown and defueling, with preparations for decontamination and dismantlement deferred until the license expiration date for the TMI-1 facility. Upon the transfer of the POL to TMI-2 Solutions, and completion of further engineering and licensing actions, TMI-2 Solutions plans to accelerate the decommissioning schedule and begin decommissioning. TMI-2 Solutions' goal is to complete the decommissioning, restoration, and release of the TMI-2 site approximately 16.5 years after the license transfer. This is seventeen years earlier than the schedule provided in the current PSDAR. 3

The PSDAR does not provide information about the long-term management of certain wastes referred to in the Application as Debris Material. At an appropriate time, TMI-2 Solutions will submit to the NRC a plan for management of Debris Material, which will provide more information about the long-term plan for management of Debris Material at

TMI-2 until DOE acceptance. This is reflected as a regulatory commitment in the Application, which is repeated in Attachment 3.

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Enclosure 1A, Figure 1A-1 provides a detailed schedule of decommissioning activities. Enclosure 1B, Figure 1B-2 provides a high level schedule of activities per phase. The schedule begins with the date that the various contractual agreements are signed between the parties, and ends with the NRC approval of the license amendment that permits complete or partial site release. Following the transfer, expected to occur in the second half of 2020, the decommissioning of TMI-2 will largely be independent of the decommissioning activities at TMI-1.

V. ESTIMATED COSTS OF DECOMMISSIONING ACTIVITIES

In February 1996, the first TMI-2 site-specific decommissioning cost analysis was developed for GPU Nuclear. That analysis was updated in 2004, 2009, 2014 and 2018 (References 6, 7, 8 and 9 respectively) to reflect current assumptions pertaining to disposition of the nuclear unit and relevant industry experience in undertaking decommissioning. The updated 2018 cost analysis (provided in the 2019 Status Report) provides a total decommissioning cost estimate of approximately $1.32 billion dollars, based on the decommissioning approach in consideration at that time.

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For estimating costs under an accelerated decommissioning approach, the updated estimate completed in December 2018 was utilized to obtain site-specific commodity quantities, and then Energy*Solutions* applied its weights and currently estimated unit cost factors, which take into consideration the Energy*Solutions* execution strategy and the methods and schedule discussed in section IV above, to arrive at an updated estimated cost to decommission TMI-2. Energy*Solutions* also utilized the latest available industry experience (e.g., information from the Zion and La Crosse projects, and 25 years of experience in planning and engineering for other facilities, including complex decommissioning).

The cost estimate recognizes the present state of TMI-2 decontamination, contingency for unknown or uncertain conditions, the availability of low and high level radioactive waste disposal sites, and site remediation requirements. The methodology used to develop the cost estimate follows the basic approach developed by the Atomic Industrial Forum (now the Nuclear Energy Institute) in AIF/NESP-036, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates."

The decommissioning cost analysis for TMI-2 has been summarized in Table 1. A detailed cost estimate associated with the decommissioning of TMI-2 is presented in Enclosure 1A, Table 1A-1 "Decommissioning Cost Estimate". In addition Enclosure 1B presents Table 1B-2 and Table 1B-3 "TMI-2 Estimated Annual Spending" and "TMI-2 Sinking Fund Analysis" respectfully.

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This PSDAR will not be updated for minor changes in anticipated decommissioning costs. However, the status of TMI-2 decommissioning funding will continue to be

reported to the NRC in accordance with 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v). This report will include, at a minimum, the assumptions used in the rates of escalation of decommissioning costs and rates of earnings used in funding projections. Additionally, GPU Nuclear, in accordance with 10 CFR 50.82(a)(7), will inform the NRC in writing (with a copy sent to Pennsylvania), before performing any decommissioning activity inconsistent with or making any significant schedule change from those actions and schedules described in the PSDAR, including changes that significantly increase the decommissioning cost. TMI-2 Solutions will also include an updated site specific estimate of remaining decommissioning costs in the license termination plan in accordance with 10 CFR 50.82(a)(9)(ii)(F). The annual 10 CFR 50.75(f)(1) reports continue to demonstrate that the current fund balances are more than adequate to cover the expected future cost of decommissioning. In the event that future estimated costs or funding levels change significantly, TMI-2 Solutions will make the necessary adjustments to ensure that sufficient funds remain available for decommissioning. 3 3

TABLE 1

Three Mile Island Unit 2 Decommissioning Cost Summary** (thousands of 2019 dollars)	
Description	**Total Cost**
Planning & Transition	2,854
Engineering & Procedures	12,451
Site Upgrades & Preparations	33,257
Large Component & Building Source Term Reduction	51,340
Waste Packaging Transportation & Disposal	28,345
Other Direct Costs	56,005
Undistributed Costs *	264,846
Performance Baseline	**449,099**
Contingency	113,869
PHASE 1 TOTAL - SOURCE TERM REDUCTION	**562,968**
Planning & Transition	3,773
Engineering & Procedures	6,285
Large Component Removal & Building Demolition	36,563
Waste Packaging Transportation & Disposal	182,968
Final Surveys & License Termination	5,685
Site Restoration	27,999
Other Direct Costs	21,213
Undistributed Costs *	134,728
Performance Baseline	**419,214**
Contingency	74,692
PHASE 2 TOTAL - DECOMMISSIONING & LICENSE TERMINATION	**493,906**
TOTAL PROJECT	**1,056,874**

*Undistributed Costs may also be referred to as "Allocated Support Costs"

**Does not include anticipated costs for long-term storage of Debris Material after Phase 2 until acceptance by the DOE (estimated to be $56 million dollars).

VI ENVIRONMENTAL IMPACTS OF DECOMMISSIONING ACTIVITIES

There are no changes to the information previously provided in this section. As stated above, Energy*Solutions* and GPU Nuclear have concluded that the environmental impacts provided in revision 2 of the PSDAR remain valid based primarily on that there is no change in decommissioning technique; acceleration of the schedule and a change in ownership does not change the underlying assumptions of the environmental impacts. A more detailed review will be provided in a future revision of the PSDAR that will be contingent on the approval of the License Transfer Application. 3

10 CFR 50.82(a)(4)(i) requires that the PSDAR include "a discussion that provides the reasons for concluding that the environmental impacts associated with the site-specific decommissioning activities will be bounded by appropriate previously issued environmental impact statements ..." The potential environmental impacts associated with the proposed decommissioning activities for TMI-2 were compared with similar impacts given in the PEIS related to post-accident cleanup activities resulting from the March 28, 1979 accident; and with NUREG-0586, "Generic Environmental Impact Statement on Decommissioning of Nuclear Power Facilities," dated August 1988 and Supplement 1, Volumes 1 and 2, dated November 2002 (Reference 10) (collectively known as GEIS) on decommissioning and radiological criteria for license termination. The following discussion provides the comparison. 3

PEIS

The PEIS identified that the post-accident cleanup activities can be categorized into four fundamental activities:

1. Building and equipment decontamination,
2. Fuel removal and the reactor coolant system decontamination,
3. Treatment of radioactive liquids, and
4. Packaging, handling, shipment, and disposal of radioactive wastes

These activities were used in the evaluation of the alternatives to GPU Nuclear's proposed action of delayed decommissioning. As described in the PEIS, the NRC evaluated seven alternatives relative to delayed decommissioning. The NRC concluded (except for the no action alternative, which was not considered acceptable) that no alternative was found to be superior to GPU Nuclear's proposal from an environmental impact perspective. 3 3

Of the seven alternatives evaluated in the PEIS (except for the no action alternative) as well as the proposed GPU Nuclear's delayed decommissioning plan, the NRC concluded that each alternative could be conducted in conformance with applicable regulatory requirements and implemented without significant impact to the human 3

environment. Hence, it is reasonable to conclude that the activities described for the TMI-2 decommissioning will be accomplished with no adverse environmental impacts based upon the following:

- The activities to be performed for decommissioning are equivalent to the activities performed during the post-accident cleanup evaluated in the PEIS,
- The radiation control techniques and decontamination methods since the post TMI-2 accident cleanup have improved,
- No site-specific activities pertaining to TMI-2 decommissioning would alter the conclusions of the PEIS,
- Radiation dose to the public will be minimal, and
- Radiation dose to decommissioning workers will be maintained ALARA according to 10 CFR Part 20.

As noted in the PEIS, the outcome of completing the clean-up activities at TMI-2 would result in many areas decontaminated to the point where general area dose rates approximate those in an undamaged reactor facility nearing the end of its operating life.

GEIS

The remaining decommissioning activities for the delayed decommissioning of TMI-2 can be compared to the activities evaluated in the GEIS.

As a general matter, TMI-2 is smaller than the reference PWR used in NUREG-0586 to evaluate the environmental impacts of decommissioning, and is likewise smaller than a number of PWRs that were evaluated in NUREG-0586, Supplement 1.

Decommissioning activities are identified in Appendix E of NUREG-0586, Supplement 1. No activities planned for TMI-2 deviate from the activities listed in terms of environmental impact. A deviation exists in terms of the variables associated with transuranic fuel and higher source terms. However, these variables are addressed through controlled decontamination and dismantlement, and following NRC regulations associated with dose. So long as decontamination and dismantlement are performed within the guidelines of the regulations regarding release of effluents, occupational dose, and offsite dose; and GTCC waste is contained in approved shipping containers; the decommissioning activities at TMI-2 are directly comparable to the activities evaluated in the GEIS.
NUREG-0586, Supplement 1, Section 4.3, "Environmental Impacts from Nuclear Power Facility Decommissioning," provides a listing of 18 issues pertinent to the decommissioning of a reactor. A discussion of these issues follows.

1. Onsite/Offsite Land Use

The GEIS concluded that the impacts on land use are not detectable or small for facilities having only onsite land-use changes as a result of large component removal, structure dismantlement, and low level waste packaging and storage. There are no anticipated changes in land use beyond the site boundary during decommissioning. Therefore, it can be concluded that the impacts on land use are bounded by the GEIS.

2. Water Use

Since the shutdown of TMI-2 and the entry into the PDMS state, the demand for potable water has decreased significantly below the demand during operation. The operational demand for cooling water, makeup water, and service water has ceased. The demand for water needed to conduct plant decommissioning activities (flushing piping, hydro-lasing, dust abatement, etc.) will be less than the demand for water supply during operation. Hence, the impacts on water use are bounded by the GEIS.

3. Water Quality - Non-Radiological

Programs and processes designed to minimize, detect, and contain spills will be maintained throughout the decommissioning process. Federal, state and local regulations, and permits pertaining to water quality will remain in effect, and no significant changes to water supply reliability are expected. Therefore, the impact of TMI-2 decommissioning on water quality is bounded by the GEIS.

4. Air Quality

There are many types of decommissioning activities that have the potential to affect air quality. These activities are listed in the GEIS and evaluated from the perspective of the ability to mitigate consequences of activities through the use of high efficiency particulate filters. In addition, the release of any effluents must be controlled to keep contaminated material within the NRC's regulatory limits. For the purposes of assessing radiological impacts, impacts are of small significance if doses and releases do not exceed limits established by the NRC's regulations. GPU Nuclear does not anticipate any activities beyond those listed in the GEIS that could potentially affect air quality. Therefore, the impact of the TMI-2 decommissioning on air quality is bounded by the GEIS. 3

5. Aquatic Ecology

GPU Nuclear does not anticipate disturbance of lands beyond the current operational areas of the plant. No alteration to the shores of the Susquehanna River will occur. All activities within the current operational areas of the plant will be conducted in accordance with required permits. Therefore, the impacts of decommissioning TMI-2 on aquatic ecology are bounded by the GEIS. 3

6. Terrestrial Ecology

Terrestrial ecology considers the plants and animals in the vicinity of Three Mile Island as well as the interaction of those organisms with each other and the environment. Evaluations of impacts to terrestrial ecology are usually directed at important habitats and species, including plant and animals that are important to industry, recreational activities, the area ecosystems, and those protected by endangered species regulations and legislation. GPU Nuclear does not anticipate activities to be conducted that would disturb habitat beyond the operational areas of the plant. In addition, the Pennsylvania Department of Natural Resources controls impacts to the environment through regulation of construction activities. Therefore, the impacts of decommissioning TMI-2 on terrestrial ecology are bounded by the conclusions in the GEIS, which concludes the impact to be small. 3

7. Threatened and Endangered Species

Of the state or federally listed endangered or threatened animal and plant species, only the bald eagle, the osprey, the peregrine falcon, and American holly were identified to have a presence on or near the island.

The bald eagle has recently been removed from the endangered species list but remains protected by two other federal laws. The Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act became effective in 2007. Bald eagles have become relatively common along the Susquehanna River and have been known to nest in Dauphin, Lancaster, and York counties. Occasionally they have been observed on Three Mile Island, but there are no known nests on the island. There is a bald eagle nest located approximately 20 miles south, near Holtwood Dam.

The Susquehanna River and the associated environment and wetland areas in the vicinity of Three Mile Island are used by many migratory and resident bird species. Osprey and peregrine falcon nests are known to occur on Three Mile Island. Ospreys have nested on the meteorological tower every year since 2004. A 55-foot nesting platform was erected near the tower, but the ospreys have not used it. Peregrine falcons have nested on the TMI-1 Reactor Building since 2002. A nest box designed for peregrine falcons was placed on the TMI-2 reactor building in 2002, but the birds have not used it. Exelon regularly monitors the osprey and the peregrine falcon nests on Three Mile Island. The American holly, state-listed as threatened, has been recorded on the TMI-1 property.

Should the situation change and the identified species routinely be found in or around any of the TMI-2 buildings or property, it is GPU Nuclear's intent to notify the NRC and the Pennsylvania Department of Environmental Protection to evaluate the impact of decommissioning activities. 3

8. Radiological Occupational Dose

It is anticipated that low-level radioactive waste removed from TMI-2 will be disposed of at approved waste disposal sites, and that the disposal at local commercial landfills will

be minimized in favor of low-level radioactive waste disposal to reduce the risk of inadvertent release of radiological material.

Radiation dose to the public is expected to remain below levels comparable to when TMI-2 was operating, through the continued application of radiation protection and contamination controls combined with the reduced source term available in the facility.

It is anticipated that an occupational dose estimate for the decommissioning of TMI-2 will be performed prior to the start of decommissioning activities based on confirmed characterization results of area contamination and activity levels.

Occupational dose will be limited to 5 rem/year total effective dose equivalent (TEDE) as required by 10 CFR 20.1201(a)(1)(i), and is expected to be administratively controlled to a lower TEDE limit to ensure that personnel doses do not exceed regulatory limits. It is also anticipated that administrative practices will result in equitable distribution of dose among available qualified workers to ensure collective dose to the work force is kept ALARA.

The decommissioning activities dose will be maintained within the regulatory limits, and as such, is consistent and within the conclusions of the GEIS

9. Radiological Accidents

The likelihood of a large offsite radiological release that impacts public health and safety with TMI-2 in the PDMS state is considerably lower than the likelihood of a release from the plant during power operation. This is because the majority of the potential releases associated with power operation are not relevant after the fuel has been removed from the reactor.

GEIS, Supplement 1 also considers the possibility of a zircalloy fire. This accident is not relevant to TMI-2 in the current PDMS condition with approximately 99% of the fuel material having been removed from the site and sent to INEEL.

The potential for decommissioning activities to result in radiological releases not involving spent fuel (that is, releases related to decontamination and dismantlement activities) will be minimized by use of procedures designed to minimize the likelihood and consequences of such releases.

Therefore, GPU Nuclear concludes that the impacts of decommissioning on radiological accidents are small and bounded by the GEIS. 3

10. Occupational Issues

GPU Nuclear will continue to maintain appropriate administrative controls and requirements to ensure occupational hazards are minimized and that applicable federal, state and local occupational safety standards and requirements continue to be met. 3

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GPU Nuclear has reviewed the occupational hazards and injuries in the GEIS and concluded that they are not unique or different than activities performed during construction and cleanup of TMI-2. Therefore, the impact of decommissioning TMI-2 on occupational issues is bounded by the GEIS.

11. Cost

Decommissioning costs for TMI-2 are discussed in Section IV of the PSDAR report. The GEIS recognizes that an evaluation of decommissioning cost is not a National Environmental Policy Act requirement. Therefore, a bounding analysis is not applicable.

12. Socioeconomics

Decommissioning of TMI-2 is expected to result in positive socioeconomic impacts. As TMI-2 transitions from the PDMS state to a unit undergoing decommissioning, the potential for local employment to support decommissioning operations becomes available.

GPU Nuclear has reviewed the GEIS and has determined that the decommissioning of TMI-2 is bounded by the GEIS analysis of socioeconomic effects on the shutdown and decommissioning of an operating unit. 3

13. Environmental Justice

Executive Order 12898, dated February 16, 1994, directs Federal executive agencies to consider environmental justice under the National Environmental Policy Act. It is designed to ensure that low-income and minority populations do not experience disproportionately high and adverse human health or environmental effects because of federal actions.

Because the activities of the decommissioning plan create the potential for additional work opportunities, the decommissioning of TMI-2 could have a positive impact on environmental justice by providing job opportunities for lower income or minority populations around the area.

The decommissioning activities are bounded by the evaluation of the post accident clean up activities relative to socioeconomic and environmental justice. GPU Nuclear concludes that the employment opportunities created by decommissioning will have a positive impact on environmental justice and that no further evaluation of detrimental impacts is required. 3

14. Cultural, Historic, and Archeological Resources

The PEIS makes no mention of cultural, historic or archeological resources on Three Mile Island. In addition, GPU Nuclear expects that most decommissioning activities will be conducted within the protected areas of the site. As stated in the GEIS, where 3

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disturbance of lands beyond the operational areas is not anticipated, the impacts on cultural, historic and archeological resources are not considered to be detectable or destabilizing. GPU Nuclear has concluded that the impact of decommissioning TMI-2 on cultural, historic, and archeological resources to be bounded by the GEIS.

15. Aesthetic Issues

The impact of decommissioning activities on aesthetic resources will be temporary and remain consistent with the aesthetics of an industrial plant. After the decommissioning process is complete, site restoration activities will result in structures being removed from the site and the site being backfilled, graded and landscaped as needed. The removal of structures is generally considered beneficial to the aesthetic impact of the site. Therefore, GPU Nuclear has concluded that the impact of decommissioning TMI-2 on aesthetic issues is bounded by the GEIS. | 3

16. Noise

General noise levels during the decommissioning process are not expected to be any more severe than during refueling outages and are not expected to present an audible intrusion on the surrounding community. Some decommissioning activities may result in higher than normal noise levels (that is, some types of demolition activities). However, these noise levels would be temporary and are not expected to present an audible intrusion on the surrounding community. Therefore, GPU Nuclear has concluded that the impact of decommissioning TMI-2 on noise is bounded by the GEIS. | 3

17. Transportation

The GEIS states that NRC regulations are adequate to protect the public against unreasonable risk from the transportation of radioactive material and that the effects of transportation of radioactive waste on public health and safety are considered to be neither detectable nor destabilizing. The NRC analysis further determined that their consideration of the existing data for decommissioning methods and transportation modes should bound the transportation impacts for all decommissioning options for pressurized water reactors and boiling water reactors.

For the decommissioning of TMI-2, the transportation modes assumed are shielded container removal by rail or truck. The reactor vessel internal components are expected to be transported in spent fuel casks by rail. Other highly radioactive wastes will be transported in shielded containers via truck. The major transport mode for waste generated from filtering and demineralization of the reactor coolant system and the fuel transfer pool water is assumed to require shipment in shielded truck casks. The low level radioactive wastes requiring controlled disposal are expected to be sent to a waste processor or a low-level radioactive waste disposal facility via railroad.

The transportation impacts of decommissioning are dependent on the number of shipments to and from the plant, the types of shipments, the distance the material is

shipped, and the radiological waste/fixed waste quantities and disposal plans. The estimated number and volume of shipments from the plant will be much smaller than shipments to the plant during decommissioning. The shipments from the plant would be primarily radioactive wastes and non-radioactive wastes associated with dismantlement and disposal of structures, systems and components.

GPU Nuclear must comply with applicable regulations when shipping radioactive waste, and the NRC has concluded in the GEIS that these regulations are adequate to protect the public against unreasonable risk from transportation of radioactive materials. In addition, shipments of waste from the site are not expected to result in measurable deterioration of affected roads or a destabilizing increase in traffic density. | 3

Therefore, GPU Nuclear has concluded that the impact of decommissioning TMI-2 on transportation is bounded by the GEIS. | 3

18. Irreversible and Irretrievable Commitment of Resources

Irreversible commitments are commitments of resources that cannot be recovered, and irretrievable commitments of resources are those that are lost for only a period of time.

Uranium is a natural resource that is irretrievably consumed during power operation. After the plant is shutdown uranium is no longer consumed. The use of the environment (air, water, land) is not considered to represent a significant irreversible or irretrievable resource commitment but rather a relatively short-term investment. Since the decommissioning plan is to release the site for unrestricted use after license termination, land is not considered an irreversible resource. The only irretrievable resources that would occur during decommissioning would be materials used to decontaminate the facility (for example, rags, solvents, gases, and tools) and the fuel used for decommissioning activities and transportation of materials to and from the site. However, the use of these resources is minor.

Therefore, GPU Nuclear has concluded that the impact of decommissioning TMI-2 on irreversible and irretrievable commitment of resources is bounded by the GEIS. | 3

Additional Considerations

While not quantitative, the following considerations are also relevant to concluding that decommissioning activities will not result in significant environmental impacts not previously reviewed.

Significant cleanup of the TMI-2 facility has already been completed with approximately 99% of the fuel removed and shipped to INEEL.

Decontamination has been completed to the extent that further major decontamination programs are not justified on the basis of worker dose.

Prior to decommissioning, TMI-2 will be maintained in accordance with the NRC approved PDMS mode governed by the associated PDMS Technical Specifications, PDMS Quality Assurance Program, and PDMS Final Safety Analysis Report. As such, TMI-2 will be maintained in a condition of stability and safety such that there is minimal risk to public health and safety.

Radiation protection techniques used at the time of decommissioning are expected to improve over current practices and should ensure reduction in occupational exposure.

Site access control processes during decommissioning are expected to reduce the risk of public contamination due to trespassing.

Conclusion

Based on the above discussion, the potential environmental impacts associated with decommissioning TMI-2 have already been postulated in and will be bounded by the previously issued environmental impact statements, specifically the PEIS, and the GEIS and its supplement. This is principally due to the following reasons:

- The postulated impacts associated with the decommissioning method chosen have already been considered in the PEIS and the GEIS, including its supplement.

- There are no unique aspects of TMI-2 or of the decommissioning techniques to be utilized that would invalidate the conclusions reached in the PEIS, and the GEIS and its supplement.

The environmental impacts associated with the site-specific decommissioning activities for TMI-2 will be bounded by appropriate previously issued environmental impact statements

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VII. REFERENCES

1. Halnon, G.H. (GPU Nuclear, Inc.), Sauger J. (TMI-2 Solutions LLC) letter TMI-19-112 "Application for Order Approving License Transfer and Conforming License Amendments," (ML19325C600) dated November 12, 2019

2. Pace, D. L. (GPU Nuclear) to NRC letter, "Notification of Intent to Submit a Post-Shutdown Decommissioning Activities Report," (ML12235A227) dated August 14, 2012

3. Camper, L. W. (NRC) to Pace, D. L. (GPU Nuclear) letter, "Three Mile Island Nuclear Station, Unit 2 (TMI-2) – Failure to Submit Post-Shutdown Decommissioning Activities Report – Non-cited Violation (Docket: 05000320)," (ML12349A291) dated February 13, 2013

4. NUREG-0683, Supplement 3, "Programmatic Environmental Impact Statement Related to Decontamination and Disposal of Radioactive Wastes Resulting from March 28, 1979 Accident Three Mile Island Nuclear Station, Unit 2," Supplement 3, dated August 1989

5. Masnik, M. T. (NRC) to Long, R. L. (GPU Nuclear) letter, "Issuance of Amendment No. 45 for Facility Operating License No. DPR-73 to Possession Only License for Three Mile Island Nuclear Station Unit 2 (TAC No. ML69115)," dated September 14, 1993

6. TLG Services, Inc., "Decommissioning Cost Analysis for Three Mile Island Unit 2," dated September 2004

7. TLG Services, Inc., "Decommissioning Cost Analysis for Three Mile Island Unit 2," dated January 2009

8. TLG Services, Inc., "Decommissioning Cost Analysis for Three Mile Island Unit 2," dated December 2014

9. Halnon, G.H. (GPU Nuclear, Inc.), to USNRC letter TMI-19-003 "Decommissioning Funding Status Report for the Three Mile Island Nuclear Station, Unit 2, dated March 28, 2019

10. NUREG-0586, "Generic Environmental Impact Statements on Decommissioning and Radiological Criteria for License Termination," dated August 1988, and Supplement 1, Volumes 1 and 2, November 2002

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ENCLOSURE 1A

DETAILED COST INFORMATION

(PROPRIETARY)

ENCLOSURE 1B

DETAILED COST INFORMATION

(NON-PROPRIETARY)

TABLE 1B-1
THREE MILE ISLAND UNIT 2
DECOMMISSIONING COST ESTIMATE
(thousands of 2019 dollars)

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REDACTED

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TABLE 1B-1
THREE MILE ISLAND UNIT 2
DECOMMISSIONING COST ESTIMATE
(thousands of 2019 dollars)

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REDACTED

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FIGURE 1B-1
THREE MILE ISLAND UNIT 2
2019 DECOMMISSIONING SCHEDULE

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REDACTED

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FIGURE 1B-1
THREE MILE ISLAND UNIT 2
2019 DECOMMISSIONING SCHEDULE

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REDACTED

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TABLE 1B-2
THREE MILE ISLAND UNIT 2
TMI2 ESTIMATED ANNUAL SPENDING
(thousands of 2019 Dollars)

Year	License Termination	Debris Material	Site Restoration	Total
2019	3,315	641	-	3,955
2020	16,846	894	-	17,740
2021	27,085	1,334	-	28,420
2022	37,761	4,209	-	41,970
2023	60,367	16,273	-	76,640
2024	72,620	16,076	-	88,696
2025	81,868	15,444	-	97,312
2026	79,102	13,129	-	92,230
2027	67,152	8,944	-	76,096
2028	29,203	4,730	-	33,933
2029	13,363	-	-	13,363
2030	20,463	-	-	20,463
2031	52,561	-	3,778	56,339
2032	86,727	-	15,428	102,155
2033	103,385	-	11,891	115,275
2034	78,802	-	11,713	90,514
2035	72,741	-	2,855	75,596
2036	24,553	-	243	24,796
2037	1,380	-	-	1,380
2038	-	-	-	-
2039	-	-	-	-
2040	-	-	-	-
Total	929,291	81,674	45,908	1,056,874

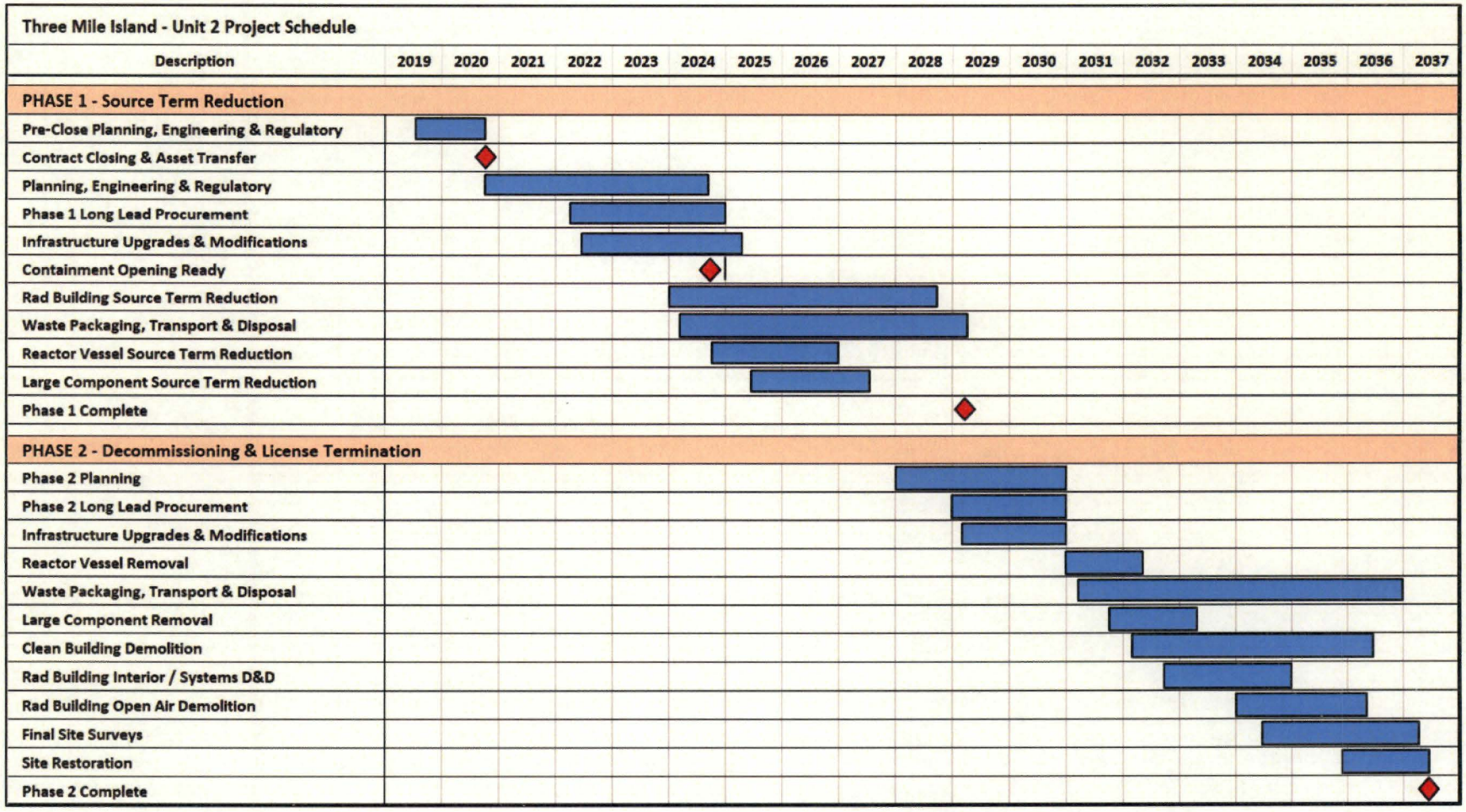
TABLE 1B-3
THREE MILE ISLAND UNIT 2
SINKING FUND ANALYSIS
(thousands of 2019 Dollars)

Year	Beginning Balance NDT	Annual Spending	NDT Earnings	Ending Balance NDT
2019	$ 900,000 A	$ 3,955	$ 1,500 B	$ 897,545
2020	$ 897,545	$ 17,740	$ 17,773	$ 897,578
2021	$ 897,578	$ 28,420	$ 17,667	$ 886,825
2022	$ 886,825	$ 41,970	$ 17,317	$ 862,172
2023	$ 862,172	$ 76,640	$ 16,477	$ 802,010
2024	$ 802,010	$ 88,696	$ 15,153	$ 728,467
2025	$ 728,467	$ 97,312	$ 13,596	$ 644,751
2026	$ 644,751	$ 92,230	$ 11,973	$ 564,493
2027	$ 564,493	$ 76,096	$ 10,529	$ 498,926
2028	$ 498,926	$ 33,933	$ 9,639	$ 474,632
2029	$ 474,632	$ 13,363	$ 9,359	$ 470,628
2030	$ 470,628	$ 20,463	$ 9,208	$ 459,373
2031	$ 459,373	$ 56,339	$ 8,624	$ 411,658
2032	$ 411,658	$ 102,155	$ 7,212	$ 316,715
2033	$ 316,715	$ 115,275	$ 5,182	$ 206,621
2034	$ 206,621	$ 90,514	$ 3,227	$ 119,334
2035	$ 119,334	$ 75,596	$ 1,631	$ 45,369
2036	$ 45,369	$ 24,796	$ 659	$ 21,232
2037	$ 21,232	$ 1,380	$ 411	$ 20,263
Total		**$ 1,056,874**	**$ 177,137**	

A - NDT Beginning balance is assumed as of 11/30/19
B - Represents 1-months earnings

Rate of Real Return is 2%

FIGURE 1B-2
THREE MILE ISLAND UNIT 2
DECOMMISSIONING PHASE ACTIVITIES*



* Does not include an assumed schedule for long-term storage of Debris Material after Phase 2 until acceptance by DOE in the early 2050 period.